# A Summary of the Fairview Beach Watershed Plan for the Potomac Watershed Roundtable

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Virginia Department of Environmental Quality

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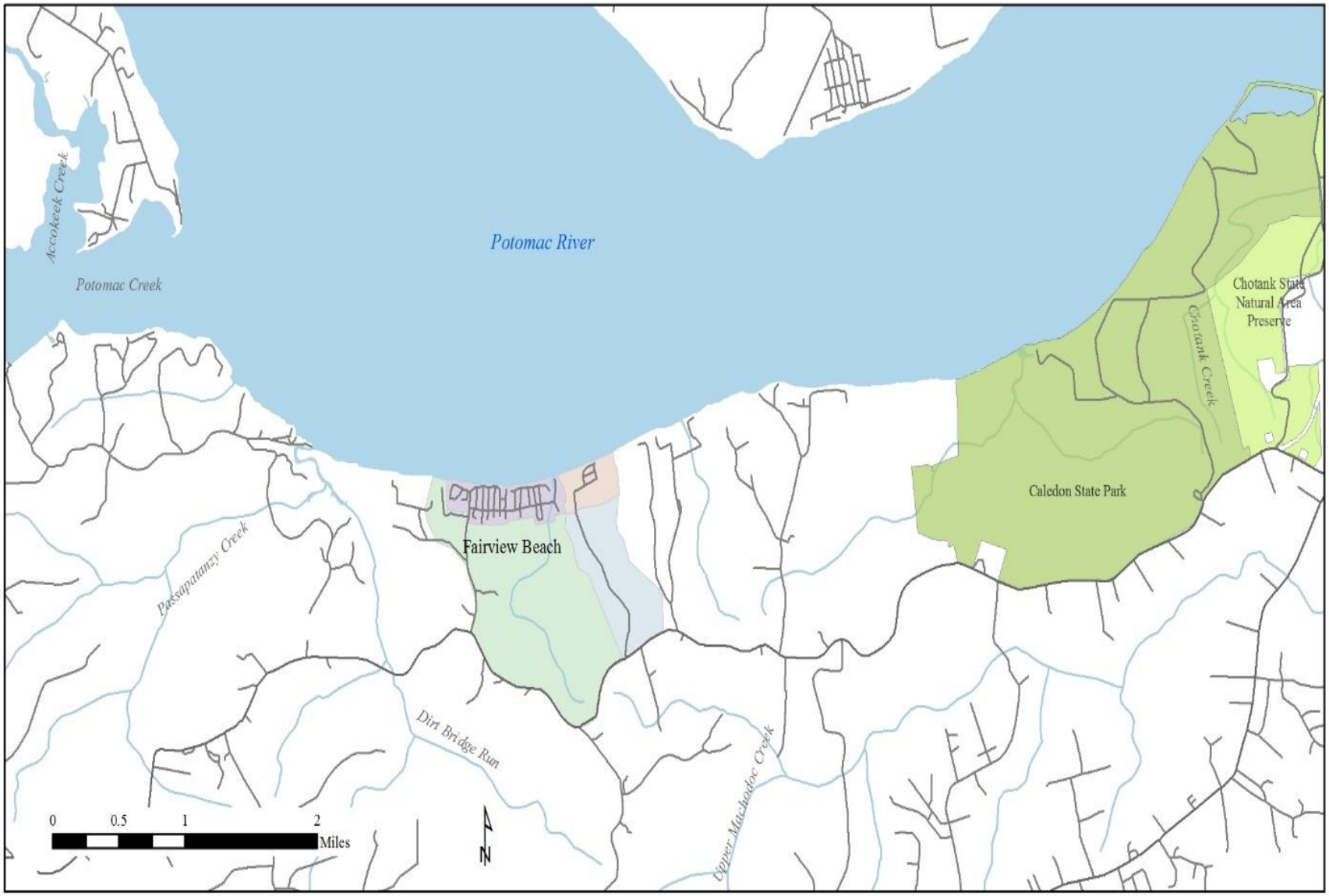
DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

# Acknowledgements

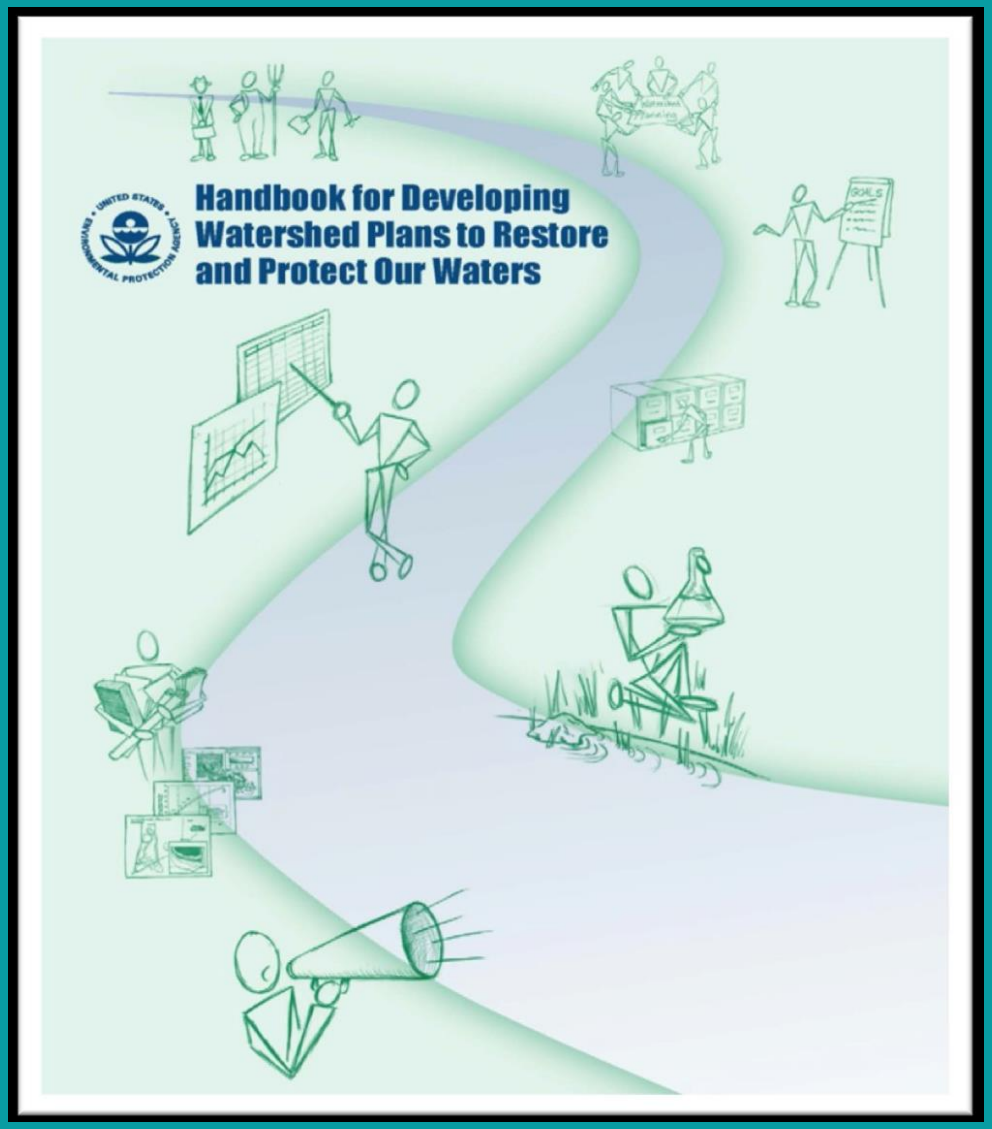
**Steering Committee Members**
**Working Group Members**

