

Questions from the Greenbrier Neighborhood Association for the Rivanna Water and Sewer Authority concerning the Meadow Creek Sewer Interceptor Upgrade:

1. Complete review of the Meadow Creek Sewer Interceptor Project including maps, history of the sewer line, and the overall plan.

The best way to get a complete review of the proposed project, including the current condition, current wet weather challenges, future service expectations, and the several alternatives considered, would be to read the Preliminary Engineering Report prepared by our consulting engineers, Greeley and Hansen. This report also includes several maps. The report is available on the web at www.rivanna.org/documents/rpt_meadowcreek.pdf. For the interest of those who do not have time to read a technical report, answers to the questions that follow will provide important summary information about the project.

2. What alternatives were considered, why were they discounted?

First, we would not suggest that any alternatives were “discounted”. Several alternatives were developed and evaluated in an effort to find the alternative that best satisfies the objectives of the project in the context of RWSA’s responsibility to the entire community. The alternatives that were considered are explained in Section 4 of the Preliminary Engineering Report (the same report referenced in the response to Question 1), pages 4-11 through 4-34.

In summary, alternatives could be divided by those that would require pumping the wastewater from those that would maintain gravity flow. Gravity flow makes a powerful “green” argument of being more energy efficient over the long-term life of the system, but gravity flow can only work if the pipe corridor continues to be routed in the valley parallel to Meadow Creek at or near where the existing interceptor is located. Pumped flow would allow more varied alignments for the pipe corridor since sewer can be pumped uphill.

Our consultant looked at the option of a pump station near the 250 by-pass and Hydraulic Road, but determined this idea would be much more costly and it would not reduce the downstream sewer flow enough to avoid increasing the pipe size through Greenbrier Park. Our consultant also looked at a pump station in Greenbrier Park itself. Again, the cost was much higher, and the staff of the City of Charlottesville was very persuasive that a pump station in this area would be out of character with the proposed stream restoration and future conservation easement for the park area.

One gravity flow concept analyzed in multiple variations called for the installation a new sewer parallel to the existing interceptor that would leave the existing sewer in place. Because of the condition of the existing interceptor, a new parallel sewer option would still require extensive rehabilitation of the existing sewer; therefore, the overall costs of the parallel option would again be much higher. Further, maintaining two sewer pipes side-by-side would require a wider easement than the future maintenance of a single pipe.

On the basis of an extensive analysis, the replacement of the existing sewer with a new sewer in predominantly the same location as the existing pipe was determined to be the best alternative. It supports important environmental goals for improved stream water quality and public health, increases reliability, combines pipe rehabilitation with sufficient long-term wet weather capacity, provides for much improved system maintenance, and minimizes the “foot print” on the land when compared to other alternatives.

3. A description of the effects on all parts of Greenbrier Park.

The proposed Meadowcreek Interceptor replacement project will provide significant improvements to the park by reducing the risk of sanitary sewer overflows and the corresponding detrimental risks to public health and the environment. When combined with the programs currently being developed and implemented by the City of Charlottesville and Albemarle County Service Authority to reduce inflow and infiltration in the collector sewers connected to the interceptor, the benefits will be even more pronounced.

Through Greenbrier Park the new interceptor and its manholes are currently proposed in the same location as the existing pipeline, and the new pipeline will be buried like the existing pipeline. The new pipe will also be structurally sound by comparison to the deteriorating existing pipeline, which should result in a much lower frequency of risk of emergency repairs; repairs that are not only costly, but can result in unplanned public access closures within the park itself.

In order to achieve the long-term benefits listed above, some tree removal will be necessary for construction, but vegetation would be allowed to re-grow after construction while preserving a center corridor for pipe maintenance.

4. Why is the sewer being expanded?

To answer this question, it is necessary to provide a brief background on how sewer pipe capacity is determined. This is a fairly complex subject, and while we apologize in advance for the length of this response, we want to give you a complete answer.

The objective of the project is also important to honor in developing these capacity calculations. The objective is to serve the present and future needs of this community, both City and County, while reducing the risk of sanitary sewer overflows as quickly as possible using a strategy that gets the biggest 'bang' for the least cost first.

The key parameters used to determine capacity are "existing average daily flow", "future average daily flow", and "peak wet weather flow". In the context of these parameters for purpose of this explanation, "inflow and infiltration (I&I)" will describe the additional flow that enters the system as a result of wet weather events. Wet weather flow has the most influence in defining the size of the pipe.

