

GENERAL FUND

Ridgewalk Greenway System

For several years, the town has planned to conduct a feasibility study and design/engineer and construct a pedestrian bridge over I-85 to connect the Collins Ridge greenway system to neighborhoods south of I-85. The project is now named Ridgewalk and is expanded to include design, engineering, and construction of the greenway system from the future train station to Cates Creek Park, including a pedestrian bridge over I-85. This project was identified by the Board of Commissioners as a transportation priority in September 2021. The project includes incorporating the greenway connection between the future train station and downtown Hillsborough, which will be designed under the train station design contract. A feasibility study and schematic design of the entire greenway system between downtown Hillsborough and Cates Creek Park is being undertaken in FY23. Engineer cost estimates will be developed as part of the scope of the feasibility project. If the project is found to not be feasible then the project funds for design/engineering and construction would not be needed. The feasibility study is funded with Surface Transportation Block Grant funding available through the Metropolitan Planning Organization. The town was required to provide a 20% local match. It is uncertain if this project will compete well for funding through the Transportation Improvement Plan. The town may have to provide significant funding toward this construction. Local debt financing is being shown to close the funding gap. Additional funding options, including grants, will be pursued once the feasibility of the project is determined.

This project was first introduced when Collins Ridge was seeking Master Plan approval and is shown in the Community Connectivity Plan. Conditions of the approval require the developers to reserve and make land available to the town to accommodate pedestrian and bicycle connectivity and to work with the town to determine the location and specific design details for pedestrian and bicycle connectivity between the parcel south of I-85 and the public rights-of-way, sidewalks, greenways, and trails in Collins Ridge. The pedestrian bridge is critical to providing a safe pedestrian crossing of the interstate. In FY23, a schematic design for the entire greenway system is being developed and studied for feasibility in coordination with designing the pedestrian bridge so that issues/constraints can be identified and accurate cost estimates can be developed for the overall project. It is likely that the greenway project will be implemented in phases. The priority connection is between downtown and the train station. Staff assumes the train station could be complete in FY28 and the greenway connection should be completed in close order. The second phase will connect the train station to the section of greenway being built and dedicated to the town by the developers of Collins Ridge. Ideally, this portion would be done during train station construction but may come later, dependent on when the Collins Ridge greenway is built. The third segment will connect Collins Ridge to Cates Creek Park. This phase may include a pedestrian bridge over Interstate 85. Design, engineering and permitting of this section will likely follow the first two sections and significant coordination with NCDOT and Federal Highway Administration will be necessary. For the purposes of this budget, we are assuming that design and engineering costs are phased over several years. Funding for design will likely be borne by the town. Once the projects are shovel ready, they may be eligible for grants or other shared funding sources.

For the segment between downtown and Collins Ridge, we are assuming \$4.5M in construction costs and \$450k design costs. We are assuming \$8M for construction and \$800k for design/engineering of the segment between Collins Ridge and Cates Creek Park. These estimates are best guesses until the feasibility study and early engineering cost estimates are developed in late FY23.

The feasibility study is the necessary first step in this project and will include a technical memo outlining permitting requirements and site constraints as well as a final narrative report. A construction cost estimate will also be included. If the project is found to be not feasible then the project funds for design/engineering and construction would not be needed.

Skate Park

The Parks and Recreation Board has prioritized the addition of a small-scale skateboarding park ("skate spot") to Cates Creek Park. There has been community interest in a skate park in Hillsborough for more than a decade. There is sufficient space to add a roughly 5,000 SF skate spot at the park, but the site has not yet been studied for feasibility. Most skate parks are built by design/build firms, meaning the same team designs the park as installs it. Design is determined through community engagement and participation in the design process by likely users.

There are very few recreational opportunities for teens and adolescents in Hillsborough and the Parks & Recreation Board believes a skate park will provide needed safe space for this age group. Parks and Recreation Board (PRB) minutes show discussions about interest in a skatepark dating back to the early 1990s. The topic arises every few years but has failed to gain traction for funding. In 2014, a skate park interest form with 109 names and contact information was submitted to the PRB by members of the community. In 2017, the PRB ranked potential sites based on 36 recommended criteria and determined that the privately-owned Exchange Park was the preferred site for skate park. For several years, the PRB studied the site and learned that there are numerous constraints to development of that parcel. The second highest ranked site is Cates Creek Park, which is owned by the town and has sufficient space to add a small skate park. Cates Creek Park is located in a developing part of town and is accessible with bathrooms and parking already provided. The PRB will continue to look for sites in central and northern Hillsborough for additional teen resources and additional skate spots. In FY23 the town contracted 5th Pocket Skateparks, a design build company, to conduct community workshops and develop plans for the skate spot. Designs will be finalized in spring 2023 and 5th Pocket will also provide cost estimates under the design contract.

5th Pocket estimates a 5000-6000 SF concrete skate park to cost roughly \$275,000. We are also including \$25,000 for contingency and inflation of labor and material costs. Once we have detailed cost estimates for construction from 5th Pocket, we can update the budget. The Parks and Recreation Board would like to move forward with implementation in FY25. This budget shows the anticipated total cost of the park born by the town but may be amended if shared funding opportunities become available.

