

STORMWATER UTILITY MONTHLY REPORT

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PART 1: WATER QUANTITY DRIVEN WORK

1. Broad Street Culvert Replacement



Project Description: This project involved replacing an old and undersized culvert on the 400 block of Broad Street.

Project Background: The inadequate culvert was responsible for previous overtopping of the road. This site has been included in previous Town flood studies by Sungate Design.

Status: Complete. Construction was completed in December. The only possible remaining work is replanting if there is plant mortality from the initial planting.

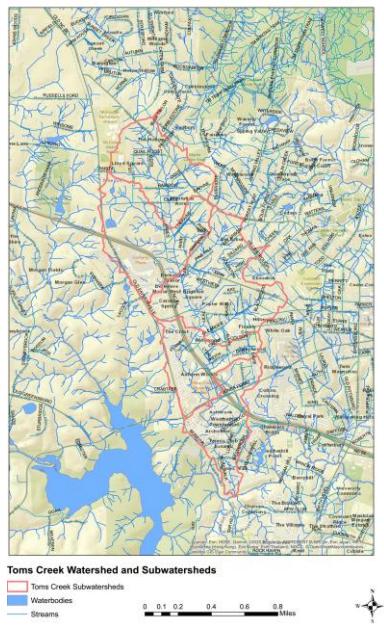
Fiscal and Staffing Considerations: The engineering cost \$50k and construction cost \$136k. No additional staff impacts are anticipated.

Additional Information:

<https://carrboro.legistar.com/LegislationDetail.aspx?ID=2288740&GUID=0B2EA271-314B-4ED8-8A38-0E199F87A49F%3E&FullText=1>

<https://carrboro.legistar.com/LegislationDetail.aspx?ID=2288740&GUID=0B2EA271-314B-4ED8-8A38-0E199F87A49F%3E>

2. RainReady Study Follow Up



Project Description: In 2019, the Council directed staff to move forward with a pilot study due to the persistent and ongoing need to address flooding issues, with the upper Toms Creek watershed serving as the geographic focus.

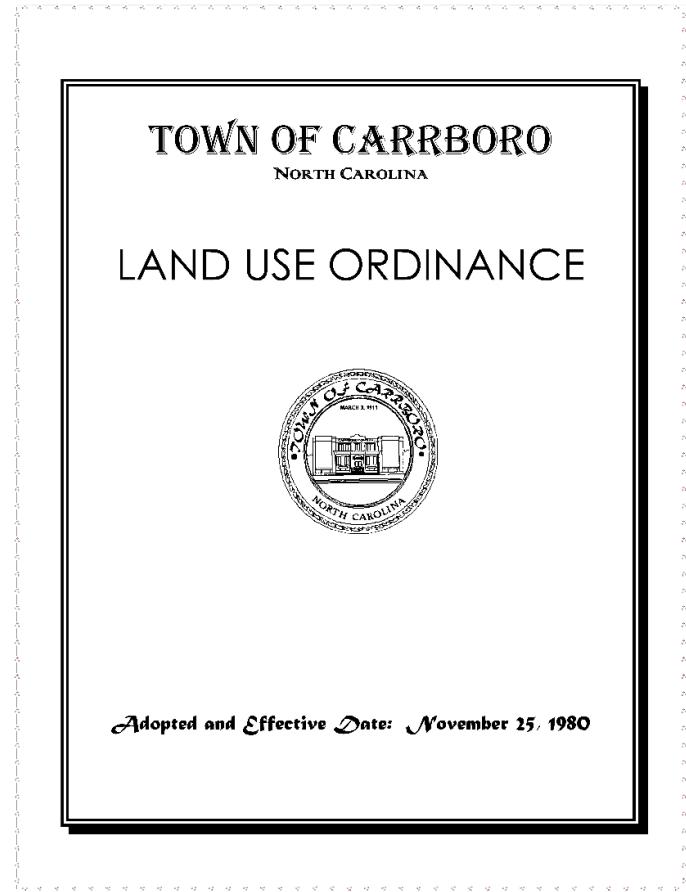
Project Background: For the Toms Creek watershed, flooding and drainage is a recurring and important theme. The upper watershed has received the most attention in recent years due to the degree of flooding and drainage issues experienced by residential property owners both in the regulated floodplain and other areas. A watershed based approach is needed to comprehensively address the issues that exist. An emerging concern is resiliency in consideration of the growing number of recent intense storms and the potential for a shift to more flooding in the future due to climate change.