Thousands of studies across the country over the past 30 years have reinforced to engineers that it is not economically or technically practical to assume that a complex sewer system will be "watertight" even under ideal maintenance conditions, and this is even more true of older systems and systems that have not been diligently maintained over many past years. For systems that have not been diligently maintained in the past, it is possible to achieve some early reductions through what we call "low hanging fruit" repairs, but once these easier repairs are made, further reductions can be very tedious and costly, and can require extensive rehabilitation of hundreds of miles of sewer pipe over periods on the order of 20 to 40 years. Many miles of sewer collector pipe that flow into the existing Meadowcreek Interceptor fit the description of older pipes that have not been extensively maintained for I&I control in the past.

Given these challenges, it becomes important to the objective of timely and proactive control of sanitary sewer overflows that we implement a strategy that allows for a higher ratio of peak wet weather flow to average daily dry weather flow in the interceptor in the early years of I&I reduction, then reducing this ratio through further I&I reduction to allow for higher long-term dry weather flow needs. The graph below illustrates this strategy for the Meadowcreek Interceptor section through the Greenbrier Park area. The existing 24-inch pipe is adequate today to handle the average daily dry weather flow, but is not capable of handling the greater flows from significant rain events. The graph on the next page (Figure 1) shows that even with Phase I Inflow Reduction ("low-hanging fruit") efforts that are now on-going through cooperation by the City, ACSA, UVA, and RWSA, the wet weather flow will still be significantly beyond the capacity of a 24-inch pipe during the 2-year recurrence storm event even many years into the future (this would even remain true if all future land development were curtailed) based on the currently recommended long-term I&I reduction program (Phases I, II, and III). However, the proposed upgrade of the Meadowcreek Interceptor to 36-inch combined with the Phase I Inflow Reduction is a strategy for success in fully containing the 2-year storm within the sewer pipe by 2012.



