



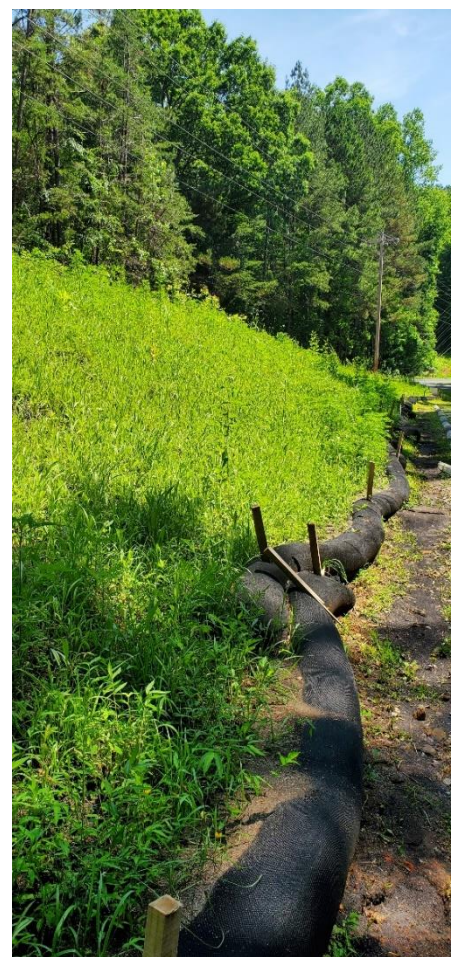
FISCAL YEAR 2023 | TOWN OF HILLSBOROUGH

Falls Lake Annual Report

Nutrient Sensitive Water Stormwater Program

July 2022 – June 2023

Published August 2023



The Stormwater and Environmental Services Division oversees the town's stormwater management program and stormwater utility.

The mission of this program is to reduce stormwater runoff pollution reaching the Eno River.

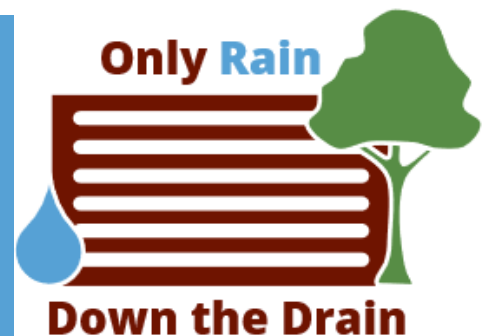


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INTRODUCTION

Why Care About Stormwater?

North Carolina's number one water quality problem is stormwater runoff pollution. As stormwater flows across impervious surfaces, it picks up various pollutants, such as excess nutrients, oil and grease, bacteria and sediment. Polluted stormwater flows down storm drains and ditches where it is discharged, untreated, into local streams, rivers, and lakes. Stormwater runoff pollution causes adverse impacts to aquatic ecosystems, poses human health risks, and can greatly increase the cost of treating drinking water.

Program Background

The Falls of the Neuse Reservoir (Falls Lake) was completed in 1981. The lake was created to provide flood control, drinking water supply, protection of downstream water quality, fish and wildlife conservation, and recreation. Due to potential water quality concerns within the lake, the North Carolina Department of Environmental Quality (NCDEQ) conducted a water quality assessment and modeling program to assess the lake's condition. Based on this assessment, Falls Lake was listed as impaired for chlorophyll a on the draft NC 2008 303(d) list. As a result, NCDEQ, with the input of a large stakeholder group embarked on a rule making process to address the impairment.

The Falls Lake Rules (Rules) were adopted by the State of North Carolina in January 2011 to restore water quality in the lake by reducing the amount of pollution entering upstream. The Rules included a staged management strategy designed to reduce nutrient discharges to the lake from various sources, including stormwater runoff from new and existing development, wastewater treatment plants and agriculture.

Stormwater Runoff from New Development

The Town of Hillsborough began enforcing the Falls Lake nutrient loading limits for stormwater runoff from new development on February 28, 2011 through adoption of its Unified Development Ordinance (UDO). The Environmental Management Commission (EMC) officially approved the Town's Falls Lake New Development program on January 12, 2012 contingent upon minor revisions to its UDO. The Town adopted those revisions to the UDO on June 11, 2012.

