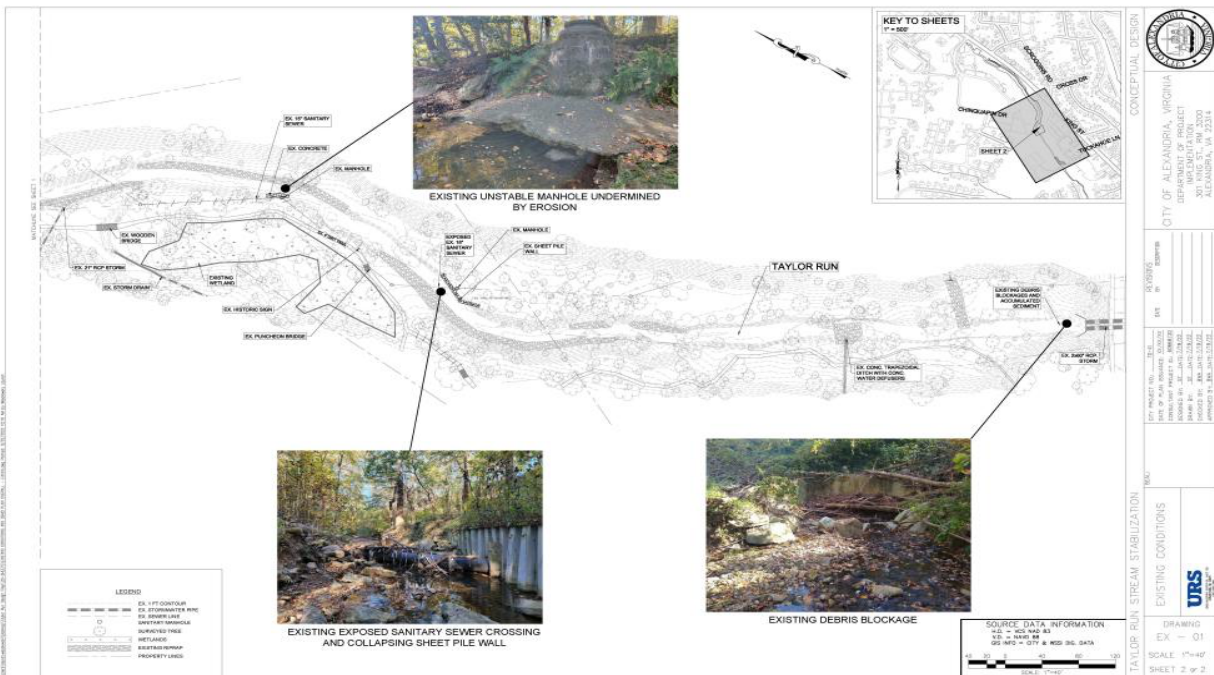
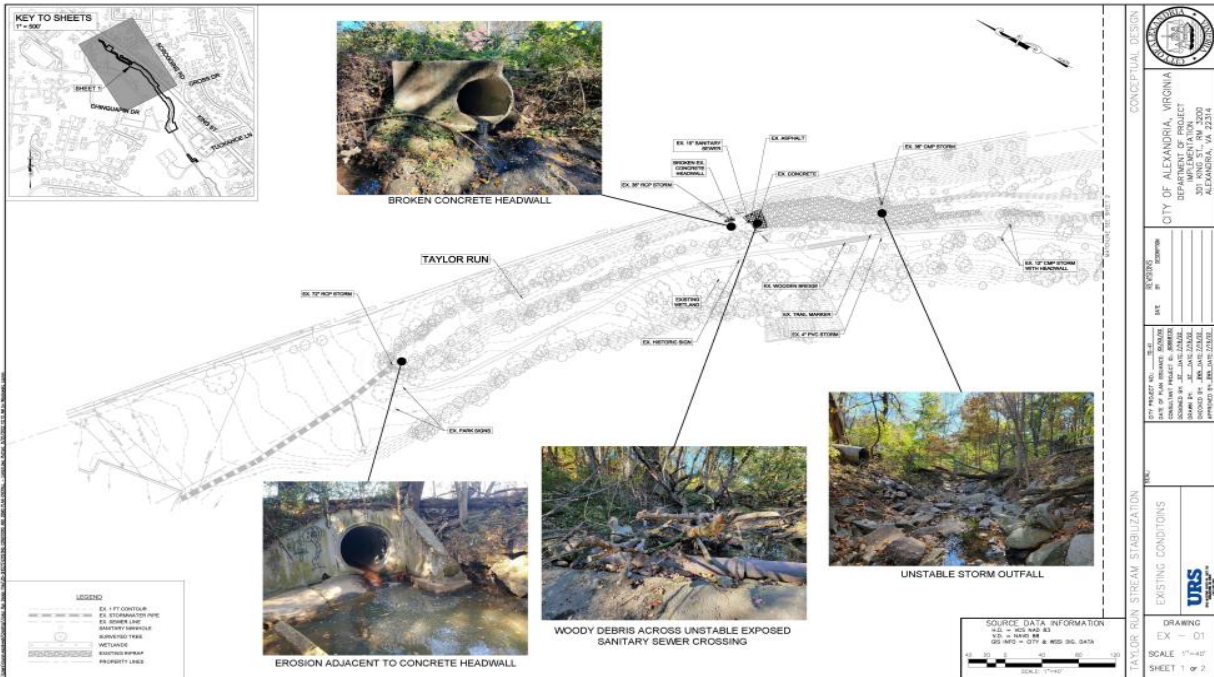


