

## Stonebridge – Basis for Design Flow

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The State Design Criteria for Sewage Works, Chapters 15, 16, and 17 covering surface and subsurface land application of wastewater was revised effective July 29, 2007. The revisions to the design criteria were based upon research and recommendations from experts with a wide range of experience (academia, consulting, public sector, contractors, and regulatory). The requirements of Chapter 17 (Subsurface Drip Dispersal) with regard to the basis for design flow have not changed since July 29, 2007. The Division of Water Pollution Control (WPC) has been very consistent implementing the design criteria revisions in our State Operation Permits (SOPs).

Since July 29, 2007, WPC has required projects involving residential units to be designed on the basis of 300 gallons per day per unit (GPD/Unit). WPC acknowledges the fact that actual water use records for many residential developments show values lower than 300 GPD/Unit. Water use for the homes in Stonebridge has been very low (approximately 50 GPD/Unit) because there is no sewerage system yet and the residents are paying for pump-and-haul. However, this situation is expected to change dramatically once a sewerage system is completed, because the homes in Stonebridge are large residences as can be seen in the pictures in **Appendix 1**.

Across the state there is a very significant difference between “units”. For example, compare Stonebridge’s large homes with units served by Consolidated Utility District (CUD) in Rutherford County and units served by Tennessee Wastewater Systems, Inc. (TWSI) in middle and east Tennessee. Water use records for both CUD and TWSI show actual water use in the range of 150 to 200 GPD/Unit.

**Appendix 2** shows a home in Royal Glenn Subdivision served by CUD. This is a typical home served by CUD. CUD uses 300 GPD/Unit as a design basis for all of their nearly 50 SOPs. Additionally, CUD requires a 50% reserve area on all SOP projects.

**Appendix 3** shows a typical home served by TWSI in middle Tennessee and cabin in east Tennessee at Starr Crest 2. It is important to note that the basis for design of Starr Crest 2 was 300 GPD/Unit. Compare the Starr Crest 2 unit to the homes at Stonebridge.

For a comparative perspective, the Division of Ground Water Protection (GWP) uses 150 GPD/bedroom, makes corrections for slope, and requires a 100% duplicate area for the sewage disposal system (see Regulations to Govern Subsurface Sewage Chapter 1200-01-06). These GWP rules cover Advanced Treatment Systems (ATS) that are separate and distinct from the disposal field and are used to improve the quality of septic tank effluent to secondary levels. These ATS concept is essentially the same as used in decentralized systems regulated by WPC, and are configured with subsurface drip dispersal, but on a smaller scale.

The rationale for WPC’s use of the 300 GPD/Unit is anchored in the fact that this is the only conservative factor used in our evaluation and permitting of these systems. WPC does not require a duplicate or reserve area, we do not adjust useable soil area based upon a correction for slope and we do not use 150 GPD/bedroom. Under GWP rules the new soil area at Stonebridge would only support 7 homes (see Britton Dotson’s worksheet and calculation in **Appendix 4**).

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While actual water use may average below 300 GPD/Unit, we know from experience that some developments have had overload problems on weekends, holidays and during vacation times. Furthermore, while decentralized systems are designed on the premise that the system is completely water tight, in actuality, there is some infiltration/inflow (I/I) in all systems. Therefore, we have empirical data that suggests using 300 GPD/Unit as the basis for design flow may not be enough. Nevertheless, the 300 GPD/Unit has been used consistently since July 29, 2007, and is believed to be a reasonable number on which to base the design flow for the Stonebridge project.

**Appendix 5** are WaterLog records that show of 182 decentralized wastewater treatments systems with SOPs only 38 (see **Appendix 6**) of these have a design/permitted basis of less than 300 GPD/Unit.

Since our design criteria revisions of July 29, 2007, only 8 total systems have had a design/permitted basis of less than 300 GPD/Unit. Of these 8 only 2 systems were completely residential and each used 250 GPD/unit. These systems were:

1. Saddle Ridge Community (SOP-07092). The reason for allowing the lower design flow per unit was based on several factors. The applicant TWSI had provided actual flow data for 5 other similar systems. The decision was also hinged on whether to permit this project at a loading rate of 0.25 GPD/SF and 300 GPD/Unit or at a lower loading rate and 250 GPD/unit. The latter option was selected.
2. The Peninsula (SOP-09022) with Aqua Green Utility. The reason for this was the transition from the old criteria to the new. This project was formerly Parrott's Bay (SOP-06017) with TWSI and was permitted under the old design criteria—no texture and structure, no pits. 2.7 acres was proposed to be used for 80 lots at 16,000 GPD (200 GPD/Unit) with a loading rate of ~0.14 GPD/SF. Permit limits were nitrate 20 mg/L and a very conservative U value of 50 pounds/acre was used—that is now 100 pounds/acre.

