

Attachment 1: Drainage Project Narrative

Town of Nichols SCIP Grant



Application

Overview

The Town of Nichols is located just upstream of the confluence of the Little Pee Dee and Lumber Rivers and has experienced two extreme flooding events – Hurricane Matthew (2016) and Hurricane Florence (2018). Both events created flows and water surface elevations at the Town of Nichols well beyond the 100-year flood event. These events devastated the Town’s infrastructure and building stock as nearly every structure within the Town limits experienced some form of damage.

The Town received Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) funding to evaluate flood patterns and potential flood mitigation measures. A “Problems and Opportunities” report was developed to identify the flood risks associated with the Town and potential solutions to be evaluated by hydrologic and hydraulic modeling, financial analysis, and other appropriate methods.

Improvements to the existing drainage system and elevation of buildings were identified as critical components to addressing both localized flooding and larger events such as those experienced in 2016 and 2018. The project described below is intended to address drainage issues primarily impacting the Town of Nichols’ business district as well as mitigating flood damages to buildings within that area. Keeping this area of Town relatively free from flooding and damage is essential to maintaining the Town’s economy and, ultimately, the Town’s survival.

A. NEED:

The business district of Nichols experiences frequent localized flooding due to inadequate and, in areas, non-existent, drainage infrastructure. It doesn’t require a major flood event to impact commerce in the business district. Rainfall from more frequent, smaller events also impact this area, reducing the entire Town’s economic stability and resiliency.

There are two major industries in Nichols, Carolina Eastern Nichols and DMA Sales, LLC that rely on access to their facilities via South Nichols Street. Post-flood, there are also vacant buildings located in this general area that were once thriving businesses. The old Town Hall and Fire

Department have been relocated from this area to a safer location, leaving yet another empty building.

B. PROJECT DESCRIPTION

The proposed project involves installing new stormwater drainage along South Nichols Street, South Main Street, and Pine Street. These systems will drain towards Mullins Street and cross S. Nichols Street, drain into a new retention basin between S. Nichols Street and Averette Road, and discharge through an existing ditch system to the floodplain of the Lumber River. The purpose of the retention basin is to provide water quality treatment of stormwater from the downtown area prior to discharge.

To further reduce runoff and improve water quality, the Town is proposing to install green infrastructure within the project area including Best Management Practices such as bio-filtration units, bio-swales, permeable pavement, and tree boxes.

This project will provide flooding relief to the business district of Nichols and improved water quality discharging to the Lumber River.

Drainage improvements include installing the following:

- 1) Approximately 450 feet of 18-inch, 800 feet of 24-inch, 530 feet of 36-inch, 450 feet of 42-inch, and 460 feet of 48-inch reinforced concrete pipe (RCP) along Pine Street, South Main Street, South Nichols Street, Mullins Road, and crossing Averette Road.
- 2) A retention basin on vacant property between South Nichols Street and Averette Road.
- 3) Approximately 200 feet of enhancements to the existing outfall ditching adjacent to the DMA facility (additional flood protection is provided along this ditch segment to further protect the DMA facility from flooding)

Streetscaping and green infrastructure includes installing a variety of stormwater BMPs (total of 20 locations including, but not limited to tree boxes, bio-filtration units, bio-swales, and permeable pavement. Trees and other aesthetic vegetation will be used to enhance the appearance of South Main and South Nichols Streets.

C. FEASIBILITY:

Multiple alternatives were considered as part of the conceptual planning process:

1. **Do Nothing:** This option results in no change to flooding frequencies and depths and does not improve water quality. If left as-is, the lack of drainage infrastructure will continue to impact the ability of Nichols to recover from the 2016 and 2018 flood events.
2. **Installation of Levee System:** Although this alternative can provide a high level of protection from the Lumber River, it does not address the lack of stormwater infrastructure in the business district and the cost far exceeds the resources of the Town.
3. **Installation of drainage infrastructure and elevated building shells:** This option is both technically and financially feasible with grant assistance. This alternative will provide improved drainage for runoff up to the 25-year storm event decreasing the number of localized flood events. The retention pond will not only provide water quality treatment prior to discharge to the Lumber River, it will also provide a focal point further enhancing the Town's desire to revitalize the business district.

