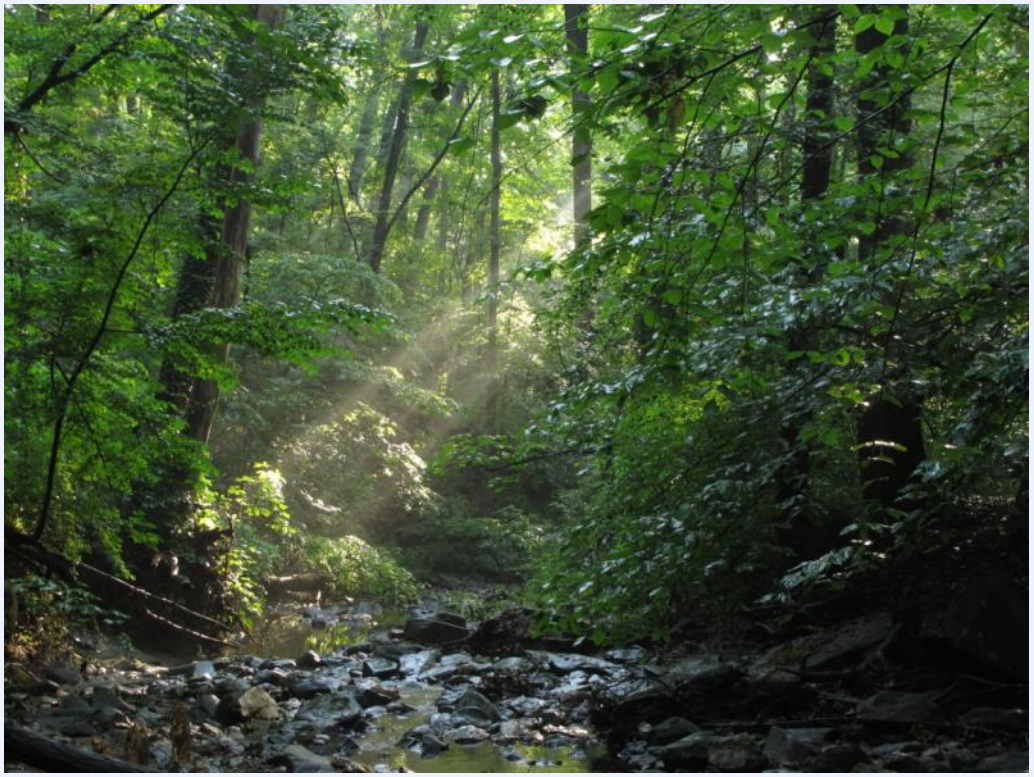
Training Managers by Ear and Volunteers by Sight



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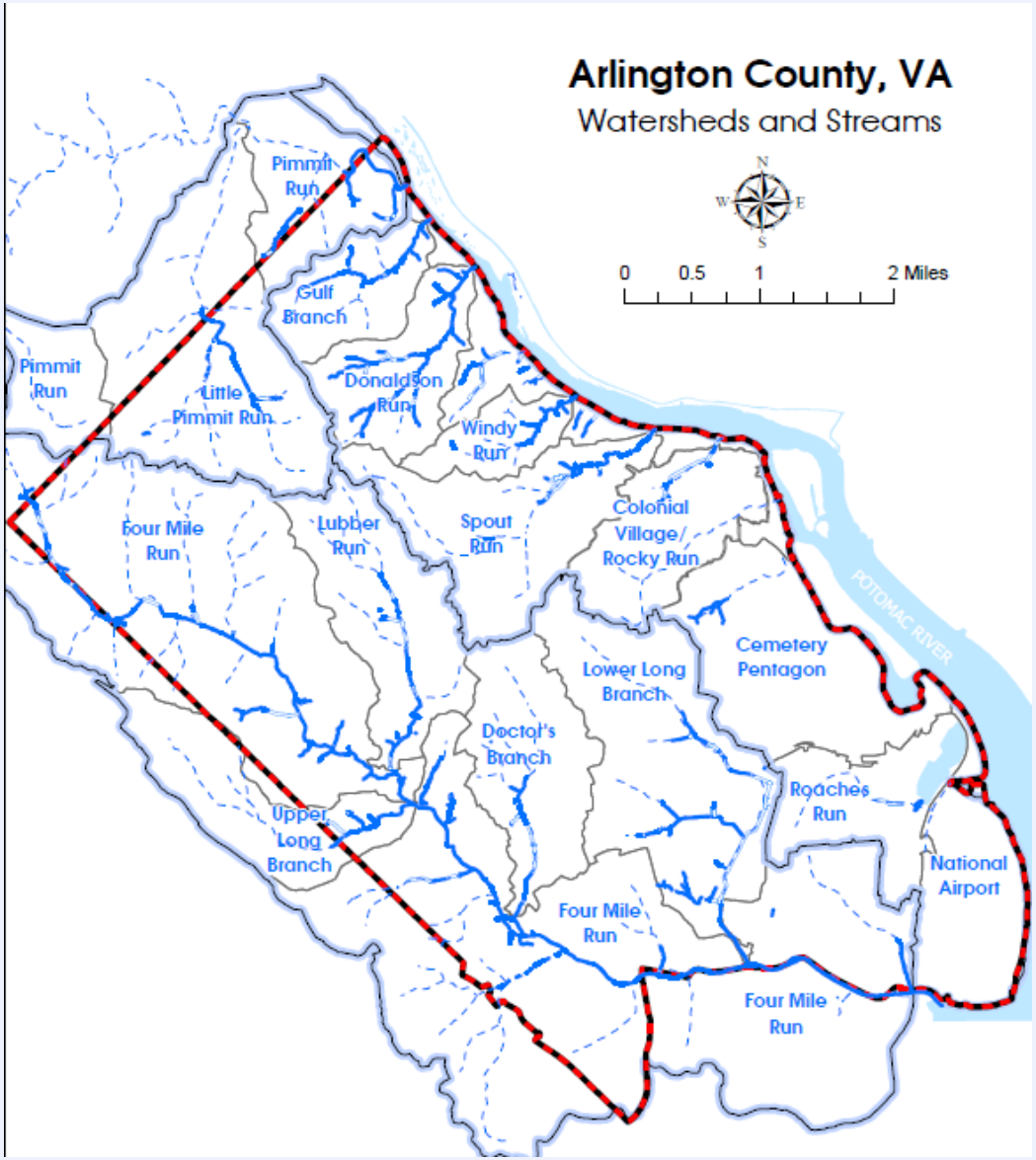
A Little About Us…

