

Meeting No. 6 Final Recommendation to Council Agenda

1. Meeting 5 Summary: Level of Service Discussion
2. Example of Stormwater Roadway Project
3. Example of On-Site Storage
4. Open Discussion



Proposed Quantity Level of Service (LOS)

50
year

Arterial Road Flood
Frequency

50
year

Collector Road Flood Frequency

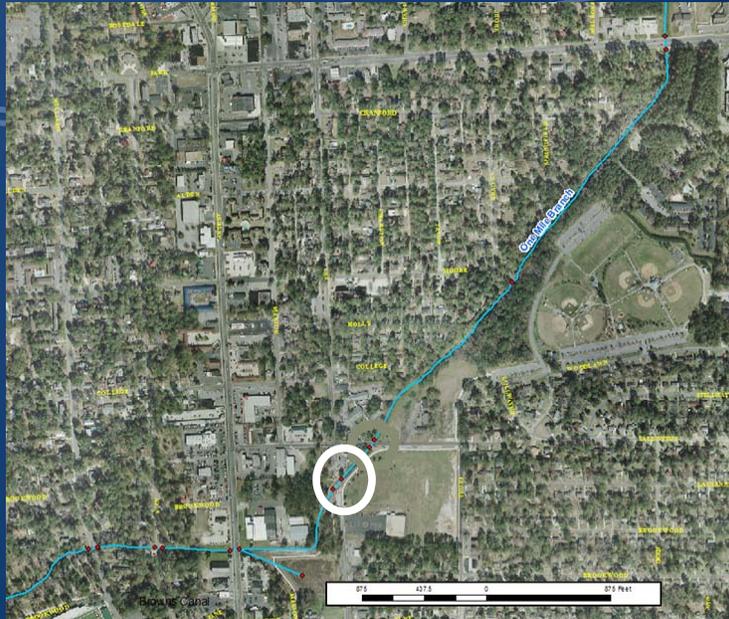
5
year

Local Road Flood Frequency

100
year + 2
feet

Flood Frequency for New Structures

Roadway Project Example: Lee Street



Roadway Project Example: Lee Street

- ◆ One Mile Branch crosses Lee Street between Vallotton Drive and Brookwood Drive
- ◆ The engineering evaluation estimates the following river stages at Lee Street:

5 yr	50 yr	100 yr
193.2 ft	194.3 ft	194.6 ft

- ◆ The roadway centerline surveyed elevation is 193.3 ft, therefore the estimated flooding is as follows:

5 yr	50 yr	100 yr
none	1.0 ft	1.3 ft

- ◆ Based on the proposed LOS, Lee Street does not meet the requirements, because it's a collector road and is flooding by more than 0.5 foot for the 50 year storm

Proposed Project to Address Flooding at Lee Street

- ◆ The objective is to have achieve the level of service at Lee Street
- ◆ No stage increase is acceptable anywhere in the system
- ◆ Avoid wetland impacts if possible
- ◆ Proposed Project:
 - ◆ Upsize Ashley Street Culvert from current 6x7 culvert to double 8x8
 - ◆ Create Regional Facility to provide storage to attenuate peak flows and provide water quality



Proposed Project: Ashley Street Culvert Improvement



Estimated Benefits at Lee Street

Road	Road Crown Elevation	5 Year			50 Year		
		Existing WSE (ft)	Culvert + RSF WSE (ft)	Delta 5 yr (ft)	Existing WSE (ft)	Culvert + RSF WSE (ft)	Delta 50 yr (ft)
Lee Street	193.33	193.2	190.3	-2.9	194.3	193.46	-0.9

- ◆ The road meets the level of service after the implementation of the proposed project:
 $193.46 - 193.33 = 0.13$ ft of flooding

Systemwide Results confirm that no peak stage increase will result from the project

