

The Stormwater and Environmental Services Division is expecting to see several milestones occur in 2023. The town's National Pollutant Discharge Elimination System (NPDES) Phase II stormwater permit for its Municipal Separate Storm Sewer System (MS4) is up for renewal in 2023. This renewal cycle requires an audit of the town's stormwater program prior to issuance of the new permit. This will be the town's first ever stormwater program audit.

Another milestone is the completion of the Falls Lake watershed and lake models by the Upper Neuse River Basin Association's (UNRBA) consulting team. These models and the information they provide are pivotal to the Falls Lake Rule reexamination process that the UNRBA is completing for its members.

Finally, the Stormwater and Environmental Services Division is completing a stormwater utility fee analysis and will be proposing a rate increase for the town's stormwater utility as part of the FY24 budget. The stormwater utility fees have not been increased since their inception. However, changes to workload have strained existing staff. The following sections provide additional details regarding these three key milestones.

Stormwater Program Audit

The town's first ever audit of its stormwater program is scheduled for 2023. Staff anticipates the audit to occur in February, but staff does not know the exact timeframe. The audit will be conducted by the North Carolina Department of Environmental Quality (NCDEQ). Town staff will be notified at least 30 days prior to the audit. The audit will include a review of all stormwater program documents and program elements developed by the town. These will be compared to the town's current NPDES MS4 permit to determine compliance. The audit will also include an onsite visit to review program elements, field procedures and visit town facilities. A debrief is expected at the end of the onsite portion of the audit, and elected officials may attend.

Stormwater and Environmental Services staff have been preparing for this audit for some time. This included utilizing third party assistance to review the town's stormwater program. As a result, documents and program elements were updated. The following list details of those efforts.

- *Stormwater Infrastructure Assessment Protocol, August 2017* – using consulting services from Summit Engineering and Design, a stormwater infrastructure assessment protocol was developed to assist the Public Works Division.
- *Stormwater Program Analysis-Phase 1, April 2018* – town staff utilized the Brown and Caldwell stormwater group to conduct a review and “gap” analysis of the town's stormwater program. A key finding was the need to improve the town's operation and maintenance of town-owned stormwater infrastructure.
- *Stormwater Program Analysis-Phase 2, August 2019* – as a continuation of the previous Brown and Caldwell work, this phase focused on stormwater asset management, mapping and automation of stormwater infrastructure operations and maintenance.
- *Self-audit, May 2021* – an intern from the UNC Ecostudio program assisted staff in completing a self-audit using a framework provided by NCDEQ. Several tweaks were made to some of education and outreach components of the town's stormwater program.

- *Stormwater Standard Operating Procedure (SOP) Document* – from the results of the Brown and Caldwell work and self-audit, staff created a “living, breathing” stormwater program standard operations procedure (SOP) document. The document provides instruction on all facets of the stormwater program and is updated regularly to reflect current procedures.
- *Stormwater Operation and Maintenance Plan (OMP)* – this plan combined the town’s pollution prevention, town-owned stormwater control measure (SCM) plan and stormwater infrastructure assessment protocols into one workable document. This single plan has improved efficiency and has significantly improved compliance with the town’s existing MS4 permit, especially with operation and maintenance of town owned stormwater infrastructure.

UNRBA/Falls Lake Rules Status

Falls Lake was listed as impaired due to exceedances of the chlorophyll-a standard in 2008. Chlorophyll-a is used to assess algal growth caused by excessive nutrients (nitrogen and phosphorous). In 2011 the state Environmental Management Commission (EMC) passed the Falls Lake Nutrient Management Strategy (Falls Lake Rules) which requires two stages of nutrient reductions. The Stage 1 goal was compliance with the chlorophyll-a standard in the lower part of the lake with a Stage 2 goal of compliance throughout the entire lake. Based on NCDEQ’s fiscal analysis of the rules, Stage 1 was originally estimated to cost the watershed \$500 million while Stage 2 was estimated at \$1 billion or more.

Due to the estimated cost, limited available data used to develop modeling for the rules and the technological uncertainty of being able to meet required reductions, the rules were developed as an adaptive management strategy. The strategy includes a provision to re-examine the rules and make adjustments. After the Falls Lake Rules were adopted in 2011, the Upper Neuse River Basin Association (UNRBA) embarked on a reexamination process on behalf of its members.

The UNRBA initiated a monitoring program in 2014 which was completed in October 2018. This data is being used in the development of new watershed and lake models that will inform the reexamination process. The watershed model has been completed and the lake models are currently being finalized. Some interesting findings from the monitoring and modeling include:

- Based on monitoring the conditions in Falls Lake are better than originally predicted.
- Nutrient load to the lake is not the only driver of algal growth. Chlorophyll-a can reach high concentrations even when nutrient concentrations remain low.
- Other influences such as lake sediment nutrient release, hydrology (e.g. large storm events), and hydraulics (e.g. water release from the dam) in the lake and watershed are often more important in determining conditions in the lake rather than nutrient concentrations or loading.
- Approximately half of the delivered nutrient load to Falls Lake originates from unmanaged lands (forest, wetlands, etc.); while these relatively natural areas contribute a larger proportion of nutrients to the lake, they are also important to the overall health of the watershed, making conservation an important component of a revised nutrient management strategy.
- All major wastewater plants in the watershed have been upgraded and are meeting or exceeding Stage 1 reductions.