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Appendix E - Taylor Run Worksheet

Figures One and Two: Taylor Run Schematic



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CBG Recommendations to the City

The TR CBG recommends the following practices:

Construction practices:

Construction Practices: Work on the infrastructure protection shall be done within the portions of the stream shown on the engineering proposals presented to the CBG in a manner calculated to have minimal impact on the wetlands and key forest communities adjacent to the stream and on the stream bed and banks. Selected options should be engineered to withstand flow rates. Construction paths should be clearly outside the boundaries of the wetlands. Between the upper sewer line crossover and the mid-stream crossover, trees on the Chinquapin Park side of the footpath should not be cut or harmed by affecting their root structure or otherwise.

Similarly, the large (City champion) red maple on the stream side of footpath should not be cut or otherwise harmed. Other trees that should not be cut or otherwise harmed were identified by the CBG and are as follows:

Tag numbers 646, 647, 648, 619 (and untagged red maple immediately behind), 613 (and untagged red maple immediately to right), 608, 609, 136, 138, 139, 141, 142, and 143.

By description, they are:

- 646 (white oak), 647 (hickory), and 648 (white oak) - three trees on the right hand at the bottom of the path coming down the hill from Chinquapin Circle.
- 619 (black cherry) and an untagged red maple right behind it - streamside on Chinquapin Circle side of TR.
- 613 (big tulip poplar tree with netlike root structure in stream). On King St. side of TR, and untagged red maple to its left.
- 608 and 609 (red maples).
- 138 (tulip poplar), 139 (elm), 141 (tulip poplar), 142 (ash) and 143 (ash). Grove of trees on King St. side of TR.
- 136 (tulip poplar). On King St. side of TR.

Each of these trees was not affected by the lower sewer line crossover and sheet wall project of a decade ago and we believe it should be possible for them to be left unaffected by the proposed line crossing and manhole projects that are now being considered. All of them are near, but not within the proposed lower line work area.

Construction equipment access and work between the two sewer line crossovers should take place, to the extent possible, on the path in the middle of the park coming down the hill from Chinquapin Circle to the mid-stream crossover, and along the stream bed between the crossovers.

Design review:

The City Manager's January 5, 2023, Memorandum to City Council (Appendix H) on the status of the community collaboration on stream improvements states that the design consultant for the TR improvements would "work closely with City staff and the identified stakeholder groups. . .to allow for input at the 30%, 60%, 90% and 100% design stages." The current community members of the CBG should be recognized as a stakeholder group that will participate in the

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design consultation process. The City desires to open up and increase engagement to the larger community as appropriate during the design process.

Upper Culvert protection:

A stone covering of the culvert walls facing the stream should be put in place and concrete rubble removed as appropriate.

Upper Sewer Pipe Protection:

City staff should select from the options presented to the CBG. See “Other Considerations” below.

Lower Sewer Pipe Protection:

City staff should select from the options presented to the CBG. See “Other Considerations” below.

Manhole Cover Protection:

City staff should select from the options presented to the CBG as well as the following option: Consider removal of the “skirt” of concrete from base, install several large stones at base of the cone and the lower stream bank to prevent erosion of the bank.

Figure Three shows a general example:



Post-work Restoration:

The City and community group will work together throughout the design and work process to develop and accomplish a comprehensive ecological restoration plan for TR that the City and the community will be proud of. Adequate funding for the restoration should be part of the funding for the improvement project.

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Lower culvert protection:

No repair work is needed at this time. Culverts should be cleared as needed to allow for free flow of the stream through the culvert.

Upland Stormwater Practices:

See “Recommendations of the Community Group on Stormwater Control Measures” below

Other Considerations:

Seven community members of the CBG believe the City should consider including a large wood component in its package of infrastructure maintenance techniques, if the construction can be done consistently with the construction practices set out above. Two community members of the group believe that Large Wood components should not be placed in TR.

The City should advise the community members of the CBG of its reasons for selecting its proposed maintenance techniques.

Community Perspective on Upland Stormwater Control Measures (did not reach consensus)

Erosion in TR is largely due to stormwater runoff that surges through the stream during heavy rains. The storm surges are caused by runoff in the stream’s Alexandria watershed, which has been increasingly covered by impermeable surfaces.