- 26.5 square miles
- Population: 212,900 (est Jan 1, 2013)
- 8,252 persons/sq mile
- Reflects an increase of 12.4% since 2000
- Population has increased an average 1% per year since 2000
- 28.5 miles of perennial, freshwater streams
- 366 miles of storm sewers
- >10,000 storm drains



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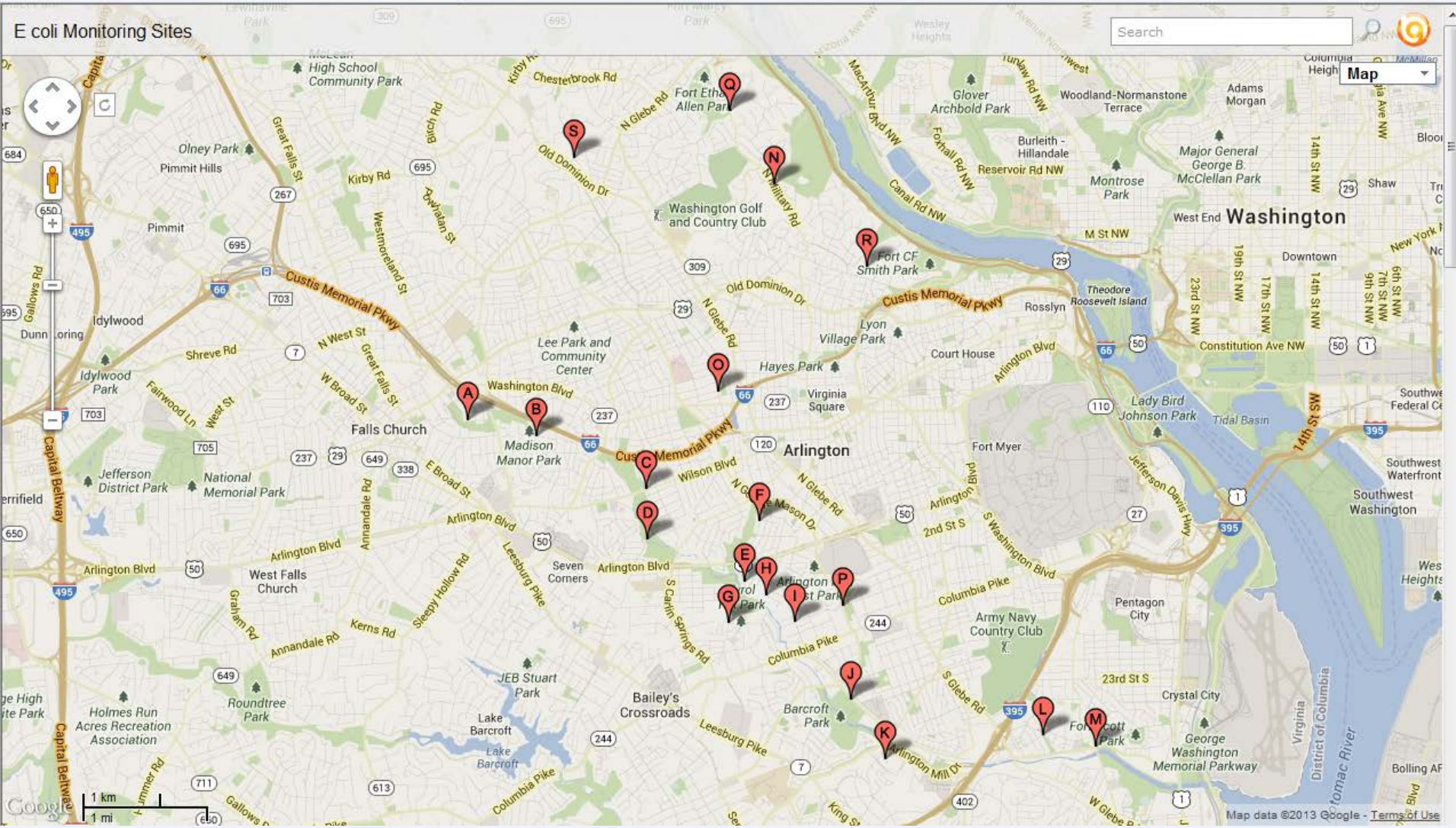

