

REDUCING NITROGEN LOADS TO TAMPA BAY USING BIORETENTION SYSTEMS

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October 22, 2015

Joint TBEP Technical
Advisory Committee and
TBRPC Agency on Bay
Management Meeting

OUTLINE

- Deliverables
- Background
- Bioretention
- Tampa Vocational Institute
- Youth and Leadership Movement
- Residential Rain Garden
- Conclusion

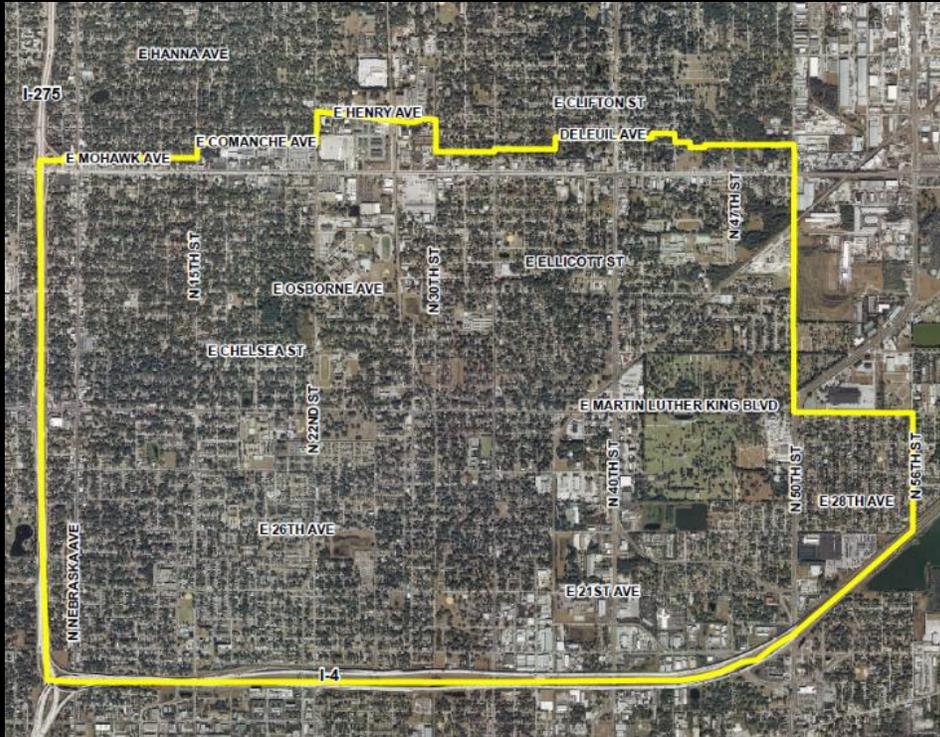


Deliverables:

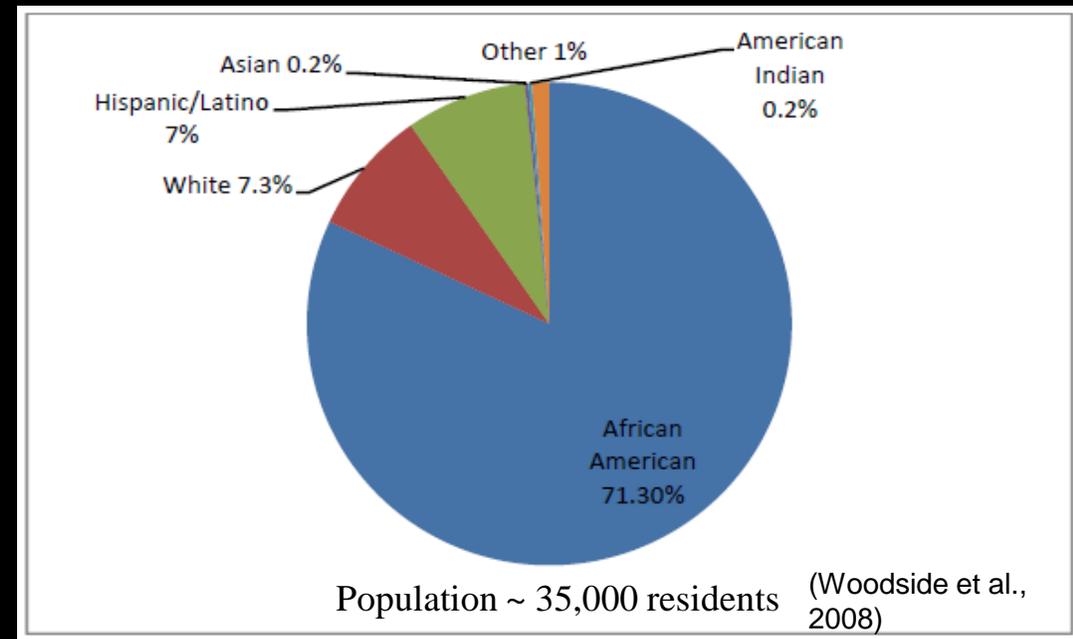
- Public Education
 - TVI
 - YLM
- One Bioretention System - Research Site
- One Residential Rain Garden
- Rain barrel installations

