



Taylor Run in Alexandria's Chinquapin Park

A Stream Worth Protecting and
Preserving

Presenters:
Russ Bailey and Bill Gillespie

Tonight, we would like to explain that...

A “stream restoration” on Taylor Run will not improve the water quality in the Chesapeake Bay, and

Viable options exist that allow the City to meet its Chesapeake Bay Program requirements. The City needs to identify and pursue those options.

Taylor Run Stream Restoration



Alexandria's Proposal

- The City of Alexandria proposed “stream restorations” for Lucky Run, Strawberry Run and Taylor Run.
- The projects were described in the City's Chesapeake Bay TMDL 40% Plan on September 24, 2019.



Disturbed or Excavated Area

Residents looked at the details and found the project would:

- Make wholesale changes to Taylor Run
- Excavate an area 1,900 by 75 feet
- Cut down about 250+ trees.
- Raise the stream bed 3 to 7 feet
- Destroy existing plant and animal communities.
- Threaten a unique wetland with 25 rare species.

This made residents question why a “stream restoration” was needed....



The park is a natural area full of life. So, why was a “stream restoration” a priority?



The City claimed:

- The Taylor Run stream restoration project was needed to meet nitrogen, phosphorous and sediment reductions for the Chesapeake Bay Program.
- The stream restorations were essential for obtaining the nutrient reduction credits needed for the Chesapeake Bay Program.

A group of residents questioned these claims....



We will show that:

- The stream is not the problem.
- Huge episodic volumes of water from the stormwater system are the problem.
- Viable options exist to earn nutrient reduction credits needed for the Chesapeake Bay Program. These credits do *not* involve stream restorations.

The City's dubious claim about phosphorus content

In the Phase III Stream Assessment Study, the City claimed the stream banks contained 1.05 lbs of phosphorous per ton of sediment.

- This estimate was not based on actual soil or sediment samples, but soil samples obtained from a Pennsylvania stream.
- Four soil samples taken along Taylor Run indicated the soils contained only 0.22 lbs of phosphorus per ton of sediment.

Residents Decided to do some Citizen Science

Citizens wanted to understand what is really happening in Taylor Run.



- The North Ridge Citizens' Association received a \$5,000 grant from DEQ to monitor Taylor Run.

Thank you NRCA for sponsoring the grant!



- The Alliance for the Chesapeake Bay provided free equipment and training for on-site physical and chemical testing.



The Taylor Run Water Sampling Team

***Huge thanks to the
volunteers who made this
effort happen!***

Left to right: Chuck Kent,
Trisha Gruesen, Rita Leffers,
John Fehrenbach, Bill
Gillespie, Amy Krafft

Not pictured: Russ Bailey,
Don Bobby, John Winstead.



- Water quality measurements were made at two sites twice a month.
- Air & water temperature, pH, conductivity, turbidity and dissolved oxygen were measured.
- Water samples were taken to a certified lab for total nitrogen, total phosphorous and total suspended sediment measurements.



Stream flow is low most of the year...



Infrequent but powerful high-water events occur during heavy rains.

The stormwater sewer system funnels water into the stream.