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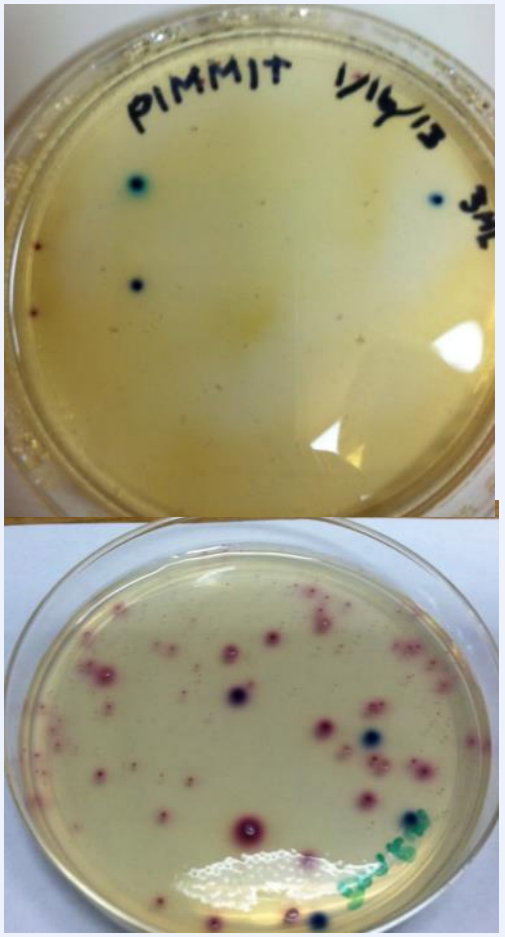
Monitoring Programs - Bacteria

- Since 2005
- 21 current sites
- 18 volunteers (some sites have teams that alternate months)
- 5 original volunteers
- Sampling 3rd Saturday of each month
- Data reported to VA DEQ & public
- Lots of interest in data from dog owners



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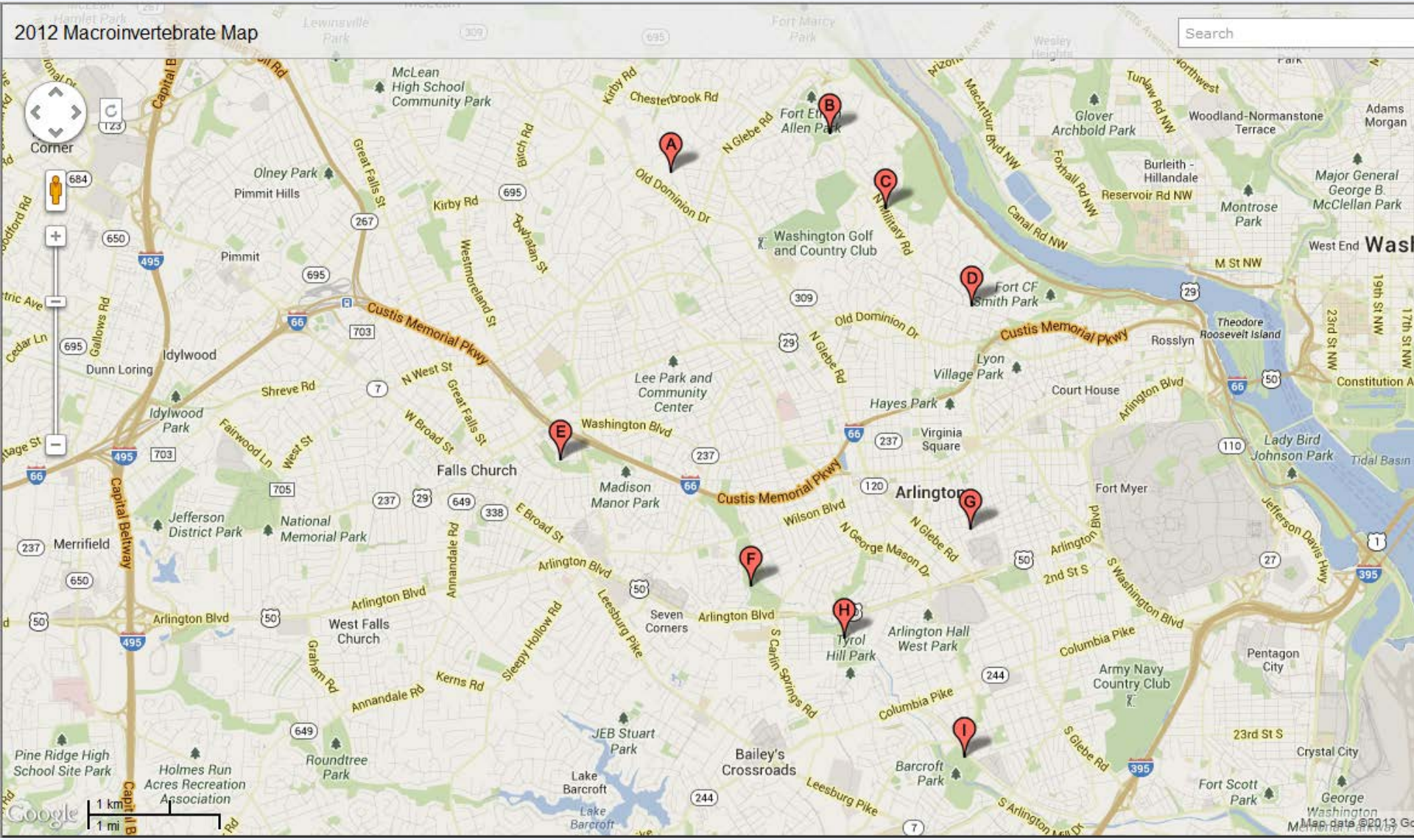