Figure 1: Meadow Creek Interceptor Schenks Branch to Albemarle-Berkley

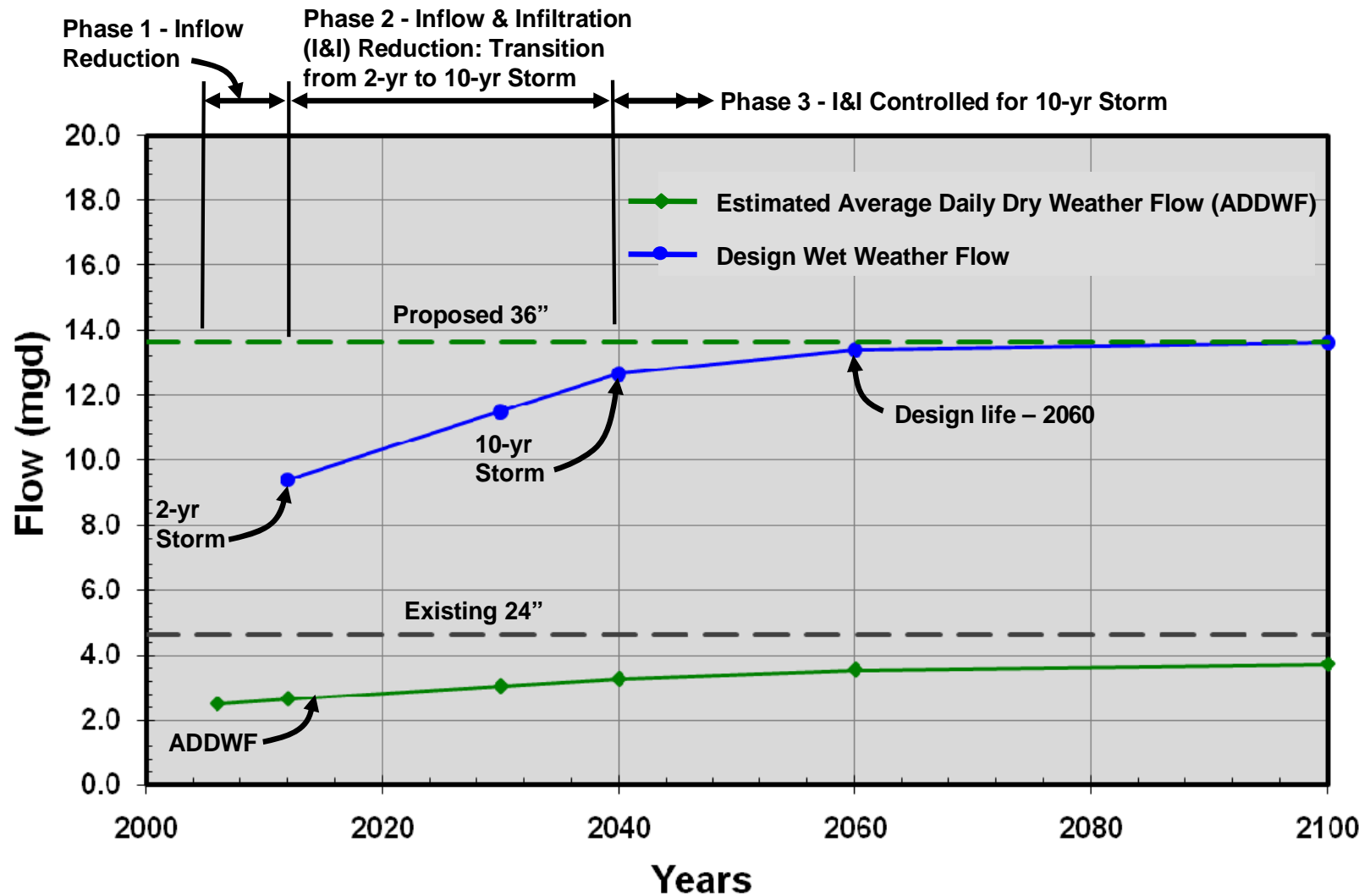


Figure 1 also illustrates the further reduction of I&I under Phase II between 2012 and 2040, during which time enough I&I is removed to allow the 36-inch pipe to fully contain the larger 10-Year recurrence storm. Beyond 2040, diligent maintenance will continue to be necessary to sustain achieved I&I levels. It is worth noting that 36-inch remains the proper diameter for the interceptor through the Greenbrier Park area even in the year 2100, after allowing for all of the long-term growth in land development currently expected by the County and the City (UVA is included with the City).

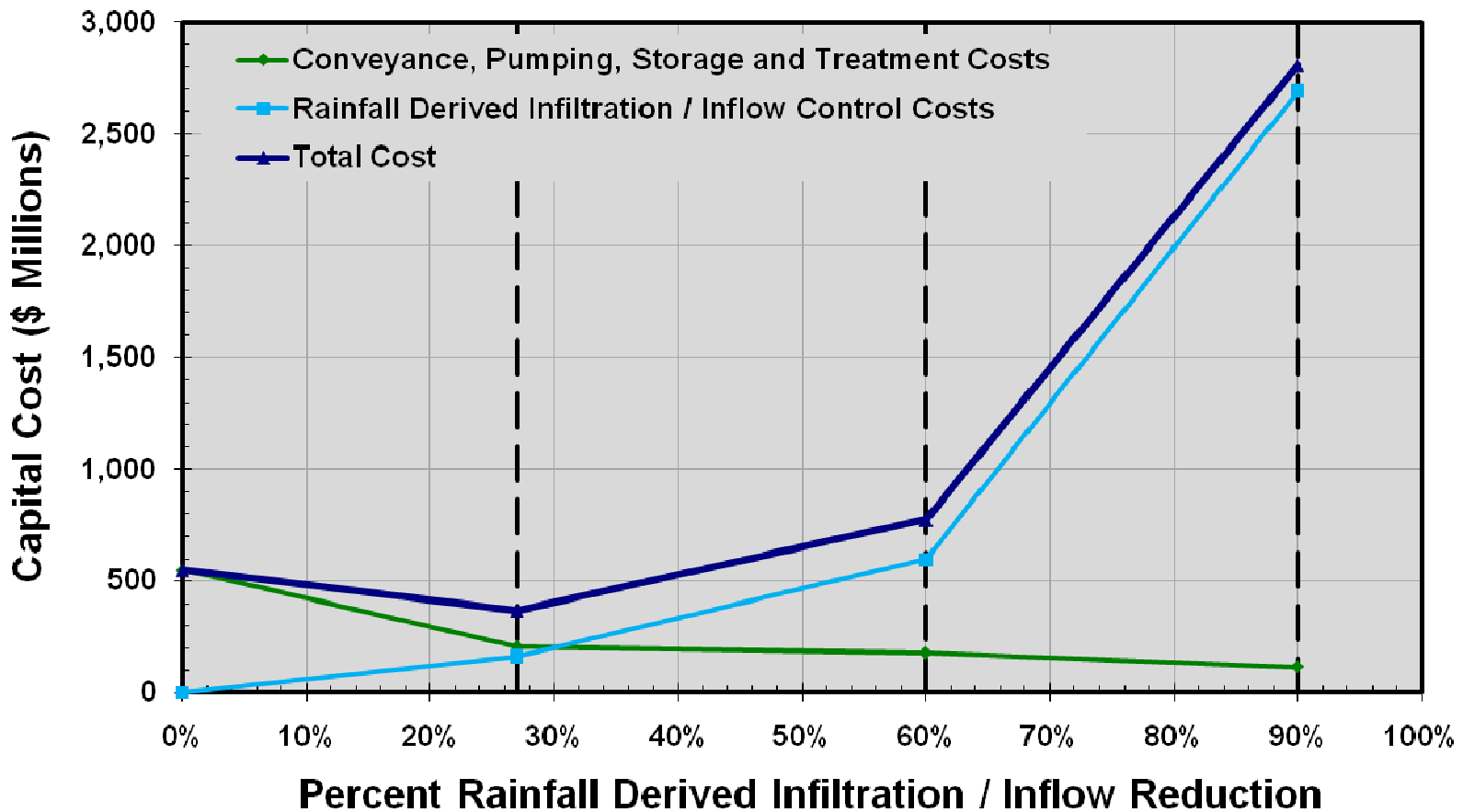
In other words, a strategy of building a new 36-inch diameter interceptor, if properly maintained after installation, can provide both short-term and long-term success. It can last 80 to 100 years or even beyond, in contrast to the existing interceptor that has developed numerous structural failures within 50 years of service.

