



# Town of Carrboro

Town Hall  
301 W. Main St.  
Carrboro, NC 27510

## Meeting Agenda Board of Aldermen



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Tuesday, May 19, 2015

7:30 PM

Board Chambers - Room 110

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### A. REQUESTS FROM VISITORS AND SPEAKERS FROM THE FLOOR

7:30-7:35

### B. RESOLUTIONS, PROCLAMATIONS, AND ACKNOWLEDGEMENTS

1. [15-0228](#) Charge Issued to Recently Appointed Advisory Board Member

7:35-7:40

### C. CONSENT AGENDA

1. **15-0227** Approval of Previous Meeting Minutes
2. **15-0130** Request-to-set a public hearing on Land Use Ordinance Text Amendments Related to New Data Service Provider Use Classification Requirements

**PURPOSE:** The purpose of this item is for the Board of Aldermen to consider setting a public hearing on text amendments to the Land Use Ordinance to establish a new data service provider use classification.

**Attachments:** Attachment A - Resolution

Attachment B - Draft LUO amendment on data service provider facilities

3. **15-0223** Request-to-set a public hearing on Land Use Ordinance Text Amendments that would Modify Provisions Relating to the Expiration of Permits

**PURPOSE:** The purpose of this item is for the Board of Aldermen to consider setting a public hearing on text amendments to the Land Use Ordinance to modify the existing provisions relating to the expiration and extension of permits.

**Attachments:** Attachment A - Resolution

Attachment B - Draft LUO Text Amendment relating to Permit Extensions-4-24-2015

4. **15-0226** Request-to-set a public hearing on Land Use Ordinance Text Amendments that would Authorize the Creation of Conditional Zoning Districts that Correspond with most of the existing Zoning Categories

**PURPOSE:** The purpose of this item is for the Board of Aldermen to consider setting a public hearing on text amendments to the Land Use Ordinance that would authorize the establishment of conditional zoning districts that correspond to most zoning districts rather than just B-1(G) and B-2.

**Attachments:** Attachment A - Resolution  
Attachment B - Draft Txt Amend Creating Conditional Zoning Districts for most Zoning Districts

#### D. OTHER MATTERS

##### 7:40-7:50

1. **15-0139** Receipt of the 30th Tree City USA Award

**PURPOSE:** The Town of Carrboro has been named a Tree City USA for 2014 by The National Arbor Day Foundation to honor its commitment to its community forest. This marks the 30th year that the Town of Carrboro has been given this award.

##### 7:50-9:20

2. **15-0148** Update on Storm Water Flooding Issues

**PURPOSE:** The purpose of this item is to provide the Board of Aldermen an update on various storm waste flooding issues since the last report on September 16, 2014

**Attachments:** TOC PW\_  
Tom's Creek  
1020 MAIN  
Broad St  
Old\_Pittsboro  
Morningside Dr  
February 11, 2014 Storm Water Design Agenda Item Abstract.pdf  
May 20, 2014 Storm Water Flooding Issues Agenda Item Abstract.pdf  
September 16, 2014 Storm Water Update Agenda Item Abstract.pdf  
Summary Storm water flooding mitigation projects May 2015  
CIP Storm Water Flooding Mitigation

##### 9:20-9:45

3.     **15-0128**     Orange County Affordable Housing Coalition Discussion on Affordable Housing Needs and Opportunities in Carrboro

**PURPOSE:** The purpose of this item is for the Board to hear from the Orange County Affordable Housing Coalition on what the affordable housing needs and opportunities are for Carrboro.

**E.     BRIEF UPDATE FROM BOARD MEMBERS**

**F.     MATTERS BY TOWN CLERK**

**G.     MATTERS BY TOWN MANAGER**

**H.     MATTERS BY TOWN ATTORNEY**





# Town of Carrboro

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301 W. Main St.  
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## Agenda Item Abstract

**File Number:** 15-0130

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**Agenda Date:** 5/19/2015

**File Type:** Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### **TITLE:**

Request-to-set a public hearing on Land Use Ordinance Text Amendments Related to New Data Service Provider Use Classification Requirements

**PURPOSE:** The purpose of this item is for the Board of Aldermen to consider setting a public hearing on text amendments to the Land Use Ordinance to establish a new data service provider use classification.

**DEPARTMENT:** Planning Department

**CONTACT INFORMATION:** Christina Moon - 919-918-7325; Marty Roupe - 919-918-7333; Nick Herman - 919-929-3905; Bob Hornik - 919-929-3905

**INFORMATION:** Section 15-146 of the Land Use Ordinance, Table of Permissible Uses, outlines a number of utility-type uses such as above-ground utility structures or facilities, and underground lines. Such uses are further classified based on the physical size of the facility's components as well as the extent, or coverage, of the area for which the utility is designed to serve. As interest in new data services come on line, staff noted an opportunity to further refine the existing definitions to better provide for new types of uses.

A draft ordinance has been prepared. If adopted, it would establish a new data service provider use classification, include the new use to the list of definitions, add it to the Table of Permissible Uses, and describe dimensional requirements and performance standards. In addition, consistent with similar standards for cell tower facilities the proposed amendment also includes language that would require a service provider to remove facilities that were no longer in service within a certain period of time.

The Board of Aldermen must receive public comment before adopting amendments to the LUO. Orange County and Planning Board review are also needed. The Board may wish to refer the draft ordinance to other advisory boards such as the Appearance Commission; the resolution template provides the Board with those options.

**FISCAL & STAFF IMPACT:** Public hearings involve staff and public notice costs associated with advisory board and Board of Aldermen review.

**RECOMMENDATION:** Staff recommends that the Board of Aldermen consider the attached resolution, setting a public hearing for June 23, 2015 and referring the proposed amendment to Orange County,

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the Planning Board and other advisory boards as appropriate.

A RESOLUTION SETTING A PUBLIC HEARING ON AN ORDINANCE AMENDING THE  
CARRBORO LAND USE ORDINANCE TO ESTABLISH REGULATIONS FOR DATA  
SERVICE PROVIDER FACILITIES NOT OTHERWISE REGULATED

WHEREAS, the Board of Aldermen seeks to provide ample opportunities for the public to comment on proposed amendments to the Land Use Ordinance;

NOW, THEREFORE BE IT RESOLVED that the Board of Aldermen sets a public hearing on June 23, 2015, to consider adopting “An Ordinance Amending the Carrboro Land Use Ordinance to Establish Regulations for Data Service Provider Facilities Not Otherwise Regulated.”

BE IT FURTHER RESOLVED that the draft ordinance is referred to Orange County, the Town of Carrboro Planning Board and the following Town of Carrboro advisory boards and commissions for consideration and recommendation prior to the specified public hearing date:

Appearance Commission

Recreation and Parks Commission

Transportation Advisory Board

Northern Transition Area Advisory Committee

Environmental Advisory Board

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Economic Sustainability Commission

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This is the 19<sup>th</sup> day of May in the year 2015.

AN ORDINANCE AMENDING THE CARRBORO LAND USE ORDINANCE TO ESTABLISH  
REGULATIONS FOR DATA SERVICE PROVIDER FACILITIES NOT OTHERWISE  
REGULATED

\*Draft 5-08-2015\*

THE BOARD OF ALDERMEN OF THE TOWN OF CARRBORO ORDAINS:

Section 1. Section 15-15 (Definitions of Basic Terms) is amended by adding a new paragraph 27a defining the term “data service provider facility” as follows:

**DATA SERVICE PROVIDER FACILITY:** An unmanned facility other than a utility facility or wireless telecommunication facility, including but not limited to a structure and ancillary improvement, used primarily for the purpose of transmitting and receiving data. Typically, such facilities resemble wireless telecommunications base stations and house equipment used to transmit and receive data via cable, fiber optic strands, or similar media.

Section 2. Section 15-146 (Table of Permissible Uses) of the Carrboro Land Use Ordinance is amended by adding a new use classification 15.750 “Data Service Provider Facility.” The Table of Permissible Uses is further amended to indicate that “data service provider facilities” shall be allowed in the R-10, R-15 and R-20 districts with a zoning permit.

Section 3. A new section 15-176.6 is added, as follows  
Section 15-176.6 Data Service Provider Facilities.

- (a) Data service provider facilities up to 500 square feet in area, and no taller than 15 feet in height are allowed in the R-10, R-15 and R-20 zoning districts with a zoning permit, provided that such facility otherwise satisfies the requirements of the Carrboro Land Use Ordinance;
- (b) A data service provider facility larger or taller than the maximums stated above may be allowed with a special use permit issued by the Board of Adjustment upon satisfaction of the considerations required by section 15-54;
- (c) All data service provider facilities shall be set back at least twice the otherwise applicable front, side and rear yard setback requirements for the zoning district in which the facility is located;
- (d) A data service provider facility shall have sufficient parking to accommodate the number of vehicles likely to be present at the facility on a regular basis;
- (e) A data service provider facility shall be surrounded by a fence or wall at least 8 feet in height and constructed of material that cannot be easily climbed or penetrated;
- (f) All data service provider facilities shall be surrounded by a Type A buffer on all sides;
- (g) No data service provider facility may generate any noise, smoke, odor, vibration, electrical interference or other disturbance that is perceptible beyond the boundaries of the lot where the facility is located or that affect the use of adjoining or neighboring properties;
- (h) No outdoor storage shall be permissible at data service provider facilities;
- (i) All data service provider facilities shall comply with the noise standards established by section 15-163;
- (j) All data service provider facilities shall comply with the vibration standards established by section 15-164;

- (k) Commercial messages may not be displayed on any data service provider facility, provided that such facility shall have a single sign no larger than 4 square feet in area, identifying the operator of the facility and providing a telephone number or other contact information for the operator;
- (l) All data service provider facilities shall meet the applicable lighting requirements established in section 15-242.5;
- (m) The recipient of the permit for data service provider facilities shall be required as a continuing condition on the validity of the permit, to submit to the Zoning Administrator by January 31st of each year documentation that the facility is being utilized. Data service provider facilities which are not used for a period of 6 months or more shall be removed by the recipient of the permit or subsequent permit holder within 90 days thereafter. A statement of financial responsibility and performance security shall be posted for each facility to guarantee compliance with this requirement.

Section 4. All provisions of any town ordinance in conflict with this ordinance are repealed.

Section 5. This ordinance shall become effective thirty days after adoption.





# Town of Carrboro

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Carrboro, NC 27510

## Agenda Item Abstract

**File Number: 15-0223**

**Agenda Date:** 5/19/2015

**File Type:** Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### TITLE:

Request-to-set a public hearing on Land Use Ordinance Text Amendments that would Modify Provisions Relating to the Expiration of Permits

**PURPOSE:** The purpose of this item is for the Board of Aldermen to consider setting a public hearing on text amendments to the Land Use Ordinance to modify the existing provisions relating to the expiration and extension of permits.

**DEPARTMENT:** Planning Department

**CONTACT INFORMATION:** Christina Moon - 919-918-7325; Marty Roupe - 919-918-7333; Nick Herman - 919-929-3905

**INFORMATION:** At the November 18, 2014 Board of Aldermen meeting, the Board considered permit extension requests for three conditional use permits. After reviewing the second permit extension agenda item Alderman Seils requested, as formal motion, that staff report back to the Board on the option to extend a permit for more than twelve months and to include under what circumstances the Board would consider a longer extension.

Article IV of the Land Use Ordinance outlines the procedures for permit and final plat approval. Section 15-62 speaks to the expiration of permits. Subsection 15-62(c) provides for the permit issuing authority to extend a permit for a period of up to one year after the date when the permit would otherwise expire if it concludes that the applicant meets the following criteria:

- (i) the permit has not yet expired,
- (ii) the permit recipient has proceeded with due diligence and in good faith, and
- (iii) conditions have not changed so substantially as to warrant a new application.

A draft ordinance has been prepared that, if adopted, would amend Section 62(c) to allow the permit issuing authority to extend a permit for a period of up to two years. The amendment would not require a permit to be extended for the maximum length of time, but rather allow the permit issuing authority the discretion to extend the permit for a period of up to but not exceeding two years. The existing criteria in the LUO provides guidance for determining whether to grant the extension.