Students Involved	Degree	Graduation
Shelby Mireles	B.S.	Spring 2014
Thomas J. Lynn	PhD	Summer 2014
Brian Wells	M.S.	Spring 2014
Ryan Locicero	PhD	Summer 2015
Laura Rankin	M.S.	Fall 2015
Anna K. Quinones	B.S.	Fall 2015
Mackenzie Peterson	M.S.	Spring 2016
Ana Beatriz Bastos Alvez	B.S.	Spring 2016
Rodrigo Moreira Pacheco	B.S.	Spring 2016
Emma Lopez	PhD	Spring 2017

EAST TAMPA



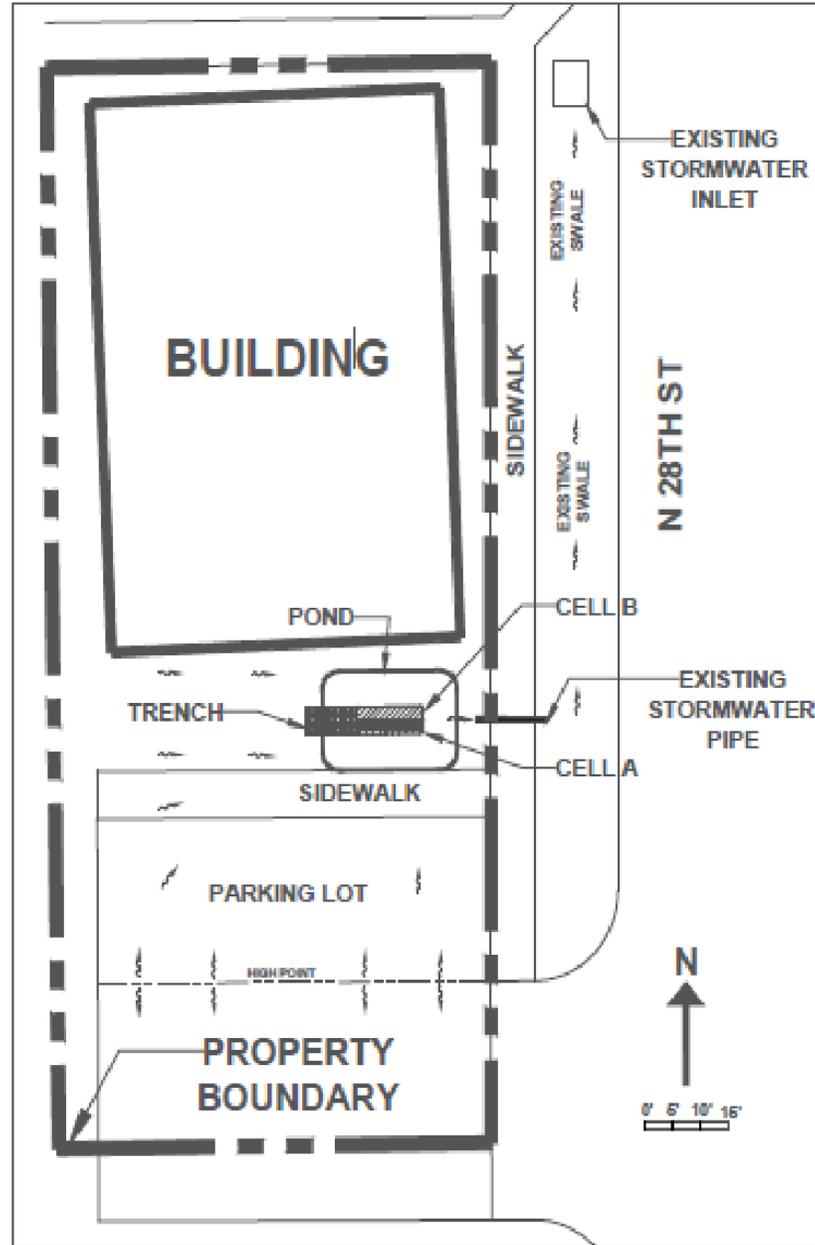
Boundary of East Tampa
7.5 square miles



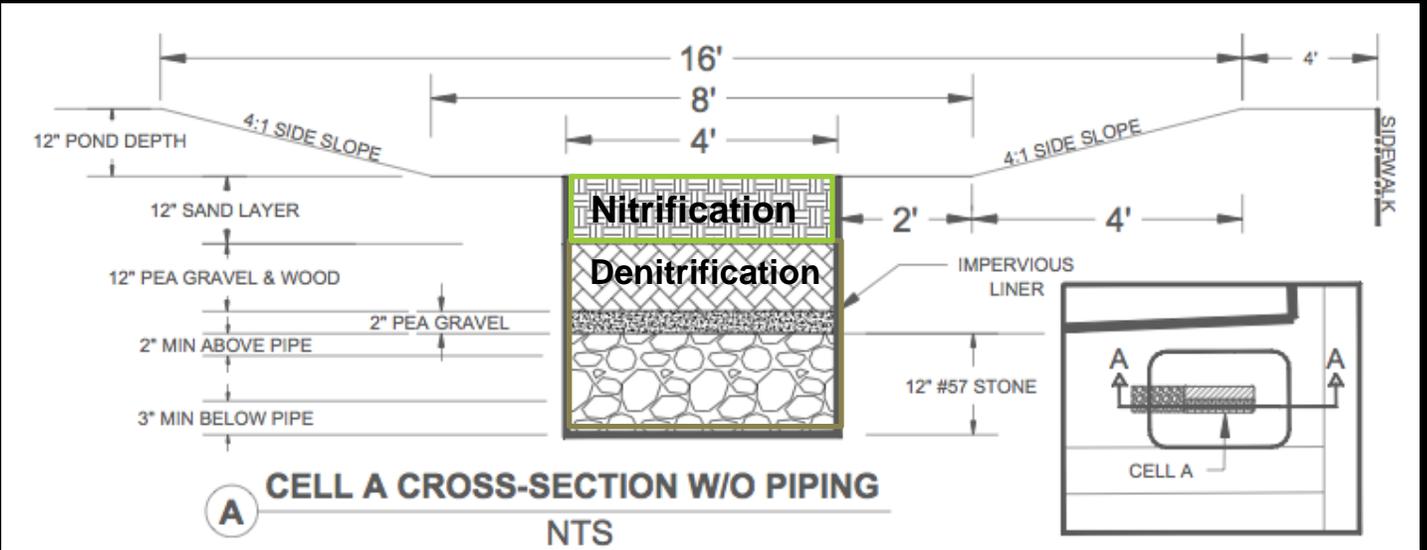
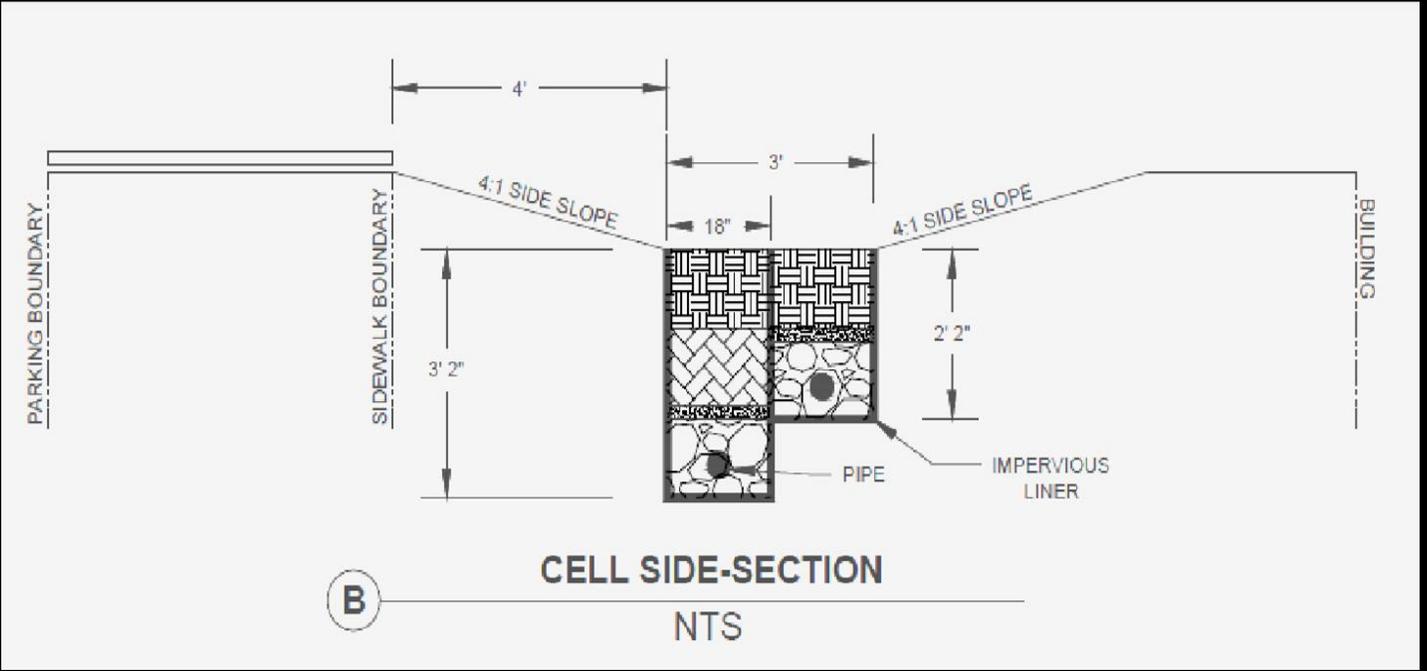
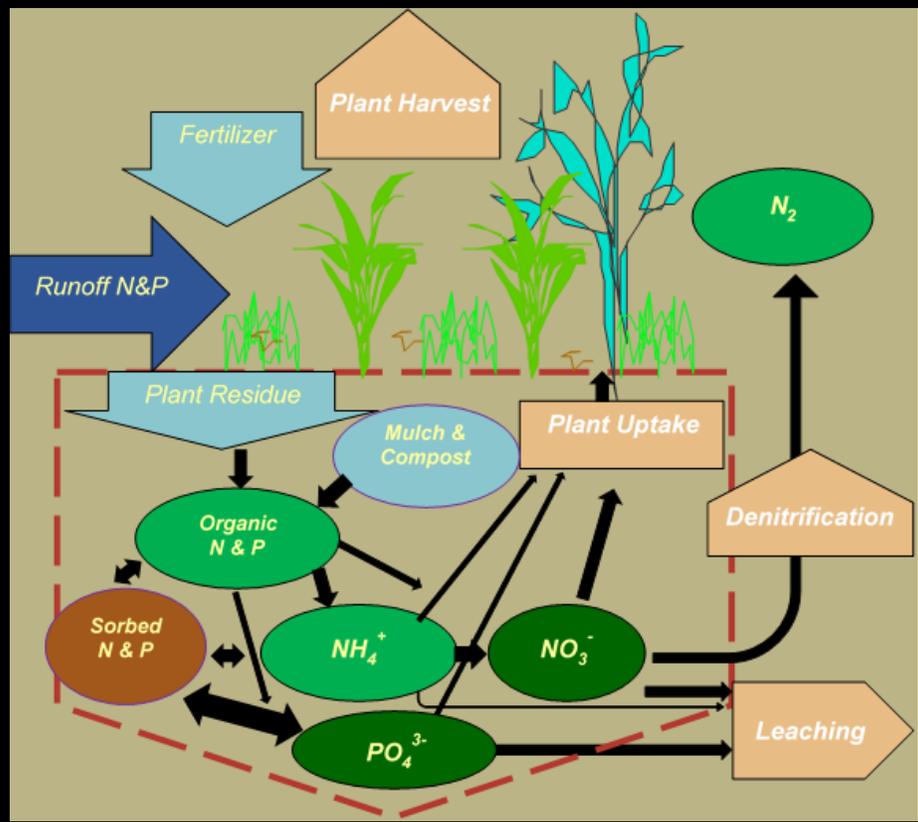
	East Tampa CRA	Tampa	Florida	USA
Total Population	35,920 ³	347,645 ¹	19,320,749 ₁	308,745,538 ¹
Unemployment Rate	11.57% ³	6.2% ²	5.9% ²	7.2% ²
Poverty Rate-Families	31.45% ³	21.1% ¹	15.6% ¹	14.9% ¹
Minority Population	77.38% ³	37.1% ¹	25.0% ¹	26.7% ¹
Per Capita Income	\$13,336 ³	\$28,779 ¹	\$26,451 ¹	\$28,051 ¹