Police Station

Place holder CIP.

Bucket Truck Replacement

Replacement of our 1999 Ford F-350 Versalift bucket truck.

The truck is now 23 years old and inadequate for tree trimming. This truck only has a 30ft reach and that does not allow us to safely trim high limbs without the risk of limbs dropping on the truck. We also use the truck for hanging banners, flags, the wreaths, and we use it to install the Christmas tree. Although the truck has low miles it has had several repairs made within the past 2 years as well.

A new truck that has a 45ft boom and a better bucket to work out of is requested. If replacement is delayed the cost to maintain the 1999 truck will increase and the price of a new truck will also increase each year. Delaying also inhibits us from trimming some of our problem areas due to the 30ft reach of the current truck.

NC 86 Facility Renovation

Renovation of the current NC Hwy 86 N facility is proposed to integrate office and storage space for Public Works with property improvements to allow for material and vehicle storage. Fleet and Safety Divisions remain on site as well. Efficiency improvements and upgrades to the facility may be made during the renovation. The renovation of the building and construction of new vehicle and equipment storage areas should meet the needs of these divisions for the next 10-20 years. \$127k remains in the project fund that could be used for design. In FY22, a portion of those funds were used to update the feasibility study numbers from FY17 in preparation for detailed design in FY23/24. The town is currently contracting with MHAworks to develop construction documents and a bid package. The design work was halted in 2022 but will begin in early 2023. Updated costs estimates will be provided once construction documents are complete. The project is expected to move forward from design to construction in FY24. Early estimates show the project at \$4M construction costs with \$400K in design fees. We've added \$100K to the budget for furniture/fixtures/equipment. These numbers will be updated once design is complete.

The current Public Works building is located next to the Eno River flood plain and is prone to flooding as occurred during Hurricane Fran in 1996. Due to a lack of space, in FY18 the Public Works Director and Public Works Supervisor moved from the existing "shed" into a rented construction trailer. Expansion of the NC Hwy 86 N facility will provide the needed space for all Public Works staff, materials, and equipment. Expansion of fleet bays will be studied during the design phase to determine the feasibility of providing bays for servicing larger trucks. Energy efficiency measures and upgrades will also be made to the building to help meet the Clean Energy Pledge and building code requirements. Site improvements will be made to expand storage areas for vehicles and equipment as well as improve stormwater devices on site.

If the renovation doesn't occur, Public Works operations would continue, but the lack of office space inhibits future personnel expansion and the possibility of flooding increases risk and liability. The annual building lease, while not significant, does not "buy" the town anything meaningful and becomes a drain on resources. Without the expansion of the NC Hwy 86 facility, equipment will deteriorate from exposure. Significant new equipment was purchased in FY22, so protecting these resources is a high priority. If fleet bays are not expanded to accommodate larger trucks, as an alternative, these trucks could also be sent out for service and repairs.

South Churton Street Improvements Cost Share

The town has long requested improvements in the South Churton Street corridor from the Eno River south to the interchange with Interstate 40. This project has been funded in the NCDOT Transportation Improvement Plan. Right of way acquisition is scheduled to begin in FY26 with active construction in FY29, but this is subject to adjustment as the schedules of other state projects becomes clearer. The project is listed as a widening but will also allow for the construction of bicycle and pedestrian improvements in the entire corridor. For FY23 and FY24, the town is funding a significant feasibility study with Surface Transportation Block Grant funds passed through from the Metropolitan Planning Organization. The town

approved a \$50,000 contribution of local funds in the FY23 budget to pair with \$150,000 of block grant funding to complete the feasibility study in FY23 and FY24. This effort will include detailed outreach to ensure the final design is fully acceptable to the community as a whole and matches the town's long-term interests. The capital portion of this project will not come until construction begins in FY29 or later.

Current NCDOT policy would require the town to financially participate in the provision of pedestrian improvements where they do not already exist in the corridor. In FY19, the town's participation was estimated at \$68,000 (20% of actual sidewalk construction cost). Given the passage of time and escalation of prices, staff is estimating the town's participation at \$100,000. Changes in design and NCDOT policy may impact whether and how much the town must participate in this project. The FY29 funds are placeholder funds.

It is possible the town will not have to participate in this project if NCDOT amends their policies to robustly implement their Complete Streets policy. At this time, the town should plan on participating. Missing this opportunity to install pedestrian improvements in this corridor would commit the town to fully funding any future sidewalk improvements in the corridor. Such a project would be in the millions of dollars rather than the modest amount estimated by participating at the time of widening.

Waterstone Drive Resurfacing

Waterstone Drive is deteriorating and needs to be milled down and resurfaced. In FY23 some of the bad areas were patched and now the road needs to be resurfaced with the final layer of asphalt. This will prevent water from getting through the patches and cracks which will cause more road failures such as cracking, potholes, and subgrade failures.

Although Waterstone Drive received a good/fair rating on the 2021 Pavement Condition Survey, that is just simply not the case due to the extreme amount of cracking that is happening almost the entire length of the road. This road is highly traveled, and it is also the largest that we maintain coming in at almost 1 mile per lane and there are 4 lanes minus turn lanes. Waterstone Drive is the only road in town that we apply salt to not only the entire length of the road but several times if needed during winter weather. This is due to the hospital being there and trying to get the lanes as safe as possible for emergency services. The salt application does not help us preserve this road but is necessary.