- Wastewater treatment plants in the watershed contribute only 7% of the nitrogen load and 3% of the phosphorous load to the lake.
- The town invested \$16 million to upgrade its wastewater treatment plant and the plant is currently exceeding Stage 1 requirements.
- Based on the watershed model, Hillsborough's wastewater treatment plant accounts for only 0.2% of the total nitrogen and 0.6% of the total phosphorous delivered to the lake.
- Based on the watershed model, Hillsborough contributes only 0.7% of the total nitrogen and 0.8% of the total phosphorous load to the lake from non-point sources (i.e. stormwater runoff).

Stage 1 Status - Stormwater

Due to intervention by the state legislature, implementation of the Stage 1 requirements for stormwater were delayed. However, the UNRBA developed the *Interim Alternative Implementation Approach* (IAIA) which is a joint compliance program for Stage 1 stormwater requirements. The IAIA is an innovative approach to improving water quality in the Falls Lake watershed and is based on investment level rather than accounting for pounds of nutrient reduction. A wide array of water quality and watershed improvement projects are allowed by this program. It permits the town to expend funds locally in Hillsborough that not only reduce nutrients, but also provide other ecosystem benefits to the town and its citizens. The EMC officially approved the IAIA program in January 2021. The first year of the program (FY22) was completed on June 30, 2022.

The town's required investment under the IAIA program is at least \$34,221 annually for five years. In the first year the town expended just over \$43,000 (including cash and in-kind expenditures). Even with spending more than the required minimum this first year, the town's five-year investment will be significantly less than the \$1.1 million dollars originally estimated for Hillsborough to comply with the Stage 1 stormwater requirements. IAIA Projects funded in the first year are listed in the following table:

Project Name	Description	Status
Biodock – Kings Highway Park	Install floating island wetlands in the Eno River at Kings Highway Park	Completed
Compost Blankets (Kings Highway and Gold Parks)	Install compost blankets on eroding slopes in Kings Highway Park and Gold Park	Completed
Cornwallis Hills SIA	As part of a stormwater impact analysis, evaluate and provide preliminary design of retrofitting an existing dry basin into a stormwater wetland to improve stormwater pollution reduction	Analysis completed
Riverwalk Riparian Buffer	Remove invasive species and plant natives along Riverwalk; this is a volunteer effort by the Tree Board	Ongoing
Odie Street Green Infrastructure	Design and construct stormwater green infrastructure treating impervious surface within the Odie Street Habitat for Humanity Neighborhood, including native plantings and installation of rain barrels	Under construction

Reexamination Status

As mentioned previously, the state legislature intervened with the schedule to implement the Falls Lake Rules. This included directing the UNC Collaboratory to conduct various studies and issue a final report on Falls Lake by the end of calendar year 2024. This would then start the rule readoption process. The UNRBA has been working closely with the UNC Collaboratory, not only sharing data and information but coordinating efforts so that studies are not redundant. This makes Falls Lake the most studied reservoir in North Carolina, maybe the nation. There is a significant amount of data to inform the models and thus the reexamination efforts.

With the modeling efforts nearing completion means that the UNRBA's reexamination process is nearing a critical point. In November of 2022, the UNRBA's Path Forward Committee (technical steering committee), began discussing concepts and principals of a revised nutrient management strategy for Falls Lake. These preliminary discussions will be shared with the larger set of stakeholders during calendar year 2023 and a final set of recommendations are expected by the end of 2023.

While these recommendations are still very preliminary, it looks like the concepts will include a program similar to the current IAIA, no additional reductions for point sources, and altering the existing development rule so that all land uses can work towards compliance within the watershed collectively. The recommendations are also expected to include proposing a site specific chlorophyll-a standard for Falls Lake. Given the previously estimated \$1 billion price tag for Stage 2, it is important that Hillsborough stay engaged in the UNRBA's reexamination process and help guide it to a reasonable approach to maintaining water quality.

Proposed Stormwater Utility Fee Increase

The town adopted a stormwater management utility and associated fee in June 2016 with implementation beginning on July 1, 2016 (FY17). This fee funds the towns stormwater program which allows the town to provide certain stormwater and environmental services to its citizens.

Since its inception, the stormwater management utility rates have not been increased. However, each year since its inception total fees billed have increased due to robust residential development. No stormwater fee is collected on undeveloped land but as a parcel develops (or redevelops) a fee is assessed. The table below shows the amount billed and increase over the previous fiscal year.