We sampled during high and low water

Volunteers measured stream height every day for 9 months

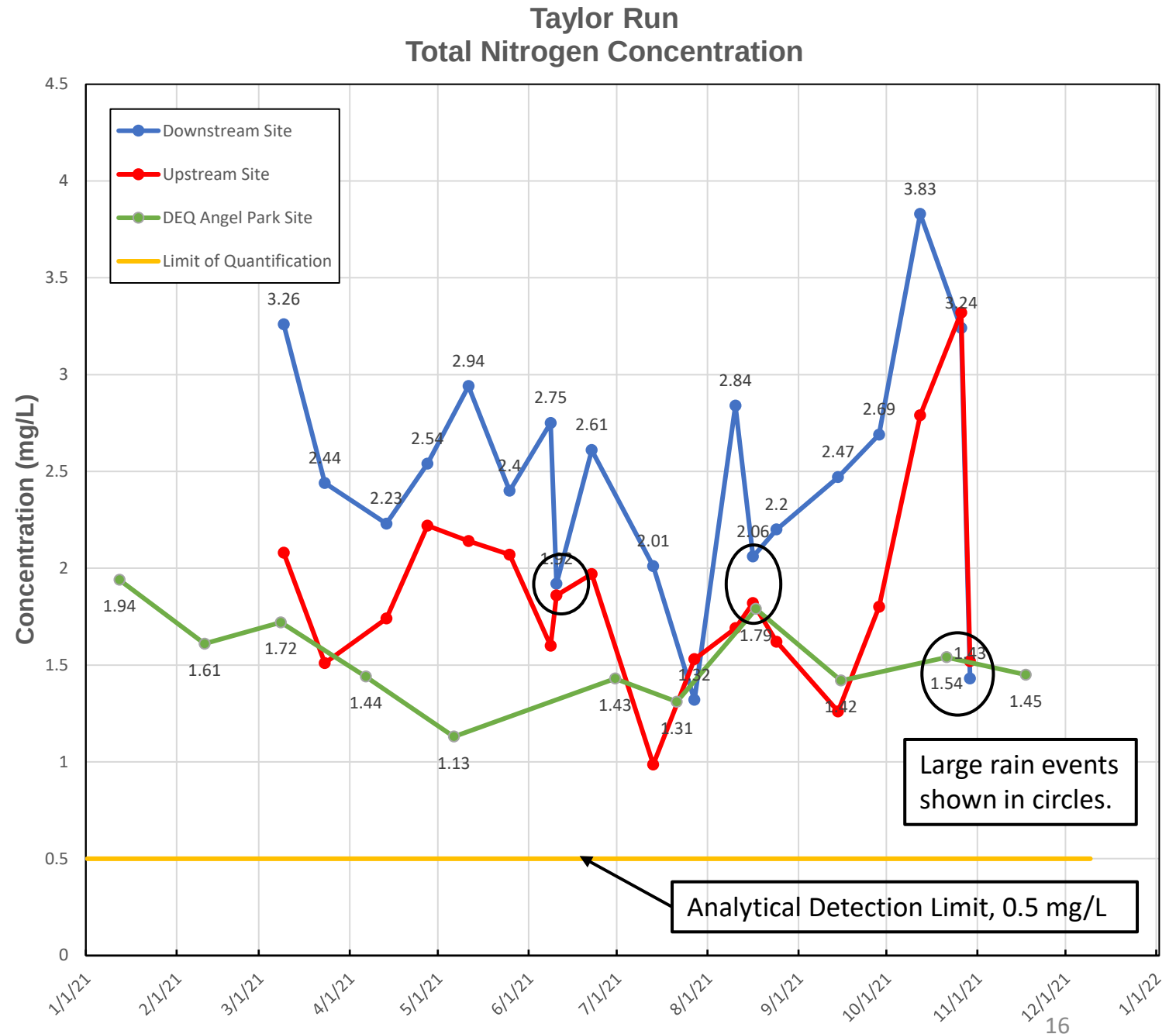


We sampled rain or shine

The team donated over 500 hours of volunteer time

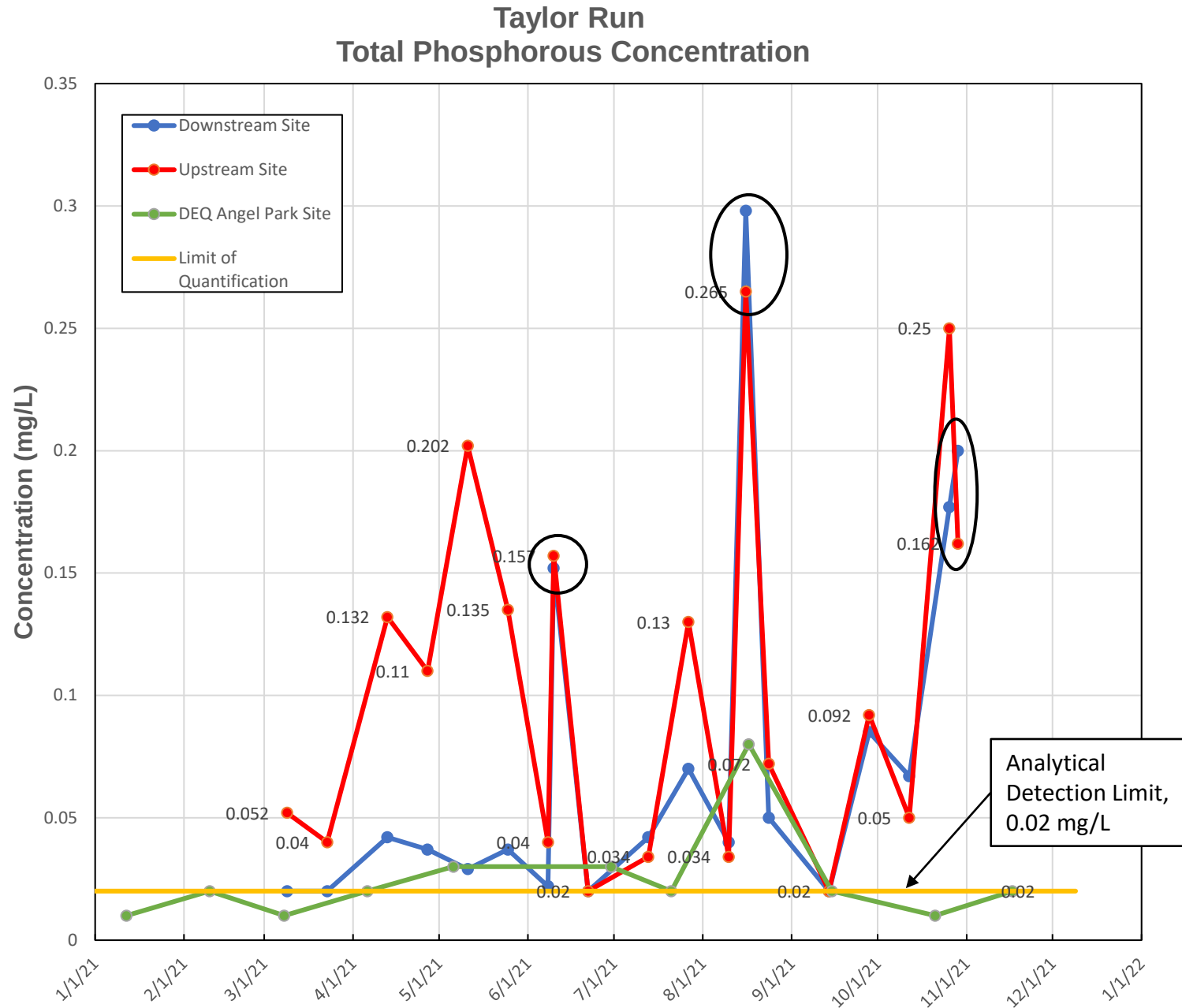
Total Nitrogen (N) Concentration (milligrams per liter)

- At low flows, the downstream site exhibits modestly higher N concentrations (Blue Line) than the upstream site (Red Line).
- A significant amount of N arrives in the stream from the storm sewer system (Red Line).
- During big rain events, N concentrations are similar.
- DEQ measured N downstream from NRCA sites. DEQ found lower concentrations of N (Green Line).