¹ United State Census, Bureau Quick Facts (<http://quickfacts.census.gov/qfd/states/12/1271000.html>); ² Bureau of Labor Statistics (<http://www.bls.gov>); United States Census 2010 (<http://www.hillsborough.communityatlas.usf.edu/demographics/default.asp?ID-12057102...>)

SITE LOCATION



BIORETENTION SYSTEMS





TAMPA VOCATIONAL INSTITUTE

- Job training
- Construction Trade Program (5 weeks)
- Participants: 18 years and older
- Clients fall among the hardest to employ:
 - No high school diploma
 - Criminal background
 - Non-custodial parents
 - Temporary Assistance for Needy Families (TANF)
 - Limited training, skills, and resources in finding jobs



USF - TVI GREEN INFRASTRUCTURE COURSE

Goal: To develop a skilled workforce trained in green stormwater infrastructure which includes:

Site assessment

Budgeting

Design

Material selection

• Installation and maintenance of:

• Rain gardens

• Rain barrels

• Gutters

While fostering environmental stewardship



HANDS ON EXPERIENCE

Consulting with stakeholder



Site Assessment

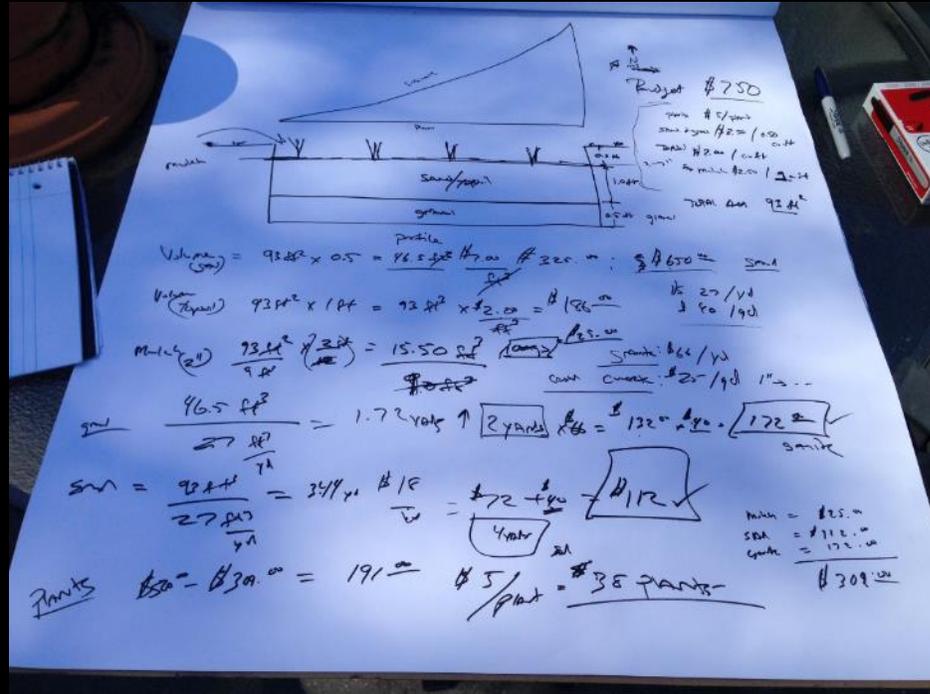


HANDS ON EXPERIENCE

Design



Budgeting & Calculating Material



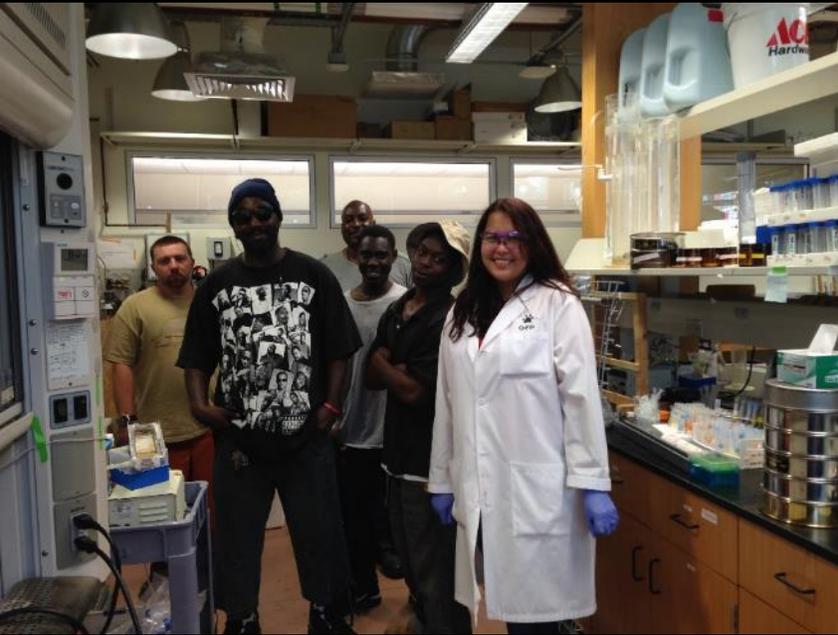
FIELD TRIP TO WASTE WATER TREATMENT PLANT

- Opportunity to learn about WWT plant operation and careers



FIELD TRIP TO USF ENVIRONMENTAL ENGINEERING LABS

- Opportunity to learn about research environmental engineers do



YOUTH PROGRAM: YOUTH LEADERSHIP MOVEMENT

Integrating with the YLM students (6th-12th grade) through green infrastructure workshops



RESIDENTIAL RAIN GARDEN



Before



After

Residence of Mrs. Evangeline Best

HANDS ON EXPERIENCE – CONSTRUCTING A RAIN GARDEN



HANDS ON EXPERIENCE – INSTALLING GUTTERS



HANDS ON EXPERIENCE – INSTALLING RAIN BARRELS



COMMUNITY EVENT



QUOTES FROM TVI PARTICIPANTS



