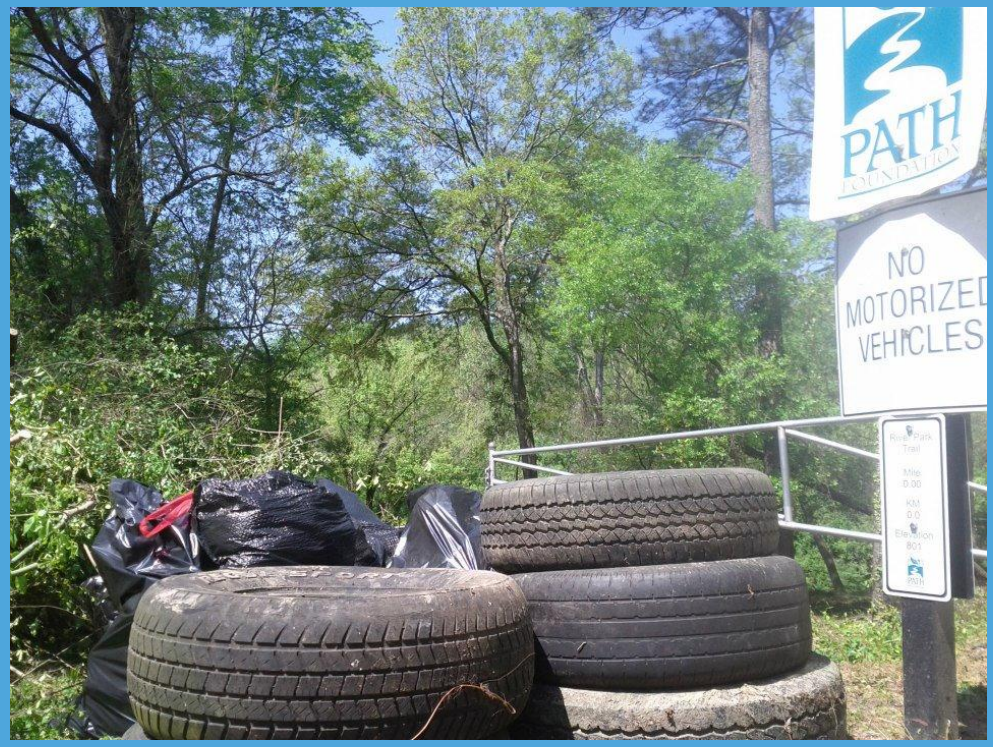
Monitoring in Underserved Communities

A Case Study in Atlanta, GA

Overview

- Forming Partnerships
- Identifying Needs:
  - In the Watershed
  - In the Community
- What should we monitor for?
- What tools do monitors need?
- How do we work together?



Background

- Community
- WAWA
- EPA
- City of Atlanta

Partnerships

- WAWA and Citizen Scientists
- CWP
- US EPA
- City of Atlanta

About WAWA

The West Atlanta Watershed Alliance (WAWA) is a community based 501c(3), non-profit organization whose mission is to improve the quality of life in the West Atlanta Watershed by protecting, preserving and restoring the communities' natural resources.

As stewards of our community, we work to achieve optimal community health through establishing a sustainable environment that allows all residents to live in harmony and balance with the built and natural environment.

Citizen Scientists

The goal of the project was to foster these researchers to become more knowledgeable and responsible as environmental stewards who protect their health at home and in their community, preserve their quality of life and restore water quality in urban watersheds.

About the Center

The Center for Watershed Protection works to protect, restore, and enhance our streams, rivers, lakes, wetlands, and bays. We create viable solutions and partnerships for responsible land and water management so that every community has clean water and healthy natural resources to sustain diverse life.

Identifying the Project Needs

How can we do monitoring that helps the resource we're protecting?

How can we do monitoring that engages and is useful to the community?