Status: Planning. The Town contracted with the Center for Neighborhood Technology (CNT), resulting in a “RainReady” report in May, 2020. Sungate Design has also completed an engineering assessment of a catchment between Hillsborough Rd. and West Main Street with known drainage issues.

Fiscal and Staffing Considerations: Sungate’s work cost \$16.5k and the CNT’s work cost \$25k. There could be further implementation costs as a result of these projects. Any fiscal impact resulting from financial assistance to be provided as part of a new program will be determined through administrative and policy level review. There has been and will continue to be a staff impact associated with technical assistance. This impact will increase if staff will be administering a new program.

Additional Information: Additional information is available from multiple Council agenda items from 2013-2019. A [project website](#) has been created with relevant historical and project related information.

3. Land Use Ordinance Stormwater Provisions Review



Project Description: LUO stormwater provisions are under review.

Project Background: At the April 16, 2019 meeting, the Council referred further review of the stormwater provisions in the LUO to staff and the Stormwater Advisory Commission in consideration of the flooding and drainage impacts being experienced and elevated risk for increasing impacts due to climate change.

Status: Planning. This has been referred to Stormwater and Planning staff, Sungate Design, and the Stormwater Advisory Commission. Staff and Sungate are currently researching and considering the scope of potential changes, and anticipate working with the SWAC later in 2021 to allow for a nearer term focus on regulatory compliance, capital project planning, and SCM maintenance and inspection.

Fiscal and Staffing Considerations: There is no fiscal impact with reviewing and amending the LUO. There will be a staff impact with performing the review.

Additional Information:

<https://carrboro.legistar.com/LegislationDetail.aspx?ID=3919560&GUID=59CDD594-2973-4C2B-813C-738A1CF5707B&Options=&Search>

<http://www.townofcarrboro.org/DocumentCenter/View/698/Article-XVI-Floodways-Floodplains-Drainage-and-Erosion-PDF>

4. FEMA Hazard Mitigation Grant Program Letters of Interest (Acquisition and Elevation)



Project Description: The information presented below is for an acquisition project for 116 Carol Street, and a new elevation project for 100 James Street

Project Background: Following on Hurricane Florence and Tropical Storm Michael, FEMA announced new rounds of HMGP funding. In addition to the Lorraine Street properties discussed above, two additional homeowners at 116 Carol Street and 100 James Street (properties included in previous HMGP applications for acquisitions that did not move forward) have responded, and were included in Letters of Interest submitted by the Town to the NC Department of Public Safety (NCDPS). Staff submitted one Letter of Interest for an acquisition project for 116 Carol Street and a second Letter of Interest for elevation of the home at 100 James Street in early 2019. Staff received notification in the summer of 2019 that the NCDPS would accept applications.

Status: Applications in Review. Application materials for the 116 Carol acquisition were submitted to the State in October, 2019 under Hurricane Florence. Application materials for the 100 James Street elevation were submitted to the State in November, 2019 under Tropical Storm Michael. Staff regularly check on the status, which has remained “pending obligation” since the applications were submitted. If approved, staff will follow up with pursuit of entering into (a) grant agreement(s) for one or both projects.

Fiscal and Staffing Considerations: If the Town is able to successfully enter into grant agreements (one for acquisition and one for elevation), costs for work covered by the grants will first be borne by the Town and then reimbursed to the Town with a combination of both Federal and State funds covering eligible costs, provided that all grant requirements are met. Elevation costs can be reimbursed at up to \$175k per home and acquisition costs at up to \$276k per home. There would be a significant staff impact to administer the grant funds.

Additional Information:

https://www.fema.gov/media-library-data/1493317448449-b83f27544e36b7bf67913f964a56b15a/HMA_Homeowners_Guide_040717_508.pdf

5. FEMA Public Assistance: Damage Recovery from Hurricane Florence



Overview

Public Assistance (PA) is FEMA's largest grant program providing funds to assist communities responding to and recovering from major disasters or emergencies declared by the President. The program provides emergency assistance to save lives and protect property, and assists with permanently restoring community infrastructure affected by a federally declared incident.

