



City of Alachua Text Amendment Application

FOR PLANNING USE ONLY

Case #: _____
Application Fee: \$ _____
Filing Date: _____ Acceptance Date: _____
Review Type: P&Z, CC

☐ COMPREHENSIVE PLAN

☐ LAND DEVELOPMENT REGULATIONS

A. APPLICANT

- Applicant's Status ☐ Applicant ☐ Agent
- Name of Applicant(s) or Contact Person(s): Christopher Gmuere Title: President
Company (if applicable): Gmuere Engineering, LLC
Mailing address: 2603 NW 13th ST Box 314
City: Gainesville State: FL ZIP: 32609
Telephone: (352) 281-4928 FAX: () N/A e-mail: chrisg@gmuereeng.com
- If the applicant is agent for the property owner*:
Name of Owner (title holder): Wallace Cain
Mailing Address: PO Box 100
City: Alachua State: FL ZIP: 32616-0100

* Must provide executed Property Owner Affidavit authorizing the agent to act on behalf of the property owner.

B. PROPOSAL

- Description/Location of Section/Goal, Objective, or Policy Requesting to Amend/Add: Requesting to amend language in Section 7.3 of the LDRS restricting Type B street standards/types to requiring installation of curb and gutter systems.
- Proposed text language and/or explanation of reason for request: Please see accompanying document for a detailed explanation.
- List any and all new Section/Goal, Objective, or Policy Requested: Requested amendments have been made to Section 7.3 and Section 10.2. See attached document for specific language.

C. ATTACHMENTS

- Proposed text in strikethrough/underscore format.
- Explanation of need and justification.
- For a text amendment to the Land Development Regulations, reference Section 2.4.1(E)(1).
- For a Large Scale Comprehensive Plan Amendment to the Comprehensive Plan, demonstrate consistency with the Comprehensive Plan.

I/We certify and acknowledge that the information contained herein is true and correct to the best of my/our knowledge.

Signature of Applicant

Signature of Co-applicant

Chris Gmuere President
Typed or printed name and title of applicant

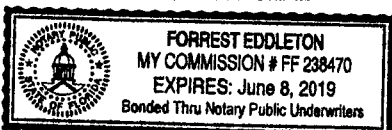
Typed or printed name of co-applicant

State of Florida County of Alachua

The foregoing application is acknowledged before me this 8th day of October, 2018, by Chris Gmuere, who is/are personally known to me, or who has/have produced _____ as identification.

NOTARY SEAL

[Signature]
Signature of Notary Public, State of Florida



City of Alachua ♦ Planning and Community Development
PO Box 9 ♦ Alachua, FL 32616 ♦ (386) 418-6121



City of
ALACHUA

THE GOOD LIFE COMMUNITY

Authorized Agent Affidavit

A. PROPERTY INFORMATION

Address of Subject Property: 17002 NW CR 241, Alachua, FL 32615

Parcel ID Number(s): 03067-005-000

Acreage: ±100

B. PERSON PROVIDING AGENT AUTHORIZATION

Name: Wallace Cain

Title: Owner

Company (if applicable): _____

Mailing Address: PO Box 100

City: Alachua

State: FL

ZIP: 32616-0100

Telephone: (386) 462-1736

FAX: _____

e-mail: _____

C. AUTHORIZED AGENT

Name: Christopher Gmuer

Title: President

Company (if applicable): Gmuer Engineering, LLC

Mailing address: 2603 NW 13th ST Box 314

City: Gainesville

State: FL

ZIP: 32609

Telephone: 352-281-4928

FAX: N/A

e-mail: chrisg@gmuereng.com

D. REQUESTED ACTION:

Text Amendment to the Land Development Regulations

I hereby certify that I am the property owner of record, or I have received authorization from the property owner of record to file an application for a development permit related to the property identified above. I authorize the agent listed above to act on my behalf for purposes of this application.

x Wallace Cain

Signature of Applicant

Signature of Co-applicant

Wallace Cain, Owner

Typed or printed name and title of applicant

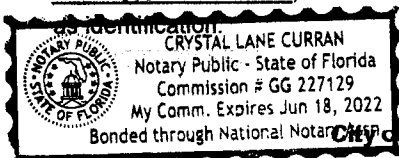
Typed or printed name of co-applicant

State of Florida

County of Alachua

The foregoing application is acknowledged before me this 5th day of October, 2018, by Wallace

R. Cain, who is/are personally known to me, or who has/have produced



Crystal Lane Curran
Signature of Notary Public, State of Florida

City of Alachua ♦ Planning and Community Development Department
PO Box 9 ♦ Alachua, FL 32616 ♦ (386) 418-6121

Revised 9/30/2014

Attachment A – Proposed Text Amendment Language

The proposed language in Sec. 10.2 – Definitions is entirely new language whereas proposed language in Sec. 7.3 and Sec. 5.1 is shown in **bold red**.

Sec. 10.2. - Definitions.

Transitional Swale means a swale, designed as a part of a stormwater management system that meets the pollutant removal goals of Chapter 62-40 of the Florida Administrative Code through the following criteria:

- (1) The average treatment efficiency of the areas treated and the areas not treated must achieve at least 80% reduction of the average annual load of pollutants that would cause or contribute to violations of state water quality standards for Class III waters.
- (2) The average treatment efficiency of the areas treated and the areas not treated must achieve at least 95% reduction of the average annual load of pollutants that would cause or contribute to violations of state water quality standards for Class I, Class II, Outstanding Florida Waters, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting.

Sec. 7.3. - Required improvements.

7.3.1 *Streets*. Work performed involving road right-of-way clearing and grubbing, earthwork, stabilizing and construction of a base and surface course shall meet the minimum requirements of the American Association of State Highway and Transportation Officials (AASHTO), latest manual edition and amendments, where applicable, unless stated otherwise in this article. These specifications are intended to govern the equipment, materials, construction methods, and quality control of the work, unless otherwise provided. They are not intended to apply to the basis of payment provisions.

- (A) *Street type improvement schedule*. For the purposes of this section, the types of subdivisions shall be given the classifications (street type standards) set forth in this subsection. Each subdivision shall comply with the required improvement standards for which it is classified.
- (1) Street type/standard A for subdivisions with business, or public and institutional uses.
 - (2) Street type/standard B for subdivisions with residential uses, where any lot is 20,000 square feet or less.
 - (3) Street type/standard C for subdivisions with residential uses, where all lots are greater than 20,000 square feet.

- (4) Street type/standard D for subdivisions with residential uses, with private streets with a maximum of ten lots using ingress and egress.

Where the proposed subdivision includes an existing street, the existing street shall conform to the standards in this section. (This standard shall not apply to any abutting street which is not connected to the proposed subdivision's street system.)

(B) *Standard street improvements.* The following standards apply to all street improvements:

(1) *Wearing surface width and right-of-way width standards.*

(a) *Arterial streets.* For street types/standards A, B, C and D.

- (i) Two 24-foot wearing surfaces with a 20-foot median.
- (ii) The subdivider shall be required to install the second 24-foot wearing surface only in subdivisions where projected average daily traffic generated on the arterial by the subdivision exceeds 7,000 vehicles.
- (iii) Minimum right-of-way width of 100 feet for streets with curb and gutter, or 120 feet for streets with swale.

(b) *Collector streets.* For street types/standards A, B, C and D.

- (i) 24-foot wearing surface.
- (ii) Minimum right-of-way width or easement of 60 feet for streets with curb and gutter, or 80 feet for streets with swales.

(c) *Local streets.*

(i) For street types/standards A, B and C.

- a. 24-foot wearing surface. The minimum street wearing surface width for local streets may be reduced by two feet on each side served by a sidewalk or multipurpose trail with a minimum width of eight feet.
- b. Minimum right-of-way width or easement width of 50 feet for streets with curb and gutter, or 60 feet for streets with swale.

c. For street type/standard B that incorporate Transitional Swales the minimum right-of-way width shall be 50 feet plus an additional 20 feet (10 feet for each side of the roadway) of private easement width for each Transitional Swale facility

(ii) For street type/standard D.

- a. 24-foot wearing surface. The minimum street wearing surface width for local streets may be reduced by two feet on each side served by a sidewalk or multipurpose trail with a minimum width of eight feet.
- b. Minimum right-of-way width or easement width of 40 feet for streets with curb and gutter, or 60 feet for streets with swale.