Development projects that were approved prior to adoption of the Falls Lake new development nutrient loading limits and had not yet been constructed were considered as "existing development" pursuant to the Rules. Projects that were under review prior to the Rules adoption and approved soon after were given vested rights and were considered existing development.

Stormwater Runoff from Existing Development

The Falls Lake Rules also require reductions in nutrient load associated with stormwater runoff from development that existed prior to enactment of the Town's new development requirements. The existing development rule is being implemented in two stages. The first stage was delayed by various actions by the state, most notably the passage of Session Laws 2016-94 and 2018-5 which modified the schedule for the implementation of existing development requirements.

However, On January 14, 2021, the EMC officially approved the model program for nutrient load reductions in stormwater runoff from existing development. Approval of the model program required local governments to begin compliance with the stormwater rule for existing development within six months. The approved model program included a provision for joint compliance by regulated jurisdictions.

The UNRBA developed a joint compliance program known as the Interim Alternative Compliance Approach (IAIA). The IAIA joint compliance program is an investment based approach to improving water quality within Falls Lake watershed. The IAIA program was reviewed and approved by the EMC. As a member of the UNRBA the Town is eligible to participate in the IAIA program to meet its stage one requirements under the existing development rule for stormwater. The Town chose to participate in the IAIA program and began implementation in fiscal year 2022 (FY2022).

Annual Reporting

As required by the Falls Lake Rules, an annual report must be submitted to NCDEQ. The report coincides with the Town's fiscal year which begins July 1st and ends on June 30th of each year. Previous annual reports only summarized activities pursuant to the new development requirements, including a summary regarding engineered, structural stormwater control measures (SCMs) installed as required by the Rules. Starting in FY2022 this annual report also summarizes activities required for existing development.

1. Stormwater Program Information

1.1 Falls Lake Rules Program Administrator

Implementation and oversight of the Town of Hillsborough’s Stormwater Program, including Falls Lake Rule implementation, is coordinated by:

Terry Hackett, Stormwater and Environmental Services Manager
Town of Hillsborough
P.O. Box 429
101 E. Orange Street
Hillsborough, NC 27278
Telephone: 919-296-9621
Email: terry.hackett@hillsboroughnc.gov

1.2 Staffing Changes

The Town of Hillsborough hired an engineering technician under the Utilities Department who will be providing part-time support to the Stormwater Environmental Services division.

1.3 Jurisdictional Map

A jurisdictional map is attached to the end of this report.

2. New Development Projects

The Falls Lake stormwater rule for new development (15A NCAC 02B .0277) requires local governments to review and approve stormwater management plans for subject developments. These developments must meet nutrient limits outlined in the Falls Lake Rules and as adopted in the Town’s UDO. The following sections summarize new development activities within the Town’s planning jurisdiction for FY2023.

2.1 Projects Approved and Nutrient Offsets

The Town of Hillsborough stormwater staff reviewed and approved stormwater management plans for two projects in the past year. Those projects are listed in Table 2-1.

Table 2-1. Offsite In-lieu Payment from Approved Projects

Project Name	Project Number	Status
Hillsborough Aldi	SW2022-01	Under Construction
Smirnov Cabinetry	SW2023-01	Under Construction

Table 2-2 summarizes the type and acreage of the approved projects. Both projects were subject to the Rules. The Hillsborough Aldi project exceeded the nitrogen and phosphorus loading rates, requiring offset payments. The Smirnov Cabinetry project exceeded the phosphorus loading rate, requiring an offset payment.

Table 2-2. Development Summary of Approved Projects

Development Type	Number	Site Acreage	Impervious Acreage	Impervious Acreage Exceeding Loading Rates
Commercial	2	5.06	2.77	2.77
Industrial	--	--	--	--
Institutional	--	--	--	--
Recreational	--	--	--	--
Residential	--	--	--	--
<i>Total</i>	2	5.06	2.77	2.77

Both projects required installation of SCMs and met the Rules onsite requirement. SCMs approved for these projects are summarized in Table 2-3. Loading rates, onsite reductions and offset payments are summarized in the following section.