Bacteria is a major focus

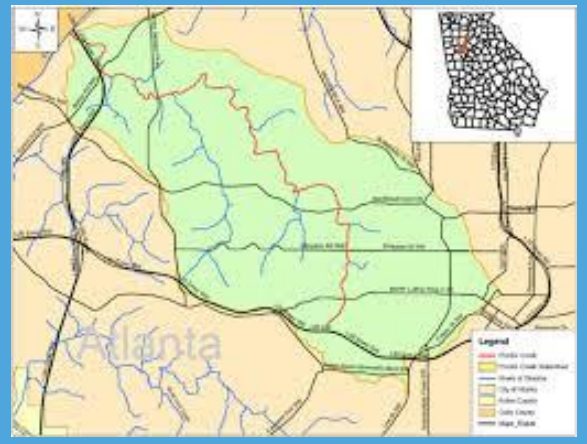
+ Land-based sources of pollution

Sewer overflows is a major problem

Cost-Effectiveness of Urban Stormwater BMPs			
BMP	Cost Effectiveness ($/lb)		
	TN	TP	TSS
Bioretention (retrofit, highly urban C soils)(CBP Expert Panel)	$2,078.97	$12,500.51	$22.25
Bioswale (new)	$309.13	$2,653.91	$5.23
Dry Detention Ponds (new)	$4,597.20	$21,143.16	$44.43
Dry Extended Detention Ponds (new)	$1,149.30	$10,571.58	$7.41
Filtering Practices (sand, below ground)	$1,065.38	$4,940.56	$7.04
Forest Buffers	$150.86	$1,851.00	$7.66
Urban Stream Restoration (recommended 2014 default efficiencies)	$696.86	$768.59	$1.16
Illicit discharges- correction of cross-connections	$17.70	$70.79	$6.69
Illicit discharges- sewer repair	$8.86	$35.43	$0.89

What are the Needs of the Community?

- Improve Public Health
- Add Value
- Collect data in a way that is repeatable and usable.
- New skills
- Some monitoring that doesn't require getting into the stream.



Voices of the Community

All communities have existing leadership. Tapping into these residents as resources is an important component of "street science". These leaders were already working in Proctor Creek community. Speaking in their own voice are:

Juanita Wallace

Ruby Mitchell-Harrison

Tony Torrence

These resident leaders stepped up to become researchers!

Monitoring Focus

- Illicit Discharges (Monitoring Outfalls)

- Hotspot Investigation (Landscape Analyses)

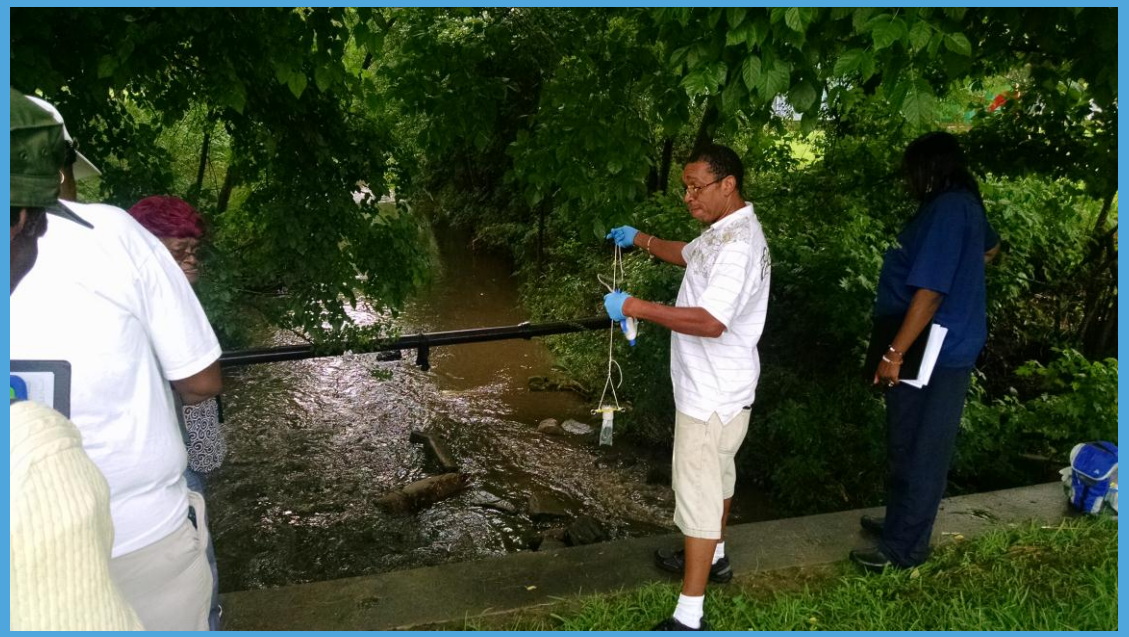
Landscape: “Hot Spot Inventory”

- Field Sheets
  - Training in June, 2015 to go through data collection sheets
  - Working to customize sheets with local context

1st Need-Citizen Training

Continue future training (in the future through WAWA) that builds communities agency

Ongoing relationship with the City of Atlanta and Citizen Scientists.