The next graph (Figure 2 on page 6) illustrates how economics has been factored into the proposed strategy. The graph plots “conveyance” costs, which includes the cost of interceptor piping and pumping, and wastewater storage and treatment of I&I that is not removed. It also includes “control” costs representing collector system improvements that reduce I&I. As one would expect, conveyance costs are less as more I&I is removed, but the cost of I&I removal increases. The third line is the combined total. Notice that total costs reach a low point at the first vertical dashed line. This dashed line is at the same point as is illustrated by the three-phase I&I reduction program on the previous graph, and is the point that minimizes the long-term sewer operating and capital costs.

Someone interested in retaining the 24-inch existing interceptor might ask, “why not increase I&I removal so that the existing interceptor can be structurally rehabilitated but not replaced?” The response is that we learn from Figure 1 that to bring the “design wet weather flow” line to below the capacity of the “Existing 24-inch” pipe, a very significant volume of further I&I must be removed from the system. We learn from Figure 2 that increasing I&I reduction to the right of the first dashed line means overall higher costs that quickly become substantial. Further, due to the limits of practicality for the City and ACSA to administer construction projects that produce I&I reduction, we are pushed to accept sanitary sewer overflows over many more years, if not throughout the time span of the graph, while trying to reduce I&I to within the 24-inch pipe. Finally, current DEQ regulations will require the Meadowcreek Interceptor to carry a minimum peak capacity of two times the average annual dry weather flow, to allow for peak diurnal flows as well as wet weather flows, regardless of how much money is spent on I&I reduction. As Figure 1 shows, a 24-inch pipe will not be able to sustain that regulatory minimum but only a few more years.



Figure 2: RWSA/ACSA/City Consolidated Wastewater Collection System - 50 Year Projection



Through the extensive analysis of data, evaluations, and the experienced judgment of our consultant, we strongly believe this community is best served for the long-term future and is committed to environmental protection by having a 36-inch diameter pipe through the Greenbrier Park area, and the key reason for this pipe size is the proper management of wet weather flow.

5. Currently, what percentage of the use of the sewer line comes from Charlottesville locations; what percentage comes from Albemarle locations?

Sixty (60%) percent of the current wastewater flow is from within the City of Charlottesville and forty (40%) percent is from the County of Albemarle.

6. What are the growth projections for both City and County use of the sewer line?

Within the City of Charlottesville, average daily dry weather flow is expected to increase from 2.76 million gallons per day (mgd) today to 3.42 mgd in 2060. Within Albemarle County, average daily dry weather flow is expected to increase from 1.83 mgd today to 2.73 mgd in 2060.

All projections are based on forecasted growth information provided by the City of Charlottesville and County of Albemarle.

7. Could you please specify how much additional capacity will be required to handle the proposed Albemarle Place development?

On the basis of the latest information RWSA has received from ACSA, the Albemarle Place development is asking for a total average daily dry weather flow of 0.351 mgd.

8. If the capacity challenges from infiltration of existing pipes could be reduced, would an "upgrade" expansion of the pipe be necessary?

Yes. This is thoroughly explained in response to Question 4.

9. Have you any data on what percentage of the water infiltration that finds its way to the Interceptor enters to the Interceptor directly, and what percentage from the decaying pipes (especially city pipes) that feed into the Interceptor. How do you know that the "capacity" issue during times of heavy rainfall is not due to these pipes?