The Peninsula used 17,500 GPD—70 homes at 250 GPD/Unit on 1.62 acres which translates to a loading rate of 0.25 GPD/SF.

Keep in mind that a hydraulic loading rate of 0.25 GPD/SF is 2.81 inches per week and equivalent to over 146 inches of rainfall annually. Adding the natural rainfall, the equivalent loading rate approaches 200 inches of rainfall annually. The 0.25 GPD/SF loading rate produces rainfall equivalent to those in a tropical rain forest.

It is important to note that Stonebridge has requested, (per Engineering Report dated November 8, 2011 by Bob Faulhaber) both the higher loading rate (0.24 GPD/SF) and a reduced design flow of 245 GPD/unit. **No system has ever been given both benefits in a variance.** As you can see there are apples and oranges comparisons being made by Stonebridge to try to get us to make a major variance to our design criteria.

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### **SUMMARY**

1. Since July 29, 2007, WPC has been consistent in applying the criteria of 300 GPD/Unit as the basis for design flow for decentralized systems for almost 200 SOPs.
2. Comparing Stonebridge to CUD and TWSI projects makes it valid to use at least 300 GPD/Unit, because that is what has been used consistently with CUD and TWSI. Furthermore, the sizes of the units/homes at Stonebridge are significantly larger than those typically found at CUD and TWSI projects.
3. Reducing the basis for design flow for decentralized systems to a value less than 300 GPD/Unit would eliminate whatever factor of safety that may exist. Under GWP rules similar systems would require at least 3 times the soil area required by WPC.

### **RECOMMENDATION**

Deny the variance request from Stonebridge to reduce the basis for design flow to 245 GPD/Unit. WPC should remain consistent, and preserve what little factor of safety exists using the 300 GPD/Unit.



## Stonebridge – Basis for Design Flow

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**Home at Stonebridge, Jefferson County, TN**

## Stonebridge – Basis for Design Flow

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**Home at Stonebridge, Jefferson County, TN**

**APPENDIX 2**



**Home at Royal Glenn – Consolidated Utility District, Rutherford County, TN**

**APPENDIX 3**



**Typical home served by Tennessee Wastewater Systems, Inc. (TWSI)  
Wilson County, TN**



**Cabin unit served by Tennessee Wastewater Systems, Inc. (TWSI)  
Starr Crest 2, Sevier County, TN**



**APPENDIX 4**

Raid from Britton Bottom 11/29/2011

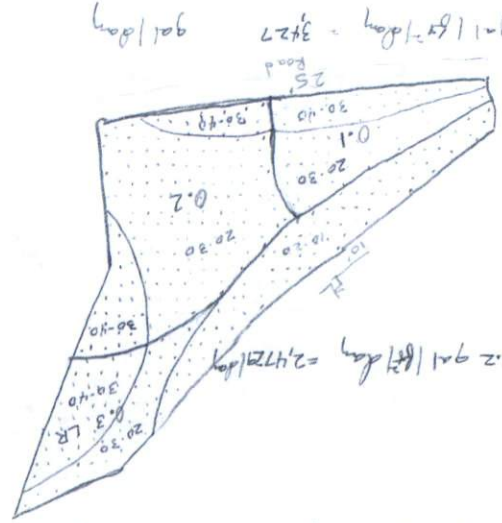
GWT Dip Criteria (Minimums)

7.13 3-bedrooms  
6.417

$6.417 \div 900 =$

6.417	gal/day
518	
2,472	
3,427	

2. Bedroom system  
1 bedroom = 150 gal/day  
450 gals/day  
(from H. & G. design)  
+ duplicate areas  
450/450 = 900



Total Square Footage = 37,800 ft<sup>2</sup>  
Corrected 10' ft setback = 32,960 ft<sup>2</sup>  
25' setback (downslope)

10-20%	76.00	less 15%	= 6,412 ft <sup>2</sup>
20-30%	3000	less 35%	= 2,220 ft <sup>2</sup>
30-40%	3500	less 35%	= 2,590 ft <sup>2</sup>
30-40%	12800	less 35%	= 9,472 ft <sup>2</sup>
30-40%	3900	less 35%	= 2,886 ft <sup>2</sup>
30-40%	12,352	less 35%	= 8,232 ft <sup>2</sup>
30-40%	11,422	less 35%	= 7,424 ft <sup>2</sup>