The Board of Aldermen must receive public comment before adopting amendments to the LUO. Orange County and Planning Board review are also needed.

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**Agenda Date:** 5/19/2015

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**FISCAL & STAFF IMPACT:** Public hearings involve staff and public notice costs associated with advisory board and Board of Aldermen review.

**RECOMMENDATION:** Staff recommends that the Board of Aldermen consider the attached resolution, setting a public hearing for June 23, 2015 and referring the proposed amendment to Orange County, the Planning Board.

A RESOLUTION SETTING A PUBLIC HEARING ON AN ORDINANCE AMENDING THE LAND USE ORDINANCE TO MODIFY PROVISIONS RELATING TO THE EXPIRATION OF PERMITS

WHEREAS, the Board of Aldermen seeks to provide ample opportunities for the public to comment on proposed amendments to the Land Use Ordinance;

NOW, THEREFORE BE IT RESOLVED that the Board of Aldermen sets a public hearing on June 23, 2015, to consider adopting “An Ordinance Amending the Carrboro Land Use Ordinance to Modify Provisions Relating to the Expiration of Permits.”

BE IT FURTHER RESOLVED that the draft ordinance is referred to Orange County, the Town of Carrboro Planning Board and the following Town of Carrboro advisory boards and commissions for consideration and recommendation prior to the specified public hearing date:

Appearance Commission

Recreation and Parks Commission

Transportation Advisory Board

Northern Transition Area Advisory Committee

Environmental Advisory Board

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Economic Sustainability Commission

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This is the 19<sup>th</sup> day of May in the year 2015.

AN ORDINANCE AMENDING THE LAND USE ORDINANCE TO MODIFY PROVISIONS  
RELATING TO THE EXPIRATION OF PERMITS

**\*\*DRAFT 4-24-2015\*\***

THE BOARD OF ALDERMEN OF THE TOWN OF CARRBORO ORDAINS:

Section 1. Section 15-62(c) of the Carrboro Land Use Ordinance is amended to read as follows:

(c) The permit-issuing authority may extend for a period up to two years the date when a permit would otherwise expire pursuant to subsections (a) and (b) if it concludes that (i) the permit has not yet expired, (ii) the permit recipient has proceeded with due diligence and in good faith, and (iii) conditions have not changed so substantially as to warrant a new application. Successive extensions may be granted for periods of up to two years upon the same findings. All such extensions may be granted without resort to the formal processes and fees required for a new permit.

Section 2 This ordinance shall become effective upon adoption.



# Town of Carrboro

Town Hall  
301 W. Main St.  
Carrboro, NC 27510

## Agenda Item Abstract

**File Number: 15-0226**

**Agenda Date:** 5/19/2015

**File Type:** Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### TITLE:

Request-to-set a public hearing on Land Use Ordinance Text Amendments that would Authorize the Creation of Conditional Zoning Districts that Correspond with most of the existing Zoning Categories

**PURPOSE:** The purpose of this item is for the Board of Aldermen to consider setting a public hearing on text amendments to the Land Use Ordinance that would authorize the establishment of conditional zoning districts that correspond to most zoning districts rather than just B-1(G) and B-2.

**DEPARTMENT:** Planning Department

**CONTACT INFORMATION:** Christina Moon - 919-918-7325; Nick Herman - 919-929-3905; Mike Brough - 919-929-3905

**INFORMATION:** In October of 2014, the Board considered and adopted text amendments to the Land Use Ordinance (LUO) relating to the Board of Adjustment. The amendments were initiated by staff to ensure the Town's compliance with changes to North Carolina State Statutes relating to the same topics. The changes were part of an ongoing effort to revisit certain statutes relating to zoning powers that had been updated over the years to address specific issues but had not been rewritten in a comprehensive way in quite a while. The intent was to improve clarity in the text, streamline and/or modernize the language and remove duplication.

In November of 2014, staff from the School of Government at the University of North Carolina at Chapel Hill, shared information with local zoning officials about a similar review spearheaded by the North Carolina Bar Association to reorganize, clarify and modernize statutes relating to local planning and development regulations. House Bill 548, was introduced in early April to formally begin the legislative process for considering these potential changes. One of the key trends that staff has observed in following this review is a growing shift away from conditional use zoning toward conditional zoning as the preferred mechanism for handling some development opportunities.

Both conditional use and conditional zoning mechanisms allow rezonings to occur under very specific conditions where they may otherwise not be appropriate. However, unlike conditional use zoning where the rezoning and associated conditional use permit are considered simultaneously following quasi-judicial proceedings, conditional zoning follows a legislative process. Conditions are agreed to by both property owner and local government and are linked to the rezoning. The petitioner submits some sort of exhibit or site plan, and the actual permit comes later as subsequent step.

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The LUO provides for staff to initiate an amendment if it believes that the proposed amendment has significant merit and would benefit the general public interest. Article IX, Zoning Districts and Zoning Map, provides for conditional use zoning for almost all of the existing general use districts but only provides for conditional zoning for two districts, B-1(G) and B-2. A draft ordinance has been prepared that, if adopted, would authorize the creation of a conditional district that would correspond to almost all of the Town's general zoning districts. The Board of Aldermen must receive public comment before adopting amendments to the LUO. Orange County and Planning Board review are also needed.

**FISCAL & STAFF IMPACT:** Public hearings involve staff and public notice costs associated with advisory board and Board of Aldermen review.

**RECOMMENDATION:** Staff recommends that the Board of Aldermen consider the attached resolution, setting a public hearing for June 23, 2015 and referring the proposed amendment to Orange County, the Planning Board.

A RESOLUTION SETTING A PUBLIC HEARING ON AN ORDINANCE AMENDING THE  
CARRBORO LAND USE ORDINANCE TO AUTHORIZE THE CREATION OF  
CONDITIONAL ZONING DISTRICTS THAT CORRESPOND TO MOST ALL ZONING  
DISTRICTS RATHER THAN JUST THE B-2 AND B-1(G) DISTRICTS

WHEREAS, the Board of Aldermen seeks to provide ample opportunities for the public to comment on proposed amendments to the Land Use Ordinance;

NOW, THEREFORE BE IT RESOLVED that the Board of Aldermen sets a public hearing on June 23, 2015, to consider adopting “An Ordinance Amending the Carrboro Land Use Ordinance to Authorize the Creation of Conditional Zoning Districts that Correspond to Most All Zoning Districts Rather than just the B-2 and B-1(G) Districts.”

BE IT FURTHER RESOLVED that the draft ordinance is referred to Orange County, the Town of Carrboro Planning Board and the following Town of Carrboro advisory boards and commissions for consideration and recommendation prior to the specified public hearing date:

Appearance Commission

Recreation and Parks Commission

Transportation Advisory Board

Northern Transition Area Advisory Committee

Environmental Advisory Board

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Economic Sustainability Commission

\_\_\_\_\_

This is the 19<sup>th</sup> day of May in the year 2015.

AN ORDINANCE AMENDING THE CARRBORO LAND USE ORDINANCE TO  
AUTHORIZE THE CREATION OF CONDITIONAL ZONING DISTRICTS THAT  
CORRESPOND TO MOST ALL ZONING DISTRICTS RATHER THAN JUST THE B-2 AND  
B-1(G) DISTRICTS

\*DRAFT 4-28-2015\*

THE CARRBORO BOARD OF ALDERMEN ORDAINS:

Section 1. Subsection 15-141.4(a) of the Carrboro land Use Ordinance is amended as follows:

(a) Conditional zoning districts are zoning districts in which the development and use of the property so zoned are governed by the regulations applicable to one of the general use zoning districts listed in the Table of Permissible Uses, as modified by the conditions and restrictions imposed as part of the legislative decision creating the district and applying it to the particular property. Accordingly, the following conditional zoning districts may be established: ~~B-2-CZ and B-1(G)-CZ.~~

R-20-CZ, R-15-CZ, R-10-CZ, R-7.5-CZ, R-3-CZ, R-2-CZ, R-R-CZ, R-S.I.R.-CZ , and R-S.I.R.-2-CZ

B-1(C)-CZ, B-1(G)-CZ, B-2-CZ, B-3-CZ, B-3-T-CZ, B-4-CZ, CT-CZ, O-CZ, OA-CZ, M-1-CZ, M-2-CZ

Section 2. All provisions of any town ordinance in conflict with this ordinance are repealed.

Section 3. This ordinance shall become effective upon adoption.



# Town of Carrboro

Town Hall  
301 W. Main St.  
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## Agenda Item Abstract

**File Number:** 15-0139

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**Agenda Date:** 5/19/2015

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**Version:** 1

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### **TITLE:**

Receipt of the 30<sup>th</sup> Tree City USA Award

**PURPOSE:** The Town of Carrboro has been named a Tree City USA for 2014 by The National Arbor Day Foundation to honor its commitment to its community forest. This marks the 30<sup>th</sup> year that the Town of Carrboro has been given this award.

**DEPARTMENT:** Public Works

**CONTACT INFORMATION:** George Seiz, 919-7427, David Jantzen, 919-7431

**INFORMATION:** One of the goals of the Public Works department in providing for the reforestation of the Town is to continue the program level necessary to maintain the Town's recognition as a Tree City USA. Carrboro has met the four standards to become a Tree City USA: a tree board or department, a tree care ordinance, a comprehensive community forestry program, and an Arbor Day observance.

This year's Arbor Day was celebrated on Friday, March 13, 2015 with the students at Carrboro Elementary school. The celebration included comments from Mayor Pro Tem Sammy Slade, presentation of the Tree City USA Award by the NC Division of Forest Resources, and the planting of a Flowering Dogwood tree by the 3<sup>rd</sup> grade class. The Public Works Department donated a copy of "The Tree Book for Kids and Their Grown-ups" to each of the 3<sup>rd</sup> grade classrooms.

**FISCAL & STAFF IMPACT:** Purchase of promotional materials (\$150), Dogwood Tree (\$90), and 12 labor hours.

**RECOMMENDATION:** The town staff requests the Board of Aldermen receive the Tree City USA Award for calendar year 2014.





# Town of Carrboro

Town Hall  
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Carrboro, NC 27510

## Agenda Item Abstract

**File Number:** 15-0148

**Agenda Date:** 5/19/2015

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### TITLE:

Update on Storm Water Flooding Issues

**PURPOSE:** The purpose of this item is to provide the Board of Aldermen an update on various storm waste flooding issues since the last report on September 16, 2014

**DEPARTMENT:** Public Works

**CONTACT INFORMATION:** George Seiz, Director of Public Works, 918-7427

### INFORMATION:

The Board of Aldermen (BOA) asked staff to provide periodic updates on the Storm Water Mitigation projects. Updates have been provided on February 11, 2014, May 20, 2014 and September 16, 2014. The abstracts from the previous updates can be found as attachments.

Preliminary engineering studies and cost estimates have been completed by Sungate Design, Inc. for six project locations at a cost of \$26,500. The preliminary estimates were included as part of the FY 15/16 Capital Improvement Plan (CIP) and are included as an attachment. Also included as an attachment is a summary table providing a description of proposed improvements, cost estimates for design and construction, and comments about flooding impacts and priority.

How these projects are to be funded still needs to be determined. At this point in time funding has not been budgeted as staff looks at possible funding options. The two options noted in the CIP are: 1) pay as you go, 2) Assessment. One of the purposes of this report is to discuss the idea of assessing properties upstream of the proposed improvements which contribute storm water.

The six locations that have been studied are shown below with updates.

#### I. PUBLIC WORKS GARAGE STREAM BANK STABILIZATION UNNAMED TRIBUTARY TO MORGAN CREEK

During the storm event of June, 2013 the stream bank of the Unnamed Tributary to Morgan Creek experienced severe erosion due to excessive velocities in the stream at the outlet of the 8' X 8' box culvert under NC 54

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**Agenda Date:** 5/19/2015

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Bypass. The property line of the Town's Public Works facility runs down the middle of the stream. The erosive velocities left the banks on the Public Works side of the stream on an extremely steep slope and in an unstable condition. Further erosion could cause damage to a shed and other structures on the Public Works property.