Option 3 was selected due to its cost effectiveness, reductions in flood damage, and ability to further the Town's goals for revitalization of its business district. This project will enhance both the Town's flood and financial resiliency.

Schedule and Delay:

Milestone Schedule	
Milestone	Date
Final Design	11/03/2023
Permits Acquired	12/29/2023
Acquisition	01/08/2024
Advertise for Bids	04/26/2024
Start of Work	06/10/2024
Completion of Work	05/12/2025

Cost Overrun: If costs are overrun, then project will adjust accordingly. The town will entertain any ideas for additional funding should overruns appear. If no alternative appears, the town will consider reducing the end scope of the project.

RIA Supplementary Funds: The town requests RIA supplementary funds. Nichols is an example of small-town America that gives residents the greatest opportunity for a better future after two devastating floods. The town has done everything in its power to be what its residents need to keep them safe. We know that our proximity to Horry County that it has enormous potential. The town remains viable should this issue be addressed. The RIA supplementary funds will aid the town that otherwise does not have them. The supplementary funds brings Nichols that much closer to success.

Ownership: The majority of the drainage work will occur within SCDOT road right-of-way. The pond and outfall ditching will occur within property /easements owned by the Town.

Permitting: This project will require a land disturbance permit and SCDOT encroachment permits. Wetland and other environmental permits are not anticipated.

Dig Once: There is no dig once concern here as this is a drainage project that does not involve digging lines for water or sewer.

D. BENEFITS/IMPACT:

The drainage infrastructure will be designed to accommodate up to the 25-year storm event, reducing localized flooding significantly along South Nichols, South Main, Pine Streets and Averette Road. The retention pond will remove sediment and reduce the discharge of other pollutants associated with urbanization.

An additional significant impact will be to the economy of Nichols. This project will provide ease of access to existing industry and provide a focal point for travelers along Mullins Street (US Highway 76) as they travel to and from Myrtle Beach.

This type of investment will significantly enhance Nichols' ability to recover from past flooding and face the future. The town stands to gain much if it can just overcome the threat of flooding,

and with its proximity to the growth of Horry County, as well as its ecological riches surrounding the town, there's no reason for the town not to grow if it can assure residents safety from floods.

This project most clearly addresses "water quality" and "resilience and storm protection" concerns. The water that drains into the Lumber River will have less chance to collect pollutants with these drainage changes, thus leading to better quality of water in the river. There is also a clear resilience goal achieved through allowing the town to shed itself of stormwater more quickly and efficiently. This resilience is crucial to the town's success.

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PRELIMINARY ENGINEERING COST ESTIMATES FOR SCIIP

ITEM	TYPE	QTY	UNIT COST	TOTAL ESTIMATE
18" RCP Installation	LF	450	183.75	82,687.50
24" RCP Installation	LF	800	236.25	189,000.00
36" RCP Installation	LF	530	288.75	153,037.50
42" RCP Installation	LF	910	315.00	286,650.00
42" Headwall	EA	2	10,500.00	21,000.00
Rip Rap	TN	12	210.00	2,520.00
Pavement Cuts and Repair	SY	120	236.25	28,350.00
Curb Inlets	EA	15	9,450.00	141,750.00
Junction Boxes	EA	2	10,500.00	21,000.00
Sediment and Erosion Control	AC	1	2,940.00	2,940.00
Clearing and Grubbing	AC	0.5	3,517.50	1,758.75
Excavation/Hauling	CY	1,500	78.75	118,125.00
Outfall Structure	EA	1	10,500.00	10,500.00
Ditching	LF	200	157.50	31,500.00
Green infrastructure	EA	10	10,500.00	105,000.00
Streetscaping	LF	2,250	157.50	354,375.00
CONSTRUCTION SUBTOTAL				\$1,550,193.75
Contingency		25%		387,548.44
Mobilization		5%		96,887.11
CONSTRUCTION TOTAL				2,034,629.30
Initial Survey		~2%		\$40,692.59
Engineering and Design		~14%		\$289,691.00
CA		~10%		\$203,462.93
Permitting		~3%		\$61,038.88
NONCONSTRUCTION TOTAL				\$594,885.39
TOTAL				\$2,629,514.69

ATTACHMENT

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Attachment 3: Project Location and Service Area Maps



Figure 1 – Location Map of Service Area and Proposed Drainage Improvements.