Harry Roberts, Student
Tampa Vocational Institute, www.cdcoftampa.org
USF mainstreaming green infrastructure with East Tampa community raingardens.us



Jerry King, Student
Tampa Vocational Institute, www.cdcoftampa.org
USF mainstreaming green infrastructure with East Tampa community raingardens.us



Marquis Baker, Student
Tampa Vocational Institute, www.cdcoftampa.org
USF mainstreaming green infrastructure with East Tampa community raingardens.us



USF mainstreaming green infrastructure with East Tampa community

raingardens.us

DEMONSTRATION PROJECTS



CDC Audrey Spotford
Youth and Family Center



Residence of Mrs. Evangeline
Best

Signage



Young Middle Magnet School



CDC Audrey Spottford
Youth and Family Center

RAIN GARDEN

YOUNG MIDDLE MAGNET

PLANT GUIDE

ANIMAL LIFE

WATERSHED MAP

You are invited

Rain Garden Dedication

1807 E Dr Martin Luther King Jr Blvd, Tampa, FL 33610

A majority of the rain that falls on sidewalks, roofs, and parking lots is collected by our storm drain system. While storm drain collection is necessary, it has a negative effect on the natural and water quality of the Tampa Bay watershed. The Young Rain Garden collects stormwater from the site, filters it through several layers of mulch, soil, sand, and gravel, and allows it to infiltrate the ground. This process is a type of green infrastructure that helps reduce runoff and improve water quality. The Young Rain Garden contains several engineered media layers and 12 Florida native plants. The plants are selected for their ability to withstand extremes in weather and climate conditions (heat, drought, and frost) and for their ability to filter and store pollutants. The Young Rain Garden was completed in the spring of 2013 in collaboration with the University of South Florida Civil and Environmental Engineering Department.