In order to stabilize the eroded bank, the stream will first need to be restored to a more stable geometric pattern followed by installation of non-erosive bank stabilization (Class II rip rap). At the same time, a suitable energy dissipater will also need to be installed at the outlet of the existing culvert to prevent further stream bank erosion. In order to accomplish this work, additional easements will be required from the adjacent property owner. NCDOT has been contacted, and they agree that simply attempting to stabilize the bank on the Public Works property without installing the dissipater may not prevent further erosion to the stream bank and may also cause erosion of the stream bank on the eastern side of the stream. There are indications that NCDOT may be willing to participate to fill and protect the scour hole.

**Project cost - \$127,900 to do the one side adjacent to Public Works**

Also to be considered is the future replacement of the culvert pipes under the Public Works driveway entrance. The existing corrugated metal pipes are in poor condition and will eventually need to be replaced. **Project cost - \$210,000**

## **II. TOM'S CREEK FLOODING**

Since 1982, flooding along Tom's Creek during Hurricanes, Tropical Storms and heavy localized storms which caused damage to existing structures have been reported. The latest was a localized rainfall event in June of 2013. Over the years, numerous studies have been conducted by Carrboro staff, the US Army Corps of Engineers and others in an effort to abate the flooding problem. To date, none of the potential solutions have been implemented due to either environmental concerns or funding issues.

There are four road crossings on Tom's Creek which create backwater. The development was designed prior to the current standards in a variety of ways, including the sizing of culverts. The enlargement of these culverts could cause more frequent downstream flooding during smaller storm events since the new culverts would not provide as much detention of storm water. Since overtopping of the roads is now occurring and would not occur after installation of the new culverts, the increased frequency of flooding cannot be quantified without a detailed Hydrologic Study of the watershed.

It should also be noted that these projects are mostly focused on the issue of eliminating or mitigating flooding effects on insurable structures. The Town may want to consider further analysis dealing with issues about the channel itself and whether or not there might be strategies that would allow maximizing access of the stream to its natural floodplain, and possibly assist with meeting other water quality concerns.

- A. West Main Street - West Main Street is an NCDOT road. Increasing the culvert size would not mitigate upstream flooding problems. Even removing the culvert and the existing road fill in its entirety would

not remove flooded structures from the floodplain.

- B. Lorraine Street - There is currently a 66” pipe under Lorraine Street on Tom’s Creek. The pipe is in poor condition with a corroded invert and sectional deformity likely caused by structural overload. The culvert currently causes backwater in the 100-year storm event which causes Lorraine Street to overtop. If the pipe size were to be increased to a 96” RCP, the 100-year water surface elevation would be lowered so that 400 Lorraine, 204 James, 206 James and 208 James would be removed from the 100-year flood plain.
- C. Carol Street - There are 2 @ 36” pipes currently under Carol Street on Tom’s Creek. The culverts currently cause backwater in the 100-year storm event which causes Carol Street to overtop. If the pipe were to be upsized to a 72” RCP, the 100-year water surface elevation would be lowered so that 116 Carol, 118 Carol and 300 James would be removed from the 100-year flood plain.
- D. Rainbow Drive - There are 2@ 30” pipes currently under Rainbow Drive on Tom’s Creek. The culverts currently cause backwater in the 100-year storm event which causes Rainbow Drive to overtop. If the pipe were to be upsized to a 72” RCP, the 100-year water surface elevation would be slightly lowered; however no dwellings would be removed from the 100-year flood plain. This is due to the fact that the existing elevation of Rainbow Drive at the culvert is considerably lower than either Carol or Rainbow; and therefore, overtopping of the road already or currently occurs earlier in the storm event. Once the road is overtopped the elevation of the flood increases much slower since the conveyance over the road is much greater than through the culverts. The fact that no dwellings will be removed from the 100 year flood plain raises the question as to the benefit of enlarging this culvert.

Consider enlarging culverts at three locations - Lorraine, Carol, and Rainbow.

**Lorraine - replace 66” pipe with 96” pipe. Project Cost - \$113,500**

**Carol - Replace 2-36” pipe w/72” pipe. Project Cost - \$110,800**

**Rainbow - Replace 2- 30” pipes with a 72” pipe. Project cost - \$80,600**

### **III. 1020 WEST MAIN STREET DRAINAGE COMPLAINT**

In April, 2010 the property owner at 1020 West Mail Street reported that his crawl space and his adjacent neighbor’s property were being flooded due to back up of storm water from downstream property, Calvary Baptist Church. Drainage from the 1020 West Main property is conveyed across the Church property in an existing 24” storm system. In December, 2013, the property owner again registered a complaint about his crawl space and shed being flooded by recent rains. He stated that in his opinion, upstream development and associated impervious surface were causing increased runoff and exacerbating his flooding problems.

Because the storm sewer which is backing up is located on private property, there is some question as to whether the Town is legally responsible for this problem and further research on this question is needed.

Four Alternatives were evaluated.

Alternative #1 would be to construct a 3 foot base overflow ditch from the properties to the existing drainage system in West Main Street. The ditch would parallel the access drive to West Main Street and would tie into the existing 42" drainage system in West Main Street. The ditch would be constructed exclusively on the Calvary Baptist Church property. There have been no discussions with the church as to the availability of the property for drainage ditch construction. This alternative and all others will reduce flooding in all storms up to the 100-year below the elevation of the crawl space, HVAC units and the shed. It is not anticipated that there will be downstream impacts since these alternatives tie directly into the existing drainage system in West Main Street.

Alternative #2 consists of replacing a portion of the existing 24" pipe system on the church property with a 3 @ 36" pipe from the properties to the existing storm drop inlet on the church property and then extending the system to the existing driveway and then continuing under the existing access drive to the drainage system in West Main Street. In order for the pipe system to work, the invert at the inlet of the system will have to be lowered by approximately 1.5 feet.

Alternative #3 would combine alternatives #1 and #2 and consists of construction of a 3 foot base ditch from the properties to the outlet of the existing 24" system on the church property and then constructing a new system 2 @ 42" system in the existing shared driveway to tie into the existing system in West Main Street

Alternative #4 would be to install one or more detention facilities in the watershed. Due to the density of development and the lack of open space, this alternative was not considered to be feasible.

**Option 1 - remove existing 24" and construct a drainage ditch the entire distance to Main St.  
Project cost - \$121,600**

**Option 2 - Replace existing 24" pipe with three - 36" pipes and tie into an existing storm system in W. Main St. - Project cost - \$323,400**

**Option 3 - Ditch and pipe combination - Project Cost - \$221,600**

#### **IV. 408 BROAD STREET CULVERT**

During a June 30, 2013 storm, Broad Street was overtopped by flooding and a portion of the downstream embankment was washed away. There is a 24" pipe under Broad Street at this location. The subject culvert

crossing is located near 408 Broad Street. The pipe crossing is located on Tanyard Branch which is a tributary to Bolin Creek. There is no flooding on adjacent properties up or downstream of the 24" pipe which cause damage to any existing structures.

The 24" pipe will not pass the 2-year storm based on the proposed zoning conditions in the contributing watershed without overtopping the road. This does not meet the current Town of Carrboro standard for cross pipes. In order to meet current Town of Carrboro standards, which require passage of the 25-year storm, the pipe will have to be upsized to a 54" RCP with a headwall on the inlet end. In addition, the 54' pipe provides enough conveyance so that the road will not be overtopped in the 100-year storm event; thereby, eliminating the slope stability problem.

**Option 1 - Replace existing 24" culvert with a 54" culvert that will meet current Carrboro Standards and not overtop the road in the 100 year storm. The existing culvert is comprised of two different pipe materials; roughly half is vitrified clay pipe and the other half plastic (HDPE). The existing inlet is partially crushed. - Project cost - \$43,000**

**Option 2 - Leave the existing pipe in place and provide a non-erodible road surface and downstream fill slope. Project cost - \$22,000**

## **V. OLD PITTSBORO ROAD DRAINAGE**

In August, 2000, it was reported by a property owner on Old Pittsboro Road that storm water from recent rainfalls had overtopped the ditch at her drive pipe and washed through her yard causing erosion on her property. There was no flood damage to the dwelling or any utilities or ancillary structures located on the property. On July 30, 2013 we received photos showing flooding on property, 100 Carr Street, at the intersection of East Carr Street and South Greensboro Street. The reported flooding was likely caused, in part, by the inadequate size of the storm drain outlet system under South Greensboro Street. It was also reported that storm water flow from the Old Pittsboro Road ditch overtopped the ditch and flooded the road. Flooding in Old Pittsboro Road had been reported on several other occasions between 2000 and 2013.

Four Alternatives were evaluated.

Alternative #1 would be to construct an adequately sized drainage system within the existing ditch in Old Pittsboro Road from the existing system in South Greensboro Street past 108 Old Pittsboro Road. The proposed system would consist of 60" and 66" pipes along with grated inlets at the drive locations installed in the ditch. Installation of an adequately sized system would eliminate flooding problems on 100 Carr Street and along Old Pittsboro Road.

Alternative #2 would be to construct an adequately sized drainage system (as in Alternative #1 from the existing drainage system in South Greensboro Street under Old Pittsboro Road tying into the exiting ditch beyond 108 Old Pittsboro Road.

Alternative #3 would be to reshape and lower the ditch along Old Pittsboro Road to add more conveyance to the ditch and to facilitate installation of the 60" pipe at the existing junction box in South Greensboro Street as in Alternatives #1 and #2. The ditch would need to be approximately 6 feet deep. This would make the top of the ditch approximately 36 feet wide at the top which would require significantly more Right-of-Way; would require removal most of the mature vegetation on the north side of the road; would require purchase and removal of an ancillary structure and would closely encroach on two dwellings.

Alternative #4 would be to install a detention facility in the watershed. The site considered for location of the detention facility is the Town owned property at the north corner of South Greensboro Street and Carr Street. An underground storm water BMP could be installed beneath the proposed building for the site. This could provide significant storm water storage and possibly cut the peak discharge to levels that the existing ditch and pipe system along Old Pittsboro Road could handle.

**Option 1 - Construct adequate size drainage system - connect to existing system that discharges to the west of S. Greensboro, and run pipe to 108 Old Pittsboro where existing ditch widens and slope increases to keep water contained. - Project cost - \$453,400**

**Option 2 - Same as option 1 but with different alignment out in public right-of-way. - Project cost - \$566,800.**

**Options 3 & 4 possibly not feasible and Option 4 (large underground detention facility) would likely cost much more than either Option 1 or 2.**

## **MORNINGSIDE DRIVE STORM DRAINAGE UPGRADES**

The property owners at Lots 103, 105, and 107 Morningside Drive experience periodic nuisance flooding of the land adjacent to Morningside Drive. None of the structures located on the lots have experienced flood damage above the finished floor elevation. However, the flooding does impact the accessibility to the structures located on Lots 103 and 105 when the associated driveways are inundated. There is an existing single 24" RCP under Morningside Drive and is undersized for the contributing watershed. Based on the calculated peak flow rates, Morningside Drive overtops in less than the 1-year storm event.

In order to convey the 25-year storm event without overtopping the roadway, three 30-inch RCP open-end pipes would be required. Multiple pipes would be needed due to limited elevation difference between the channel bed and roadway surface. Storm events greater than the 25-year event, would continue to overtop the existing road. While increasing the number and size of the cross-pipes will reduce the frequency of flooding on the Lots, the low areas on the Lots will still be inundated periodically unless the driveway and parking areas are raised above the elevation of the roadway sag. The pipe under the driveway to Lot 105 will also need to be replaced by the property owners with a larger appropriately sized pipe.

Project would replace existing 24" culvert with 3 - 30" culverts. Some curb and gutter work in combination with the installation of a catch basin to control water coming off of street.