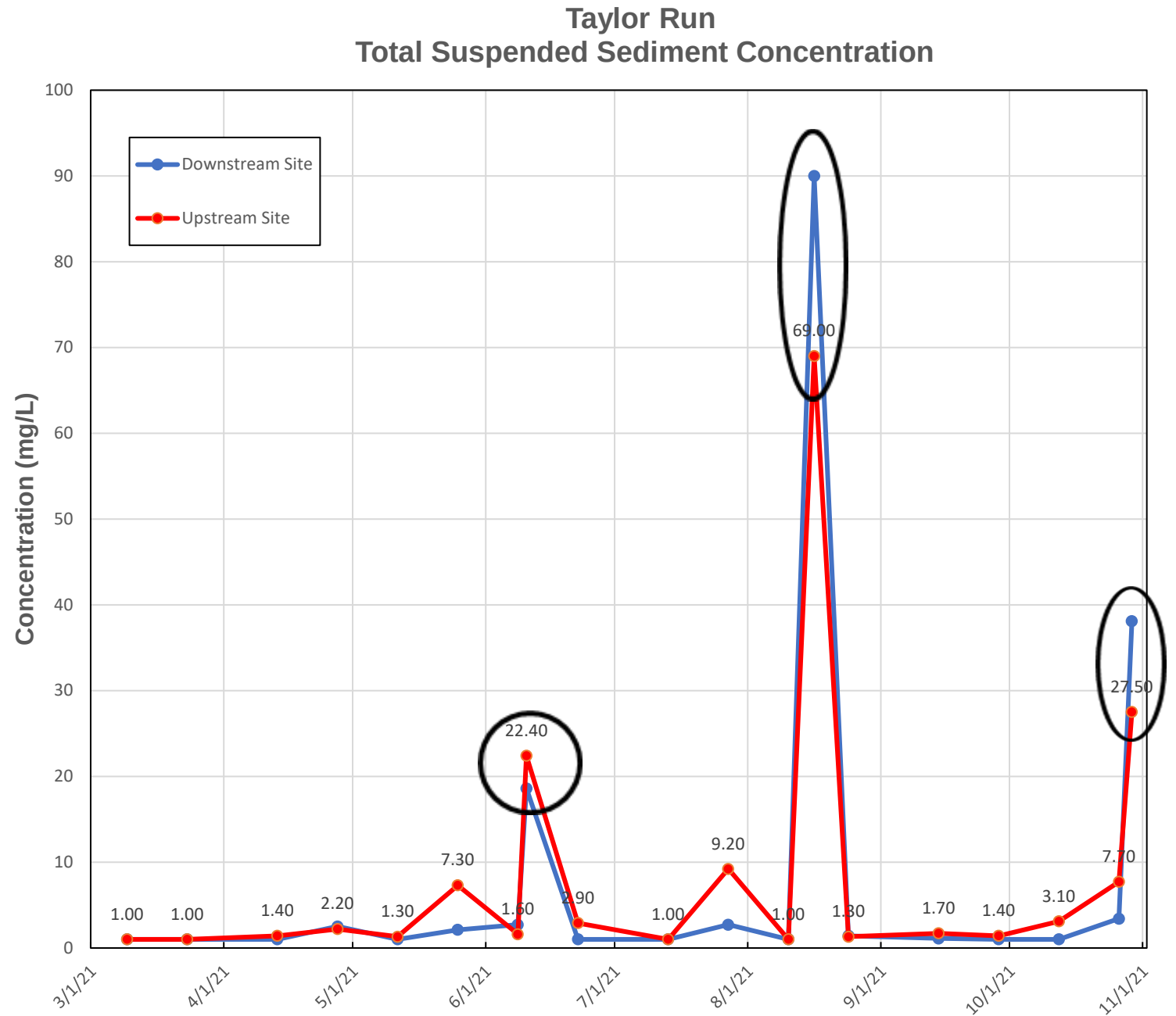
Total Phosphorous (P) Concentration (milligrams per liter)

- There is minimal phosphorous in the water at the NRCA and DEQ downstream sites. Some P measurements are near the analytical detection limit.
- ***Most phosphorous arrives in the stream from the storm sewer system.***
- At low flows, the downstream site averages about 0.04 mg/L less P than the upstream site.
- Some high-water events are circled.



Total Suspended Sediment (TSS) Concentration (milligrams per liter)

- At low flows, TSS concentrations are low and about the same at the upstream and downstream sites.
- During high water events, a large concentration of sediment arrives in the stream from the stormwater sewer system.
- Some high-water events are circled.



What the Chemical Monitoring has Told Us

Phosphorous: Almost all the phosphorous found in the stream water originates upstream in the stormwater sewer system.