Table 2-3. SCMs Approved

SCM Type	Quantity
Bioretention	1
Underground Detention	1
Stormfilter	1

2.2 Loading Rates of Approved Projects

Nutrient loads from the approved projects are summarized in Table 2-4. For all projects subject to the Rules, nutrient loading estimates were calculated using SNAP v4.1, NCDEQ’s approved nutrient loading accounting tool at the time of stormwater management plan review.

Table 2-4. Loading Rates and Onsite Reductions of Approved Projects

Nutrient Loading	Nitrogen		Phosphorus	
	lbs/yr	lbs/ac/yr	lbs/yr	lbs/ac/yr
Pre-development Load	6.1	1.2	2.63	0.52
Post-development Load – Untreated	39.7	7.8	6.02	1.19
Post-Development Load – Treated	15.8	3.1	2.03	0.40
Reductions from Onsite SCMs	23.9	4.7	3.98	0.79

As noted in the previous section, both projects required additional offsite reduction measures to meet required loading rates. Both projects purchased nutrient credits through a mitigation bank. Table 2-5 provides the total pounds purchased.

Table 2-5. Offsite In-lieu Payment from Approved Projects

Nutrient	Lbs/yr	Total lbs ¹
Nitrogen	5.7	170.3
Phosphorus	0.4	10.6

¹Total pounds required based on 30 years.

2.3 Projects Completed

Three projects previously approved pursuant to the Rules were completed in the past year. In order to meet required nutrient loading rates and peak flow requirements, 5 SCMs were installed. The SCMs are operational and have been inspected by stormwater staff. The SCMs installed are listed in Table 2-6.

Table 2-6. Summary of Completed Projects

Project Name	Stormwater SCMs Installed
Corbin Creek Woods	Stormwater Wetland
UNC Hospital Expansion Bed Tower II	Stormwater Wetland, Wet Pond
Waterstone Medical Office Building	Floating Wetland Islands, Wet Pond

2.4 Greenfield Development and Redevelopment

Within the past three fiscal years, about 125 acres have been approved for development within the Town of Hillsborough’s jurisdiction. Most of these projects have been completed while some are currently under construction. Once complete, this development will have resulted in about 51 acres of additional impervious surface. All development approved in the last three fiscal years has been greenfield development that is subject to the Rules. During this period, the Town of Hillsborough did not approve any projects that would be considered redevelopment or existing development under the Rules. Table 2-7 reports area by development type for projects which began construction within the last three fiscal years.

Table 2-7. Development Approved FY2021 through FY2023¹

Development Type	Site Acreage²	New Impervious Acreage
<i>Greenfield</i>		
Commercial	5.06	2.74
Industrial	--	--
Institutional	2.0	0.9
Residential	118.1	47.4
Greenfield Total	125.2	51.0
<i>Redevelopment³</i>		
Commercial	--	--
Multi-Family Residential	--	--
Recreational	--	--
Redevelopment Total	0.0	0.0
<i>Existing Development as Defined by the Rules⁴</i>		
Commercial	--	--
Residential	--	--
Existing Development Total	0.0	0.0
All Development Total	125.2	51.0

¹Completed or under construction

²Total site acreage including undisturbed forest.

³Redevelopment projects were defined as projects where existing buildings or parking lots are being redeveloped and some new impervious will be added. All projects that occurred in Hillsborough in the last three years added new impervious.

⁴Existing development summarized here does not include projects that were approved and began construction prior to FY20-21.

3. Operation and Maintenance Program

As indicated in Section 2.3, construction was completed this year on three projects within the Town’s jurisdiction that was approved pursuant to the Falls Lake nutrient loading requirements. The as-built certification and operation/maintenance agreements were received. Subsequently, Town stormwater staff completed inspections of the onsite SCMs and accepted the SCMs into the operation and maintenance program. No enforcement actions were required.

With this most recent addition, a total of 58 SCMs pursuant to the Rules operate within the Town’s jurisdiction, including 7 SCMs that were closed out within the last two fiscal years. Hillsborough requires annual maintenance inspection reports to be submitted by September 1 of each year. Reports for newly closed out SCMs are due one year following close out. In fiscal year (FY) 22-23, the Town received annual maintenance inspection reports for 49 of the 53 SCMs requiring a report (including Town owned and inspected facilities). The missing reports were due to new management not understanding the requirements; these managers have been contacted and are on track for submitting the required FY 23-24 report. In FY 23-24 to date, the Town has received 37 of the required reports.