**Project cost - \$100,200.**

**VI. Mitigation Grants for Flood-prone properties**

The Town submitted applications in October 2013 for Hazard Mitigation Assistance (HMA) grant funding for four flood prone properties in the Tom's Creek basin; a requirement of the grant funding was that each property was already flood-insured. Funding was not allocated. In August 2014, staff learned that additional funding was available for local governments in Orange and Alamance Counties. A letter of interest was prepared in September. The letter identified \$2,697,798 in projects including: funding for generators to control traffic lights, funding for generators to serve Town Hall, and funding for culvert replacement and the elevation and acquisition projects applied for previously. In December, the Town was notified that the elevation and acquisition projects were approved to be submitted as grant applications under the Hazard Mitigation Grant Program (HMGP), with the 25 percent non-local match to be provided by the State of North Carolina. Applications for four properties, seeking \$748,392 in grant funds, were submitted in April 2015, as follows:

	<b>Acquisition</b>	<b>Elevation</b>
1	100 James Street	400 Lorraine Street
2	116 Carol Street	403 Lorraine Street

**Funding:**

As noted in the beginning of this report funding for these projects still needs to be determined. One option to possibly consider 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.

One approach would be to determine layers or levels of benefit and subsequent assessment. So 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 may also want to 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.

Attached are drawings showing the drainage areas in various project locations. Example calculations of the cost per acre of the various projects are as follows assuming the cost of the entire project being assessed against the property owners. An average acreage per property is shown for example purposes only knowing that in some areas lot sizes could vary significantly.

Public Works Stream Bank -  $\$127,900/363.8 \text{ acres} = \$356 \text{ per acre}$  889 properties Ave. 0.4 acres per property.

Tom's Creek - All three culverts -  $\$304,900/497 \text{ acres} = \$613 \text{ per acre}$  235 properties Ave. of 2.1 acres per property.

1020 Main Street - Option 1 -  $\$121,600/20.1 \text{ acres} = \$6,050 \text{ per acre}$  83 properties Ave. of 0.24 acres per property

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**Agenda Date:** 5/19/2015

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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400 Block of Broad Street - Option 1 - \$43,000/19.5 acres = \$2,205 per acre 47 properties Ave. of 0.41 acres per property

Old Pittsboro Road - Option 1 - \$453,400/32.9 acres = \$13,781 per acre 104 Properties Ave. of 0.32 acres per property.

Morningside Drive - \$100,200/32.5 acres = \$3,083 per acre 64 Properties Ave. of 0.51 acres per property

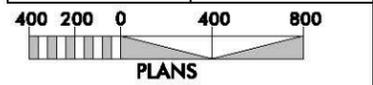
**FISCAL & STAFF IMPACT:** The fiscal impact to the Town is unknown at present and will be determined ultimately by decisions about the extent and scope of projects in relation to their costs and benefits and the financing methodology used to fund any projects. The Town will be exploring different funding strategies and options for storm water management over the next year.

**RECOMMENDATION:** It is recommended that the Board of Aldermen accept the report

# TOC PUBLIC WORKS DRAINAGE AREA



PROJECT REFERENCE NO. <i>TOC PUBLIC WORKS</i>	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> <small>DO NOT USE FOR R/W ACQUISITION</small>	
<b>PRELIMINARY PLANS</b> <small>DO NOT USE FOR CONSTRUCTION</small>	



**DRAINAGE AREA:  
363.8 AC**

**PROPERTIES WITHIN  
DRAINAGE AREA:  
889**

REVISIONS

**Storm Water Flooding Mitigation Projects for CIP**

G. Seiz  
5/13/2015

Priority	Project Location	Description	Design	Construction	Construct Admin.	Project Total	Petition Received Y/N	Comments
High FY - 15/16	<b>Adjacent to PW</b>	Streambank stablization PW side only and include eroded area along Morgan Creek. To do both sides and fill scour hole	\$34,700 \$58,500	\$81,000 plus \$22,500 for Morgan design Work done in house. \$243,000	\$12,200 \$36,600	\$127,900 \$338,100	No	Stream has changed course eroding bank adjacent to PW. Fence and structure in jeopardy. Section alongMorgan would impact mulch area if more erosion. Same reason - cost would about triple per Sungate
High FY 15/16	<b>Tom's Creek Lorrain, Carol Rainbow</b>	Upgrade culverts under Lorraine, Carol, and Rainbow  Lorraine Replace 66" pipe with 96" RCP Carol Replace 2-36" w/72" Rainbow Replace 2-30" pipes with a 72" (minimal benefit, needs more review No dwellings removed from 100 yr)	\$13,100 \$12,800 \$9,300	\$87,300 \$85,200 \$62,000	\$13,100 \$12,800 \$9,300  Total	\$113,500 \$110,800 \$80,600  \$304,900	Yes	<b>Flood related damage 100 James, 115, 116 and 118 Carol 400 Lorraine and 200 Rainbow from 6/30/13 storm. overtopped road on 6/30/13.</b> Pipe under Lorraine has corroded invert. Periodic nuisance flooding occurs in yards during significant rainfalls Benefit of enlarging Rainbow culvert needs to be reviewed as no dwellings will be removed from 100 yr. floodplain
Med High** FY 16/17	<b>1020 West Main</b>  <b>** The existing 24" storm sewer is located on private property, subsequently there is question if Town is responsible.</b>	Alt. 1 Remove existing 24" and construct ditch entire distance to Main St.  Alt 2 - Replace existng 24" with 3-36" and tie into existing storm system in West Main St.  Alt 3 - Ditch- pipe combination	\$8,300 \$36,200 \$23,300	\$55,000 plus \$50,000 for easements \$241,000 plus \$10,000 for easements \$155,000 plus \$20,000 for easements	\$8,300 \$36,200 \$23,300	\$121,600 \$323,400 \$221,600	Letters	24" storm sewer thru chruch property backs up during heavy rainfall.  <b>Flooding of crawl space 1020 W. Main. Inundation of area around 1020 and also 121A-B Goldston</b> In Sungate's opinion the increase in impervious area since 1998 <u>does not</u> support the property owner's assertion that upstream development and associated impervious area were causing or exacerbating his flooding problems
Middle FY 16/17	<b>408 Broad St</b>	Alt. 1 replace 24" culvertw/54'  Alt. 2 Pave portion of roadway and armor downstream fill slope to protect when overtopped.	\$5,000 \$2,600	\$33,000 \$17,000	\$5,000 \$2,600	\$43,000 \$22,200	Letters	<b>Road overtopped 6-30-13, eroded road and private property. Inlet of 24" VCP in poor shape. No structure damage. \$10,000 for emergency repair or road and slope.</b> Apparently overtopped one tme before per David P.
Middle FY16-17	<b>Old Pittsboro</b>	Alt. 1 - construct adeqautes size drainage system - connect to ex. at S. Greensboro and run to 108.  Alt. 2 - same but different align. in street	\$50,000 \$65,400	\$333,400 plus \$20,000 easements \$436,000	\$50,000 \$65,400	\$453,400 \$566,800	yes	<b>Water comes out of ditch, covers road and causes some wash out on private property. Not aware of any damage to homes.</b> <b>Road floods from outfall to roughly 106 Old Pittsboro.</b>  Flooding of property at 104 Old Pittsboro and at

		Alt. detention facility considered but above options more cost effective.		100 Carr St. on 6-30-13.
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Lower FY 17/18	<b>Morningside Dr.</b>	Replace existing 24" culvert with 3 - 30" culverts, some CB's & curb work.	\$11,600	\$77,000	\$11,600	\$100,200	Calls	<p><b><i>Water overtops roadway.</i></b></p> <p><b><i>Periodic nuisance flooding at 103,105, 107 Morningside.</i></b></p> <p><b><i>Mostly at 105. Structures have not been impacted.</i></b></p> <p><b><i>Driveway access to 103 &amp; 105 impacted when area floods</i></b></p> <p>Alternative - accept nuisance flooding in yard but 105 raise or eliminate parking area and raise driveway.</p>
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Lower FY 17/18	<b>Culvert pipes under PW Drive</b>	Replaced existing dual 90"cmp with dual 96"	\$24,300	\$162,000	\$24,300	\$210,600	PW	Existing CMP in poor condition with inverts eroded. Will eventually need to be replaced to avoid future failure.
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## **CIP - Storm Water Flooding Mitigation**

### **Project Description**

A significant rain event on June 30, 2013 caused extensive flooding at several locations within the city limits. Many of these locations had experienced flooding before. The Town has responded by completing engineering evaluations to determine possible options and cost estimates to address the flooding problems.

The following locations have been evaluated:

Tributary to Morgan Creek adjacent to the Public Works building  
 Areas along Tom's Creek- Lorraine Street, Carol Street and Rainbow Street  
 West Main Street  
 Old Pittsboro Road  
 Morningside Drive  
 Broad Street

### **Project Benefits**

To reduce flooding of yards, structure damage, and overtopping of roadways during significant rain events.

### **Energy Sustainability Measures**

None identified.

### **Operating Impact**

Maintenance costs will be minimal.

<u>ESTIMATED COSTS</u>	<u>PRIOR YEARS</u>	<u>2014-15</u>	<u>2015-16</u>	<u>2016-17</u>	<u>2017-18</u>	<u>2018-19</u>	<u>2019-20</u>	<u>2020-21</u>	<u>2021-22 &amp; BEYOND</u>	<u>TOTAL PROJECT</u>
Planning/Design			\$ 69,900	\$ 78,300	\$ 35,900					\$ 184,100
Construction			\$ 362,900	\$ 639,700	\$ 274,900					\$ 1,277,500
<b>TOTAL COST</b>		\$ -	\$ -	\$ 432,800	\$ 718,000	\$ 310,800	\$ -	\$ -	\$ -	\$ 1,461,600

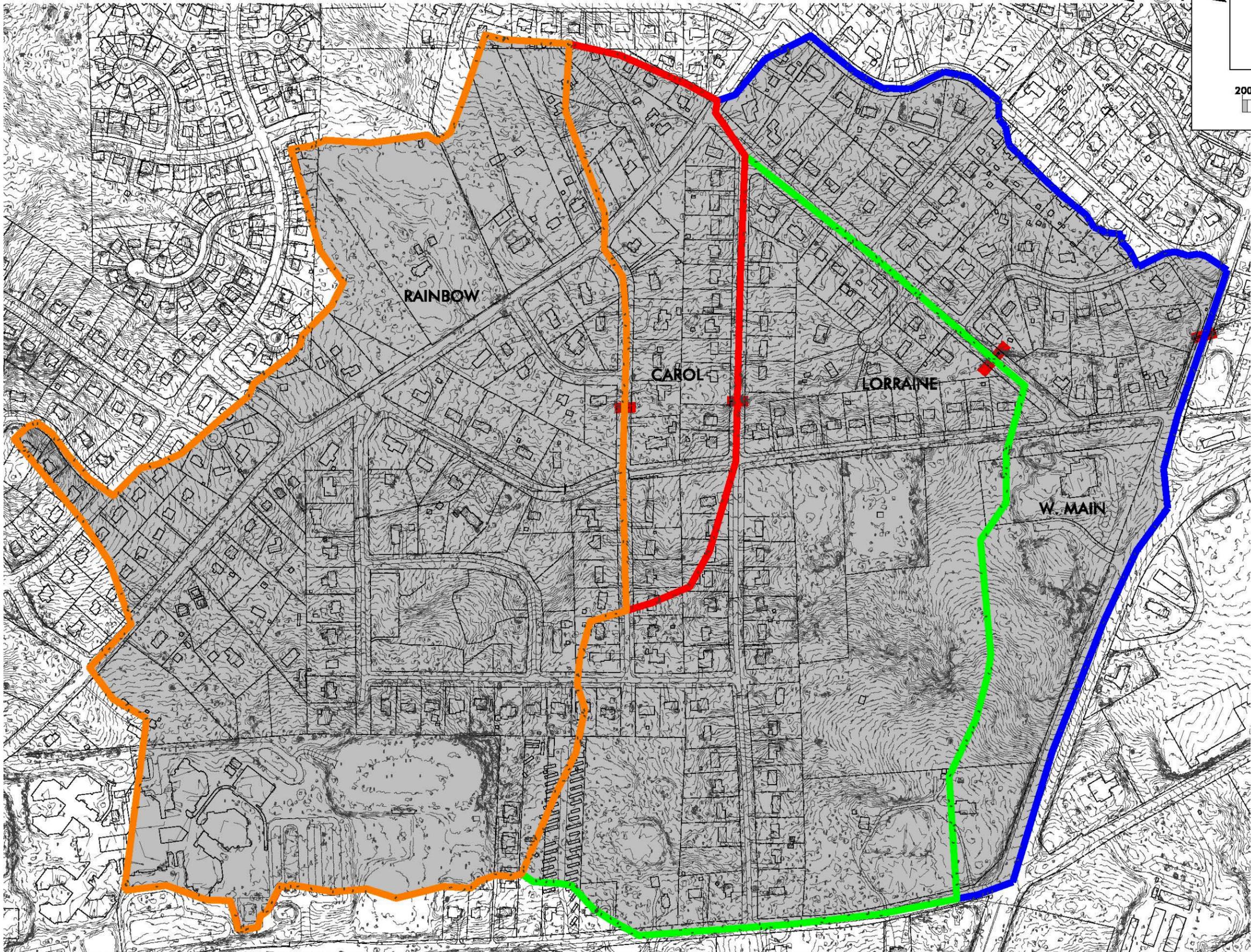
<u>ESTIMATED FUNDING</u>	<u>PRIOR YEARS</u>	<u>2014-15</u>	<u>2015-16</u>	<u>2016-17</u>	<u>2017-18</u>	<u>2018-19</u>	<u>2019-20</u>	<u>2020-21</u>	<u>2021-22 &amp; BEYOND</u>	<u>TOTAL PROJECT</u>
Pay-As-You-Go/ Assessments			\$ 432,800	\$ 718,000	\$ 310,800					\$ 1,461,600
<b>TOTAL FUNDING</b>		\$ -	\$ -	\$ 432,800	\$ 718,000	\$ 310,800	\$ -	\$ -	\$ -	\$ 1,461,600