2nd Need –Address Proctor Creek TMDL

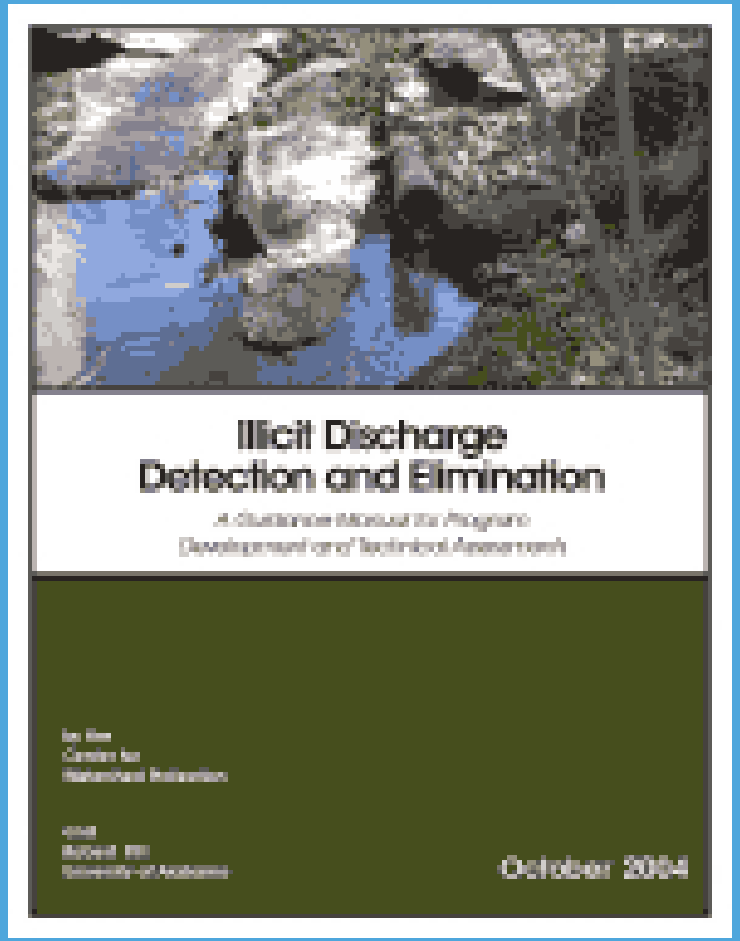
- Bacteria from sewage discharges is a major source of impairment in Proctor Creek.
- One source of this contamination is illicit discharges of sewage.
- Illicit discharges have not been quantified in Proctor Creek, but recent studies find that these sources are a significant portion of bacteria and nitrogen in creeks in the MidAtlantic Region.

3rd Need – Community Participation

- Provides an opportunity to engage in the political process.
- Allows citizens to gather knowledge and useful job skills.
- Residents will be able to participate in activities that are directly tied to implementation.

Final Need – National Replication

- Nationwide, there are over 12,000 TMDLs for pathogens, which is greater than any other pollutant.
- Illicit discharges have not been quantified in many studies.
- Available data suggest their contribution can be significant.
- We need data to quantify both their contribution, and how cost-effective it is to remove these discharges.



Project Goals

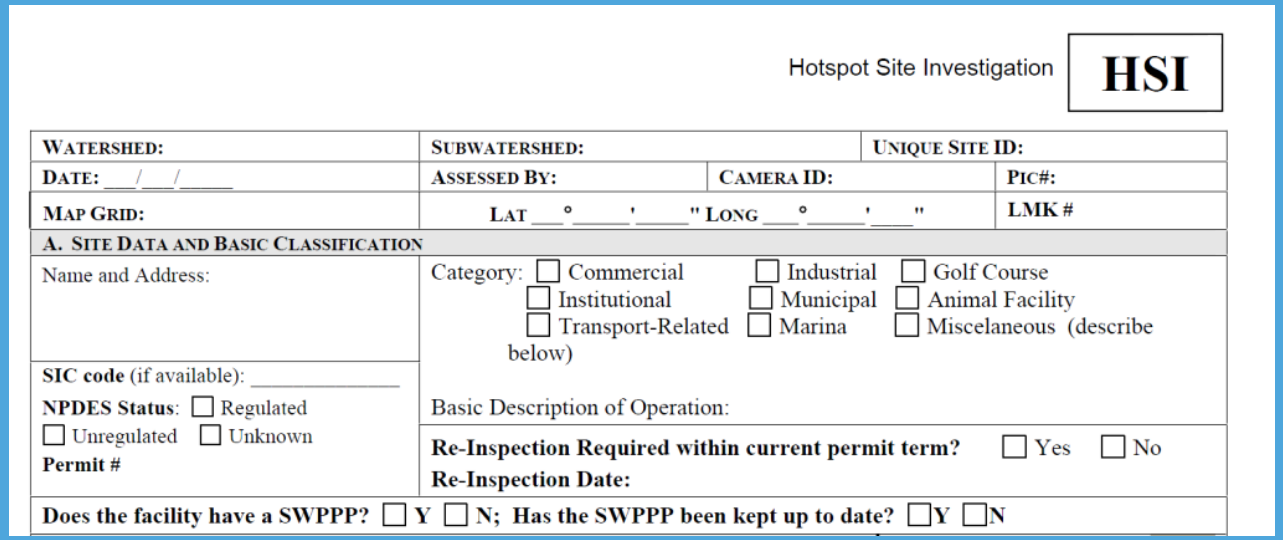
- Develop and test a protocol for calculating bacteria from illicit discharges in Proctor Creek.
- Calculate the cost of repairing these discharges.
- Train citizen monitors in techniques to find illicit discharges and implement the protocol.