<i>Year</i>	<i>Stormwater Fees Billed</i>	<i>Increase Over Previous Year</i>
FY17 (2016)	\$639,600	n/a
FY18 (2017)	\$641,400	\$1,800
FY19 (2018)	\$656,250	\$14,850
FY20 (2019)	\$692,925	\$36,675
FY21 (2020)	\$712,125	\$19,200
FY22 (2021)	\$722,700	\$10,575

The collection rate (i.e. the amount of revenue received) currently averages 98% annually which is slightly better than originally predicted (97%). While residential development continues at a fairly strong pace, it has slowed down. Despite expecting to add around 100 new residential properties over each of the next couple of years, that only equates to a \$7,500 increase annually. Unfortunately, costs continue to rise as

does the required workload for existing Stormwater and Environmental Services staff. Stormwater fees would need to increase simply to keep pace with inflation. Staff has found innovative ways to address workload, like use of interns. The stormwater fund is also funding 10% of the town's engineering positions in the Utilities Department who are now providing new development support to the Stormwater and Environmental Services Division.

However, in order to provide an appropriate level of service and maintain compliance with the town's MS4 stormwater permit, staff is proposing to raise stormwater fees in FY24 to also fund an entry level stormwater technician position. Staff is currently completing a stormwater utility rate analysis to determine proposed fee increases to fund this new position. Some of the reasons why a new position is being proposed include the following:

- The gap analysis and self-audit mentioned above, indicated needs in order to be fully compliant with the town's MS4 stormwater permit. Specifically, the Public Works Division needs support with implementing their portion of the town's stormwater OMP.
- New development has increased the number of stormwater control measures (SCMs), and stormwater infrastructure that needs inspected and maintained.
 - Added 43 SCMs since the inception of the stormwater utility bringing the current total to 132; Stormwater and Environmental Services staff must audit (inspect) approximately 1/3 of those annually.
 - Expect to add 8 more completed SCMs this year as projects are closed out; will add more as Collins Ridge continues to develop.
 - Even though the town requires the owner to submit SCM inspection reports annually, the reports must be reviewed by town staff and the number of reports has obviously increased significantly.
 - Added over 1,200 new residential properties since 2017; large residential developments in Waterstone and Forest Ridge are essentially built out; not only does this add to the SCM inventory, it includes inspection and maintenance of stormwater infrastructure within newly accepted town roads.
 - As new residential development is completed there is a huge need to educate homeowner associations (HOAs) about maintaining SCMs. This education and outreach component of the town's stormwater program has increased significantly.
- Public Assistance calls and email have increased substantially over the last 5 years. In 2017 Stormwater and Environmental Services Division reported 7 public assistance requests in the annual report; since then the average is almost 20 annually with a high of 54 in 2021.
- Falls Lake Joint Compliance Requirements
 - Compliance with Stage 1 of the Falls Lake Rules for stormwater from existing development began in July 1, 2021.

- The town opted to participate in the Upper Neuse Basin Association's (UNRBA) *Interim Alternative Implementation Approach* (IAIA) which is a state approved joint compliance program to meet Stage 1 of the existing development rule for stormwater.
- The IAIA is an investment based approach that requires the town to complete water quality/watershed improvement projects. It has required both Stormwater and Environmental Services staff positions to manage and oversee projects. Project management can be time consuming. The town's Stormwater Program Coordinator has especially increased her time in managing watershed/water quality improvement projects. She has also increased her involvement in the town's required education and outreach program since the Stormwater and Environmental Services Manager does not have as much time to devote to it.
- Due to the importance of the Falls Lake Rules reexamination process and Stage 2 requirements, participation in the UNRBA is critical in ensuring Hillsborough has a say in the process. To that end, the Stormwater and Environmental Services Manager has increased the number of technical workgroups he serves on with the UNRBA and was appointed co-chair of the UNRBA's "Path Forward" committee which is the technical steering committee for the rule reexamination process. This is in addition to serving on the UNRBA's board of directors.

As part of the budget process, staff will include its recommended rate structure and more information on the proposed new position. The details of that recommendation will be provided through the FY24 budget process. Staff will be on hand at the January 28th budget retreat to answer questions. Provided that the town board is in favor of moving forward with the increase, staff recommends a public information meeting later this spring to get public feedback. Stormwater and Environmental Services staff will enlist the town's Public Information Office to assist with this outreach.

Staff is planning to keep the residential fee as a flat rate but will be recommending going from 5 tiers to 6 tiers for non-residential properties. The 6th tier will address properties that have significantly more impervious surface area. Changing the number of tiers or the equivalent residential unit (ERU) used to calculate non-residential rates will require a change to the town's Stormwater Management Utility Ordinance. Proposed fee increases, changes to the tier structure, etc. require a public hearing. The FY24 budget public hearing will serve as the required public hearing for any proposed changes.

In subsequent years, stormwater fees may need to be raised again. Two other needs include the potential expansion of the IAIA program if adopted in the Falls Lake Rule reexamination process, and additional equipment necessary for the Public Works Division to maintain town owned stormwater infrastructure and meet permit requirements. Staff looks forward to discussing this in more detail.