8/17/99

### TOMS CREEK DRAINAGE AREA

PROJECT REFERENCE NO. <i>TOMS CRK</i>	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

200 100 0 200 400  
PLANS



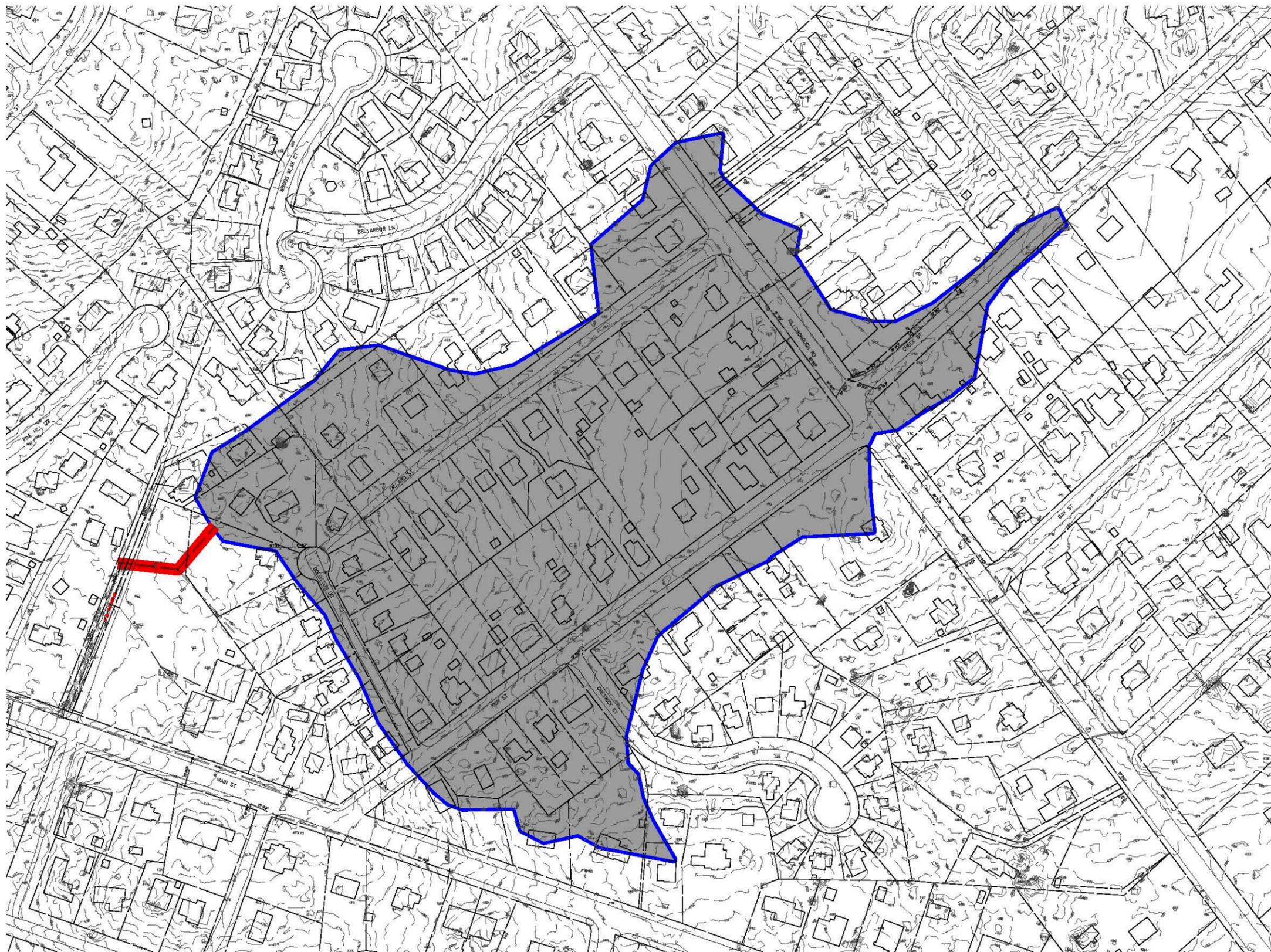
- W. MAIN ST  
DRAINAGE AREA:  
284.4 AC**
- PROPERTIES WITHIN  
DRAINAGE AREA:  
282**
- LORRAINE ST  
DRAINAGE AREA:  
230 AC**
- PROPERTIES WITHIN  
DRAINAGE AREA:  
235**
- CAROL ST  
DRAINAGE AREA:  
146 AC**
- PROPERTIES WITHIN  
DRAINAGE AREA:  
168**
- RAINBOW DR  
DRAINAGE AREA:  
121 AC**
- PROPERTIES WITHIN  
DRAINAGE AREA:  
130**

REVISIONS

TOMS CRK\_Hyd\_DA\_PSH.dgn

REVISIONS

### W MAIN STREET DRAINAGE AREA



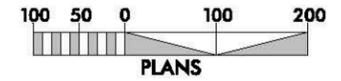
PROJECT REFERENCE NO. 1020 W MAIN	SHEET NO. DRG AREA
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



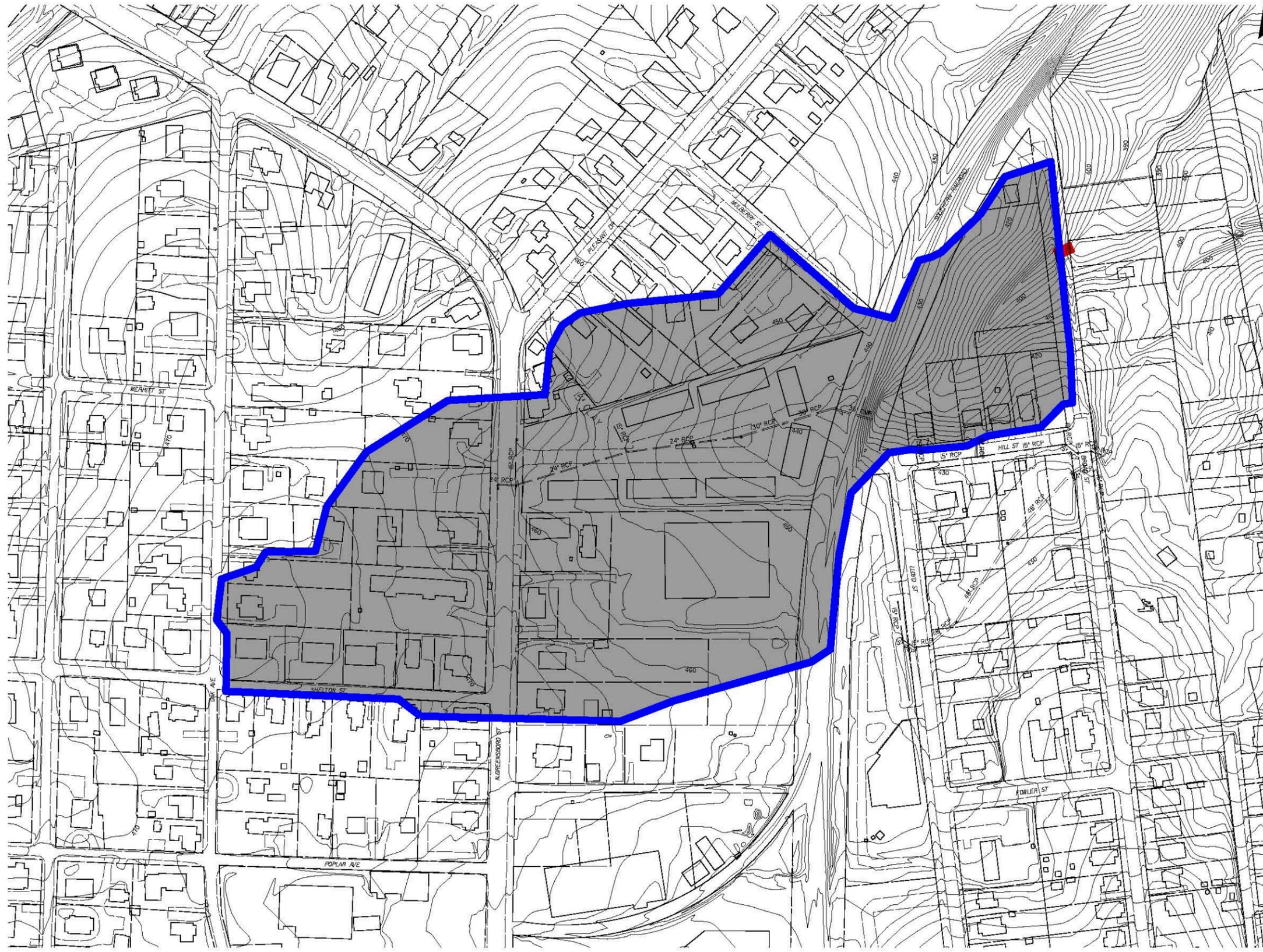
**DRAINAGE AREA:**  
20.1 AC

**PROPERTIES WITHIN DRAINAGE AREA:**  
83

# BROAD STREET DRAINAGE AREA



PROJECT REFERENCE NO. <i>BROAD ST</i>	SHEET NO. <i>APPDX A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