Eligible Applicants

Eligible applicants include states, federally recognized tribal governments (including Alaska Native villages and organizations so long as they are not privately owned), U.S. territories, local governments, and certain private non-profit (PNP) organizations.

PNPs must have "an effective ruling letter from the U.S. Internal Revenue Service, granting tax exemption under sections 501(c), (d), or (e) of the Internal Revenue Code of 1954, or satisfactory evidence from the State that the nonrevenue producing organization or entity is a nonprofit one organized or doing business under State law."¹ Additionally, for a PNP operated facility to be eligible, the PNP must demonstrate the facility provides a critical service or provides a non-critical, but essential government service and is open to the general public. A facility that provides a critical service is defined as one used for an educational, utility, emergency, or medical purpose.²

Project Categories

FEMA processes PA grant funding according to the type of work the applicant undertakes. Eligible work must be required as a result of the declared incident, be located in the designated area, be the legal responsibility of the applicant, and be undertaken at a reasonable cost.

Eligible work is classified into the following categories:

Emergency Work

Category A: Debris removal
Category B: Emergency protective measures

Permanent Work

Category C: Roads and bridges
Category D: Water control facilities
Category E: Public buildings and contents
Category F: Public utilities
Category G: Parks, recreational, and other facilities

Federal funding guidelines for each of these categories are listed in the *Public Assistance Program and Policy Guide*, which is located online at <https://www.fema.gov/media-library/assets/documents/111781>.

Application Process

After a federal declaration, the recipient (i.e. state, tribe, or territory) conducts Applicant Briefings to inform potential applicants (i.e. state, local, tribal, territorial, and PNP officials) of the assistance available and how to apply. Applicants must then file a Request for Public Assistance within 30 days of the date their respective area is designated by the federal declaration.

Following the approved request, FEMA and the applicants will conduct additional meetings to discuss disaster

Project Description: The Town has been working through the FEMA Public Assistance process for damage recovery from Hurricane Florence. This aspect of Public Assistance is associated with covering the costs for debris removal, emergency protective measures, restoring roads, equipment and facilities to pre-storm conditions, and administrative costs. It is considered separately from the activities described in #11 below, although also under the Public Assistance umbrella.

Project Background: Stormwater staff have been leading the Town's pursuit of FEMA Public Assistance funding. Staff have submitted claims for losses not covered by insurance and have been working with FEMA/NCDPS staff to document and receive reimbursement, as well as reimbursement for staff time associated with emergency response and follow up. This process has been underway since the winter.

Status: Closeout. The Florence damage recovery work and reimbursal has been completed. Staff are working with NCDPS and FEMA to close out the final review now that the stream restoration project (#11) is complete.

Fiscal and Staffing Considerations: The Town has received about \$59k in uninsured costs from FEMA to date, and could receive up to about \$200k of additional funds, including any funds granted for the stream restoration project, and for staff time for Public Assistance administration. This work has required over 500 hundred hours of Stormwater staff time.

Additional Information:

https://www.fema.gov/media-library-data/1534520496845-4b41646e3d8839c768deb3a7f4ded513/PADeliveryModelFactSheetFINAL_Updated_052418.pdf
https://www.fema.gov/pdf/government/grant/pa/fema323_app_handbk.pdf

PART 2: WATER QUALITY & FEDERAL/STATE REGULATORY DRIVEN WORK

6. NPDES Town Wide Permit



An MS4 Audit is a structured review of the Stormwater Management Program to evaluate whether the MS4 is meeting the requirements specified in the NPDES MS4 Permit & Stormwater Management Plan (SWMP)



AKA do you have your ducks in a row?

Department of Environmental Quality



2

Regulatory Requirement: The Town is regulated under a town wide permit that requires the Town to implement a comprehensive stormwater management program that includes six minimum measures:

- (1) Public education and outreach on stormwater impacts
- (2) Public involvement/participation
- (3) Illicit discharge detection and elimination
- (4) Construction site stormwater runoff control (delegated to Orange County)
- (5) Post-construction stormwater management for new development and redevelopment, and
- (6) Pollution prevention/good housekeeping for municipal operations.