On the basis of pipe sizes and lengths serving the Meadowcreek Interceptor, Greeley and Hansen prepared an estimate as an indicator of the possible sources of I&I by jurisdiction. These estimates were 40% from the ACSA system, 37% from the City system, 12% from the RWSA system, and 11% from the UVA system. Due to the structural condition of the existing Meadowcreek Interceptor, there are likely some sources of I&I directly to the interceptor that would be remedied by the replacement of the pipeline as proposed. RWSA also has included in its current capital budget the rehabilitation of sections of the Schenks Branch Interceptor and Albemarle-Berkley Interceptor, which are expected to further reduce RWSA's direct contribution to I&I into the Meadowcreek system.

10.If the Albemarle Place development is not likely to come "on line" for some time could the Interceptor serve its main purpose for another decade, especially if the city continues to repair the feeder pipes?

No. This is thoroughly explained in response to Question 4.

11.Were all the images that you showed at the public meeting of pipes decaying etc. from the Meadowcreek Interceptor?

Most of the pictures were directly from the Meadowcreek Interceptor, and all of the points made in the presentation are reflective of conditions in the Meadowcreek Interceptor system.

12.How long will it be until the next expansion is necessary?

As explained in the response to Question 4 and illustrated by the graphs, we are anticipating that a new 36-inch diameter interceptor through the Greenbrier Park area, with proper access for inspection, maintenance, and care, could still be in service beyond the year 2100. This will, however, also depend upon the fulfillment of the planned three-phase program for I&I reduction by all parties (City, ACSA, and RWSA). Further, it depends on future land use decisions remaining within the framework of the projections provided to RWSA for this project by the County and City.

13. Many residents of our neighborhood are being asked for very wide easements. How was a 40 foot width for the sewer corridor determined? If the pipe lasted for 50 years with 0 feet, why not have a 10 foot corridor?

It is worth noting here that the original recorded easements from the 1950s within the Greenbrier Heights neighborhood and Greenbrier Park area were specified as 40-feet in width. These easements were negotiated by and conveyed to the City of Charlottesville. The City later conveyed these easements to RWSA after RWSA was created.

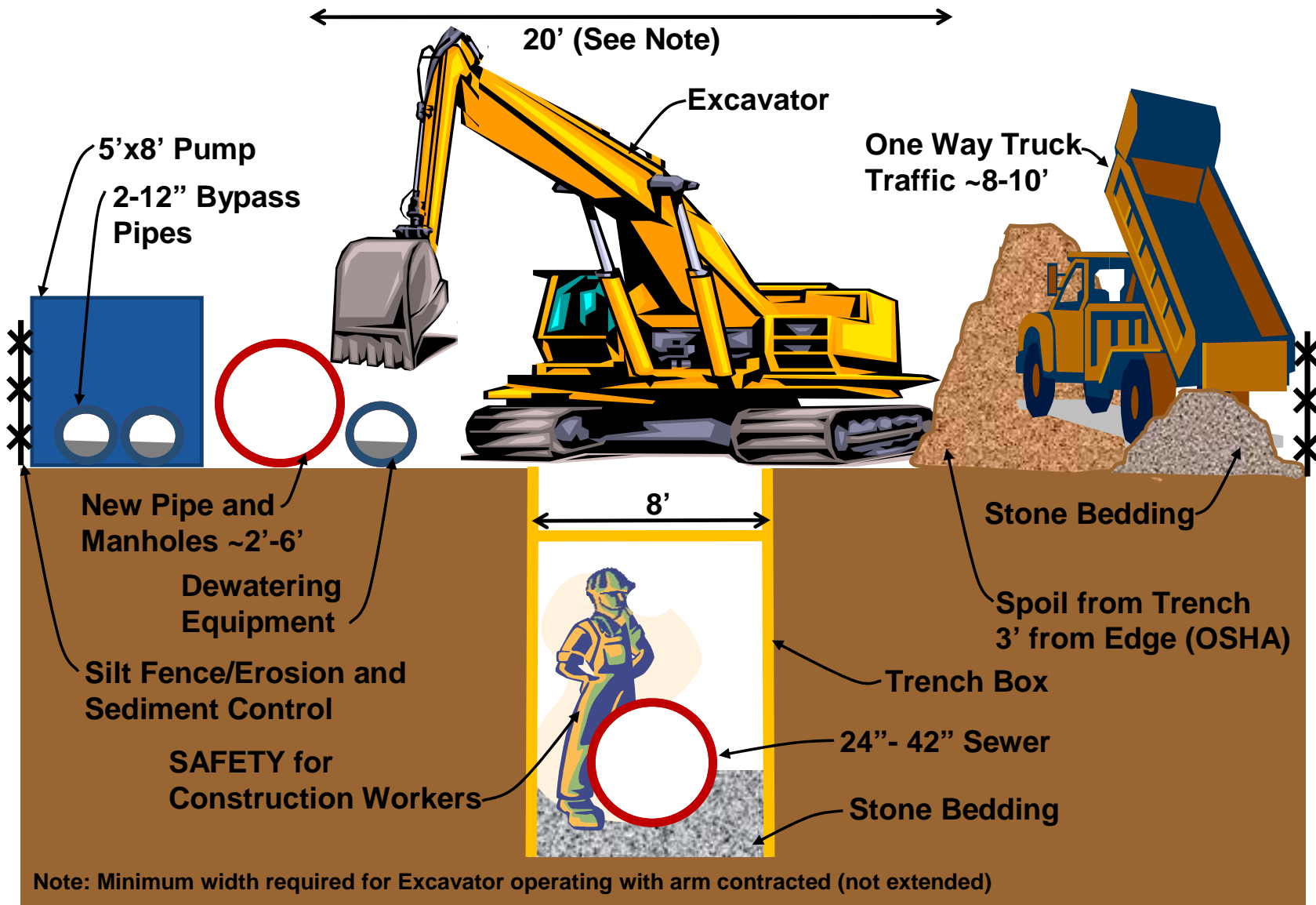
It is true that over many past years these easements were not well maintained. That lack of maintenance is now reflected by the significant structural problems with the existing pipe.