Tri County City Soil and Water Conservation District
King George County Government
King George Service Authority
L. E. Smoot Memorial Library
VA Department of Conservation and Recreation
VA Department of Environmental Quality
VA Department of Health
George Washington Regional Commission
Virginia Tech
Fairview Beach Residents Association
Interstate Commission on the Potomac River Basin

*Thanks for all of your help!*


Potomac River
Accokeek Creek
Potomac Creek
Chotank State Natural Area Preserve
Chotank Creek
Caledon State Park
Fairview Beach
Passapatanzy Creek
Dirt Bridge Run
Upper Machodoc Creek
0
0.5
1
2
Miles
N

# Watershed Plan Overview

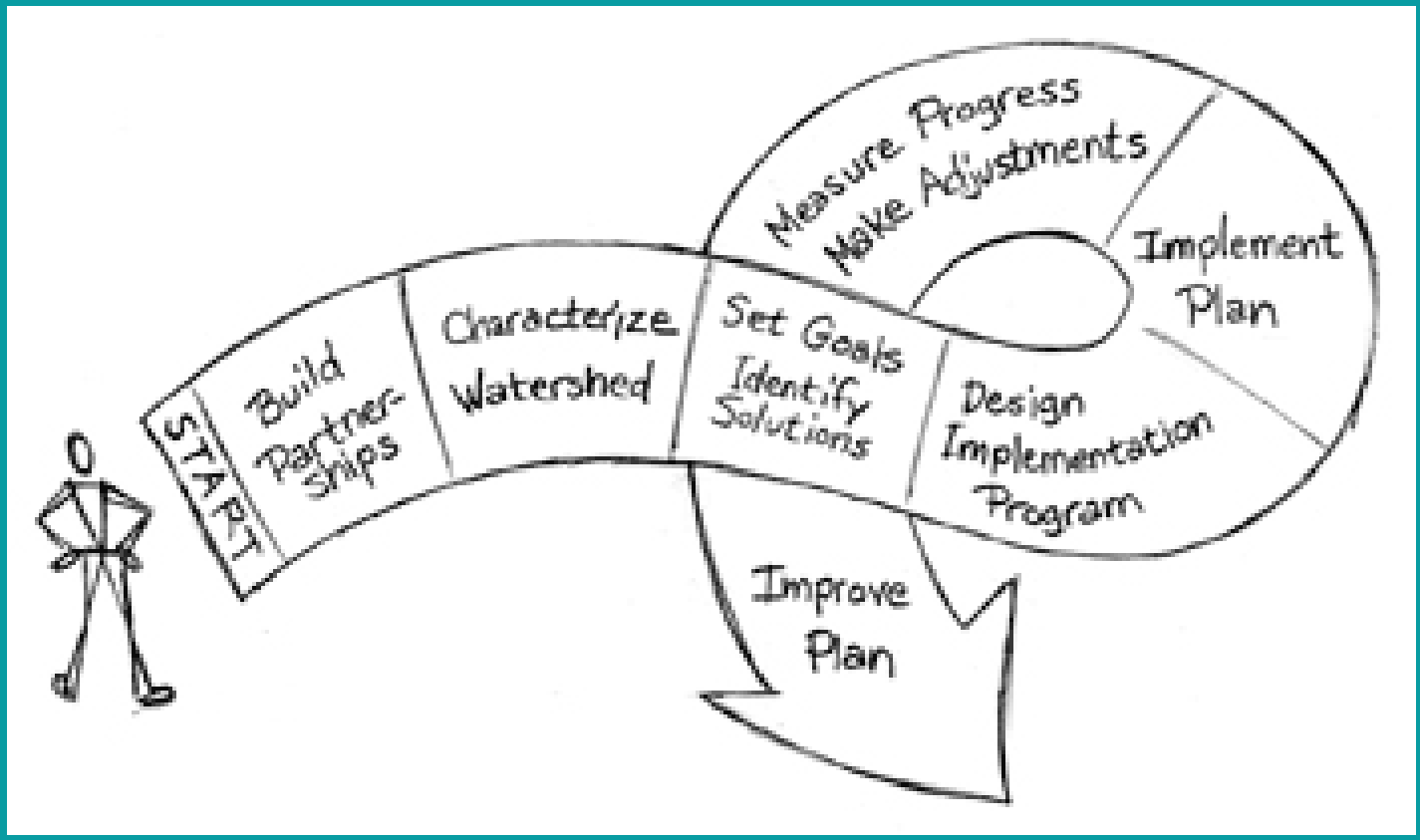



- EPA released a manual in 2008
- Outlines 6 steps
- 9 important elements
- References, checklists, worksheets and planning guides

http://water.epa.gov/polwaste/nps/handbook_index.cfm

# Watershed Planning

Outlines 6 Steps in Watershed Planning and Implementation Process



# Watershed Plan Overview

Goals:

- Restore and protect water quality
- Address both point and non-point sources
- Scientifically defensible plan
- Watershed Plans can be completed without a TMDL

# Watershed Plans

The 9 elements, with reference to draft watershed plan chapters:

1. Identify causes & sources of pollution (Ch. 4)
2. Determine load reductions needed (Ch. 5)
3. Develop management measures to achieve goals (Ch. 5)
4. Identify technical and financial assistance to implement plan (Ch. 5)
5. Develop information/education component (Ch. 3)
6. Develop implementation schedule (Ch. 6)
7. Develop interim milestones to track implementation of management measures (Ch. 8)
8. Develop criteria to measure progress towards meeting watershed goals (Ch. 10)
9. Develop monitoring component (Ch. 11)

# Public Participation

- **Public Meetings**
  - Informational
  - Solicit public participation
  - Provide a forum for public comment
- **Steering Committee**
  - Direct the overall process
  - Considers input from Working Groups
  - May help prepare and review document
- **Working Groups**
  - Address "community" issues for Fairview Beach/concerns on specific topics

*While there is already good work underway in the area, this plan provides a road map to direct efforts that improve impaired waters*

# Public Participation

# How Citizens Helped During the Process


- Provide additional detail on watershed, including detailed observations of stormwater runoff and citizen water quality monitoring
- Identify potential implementation impediments
- Identify local funding sources/partnerships
- Commitment to assist with implementation projects, especially education programs (ie. Pet waste)
- Provide technical reviews of the draft watershed plan
- Provide review of presentation materials for final public meeting