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Monitoring Programs - Macroinvertebrates

- Since 2001
- 9 sites
- 91 volunteers
- 5 original volunteers
- Sampling 3xs per year
- Data reported to VA DGIF, VA DEQ, & public

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My Challenge

EDS – Cat Herders Super Bowl Advertisement

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My Challenge

- 10+ yr programs
- ???# of volunteers
- Reinvigorating existing volunteers
  - "It's just outreach"
- Attracting new volunteers

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My Challenge

- Not offending the veteran volunteers with the addition of new volunteers
- Protocol & safety updates needed
- Lack of consistency amongst macro teams

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“Oh my gosh, she’s here again”

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Volunteer Biological Monitoring Program

Data Collection Protocol

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March 2013

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Bacteria Monitoring Protocol

The Coliscan Easygel method is simple and easy to use, but it does have several steps that can be easy to forget - especially if you are a new monitor! Reference the steps below to ensure that you get the best results possible.

Store the Easygel in the freezer. Check the expiration date on the bag containing the Easygel bottles. If it is expired, contact Jen for more.

Day of Sampling:

1. Identify where you will place the incubator. Got kids or pets? Be sure to keep it away from where they will knock it over. It will need to be left undisturbed for at least 24 hours. Direct sunlight will deactivate the bacteria and alter your results. Ideally incubate in a dark area.

2. The Easygel will take roughly one hour and a half to thaw (90 minutes). Do not put it in the microwave to quicken thawing. Pull one Easygel bottle out and let it thaw to room temperature for every sample you take.

3. Go to your sample location and collect your sample. Do not completely fill you bottle up to the top. Leave some air at the top - this will help your sample mix thoroughly during the shaking in Step 5. Use your best judgement when taking your sample from the water column. Do not skim water from the top of the stream or take water so deep that sediment enters your bottle. In most of our sites, you will take your sample a few inches down in the water column.

4. Put the sample on ice for the drive home and store it in the fridge until you are ready to mix it with the Easygel.

5. Label your petri dish bottom. Use black ink and write as small as possible. Note the number of mls added and the time. If you are sampling multiple sites, note the site number.

6. Shake the water sample bottle 25 times BEFORE pipetting out the sample. This will help ensure that there is an even distribution of colonies throughout the water sample.

7. Using the pipette, transfer 3 mls of your water sample to the Easygel bottle. Only have one cap off at a time to reduce contamination. With time, you may choose to add 2, 3, or 5 mls of a water sample. This will depend on how many colonies you find on average from your site. If you are new to a site, start with 3 mls.

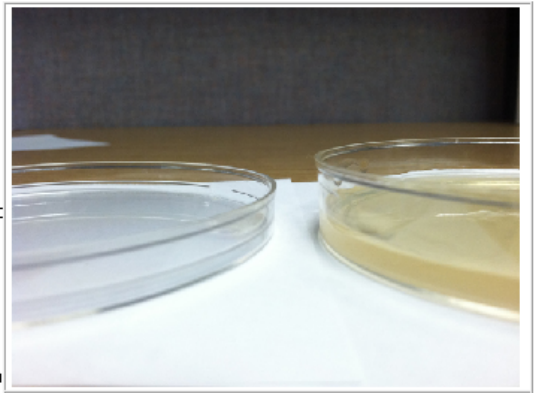
8. Gently swirl the Easygel bottle to mix the water sample with the Easygel for 10 seconds. Take care not to shake it or add air bubbles to the mix.

9. Pour the Easygel mixture into the bottom petri dish and place the top lid on top of the bottom dish. While pouring, keep the top lid over the bottom lid to reduce any airborne mold from getting onto your plate. Let it sit for one hour to an hour and a half (60-90 minutes) - until the gel forms.

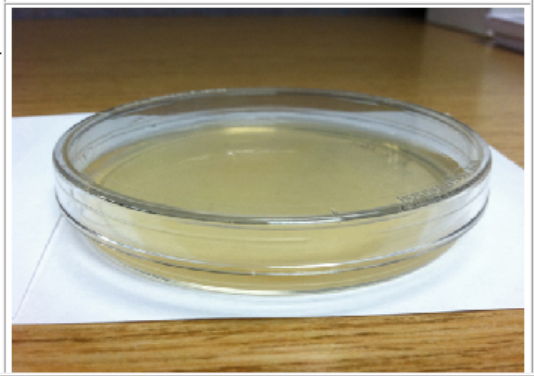
10. Place the petri dish UPSIDE DOWN in the incubator. Leave it in the incubator for 24 hours. (See picture below)

11. Read your plate. Only count the number of royal blue and purple colonies. Record your data on the data sheet and return it via e-mail to Jen. (See picture below)

12. If your total count calculations do not result in a whole number, round up. For example, if your calculations give you an answer of 133.333..., the correct answer to record is 134. You never have a fraction of a colony. If you do not have any colonies to report, the proper nomenclature is <50.



The bottom lid (right) of the petri dish is slightly taller than the lid. The top lid (left) has a slightly larger circumference.



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“We love all the macros equally. Bigger is not better.”