RWSA's consultant recommended the continued use of a permanent 40-foot easement width for the construction and maintenance of the proposed replacement of the interceptor on the basis of their experience with large pipeline construction, in an effort to provide sufficient space for the proper, timely, safe, and economical construction of the new pipeline by an experienced contractor. The figure on the next page illustrates the complexity of the logistics of the construction that was a part of their consideration.

At the September 24 open house, RWSA asked our consultant to perform a review of their decision as a further "quality control" check, and following that meeting RWSA asked the consultant to contact those contractors who are reputable and would likely be interested in bidding the new project, and ask these contractors if they would be willing to complete a survey of their judgment of the effect of easement width on cost. RWSA expects to be publishing the results of the survey by early November, but through recent discussions with our consultant we understand that reducing easement widths below 40-feet are likely to have very significant adverse impacts on both costs and the time for completion of the construction work.

As stated at the September 24 open house, RWSA has committed that following construction, RWSA will need to maintain ready access to the pipeline for inspection, maintenance, and emergency repair, but would permit woody vegetation to re-establish beyond ten feet on each side of the center of the pipe (beyond a 20-foot total width) with the understanding that in the event of a very large emergency repair, some of that vegetation within the easement area may have to be removed again. However, the risk is very low that a structurally sound and properly accessed and maintained pipeline will require emergency repairs, so the re-growth area would likely remain long-term. Further, RWSA is willing to work with homeowners on a "case-by-case" basis with specific issues such as fencing or alternative landscaping

Construction in the Easement



so long as the alternative method provides for appropriate access for inspection, maintenance, and repair.

RWSA has recommended 20-foot maintained area for access and to minimize future root damage to the new pipe. RWSA will have a legal duty to quickly repair any malfunction that causes a sanitary sewer overflow, and in the case where a repair requires the mobilization of an excavator, a 10-foot maintained area would be too narrow for immediate access, resulting in delay for tree-clearing activities that would greatly increase adverse environmental consequences.

14. We have learned that one reason for the proposed widening of the right of way is that it would be more expensive to have the heavy equipment constrained by the existing trees. How much more would it cost to save more of the trees?

As provided in the response to Question 13, RWSA will be publishing the results of a contractor's survey by early November. These results will provide the most reasonable indicator available as to the effect of width on cost.

15. How are you specifically planning to work with the individual homeowners?

Our philosophy is to promote extensive cooperation and partnership, meaning that we will "build bridges" everywhere we can. However, we ask homeowners to understand up front that we also have a legal responsibility to construct, operate, and maintain a regional sewer system, serving both the City and County, and in the case of construction we are constrained by what is achievable in the "marketplace" through the bid process with private sector contractors. To achieve a win-win, we ask for a two-way dialogue.

Individual homeowners have unique interests, accordingly we believe in meeting with each homeowner (which is on-going through our right-of-way agent) and making every attempt to address the individual issues of homeowners consistent with the objectives of the project. Accordingly, there is not a "one-size-fits-all" specific plan. We do need to keep a couple of other principles in mind. First, we need to balance the flexibility to address individual issues against the principle of being reasonably equitable toward all homeowners. Second, we believe that our offerings to homeowners need to be limited to a reasonable understanding of fair market value, as we also have a general fiduciary responsibility to all ratepayers of the City and ACSA.

Within this framework a number of things are possible. While this is not a comprehensive list, we can talk with homeowners about some flexibility in landscaping, fencing, and other similar issues. Provided we have reasonable

access to our pipeline for inspection, operation, maintenance, repair, or replacement, our intent is to work with homeowners.