# Fairview Beach Watershed Plan Meetings (2014)

- Public/Community WG Meetings February 20th
- Government WG Meeting May 6th
- Community WG Meeting May 15th
- Steering Committee Meeting July 10th
- Developed load reduction spreadsheet: measures, units, % efficiencies, implementation locations, notes from meetings, costs
- Developed spreadsheets to gather specific local information, including additional local programs to enhance implementation, agency responsibilities, technical resources, etc
- Reviewed draft document and presentation and provided specific recommendations to project team

# What is included in the Watershed Plan for Fairview Beach?

- Review of Fairview Beach studies
- Source Assessment/Implementation Actions & their estimated fecal coliform reduction benefits
- Cost & Benefits
- Measurable Goals and Milestones
- Stakeholder's Roles
- Potential Funding Sources
- Public Participation
- Water Quality Monitoring

# Why we are concerned about bacteria in our waterways – understanding the health risks:

- Enterrococci  are bacteria that indicate the presence of fecal contamination, and therefore the presence of pathogens with a potential to cause waterborne illness
- Pathogens include: types of bacteria (*Shigella, Salmonella*), viruses (rotaviruses, norovirus), protozoan parasites (*Cryptosporidium*, *Giardia*), and other micro-organisms
- Illnesses may be gastrointestinal, but contact with contaminated water may also cause upper respiratory infections, wound infections and skin irritation
- Young children, the elderly, and those with weakened immune systems are particularly at risk

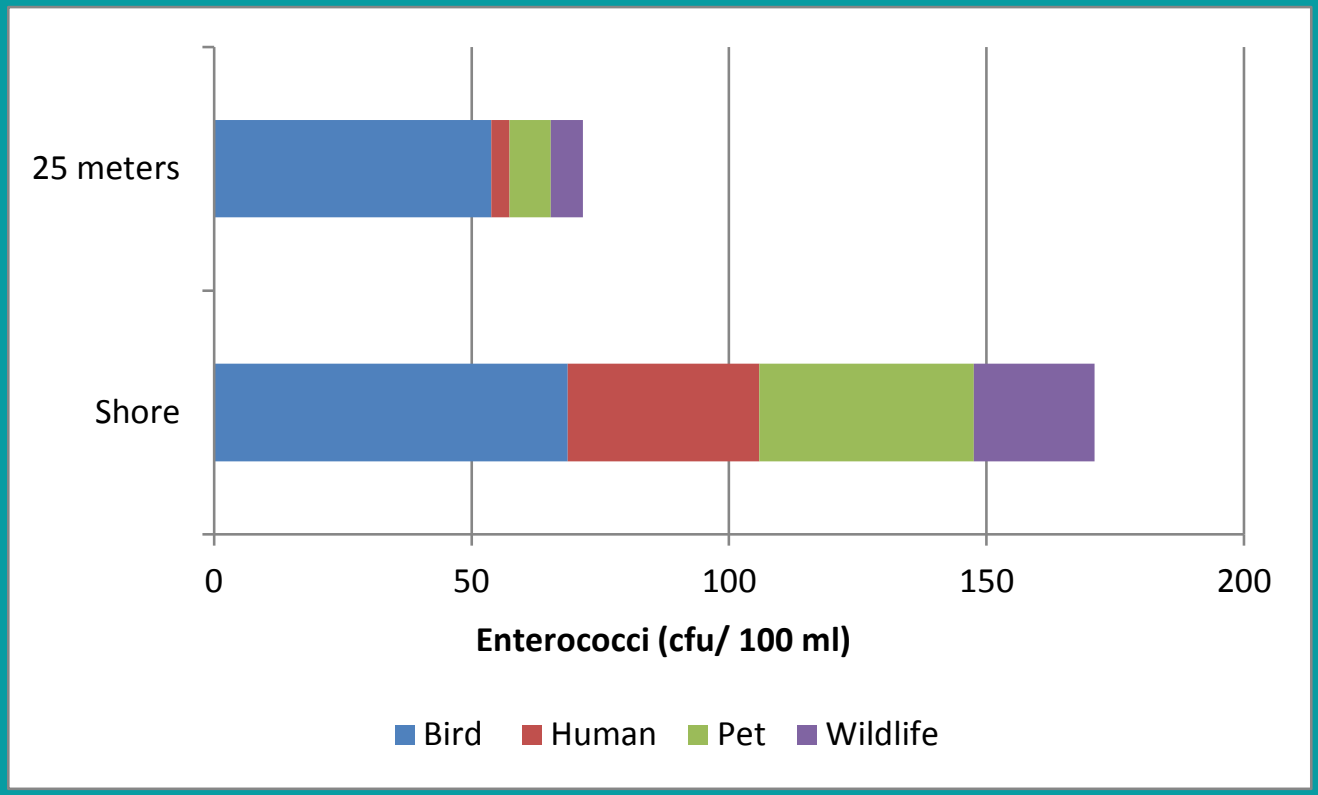
# Fairview Beach Monitoring Programs

| | | |
|---|---|---|
| Virginia Department of Health | Enterococci | • Sample weekly May (Memorial Day) through September since 2004<br>• Swimming advisory issued if the arithmetic average Enterococci count exceeds the assessment threshold of 104 cfu/100 ml |
| Virginia Tech | • Enterococci<br>• Microbial Source Tracking<br>• Optical Brighteners | Targeted bacteria monitoring to identify sources:<br>• "hot spots"<br>• Potomac River<br>• boating events and marina<br>• Caledon State Park |
| Fairview Beach Residents Association | E. Coli (Coliscan kits) | • Stormwater vs. dry conditions<br>• Rough conditions vs. calm conditions<br>• Drain pipes near Pavilion Drive |