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“But it is just outreach…”

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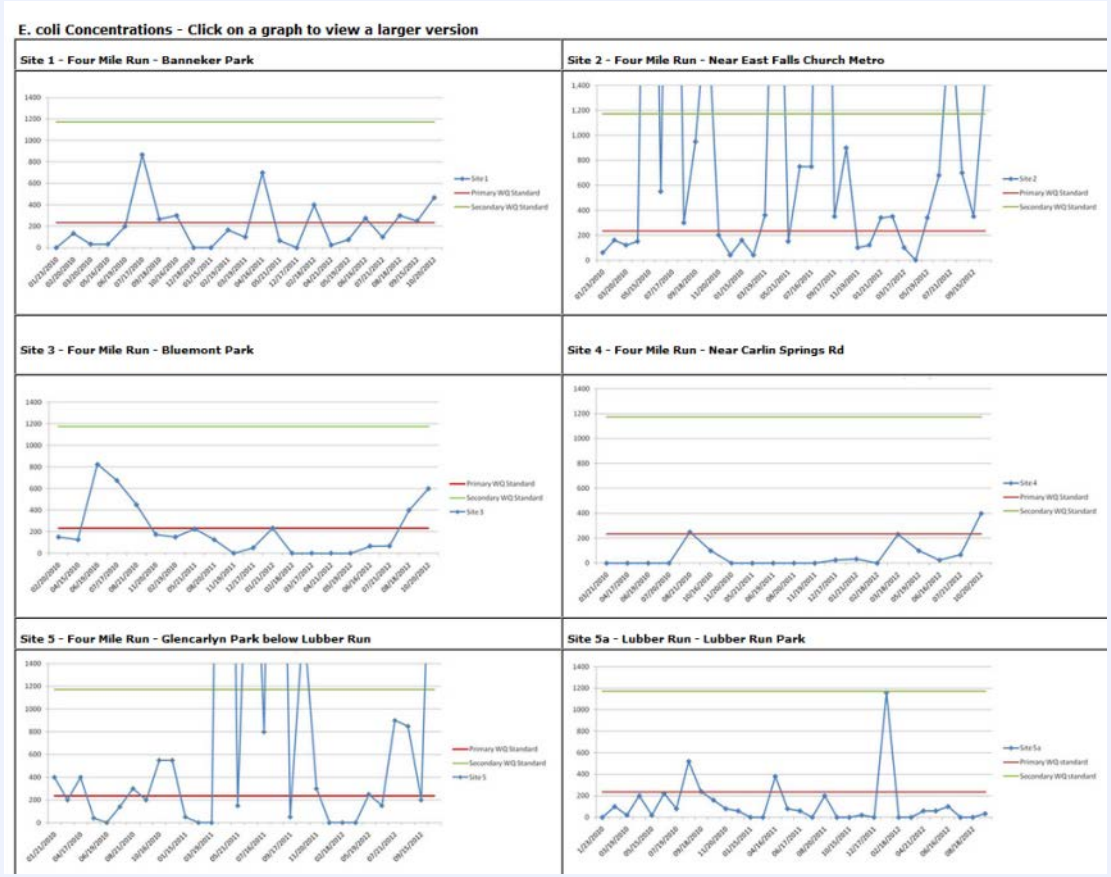
How are bacteria data used?

1. VA DEQ online maps that describe water quality impairments
2. Arlington's annual NPDES report
3. 2012 VA Citizens for Water Quality Summit - https://allianceforthebay.org/2012/08/virginia-citizens-for-water-quality-summit/
4. Arlington's website



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2013 MS4 Permit

MONITORING REQUIREMENTS - Bacteriological Monitoring
Four-Mile Run Watershed

The permittee shall continue its long term Four-Mile Run bacteriological monitoring activities to evaluate the effectiveness of its efforts to reduce bacterial pollutant loadings. This program shall continue to be implemented as follows:

- The permittee shall use **the Coliscan EasyGel method** to analyze in-stream E-coli levels.
- The permittee shall collect monthly samples at each of the following locations in Four-Mile Run identified in Table I
- **The permittee may rely on community volunteers to conduct bacteriological monitoring.**
- The permittee shall analyze the data for relationships with precipitation events including recent (occurred within 24-hours of sampling) and long term (total monthly precipitation).
- ……

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2013 MS4 Permit

MONITORING REQUIREMENTS - Biological Stream Monitoring

• The permittee shall continue its biological stream monitoring program to evaluate the health of existing streams and the long term effectiveness of its stormwater management program. With the application for permit reissuance, the permittee shall provide a detailed analysis of any long-term trends in local stream health identified during this permit. This program shall continue to be implemented as follows:

•The permittee shall use a biological stream monitoring protocol based on EPA's Rapid Bioassessment Protocol 2 and shall include habitat assessment, temperature and pH measurements, and an assessment of the benthic macroinvertebrate community. The developed protocol shall be available on the permittee's website.

• Monitoring shall be conducted a minimum of twice a year with sampling events occurring between January 1 and June 30 and July 1 and December 31 at each monitoring location.

• Monitoring shall continue at the following locations listed in Table II.

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2013 MS4 Permit

• The permittee may rely on community volunteers to conduct biological stream monitoring provided each volunteer has attended two training events. Documentation of volunteer training shall be kept on file for review.

• The permittee shall obtain all necessary aquatic wildlife collection permits from appropriate State and/or Federal agencies (e.g. Virginia Department Game and Inland Fisheries).

•…….