Funding was provided by the Environmental Protection Agency (EPA) People, Property, and the Planet (P3) Water Awareness, Research, and Education (WARE) in East Tampa, award # 83403046, and the National Science Foundation (NSF) 10036 Research Experience for Teachers (RET) award # 100062.

Contact info.

E-mail: emmalopez@mail.usf.edu
laurarankin@mail.usf.edu

- <http://www.cdcoftampa.org/>
- <http://www.tampavocational.com/>
- <http://raingardens.us/>
- <http://usf-reclaim.org/>

Remarks, rain garden tour, refreshments

- Mrs. Nadine Johnson, Principal, Young Middle Magnet
- Mr. Larry Plank, Director of K-12 STEM Education, Hillsborough County Public Schools
- Mrs. Evangeline Best, Board Member, CDC of Tampa Inc.
- Mr. Josh Noftz, Visualization Specialist, RS&H
- Mrs. Jennifer Butler, Teacher, Young Middle Magnet
- Mrs. Holly Greening, Executive Director, Tampa Bay Estuary Program
- Dr. Maya Trotz, Associate Professor, Civil & Environmental Engineering, University of South Florida

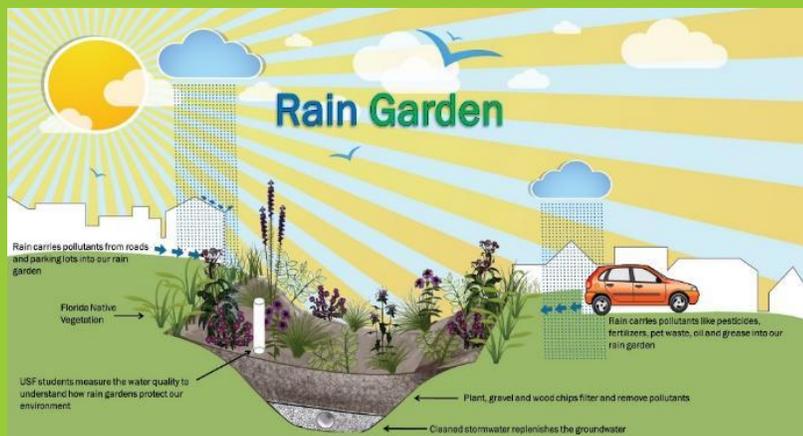
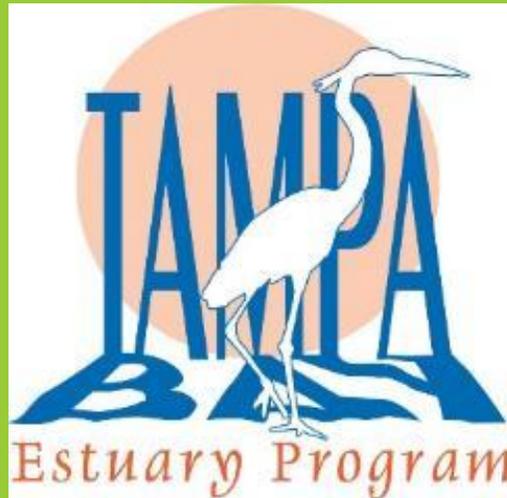
Wednesday October 28th, 9 am – 10 am

More Information:
wareret.net; usf-reclaim.org; raingardens.us

Contact Young Middle Magnet
<http://young.mysdhc.org/>
 (813) 276-5739



THANK YOU!



OUTCOMES

Outreach

- Build trust and confidence
- Foster sense of environmental stewardship
- Develop critical thinking skills
- Pursue technical trades & additional certifications
- Protect Tampa Bay
- Increase awareness about LIDs

Career Opportunities

- Business: landscaping companies
- License: WWTP plant operators
- Municipal stormwater agencies and state agencies such as:
 - City of Tampa
 - Hillsborough County
 - Department of Transportation