The initial Carrboro permit was issued effective July 1, 2005, renewed in 2011, and again in 2017.

Background: In 1990, under the authority of the federal Clean Water Act and starting with large (population >100k) municipalities (and industries), EPA began regulating stormwater runoff. In 2000, the scope was extended to smaller municipalities, and EPA delegated the authority to the State to issue these municipalities (including Carrboro) a stormwater permit.

Status: Active. The planned EPA/State NPDES Phase II stormwater permit audit was completed on August 12. A Notice of Violation, as anticipated and previously reported, was provided on November 2. Staff prepared additional information as part of Council and Stormwater Advisory Commission agendas in early November. Staff presented a draft Stormwater Management Plan to the Stormwater Advisory Commission in early January, and are submitting this plan to the NCDEQ in mid-February.

Fiscal and Staffing Considerations: Preparing for and follow up from this audit and improving the Town's permit compliance and record keeping activities has been and will continue to be a significant undertaking.

Additional Information:

<https://deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/npdes-ms4-permitting>

7. Stormwater Control Measure Maintenance and Inspection Program



Background: The Town's Land Use Ordinance (LUO) has required "Stormwater Control Measures" (SCMs) as part of development projects. SCMs treat runoff to reduce both water quantity and quality impacts. Since 2007, the LUO¹ has articulated requirements for private landowner maintenance of SCMs. (Prior to 2007, this responsibility was implicit rather than explicit.) In early 2020, the Council approved a rate increase to support the necessary capacity to expand program efforts in general, and specifically including SCM compliance oversight. In August, 2020, NCDEQ audited the Town's performance for its permit. Past oversight of SCM maintenance was a recognized permit performance deficiency. Moving forward with a compliant and comprehensive Town wide SCM maintenance oversight program is also seen as an immediate and effective action that the Town can take for flood/climate change resilience since there are many existing SCMs for which performance can be improved with proper maintenance, and risks of poorer future performance can also be avoided through preventative maintenance.

Status: Active. The concept that staff are moving forward with, given the above, is to move forward with the SCM maintenance and inspection program activities with goals of:

- 1) A letter being sent to all owners of Town permitted SCMs outlining their responsibilities and clear communications about the program and what will be happening going forward (initiated in November);
- 2) All owners of Town permitted SCMs being required to initiate their own annual reporting of their maintenance and inspection efforts by the end of 2021;
- 3) Stormwater staff committing to complete staff inspections of all Town permitted SCMs by the end of 2022.

Staff have been reporting on activities to the Stormwater Advisory Commission since October. **More than 20 letters have been written to SCM property owners, representing about half of the entire SCM inventory. The response has in general acknowledged an interest in pursuing the maintenance, inspection and reporting being requested. Letters to the remaining owners are planned for the coming weeks.**

Fiscal and Staffing Considerations: This activity is requiring a significant amount of staff time.

Additional Information: <http://www.townofcarrboro.org/751/Maintenance-and-Inspection>

¹ [Section 15-263.1 Maintenance of Structural BMPs](#)

8. NPDES Public Works Facility NPDES Permit

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES
GENERAL PERMIT NO. NCG080000

TO DISCHARGE STORMWATER UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

for establishments primarily engaged in the following activities:

Vehicle Maintenance Areas

Regulatory Requirement: Under federal and state law, the Public Works facility continues to be regulated through an NPDES stormwater general permit.

Background: In 1990, under the authority of the federal Clean Water Act and starting with large (population >100k) municipalities (and industries), EPA began regulating stormwater runoff. In 2000, the scope was extended to smaller municipalities, and EPA delegated the authority to the State to issue these municipalities a stormwater permit. In addition to receiving a town wide permit, Carrboro received a separate permit for the Public Works facility given the operations occurring at the site and potential for stormwater impacts on water quality.