Staff recommends that all of Waterstone Drive is resurfaced in FY24 so that we can seal up the cracks and existing patches that were just completed to prevent further failure. If we cannot do the entire length at one time due to funding, an option would be to do half in FY24 and half in FY25.

Garbage Truck

Need to replace a 2015 Mack Automated garbage truck. The truck is already 7 years old and will be used as a backup once we receive our new additional automated truck which should arrive by the summer of 2023. Would like to replace it in FY26 (the truck will be nearly 10 years old at that time) so that we can reduce the cost of repairs and have a reliable truck to collect garbage. The expected life of a garbage truck in Hillsborough is 7-8 years.

Passenger Rail/Multi-modal Station

Construct a future train station building and parking to facilitate passenger rail service in Hillsborough. A portion of the building will also include permanent town offices. This portion of the structure will be

funded by the town and is non reimbursable. Site improvements will include an access road from Orange Grove Street and a 100-vehicle parking lot that can be used as a local transit park-and-ride facility as well as stormwater treatment and utilities to the site. Regional transit partners will be asked to modify routes to provide connected service from the Hillsborough Circulator, 420 route and other bus service to the train station. Costs for the future station portion of the building and site improvements will be run through the town's budget and will be reimbursed by NCDOT and the regional transit tax through interlocal agreements. The town will accept long-term maintenance and ownership responsibility for the building. Feasibility of pedestrian connectivity to the station from downtown Hillsborough is included in the design of this project, but the construction of those improvements will be funded outside of this budget. Early estimates for the town offices portion of the building are \$500k. Sustainability initiatives such as solar panels, green roofs, EV charging infrastructure, and geothermal systems may add up to \$1M to the budget. Cost estimates will be available in late FY23, and budget figures can be updated at that time.

The station design will include several sustainability initiatives with the goal of eventually providing a net zero building. The project also advances the town's sustainability goals by providing a transit connection for regular commuting and travel not currently available to town residents. The station and expected surrounding development will also provide enhanced connectivity and walkability to a new area of town and is expected to serve as a bridge to connect downtown to activity areas south of the river. The creation of a station that serves as a transit hub and public gathering place represents a significant investment in the town's infrastructure, both physical and social.

The conceptual station plan was completed in FY15. A change in state regulations removed the need for extensive environmental review of this project. The town's initial contribution to this project was utilized in FY23 during design. The town, NCDOT and Go Triangle have approved an interlocal agreement for the project. This agreement commits the state and tax funding to the project. The project must be completed within 7 years of the funding agreement date, or the town will be expected to reimburse the outside funding to the partners.

WATER & SEWER FUND

Adron F. Thompson Facility Renovation

The renovation and expansion of the Adron F. Thompson building, located at 715 Dimmocks Mill Road, will include a new welding shop, stock room for inventory and a building addition that will include additional office space, storage and restrooms. Improvements to the stock yard are included as well as bringing natural gas power to the building. We would like to take care of what we have and provide a clean and safe working environment for employees.

The Adron F. Thompson building was originally a water treatment plant built in 1936. The Water Distribution and Wastewater Collection divisions began using the building after the new water plant was built in 1972. The building was expanded in 2003 to provide a lunch room and meeting area. Staff has continued to expand and the building no longer meets the needs of the existing staff and the building has many issues as presented in a conceptual report completed by RND associates. A concept study has been completed that shows that the existing facility can be remodeled with a small addition to accommodate current and future employees while maintaining the historic nature of the original building. The study noted that there are components of the building that contain asbestos and lead. Furthermore, the welding shop is not properly ventilated and it is not a good space to perform this work. The building is not ADA

compliant. The roof leaked and had to be replaced in FY19. The windows are inefficient. Some of the work space has no HVAC system so staff must place floor heaters and fans in their office space. Sixteen employees currently occupy three offices and two small bathrooms. Portions of the yard are within the floodplain. Additional safety and building codes will be addressed in this project including electrical, HVAC, sanitary, fire, and security. The conceptual plan is ready to be more formalized through a two-phase design contract. The first phase will drill down on the concepts presented in the plan to formulate a design basis and estimated fee. The second phase will prepare the design, permit and bid the project. The last phase will be construction. The projected cost of construction is increased from \$2.5M to \$3M due to potentially adding additional space for the administration group and current material cost inflation.

Delaying this project will result in many avoidable issues. Sanitary issues with so many employees using the same small bathroom could result in excessive sick days. Working in a building with known lead and asbestos and no HVAC in part is a hazard. Organization will continue to be difficult with multiple employees working out of a small space. Inventory will not be accounted for accurately. Assets stored outside will not be under cover and may need to be replaced sooner than anticipated. The welding shop may not be available for use.

Galvanized Water Main Replacement

Replace galvanized water mains - upsize to 6" and provide fire protection.