**DRAINAGE AREA:**  
19.5 AC

**PROPERTIES WITHIN  
DRAINAGE AREA:**  
47

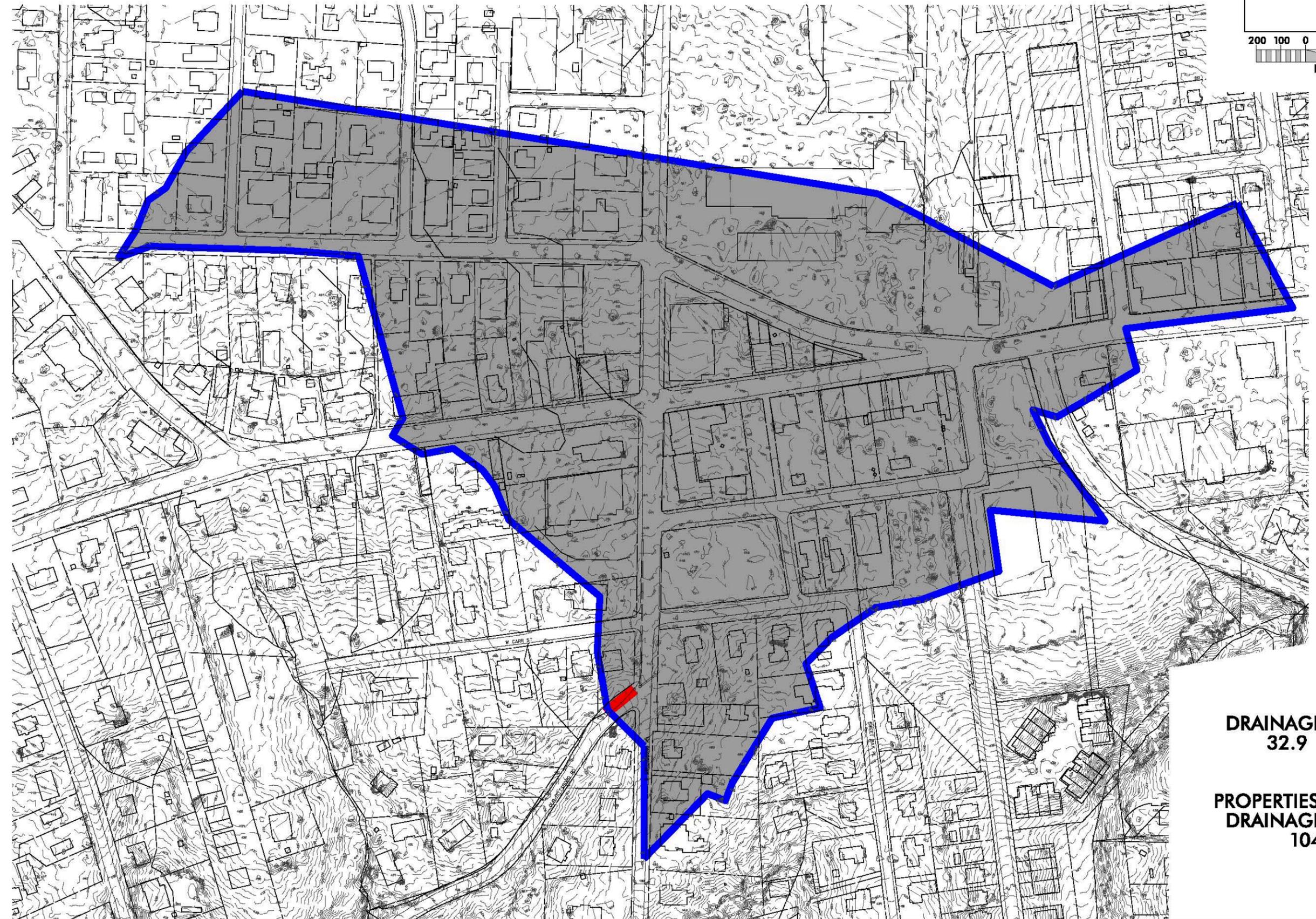
REVISIONS

# OLD PITTSBORO RD DRAINAGE AREA

PROJECT REFERENCE NO.	SHEET NO.
OLD PITTSBORO RD	
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

200 100 0 200 400

PLANS



**DRAINAGE AREA:  
32.9 AC**

**PROPERTIES WITHIN  
DRAINAGE AREA:  
104**

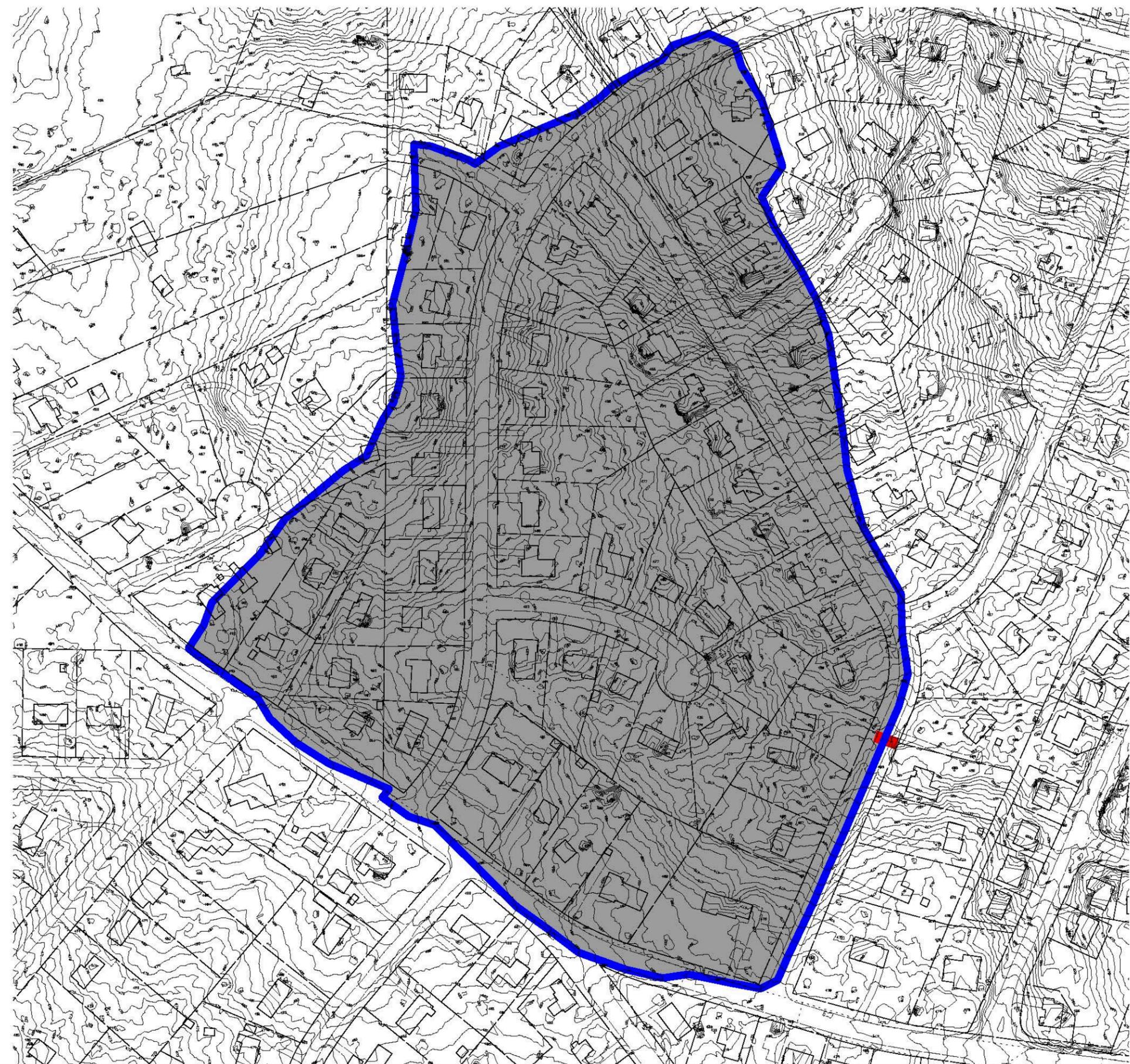
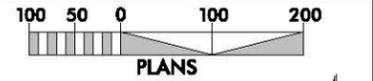
REVISIONS

8/17/99

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10/1/05

### MORNINGSIDE DR DRAINAGE AREA

PROJECT REFERENCE NO.	SHEET NO.
MORNINGSIDE DR	
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



**DRAINAGE AREA:  
32.5 AC**

**PROPERTIES WITHIN  
DRAINAGE AREA:  
65**

REVISIONS



# Town of Carrboro

Town Hall  
301 W. Main St.  
Carrboro, NC 27510

## Agenda Item Abstract

**File Number: 14-0028**

**Agenda Date:** 2/11/2014

**File Type:** Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### TITLE:

Storm Water Design Standards - future considerations

**PURPOSE:** The purpose of this item is to provide the Board of Aldermen an opportunity to discuss possible future changes to storm water design standards in light of recent flooding issues and concerns about climate change.

**DEPARTMENT:** Public Works Department and Planning Department

**CONTACT INFORMATION:** George Seiz, Director of Public Works, 918-7427;  
Patricia McGuire, Planning Director, 918-7227; Randy Dodd, Environmental Planner, 919-7426; Henry Wells,  
P.E., Town Engineer, 919-859-2243

### INFORMATION:

Last fall the Board of Aldermen expressed an interest in having a discussion about possible future changes to storm water design standards. The interest in this subject stemmed from a significant rainfall event (June 30, 2013) and also from concerns about climate change. In order to help facilitate a discussion on this matter Town staff is providing the following information:

1. Recent flooding concerns (Map)
2. Basis for Carrboro Storm Water Design Standards
3. FEMA Repetitive loss
4. Update on various storm water problem areas

#### 1. Recent Flooding concerns

On Sunday, June 30, 2013, the Town experienced a significant rainfall event which created flooding at several locations within the Town and surrounding communities. Approximately five (5) inches of rain fell over a twelve hour period, but more importantly a little over 3 inches of rain fell in just two hour towards the end of the event. Important to note is that rainfall was relatively consistent throughout the area based on the similar recorded amounts in rain gauges at Public Works (south part of Town), a rain gage on Oak Ave. (central), and at the Horace Williams airport (E of Town).

**Agenda Date:** 2/11/2014

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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Emergency services personnel responded to many calls about street flooding and water coming out of stream banks. Several homes in the town experienced flooding including a few homes along Tom's Creek and unfortunately the Rocky Brook trailer court also received significant flood damage. Other examples of reported damage were a washed out section of Board Street and water over topping the road along Old Pittsboro Rd.

Public Works staff documented many of the locations where flooding was reported or observed during and after the rain event and is shown on the attached map. Yellow shaded text indicates locations where storm water entered structures. Gray shaded text indicates locations where there was damage to town infrastructure. A general statement can be made that most of the flooding calls are within areas that were developed before the Town's storm water regulations were put in place (1995). This could be an indicator that perhaps the current regulations being used for new development are adequate.

## **2. Basis for Carrboro Storm water Design**

Over the past twenty years the Carrboro LUO has been amended and expanded to include regulations to abate existing flooding problems and to prevent new ones. These amendments included new storm water standards promulgated by FEMA and NCDENR, but more importantly, the town responded proactively to adopt a Storm Drainage Design Manual to set minimum standards that address previously unregulated flooding. In the early 1990's the State of North Carolina enacted the NPDES Storm water Rules regulating surface water discharges of stormwater into streams. In the wake of Hurricane Floyd in 1999 the State of North Carolina established the North Carolina Floodplain Mapping Program. The purpose of the program was to establish a state agency to enforce FEMA regulations regarding Special Flood Hazard Areas. In August, 2009 the State enacted the Jordan Lake Rules which would eventually require each municipality to enforce buffer requirements for streams within their jurisdiction. The Town of Carrboro again proactively incorporated each of these required programs into their overall Stormwater Program to augment the requirements for storm water design guidelines. Of these mandatory and self-imposed programs the FEMA Floodplain regulations and the Carrboro Storm Drainage Design Manual are essential to the prevention of flooding.