Train and Work with Citizen Scientists

- Train Citizen Scientists to spot pollution in the watershed.
- Work with these residents to implement the recommended protocol.

Protocol Development – Work to Date

- Worked with WAWA Citizen Scientists to identify needs and potential measures for tracking pollution on the land and at the outfall.
- Tracking measures may include:
  - "Hotspots" on the land surface.
  - Percent of outfalls flowing
  - Chemical parameters from outfall samples.

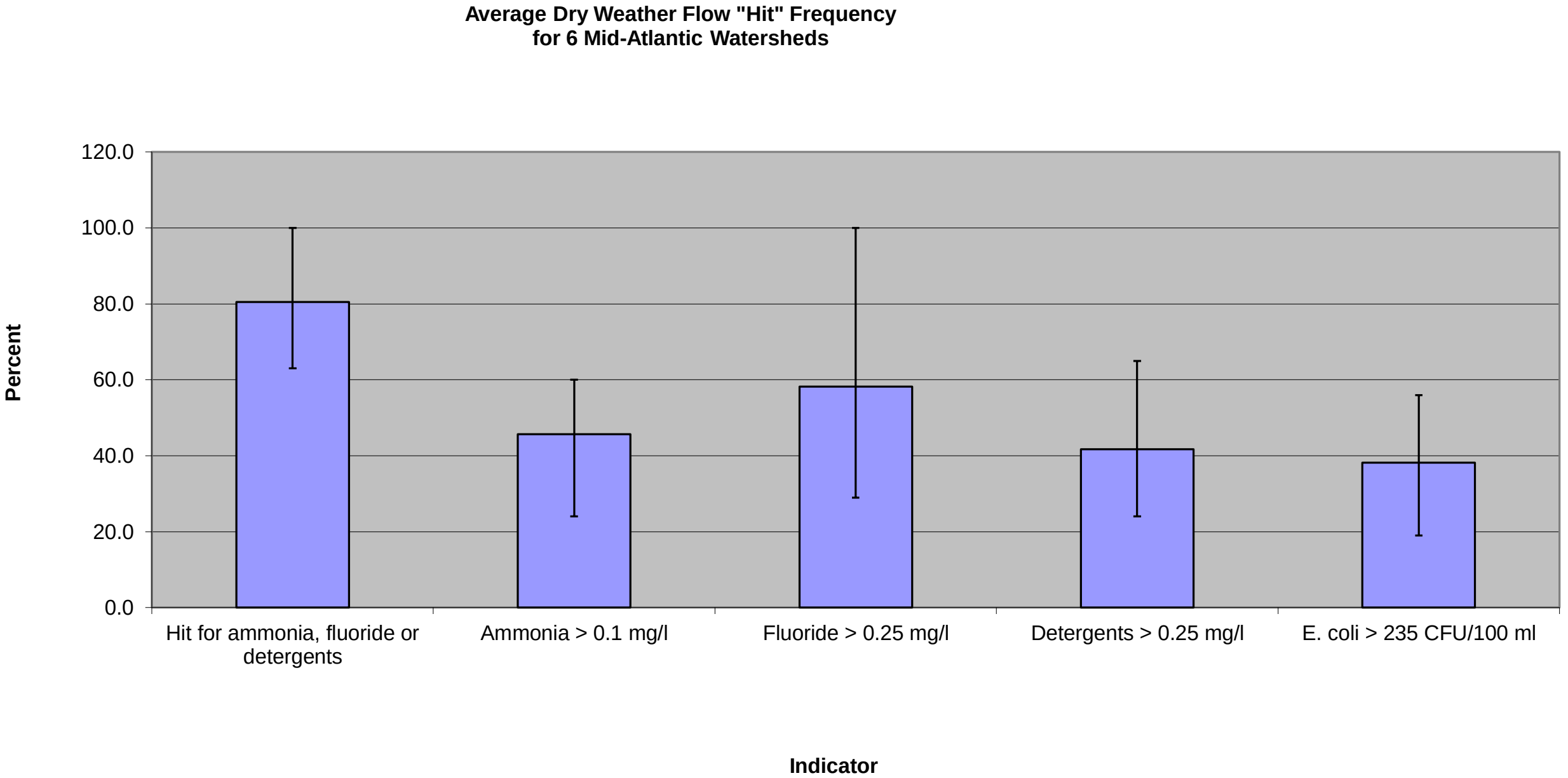


Hotspot Site Investigation **HSI**

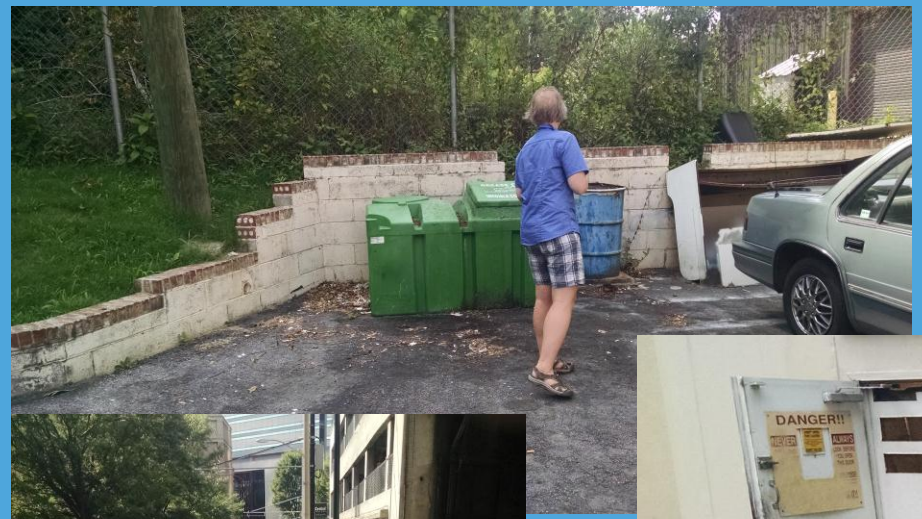
WATERSHED:	**SUBWATERSHED:**		**UNIQUE SITE ID:**
DATE: ___/___/_____	**ASSESSED BY:**	**CAMERA ID:**	**PIC#:**
MAP GRID:	**LAT** ___°_____'_____" **LONG** ___°_____'___"		**LMK #**
A. SITE DATA AND BASIC CLASSIFICATION			
Name and Address:	Category: ☐ Commercial ☐ Industrial ☐ Golf Course ☐ Institutional ☐ Municipal ☐ Animal Facility ☐ Transport-Related ☐ Marina ☐ Miscelaneous (describe below)		
SIC code (if available): _____ **NPDES Status**: ☐ Regulated ☐ Unregulated ☐ Unknown **Permit #**	Basic Description of Operation:		
	Re-Inspection Required within current permit term? ☐ Yes ☐ No **Re-Inspection Date:**		
Does the facility have a SWPPP? ☐ **Y** ☐ **N; Has the SWPPP been kept up to date?** ☐**Y** ☐**N**			