Node ID	Road	Road Class	Road Crown Elevation	3 Year			30 Year		
				Existing 5 Yr WSE (ft)	RSE Acres	Culvert + Delta 5 yr (ft)	Existing 50 Yr WSE (ft)	RSE Acres	Culvert + Delta 50 yr (ft)
OM60010			148.0	147.9		-0.1	150.2	150.2	0.0
OM60020	Railroad	R/R	162.4	148.1	148.0	-0.1	150.3	150.3	0.0
OM60030				152.1	152.0	-0.1	154.6	154.4	-0.1
OM60040	Gordon St	Local	154.5	153.1	152.9	-0.2	155.5	155.4	-0.1
OM60050				154.3	154.2	-0.2	156.5	156.4	0.0
OM60070				154.1	154.0	-0.2	156.2	156.2	-0.1
OM60080	Melody Ln	Arterial	158.4	154.9	154.7	-0.2	157.8	157.7	-0.1
OM60090				156.2	156.1	-0.1	158.5	158.4	-0.1
OM60100	Wainwright Dr	Local	158.4	158.9	158.7	-0.1	160.4	160.3	0.0
OM60110				159.4	159.2	-0.1	161.1	161.1	0.0
OM60120				163.0	162.9	-0.1	165.1	165.1	0.0
OM60140	Sustella Ave	Collector	170.2	165.6	165.5	-0.1	167.4	167.3	0.0
OM60150				172.7	172.6	-0.1	173.9	173.9	0.0
OM60170	Oak St	Arterial	178.4	174.3	174.2	-0.1	176.0	176.0	0.0
OM60180				180.4	180.3	-0.1	181.4	181.4	0.0
OM60190	Patterson St	Arterial	183.7	181.3	181.2	-0.1	183.0	183.1	0.1
OM60200				181.9	181.8	-0.1	183.5	183.6	0.1
OM60220	Williams St	Collector	185.3	182.5	182.3	-0.2	184.4	184.6	0.2
OM60230				184.1	183.5	-0.6	185.0	185.1	0.0
OM60240	Iola Dr	Local	186.1	184.6	183.9	-0.7	185.8	185.8	0.0
OM60250				187.3	186.6	-0.7	188.4	188.4	0.0
OM60260	Ashley St	Arterial	192.7	191.2	188.4	-2.8	193.1	191.5	-1.6
OM60265				191.2	188.5	-2.7	193.1	191.5	-1.6
OM60270				192.0	190.0	-2.0	193.3	192.3	-1.0
OM60280	Lee St	Collector	193.3	193.2	190.3	-2.9	194.3	193.5	-0.9
OM60290				193.6	190.9	-2.7	194.6	193.8	-0.8
OM60300	Vallotton Dr	Collector	193.3	193.8	191.0	-2.8	195.1	194.1	-1.1
OM60310				195.1	194.3	-0.8	196.5	195.5	-1.0
OM60330				199.2	198.6	-0.6	200.5	199.6	-0.8
OM60350	Park Ave	Arterial	200.2	201.0	201.2	-0.1	201.4	201.5	-0.1
OM60360				200.3	200.2	-0.1	201.2	201.1	-0.1
OM60370	Lakeland Ave	Local	199.8	200.4	200.2	-0.1	201.2	201.1	-0.1
OM60380				200.4	200.3	-0.1	201.2	201.2	-0.1

Project Cost Estimate

- ◆ Culvert Improvements: \$225,000
- ◆ Regional Facility: \$ 450,000
- ◆ Total Cost: \$ 675,000
- ◆ Benefit Ranking: 31 Points
 - ◆ One Local Road Meets LOS (Lakeland Ave) = 1 pt
 - ◆ Two Collector Roads Meet LOS (Lee St, Vallotton Drive) = 10 pts
 - ◆ One Arterial Road Meets LOS (Ashley St) = 20 pts

Note: points per benefit are determined when City wide study is complete

Final Project Ranking

- ◆ When the master plan will be complete, the City will have a citywide list of projects with an estimated benefit, and relative ranking
- ◆ The City engineer will have a better assessment on spending limited funds to maximize the benefit to the community

Rank	Project	Sub-Basin	Benefits	Cost	\$/Benefit
1	Ashley St. Culvert Imp.	One Mile Branch	31	\$ 675,000	21,774
2	River Street Regional Fac.	Hightower Creek	39	\$ 900,000	23,076
3	Lakeland Drive Reg. Fac	Sugar Creek	16	\$ 410,000	25,625
4					