- (d) *Marginal access streets.*
- (i) For street types/standards A, B and C.
 - a. 20-foot minimum wearing surface.
 - b. Minimum right-of-way width or easement width of 40 feet for streets with curb and gutter, or 60 feet for streets with swales.
 - c. For street type/standard B that incorporate Transitional Swales the minimum right-of-way width shall be 40 feet plus an additional 20 feet (10 feet for each side of the roadway) of private easement width for each Transitional Swale facility
 - (ii) For street type/standard D.
 - a. 20-foot minimum wearing surface.
 - b. Minimum right-of-way width or easement of 40 feet for streets with curb and gutter, or 60 feet for streets with swales.
- (e) *Wearing surface and right-of-way width summary table.* These standards are summarized in the following Table 7.3-1, Wearing Surface standards, and Table 7.3-2, Minimum Right-of-Way Width Standards:

Table 7.3-1. Wearing Surface Standards			
Classification	Street Type Standard	Minimum Wearing Surface Width (in feet) [1]	Number of Travel Lanes [2]
Arterial	All	2 × 24	4
Collector	All	24	2
Local	All	24	2
Marginal access	All	20	2
[1] The minimum street wearing surface width for local streets may be reduced by two feet on each side served by a sidewalk or multipurpose trail with a minimum width of eight feet.			
[2] Individual travel lanes for streets shall be 12 feet wide, except for marginal access streets, which shall be a minimum ten feet in width.			

Table 7.3-2. Minimum Right-of-Way Width Standards				
Classification	Street Type Standard	Curb and Gutter Right-of-Way Minimum Width (ft.)	Transitional Swale Right-of-Way Minimum Width (private easement minimum width) (ft.)	Standard Swale Right-of-Way Minimum Width (ft.)
Arterial	All	100	N/A	120
Collector	All	60	N/A	80
Local	A, B, C	50	50 (20 total – 10 on each side of roadway)	60
Local	D	40	N/A	60
Marginal access	All	40	40 (20 total – 10 on each side of roadway)	60

(2) *Curb and gutter.*

- (a) Curb and gutter shall be provided on type A and B streets, but is not required on type C and D streets.
- (b) For lots including and between 10,000sf and 20,000sf Transitional Swales (as defined by Section 10.2) may be provided as an alternative to providing Curb and Gutter for Type B streets that are designated Local or Marginal Access.
 - (i) If Transitional Swales are utilized the subdivider shall provide data-analysis from a licensed stormwater engineer demonstrating that performance measures outlined in the definition of Transitional Swale (Sec. 10.2) will be met by the Transitional Swale system.
 - (ii) In all cases where Transitional Swales are provided swale facilities shall be located within a minimum 10 foot wide private easement on each side of any proposed roadway. Such easements and all associated swales, culverts, and other features of the

Transitional Swale shall be privately maintained and will be the sole responsibility of the subdivider or any successive Home Owner's Association. The Transitional Swale facility must be owned in its entirety by a single entity.

(iii) In all cases where Transitional Swales are provided an F-type, or similar style, curbing is required to line the outer edge of an associated paved roadway. Curb breaks allowing for spillway connections to the swale system are permitted.

- (c) If curb and gutter is not required, the subdivider shall comply with the right-of-way width requirements for streets with swales in accordance with the following Table 7-3.2, Minimum Right-of-Way Width Standards:

7.3.2 *Sidewalks.*

- (A) *Location.* Except for subdivisions (Section 2.4.10) located in the A zone district and subdivisions exceeding one dwelling unit per acre in the RSF-1 zone district, sidewalks meeting the standards of this subsection shall be located on both sides of all Type A, B, and C arterial and collector streets, and on at least one side of any other street.
- (B) *Configuration.* If sidewalks are required, they shall be concrete, installed by the subdivider, provide curb cuts for bicycles and handicapped access, and be at least five feet wide and four inches thick.
- (C) *Connection.* All multiple-family and nonresidential development shall provide at least one improved pedestrian connection between the on-site pedestrian circulation system and the adjacent public sidewalk or greenway network, with an additional connection required for each additional five acres of development area.

7.3.3 *Road and street signs.*

- (A) *Road and street signs.* Road and street signs are traffic control signs such as stop signs, speed limit signs, etc. For all subdivisions, all road and street signs shall be designed in number and location to meet the USDOT Manual for Uniform Traffic Control Device Standards and shall be shown on the preliminary plat. The subdivider shall install such road and street signage and shall maintain and repair such signage through the warranty period, until transfer to the homeowners' association. In lieu of installation of such signage, the posting of a surety device in accordance with Section 6.10, Improvement guarantees for private improvements, shall be filed, approved, and accepted by the City Commission.
- (B) *Street name signs.* Street name signs are signs within a subdivision that identify street names. Street name signs shall be placed, by the subdivider, at all intersections within or abutting the subdivision. The type and location of the street name signs shall be submitted as part of the preliminary plat and shall conform to the Alachua County's street naming and addressing system.

7.3.4 *Streetlights.* Installation of streetlights is required on all public streets. Streetlights shall be installed by the subdivider in accordance with the standards in the City's Electrical Service Policy Manual.

7.3.5 *Reserve strips.* The creation of reserve strips shall not be permitted adjacent to a proposed public street in such a manner as to deny access to such street from property adjacent to the proposed subdivision, or to landlock adjacent properties.

7.3.6 *Stormwater management and flood protection requirements.* Subdivider shall comply with all stormwater management requirements set forth in Section 6.9.3, Stormwater management standards.

7.3.7 *Sanitary sewer.*

- (A) *Sanitary sewer available and reasonably accessible.* Where a publicly owned sanitary sewer system is available and reasonably accessible, the subdivider shall provide sanitary sewer services to each lot within the subdivision. All sewer lines serving lots within the subdivision shall be designed to operate on a gravity flow basis wherever possible. If a wearing surface and sanitary sewer lines are required, all sewer lines shall be installed by the subdivider prior to the paving of the street.
- (B) *Publicly owned sanitary sewer unavailable.* Where lots cannot be served by the extension of an existing publicly-owned sanitary sewer, an alternate method of sewage disposal for each lot may be used if it complies with all applicable standards of the Alachua County Health Department, the Florida Department of Health, the Florida Department of Environmental Protection and any other regional, State or Federal agency, as applicable. Alternative methods of sewage disposal shall be designed and installed as to enable subsequent connections to a publicly owned sanitary sewer system as service becomes available.
- (C) *Complies with requirements of Alachua County Health Department.* The subdivider shall furnish written proof demonstrating compliance with the provisions for sanitary sewage disposal for the entire subdivision prior to approval of a preliminary plat and construction plans for the subdivision.

7.3.8 *Water supply.*

- (A) *Publicly owned water supply available.* Where a publicly owned water supply is available and within a reasonable distance, the subdivider shall provide a system of water mains and shall connect the system to such supply. If a wearing surface and water mains are required, all water lines shall be installed by the subdivider prior to the paving of the street.
- (B) *Publicly owned water supply unavailable.* Where no publicly owned water supply is available within a reasonable distance, an alternate supply may be used if it is in compliance with all applicable standards of the Alachua County Health Department, the Florida Department of Health, the Suwannee River Water Management District and the Florida Department of Environmental Protection.
- (C) *Complies with requirements of Alachua County Health Department.* In cases where the development is not connected to a publicly owned water supply, the subdivider shall furnish written proof demonstrating compliance with the provisions for water supply for the entire subdivision prior to approval of a preliminary plat and construction plans for the subdivision.

7.3.9 *Fire protection improvements.* Fire protection improvements shall be provided when the subdivision is connected to a publicly owned water system and shall include the installation of fire hydrants to water mains with a minimum pipe size of six inches in diameter. If fire protection improvements are required, then:

- (A) *Fire hydrants.* Fire hydrants shall be located no more than 1,000 feet apart and within 500 feet of each lot;

- (B) *Residual pressures.* The distribution system shall be capable of delivering, in addition to domestic requirements, residual pressures of not less than 20 pounds per square inch and fire flows of at least 500 gallons per minute; and
- (C) *Complies with ISO standards.* The distribution system shall be designed to comply with the ISO standards for the development.