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New Gear Purchases Based on Safety & Observed Needs

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Trainings

- Program Introduction
- New – Macro I
- New - Team Leader
- New - Bacteria Annual Mtg
- Coming – CPR & First Aid
- Coming – Macro II

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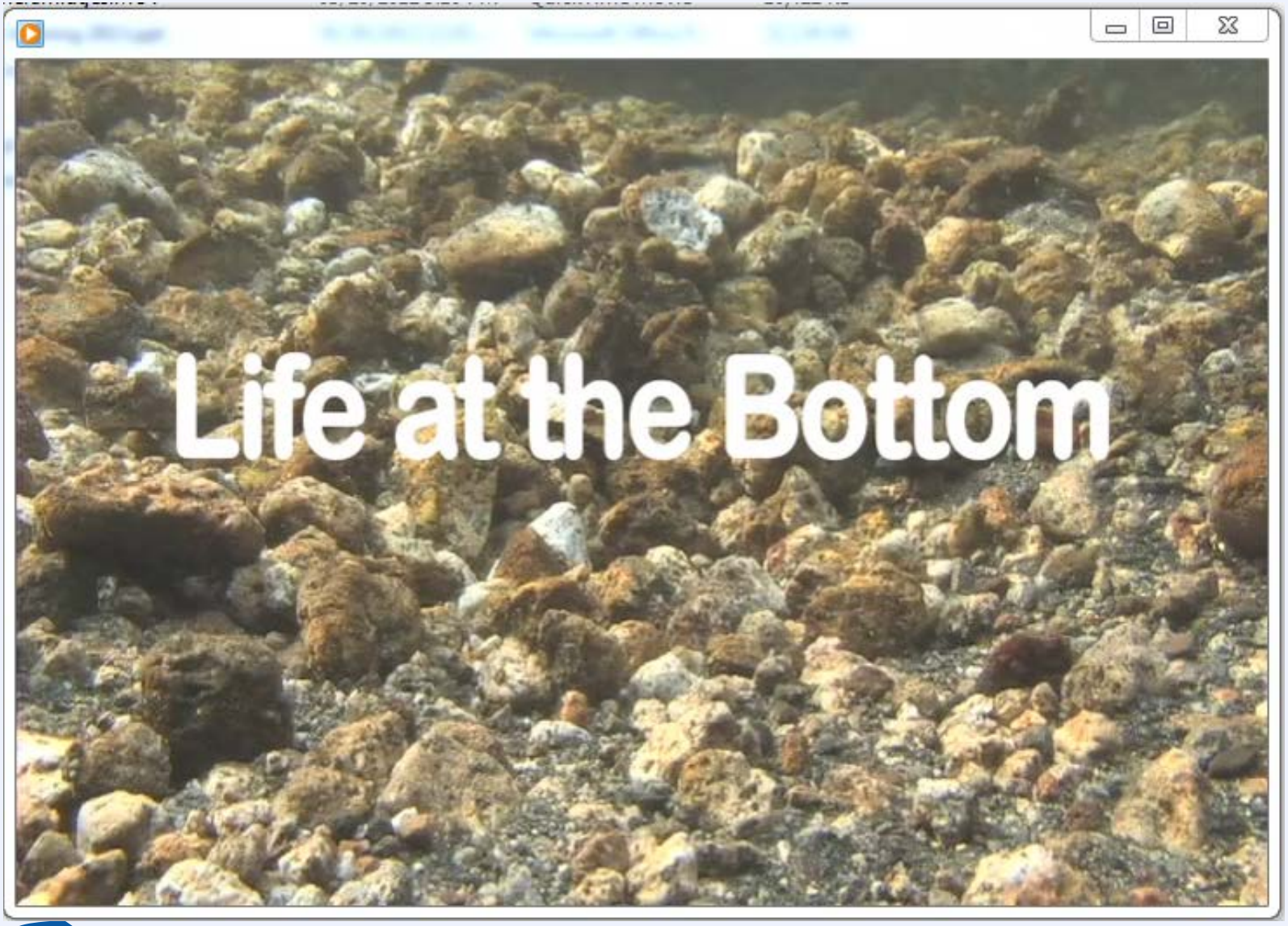

[Multi-organism]

[Snail]

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Macroinvertebrate Identification

Specimen # _____

Describe body shape

_____

Yes/No: Shell ___ Head ___ Wingpads ___

# of legs _____ # of tails _____

# of prologs _____

Location of gills _____

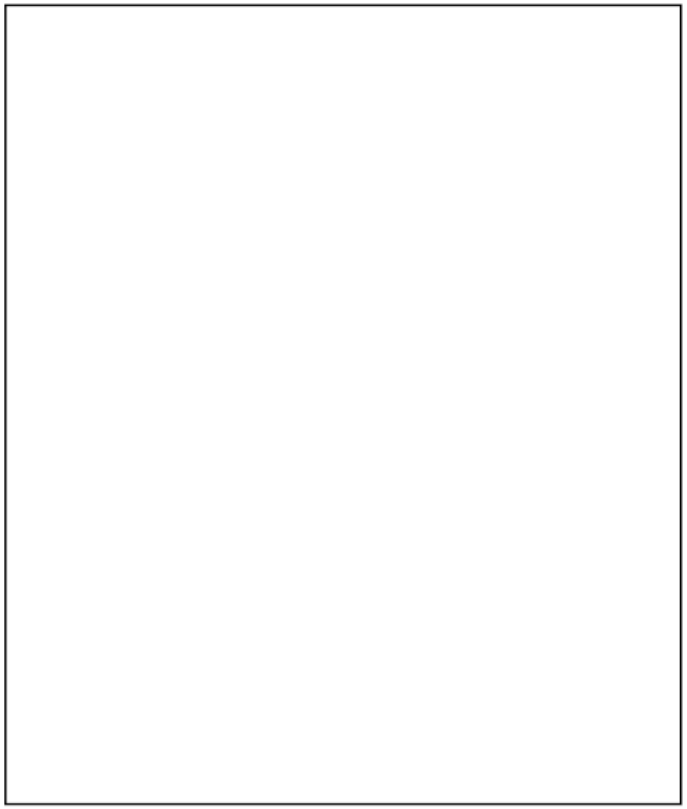
Other features _____

_____

_____

Tolerance Value _____

Notes:



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So What Do Ya Think?