According to the annual inspection reports received in FY 22-23 for SCMs within the Town’s jurisdiction, maintenance was needed on 24 SCMs. After the September 1 inspection report deadline, the town will be contacting the SCM owners that have not completed maintenance needs indicated on FY22-23 inspection reports, and if substantial progress is not achieved in 2-3 months, the town will follow-up with the owners and consider enforcement actions at that time. Table 3-1 summarizes inspections and corresponding actions for current and past fiscal years.

Table 3-1. Stormwater SCM Inspection Summary

Inspection Activity	FY 22-23	FY 23-24 (to date)
Total SCMs for which Inspection Reports Received (including SCMs approved prior to the Rules)	122	61
SCMs Approved Post-Rules for which Inspection Reports Received	49	37
Site SCM Inspections by Town Personnel	60	2
Reports indicating maintenance need	24	4
Maintenance Completed or Near Completion	16	1
Enforcement Actions	1	0

4. Stormwater for Existing Development

The Falls Lake stormwater rule for existing development (15A NCAC 02B .0278) requires local governments to develop and implement a nutrient load reduction program. The rule is being implemented in two stages. Stage 1 requires local governments to reduce nutrient loads from existing development back to 2006 baseline levels. The Town elected to meet its Stage 1 requirements pursuant to this rule by participating in the IAIA, a joint compliance program developed by the UNRBA.

The IAIA joint compliance program is an investment based approach to improving water quality within the Falls Lake watershed. Participating governments are required to invest a minimum amount annually towards installation and maintenance of water quality based projects and practices. As part of the IAIA a detailed reporting spreadsheet has been developed and is being submitted electronically to DEQ as part

of the annual reporting requirements. A printed copy of that spreadsheet is provided in Attachment 2 of this report. The following tables summarize the FY2023 projects and provide a summary of expenditures. As indicated in Table 4-2, the Town exceeded its minimum funding requirement under the IAIA program for FY2023.

Table 4-1. IAIA Project Summary

Odie Street Green Infrastructure		
<i>Project ID Number</i>	IAIA-22-2	
<i>Description</i>	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	
<i>Type</i>	Green Infrastructure and other best management practices	
<i>Status</i>	Project is nearly complete; bioswales and treatment swales have been constructed; native plant gardens and rain barrels being installed; project will be completed in FY24.	
<i>FY2023 Funds Expended</i>	<i>Cash</i>	\$11,320.11
	<i>In-kind</i>	\$13,139.60
	<i>Project Total</i>	\$24,459.71

Cistern – Cates Creek Park		
<i>Project ID Number</i>	IAIA-23-6	
<i>Description</i>	Install an above ground cistern and associated appurtenances at the town's Cates Creek Park; water to be used for irrigation of plants and gardens within the park.	
<i>Type</i>	Water storage/irrigation	
<i>Status</i>	Completed/in-service	
<i>FY2023 Funds Expended</i>	<i>Cash</i>	\$10,017.04
	<i>In-kind</i>	--
	<i>Project Total</i>	\$10,017.04

Table 4-1. IAIA Project Summary (continued)

Eno River Hydrilla Management		
<i>Project ID Number</i>	IAIA-23-7	
<i>Description</i>	Cost share for treating invasive hydrilla plant by the Eno River Hydrilla Management Task Force. Provides multiple benefits including nutrient reductions and aquatic habitat improvement.	
<i>Type</i>	Aquatic weed control; invasive species removal.	
<i>Status</i>	Ongoing; this is a long-term project with treatment and surveys spanning multiple years.	
<i>FY2023 Funds Expended</i>	<i>Cash</i>	\$4,447.80
	<i>In-kind</i>	--
	<i>Project Total</i>	\$4,447.80