7.3.10 *Water and sanitary sewer systems.* New potable water and sanitary sewer systems, where required by the Comprehensive Plan, shall be designed by a Florida registered engineer in accordance with all applicable regulations of the Florida Department of Environmental Protection.

7.3.11 *Utilities.*

(A) *Location of utility easements.*

(1) *Generally.*

- (a) Utilities shall be located within the street right-of-way, as shown in the Technical Standards Manual.
- (b) Normally, the City will not permit utility easements across lots or centered on rear or side lot lines, except where, due to topography or other circumstances beyond the control of the subdivider, such utility easements are determined necessary for the reasonable development of the property. If approved, they shall be at least 15 feet wide and centered as near as practical between the lots.

(B) *Oversizing and reimbursement.*

- (1) *Oversized improvements.* Wherever a development contains public improvements that are required by the City to be larger than that necessary to serve the development where they are located, the owner/developer shall negotiate with the appropriate City departments to determine the proportional shared costs for the required improvements. Negotiated costs will be in accordance with existing City policy in place at the time of installation.
- (2) *Reimbursements.* Reimbursements to the owner/developer on oversized public improvements shall be in accordance with existing City policy in place at the time of installation.

7.3.12 *Adequate off-site facilities and services.* Where the City concludes that a proposed subdivision will create impacts on surrounding streets, utilities, or other facilities that cannot be adequately offset through the construction of on-site facilities, the construction of off-site facilities sufficient to offset the anticipated impacts of the proposed development may be required. In no event, however, shall a subdivider be required to provide off-site facilities for purposes of granting a general public benefit beyond offsetting the impacts of the proposed subdivision.

7.3.13 *Monumentation and control points.* The subdivider shall comply with the requirements of F.S. ch. 177 regarding the placement of all monuments.

Sec. 5.1. - Dimensional standards tables.

5.1.2 *Dimensional standards in Residential Districts.* All primary and accessory structures in the residential zoning districts are subject to the dimensional standards set forth in Table 5.1-2, Table of Dimensional Standards in the Residential Zoning Districts. These standards may be further limited or modified by other applicable sections of these LDRs. Rules of measurement and permitted exceptions are set forth in Sections 5.2.1, Lots; 5.2.2, Setbacks and required yards; 5.2.3, Height; and 5.2.4, Bulk.

Table 5.1-2. Table of Dimensional Standards in the Residential Zoning Districts									
District and Use	Lots		Minimum Yards and Setbacks				Max. Height (ft.)	Max. Lot	Max. Gross Density (DU/acre) [3]
	Min. Area (sq. ft.)	Min. Width (ft.)	Front (ft.) [4]	Side (ft.)	Rear (ft.)	Wetland and Water-course (ft.)		Cover (incl. accessory structures)	
RSF-1									
Dwelling, single-family, detached	40,000	100	30	15 for each	15	Sec. 5.2.2(B)	65	40%	1
All other uses	None	None	35	25 for each	35			35%	N/A
RSF-3 (District permitted only in areas with community water and sewer systems)									
Dwelling, single-family detached	10,000	50/75 ¹	20	7.5 for each	15	Sec. 5.2.2(B)	65	40%	3
All other uses	None	None	35	25 for existing; 30 for	35			50%	

				new					
RSF-4 (District permitted only in areas with community water and sewer systems)									
Dwelling, single-family, detached	7,500	50/75 ¹	20	7.5 for each	15	Sec. 5.2.2(B)	65	45%	4
Dwelling townhouse, and two- to four-family	7,500 per unit for the first 2 units; 2,000 per unit for each additional	50	15	5 for each building side	10			60%	
All other uses	None	None	35	25 for existing; 30 for new	35			60%	

Portions of table 5.1-2 to remain unchanged have been omitted from this review document.

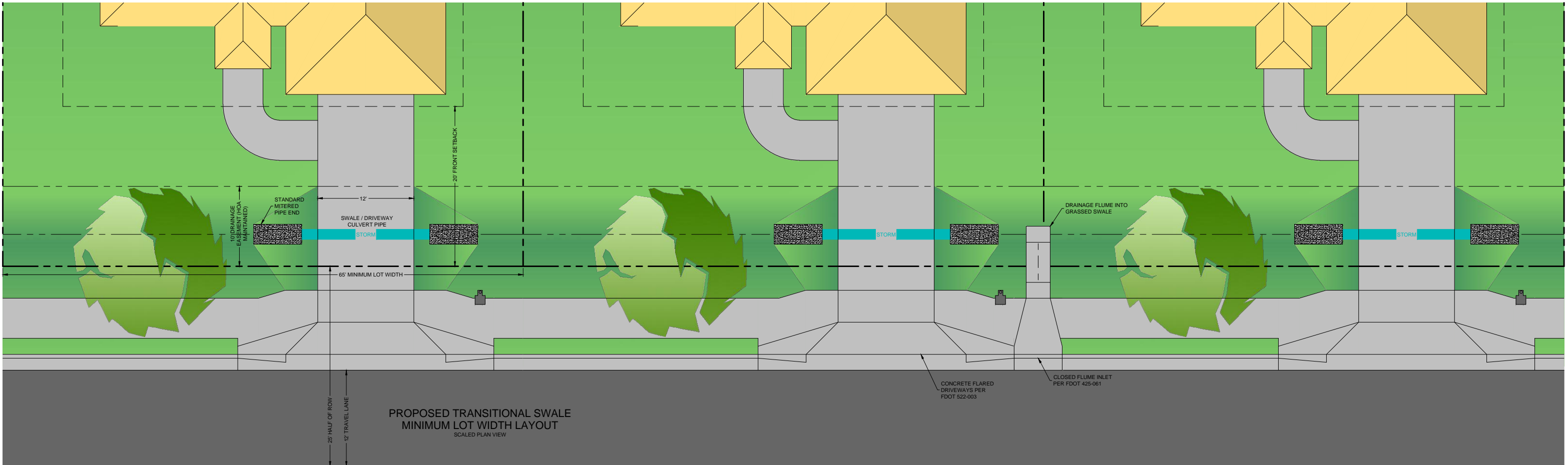
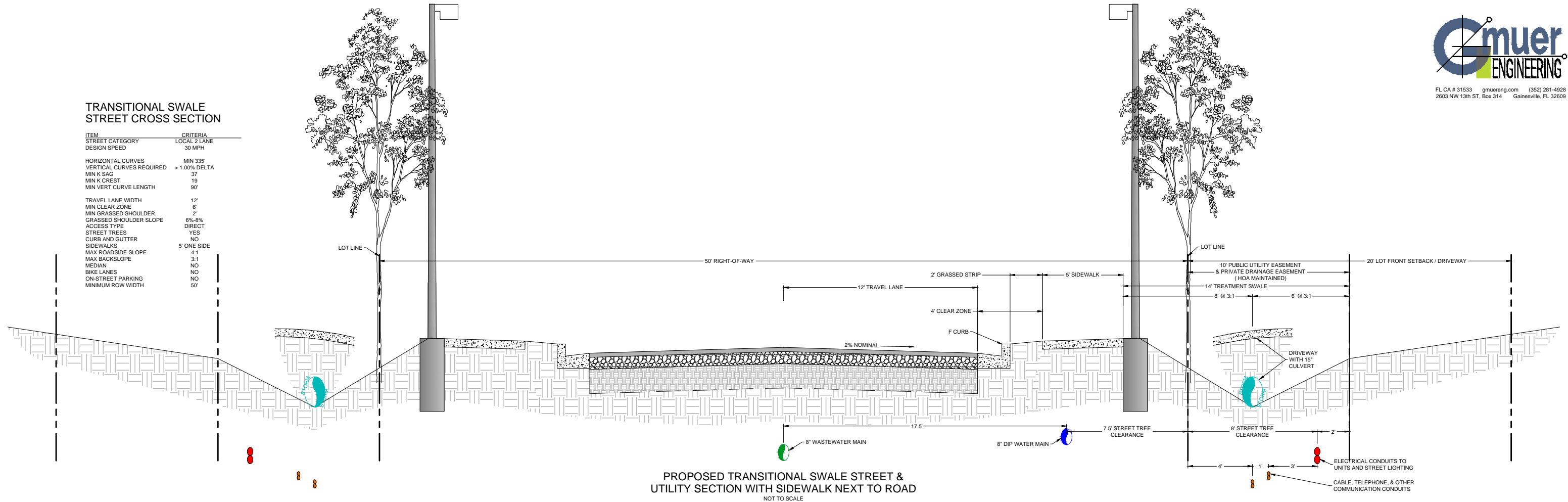
RMH-P									
Mobile home park ² , dwelling, mobile home	10 acres for park site; 5,445 per DU; 3,500 per park stand	400 for site; 40 average for park stand	35 at site perim.; 20 between homes and from access drives	25 at site perim.; 20 between homes and from access drives	15	Sec. 5.2.2(B)	65	30%	8
All other uses	None	None	35	25 for each	35			35%	N/A

¹ **Note.** Where the use of Transitional Swales is proposed for subdivisions with lots between 10,000sf and 20,000sf the minimum lot width shall be 75ft.