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Fall 2012 Team Leader Calls

- Summary from team leader calls

Summer 2012 Updates

- The habitat assessment data sheets have been updated to incorporate monitor suggestions from the spring 2012 monitoring season.
- WEG's habitat and macroinvertebrate data are in every team's binder. Please look at WEG's habitat scores and compare them to your data sheets from the spring.
- I have purchased additional microscopes. Once the order arrives, there should now be enough for 2 for each kit. They aren't here yet (as of 7/13/12).
- I have purchased 3-tine scrapers that can be used to fluff the substrate. There should be one rake per kit now.

Monitoring Windows	
2013	
Spring	May 4 - June 2
Summer	July 13 - August 11
Fall	September 21 - October 20
2012	
Spring	May 5 - June 3
Summer	July 14 - August 12
Fall	September 22 - October 21

Macro Keys

At the 2012 trainings, the attendees requested that some of the macroinvertebrate identification materials be made available electronically. Click on the links below to download.

- Macroinvertebrate PowerPoint
- Large images of stoneflies, mayflies, and netspinning caddisflies.

Synopsis of the opening group discussion:

- No more winter sampling. We sample spring, summer, and fall now.
- We will be collecting 10 nettings, instead of 9.
- No more tub-gazing for sorting the samples. We need to closely follow the protocol to eliminate sorting bias. Take a small sub-sample in a small white container, sort the sub-sample completely, then take another sub-sample to sort. See the protocol for details.
- Teams will now measure out the reach length (300 feet) with the new tape measures at the start of the sampling session.
- Teams will submit to Jen, via e-mail, pictures of their sampling reach after sampling. The photos will help document how the reach changes through the coming years. Only one or two pictures is necessary, and the pictures should be taken from the same location each time.
- Volunteers wish to have more microscopes available. *Jen's Response: In the new fiscal year (this summer), I will put in for additional scopes.*
- As boots spring leaks, we are going to throw them out. Our boots are old and kinda tired. Volunteers would like to have some of the new boots added be "muck boots" - boots that are knee high. *Jen's Response: In the new fiscal year (this summer), I will start looking at making some boot purchases as we throw out the old pairs. I will include 1 or 2 pairs of muck boots (knee-high) in each of the monitoring sheds.*
- Volunteers like the new, blue tables. *Jen's Response: Wohoo!*
- There is a desire to see new volunteers be added to the teams. *Jen's Response: Prior to each monitoring season thus far, I have offered a training to bring in new blood. I will continue to do so through 2012.*
- Volunteers want a handout and/or sign to provide the public in case those passing by want to learn more about the program. *Jen's Response: I have some brochures that include information on our program, as well as other volunteering opportunities. I will include those in the binders.*
- Volunteers like the 3-tine scraper that was at the training. They can be found at Home Depot. *Jen's Response: When I start making purchases for the kits this summer, I will pick one up for each kit.*

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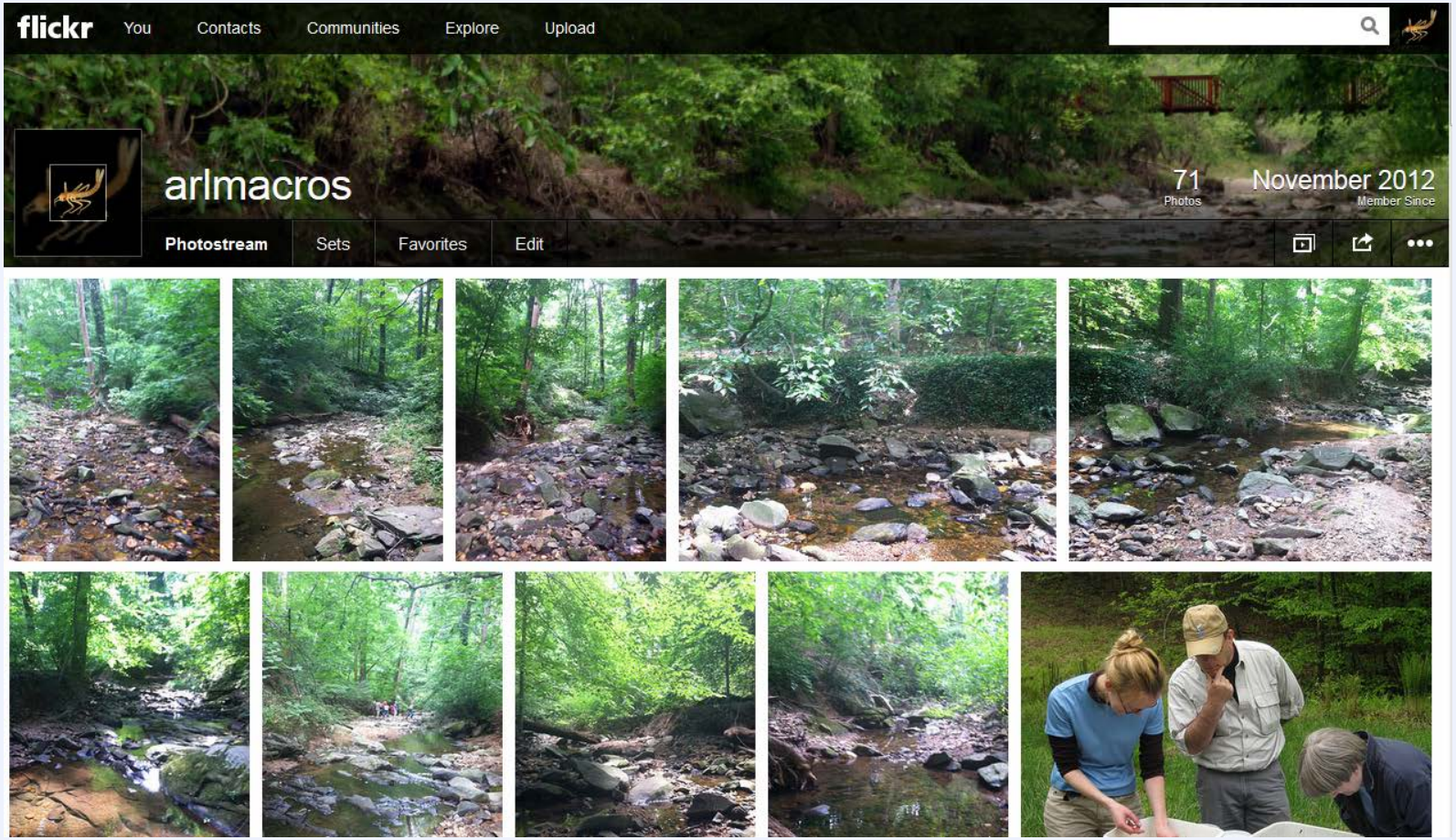
Flickr Account