A revised lead and copper rule was passed by the Environmental Protection Agency. It requires utilities to identify lead service lines, perform additional sampling of schools and licensed daycares and replace lead pipes downstream of an area that tested high for lead, including galvanized pipes. In general, galvanized pipes are not used in today's water main construction. These pipes are typically very old and corrode. Additionally, they are small diameter mains, which do not provide fire flow for customers. A minimum pipe size for fire hydrants is 6 inches. There is time to identify such services and mains but we should not wait to get started planning. There is approximately 1.45 miles of identified galvanized mains in our GIS system. This could be reduced with physical verification.

If the project is not performed, we could be fined, have main breaks or have high lead sample results which would require replacement of lead service lines and mains anyway.

Governor Burke Road Water Main Replacement

Replace approximately 1,400 feet of 6-inch PVC water main and appurtenances with ductile iron water main on Governor Burke Road between Highway 86 and Highway 57.

The existing 6-inch PVC water main was installed in rock with little bedding, which has been the reason the water main breaks frequently. Since 2015, portions of this main have broken seven times. Each piece cut from the main must be replaced with 2 couplings. Couplings can weaken the pipeline and are more subject to freeze/thaw events, which can leak over time. These couplings are like band aids or splints and they only last for so long. This is a major cost to the town on repairs to the water main, adding water loss, overtime for staff and road repair. The breaks to date have resulted in 33 hours of overtime for each crew member. A typical crew ranges from 2 to 3 town employees plus inmates, if available. There is only one hydrant along this stretch, and another should be added. Half of the water main is within or along the edge of the road, which is added asphalt cost for repairs to the road. During repairs to the water main, the impact is eight homes being out of water service and no fire protection. Residents have complained

due to the frequency of main breaks on this line. Having the water main replaced and moved out of the road will save the town money on after-hour repairs, reduce emergency response to leaks, restore pipe integrity, provide better fire protection, and minimize customer shutdowns. With having the 6-inch water main installed in rock and in the road brings more cost and concerns with having traffic driving across the leak before the road is shut down for repairs to prevent damage to vehicles. To move the main out of the road will require engineering and state permitting. Construction funds are requested for FY24.

If the request is not approved, the town will continue to spend funds on repairs and overtime. Residents will continue to be frustrated with the lack of reliable water service and road closures. The pipe will eventually fail due the number of “band aids” on it and the replacement will be more of an emergency. Funds spent on repairs and overtime can be put towards the design, state permits and materials for this request.

Hasell Water Tank Replacement

Replace Hasell Street Water Tank with a new elevated water tank. The new tank size will be much larger than the 200,000 gallon existing size, ideally increased to 500,000 gallons or more, and may be located near or on the same site as the existing tank. It may be the town purchases the land adjacent to the current tank to construct the new tank or it is possible the preliminary engineering recommends a different site but that is controlled by topographical elevation.

The existing Hasell Street Water Tank was constructed in the mid-1930s and it is the oldest tank in the town system. It holds 200,000 gallons and is constructed of riveted steel. It is the controlling tank in the Central Pressure Zone (CPZ), where water is initially pumped from the Water Treatment Plant and then distributed to CPZ customers, as well as to the North Tank in the North Pressure Zone (NPZ) through a pumping station beside the tank and to the South Pressure Zone (SPZ) from the Mayo pumping station located offsite from the tank. The small size and age of the Hasell Street Water Tank creates a need for a replacement tank. Development within the Central Pressure Zone (CPZ) has created additional water volume needs, and an elevated tank will enable the entire tank volume to be usable. The existing tank is a standpipe, which allows us to effectively use only about 40 percent of the tank volume since we cannot allow the tank to drop more than about 30 feet of its 72 feet height. The proposed tank will be the same height, but the design will allow us to utilize the entire tank volume. This will also help with water quality turnover and may improve operations at the plant where staff is continually filling tanks. This project is to take care of what we have and to provide reliable service to customers.

The small volume of the tank makes it difficult to manage water distribution, with customers near the tank experiencing more pressure fluctuations due to the quickly varying water levels of this tank style. The tank structure is sound, and inspections are performed annually so project is slated for later in the CIP. Costs are based on Waterstone tank, inflation, and the current construction climate in addition to other bid tabs for similar tanks in other locations. This request has been on the CIP list since FY16 or possibly even earlier. Staff applied to the state for a preconstruction study grant to finalize the location and size need of the tank but will not hear about any award until at least Feb. 2023. This project is semi-related but not codependent to the US 70 Business Water Main Improvements (upsizing) project as water from Hasell tank must get to the US 70A tank.

Hydrant & Valve Project

Replace old, obsolete fire hydrants and install valves on the hydrant legs where needed. Install new valves and piping where redundancy study recommends.

We currently have a large number of fire hydrants in the central pressure zone that were installed without a watch valve on the hydrant leg (valve on the pipe connecting the water main and the hydrant assembly). These cannot be turned off without turning off the water. Some of these hydrants date back to the 1930s and need to be replaced since parts are hard to find and they are sometimes difficult or impossible to disassemble. There are approximately 150 hydrants without watch valves. Current bids for hydrant replacements with watch valve range from \$3,000 - \$5,500. The requested funds will cover many of the needed replacements through contract work, with staff likely able to perform the remaining replacements with its own resources. We won't know how many hydrants will be able to be replaced with the requested funds until we receive the bid prices.