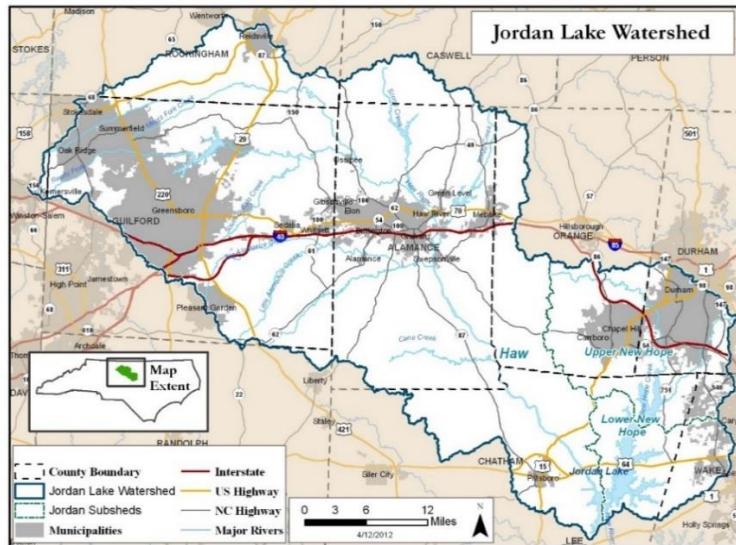
Status: Active. This activity has been and remains in a regular/routine operational status, with the facility remaining compliant with federal/state requirements.

Fiscal and Staffing Considerations: The Town has been working with a consultant for about \$6k/year to support regulatory compliance. There is also an ongoing level of staff activity to maintain compliance.

Additional Information:

<https://deq.nc.gov/about/divisions/energy-mineral-land-resources/npdes-stormwater-gps>

9. Jordan Lake Rules Compliance



Regulatory Requirement: The Jordan Lake Rules are a nutrient management strategy designed to restore water quality in the lake by reducing pollution entering the lake. Restoration and protection of the lake is essential because it serves as a water supply for several thriving communities, a prime recreation area for more than a million visitors each year, and an important aquatic ecosystem.

Background: Jordan Lake was impounded in 1983 by damming the Haw River near its confluence with the Deep River. It was created to provide flood control, water supply, fish and wildlife conservation, and recreation. The lake has had water quality issues from the beginning, with the NC Environmental Management Commission declaring it as nutrient-sensitive waters (NSW) the same year it was impounded. Since that time, Jordan Lake has consistently rated as eutrophic or hyper-eutrophic, with excessive levels of nutrients present. The most relevant provisions in the rules for Carrboro relate to stormwater management for both new and existing development, riparian buffers, and fertilizer application.

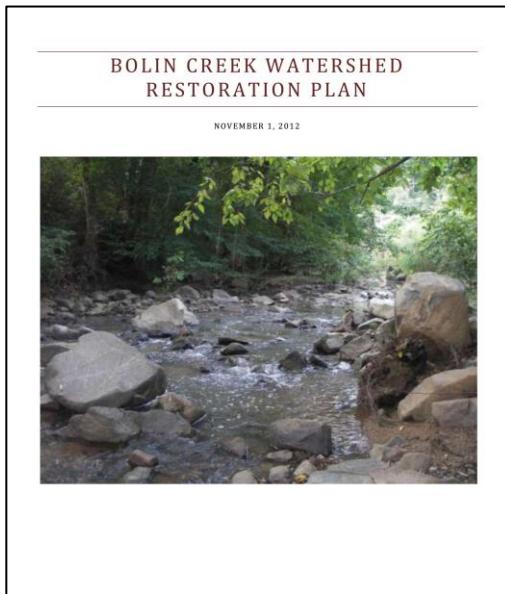
Status: Under Review (State). There was significant Town activity between about 2005 and 2015 to prepare for and enact ordinance provisions and begin work on implementation activities. The State then chose to pursue further studies to guide implementation. Jordan Lake Rules regulatory review has begun now that a NC Policy Collaboratory study has wrapped up. The goals of the rules readoption process is to evaluate the Collaboratory's findings and engage stakeholders throughout the watershed to help develop draft rules. The NC Division of Water Resources (DWR) has contracted with Triangle J Council of Governments (TJCOG) to administer this public participation process.

Fiscal and Staffing Considerations: The Town continues to be required to submit annual reports identifying stormwater retrofits, and has programmed several projects in the CIP. It is preliminary at this point to speculate on the potential fiscal/staff/regulatory impacts that will result, beyond an understanding that some staff time will be required to stay informed and report back as the review is pursued.