² **Note.** There are also use-specific regulations for such parks found in Article 4.

**TRANSITIONAL SWALE
STREET CROSS SECTION**

ITEM	CRITERIA
STREET CATEGORY	LOCAL 2 LANE
DESIGN SPEED	30 MPH
HORIZONTAL CURVES	MIN 335'
VERTICAL CURVES REQUIRED	> 1.00% DELTA
MIN K SAG	37
MIN K CREST	19
MIN VERT CURVE LENGTH	90'
TRAVEL LANE WIDTH	12'
MIN CLEAR ZONE	6'
MIN GRASSED SHOULDER	2'
GRASSED SHOULDER SLOPE	6%-8%
ACCESS TYPE	DIRECT
STREET TREES	YES
CURB AND GUTTER	NO
SIDEWALKS	5' ONE SIDE
MAX ROADSIDE SLOPE	4:1
MAX BACKSLOPE	3:1
MEDIAN	NO
BIKE LANES	NO
ON-STREET PARKING	NO
MINIMUM ROW WIDTH	50'





INTRODUCTION PAGE

Model requires the use of Excel 2007 or newer

This program is compiled from stormwater management publications and deliberations during a two year review of the stormwater rule in the State of Florida.

Input from the members of the Florida Department of Environmental Protection Stormwater Review Technical Advisory Committee and the staff and consultants from the State Water Management Districts is appreciated.

The State Department of Transportation provided guidance and resources to compile this program. The Stormwater Management Academy is responsible for the content of this program.



GENERAL SITE INFORMATION: V 8.6		GO TO INTRODUCTION PAGE		10/8/2018		Blue Numbers =		Input data	
		Red Numbers =		Calculated or Carryover					
Select the appropriate Meteorological Zone, input the appropriate Mean Annual Rainfall amount and select the type of analysis				NAME OF PROJECT		HELP Rainfall			
				Swale Treatment		VIEW ZONE MAP			
Meteorological Zone (Please use zone map):				CLICK ON CELL BELOW TO SELECT					
				Zone 2					
Mean Annual Rainfall (Please use rainfall map):				52.00		Inches		VIEW MEAN ANNUAL RAINFALL MAP	
Type of analysis:				CLICK ON CELL BELOW TO SELECT					
Treatment efficiency (N, P) (ex 80 70 (no decimal points) use only for specified removal efficiency):				Specified removal efficiency					
				80		80		GO TO WATERSHED CHARACTERISTICS	
				%					
Select the STORMWATER TREATMENT ANALYSIS Button below to begin analyzing the effectiveness of Best Management Practices.				Model documentation and example problems.					
STORMWATER TREATMENT ANALYSIS				There is a user's manual for the BMPTRAINS model. It can be downloaded from www.stormwater.ucf.edu . The results from the example problems shown in the manual however may not reflect current model results due to ongoing updates of the model.					
Systems available for analysis: Retention Basin with option for calculating effluent concentration Wet Detention Exfiltration Trench Pervious Pavement Stormwater Harvesting Biofiltration Greenroof Rainwater Harvesting Managed Aquatic Plants Detention Vegetated Natural Buffer Vegetated Filter Strip Swale Rain Garden Tree Well Lined reuse pond User Defined BMP				RESET INPUT FOR STORMWATER TREATMENT ANALYSIS					
				METHODOLOGY FOR CALCULATING REQUIRED TREATMENT EFFICIENCY					
				METHODOLOGY FOR RETENTION SYSTEMS			METHODOLOGY FOR WET DETENTION SYSTEMS		
				METHODOLOGY FOR GREENROOF SYSTEMS			METHODOLOGY FOR WATER HARVESTING SYSTEMS		

WATERSHED CHARACTERISTICS		V 8.6	GO TO STORMWATER TREATMENT ANALYSIS		Blue Numbers =	Input data	LAND USES/EMC	
SELECT CATCHMENT CONFIGURATION		10/8/2018	CLICK ON CELL BELOW TO SELECT CONFIGURATION		VIEW CATCHMENT CONFIGURATION			
			A - Single Catchment		GO TO GENERAL SITE INFORMATION PAGE			
For comingling, the off-site catchment must be upstream. The delay is only for retention BMPs and must be used in hours as measured by the time of concentration at a one inch/hour rain			COMINGLING		MULTI-LAND USE			
Delay [hrs]	0.00	CATCHMENT NO.1 NAME:	Lot and ROW		VIEW AVERAGE ANNUAL RUNOFF "C" Factor			
max delay = 15 hrs.		CLICK ON CELL BELOW TO SELECT		VIEW EMC & FLUCCS				
Pre-development land use:		CLICK ON CELL BELOW TO SELECT		GO TO GIS LANDUSE DATA				
with default EMCs		Single-Family: TN=2.070 TP=0.327						
Post-development land use:								
with default EMCs								
Total pre-development catchment area:			AC					
Total post-development catchment or for BMP analysis:		0.250	AC	Average annual pre runoff volume:				
Pre-development Non DCIA CN:				Average annual post runoff volume (note no BMP area):				
Pre-development DCIA percentage:			%	Pre-development Annual Mass Loading - Nitrogen:				
Post-development Non DCIA CN:		65.00	%	Pre-development Annual Mass Loading - Phosphorus:				
Post-development DCIA percentage:		0.00	%	Post-development Annual Mass Loading - Nitrogen:				
Estimated BMP Area (No loading from this area)		0.026	AC	Post-development Annual Mass Loading - Phosphorus:				
				OVERWRITE DEFAULT CONCENTRATIONS USING:				
				PRE: POST:				
				EMC(N): mg/L EMC(P): mg/L				
				USE DEFAULT CONCENTRATIONS				
				0.041 ac-ft/year				
				kg/year				
				kg/year				
				0.104 kg/year				
				0.016 kg/year				

SWALE

10/8/2018

V 8.6

SWALE SERVING CONTRIBUTING CATCHMENT:

Swale Treatment

Loadings from BMP area are contained by the BMP, thus no BMP area load.

Contributing catchment area:

Required treatment efficiency (**Nitrogen**):

Required treatment efficiency (**Phosphorus**):

Swale top width calculated for flood conditions [W]:

Swale bottom width (0 for triangular section) [B]:

Swale length [L]:

Average impervious length:

Average impervious width (including shoulder):

Average width of the pervious area to include swale width:

Contributing catchment area:

Swale slope (ft drop/ft length) [S]:

Manning's N:

Soil infiltration rate:

Side slope of swale (horizontal ft/vertical ft) [Z]:

Infiltrated storage depth:

Average height of the swale blocks [H]:

Length of the berm upstream of the crest [Lb]:

Number of swale blocks*:

Volume of water in swales upstream of swale blocks:

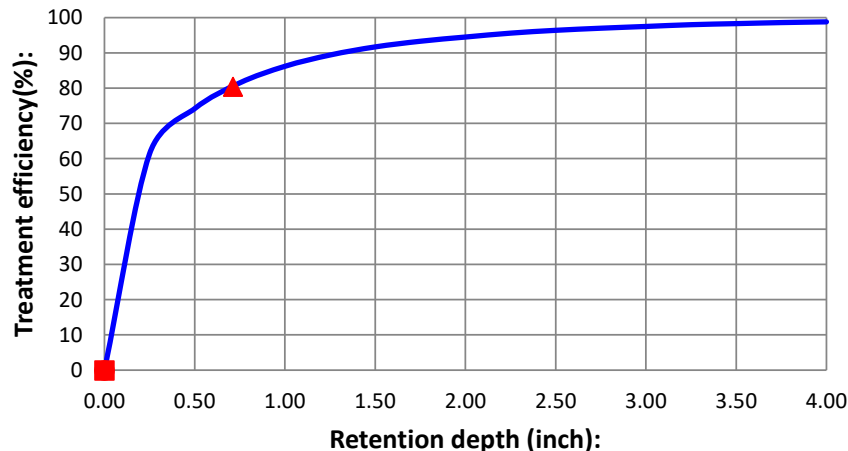
Total volume:

