



* COMPUTATIONAL REFERENCE INFORMATION FOR COLUMNS 7 & 10

CHURCH CAPACITY = 300 PERSONS PER ACRE & CHURCH ACREAGE = 2.00 ACRES
 POPULATION DENSITY PER ACRE = CHURCH CAPACITY / CHURCH ACREAGE
 POPULATION DENSITY PER ACRE = 300 PERSONS / 2.00 ACRES
 * POPULATION DENSITY PER ACRE = 150 PERSONS / ACRE

AVERAGE FLOW PER PERSON = 16 GPD (PER UTILITIES)
 AVG. DAILY PER YEAR = ACREAGE X POPULATION DENSITY X AVG. FLOW PER PERSON
 AVG. DAILY PER YEAR = 2.00 ACRES X 150 PERSONS/ACRE X 16 GPD
 * AVERAGE DAILY PER YEAR = 4,800 GPD

ST LUKE'S SEWER EXTENSION - ANALYSIS
SANITARY SEWER SYSTEM - ULTIMATE BUILDOUT

PEAKING FORMULA (FROM AVERAGE FLOWS TO PEAK FLOWS)
 a) 0-20 MGD: $Q_d = 3.5 * Q_a^{0.807}$
 b) 20-50 MGD: $Q_d = 2 * Q_a$

Chesterfield County Department of Public Utilities
Hydraulic Analysis for Sanitary Sewer Design

Location	LINE NUMBER	MANHOLE Number FROM TO	Area (Acres)	INCREMENT	TOTAL	Population Density(per Acre)	NUMBER OF LOTS		AVG. FLOW/LOT (GD)	AVG. DAILY PER YEAR (MG.D)	PEAK FLOW (MG.D)	TOTAL FLOW (MG.D)		LENGTH	SLOPE	DIA.	CAPACITY OF PIPE (FULL) (MG.D)	VELOCITY (FULL) FEET PER SEC.	VELOCITY OF PIPE (ACTUAL)	MISC. HEAD LOSSES	GROUND ELEVATION AT UPPER END	ELEVATION OF INVERT		DEPTH TO INVERT	REMARKS
							INCREMENT	TOTAL				AVG.	PEAK									UPPER END	LOWER END		
St. Luke's Church	1	2	2.00	2.00	2.00	*	0	0	0.00001	0.0004	0.0004	0.0004	0.0004	110	0.40%	8	0.76	2.19	0.29	0	197.18	191.44	191.00	5.74	
		3	0.00	0.00	0.00		4	4	0.000004	0.0001	0.0001	0.0002	0.0005	110	0.40%	8	0.76	2.19	0.30	0	197.18	191.44	191.00	5.74	
		4	0.00	0.00	0.00		2	6	0.00001	0.0002	0.0002	0.0002	0.0006	142	10.06%	8	3.83	10.98	1.01	0	195.67	190.90	176.61	4.77	
		3	0.00	0.00	0.00		16	22	0.00002	0.0006	0.0006	0.0004	0.0011	74	1.34%	8	1.40	4.00	0.58	0	186.35	176.51	175.52	9.84	
		2	0.00	0.00	0.00		2	24	0.00002	0.0006	0.0006	0.0007	0.0015	194	4.96%	8	2.69	7.71	1.02	0	181.00	175.42	165.79	5.59	
		1	0.00	0.00	0.00		0	24	0.00002	0.0006	0.0006	0.0009	0.0019	259	4.95%	8	2.69	7.70	1.10	0	172.23	165.69	152.86	6.54	
		Ex																							

* SEE POPULATION DENSITY & AVERAGE FLOW/LOT NOTES TO RIGHT

CPI: 08-0183

DATE:	REMARKS:
JULY 31, 2012 - COMMENTS	
SEPT. 05, 2012 - CLARITY	
DATE:	REMARKS:
JUNE 28, 2012	
SHEET NO.:	
4 OF 5	
SCALE:	
1" = 100'	
JDB ND:	
1206-07	

SAINT LUKE'S
UNITED METHODIST CHURCH
DALE DISTRICT
 of CHESTERFIELD COUNTY, VIRGINIA

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