The “infrastructure fixes” to protect the sanitary sewer line in the stream valley and efforts to reduce erosion in TR, including the recommendations by the Consensus Building Group, are short-term responses to a long-term problem.

Our recommendations provide an opportunity to educate Alexandria’s City Council, City staff, and City residents about the cause of the erosion along TR and that the solution lies not with stream reconstruction, but with the implementation of Best Management Practices (BMPs) upstream to control the stormwater surges during periods of heavy rain.

The community members appreciate the work that the City has done to evaluate the cost of flow reduction options and BMPs upstream. We thank the City for exploring the construction of a stormwater retention pond or underground cistern adjacent to the Chinquapin Recreation Center to hold as much water as possible before the water is released into TR. We understand that a retention structure will not prevent a surge if the City receives a 100-year deluge, but we believe retention pond or cistern will provide a valuable holding area for lesser and more frequent deluges which otherwise will flow unimpeded into TR. We recommend that the City fund and install the Chinquapin Recreation Center cistern or retention pond and other stormwater BMPs in other areas of the TR watershed including:

- Along King Street from South Taylor Street to the cistern or retention pond that will be installed adjacent to the Chinquapin Recreation Center,
- In or along the Bradlee Shopping Center,
- Along Braddock Road from North Early Street to Quaker Lane,
- At Minnie Howard School,
- In Chinquapin Park along the Chinquapin Drive and downhill from the garden plots, and

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- In other locations in the Taylor Run watershed.

The City should also ensure that the water retention cistern at Alexandria City High School be returned to full working order promptly. In addition, the City needs to retrofit existing detention basins, wherever possible, with devices that reduce the erosive power of frequent storm events.⁹

Upstream BMPs offer the best hope of addressing the long-term problem we face. We should move forward in a new direction. We should begin installing upstream BMPs that reduce stormwater surges that channel water into the stream via the stormwater sewer system. Upstream BMPs are critical for protecting downstream infrastructure including the City's sanitary sewer line, King Street, and other City infrastructure further downstream.

Finally, we recommend strengthening the regulations designed to prevent stormwater run-off at the site of all new construction. We also recommend that the City increase the credits property owners receive on their storm water taxes or even real estate taxes to further incentivize property owners to retrofit their properties with BMPs.

City Response on Community Members Upland Stormwater Control Measures

As discussed during the March 8th, 2023 TR CBG meeting, the City appreciates the list of potential locations for additional stormwater control measures. Staff is always supportive of BMPs and implementation of BMPs to reduce stormwater flow into our streams and rivers. We will continue to identify locations of BMPs both for regulatory purposes and where they make sense in the City. The green infrastructure BMPs are excellent for water quality and have other co-benefits but we do not believe it is the best approach for this stream stabilization required for Taylor Run.

We attempted to lay out our reasoning at the February 13th CBG meeting with a presentation and a final report (Appendix D).¹⁰ Based upon our extensive modeling including the 10-year and 100-year storms as well as taking the watershed back to a natural state and removing all impervious area, velocities will continue to erode the stream channel causing disturbance to City infrastructure.

In 2018 the City worked with the state and developer to create a Memo to Industry that 65% of water quality requirements need to be met through green infrastructure.¹¹ ¹²Today, typically developers in Alexandria will attempt to do the most green infrastructure practices on sites they can. We also have a higher standard than the state requirement to treat the first ½" of rainfall runoff.

⁹ Hawley, R. J., James A. Goodrich, Nora L. Korth, Christopher J. Rust, Elizabeth V. Fet, Craig Frye, Katherine R. MacMannis, Matthew S. Wooten, Mark Jacobs, and Rajib Sinha, 2017. Detention Outlet Retrofit Improves the Functionality of Existing Detention Basins by Reducing Erosive Flows in Receiving Channels.

¹⁰ <https://www.alexandriava.gov/sites/default/files/2023-02/Taylor%20Run%20BMPs%20In%20the%20Watershed.pdf>

¹¹ https://www.alexandriava.gov/sites/default/files/2023-02/Taylor%20Run%20Watershed%20Analysis%20TM%20Final_wAppendices.pdf

¹² <https://media.alexandriava.gov/docs-archives/tes/info/memotoindustry01-18=use-of-manufactured-bmps.pdf>

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As far as incentives, in 2022 the City has increased the Stormwater Utility (SWU) credits that property owners can receive along with added-in new flood mitigation practices and mature tree credits. Now property owners can receive up to 50% off their SWU Fee. The SWU credit program does not provide credits to property owners on their Real Estate taxes.

We do appreciate the community members' efforts in putting this important information together. The City will continue to look for BMP opportunities throughout all the City's watersheds where it makes sense, both environmentally and economically. Unfortunately, BMPs will not reduce erosive velocities enough to warrant not using stabilization practices.