Provided treatment efficiency (**Nitrogen**):

Provided treatment efficiency (**Phosphorus**):

* Assumes that swale blocks are equidistant spacing along length of swale, swale slope is consistent, and swale length is total length of swale

Lot and ROW	Catchment 2	Catchment 3	Catchment 4	
0.224	0.000	0.000	0.000	ac
80.000	80.000	80.000	80.000	%
80.000	80.000	80.000	80.000	%
14.00				ft
0.00				ft
80.00				ft
0.00				ft
0.00				ft
14.00				ft
0.00	0.00	0.00	0.00	ft ²
0.040				
0.030				
3.000				in/hr
3.500				
0.113	0.000	0.000	0.000	in
1.00				ft
1.00				ft
2.00				
0.600	0.000	0.000	0.000	in
0.713	0.000	0.000	0.000	in
80.405	0.000	0.000	0.000	%
80.405	0.000	0.000	0.000	%



- Efficiency Curve:
- ▲ Sys. Eff. (N \$ P) CAT 1
- Sys. Eff. (N \$ P) CAT 2
- Sys. Eff. (N \$ P) CAT 3
- ◆ Sys. Eff. (N \$ P) CAT 4

NOTE FOR TREATMENT EFFICIENCY GRAPH:

The purpose of this graph is to help illustrate the treatment efficiency of the swale as the function of retention depth. The graph illustrates that there is diminishing effectiveness as the retention depth is increased.

HELP - EXAMPLE PROBLEM 1

Blue Numbers =	Input data	HELP - BACKGROUND
Red Numbers =	Calculated or Carryover	

GO TO STORMWATER TREATMENT ANALYSIS

Concentration reduction? (If $S \leq 1\%$ or $H \geq 6$ in)

Lot and ROW	Catchment 2	Catchment 3	Catchment 4

Provided percent mass reductions in surface discharges are:

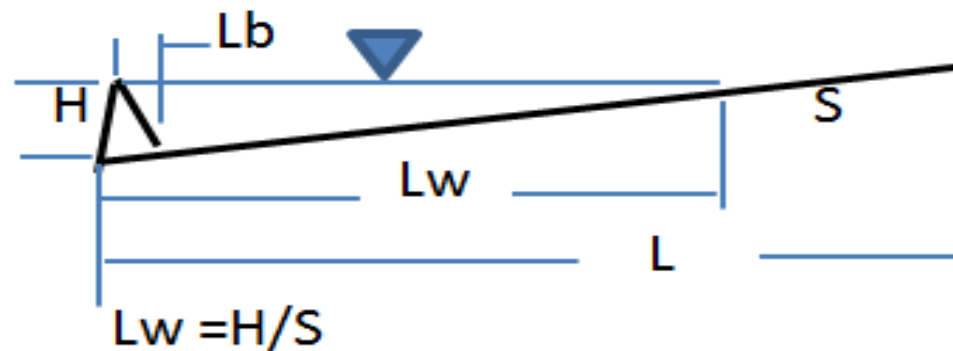
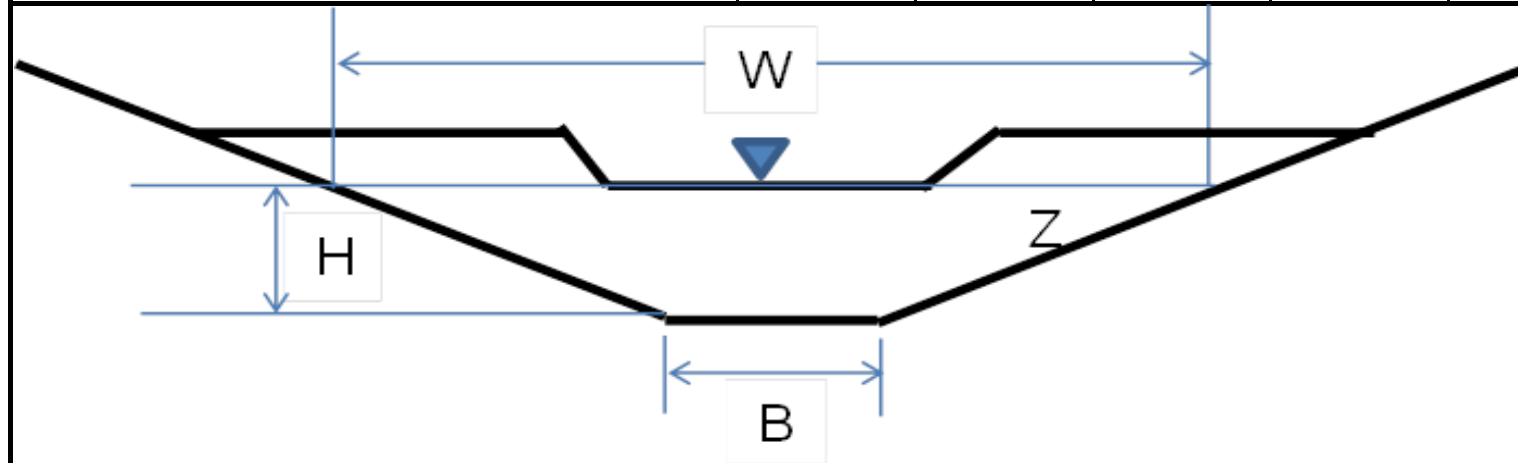
Nitrogen efficiency	80.405	0.000	0.000	0.000
Phosphorus efficiency	80.405	0.000	0.000	0.000

If you are you interested in the mass of pollutants removed before percolating into the groundwater?

[View Media Mixes](#)

Specify soil media

Nitrogen mass reduction in groundwater discharge					%
Phosphorus mass reduction in groundwater discharge					%



CATCHMENTS AND TREATMENT SURFACE DISCHARGE SUMMARY

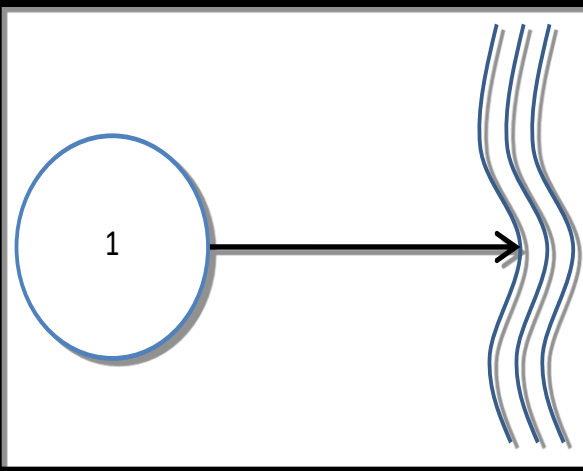
V 8.6

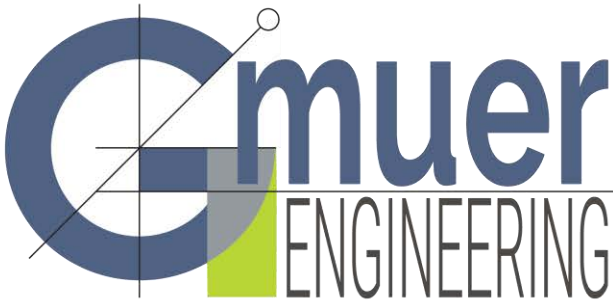
CALCULATION METHODS:

1. The effectiveness of each BMP in a single catchment is converted to an equivalent capture volume.
2. Certain BMP treatment train combinations have not been evaluated and in practice they are at this time not used, an example is a greenroof following a tree well.
3. Wet detention is last when used in a single catchment with other BMPs, except when followed by filtration