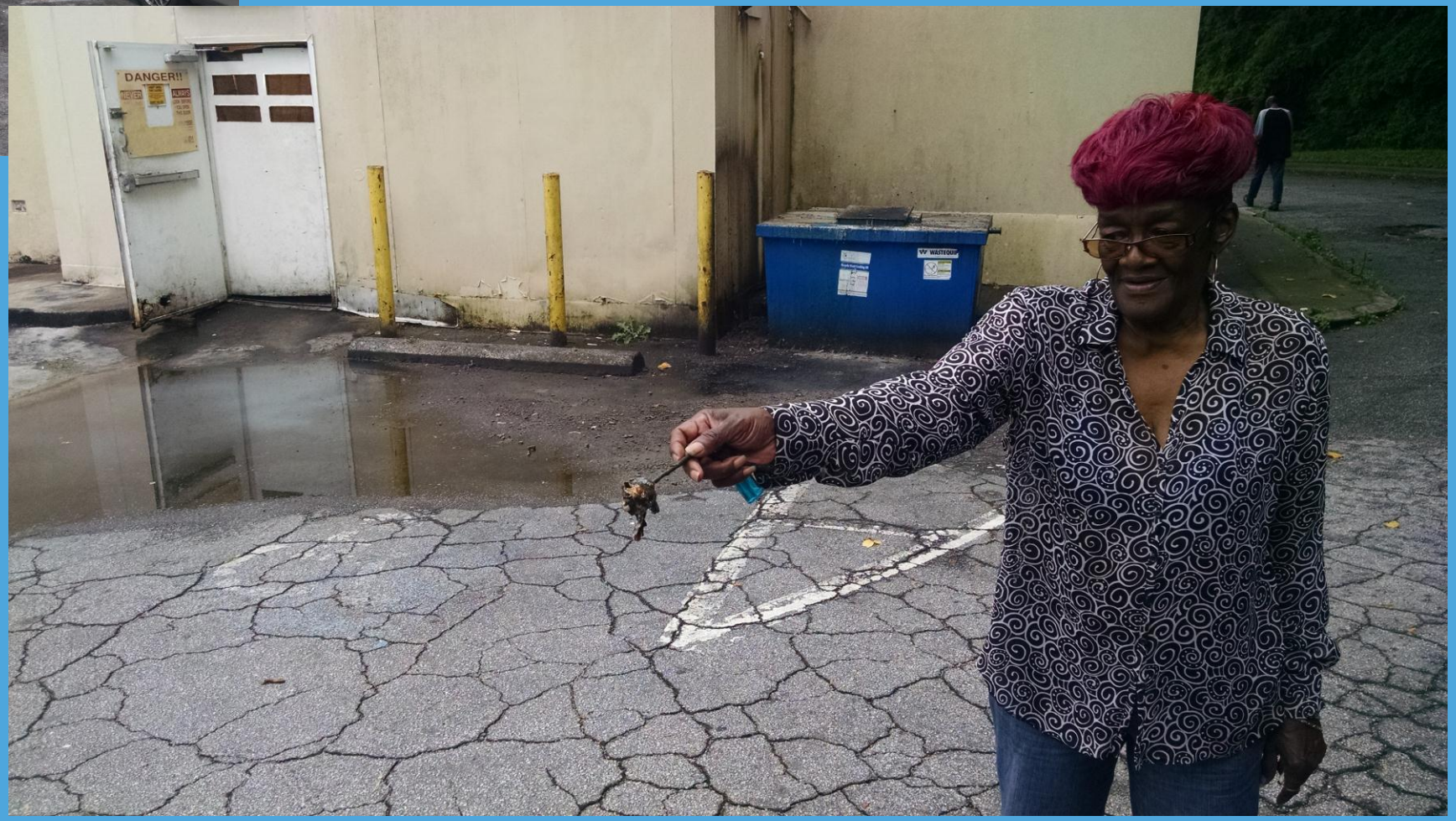
Citizen Training – Work to Date

- Training on 6/9, included:
  - Hotspot Investigation
  - "Outfall Reconnaissance Inventory"
- This will inform:
  - Future training needs
  - Revised field sheets
  - Useful tracking measures


Average Dry Weather Flow "Hit" Frequency
for 6 Mid-Atlantic Watersheds
Percent
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Hit for ammonia, fluoride or detergents
Ammonia > 0.1 mg/l
Fluoride > 0.25 mg/l
Detergents > 0.25 mg/l
E. coli > 235 CFU/100 ml
Indicator