Additionally, in FY21, a consultant studied how many customers would be out of water if a pipe broke in various locations. The affected customers were prioritized based on the estimated demand of the outage area. This budget would include adding valves where needed to minimize impacts in four groups over the next several years.

If we do not perform this work, we risk having these hydrants not work properly in the event of a fire, which could be catastrophic. Impacts to customers to repair or replace a hydrant would be recognized. Additionally, we have opportunity to reduce the risk of customers being out of service under certain main break scenarios by providing additional valves and piping in the system.

OWASA Booster Pumping Station

This project is to build a booster pump station to receive water from OWASA in times of need to provide system redundancy to the entire town.

A 16" water line between Orange Water and Sewer Authority (OWASA) was installed by OWASA in the late 1970s and has served as the water system interconnection between OWASA and Hillsborough for several years. The section from Exchange Park Lane south to Davis Road was transferred to Hillsborough in 2013. When the town created its south pressure zone shortly thereafter, it rendered the existing booster station obsolete as that station was for our central pressure zone. If we delay installing the booster pump station, we continue risking system redundancy in this ever-changing climate. The OWASA booster pumping station will allow the town to receive emergency water supply from OWASA per our mutual aid agreement. This project will ensure an alternative source of clean and safe water for our community. Currently we can send to OWASA by gravity but cannot receive without some temporary valving manipulation. Now that Collins Ridge is connected to this main, they would be cut off if we received water the current way by valving so it enters our central pressure zone.

US 70 Business Water Improvements

This is a multi-year, two phase project to: 1) Replace approximately 4,900 linear feet of 12-inch Asbestos-Cement (AC) water main along Highway 70-A between Highway 86/Elizabeth Brady Road to the Highway 70-A Water Tank with a new 16" ductile iron water main and 2) Replace approximately 4,320 linear feet of 12" AC water main along Highway 70-A between Churton Street and Highway 86 with a new 16" ductile iron water main.

The main transmission line along Highway 70-A is only 12 inches in diameter and is made out of asbestos-cement. This pipe is no longer manufactured, is a hazard to repair due to the asbestos, and is more prone to breakage. Ductile iron pipe or plastic pressure pipe is the current standard for water mains. This will provide long-term stability for this section of the water system. The increase in pipe size was recommended through system modeling to handle more flow to the US 70 tank, prevent the US 70 tank from emptying too much when the Forest Ridge Booster Pump Station is operating, and to better meet the town's needs when we need to transfer water from Durham in an emergency situation. Modeling has confirmed to help pressure and that the 12" should definitely be upsized to 16" between Churton and the US 70-A tank and to receive a target flow of 2 MGD from Durham. The report also recommended a new express main from Valley Forge to US 70-A tank, however that is not under consideration at this time.

Some sections of this pipeline are the only way to move water along 70-A east of Elizabeth Brady Road. We have been lucky not to have had many major breaks thus far along this pipeline, due to its age (built in 1973) and the substandard material. If a main break occurs in the area between Hwy 86 and Forest Ridge on US 70-A, water cannot get to the US 70 tank and this is problematic. When we have to make repairs, we typically have to cut the pipe with a saw, which releases asbestos fibers, thus requiring a respirator. If we do not perform this work, we risk this line deteriorating further and draining the US 70 Tank. We can currently receive 1.6 MGD from Durham. The costs have been increased from the FY23 capital project due to material cost escalation.

There may be opportunity to cost share if a new connector between South Churton and Hwy 86 is planned but the timing is unlikely to be in our benefit. This project has been on the CIP list since FY16 or even earlier. It is related to the Hasell Street Tank Replacement project to help move water to other parts of the central zone, but the projects are not codependent.

Water & Sewer Air Release Valve Replacements

Replace old, obsolete water and sewer air release valves (ARVs). Install new air release valves where needed to enhance system performance. An automatic air release valve provides a critical role in pressurized piping systems such as our water system and sewer force mains. Air trapped in a pipeline will naturally rise and collect at high points within the system. This trapped air can cause pump failures, faulty instrumentation readings, corrosion, flow issues, and water hammer and surge issues. Unnecessary air in the pipeline also makes the pumps work harder, resulting in additional energy consumption. The valves can also be called air/vacuum combination valves, and these are used on sewer force mains due to the start stop nature of sewer pumping stations. When the vacuum part is present, these valves also allow outside air to re-enter the sewer force main when pumping stops to prevent negative pressures forming on buried infrastructure (i.e. pipe collapse). Sewer ARVs require routine maintenance to ensure their internal mechanisms do not become clogged with grease, sewage, or other obstructions. Sewer ARVs also require routine inspections to ensure internal components did not fail due to internal corrosion. The water system is continuously pressurized and thus only air release valves are necessary. Water ARVs can wear out over time and seize. They may be of substandard material and beyond useful life (30-40 years).