PROJECT TITLE	Swale Treatment	Optional Identification			
	Lot and ROW	Catchment 2	Catchment 3	Catchment 4	
BMP Name	Swale				
BMP Name					
BMP Name					

Surface Water Discharge Summary Performance of Entire Watershed

Catchment Configuration	A - Single Catchment		10/8/2018	
Nitrogen Pre Load (kg/yr)	0.00	Treatment Objectives or Target for TN MET TP MET	BMPTRAINS MODEL	
Phosphorus Pre Load (kg/yr)	0.00			
Nitrogen Post Load (kg/yr)	0.10			
Phosphorus Post Load (kg/yr)	0.02			
Target Load Reduction (N) %	80			
Target Load Reduction (P) %	80			
Target Discharge Load, N (kg/yr)	0.02			
Target Discharge Load, P (kg/yr)	0.00			
Provided Overall Efficiency, N (%):	80			
Provided Overall Efficiency, P (%):	80			
Discharged Load, N (kg/yr & lb/yr):	0.02	0.04		
Discharged Load, P (kg/yr & lb/yr):	0.00	0.01		
Load Removed, N (kg/yr & lb/yr):	0.08	0.18		
Load Removed, P (kg/yr & lb/yr):	0.01	0.03		



Attachment D - Maintenance and Costs Narrative

Infrastructure Maintenance Activities and Relative Costs of Curb-and-Gutter vs. Swale Sections

The subdivision road section defines the infrastructure to be maintained by the City and the lot line demarcating the area maintained by the home owner. A typical curb and gutter section places the most infrastructure in the right-of-way to be maintained by the City. It consists of the asphalt roadway and limerock, curb and gutter, curb inlets, longitudinal pipes, cross drain pipes, curb ramps, and sidewalks. Maintenance of curb and gutter road sections consist of the occasional blocked inlet pipe or repair of crushed curb inlet tops and sidewalk curb ramps. Any significant maintenance activities are usually scheduled and accompany road repair/resurfacing operations under a capital improvement project.

A typical swale section places the least amount of infrastructure in the right-of-way, mainly the asphalt roadway and any drains that cross the roadway. Typically, the maintenance of swale sections occurs usually every 2-3 years and, if swales are located within the right-of-way, maintenance is performed by City crews at the request of residents. The operations consist of swale regrading and sodding to remove sediment and the clearing of sediment from culverts.

City Staff in Public Works and Planning have expressed significant concerns with potential maintenance costs for developments with swale systems. Several elements have been incorporated into our proposed Text Amendment to address these concerns:

1. Pavement Maintenance

Staff: Increased prevalence of off-street parking will increase rate of damage to pavement in neighborhoods with smaller lots.

Response: Proposed cross-sections and requirements have been revised to include a concrete ribbon lining the edge of the paved roadway. This will act to address staff's concerns that parking on the edge of the pavement is increased in more dense neighborhoods and will reduce the lifespan of the roadway.

2. Stormwater Maintenance

Staff: The City historically does not maintain drainage retention areas (DRAs), but the City does maintain stormwater piping to them. Culvert maintenance would also be problematic: the use of culverts would increase the maintenance obligation of the City of Alachua as their useful life may be up to 50% less than the useful life of a concrete stormwater drain/inlet typically found in a curb and gutter development.

Response: The proposed cross-sections and language have been revised to show that swales, culverts, and other features of the "transitional swale" will be within private easement, privately maintained, and not within the City's right-of-way. The proposed language has also been revised to state that ownership and maintenance of the swales is solely the responsibility of an associated Home Owners Association. The language specifically spells out that in no way will the City be liable for maintenance or potential failures of the swale system. Through the subdivision, site plan review, and permitting processes the City is able to require and verify that swale systems are constructed according to best engineering practices and specific standards acceptable to the City. Requiring and monitoring these standards inherently ensures that the privately maintained and privately constructed swale system will not generate any more risk than if it were a publicly constructed project. In essence, the proposed language will allow the City to gain neighborhood development with privately constructed infrastructure. As proposed, long-term maintenance is only a factor in situations where the City has agreed to adopt privately constructed streets. Long-term maintenance of the swale system will be the sole responsibility of an associated Home Owners Association.

Attachment E: Analysis of Section City of Alachua Land Development Regulations Section 2.4.1(E)(1)

Section 2.4.1 (E) *Standards.*

(1) *Text amendments.* Amending the text of these LDRs is a matter committed to the legislative discretion of the City Commission. In determining whether to adopt or deny the proposed amendment, the City Commission shall consider and weight the relevance of the following factors:

(a) *Consistent with Comprehensive Plan.* Whether and the extent to which the proposed amendment is consistent with the Comprehensive Plan.

The proposed Text Amendment is consistent with the Comprehensive Plan. Please see the Tara Forest Text Amendment Narrative (re-submitted 3/27/19) which goes over this consistency in detail.

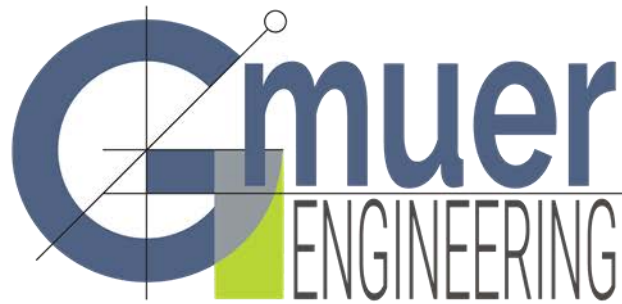
(b) *Consistent with ordinances.* Whether the proposed amendment is in conflict with any provision of these LDRs or the City Code of Ordinances. The proposed Text Amendment intends to augment the existing LDRs by providing additional options in subdivision roadway design. The goal is to present an option that meshes with existing code language and does not contrast or conflict with existing options. Please refer to Attachment A: Proposed Strikethroughs and Additions to the City of Alachua Land Development Regulations (re-submitted 3/27/19) for a detailed analysis and description of how the proposed Text Amendment will sync with existing code language.

(c) *Changed conditions.* Whether and the extent to which there are changed conditions that require an amendment. There are no known changed conditions that precipitated the Text Amendment request. The goal is to broaden the palate of options available for subdivision design standards as seen in some neighboring jurisdictions and across North Central Florida.

(d) *Community need.* Whether and the extent to which the proposed amendment addresses a demonstrated community need. Current code language limits street design standards and configurations to 4 types. This limited number of tools limits variety in development design and limits innovative approaches to establishing street networks. Additional tools will allow more opportunities for each neighborhood to have a unique character while still uniformly preserving efficiency and functionality for the City as a whole. Additionally, newly adopted Land Development Regulations for Alachua County require that all new stormwater treatment designs utilize several treatment options rather than one design solution. Currently,

the City of Alachua LDRs encourage singular design solutions such as curb and gutter and discourage the use of multiple design options (such as incorporating swale systems).

- (e) *Compatible with surrounding uses.* Whether and the extent to which the proposed amendment is consistent with the purpose and intent of the zone districts in these LDRs, or will improve compatibility among uses and will ensure efficient development within the City. **The proposed Text Amendment is compatible with the intent described for the zone districts where the proposed amendment would be applicable. Specifically, the proposed amendment allows for efficient and orderly development while continuing to retain the rural character espoused by the LDRs and City of Alachua branding. Much of the existing development that would be comparable to proposed development affected by the proposed amendment does not display elements that are required by current code namely curb-and-gutter and swale systems. Also, the ability to use Transitional Swales, as proposed, is highly situational and unlikely to be used on a wide scale due to the specifically defined treatment criteria highlighted in the definition of Transitional Swale. The limited practicability limits impacts on existing uses as shown in several nearby jurisdictions (see Attachment H: NCF Lot Mins with Swales Table).**
- (f) *Development patterns.* Whether and the extent to which the proposed amendment would result in a logical and orderly development pattern. **The proposed amendment would lead to a logical and orderly development pattern by providing design tool that bridges the gap between existing development without curb-and-gutter or swale systems and any new comparable development. As currently written the Code would result in a hard visual break between existing development with a rural character and new development that would be decidedly more urban in appearance (see Attachment F: Comparable Neighborhoods and Attachment G: Neighborhood Types with Graphic).**
- (g) *Effect on natural environment.* Whether and the extent to which the proposed amendment would result in significantly adverse impacts on the natural environment, including but not limited to water, air, noise, stormwater management, wildlife, vegetation, wetlands, and the natural functioning of the environment. **As proposed, "Transitional Swales" would be allowed only if specific criteria for stormwater capture and treatment are presented as a part of development plans. This will help ensure that water quality remains a primary element of designing the proposed street type. In addition, allowing swale systems as opposed to strictly requiring curb-and-gutters will allow development to disperse stormwater treatment of point sources rather than concentrating them into large stormwater ponds and other treatment systems. Acting to disperse pollution sources is a main tenant of Low Impact Design and similarly environmentally conscience design techniques.**
- (h) *Public facilities.* Whether and the extent to which the proposed amendment would result in development that is adequately served by public facilities (roads, potable water, sewage, stormwater management, parks, and solid wastes). **The proposed amendment will not have any negative impacts to public facilities or the provision of public services. For additional detail on how the proposal will positively affect stormwater management please see Attachment D: Maintenance and Costs Narrative.**