Nitrogen: The stormwater sewer system brings a significant amount of nitrogen into the stream. At low flow rates, the downstream site averages about 0.7 mg/L more nitrogen than the upstream site. At high flow rates, nitrogen concentrations are about the same at both sites.

Sediment: A large fraction of the waterborne sediment is delivered to the stream by the stormwater sewer system. The City could also make park improvements to reduce the sediment from entering the stream.

More can and should be done to prevent pollutants from entering the storm sewer system.





We also conducted
macroinvertebrate
surveys



Frank Graziano with Wetland Studies and Solutions, Inc., the City's contractor, has stated in public meetings that: "...anything living in there will have trouble surviving and you will not find Mayflies...."



There is a surprising amount of life in the stream... including many Mayflies (lower left)



Macroinvertebrate Survey Summary

We performed three surveys:

- May 7, Grade 5
- August 5, Grade 3
- October 28, Grade 7

We followed the Virginia Save Our Streams protocol.



Chinquapin Park and Taylor Run do need improvements.

- The sanitary sewer in and along Taylor Run needs to be protected.
- Some stream banks need to be protected with stone rip-rap.
- The park needs better stormwater control, trail improvements, and more.

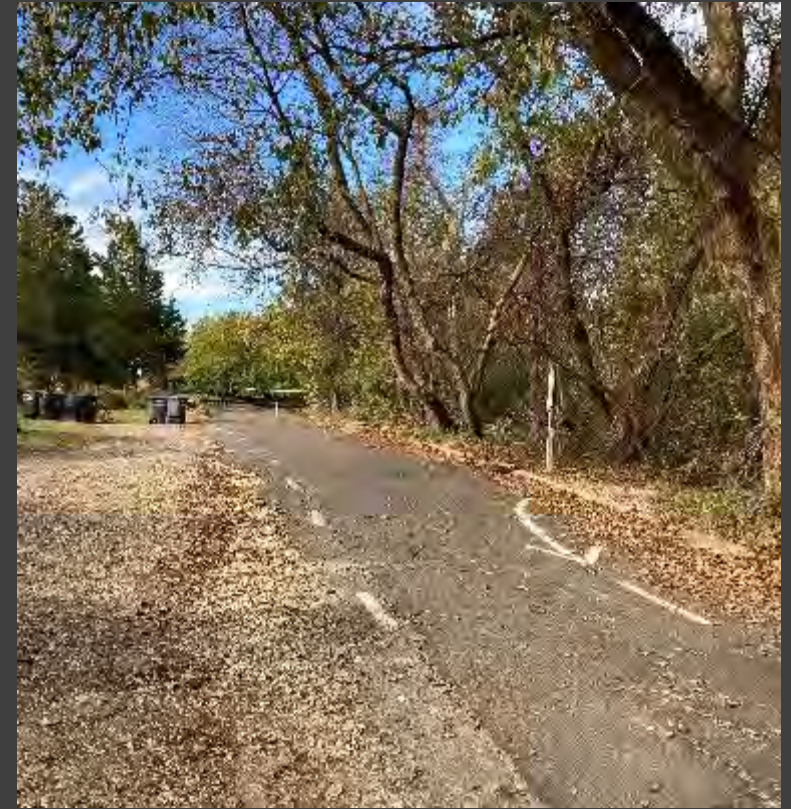
These improvements can be made without a wholesale re-engineering of a natural area.



Foot paths need maintenance to slow, divert and absorb runoff.



Curbs and gutters have not been maintained -- creating erosion.



Paved roads in the park send stormwater into the stream valley.

Chinquapin Park does needs work...



The Good News:

- There is room for Best Management Practices (BMPs) that slow down, filter and capture stormwater upstream of Taylor Run.
- BMPs include: Rain gardens, bioretention ponds, bioswales, and more...