The town currently owns and operates 14 sanitary sewer force main air release valves. The town does not currently have records of routine maintenance or inspection of these assets, and recent field assessments indicate the sewer ARVs are likely not functioning as designed. The proposed project will replace the existing sewer ARVs with new, corrosion-resistant ARVs to ensure the sewer force mains

operate as intended. Current bids for sewer ARV replacement range from \$5,000-\$10,000/valve, with a number of factors including size, location, and condition of the host pipe impacting overall cost. The requested funds will cover many of the needed replacements through contract work, with staff likely able to perform the remaining replacements with its own resources. Town staff can provide a more detailed estimate of replacement costs and quantities when bids are received.

The town also owns and operates approximately 50 water main ARVs. There are many other end of line "blow offs" that are manually operated to flush water. The town does not currently have maintenance or inspection records of these valves. Limited field work to date indicates the water ARVs are not likely venting fully, and maintenance of the valves is unlikely to resolve the issue. Town staff recommends full inventory and replacement of the water ARVs, current bids for water ARV replacement range from \$1,000-\$3,000 per valve depending on size, location, etc. Staff can provide a more detailed estimate of replacement costs and quantities when bids are received. This work ties to the longstanding goal of "taking care of what we have."

FY24 budget is the first submission of this project. If the town does not proceed with this project, the existing sewer and water ARVs will likely fail. It is suspected they are not providing the best optimization for the system either. Replacing a failed sewer ARV is very difficult and results in sanitary sewer overflows. These spills can be significant given the pressurized nature of the failure. These replacements typically require the sanitary sewer pumping station connected to the sewer ARV to be taken offline while the replacement is completed. A water ARV failure can result in non-revenue water and distribution issues. Town staff recommends replacing the ARVs to avoid this scenario. During this work a full inventory will be verified with additional data collected. For FY24, sewer ARVs will be targeted. For FY25 and FY26, water ARVs will be targeted. The high end of the estimated cost is budgeted.

Water Distribution System Master Plan Improvements

Implement the CIP recommendations of the anticipated Water Distribution Master Plan which should be completed in fall 2023.

The town is currently preparing a Water Distribution System Master Plan using a hydraulic model of the water distribution system. This master plan will provide recommendations on where improvements are needed to provide adequate fire flow to current and future customers as well as improve drinking water quality and redundancy throughout the distribution system. The Master Plan recommendations may include waterline extensions, replacements, and installation of new appurtenances. This CIP program will implement those recommendations when available.

Bellevue Mill Interceptor Upgrade

Replace 2,700 linear feet of 8" sewers with 12" sewers and 15 manholes. The Bellevue Mill interceptor extends from near the end of Forrest Street southward to Eno Street.

This interceptor was in existence since before the town had a wastewater plant and presumably as early as the 1920s per mill maps. Unfortunately, the portions of the sewer traverse through an identified brownfield so extra costs will be incurred to identify and properly dispose of contaminated soils and some extra permitting. Hydraulic modeling has shown this interceptor is undersized for 2040 growth scenarios. Regardless, it is well beyond its useful life and likely contributing to inflow and infiltration in the basin. This interceptor is also paralleled by a 12" sewer and there are some interesting cross configurations

between the two that really need to be studied. It is believed the parallel 12" interceptor was constructed to take flow from the Efland force main which has since been abandoned. There may be little flow in it. If there is some reconfiguring that can be done, the existing 8" could be abandoned with little work. Extra preliminary investigations are necessary before this project can be reduced in scope.

If high density redevelopment and development in the western part of Hillsborough is desired, this main will definitely need to be upgraded. At a minimum, it is recommended to evaluate the interceptor further for a reduction in scope of replacement as there is a parallel sewer that could be utilized if elevations allow.

Cates Creek Outfall Upgrade

The Cates Creek Outfall was built in two phases. It is 3.4 miles long. The upper reach, which discharges into the Elizabeth Brady Pumping Station was built in the mid-1990s. The lower portion which is called Phase 2 was built in the early to mid-2000s when Waterstone began to develop. The entire line is the main pipeline in the Elizabeth Brady sewer basin. The scope and extent of the upsizing is currently unknown but a proposed development, if it proceeds, would exceed the pipe capacity in some areas.

Already the collection system modeling, without a recent proposed development, shows in the next ten years that the outfall needs to be monitored and upsized appropriately. While much newer than the River Pumping Station Eno River Interceptors, there is evidence of a wet weather response in the system. With the recent inquiry about a significant development south of Waterstone Drive and the increased demand proposals of sites we did account for but underestimated the desired plan, this schedule may be escalated and the developers will be expected to cost share in necessary upgrades.

This request relates to the Elizabeth Brady Pumping Station and Force Main project as both will need to be investigated and upsized accordingly either sooner or later depending on development pacing. If the project is not approved, development will be limited, and sanitary sewer overflows may occur as the system ages and starts to leak more. FY24 budget is the first entry of this project with expected funds needed in FY27 and FY28.

Elizabeth Brady Pump Station and Force Main Upgrade

Design, bid and construct a public sanitary sewer pumping station upgrade at the existing Elizabeth Brady Pumping Station site. The station upgrades would enable new development in the Elizabeth Brady basin as well as denser redevelopment of existing sites. The station was rebuilt in 2012 and sized for a quick upgrade of pump capacity which is being implemented now. However, the level of development discharging to this station is much greater than this quick upgrade option which will only hold steady for a few years, if that.