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Ph. (352) 281-4928

gmuereng.com

Comparable Neighborhoods

Support Material for Transitional Swales Text Amendment

Forrest Eddleton, Planning Director
11-29-2018

Eryn's Garden

North Gainesville

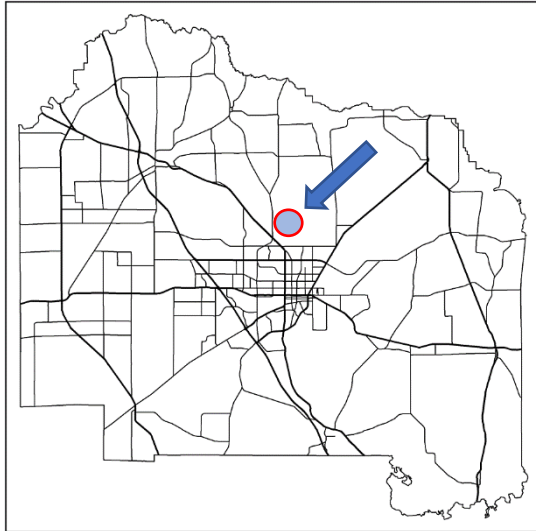
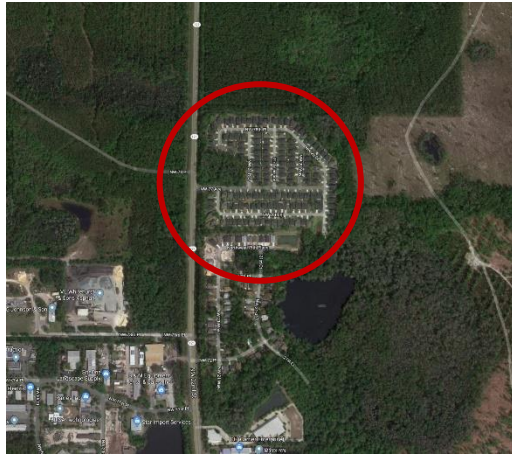
East Side of County Road 121

Original Plat 1983

Redeveloped 2010-2017

Lot Sizes: ~50ft x ~90ft

No curb-and-gutter/ No swales



Blues Creek Phase 6

Northwest Gainesville

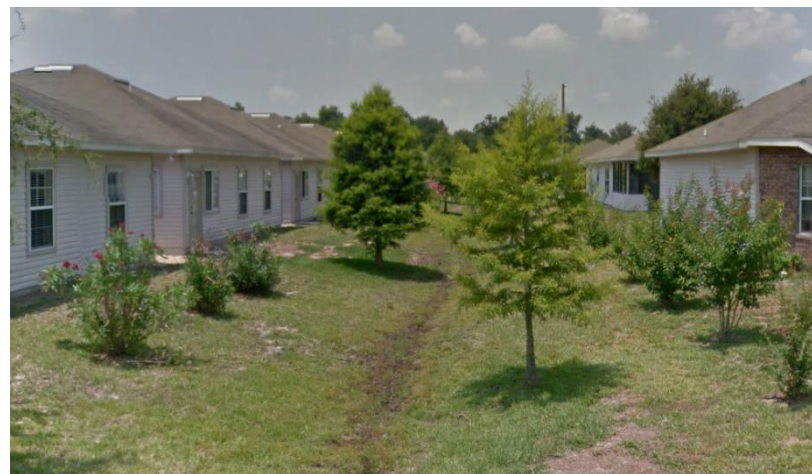
West side of NW 43rd Street

Platted in 2001

Lot sizes ~40ft x ~70ft

No curb-and-gutter

Swales at the rear of lots



Turkey Creek Forest

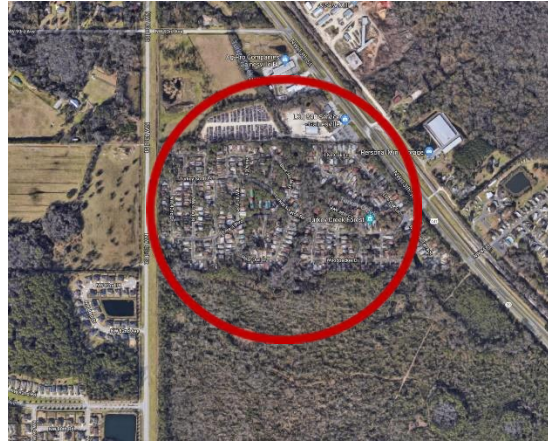
Northwest Gainesville

Between US 441 and NW 43rd St.

Original Plat: 1977

Lot Sizes: ~45ft x ~90ft

Mix of Swales with valley curb



Kingsland – Alachua

City of Alachua

North of US 441, East of NW 140th St.

Plat: 2006

Lot Sizes: ~70ft x ~120ft

Swales with no curb-and-gutter



Attachment G - City of Alachua Single-Family Neighborhoods by Roadway Types

The argument has been made that new single-family residential development on lots less than 20,000 square feet within the City of Alachua must be developed with curb-and-gutter stormwater management facilities in order to be compatible with the character of existing neighborhoods. However, an analysis of existing neighborhoods has shown that the overwhelming majority of streets do not contain curb-and-gutter systems. In addition, swales systems have been allowed in several neighborhoods dating back to at least the late 1950s and as recently as 2006. Two recent developments (2005/2010) have included curb-and-gutter systems but only one district within the City proper was developed with a curb-and-gutter system prior to 2005 (see Area C on attached graphic). Our analysis shows that curb-and-gutter systems are not a primary feature of Alachua's character but rather a new feature emblematic of newer developments on the periphery of Alachua's central urban area.

When analyzing the City of Alachua's single-family neighborhoods by roadway cross-sections four basic types of neighborhood can be identified: neighborhoods without curb-and-gutter, neighborhoods with a combination of no curb-and-gutter and swales, neighborhoods with swales, and neighborhoods with curb-and-gutter. Neighborhoods without curb-and-gutter (blue areas on the graphic) or any visible stormwater treatment system make up the largest share of the single-family neighborhoods at 50% of the total. These neighborhoods are predominantly the original neighborhoods of Alachua going back to 1907 with the most recent plat being recorded in 1998. Neighborhoods with a combination of swales and no curb-and-gutter make up roughly 12% of the total single-family neighborhoods. Plat dates in these areas are difficult to ascertain but the majority of development was done in mid last century (1950s-1970s). Neighborhoods with swales are roughly 19% of the total single-family neighborhoods with the largest of these neighborhoods being platted in 1959 and 1977. However, one of these neighborhoods with swales was permitted and platted in 2006 as a Planned Unit Development. This indicates that the City was willing to allow a neighborhood with swales in its recent history. Neighborhoods with curb-and-gutter are a relatively new style of development for Alachua. The "native" or existing neighborhoods with curb-and-gutter are located in a cluster to the north of the city on the east

side of County Road 235. These neighborhoods were platted in 1956, 1980, and 1986. The remaining curb-and-gutter neighborhoods are on the western edge of Alachua's urban area and were platted in 2005 and 2010.