The metric of individual projects will be the Level of Service

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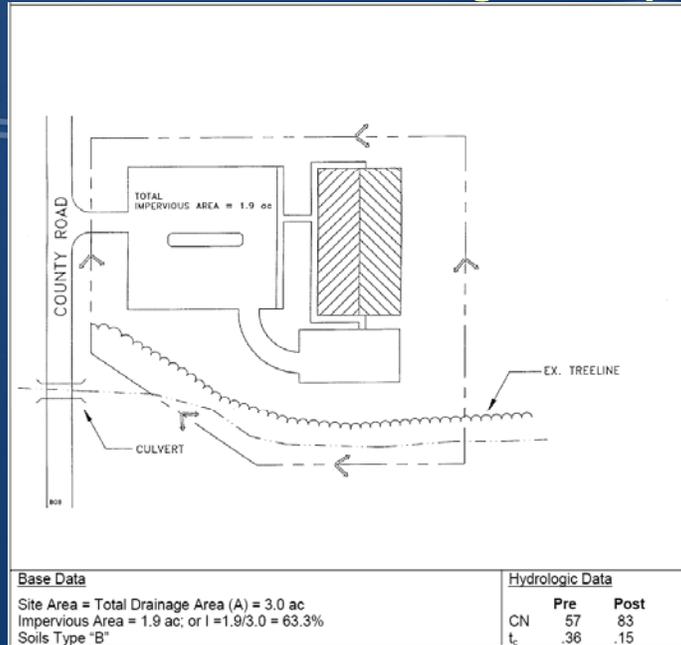
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On-Site Stormwater Storage Example



Stormwater Storage Requirements

◆ Georgia Stormwater Manual

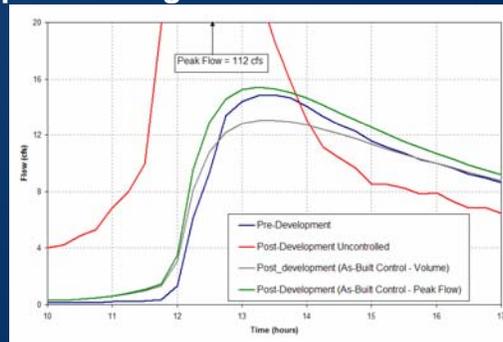
Method	Storm Depth	Volume Required	Portion of Parcel Area
Quality Control Volume Qcv	1.2 inch	8,102 cu-ft	2%
Channel Protection Volume Cpv	3.6 inch (1 year)	13,068 cu-ft	3.5%

◆ Additional Requirements

Method	Storm Depth	Volume Required	Portion of Parcel Area
Peak Flow Control	7.7 inch (25 year)	32,404 cu-ft	8-12%
Volumetric Control	7.7 inch (25 year)	43,124 cu-ft	10-15%

Volumetric Control: A potential approach for tail water controlled sub-basins

- ◆ Require new development to retain 25 year/24 hour runoff within the property ensuring that the volume discharged between hour 10 and 17 is not greater than in the pre-existing condition.
- ◆ By implementing volumetric control about 10% of the parcel area will be dedicated to storm-water control



Other Communities with Volumetric Control

- ◆ Fulton County GA
- ◆ Franklin TN
- ◆ Milwaukee WI
- ◆ Jacksonville FL
- ◆ Rockledge FL

It was being considered in:

- ◆ Austin TX
- ◆ Houston TX
- ◆ St Louis MO
- ◆ Nashville TN

The following slides are the draft proposition to City Council for discussion



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Future Developments will be required to provide stormwater treatment as follows:

1.2
inch

Georgia SW Manual Treatment
Volume

3.6
inch

Georgia SW Manual
Channel Protection Volume

7.7
inch

Peak Flow Control

7.7
inch

Volumetric Control

Discussion Points on Volumetric Control

1. **Exception to the Volumetric Control:**
 1. Cherry Creek has a greater tributary area outside of the City and should not be considered at this time.
2. **Included in Volumetric Control:**
 1. Hightower Creek tributary area outside of City limits (~15%) should be included.
 2. Mud Creek would also be included since the City discharges in its headwaters.
3. **Benefits: protects the existing floodplain (structures, and roads) from future development impacts**

Stormwater Committee (SWC) Meeting Dates

- ◆ Nov 17 2009 – Introduction
- ◆ Dec 1 2009 – Regulations and Existing Program
- ◆ Jan 19 2010 – Typical Elements - Levels of Service (LOS)
- ◆ Feb 23 2010 – Special Considerations and LOS Discussion
- ◆ Mar 23 2010 – Recommendations to Council
- ◆ Apr 20 2010 – Extra Meeting (if necessary)
- ◆ May 4 2010 – Recommendations to Council