A developer is proposing consolidation of two to three existing sanitary sewer pumping stations (Woods Edge Front, Woods Edge Back, and Nazarene) into a new, larger pumping station. The larger pumping station would be sized for the future buildouts of the basin serving the existing stations to be abandoned as well as the new, proposed development. The new station would likely discharge into the existing Cates Creek interceptor that drains to the Elizabeth Brady station.

The new, larger pumping station's operating point is significant when compared to Elizabeth Brady's operating point, and even a phased approach to the buildout of the basin served by the new pumping

station will require upgrades at Elizabeth Brady. The developer is working with town staff to provide funding, either with an advance of system development fees or a proffer of future funds, to enable this upgrade to serve the proposed development. The developer would also be required to build the new station and force main that enables the future abandonment of Wood Edge Front, Woods Edge Back, and Nazarene Pumping Stations station to town standards with no cost participation by the town. The upgrade to the Elizabeth Brady station will require an upgrade to the existing force main to the wastewater treatment plant to ensure efficient pumping station operations.

This project invests in the future of the town's development goals. If the decision is made to control the amount of development discharging to this station, then this project and the related Cates Creek outfall project scope can be minimized.

Eno River Interceptors

Replace outdated and insufficient infrastructure to meet committed and projected growth. The Eno River Interceptor project extends from the current River Pumping Station location to Churton Street. Existing sizes are 18" and 21," which will be replaced with at least 30" and 36" pipes along with several manholes as recommended by the Collection System Modeling Phase 2 report. The project is about 1 mile in length.

The Eno River Interceptors were constructed with the wastewater plant in the mid-70s, thus they are over 40 years old. They are concrete and subject to corrosion from hydrogen sulfide. The original interceptors were installed very shallow – in places less than 4 feet deep which leaves them susceptible to damage by excavation or directional drilling of communications lines. There is also corrosion from hydrogen sulfide.

No significant rehabilitation or replacement of the collection system in this area has ever occurred. Over the years, the interceptor manholes were raised to prevent sanitary sewer overflows due to wet weather surcharging (water other than wastewater entering the system) and because they were not protected from the floodplain. The original manholes are of brick material and subject to groundwater intrusion. Hydraulic modeling shows that due to the shallowness and some flat sloped pipes, the pipes are exceeding their capacity during wet weather events. The wastewater is getting to within two feet of the manhole tops under certain conditions. The town has committed and projected growth, including upcoming projects like Collins Ridge, Moren and the Research Triangle Logistics Park. These and other similar projects will eventually overwhelm the collection system, resulting in sanitary sewer overflows and violations and possibly a stoppage of growth until upsizing can occur. To support current needs and future growth through 2040, these pipes need to be upsized.

Since these interceptor pipes carry flow from areas that are focused upon for growth, the town board has already agreed to defer large projects contributing wastewater into our River pumping station basin due to wet weather concerns as we investigate our worst leaky basin, Lawndale, and secure funding for this replacement. A consultant has also investigated temporary ways we can relieve the interceptors during wet weather, but the pipe condition needs to be evaluated before implementing the most reasonable solution. These pipes were some of the first to ever be installed in town. This project intertwines with the River Pump Station Project as well.

Staff is currently working on the physical evaluation of the piping, manholes, and pump stations within the collections system with the resources available. This cannot be a comprehensive effort, unfortunately. We also have the collection system model that shows capacity deficiencies based on dry weather flow.

Further development, as planned for the town, will exacerbate any hydraulically limited sewer pipes and cause overflows that result in noncompliance. This request supports the growth we have worked hard to attract and allow. The money budgeted here is what was submitted for funding to the state revolving fund and is reflective of 2040 projected flows. The current construction climate may result in an increase in costs. Much of the pipes need to be upsized to handle the projected 2025 growth. This cannot be deferred much longer. This project is related in theory to the River Pumping Station replacement project if we receive state funding. These two projects were bundled together. The project was added in FY23 and \$750,000 of system development fees were allocated to it for that fiscal year.

Eno River West Interceptor Upgrade

Replace approximately 2,900 linear feet of 18" sewers with 24" sewers along with 12 manholes. This sewer interceptor is also one of the oldest in town, built in the 1970s.

The modeling report recommendations has shown that the sewer experiences wet weather capacity issues (leaks) and is undersized for potential 2040 growth. It will need to be upsized to meet future demands and due to general condition deterioration. The general vicinity of the work is west of Churton Street to Occoneechee St. on the south side of the river.

With the high-density redevelopment and new development expected in the downtown and west Hillsborough area west of Churton Street, it is recommended to upsize this interceptor.

Exchange Club Interceptors

This gravity sewer was installed in the early 1970s. Recent hydraulic modeling of the collection system revealed a capacity deficiency for existing and proposed growth conditions. There is also some configuration of the mains that may contribute to hydraulic flow restrictions (i.e., there are zig zags that do not provide smooth transitions and allow buildup of corrosive gases). We know that the current brick manholes along this segment are in disrepair. The town has paid to rehabilitate the manholes to keep them from crumbling, leaking or allowing infiltration. This segment of sewers goes through Exchange Club Park and is generally between Orange Grove Road and the Riverwalk. Children play around the manholes. The town has budgeted to repair/replace this infrastructure in the past but not to the extent now known.