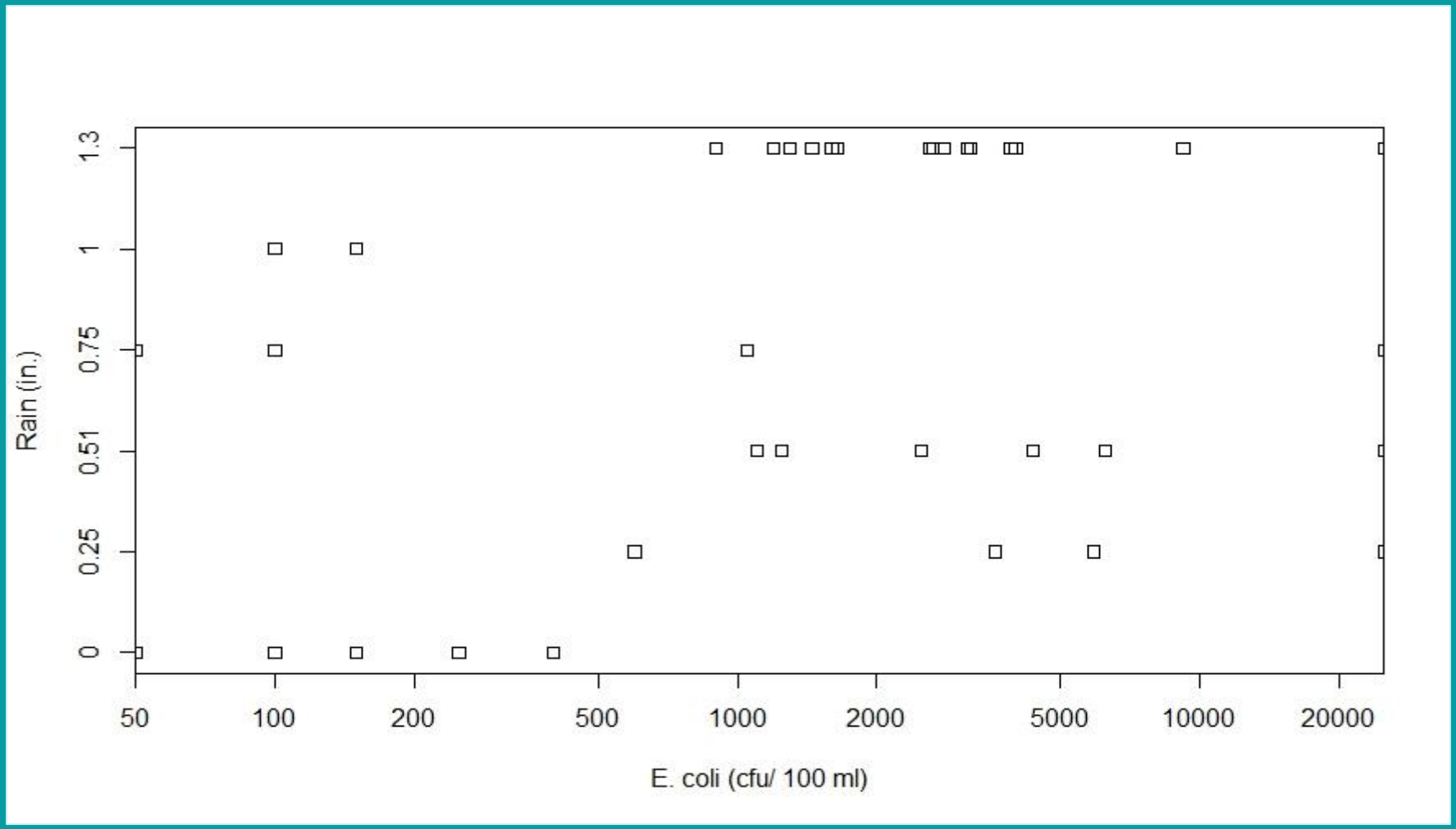
# Swimming Advisories at Fairview Beach (VDH)

| Year | Number of Advisories | Days Under Advisory |
|---|---|---|
| **2004** | 4 | 13 |
| **2005** | 2 | 8 |
| **2006** | 3 | 33 |
| **2007** | 6 | 32 |
| **2008** | 5 | 24 |
| **2009** | 5 | 16 |
| **2010** | 4 | 18 |
| **2011** | 4 | 22 |
| **2012** | 5 | 10 |
| **2013** | 2 | 5 |
| **Average** | 4.0 | 18.1 |

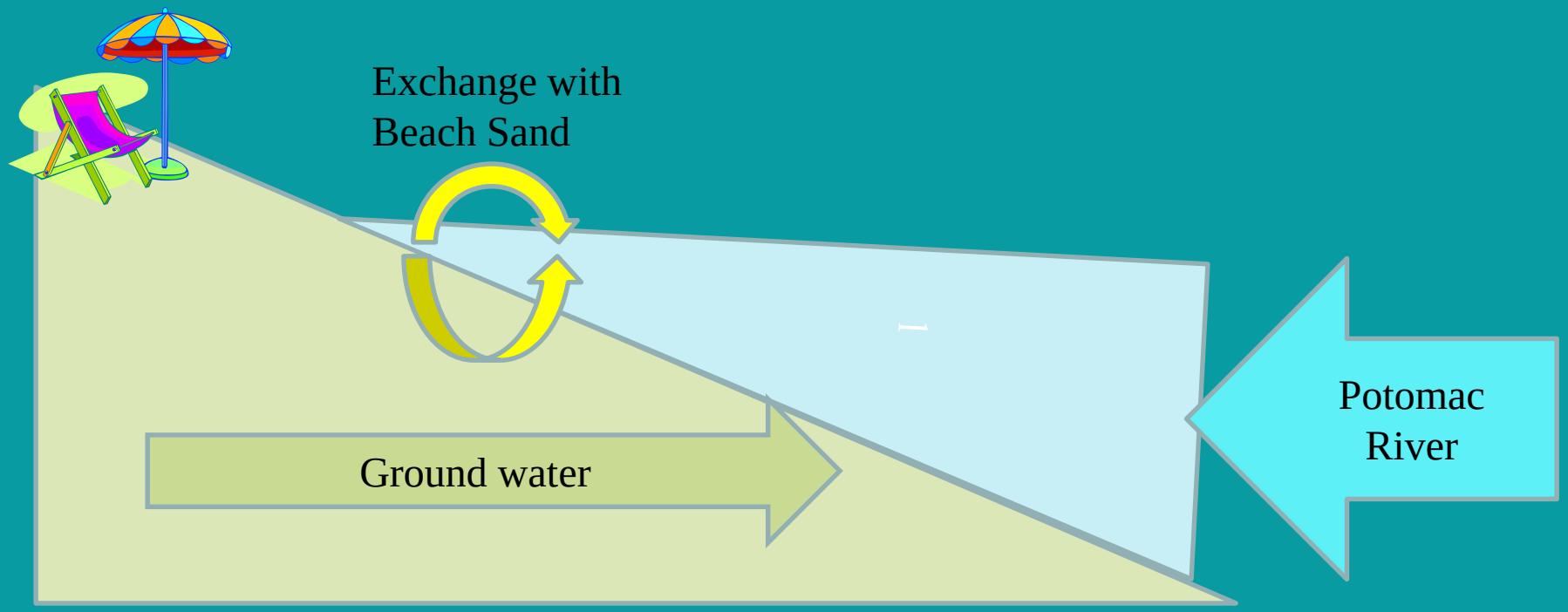
# Average bacteria concentrations are higher near shore than 25 meters out (VT)