Adoption of the FEMA Flood Hazard Program by the local governing jurisdiction allows owners of structures subject to flooding by the 100-year storm to obtain federally funded flood insurance. FEMA provides Flood Insurance Rate Maps (FIRM) and Flood Profiles on larger streams showing the areas of flooding as well as the elevation of the flood. FEMA uses the best available technical data to create the FIRM's including statistical information for stormwater discharges, hydrologic and hydraulic modeling, rainfall data and topographic surveys. The updated and current FEMA Study for Orange County was released in May 2008 and replaced the previous study of August 1979. Discharges for the study were based on existing development within the watershed and were estimated using the US Department of Interior publication [The National Flood-Frequency Program - Methods for Estimating Flood magnitude and Frequency in rural and Urban Areas In North Carolina, 2001](#). The equations for establishing peak discharge are based on one of the three separate Hydrologic Regions in North Carolina and are calibrated where applicable, using historical high-water marks

**Agenda Date:** 2/11/2014

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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obtained from interviews of residents and associated surveys. The equations were developed using historical USGS gage data from over 360 sites statewide. The HEC RAS model (Version 3.1.2) used as the Hydraulic Model to predict the elevations of the 100-year storm was released as an update of the original HEC RAS model in June 2004. The latest update of the FEMA study for Orange County is currently under review by the community. The new study will incorporate updates to both the USGS Hydrologic analysis as well as to the HEC RAS model (Version 4.1, Jan 2010)

The Carrboro Storm Drainage Design Manual was adopted around 1995 and has been updated to keep abreast of new developments in storm water regulations. The manual outlines design requirements for storm drainage for streets and local development sites outside the FEMA areas. The purpose of these requirements is to provide adequate conveyance of storm water without causing flooding of proposed streets, houses or buildings, or up or downstream properties. The manual was developed based on experience gained in dealing with the existing flooding problems in Carrboro, reference material from NCDOT and other local storm water programs and applicable state and federal storm water legislation. The current design standards include conveyance of the 10-year storm for storm drainage systems and conveyance of the 25-year storm for culverts crossing under roads. In addition no increase in the flood levels expected from the 100-year storm event are allowed to occur on upstream properties due to development on lower properties. The peak discharges associated with these events for smaller watersheds are generally computed using the Rational Method. In the Carrboro area the 10-year storm discharge is based on a rainfall event of approximately 6.0 inches/hour (based on National Oceanic and Atmospheric Administration statistical data) for the Rational Method. The 25-year storm is based on a rainfall event of approximately 7.0 inches/hour. For most areas monthly rainfall data gathered by NOAA has been accumulated for the past 100-years in order to arrive at these numbers. As a base of reference, the highest hourly reading during the storm which occurred on June 30, 2013 was 2.09 inches in one hour.

As previously mentioned most hydrologic analyses are based on studies of statistical data produced either by NOAA or the USGS and these procedures are based on historical rainfall data that is derived from the record of actual climatic events. If weather patterns were to change in response to whatever naturally evolving or human inspired conditions these shifts or trends would be revealed and appropriate revisions in the base data would be made. Both of these agency's procedures have been updated as additional data continues to be gathered over time and is revised and improved as weather patterns and climate change. The Engineering community constantly monitors changes in computational methodologies that will enable us more accurately predict peak discharges of storm events so as to continue to safeguard life, health, and property and to promote the public welfare.

### **3. Flood Mitigation Assistance (FMA) grant - response to flooding along Tom's Creek**

In late July 2013, staff learned that the Federal Emergency Management Agency had released a notice of funds available for the Flood Mitigation program (FMA). An initial letter of interest was submitted, pertaining to four

**Agenda Date:** 2/11/2014

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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properties in the Plantation Acres neighborhood based on historical and recent flooding, as communicated to staff in meetings held in the neighborhood that summer. After further communication with property owners, four properties were discussed with the Board of Aldermen on October 15<sup>th</sup>. The Board of Aldermen authorized the submittal of two grant applications, one for acquisition of two properties and one for elevation of two properties. The total cost estimate for projects is \$746,857. A 25 percent local match, which can be met through in-kind contributions and cash match from the owners, is required. If approved, grant funds are expected to be available early in federal fiscal year 2015.

#### **4. Update on various storm water problem areas**

The following is a status update on various locations where Town staff is working to address storm water drainage concerns:

- *Tom's Creek* - Following the suggestion of one of the neighbors along Tom's Creek, Town staff set up a series of meetings to go door to door and ask homeowners what problems they have and here about concerns and suggestions. There were 5 neighborhood meetings held from mid-July to early August and 16 out of 39 property owners came to the meetings and helped to answer questions on survey sheets. A summary of the surveys is attached. More evaluation is needed.
- *105 Morningside Drive - yard flooding, water overtops the road, request to enlarge culvert.* Staff has visited with the adjacent resident and discussed possible options. Preliminary analysis indicates that enlarging the culvert under Morningside will likely cause negative impacts downstream. Replacing sections of curb and/or installing some storm inlets may help mitigate the problem.
- *400 Block of Broad St. - water overtopped road on June 30<sup>th</sup>, public road damage and private property damage. petition received, request to enlarge culvert.* An emergency repair was made at this location costing about \$10,000. Preliminary review indicates the culvert would need to be enlarged from an 18" to 48" to meet current standards. Potential downstream impacts need to be reviewed as well as well as other possible options. Cost estimates for options need to be determined and programming in the CIP considered.
- *Old Pittsboro Road - concerns expressed about storm water run-off, sewage in the drainage ditch, sitting water.* Staff is still in the early stages of evaluating the storm water run-off issues. Ideas suggested such as widening the drainage ditch or piping the storm water could possibly be considered. OWASA made a repair last summer to address sewage backing into a storm junction box. As a follow up to that repair OWASA also did some public education outreach to citizens and businesses about the detriments of putting fats, oils and grease in sanitary sewers as requested by the BOA.
- *Tributary to Morgan Creek adjacent to Public Works* - While clearing scrub trees this winter adjacent to the culvert pipes under Public Works Drive, Public Works staff has discovered significant erosion of the stream bank adjacent to the Public Works property. Appears to be a result from June 30, 2013 storm event. Location is still being evaluated to determine extent of repair work needed. Cost estimate for repair needs

**Agenda Date:** 2/11/2014

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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to be determined and programming in the CIP considered. A temporary more immediate repair may be necessary.

- *Wilson Park Multi-Use Path - Erosion along edge of path due to storm system overloading.* An emergency repair was made by the Public Works Department. Repair work seems to be holding and will continue to monitor location.
- *Existing Capital Improvements Planning and Relationship to Flooding -* To date, the management practices identified for making progress under the existing development provisions of the Jordan Lake Rules have not in general been located in areas experiencing higher impacts from flooding. It is possible that some retrofit opportunities identified could have a small flood (peak flow) mitigation result, although additional analyses will be necessary to quantify the potential to mitigate flooding. The retrofits identified will reduce total stormwater volume, and in doing so, protect stream channels from erosion and provide groundwater recharge benefits.
- For several years, Town staff have been identifying retrofit opportunities to comply with the existing development provisions of the Jordan Lake Rules which are based on reducing nitrogen and phosphorus in runoff. As was noted in the recent review of the CIP for FY 2014-15 to so19-20, modifications to the state law (SL 2013-295), delay the previously mandated implementation by three years. Planning has continued, to so as: 1) not to lose sight of the federal\* and state requirement which may result in a significantly larger obligation in years ahead; 2) advance commitments to improving water quality in Bolin Creek and Morgan Creek; and 3) respond due to uncertainty about the interrelationship of to responsibilities under the Town's NPDES permit. The design storm used for designing BMPs under the Jordan Lake rules is the 1" rain event; flow beyond 1" as in flood events generally bypasses the BMP and is not retained or detained. So for a 5" rain and flood event, 4" will bypass a stormwater device designed to reduce nitrogen and phosphorus.
- \*The past year has resulted in State legislation which has delayed implementation. It is noteworthy that Jordan Lake is considered to be impaired by EPA, and is under a federal "TMDL". Current or future changes in State level implementation could be challenged at the federal level.

**FISCAL & STAFF IMPACT:** No fiscal impact with the accepting this report. There may be significant fiscal impacts in the future depending on solutions determined to adequately address some of the problem areas.

**RECOMMENDATION:** It is recommended the BOA review and discuss the information provided, and further direct the Town staff on this matter.



# Town of Carrboro

Town Hall  
301 W. Main St.  
Carrboro, NC 27510

## Agenda Item Abstract

**File Number:** 14-0162

**Agenda Date:** 5/20/2014

**File Type:** Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### TITLE:

Update on Storm Water Flooding Issues

**PURPOSE:** The purpose of this item is to provide the Board of Aldermen an update on various storm water flooding issues since the last report on February 11, 2014.

**DEPARTMENT:** Public Works Department

**CONTACT INFORMATION:** George Seiz, Director of Public Works, 918-7427

### INFORMATION:

At the regular Board of Aldermen meeting on February 11, 2014, town staff provided a report about storm waste design standards and possible future considerations related to those standards. Included in the report was a summary and update of various storm water problem areas. As part of the discussion on February 11, the BOA requested staff to provide periodic updates on efforts to address these problem locations.

The Public Works Department has been in contact with Town Engineer Henry Wells who has estimated costs for further evaluation of the these problem areas. The estimates and new information are included below in the summaries for each location. New information is shown in italics. After evaluations of the locations are completed, staff will make recommendations for the Capital Improvement Plan

- **Tom's Creek (2-11-14)** - Following the suggestion of one of the neighbors along Tom's Creek, Town staff set up a series of meetings to go door to door and ask homeowners what problems they have and here about concerns and suggestions. There were 5 neighborhood meetings held from mid-July to early August and 16 out of 39 property owners came to the meetings and helped to answer questions on survey sheets. More evaluation is needed.

*Most technical information is already available. Will need to prepare mapping to explain impacts to properties - \$4,000 to \$5,000*

- **105 Morningside Drive (2-11-14)** - yard flooding, water overtops the road, request to enlarge culvert. Staff has visited with the adjacent resident and discussed possible options. Preliminary analysis indicates that enlarging the culvert under Morningside will likely cause negative impacts downstream. Replacing

**Agenda Date:** 5/20/2014

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

---

sections of curb and/or installing some storm inlets may help mitigate the problem.

*Possibly increase culvert size or add additional culvert, but must determine impacts downstream. More analysis to see if culvert can be enlarged and prepare construction cost estimate. - \$2,500 to \$4,000*

- **400 Block of Broad St. (2-11-14)** - water overtopped road on June 30<sup>th</sup>, public road damage and private property damage. petition received, request to enlarge culvert. An emergency repair was made at this location costing about \$10,000. Preliminary review indicates the culvert would need to be enlarged from an 18" to 48" to meet current standards. Potential downstream impacts need to be reviewed as well as well as other possible options. Cost estimates for options need to be determined and programming in the CIP considered.

*Some analysis already completed. Further review and prepare construction cost estimate - \$1,000 to \$1,500*

- **Old Pittsboro Road (2-11-14)** - concerns expressed about storm water run-off, sewage in the drainage ditch, sitting water. Staff is still in the early stages of evaluating the storm water run-off issues. Ideas suggested such as widening the drainage ditch or piping the storm water could possibly be considered. OWASA made a repair last summer to address sewage backing into a storm junction box. As a follow up to that repair OWASA also did some public education outreach to citizens and businesses about the detriments of putting fats, oils and grease in sanitary sewers as requested by the BOA.

*Need to determine if under DENR or Corps of Engineers jurisdiction. Agencies may not let us do anything. Further evaluation - \$5,000 to \$7,000*

- **1020 West Main Street** - Private storm sewer on adjacent church property backs up in heavy rains and threatens crawl space and HVAC units of private property. Dillard St., High St. and Goldston Dr. drain to this area. Possible drainage study to evaluate existing storm sewer system. - Study - \$2,000 - \$4,000.

- **Tributary to Morgan Creek adjacent to Public Works (2-11-14)** - While clearing scrub trees this winter adjacent to the culvert pipes under Public Works Drive, Public Works staff has discovered significant erosion of the stream bank adjacent to the Public Works property. Appears to be a result from June 30, 2013 storm event. Location is still being evaluated to determine extent of repair work needed. Cost estimate for repair needs to be determined and programming in the CIP considered. A temporary more immediate repair may be necessary.

*Sungate Design is working with another consultant to get a preliminary cost estimate for engineering and construction. Close proximity to NCDOT storm water culvert may require coordination with NCDOT. Further evaluation and prepare cost estimate - \$4,000 - \$5,000.*

- **Wilson Park Multi-Use Path (2-11-14)** - Erosion along edge of path due to storm system overloading. An emergency repair was made by the Public Works Department. Repair work seems to be

**Agenda Date:** 5/20/2014

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

---

holding and will continue to monitor location.