This gravity sewer is ready for an upgrade. This project would be 2,250 LF of gravity sewer replacement to 15-inch (2040 Committed) or 18-inch diameter (2040 Committed + Potential Flows). The estimated cost is \$1.4 million.

We must upsize this infrastructure with possible realignments to address current and future growth and to improve its condition.

River Pump Station Relocation & Upgrade

The River Pump Station was originally built in 1976 and it is the largest pump station in town. It currently delivers over 75% of the wastewater to the wastewater plant. This pump station was scheduled to be replaced during the 2014 Phase 1 wastewater plant upgrade. However, unforeseen regulatory obstacles resulted in this part of the upgrade being eliminated from the project.

FY23/24 – Design of the River Pump Station replacement/expansion and land acquisition

FY24 – FY26 River Pump Station replacement/expansion

The River Pump Station has approached wet weather capacity limitations and its useful life. The station is over 40 years old. Replacement pumps and parts are difficult to find. The station is requiring a lot of maintenance, it is not efficient, and its structure is deteriorating. The station receives wastewater from over 75% of the town and is considered a critical station. In an emergency, bypassing wastewater, should it fail, will be costly and difficult. The station has unsafe exposed wiring and a steel spiral staircase. Both items are subject to deterioration due to the corrosive environment of wastewater. This pump station has also reached its flow capacity. Two recent rain events resulted in all three pumps running continuously for over ten hours. While the work of the wastewater treatment and collection system group has reduced this multiple run time situation, this was not the intent of the station. One pump is supposed to be redundant. The station being in the floodway of the sensitive Eno River is also problematic. The station is susceptible to not only flooding, but vandalism. An evaluation was performed by an engineering firm and it is determined to move this station out of the floodplain. The proposed location is further north on the site of the River Park Elementary School (but over 500 feet and downhill from the school's building and play area). Costs were reviewed and analyzed as part of applying for grant funding to move this station from the floodway.

This project is to take care of what we have and also provide for future growth while protecting a sensitive waterbody and the current asset by relocation.

Delaying the River Pump Station improvements any longer will further increase risk of failure of one of our largest and critical sewer pump stations. Should it fail, it would likely overflow into the Eno River causing environmental concern and violations. The town would have to scramble to obtain emergency funds and vendors who can come repair it. Engineering analysis resulted in a recommendation to move this station out of the floodway and bring it to current standards.

Train Station Pump Station

Design, bid and construct a public sanitary sewer pumping station on space allocated at the proposed train station site. The new station would be sized to serve the entire basin buildout, including the sewer flow generated by the town's proposed train station development as well as outparcels created by a future subdivision of current town property.

The town is currently in the preliminary design phase of a rail station with office and meeting space on Gold Hill Way near Churton Street. The rail station is proposed on land currently owned by the town and will ultimately occupy a small portion of the town parcel. The remainder of the town parcel not used for the proposed station will be subdivided and made available for future uses.

In lieu of constructing a small grinder station that serves only the proposed town project, the town may instead build a publicly owned, operated and permitted lift station capable of serving the future lots created by the above-referenced subdivision. A town pumping station would enable denser development on the newly created lots and would minimize potential project infrastructure unknowns for future developers. The costs of the proposed lift station could be recovered with system development fees, proffers, or other agreements with the future owners of the subdivided lots.

The proposed project would also evaluate discharge alternatives for the proposed sanitary sewer force main from the newly constructed station. This alternative analysis would include an evaluation of the receiving sewer's capacity for the proposed flow as well as the technical merits of the alignments proposed.

Town staff recommends developing the Train Station site with a public sanitary sewer pumping station to allow the widest variety of uses at the proposed Train Station site and adjacent, future sites.

Tertiary Filter Flocculators

Install new flocculators ahead of tertiary filtration to maximize the Total Phosphorous removal needed to meet the Falls Lake Rules and also reduce chemical usage.

The 2014 Phase 1 Plant Expansion included new tertiary filtration. The structure was designed to have flocculators installed but the installation was removed from the project to reduce costs. However, the pedestals and electrical conduit were installed to provide for future needs.

Currently, a chemical called Polyaluminum Chloride (PAC) is used to precipitate Phosphorous out of a dissolved state to a solid form that can be removed by filtration. Currently, PAC is fed to the clarifier, which provides the mixing necessary to activate the chemical. This method currently works well but will be insufficient in the future to meet the removal efficiency needed to meet the Falls Lake Rules.

Feeding PAC directly to the filters is also much more efficient. Laboratory testing has shown that with the addition of flocculators, we should be able to reduce our chemical feed by 28% or more. This equates to chemical savings of approximately \$4,500 per year.

This project can be delayed until the current Phosphorous removal efficiency is inadequate to meet our permit requirements, which is estimated to be in FY29. However, we will not realize the cost savings of reduced chemical usage or the reduction in our carbon footprint.

The PAC is manufactured and then delivered from out-of-state locations. Flocculation will not only reduce the carbon emissions from the chemical manufacturing process but also the semi-truck deliveries from hundreds of miles away.