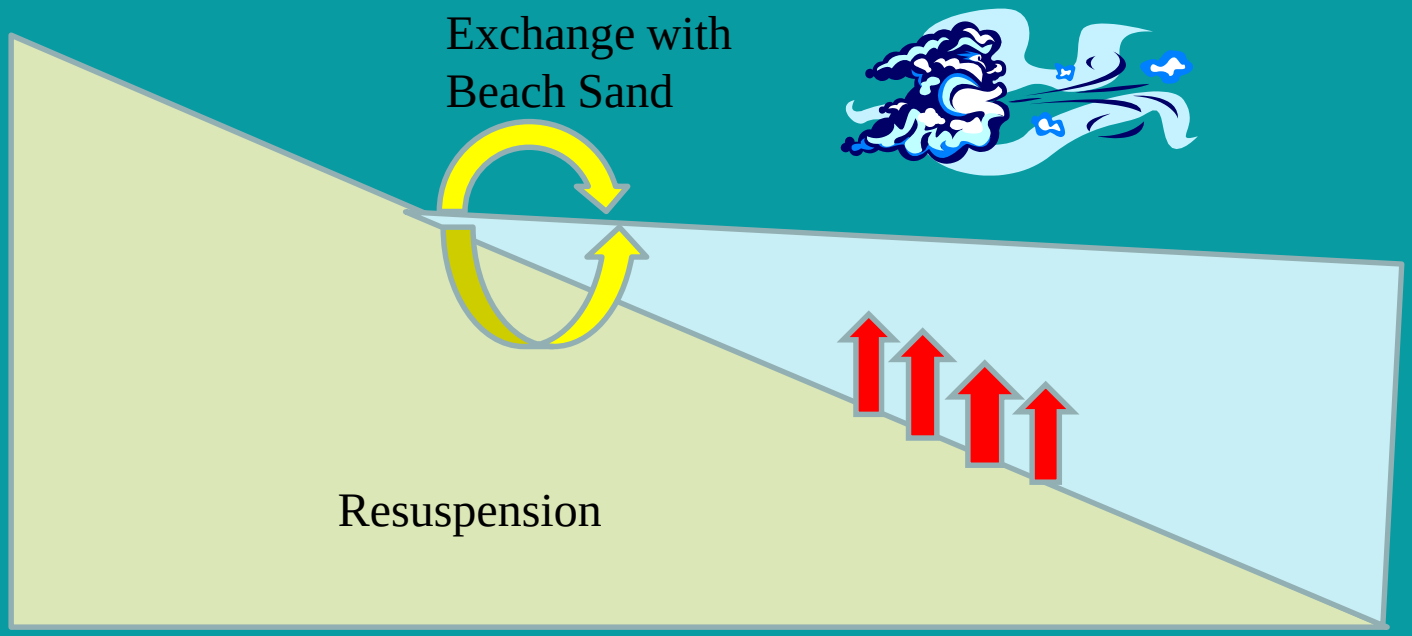
# Bacteria concentrations in storm flow higher than dry weather flow (FBRA)