District (See Attached Graphic)	Acreage	Plat Date
A	26.65	2010
B	44.97	1961
C	39.85	1980/1985/1956
D	17.48	2006 (PUD)
E	112.59	1907/1926/1971/1998
F	39.99	2005
G	87.82	1959/1977
H	84.90	1905-1970s
I	3.25	1905
J	29.72	1914/1966
K	8.99	1950s-1970s*
L	10.01	1961
M	17.55	1950s-1970s*
N	27.53	1950s-1970s*

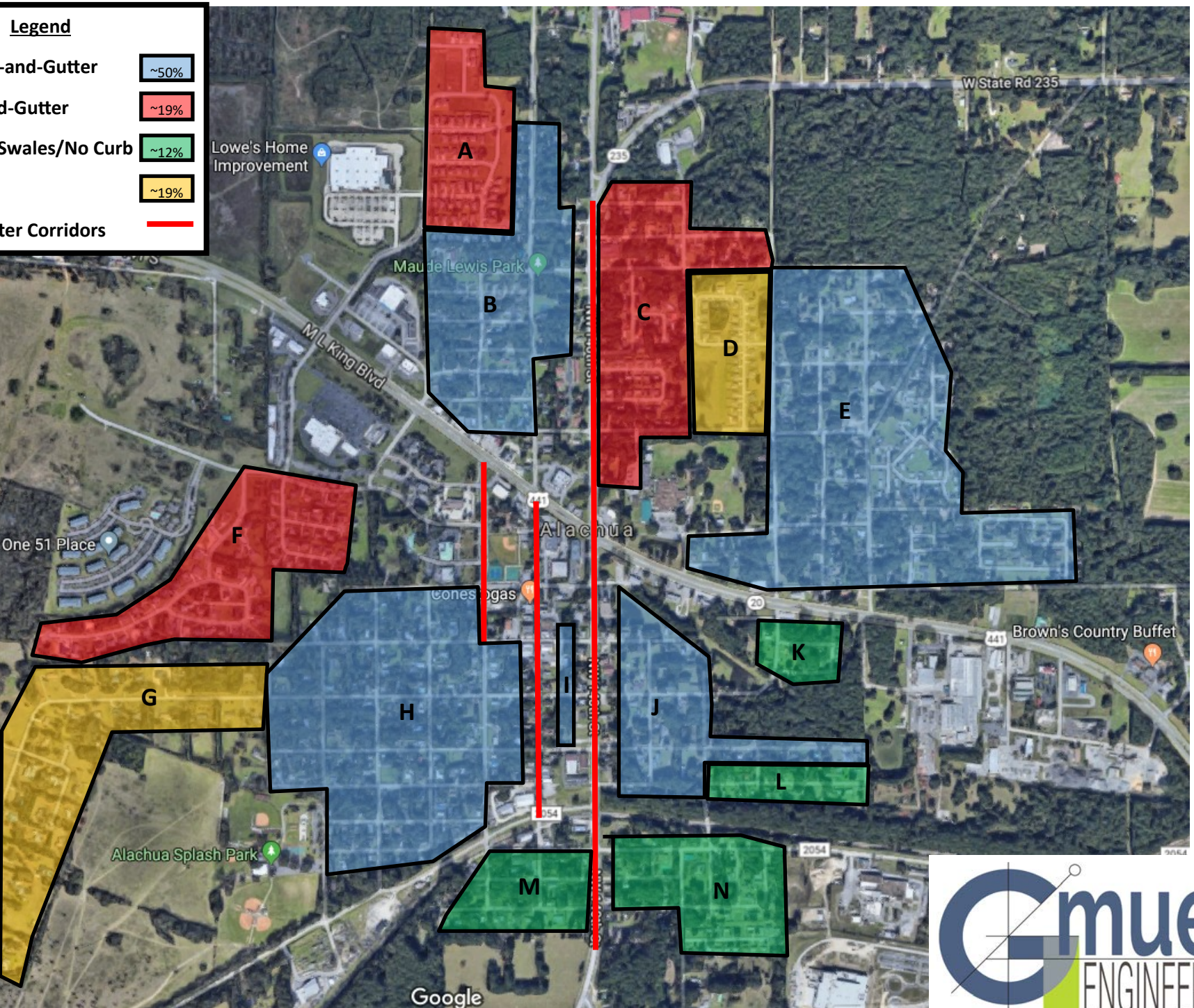
Neighborhood Type	Acreage	% of Total SF Area
Without Curb-and-Gutter (Blue: B, E, H, I, J)	275.42	50.0%
Combination Swales/No Curb (Green: K, L, M, N)	64.01	11.6%
With Swales (Orange: D, G)	105.30	19.1%
With Curb-and-Gutter (Red: A, C, F)	106.48	19.3%
Totals	551.21	100.0%

Judging by the development patterns of Alachua, no structural or inherent incompatibility exists between neighborhoods with curb-and-gutter, neighborhoods with swales, or neighborhoods without either. In several locations throughout the city existing neighborhoods with differing types are immediately adjacent to each other. Further, the City of Alachua approved a development with swales in 2006 located directly between existing neighborhoods with and without curb-and-gutter. It is unclear which design or performance trade-offs may have been incorporated as a part of the approval of this PUD but it is clear that neighborhoods with swales was palatable in some form or another to the City within relatively recent history.

The majority of large-scale development opportunities, particularly for single-family neighborhoods, exists on the fringe of Alachua's existing urban area. Strict application of the requirement for curb-and-gutter systems will

create a ring of neighborhoods surrounding the City that will be of a starkly different character and feel from the existing community. This ring of neighborhoods will also be starkly different from the surrounding rural areas. Creating a ring of new development between established neighborhoods and rural areas while forcing design elements that are out of character with the existing community threatens Alachua's character and branding as a small town/rural community. Adding roadways with swale systems as an available tool to neighborhood designers increases the opportunities to establish new neighborhoods that blend with existing character, provides measurable performance standards for stormwater facilities, and creates a more holistically developed community.

City of Alachua Single-Family Neighborhood Types



Jurisdiction	Min. Lot Width	Min. Lot Size	Swales Permitted	ROW Width Limits	Examples
Alachua County	Variable	Variable	Yes	Determined by design	No known examples of SF development under standard zoning with less than 70ft lot widths and swales
City of Gainesville	50ft (RSF-4)	4300sf (RSF-4)	Yes	Determined by design	No known constructed examples of SF developments under standard zoning with swales and less than 70-75ft lot widths
City of Newberry	50ft (RSF-3)	7500sf (RSF-3)	Yes (on lots greater than 20000sf)	Determined by design	No known constructed examples of SF developments under standard zoning with swales and less than 70-75ft lot widths
Marion County	70ft (with central water and sewer). Minimums can be further reduced through administrative process.	5000sf (with central water and sewer). Minimums can be further reduced through administrative process.	Yes	Determined by design	Oak Run: 60ft lot widths/7500sf lots with swales Marion Landing: 70-75ft lot widths/7500sf lots with swales
City of Belleview	50ft (RSF-4)	4000sf (RSF-4)	Yes (classified as subdivision type "C")	66ft with swales	Villas at Belleview: 50ft lot widths with 4000sf lots with swales
Columbia County	85ft (RSF-3 requires central water and sewer)	10000sf (RSF-3 requires central water and sewer)	Yes (on lots greater than 20000sf)	Determined by design	Eastside Villas: 55ft lot widths with 6500sf lots with swales
Lake City	50ft (RSF-3)	6000sf (RSF-3)	Yes	Determined by design	No known constructed examples of SF development with less than 75ft lot width, 7500sf lots, and swales.
Bradford County	50ft (RSF-3)	7500sf (RSF-3)	Yes	Determined by design	No known constructed examples of SF development with less than 80ft lot widths, 10000sf lots, and swales
City of Starke	60ft (R-2A)	6000sf (R-2A)	Yes	Determined by design	No known constructed examples of SF development with less than 80ft lot widths, 10000sf lots, and swales
Putnam County	75ft (R-4)	7500sf (R-4)	Yes	Determined by design	The majority of SF development within the county, particularly closer to more urban areas, conforms to this development standard.
City of Palatka	60ft (R-1)	6000sf (R-1)	Yes	Determined by design	No known SF development with less than 75ft lot widths, 7500sf lots, and swales.
St. John's County	75ft (R-3)	7500sf (R-3)	Yes (only on existing platted subdivisions or new lots greater than 1 acre)	60ft with swales (Local Road)	Many examples of developments with 75ft lot widths, 7500sf lots, and swales (St. Augustine Shores, etc.).