16. Will you simply show up and go to work, or are you planning to meet with the persons whose homes are affected to show them in advance exactly where they will be digging/cutting, etc., so that impact will be minimized?

We believe homeowners who have actively engaged in a dialogue with our right-of-way agent already know the answer to this question. Our agent has already walked properties with numerous homeowners, showing them on the ground the limits of proposed work. We have also had surveyors install stakes for homeowners and then showing them precise boundaries of the affected area on the ground.

This is the appropriate time to discuss the boundaries of the area of impact, in the context of easement amendment negotiations. When the project is bid, the limits from the easements will be clearly drawn on the construction plans and we intend to strictly enforce those limits. However, we must realize that bidders are submitting a price based on the limits on the construction plans, and because a contract is a “two-way street”, we need to allow the contractor flexibility to work within those limits as s/he deems appropriate within the overall specifications of the project. We ask homeowners not to expect that the limits negotiated in the easement agreement amendments be a starting point for further negotiations with a contractor after construction begins, so that we can both honor and enforce the terms of the contract. With that understanding, however, we want to encourage constructive dialogue between homeowners and the contractor that help the homeowner better understand the contractor’s specific methods and duration. If at any time a homeowner has a concern about what is learned from a contractor, we would welcome a call, and we can take action when it is necessary to hold a contractor to the terms of our contract.

We do want to provide ways for homeowners to stay informed and be able to voice concerns during the construction process, and we are open to your suggestions on ways that work best for you to accomplish this. Some ideas we have heard so far include providing a website with weekly updates as to where the contractor is proposing to work, providing a means where citizens can contact our project inspector and project manager directly, and providing a public meeting at the beginning of construction for citizens to meet the contractor’s personnel. Again, we are open to your ideas on other ways to effectively communicate.

17. What input will individual homeowners have regarding the replacement plantings in or near their yards?

Homeowners can have significant input through the discussions with our right-of-way agent. Our response to Question 15 above provides further information regarding our philosophy to these discussions.

18. Will you provide a contact person to be responsible for responding to complaints and issues that develop as the project proceeds?

Yes, we intend to provide a way that citizens may directly contact our project inspector who will be on-site full-time to observe the activities of the contractor. For questions the inspector is unable to address, we will also provide for contact with RWSA's project manager.

19. How long will there be no access to the bridge across the creek between Jamestown and Greenbrier Drive and when do you expect that to occur? Can you avoid cutting that off during the school year?

The construction of the new Meadowcreek Interceptor will not be in conflict with the bridge, but the pipeline will cross the trail that leads to the bridge. Because the stream restoration project will actually be relocating parts of the stream, we believe the best way to address this question is through coordinating with the City of Charlottesville. We appreciate this question and are working to provide you an answer as the City and The Nature Conservancy complete their design of the stream restoration project.

20. If arrangements are made between property owners and the size and treatment of the vegetation and trees during construction, if it occurs, would you also require that such protections also be in place for municipally owned parklands or other sites, to protect the Rivanna Trails?

Management of municipal parks is the responsibility of the City of Charlottesville, and the Rivanna Trails Foundation manages the Rivanna Trail. RWSA will continue to support coordination and information-sharing with these agencies, but we would also suggest that citizens who are interested in influencing decisions regarding parks or trails contact the agencies who are responsible for those decisions.

21. The Meadow Creek Stream Restoration Project calls for removal of invasive plants and replacement with native species. Will RWSA also be following this protocol?

RWSA has already coordinated with the City and The Nature Conservancy, and in doing so is specifying a seed mix the contractor must use for immediate restoration of groundcover that is consistent with the stream restoration project's intent of using native species. At this point, there is no specific provision in the Meadowcreek Interceptor project for removing invasive plants from the area except where they specifically need to be disturbed by construction activities. We invite continuing discussions with the homeowners in the neighborhoods based on what is the specific interests of each individual, to what extent is each individual's perspective similar or different from other perspectives of others in the neighborhood, and how those individual perspectives fit into the City's plans for Greenbrier Park. At this point RWSA is open minded but needs more specific input. Once this better understanding is achieved, RWSA will look closely at reasonable requests, but ideas that have an impact on the budget for the project would require budget approval from the RWSA Board of Directors.

22. Could the stream restoration project proceed without the interceptor expansion and enlargement?

We believe that our response to Question 8 above clearly addresses the reasons why the interceptor project is necessary. As provided in that response, the most important objective is environmental responsibility, particularly with respect to water quality.

