



Legislation Details (With Text)

File #: 16-003
Type: Agendas
File created: 1/7/2016
On agenda: 1/12/2016
Name:
Status: Agenda Ready
In control: Board of Aldermen
Final action:
Title: Update on Stormwater and Flooding

PURPOSE: The purpose of this item is to provide the Board of Aldermen an update on various storm water and flooding issues in relation to recent rain events.

Indexes:

Code sections:

Attachments: 1. Attachment A - Overview of Recent Rainfall Events and Flood Levels on Toms Creek, 2. Attachment B - Data from Gage Station on Morgan Creek Graph, 3. Attachment C - Email RE: Flooding Response and Assistance

Date	Ver.	Action By	Action	Result
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TITLE:

Update on Stormwater and Flooding

PURPOSE: The purpose of this item is to provide the Board of Aldermen an update on various storm water and flooding issues in relation to recent rain events.

DEPARTMENT: Public Works, Planning

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INFORMATION:

Following heavy rains and reports of high water levels in a few locations in Town, Board of Aldermen members requested that staff provide an opportunity for the Board to receive an update on the Team Carrboro Action Plan (TCAP) item (Public Works, 7/1/14 #2), "Flooding mitigation projects" and to consider a goal of setting specific action steps. The (TCAP) item includes carrying out detailed hydrologic studies related to preliminary engineering reported to the Board of Aldermen on May 19, 2015, and offering different funding mechanisms for consideration. This update also seeks to summarize the information received about flooding around town in December, the Town response, and the status of the applications for Hazard Mitigation Grant Project funding.

The Town has historically prepared for and responded to rainstorms by clearing culverts, communicating with homeowner's association representatives, monitoring water levels, and responding to requests for assistance from property owner's post-events. Regular monitoring of stormwater devices and conditions around town has also occurred. Following a particularly heavy rainfall in the late summer of 2012, the Board of Aldermen received a request from Plantation Acres homeowners for action to alleviate flooding conditions and revisit some changes that had been proposed in relation to flooding in the early 1980's. Staff reviewed records of

previous action, mapped all known storm impacts from the 2012 storm, prepared a chronology of stormwater management and flood elevations of structures in the Tom's Creek drainage area, and prepared to meet Plantation Acres property owners on site to gain a greater understanding of the conditions that had been experienced in the 2012 storm. In late June 2013, heavy rainfall occurred again. Reports on the topic, including considerations and options for Town action were provided on three occasions in 2014:

Date	URL/Agenda Materials
February 11, 2014	https://carrboro.legistar.com/LegislationDetail.aspx?ID=1659067&GUID=C466B117-5E39-48E0-9351-D87DA532019C
May 20, 2014	https://carrboro.legistar.com/LegislationDetail.aspx?ID=1797448&GUID=824C74AA-FB50-4004-B8AF-0B40580F20FE&FullText=1
September 16, 2014	https://carrboro.legistar.com/LegislationDetail.aspx?ID=2546142&GUID=349D96E3-F8BE-4B32-95E8-5D527FDB785B
May 19, 2015	https://carrboro.legistar.com/LegislationDetail.aspx?ID=2288740&GUID=0B2EA271-314B-4ED8-8A38-0E199F87A49F

The February, 2014 report included information on the basis for the Town's Storm water Design and Management and a description of the data used in creating and updating mathematical stormwater models.

Overview of recent rainfall and stream gage data on Morgan and Bolin Creek levels

An overview of recent rainfall events and flood levels in Tom's Creek has been prepared by Henry Wells, Town Engineer. A graph showing water levels at the Morgan Creek stream gage is also attached (*Attachments A and B*). .

Follow-up on communication about resources and assistance available to people affected by the storms

An email update on resources and assistance was provided on December 31st. A copy is attached (*Attachment C*).

Reports of Flooding

804 Manor Ridge Drive (12/23/15) - curb inlet was blocked and caused water to flow over the curb towards yard inlet and ditch on property line. Staff responded and cleared the curb inlet; normal flow was restored.

116 Carol Street (12/30/15) - Tom's Creek floodplain engaged. Water filled the yard and entered living space of home.

118 Carol Street (12/30/15) - Tom's Creek floodplain engaged. Water entered storage area under porch.

207 Oleander Drive (12/30/15) - back and side yards flooding. Drainage correction would require grading of resident's yard outside of Town's ROW. Natural topography drains water from adjacent property. Would require regrade to street.

205 Robert Hunt Drive (12/30/15) - front and side yard flooding. Property located next to HOA drainage easement and existing blue line stream.