Additional Information:

<https://deq.nc.gov/about/divisions/water-resources/water-planning/nonpoint-source-planning/jordan-lake-nutrient-management-plan>
<https://www.tj cog.org/programs-energy-environment/water-resources/jordan-lake-one-water>

10. Bolin Creek Watershed Restoration Plan Implementation



Regulatory Requirement: The downstream extent of Bolin Creek in Carrboro, and continuing into Chapel Hill, is on the state/federal list of impaired waters. Local actions are needed to improve water quality.

Background: Carrboro staff worked with Chapel Hill and other local, state and federal agency staff in 2006 to create the Bolin Creek Watershed Restoration Team (BCWRT) because of the impaired waters listing. At the time, the Bolin Creek watershed was selected as one of only 7 watersheds in the state to receive focused state and federal assistance in preparing grant applications and leveraging other resources to remove Bolin Creek from the impaired waters list. The BCWRT's long term goal is to improve the health of Bolin Creek and its tributaries and remove it from the impaired waters list. This is an ambitious goal that will require a robust commitment for many years to come.

Status: Planning. Watershed restoration plan implementation has been inactive since 2012 due to insufficient staff capacity and funding resources. Staff are exploring project opportunities.

Fiscal and Staffing Considerations: There are no near term considerations. Longer term fiscal and staff considerations are uncertain.

Additional Information:

<https://townofcarrboro.org/280/Bolin-Creek-Watershed-Restoration>

PART 3: WORK DRIVEN BY BOTH WATER QUANTITY AND QUALITY INTERESTS

11. Public Works Stream Restoration



Project Description: This project has involved two phases of repairing/restoring a badly eroding stream channel in an extremely high risk situation adjacent to Public Works. The first phase was preliminary engineering; the second is construction/restoration.

Project Background: There are two unnamed intermittent streams that flow from the south side of downtown along South Greensboro Street and Old Pittsboro Road, join just above the 54 Bypass, and then flow under the bypass and along the Public Works property line before joining Morgan Creek. The stream channel is very incised adjacent to Public Works, with an extremely actively eroding bank. During Hurricane Florence, a large section of the streambank immediately adjacent to the fuel tanks (as well as outbuildings) collapsed, escalating and accelerating the importance of addressing the bank erosion. This project has been an identified need since 2015.

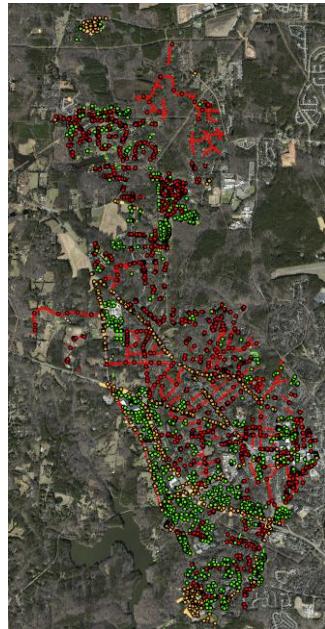
Status: Closeout. The preliminary engineering was completed in early 2020. Construction bids were solicited in March and received in April. The Council approved moving forward with construction on May 5th. North State Environmental was awarded a construction contract in May; construction began in July. Grading was completed in early September and planting occurred in December.

Fiscal and Staffing Considerations: The total cost for engineering and construction was \$230k. Staff are working with NCDPS and FEMA to close out the review of Public Assistance funding for this project (#5). There has been a significant staff impact associated with project management and pursuit of federal funding.

Additional Information:

https://www.fema.gov/media-library-data/1534520496845-4b41646e3d8839c768deb3a7f4ded513/PADeliveryModelFactSheetFINAL_Updated_052418.pdf
<https://carrboro.legistar.com/LegislationDetail.aspx?ID=2288740&GUID=0B2EA271-314B-4ED8-8A38-0E199F87A49F%3E&FullText=1>

12. MS4 Inventory Update, Condition Assessment, Asset and Workflow Management



Description: This initiative involves using new technology to update the MS4 inventory, assess MS4 conditions, and create asset management and workflow systems and tools. Asset management is a strategic approach to maintaining and sustaining infrastructure in order to deliver services at the lowest overall life cycle cost. This method is intended for managing any assets, has traditionally been used for drinking water and wastewater, and is increasingly being used by stormwater utilities.