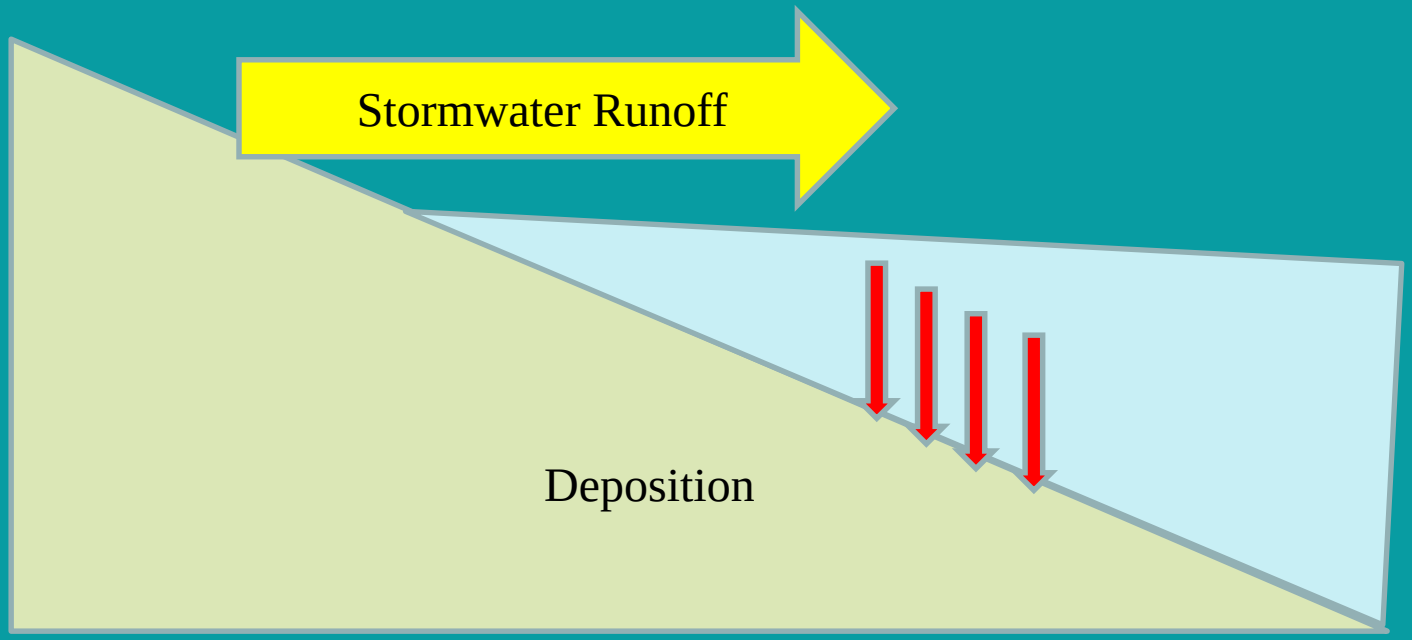
# Calm Conditions



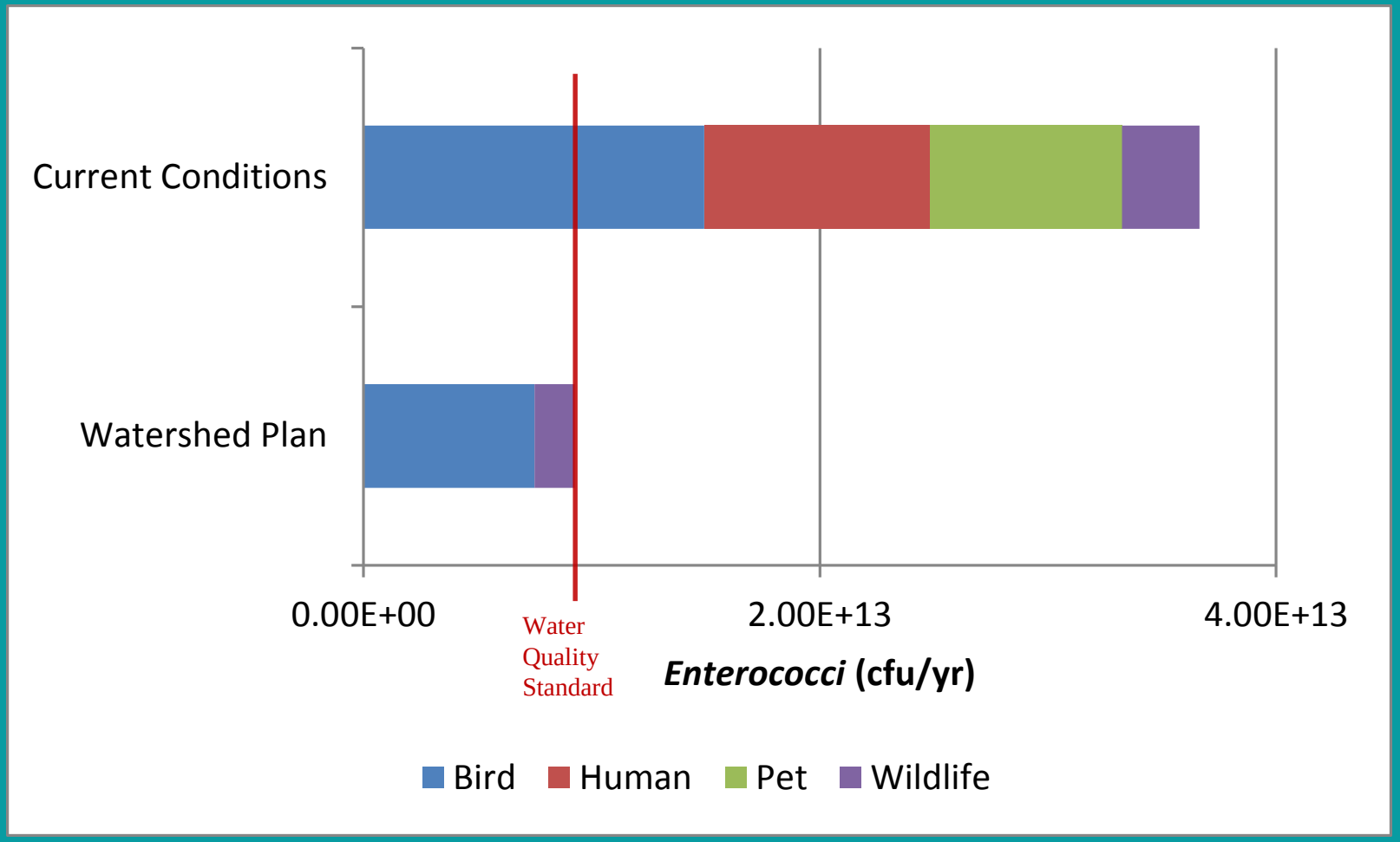
# Rough Conditions



# Precipitation



# Watershed Plan Reductions by Source



# Watershed, or Clean-Up Plan Strategy

## Focus on human controlled actions:

- Repairing / replacing failing septic systems
- Correcting sewer infrastructure problems
- Managing pet waste

I need a little help here!

Failed Septic System

# Potential Control Measures

## Pet Waste and Stormwater BMPs


Educational Sign

Pervious Pavers

Rain Gardens

Vegetative Buffer

Volunteer Rain "Gardeners"

# Potential Control Measures

## On-site Sewage Disposal Systems

Septic System Pump-out

Septic System Replacement

Septic System Repair

Alternative On-site Sewage Disposal System

# Control Measure Quantification

- Spatial analysis (e.g., GIS, Google)
- Literature search for BMP efficiencies
- SWCD, VDH, & DEQ records
- Fairview Beach studies
- Input from Working Groups and Steering Committee on local conditions
- Testing sewer infrastructure: smoke, camera, etc. (still needed for specific properties)
- Calculation for reductions needed:

**BMP reduction efficiency X area treated X loading rate for that area = Estimated Reductions**

# Infrastructure

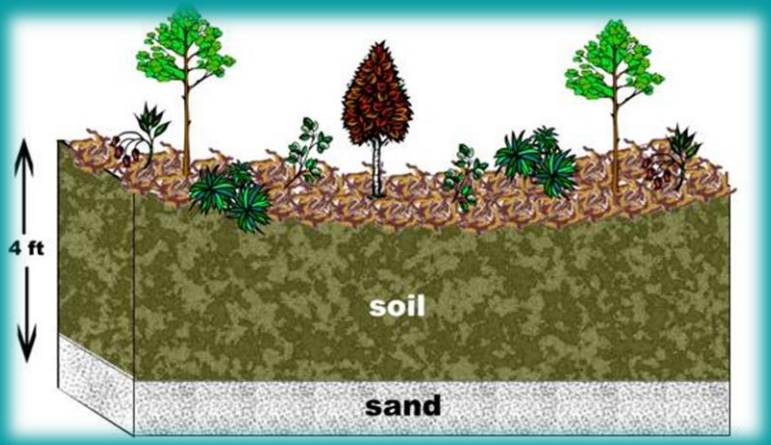
- Improve Sewer System by finding and fixing leaking laterals using dye/smoke testing
- Ensure that boat pump-out station at marina is maintained in working order
- Pump & close old/unused septic tanks (RB-2, only w/concurrent sewer connection)
- Address flooding drain fields
- Septic tank pump-out (RB-1)
- Improve Septic Systems in Trailer Park. Dye test septic systems to determine deficiencies
- "Pump out" boat to collect waste from other boats during high traffic times
- Hook up remaining septic users to sewer system (RB-2)
- Repair workable septic systems (RB-3)
- Repair septic systems with alternative systems (RB-5)

# Pet Waste

- Pet Waste Stations
- Pet waste pick-up (volunteer or service)

# Runoff Reduction

- Install Rain barrels
- Replace paved areas with porous pavement or permeable pavers
- Evaluate redevelopment opportunities in the trailer park area
- Install Rain Gardens
- Redirect downspouts onto grassy areas
- Encourage low impact development techniques
- Install vegetative buffers or turf to trees



# Education Programs

- Participate in Virginia Clean Marina Program
- Develop general education program
- Distribute leash bag holders for pet owners
- Encourage more inspections of boats by the Coast Guard Auxiliary
- Create new ordinance that requires records of old septics during property transfer or hook-up of system to sewer
- Send mailings to trailer park owner to determine where problems exist
- Develop a proper septic maintenance education program, including educational materials, technical advice
- Provide information for recreational boater education programs
- Provide a feral cat population control education program

## Beach

- Repair bulkheads and enhance with vegetation
- Increase width of beach by 10 – 15 yards

## Wildlife Management

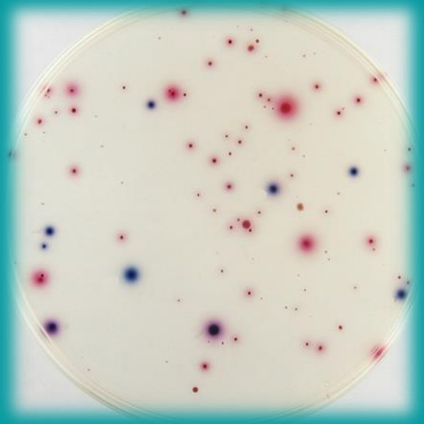
- Discourage birds from visiting the beach