Hotspot Inventory



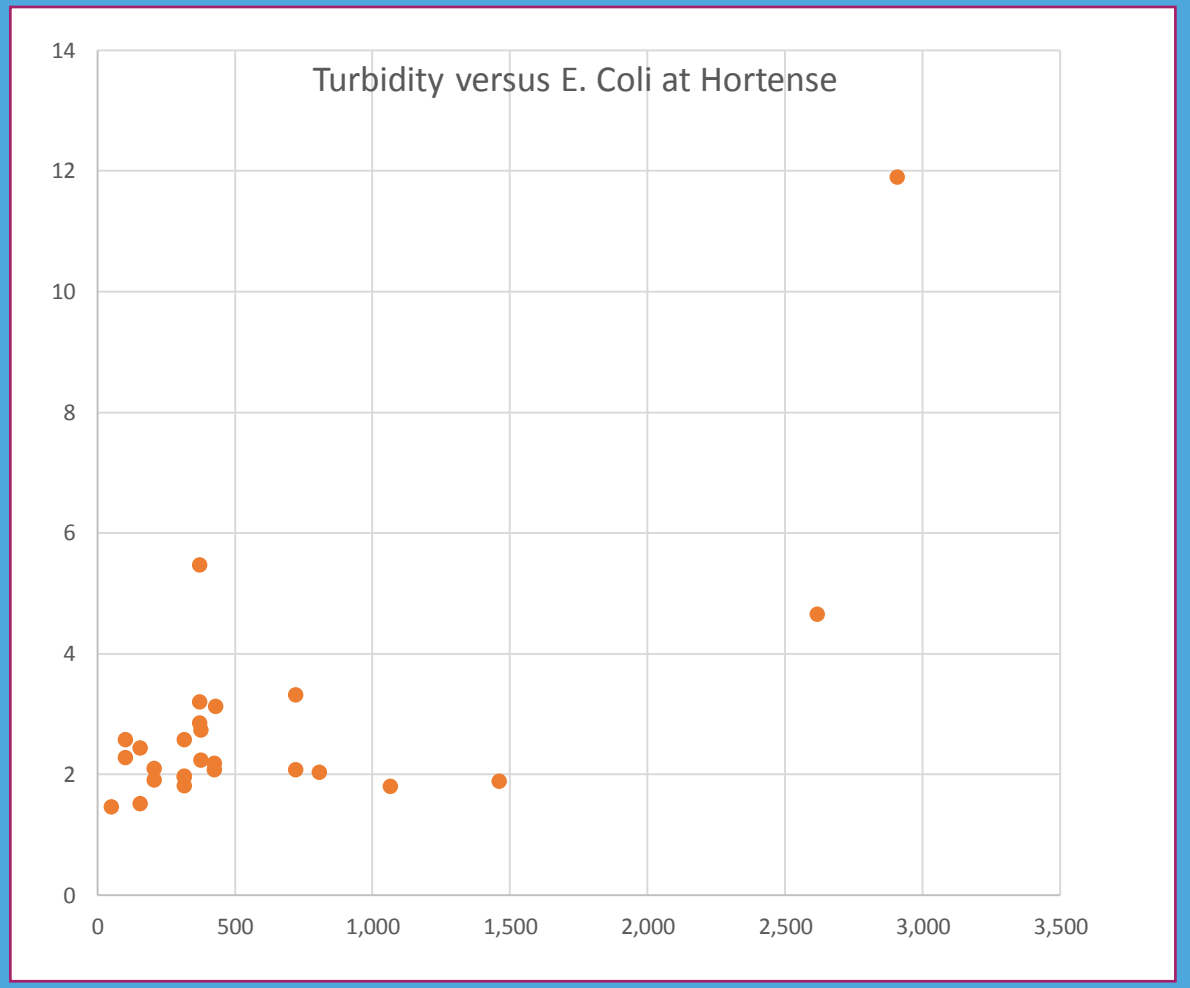


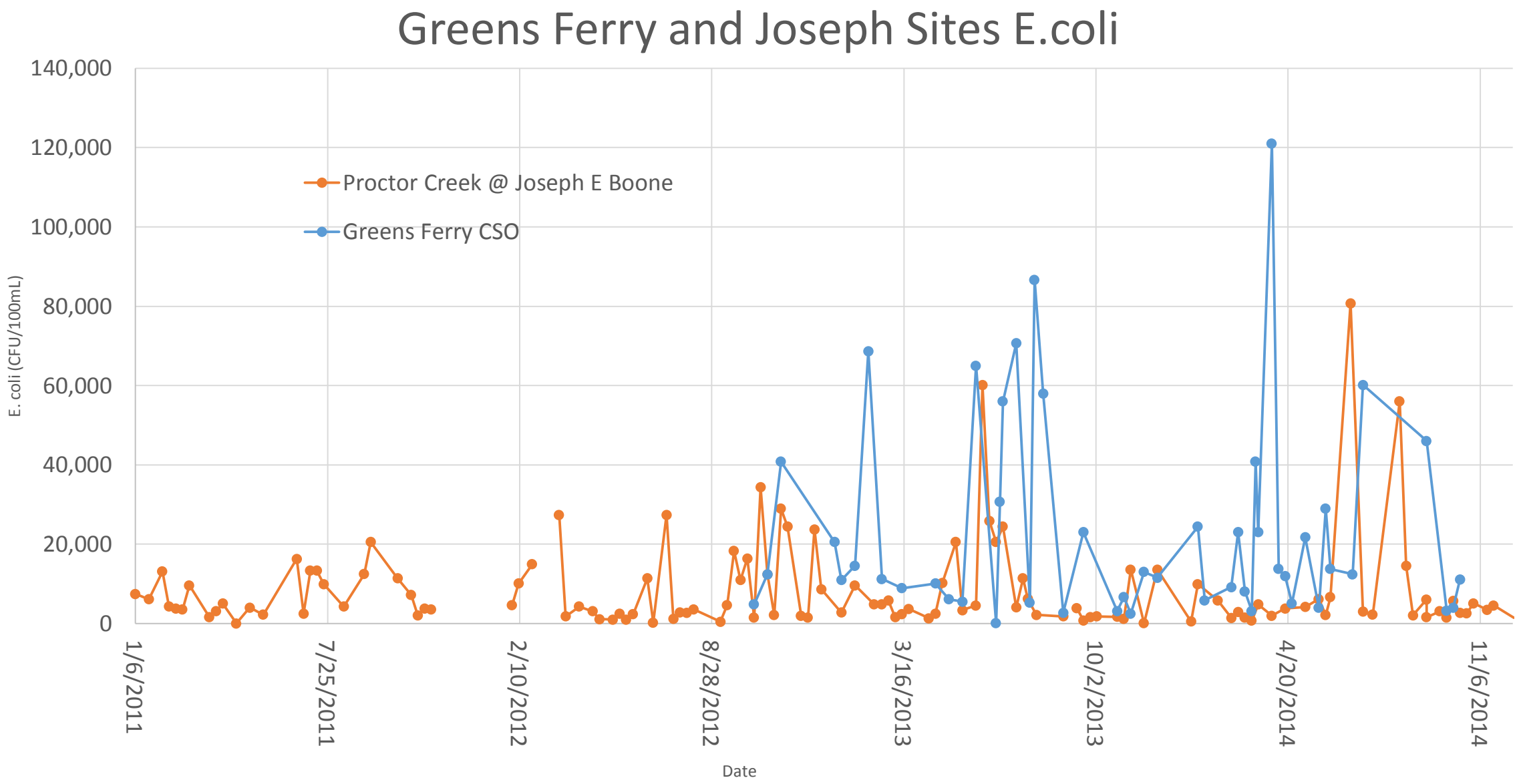
Illicit Discharge Protocol

- Review existing in-stream monitoring data to develop a baseline
- Work with local and state experts and programs to develop a monitoring protocol for quantifying discharges.
- Test and finalize the protocol in Proctor Creek.
- Ultimately, it is hoped that it will be used by the Georgia DEP in the TMDL process.

Baseline Data – Work to Date

- Assembled CRK Data
- Began to evaluate relationships and "surrogates" for E. Coli in Proctor Creek.
- Met with UWP to discuss options for measuring progress in the future.




Greens Ferry and Joseph Sites E.coli
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
E. coli (CFU/100mL)
Proctor Creek @ Joseph E Boone
Greens Ferry CSO
1/6/2011
7/25/2011
2/10/2012
8/28/2012
3/16/2013
10/2/2013
4/20/2014
11/6/2014
Date

Challenges/ Change in Approach

- Original scope called for developing the protocol and then training volunteers
- Switched to a more collaborative approach (i.e., developing the protocol in concert with initial trainings.
- In order to accomplish this within the budget, we have a delayed timeline to combine travel/ training costs.

RESULTS

This effort to engage residents in gathering comprehensive data on the present-day effects of the existence of numerous water quality stressors on our impaired urban waters was generally successful. We were able to Identify point and non point sources that helped the community quantify negative impacts to community health, environmental quality, and overall quality of life.

RESULTS

A major part of the project that will continue to evolve is seeking to identify Illicit discharges. These are defined as any discharge to the municipal sewer systems that is not composed entirely of storm water.

These non-stormwater discharges occur due to illegal connections to the storm drain system from business or commercial establishments During our investigations we were not able to locate many of these forms of water pollution. But other community led activities.

What is Your Experience?

What types of issues do you need to address to improve your waters?

Are there any unique needs in your community?

Thank You!

Center for Watershed Protection

http://www.cwp.org/

West Atlanta Watershed Alliance

http://wawa-online.org/

Proctor Creek Stewardship Council

http://www.proctorcreek.org/