Piedmont Health at 301 Lloyd Street (12/30/15) - railroad ditches overflowed and overwhelmed drainage system and water entered business office. This property is located on a blue line stream which flows through the drainage system.

111B Pine Street (12/30/15) - back and side yards flooded. Town drainage easement disposes into private swale on owner's property located within natural topographic valley. Swale requires regrading and connection to blue line stream behind owner's property. Swale currently ends in owner's yard and floods property.

Preliminary engineering/CIP estimates - status of hydrologic studies

Preliminary engineering studies and cost estimates were completed in 2014 by Sungate Design, Inc. for six project locations and preliminary estimates of improvements that could address flooding concerns were included as part of the FY 15/16 Capital Improvement Plan (CIP) (see 5/19/15 agenda materials for details at <https://carrboro.legistar.com/LegislationDetail.aspx?ID=2288740&GUID=0B2EA271-314B-4ED8-8A38-0E199F87A49F>).

An estimate for the cost and time to complete a hydrologic analysis for the Tom's Creek drainage area has been provided by Sungate Engineering. This project will take approximately one month to complete and will provide a better understanding of the proposed improvements.

Mitigation Grants for Flood-prone properties - Tom's Creek/Plantation Acres

Applications for four flood-prone properties (all within regulated floodplain and flood insured) seeking \$748,392 in grant funds, were submitted in April 2015, as follows:

	Acquisition	Elevation
1	100 James Street	400 Lorraine Street
2	116 Carol Street	403 Lorraine Street

A decision from the Federal Emergency Management Agency was expected in the fall of 2015, but was delayed due to redeployment of staff to respond to storm events in South Carolina. North Carolina Hazard Mitigation program staff have been notified to expect a decision in January.

Funding options/Assessment authority

How and when these projects would be funded, should the hydrologic studies result in no changes to the scope of the preliminary engineering, has not been determined. The CIP noted two options: 1) pay as you go, and 2) assessment. Exploration of a method of assessing properties upstream of the proposed improvements which contribute storm water was included in the 5/19/15 agenda item. The Town Manager has also been working with OWASA to determine whether and how a stormwater utility might benefit the Town in meeting its stormwater management needs.

One option for funding noted improvements is assessing some or all of the cost to the properties that benefit from the projects. According to State Statute 160A-216, the Town would have the authority to make a special assessment for the types of improvements noted above. Pertinent statutes are shown below:

160A-216. Authority to make special assessments.

Any City is authorized to make special assessments against benefited property within its corporate limits for: Constructing, reconstructing, extending, and other building or improving storm sewer and drainage systems.

State Statute 160A-218. Basis for making assessments

Assessments may be made on the basis of:

1. The frontage abutting on the project, at an equal rate per foot of frontage, or
2. The area of land served, or subject to being served, by the project, at an equal rate per unit of area, or
3. The value added to the land served by the project, or subject to being served by it, being the difference between the appraised value of the land without improvements as shown on the tax records for the county, and the appraised value of the land with improvements according to the appraisal standards and rules adopted by the county at its last revaluation, at an equal rate per dollar of value added; or
4. The number of lots served, or subject to being served, where the project involves extensions of an existing system to a residential or commercial subdivisions, at an equal rate per lot; or
5. A combination of two or more of these bases.

Whenever the basis selected for assessment is either area or value added, the council may provide for the laying out of benefit zones according to the distance of benefited property from the project being undertaken, and may establish differing rates of assessment to apply uniformly throughout each benefit zone.

For each project, the council shall endeavor to establish an assessment method from among the bases set out in this section which will most accurately assess each lot or parcel of land according to the benefit conferred upon it by the project. The council's decisions as to the method of assessment shall be final and conclusive and not subject to further review or challenge.

Another approach could be to determine layers or levels of benefit and subsequent assessment. As an example, if the all properties that contribute water to a drainage area were considered to benefit the same by the installation of a culvert(s), a simplified calculation would be to take the entire area of land served, divided by the cost of the project and determine a cost per acre which would then be applied to the acreage of each lot. The Town could consider that there is some overall public benefit, pay a portion of the cost from tax revenue and assess the remaining portion against those benefitted, or possibly even consider various levels of benefit such as a higher level of assessment to those that may be closer to the project and receiving a higher level of benefit. Example calculations of a cost per acre of the various projects were included in the 5/19/15 report.

FISCAL & STAFF IMPACT: The fiscal impact to the Town is unknown at present and will be determined ultimately by decisions about the extent and scope of projects in relation to their costs and benefits and the financing methodology used to fund any projects. The Town will be providing more detailed information on different funding strategies and options for storm water management later in FY 2015-16.

RECOMMENDATION: It is recommended that the Board of Aldermen accept the update.