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Date: _____ Site: _____

# of nettings: _____ Total individuals collected: (100, +/- 10%)

# of nettings from: _____ edge _____ riffles _____ pools _____ other (explain)

Name of Macro-Invertebrate	Tolerance Value		Order/Family	Running Count	Total
Caddisflies			**Trichoptera**		
Fingernet	3		Philopotamidae		
Netspinning Caddis	6		Hydropsychidae		
Other Caddis	6 to 0				
Mayflies			**Ephemeroptera**		
Small Minnow Mayfly	4		Baetidae		
Other Mayfly	7 to 1				
Beetles			**Coleoptera**		
Riffle Beetle	4		Elmidae		
Water Scavenger Beetle	5		Hydrophilidae		
Predaceous Diving Beetle	6		Dytiscidae		
True Flies - Diptera			**Diptera**		
Cranefly	3		Tipulidae		
Cranefly			*Genus - Antocha*		
Cranefly			*Genus - Dicranota*		
Black Fly	6		Simulidae		
Midge 1 (white/gray)	6		Chironomidae		
Midge 2 (red)	9		Chironomidae		

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News for Macroinvertebrate Monitors

Spring 2013 Monitoring Dates

- Completed: Saturday, May 4 at 9am - Donaldson Run
- Completed: Saturday, May 4 at 3pm - Glencarlyn
- Saturday, May 11 at 9am - Windy Run
- Saturday, May 11 at 1pm - Gulf Branch
- Saturday, May 11 at 3pm - Barcroft
- Saturday, May 18 at 9am - Bluemont
- Saturday, May 18 at 1pm - Lubber
- Sunday, May 19 at 1pm - Little Pimmit
- Saturday, May 25, 1pm - Banneker

[Program Rules, Expectations of Volunteers, and Safety for Stream Monitors]

[Monitoring Protocol]

Please refresh your memory with these documents!

Contact the team leads if you plan to attend! It is important that we have a rough head count so that we don't have too many or too few!

2013 Macroinvertebrate ID Classes

As promised, there will be macroinvertebrate ID classes this spring, just before water monitoring season begins. Each of the classes below will cover the same information, so you only need to sign up for one class.

Each class will be limited to 12 people (that's how many microscopes we have). Each person will have the use of a microscope with a set of preserved samples. This class will cover the basics of identifying the common macroinvertebrates that we find in Arlington's streams. This class is appropriate for **all** monitors. Only current, active monitors are eligible for the classes. Reserve your spot with Jen McDonnell at jmcdonnell@arlingtonva.us.

- Wednesday, April 10 - Court House Plaza (2100 Clarendon Blvd), Rm 710A. 9:00 AM - 12:00 PM
- Wednesday, April 10 - Court House Plaza (2100 Clarendon Blvd), Rm 710A. 2:00 PM - 5:00 PM
- FULL - Saturday, April 13 - Fairlington Community Center (3308 South Stafford Street). 9:00 AM - 12:00 PM
- FULL - Sunday, April 14 - Walter Reed Center (2909 South 16th Street). 3:00 PM - 6:00 PM
- FULL - Wednesday, April 24 - Court House Plaza (2100 Clarendon Blvd) Rm 710A. 6:00 PM - 9:00 PM

Later in 2013, we will begin the Master Identifier training. The Master Identifier trainings will get down to the family level for common, Arlington macros.

2013 Monitoring Windows Announced

The monitoring windows for 2013 are found in the table to the right. Going forward, the monitoring windows will be as similar as possible for year-to-year. This will be helpful as we compare one year's data to the next. Each window is 5 weekends in length.

Fall 2012 Team Leader Calls

- [Summary from team leader calls]

Monitoring Windows
2013

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Lessons Learned

First:

- Show Up, Look, Listen

Second:

- Be transparent
- Provide new opportunities
- Follow through on promises & note when fulfilled

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Questions

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