Summary of Further Evaluation Costs -

Tom's Creek	\$4,000 - \$5,000
105 Morningside Dr.	\$2,500 - \$4,000
400 Block of Broad St.	\$1,000 - \$1,500
Old Pittsboro Rd.	\$5,000 - \$7,000
1020 West Main. St.	\$2,000 - \$4,000
Tributary to Morgan Creek	\$4,000 - \$5,000

Total Range - \$18,500 - \$26,500

Tentative time line -

Complete Evaluations - June - September, 2014

Prepare Recommendations for FY 15/16 CIP - October /November, 2014

**FISCAL & STAFF IMPACT:** Available funds in the current fiscal year (\$6,000) will be utilized to begin the evaluation work and \$20,000 has been budgeted in FY 14/15 to continue the evaluations. PW staff will be working with the consultant during the evaluations and staff hours will also be needed for CIP recommendations. There may be significant fiscal impacts in the future depending on solutions determined to adequately address some of the problem areas.

**RECOMMENDATION:** It is recommended the BOA accept the report.



# Town of Carrboro

Town Hall  
301 W. Main St.  
Carrboro, NC 27510

## Agenda Item Abstract

**File Number:** 14-0274

**Agenda Date:** 9/16/2014

**File Type:** Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### TITLE:

Update on Storm Water Flooding Issues

**PURPOSE:** The purpose of this item is to provide the Board of Aldermen an update on various storm water flooding issues since the last report on May 20, 2014.

**DEPARTMENT:** Public Works Department

**CONTACT INFORMATION:** George Seiz, Director of Public Works, 918-7427; Patricia McGuire, Planning Director, 918-7327; Travis Crabtree, Fire Chief, 918-7349

### INFORMATION:

#### A. Overview

At the regular Board of Aldermen (BOA) meeting on February 11, 2014, town staff provided a report about storm water design standards and possible future considerations related to those standards. Included in the report was a summary and update of various storm water problem areas. As part of the discussion on February 11, the BOA requested staff to provide periodic updates on efforts to address these problem locations. The locations noted in the report were:

1. Tributary to Morgan Creek adjacent to Public Works
2. Areas along Tom's Creek
3. Old Pittsboro Road
4. 400 Block of Broad Street
5. 105 Morningside Drive
6. 1020 West Main Street

At the regular BOA meeting on May 20, 2014, town staff provided an update which included preliminary estimates prepared by Sungate Design to do further evaluation of these problem areas. The total estimated cost for this additional evaluation will be approximately \$26,000. It was noted that after evaluations were completed, staff would make recommendations for the Capital Improvement Plan. The proposed time line was to complete the evaluations from June thru September 2014, and prepare recommendations for the FY 15/16 CIP in the fall.

**Agenda Date:** 9/16/2014

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

---

**B. Actions to date in chronological order:**

- **Tom's Creek - Late Summer 2013** - Following the suggestion of one of the neighbors along Tom's Creek, Town staff set up a series of meetings to go door to door and ask homeowners what problems they have and here about concerns and suggestions. There were 5 neighborhood meetings held from mid-July to early August and 16 out of 39 property owners came to the meetings and helped to answer questions on survey sheets. neighborhood meetings with residents along Tom's creek.
- **July, 2013 re: 400 Block of Broad St.-** Emergency repair of washout in 400 block. Cost for repair approximately \$10,000
- **July 2013 and previous to this date re: 105 Morningside** - Street Supt. had several meetings with property owner regarding nuisance flooding in yard. Looked at things PW could possibly do with regards to curb and gutter work along roadway and driveway improvements. One option is to enlarge existing culvert but may have impacts downstream.
- **October, 2013 re: Flood Mitigation Assistance (FMA) grant, response to flooding along Tom's Creek.** In late July 2013, staff learned that the Federal Emergency Management Agency had released a notice of funds available for the Flood Mitigation program (FMA). An initial letter of interest was submitted, pertaining to four properties in the Plantation Acres neighborhood based on historical and recent flooding, as communicated to staff in meetings held in the neighborhood that summer. After further communication with property owners, four properties were discussed with the Board of Aldermen on October 15<sup>th</sup>. The Board of Aldermen authorized the submittal of two grant applications, one for acquisition of two properties and one for elevation of two properties. The total cost estimate for projects was \$746, 857. A 25 percent local match that could be met through in-kind contributions or cash match from the owners was required. The Town did not receive grant funding.
- **February 5, 2014 re: 1020 Main St.** - PW Director met with two neighbors to review site. Neighbors requested town do some storm water analysis. Made observations of existing storm sewer that crosses church property and PW cleaned out debris near inlet. PW Director also talked to pastor of adjacent church about the situation. Town staff and rep from Sungate Design had previously spoken with residents in 2010. Residents later installed small section of storm water piping (with permission from church) to help bypass storm water.
- **February 11, 2014** - staff provided an update to the BOA (see Overview above)
- **May 20, 2014** - staff provided an update to the BOA (see Overview above)
- **June 2014** - BOA approves FY 15/16 budget which includes \$20,000 for engineering evaluation of the locations noted above in addition to the \$6,000 to be spent in FY 13/14.

**Agenda Date:** 9/16/2014

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

---

- **June 23, 2014** - Initial Service Contract with Sungate signed to identify causes of flooding problems and possible alternatives for remediation of the problem and preliminary costs estimates for possible improvements at the following locations: Amount of contract - \$6,000
  - Tributary to Morgan Creek adjacent to Public Works
  - Areas along Tom's Creek
  - Properties adjacent or near 1020 Main Street.
  
- **August 26, 2014 re: tributary to Morgan Creek adjacent to Public Works** - Meeting between Town staff, Town Engineer and NCDOT regarding erosion along tributary. Discussed possible causes and remedies.
  
- **September 1, 2014, re: FEMA Hazardous Mitigation grant** - On August 8, 2014, the Town of Carrboro was asked to join with the Town of Chapel Hill and Orange County in the pursuit of a \$4 million FEMA Hazardous Mitigation grant to be spread between Alamance and Orange counties. The initial application was turned in on September 1, 2014 which was a letter of interest and that we would like any available funding to help mitigate flooding issues in town. Addresses and estimates were provided with the letter of interest. The North Carolina Department of Emergency Management will review and approve what they feel is relevant based on past claims and then forward those that are approved to FEMA. Additional information deadline will be October 15, 2014, if the state needs additional beyond what was already provided. Property acquisition, flood and drainage mitigation along with power redundancy for important and critical structures were items allowed to be requested. Generator quick connects for key intersections to relieve police from traffic control duties, several culvert improvements and finally a fixed generator to power town hall were requested. All combined were a total of \$2.7 million just for the Town of Carrboro.
  
- **September 12, 2014** - Supplemental service agreement prepared for continued work for the three locations noted above and adding the following locations: amount of Contract \$20,000
  - 400 Block of Board Street
  - Old Pittsboro Rd.
  - 105 Morningside

Sungate and staff will continue to review various options to help mitigate flooding at these locations

### **C. Additional detail about locations - contained in previous updates:**

- **Tom's Creek** - Neighborhood meetings. There were 5 neighborhood meetings held from mid-July to early August and 16 out of 39 property owners came to the meetings and helped to answer questions on survey sheets. More evaluation is needed.

**Agenda Date:** 9/16/2014

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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*Most technical information is already available. Will need to prepare mapping to explain impacts to properties - \$4,000 to \$5,000*

- **105 Morningside Drive** - yard flooding, water overtops the road, request to enlarge culvert. Staff has visited with the adjacent resident and discussed possible options. Preliminary analysis indicates that enlarging the culvert under Morningside will likely cause negative impacts downstream. Replacing sections of curb and/or installing some storm inlets may help mitigate the problem.

*Possibly increase culvert size or add additional culvert, but must determine impacts downstream. More analysis to see if culvert can be enlarged and prepare construction cost estimate. - \$2,500 to \$4,000*

- **400 Block of Broad St.** - water overtopped road on June 30<sup>th</sup>, public road damage and private property damage. Petition received, request to enlarge culvert. An emergency repair was made at this location costing about \$10,000. Preliminary review indicates the culvert would need to be enlarged from an 18” to 48” to meet current standards. Potential downstream impacts need to be reviewed as well as other possible options. Cost estimates for options need to be determined and programming in the CIP considered.

*Some analysis already completed. Further review and prepare construction cost estimate - \$1,000 to \$1,500*

- **Old Pittsboro Road** - concerns expressed about storm water run-off, sewage in the drainage ditch, sitting water. Staff is still in the early stages of evaluating the storm water run-off issues. Ideas suggested such as widening the drainage ditch or piping the storm water could possibly be considered. OWASA made a repair last summer to address sewage backing into a storm junction box. As a follow up to that repair OWASA also did some public education outreach to citizens and businesses about the detriments of putting fats, oils and grease in sanitary sewers as requested by the BOA.

*Need to determine if under DENR or Corps of Engineers jurisdiction. Agencies may not let us do anything. Further evaluation - \$5,000 to \$7,000*

- **1020 West Main Street** - Private storm sewer on adjacent church property backs up in heavy rains and threatens crawl space and HVAC units of private property. Dillard St., High St. and Goldston Dr. drain to this area. Possible drainage study to evaluate existing storm sewer system. - Study - \$2,000 - \$4,000.

- **Tributary to Morgan Creek adjacent to Public Works** - While clearing scrub trees this winter adjacent to the culvert pipes under Public Works Drive, Public Works staff discovered significant erosion of the stream bank adjacent to the Public Works property. Appeared to be a result from June 30, 2013 storm event. Location is still being evaluated to determine extent of repair work needed. Cost estimate for repair needs to be determined and programming in the CIP considered. A temporary more immediate repair may be necessary.

*Sungate Design is working with another consultant to get a preliminary cost estimate for engineering*

**Agenda Date:** 9/16/2014

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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*and construction. Close proximity to NCDOT storm water culvert may require coordination with NCDOT. Further evaluation and prepare cost estimate - \$4,000 - \$5,000.*

**FISCAL & STAFF IMPACT:** \$6,000 was allocated in FY 13/14 to begin the storm water flooding evaluation work and \$20,000 has been budgeted in FY 14/15 to continue the evaluations. PW staff will be working with the consultant during the evaluations and staff hours will also be needed for CIP recommendations. There may be significant fiscal impacts in the future depending on solutions determined to adequately address some of the problem areas. How the projects should be funded may become an important issue.

**RECOMMENDATION:** It is recommended the BOA accept the report.





# Town of Carrboro

Town Hall  
301 W. Main St.  
Carrboro, NC 27510

## Agenda Item Abstract

**File Number:** 15-0128

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**Agenda Date:** 5/19/2015

**File Type:** Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### **TITLE:**

Orange County Affordable Housing Coalition Discussion on Affordable Housing Needs and Opportunities in Carrboro

**PURPOSE:** The purpose of this item is for the Board to hear from the Orange County Affordable Housing Coalition on what the affordable housing needs and opportunities are for Carrboro.

**DEPARTMENT:** Manager's Office

**CONTACT INFORMATION:** Nate Broman-Fulks, 919-918-7314, [nbroman-fulks@townofcarrboro.org](mailto:nbroman-fulks@townofcarrboro.org)

**INFORMATION:** The Orange County Affordable Housing Coalition (OCAHC) is an association of individuals and organizations working together to provide housing opportunities for all in Orange County. Their mission is to foster collaboration among providers and advocates to support affordable housing development and preservation in Orange County.

OCAHC members will present to the Board on the affordable housing needs of the community, the opportunities that are available to address these needs and how funding could assist this effort.

**FISCAL & STAFF IMPACT:** This is an informational presentation and does not have a direct fiscal or staff impact.

**RECOMMENDATION:** Staff recommends the Board consider the information presented by the Orange County Affordable Housing Coalition.