23. Have you received all of the state and federal permits required to proceed with this expansion/ replacement?

RWSA has received permits from the U S Army Corps of Engineers and the Virginia Marine Resources Commission. A permit application has been submitted and is pending for a Certificate to Construct from the Virginia Department of Environmental Quality. RWSA will soon be completing applications to the Virginia Department of Conservation and Recreation for Virginia Stormwater Management Program Permits.

24. Why weren't citizens who would be directly affected by the permit contacted by RWSA or some responsible party? This is particularly important for notice to property owners'.

To the contrary, citizens have been contacted. In the very beginning of this project a letter was sent to all potentially affected property owners describing the purpose of the project and providing advanced notice of surveying and geotechnical explorations scheduled to occur. A contact for information and questions was provided at that time. In addition, monthly updates of the progress of the design have been made available at public meetings and posted to the RWSA website. Further, each property owner in the Greenbrier neighborhood has been contacted individually by our right-of-way agent, and substantial opportunity has been provided through these contacts for a discussion of the project need and scope as well as other issues of individual interest to the property owner. On September 24 RWSA participated in and made a project presentation in an open house at the MLK Performing Arts Center. Since that date we've held further discussions with neighborhood groups, including the current meeting scheduled with the Greenbrier neighborhood. RWSA staff and right-of-way agents continue to be available and invite specific questions about any aspect of the project.

25. Were the Interceptor replacement and the stream restoration presented to the U.S. Army Corp of Engineers as coordinated projects with one permit?

RWSA has coordinated its efforts with the City and the Nature Conservancy throughout the design of the interceptor project. Specifically, RWSA asked the City and The Nature Conservancy to review proposed new pipeline alignments as they were being developed to provide specific comments if any aspect of RWSA's proposed alignment were in conflict with the proposed stream restoration project.

Two projects may be very well coordinated at the local level, yet be issued as separate permits, simply based on the details of the permitting rules of a particular agency. Such is the case here. The U S Army Corp of Engineers requires an application for what they call a "Nationwide Permit 12" application for a pipeline project, but requires a "Nationwide Permit 27" application for a stream and wetland restoration project. Therefore, even though design information has been coordinated locally, two separate permits must be obtained based on the permitting requirements of the Corps of Engineers.

26. How much money will the ACSA pay for the RWSA expansion?

With respect to all capital improvement projects by RWSA, cost allocation agreements are negotiated directly between the Albemarle County Service Authority and the City of Charlottesville. RWSA implements the terms of cost allocation agreements, and provides information about the capital improvement projects in response to questions by either entity, but does not participate in the face-to-face negotiations between the City and ACSA.

27. What portion will be paid by city rate-payers and/or tax payers?

The response to Question 26 above addresses the allocation between the City and ACSA. The City of Charlottesville is responsible for determining how the City will obtain its revenues to pay the City's share of the cost allocation. We understand from a conversation with City staff that tax revenues will not be used for the City's allocation to the Meadowcreek Interceptor project. The City's wastewater fee schedules include several ways to obtain revenue, and we would invite citizens interested in further detail to contact the City directly.

28. Is the city sewer replacement program going to be paid from property taxes or from user fees?

Similar to the response to Question 27, the City is responsible for establishing the basis for its revenue to fund its own infrastructure, and we would invite citizens with an interest in this issue to contact the City directly.

29. Please tell us about how the City, RWSA, TNC, and RTF are working together to make this an environmentally sensitive set of projects that will have minimum impact on our Greenbrier Park, Meadow Creek downstream, and on properties affected by the projects.

RWSA has been in contact with each of these agencies in an offer to work cooperatively with each, and will continue this cooperation. As stated above there has been extensive communication among RWSA, the City, and The Nature Conservancy to coordinate the pipeline project with plans for the stream restoration project.

RWSA also supports the idea of the joint use of a sewer easement with a walking trail as long as permission for the development and maintenance of a trail is also properly granted by the respective property owner. With respect to the trail through the Greenbrier Park area, we are aware that the City is working directly with RTF on improvements and RWSA is available as needed.

RWSA agrees that these projects are environmentally sensitive. A new sewer infrastructure properly sized and structurally sound should provide many years of service with significant benefits to the environment, especially through improved water quality and public health, while maintaining a vital and necessary public service to a large area of our community, including the homes in the greenbrier neighborhood.

30. Will our City officials have any opportunity to review these projects in an open Council meeting and enact changes?

RWSA is directed through a five-member Board of Directors that includes two members who are employees of the City of Charlottesville. Among these members is the City Manager, who directly serves the City Council and consistently shows a very high level of interest in matters of importance to the Councilors. The Council has the opportunity to review RWSA projects at their discretion, and RWSA will be responsive to such requests.