Background: A GIS based system inventory was first completed about 15 years ago in preparation for the Town's NPDES permit. While maintenance of the inventory is ongoing, some additional work is needed to fully complete the inventory so it can serve as the foundation for comprehensive stormwater workflow, regulatory tracking and asset management needs. The Town is in the process of implementing a new workflow management system (CityWorks) and GIS based field inventory capabilities. A system condition assessment has not been completed, nor has an asset management system been created.

Status: Active. Staff began using CityWorks in May and will continue to configure and implement CityWorks and update the GIS data to serve this function.

Fiscal and Staffing Considerations: There is no direct fiscal impact currently. The need for additional resources such as engineering or contractual services will depend on the technical requirements and overall staff workload and the desired pace of moving this work forward.

Additional Information: <https://louisville.edu/cepm/projects/sustainable-community-capacity-building/asset-management-for-stormwater>

<https://www.epa.gov/sites/production/files/2018-01/documents/overcoming-barriers-to-development-and-implementation-of-asset-management-plans.pdf>

13. Stormwater Project Planning and Prioritization

Criteria	Type	Possible	Points						
			10	9	8	7	6	5	4
Public safety/welfare	Public interest	Mandatory	High infrastructure impacts			Medium infrastructure impacts			Low infrastructure impacts
Community Benefits	Conveyance repair/replacement	Infrastructure	10	Public infrastructure or insurable structures affected		Private property impacted			
	Public visibility/educational value	Public interest	10	High		Medium			
	Detention	Flood mitigation	10	Public infrastructure, insurable structures protected		private insurable structures protected			no insurable structures protected
	Water supply protection	Public interest	10			Yes			
	Green infrastructure	Multiple	10	Green street/parking lot		> 1 acre & reduction in curve # by >15			Other green infrastructure
Environmental Benefits	Stream/riparian repair/restoration	Stream/geomorphic	10	Perennial stream		Intermittent stream			
	Runoff (volume) reduction	Multiple	10	>cfs		> < cfs			>< cfs
	Impaired waters	Water quality/stream	8		Lower Bolin Creek		Upper Bolin Creek		
	Nutrient reduction	Water quality	7			> N reduction			< N reduction
Feasibility	Landowner	Feasibility	10	Town owned	Other local agency		State/federal		Private-landowner easement/agreement
	In CIP?	Feasibility	5					Yes	

Description: The purpose of this work is to create a process for planning for and prioritizing large stormwater improvement/capital projects, to inventory all potential projects with a 10-20 year planning horizon, and to develop a prioritized 5 year project list/CIP update during FY 21.

Background: Carrboro has been identifying stormwater capital projects in the Capital Improvements Program (CIP) since 2012. These projects have historically been significantly but not solely motivated by the implementation of State's rules to restore Jordan Lake. Other studies have been completed and potential projects identified by the Town Engineer and also through, for example, the State's Ecosystem Enhancement program, Bolin Creek watershed restoration efforts, and efforts to identify infrastructure replacement/ improvement and stream repair/restoration projects. Identifying and implementing capital projects is an ongoing Town process, with updates to the CIP typically prepared annually.

Status: Active. Preliminary and planning level cost projections have been considered in the past as part of a Stormwater Service Delivery Review in 2019. Jordan Lake Rules, Bolin Creek Watershed Restoration, and Condition Assessment/Asset Management are also relevant. Stormwater input has been provided as part of the annual CIP update. Since the November report, staff provided input on the annual CIP update which has included recommending Stormwater Enterprise Fund support for near term stormwater infrastructure improvements as part of the Roberts Street project and also at Town Hall/Fire Station #1 and the Century Center.

Fiscal and Staffing Considerations: There is no fiscal impact associated with identifying, planning for, and prioritizing projects. There will be a staff impact to pursue this work through FY 19/20, and a lower level impact in subsequent years.

Additional Information:

http://www.townofcarrboro.org/AgendaCenter/ViewFile/Agenda/_12052018-3552