The Importance of Considering Alternatives

	Nitrogen (lbs./yr.)	Phosphorous (lbs./yr.)	Sediment (lbs./yr.)
Nutrient Reductions Needed by 2028	2,374	287	280,879
Lucky Run Stream Restoration	-658	-257	-489,818
Remaining Balance	1,716	30	-208,939
RiverRenew Nutrient Reduction Credits	-1,500	-500	-30,000
Remaining Balance	216	-470	-238,939
Tree Planting Project	-185	-46	NA
Remaining Balance	31	-516	-238,939

The City's sediment goals would be achieved after the Lucky Run project.

The City's phosphorous goals would be achieved after applying the RiverRenew credits.

The December 28, 2021 Memo from Mark Jinks to the Mayor & City Council

Taylor Run	Original Reduction Estimates (lbs/yr)	Reductions Based on Soil Sampling (lbs/yr)
TP	291.2	89.9
TN	632.3	126.4
TSS	554,680.40	369,706.80
Cost: \$/lbs of P	\$15,453	\$50,056
Strawberry Run	Original Reduction Estimates (lbs/yr)	Reductions Based on Soil Sampling (lbs/yr)
TP	342.3	78.5
TN	743.4	81.6
TSS	652,064.00	529,023.50
Cost: \$/lbs of P	\$13,146	\$57,325
Lucky Run	Original Reduction Estimates (lbs/yr)	Reductions Based on Soil Sampling (lbs/yr)
TP	257.2	26.4
TN	558.4	116.1
TSS	489,817.70	351,872.50
Cost: \$/lbs of P	\$17,496	\$170,455

Why spend 4.5 million in taxpayer dollars on a stream when the pollution doesn't originate in the stream?

There may be minimal phosphorous in the other streams....

The estimated project costs for Strawberry Run and Lucky Run are 1.6 and 1.9 million, respectively.

The Importance of Considering Alternatives

The City can easily get the small additional nitrogen credits it needs by:

- Purchasing credits through the nutrient trading program, where the credits will achieve the most cost-effective nutrient reductions.
- Installing stormwater Best Management Practices (BMPs) at locations around the City.
- Installing BMPs at new development and redevelopment projects.

The Bottom Line...

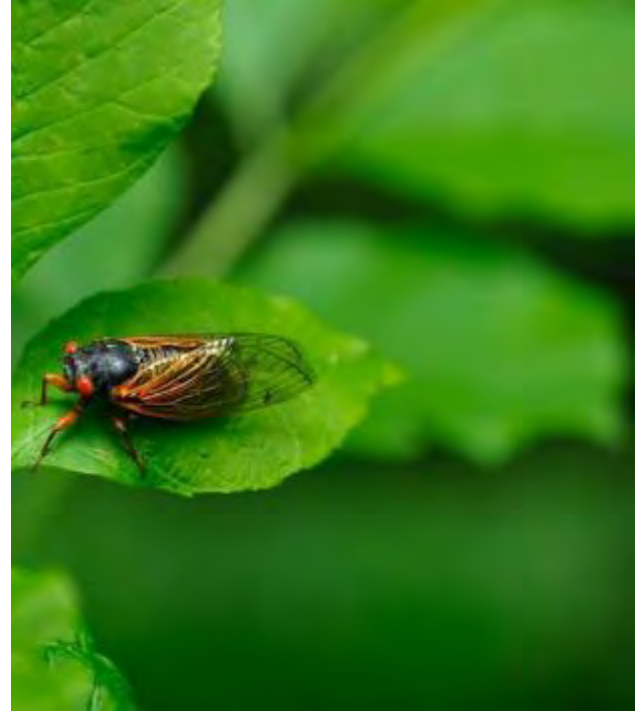
“Stream restoration” will not improve the water quality in Taylor Run.

“Stream restoration” will not reduce pollution in the Chesapeake Bay.

Best Management Practices installed upstream of Taylor Run will improve water quality.

Viable options exist allowing the City to meet its Chesapeake Bay Program requirements. Identify and pursue those options.

The City should save, protect and nurture one of its last remaining wild places.



The stream contains lots of wildlife

- Deer
- Raccoon
- Water Strider
- Cicadas
- Vole
- Crayfish Chimney