Riverwalk Compost Blanket		
<i>Project ID Number</i>	IAIA-23-8	
<i>Description</i>	Install compost blanket to alleviate erosion and increase infiltration on an eroded slope along Riverwalk Greenway. Project also provides native pollinator habitat.	
<i>Type</i>	Green Infrastructure and other best management practices	
<i>Status</i>	Completed	
<i>FY2023 Funds Expended</i>	<i>Cash</i>	\$593.64
	<i>In-kind</i>	--
	<i>Project Total</i>	\$593.64

Murray St and Turnip Patch Park Riparian Buffer Enhancement		
<i>Project ID Number</i>	IAIA-23-10	
<i>Description</i>	Plant additional trees and shrubs within the riparian buffer at these two town parks.	
<i>Type</i>	Stream and riparian buffer restoration and enhancement	
<i>Status</i>	Completed	
<i>FY2023 Funds Expended</i>	<i>Cash</i>	\$3,500.00
	<i>In-kind</i>	--
	<i>Project Total</i>	\$3,500.00

Table 4-1. IAIA Project Summary (continued)

Odie St Stabilization Project		
<i>Project ID Number</i>	IAIA-23-9	
<i>Description</i>	Part of the overall Odie Street improvement project; stabilize existing ephemeral/intermittent stream channel and plant riparian vegetation; while this is a separate project, it is part of the overall Odie Street/Habitat for Humanity project. Stabilization the stream will reduce sediment and erosion, while stabilizing the roadbed along the channel.	
<i>Type</i>	Stream and riparian buffer restoration and enhancement	
<i>Status</i>	Engineering design completed; grant funding pending	
<i>FY2023 Funds Expended</i>	<i>Cash</i>	\$12,711.85
	<i>In-kind</i>	\$3,000.00
	<i>Project Total</i>	\$15,711.85

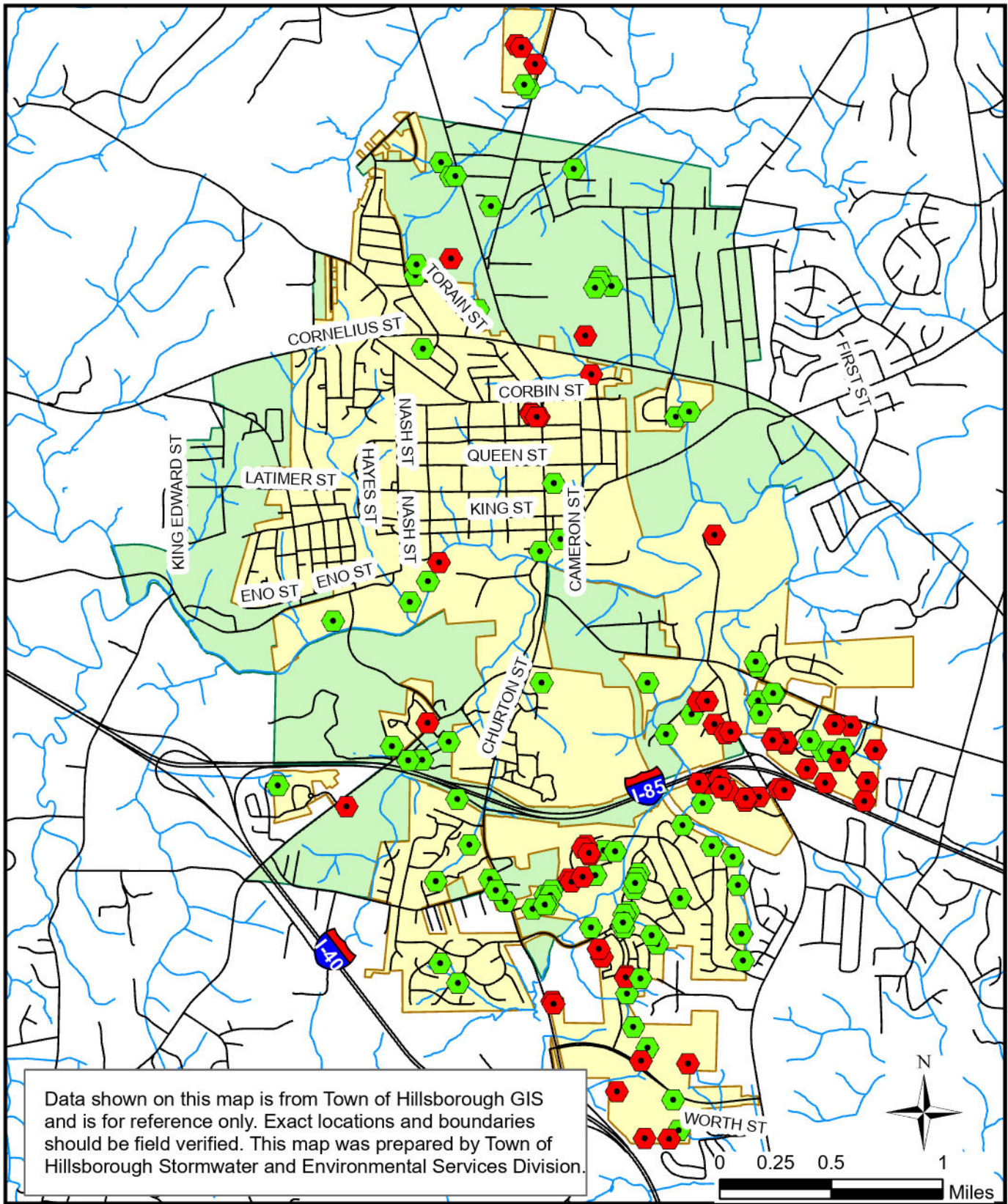
Table 4-2. IAIA Annual Investment Summary