# Monitoring

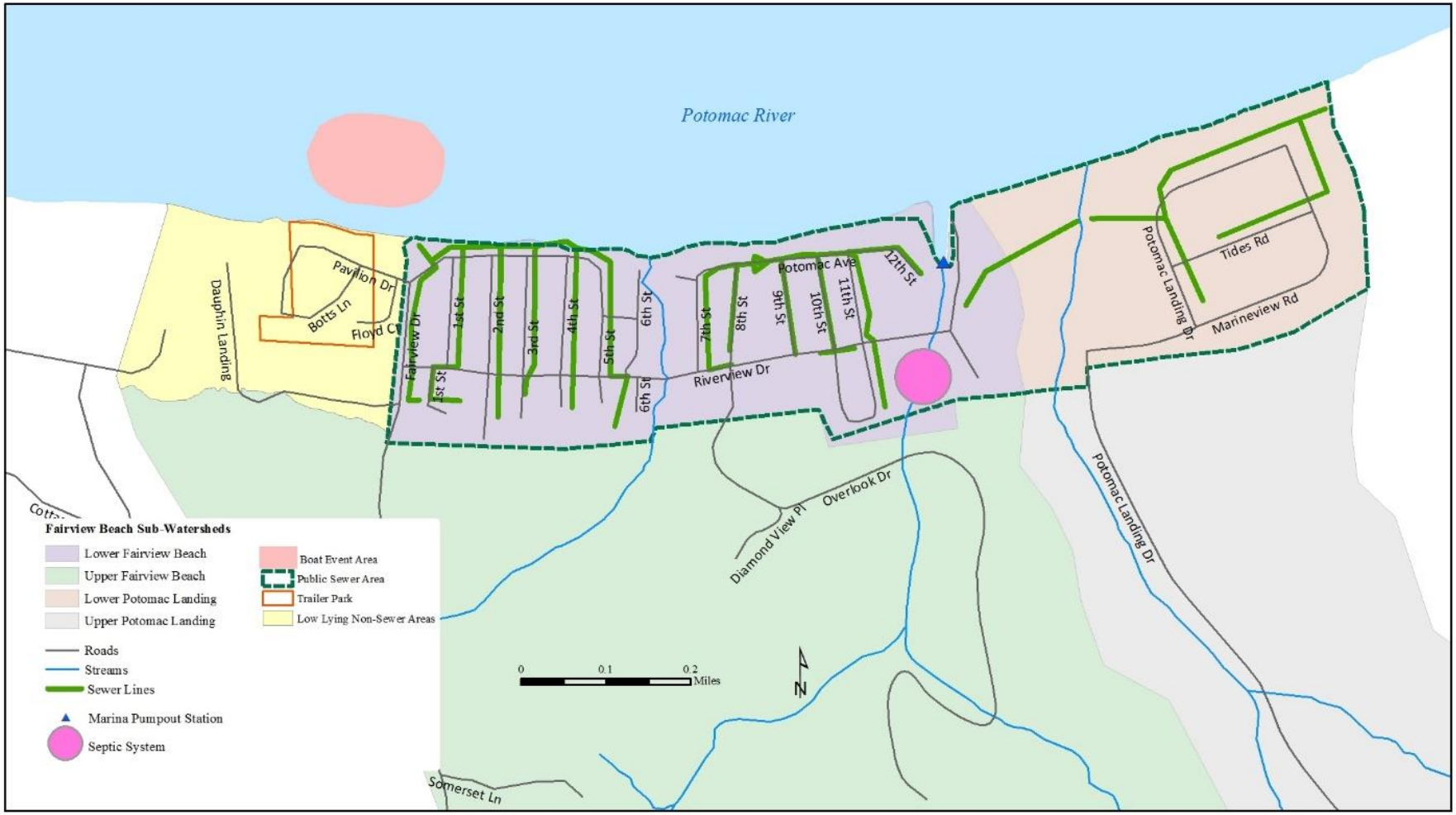
Continue VDH monitoring and if necessary posting of swimming advisories

Conduct pre-post BMP monitoring for installed BMPs

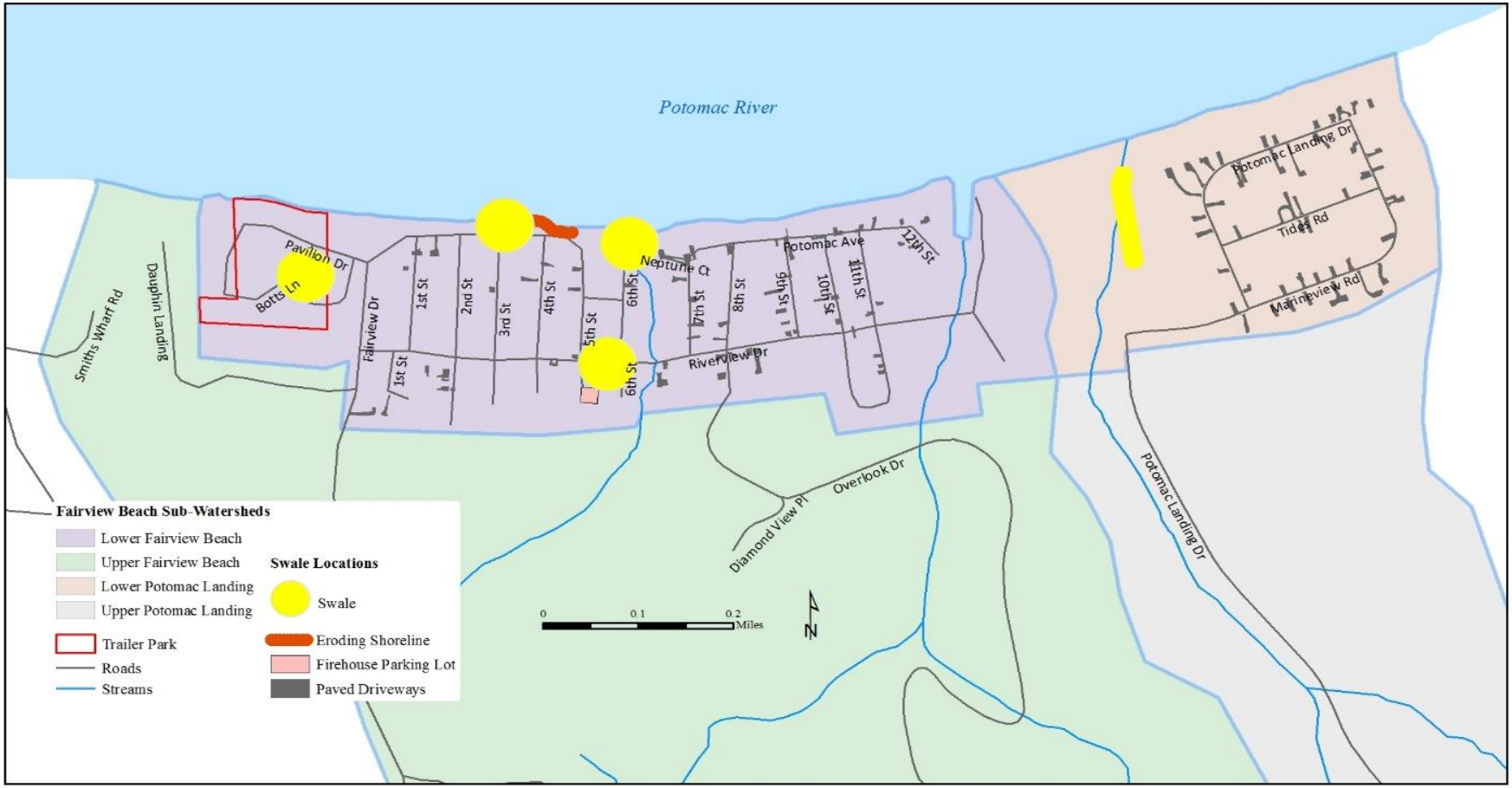
Continue to conduct hot-spot monitoring by citizen monitors