Description	Amount
Required Annual IAIA Investment	\$34,221.00
Cash Funds Expended	\$42,590.44
In-Kind Funds Expended	\$16,139.60
<i>Total Funds Expended</i>	\$58,730.04
<i>IAIA Compliance Status¹</i>	<i>Compliant</i>

¹Compliance is based on whether the cash and in-kind funds expended during the fiscal year exceeds the required investment amount.

ATTACHMENT 1 Town of Hillsborough Jurisdictional Map

Stormwater Control Devices (SCMs) FY22-23



Date 8/29/2023

Legend

-  Legacy SCMs
-  Town Limits
-  Falls Lake Approved SCMs
-  ETJ



ATTACHMENT 2 IAIA Annual Report Spreadsheet

Summary Information for the Participating Jurisdiction:	
Local government submitting the annual report:	Town of Hillsborough
Minimum annual investment level specified in the UNRBA Bylaws:	\$34,221
Reporting period (fiscal year):	FY2022
Total investment for fiscal year (cash and inkind expended for specific project(s)):	\$58,730
Carry over from previous year (not applicable the first year):	Not applicable in FY2022
Carry over to next fiscal year(s):	\$24,509
Compliance with the minimum investment level based on funds expended (cash and inkind):	Yes
Contact information for the person submitting the report for this fiscal year:	
Name	Terry Hackett
Email	terry.hackett@hillsboroughnc.gov
Phone Number	919-296-9621

Individual Project or Activity Information:

Local Government Claiming Credit	Local Government project ID Number	Project Type	Funding Option	Project Location (County)	Project Location (Latitude DD)	Project Location (Longitude DD)	Partners	Benefits and Linkages to Water Quality/Quantity Improvement	Additional Benefits (if Applicable)	Project Status	Project Status Description
Town of Hillsborough	IAIA-22-2	Green infrastructure and other best management practices (BMPs)	Other organization agreement	Orange	36.0905894	-79.11662392	Piedmont Conservation Council, Orange Habitat for Humanity, NCEEG Grant	Nutrients	ecosystem services, sustainability, outreach, environmental justice, research	Construction/Installation	
Town of Hillsborough	IAIA-23-6	Stormwater control measures (State-approved SCMs)	Self-funded	Orange	36.04869	-79.095658	None	Water storage	Peak flow reduction, sustainability	In Service/Operation and Maintenance	
Town of Hillsborough	IAIA-23-7	Hydrilla removal and control	Other organization agreement	Orange	36.070936	-79.130271	Eno River Hydrilla Management Task Force	Other/Multiple	Nutrient reduction, aquatic habitat improvement	Other	Treatment to control aquatic invasive weed
Town of Hillsborough	IAIA-23-8	Green infrastructure and other best management practices (BMPs)	Self-funded	Orange	36.072318	-79.102353	None	Nutrients	ecosystem services, sustainability, pollinator habitat	In Service/Operation and Maintenance	
Town of Hillsborough	IAIA-23-9	Stream and riparian buffer restoration and enhancement	Other organization agreement	Orange	36.0905894	-79.11662392	Piedmont Conservation Council, Orange Habitat for Humanity, NCEEG Grant	Other/Multiple	ecosystem services, sustainability, outreach, environmental justice, sediment	Design, Permitting	