# Potential location of BMPs to control human sources



# Potential location of BMPs to control stormwater



# Implementation Costs

- Control Measure Cost
  - Number of units multiplied by unit cost
- Technical Assistance (TA) Cost
  - Full time equivalents multiplied by unit cost
- Total Cost = Control Measure Cost + TA Cost

# Costs of Implementation

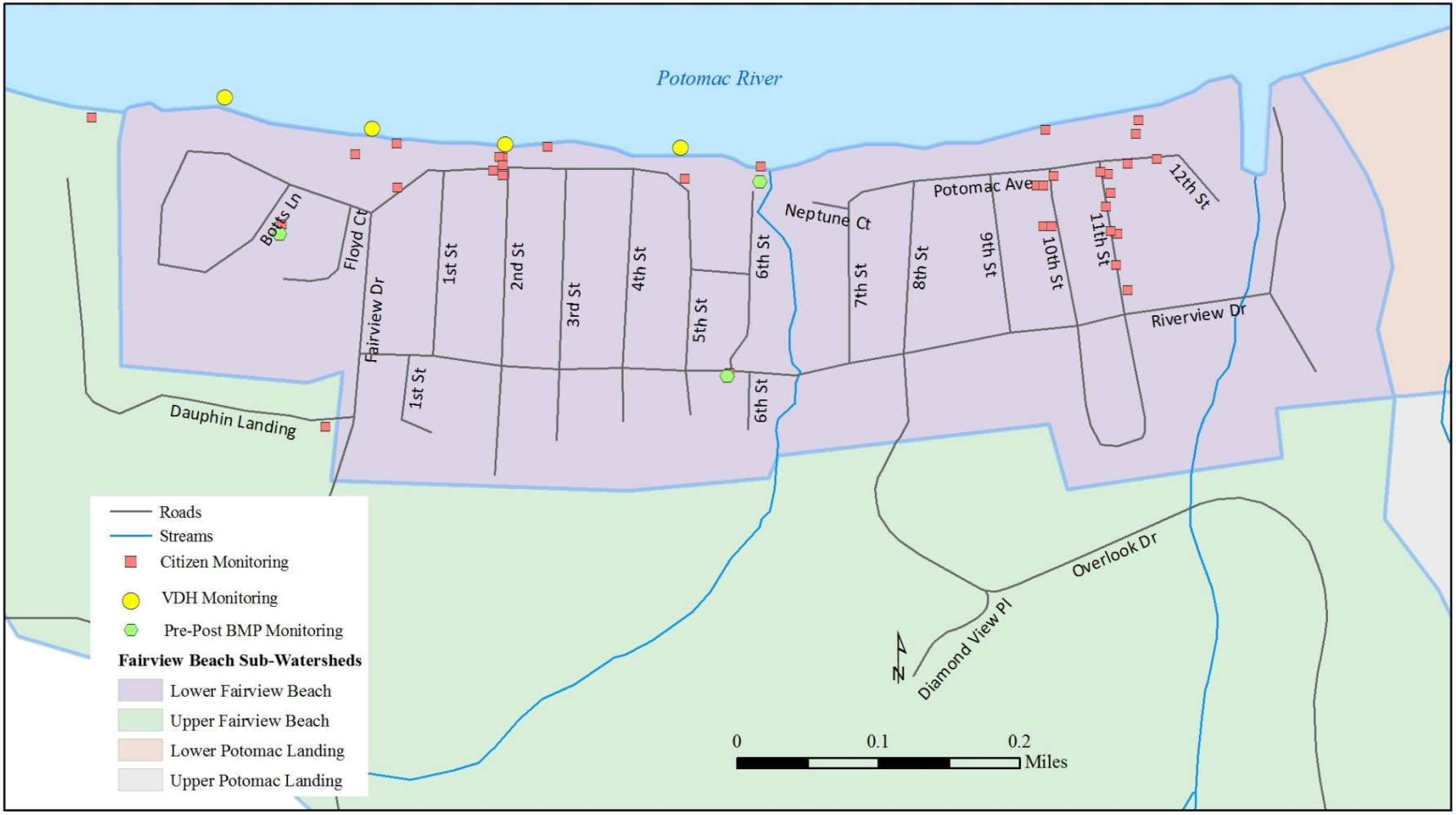
Total Phase 1 (years 1-5) implementation cost estimates:
**$908,884**

Additional Phase 2 (years 6-10) implementation could be considered in order to fully implement load reductions:
**$266,342**

**Before beginning Phase 2, the steering committee will evaluate program/partner success and target further efforts.**
**Agencies and localities will track BMP installations during both phases**

Total cost for implementation of this watershed plan:
**$1,175,227**

# Monitoring Locations



# Funding Sources

- Water Quality Improvement Fund
- EPA 319 Funds
- US Army Corps of Engineers
- State Revolving Loan Funds
- VA Small Business Environmental Assistance Loan
- Community Development Block Grant
- Virginia Environmental Endowment
- National Fish and Wildlife Foundation
- SE Rural Community Assistance Project
- VDOF Trees for Clean Water Program
- Community Foundation of the Rappahannock River Region
- **Virginia Conservation Assistance Program**

The Final Plan was "accepted" by EPA on 12/4/14

http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/TMDL/TMDLImplementation/TMDLImplementationProgress.aspx

# But, EPA also had some special comments:

- Within 10 years of "acceptance" of the plan, must show water quality improvements and progress towards restoration in order for the watershed plan to remain "accepted"

- If there are no water quality improvements or restoration efforts, a TMDL must be developed

# Progress Since the Plan

- DEQ assisted VDH with funds to continue the beach monitoring in 2015, which allow for swimming advisory postings when necessary. Good news: It is anticipated that VDH has resources to carry out the 2016 beach monitoring
- DEQ has worked with TCCSWCD to develop a 319 proposal for an implementation project in FB, though it was not funded last year largely due to the need for the septic survey in one section of the community to determine the number of septic system problems. Good news: VDH is ready to conduct the survey once they can gain access to the property
- TCCSWCD has worked with the FBRA to determine the possible locations for raingardens in the community – funding is available but still searching for landowner participants
- TCCSWCD continues to support the pet waste management program by providing bag stations and maintaining them

# Monitoring Update

| | 2014 | 2015 |
|---|---|---|
| Fairview Beach swimming advisories | 5 | 8 |
| Days under advisories | 17 (16%) | 50 |
| | | |
| All of Virginia beaches advisories | 53 | 26 |
| All of Virginia days under advisories | 105 | 97 |
| Total VA beaches monitored | 32 | 4* |

* 3 of these beaches had 25 of 26 advisories

**Fairview Beach under swimming advisory >50% of days**