IAIA Annual Report_Town of Hillsborough_FY23

Town of Hillsborough	IAIA-23-10	Stream and riparian buffer restoration and enhancement	Self-funded	Orange	36.074781	-79.108461	None	Nutrients	eccosystem services, sustainability, sediment	In Service/Operation and Maintenance	
Town of Hillsborough											
Town of Hillsborough											
Town of Hillsborough											

Anticipated Timeline for Completion of Construction or Full Implementation (Fiscal Year)	Total Project Cost (All Partners, All Years)	Total Funds Committed This Fiscal Year (All Partners, This Fiscal Year)	Cash Funds Expended for Fiscal Year by Your Organization	In-Kind Funds Expended for Fiscal Year by Your Organization	Estimated Annual Total Nitrogen Reductions (lb-N/yr)	Estimated Annual Total Phosphorus Reductions (lb-P/yr)	Nutrient Credit Estimation Method	Nutrient Credit Estimation Method (User Entered)	Other Tracking Metrics	Date of Last Project Update (mm/dd/yyyy)	Initials of Staff Updating the Database (Optional)
2024	\$225,258.96	\$153,889.24	\$ 11,320.11	\$13,139.60	19.32	5.66	SNAP version x.x.		NCSU will begin monitoring of bioswales in FY24	8/28/2023	TLH
2023	\$ 10,017.04	\$ 10,017.04	\$ 10,017.04	\$ -	Variable	Variable	DWR Crediting document	Nutrient reductions based on usage; town will monitor usage and update when		8/25/2023	TLH
On-going	unknown	\$ 44,478.02	\$ 4,447.80	\$ -	tba	tba	Other (user entered)	Nutrient credits for hydrilla removal are pending further investigation	Hydrilla and tuber surveys conducted by the state	8/28/2023	TLH
2023	\$ 593.64	\$ 593.64	\$ 593.64	\$ -	0.05	0.01	DWR Crediting document			8/25/2023	TLH
2024	\$ 202,465.00	\$ 25,907.85	\$ 12,711.85	\$ 3,000.00	tba	tba	Other (user entered)	Stream restoration/stabilization credits are currently not		8/25/2023	TLH

2023	\$ 3,500.00	\$ 3,500.00	\$ 3,500.00		0.18	0.13	SNAP version x.x.	Reductions based on converting managed pervious to protected forest	Inspect to ensure trees survive	8/28/2023	TLH

Narrative Project Description and Benefits

Odie St GI Project - Design and construct stormwater green infrastructure treating impervious surface within the Odie Street Habitat for Humanity Neighborhood. Provides multiple benefits including nutrient reduction, peak flow attenuation, ecosystem benefits and includes an educational component to a historically underserved community.

CCP Cistern Project - Install an above ground cistern and associated appurtenances at the town's Cates Creek Park; water to be used for irrigation of plants and gardens within the park.

Eno River Hydrilla Management Project - Cost share for treating invasive hydrilla plant by the Eno River Hydrilla Management Task Force. Provides multiple benefits including nutrient reductions and aquatic habitat improvement.

Riverwalk Compost Blanket Project - Install compost blanket to alleviate erosion and increase infiltration on an eroded slope along Riverwalk Greenway. Project also provides native pollinator habitat.

Odie St Stabilization Project - Stabilize existing ephemeral/intermittent stream channel and plant riparian vegetation; while this is a separate project, it is part of the overall Odie Street/Habitat for Humanity project. Stabilizing the stream will reduce sediment and erosion, while stabilizing the road bed along the channel.

Murray St and Turnip Patch Park Riparian Buffer Enhancement Project - plant additional trees and shrubs within the riparian buffer at these two town parks.