$518 \text{ gal/day} \times 0.1 \text{ gal/ft}^2/\text{day} = 518 \text{ gal/day}$

## Stonebridge – Basis for Design Flow

### **APPENDIX 5**

EFO	County	Site (Updated 11/29/11)	Permit #	Design Flow MGD	Gal/Day	Number Of Lots	GPD/LOT
Chattanooga	Bradley	BP Kangaroo Express Store #3628	SOP-02015	0.0008	800	1	800
Chattanooga	Bradley	Ocoee Utility District - Brighton Ridge & Woodbridge Subdivisions	SOP-07034	0.02184	21840	80	273
Chattanooga	Bradley	Johnston Estates Sewage Treatment & Collection System	SOP-09008	0.045	45000	150	300
Chattanooga	Meigs	Watts Bar Utility District - Espalier Bay Subdivision	SOP-06032	-			
Chattanooga	Meigs	Lake Park Place View Condominiums	SOP-07018	0.0024	2400	8	300
Chattanooga	Rhea	Tennessee Wastewater Systems, Inc. - Piney Bay Subdivision	SOP-06053	0.004	4000	14	286
Chattanooga	Rhea	Tennessee Wastewater Systems, Inc. - Blue Sky Bay Subdivision	SOP-07007	0.03	30000	100	300
Chattanooga	Rhea	Lake Front Estates Subdivision	SOP-07012	0.021	21000	70	300
Columbia	Bedford	Tennessee Wastewater Systems, Inc. -Horseshoe Bend Condominiums	SOP-01048	0.007	7000	26	269
Columbia	Bedford	Community High School Treatment Facility	SOP-08010	0.015	15000	1	15000
Columbia	Coffee	Highway 53 Elementary School	SOP-09002	0.007	7000	1	7000
Columbia	Franklin	Tennessee Wastewater Systems, Inc.-Roark Cove Treatment Facility	SOP-07082	0.0258	25800	86	300
Columbia	Franklin	Awalt Road Treatment Facility	SOP-08015	0.0309	30900	94	329
Columbia	Giles	Tennessee Wastewater Systems, Inc. - Milky Way Treatment Facility	SOP-08011	0.0309	30900	100	309
Columbia	Marshall	Marshall County Board of Public Utilities - The Villa at Chapel Hill	SOP-06042	0.0222	22200	74	300
Columbia	Marshall	Marshall County Board of Public Utilities -	SOP-07069	0.0579	57900	193	300

## Stonebridge – Basis for Design Flow

EFO	County	Site (Updated 11/29/11)	Permit #	Design Flow MGD	Gal/Day	Number Of Lots	GPD/LOT
		Warner's Ridge					
Columbia	Maury	Mount Pleasant STP	SOP-04021	0.94	940000	-	
Columbia	Maury	Tennessee Wastewater Systems, Inc.-Oakwood Subdivision	SOP-96035	0.0145	14500	48	302
Cookeville	Clay	City of Celina - Swan Ridge Development	SOP-05061	-			
Cookeville	Clay	Mitchell Creek Marina, LLC	SOP-08004	0.03	30000	342	88
Cookeville	Cumberland	Crab Orchard Utility District - Obed River Estates	SOP-06027	0.0409	40900	117	350
Cookeville	Cumberland	South Cumberland Utility District - Mountain Vista Estates Subdivision	SOP-07033	0.0465	46500	155	300
Cookeville	Cumberland	Genesis Village Estates	SOP-08040	0.03	30000	100	300
Cookeville	Cumberland	Cumberland Mountain Preserve Subdivision	SOP-08049	0.0138	13800	46	300
Cookeville	Cumberland	Four Seasons Townhomes Association (Formerly D & R Properties, LLC)	SOP-90182	0.0035	3500	14	250
Cookeville	Cumberland	Deer Creek Homeowner's Association	SOP-91004	0.01	10000	11	909
Cookeville	DeKalb	Seventh Day Adventist Church - Indian Creek Camp	SOP-06003	-			
Cookeville	Fentress	Clarkrange Treatment Facility	SOP-07059	0.0426	42600	142	300
Cookeville	Fentress	Big South Fork Resort formerly Mountain View Golf Course & Lodge LLC.	SOP-08027	0.047	47000	120	392
Cookeville	Jackson	Scheley's Wild Acres	SOP-06043	0.0077	7700	28	275
Cookeville	Jackson	Cumberland Estates	SOP-07044	0.0198	19800	72	275
Cookeville	Overton	Livingston Municipal Airport	TNR170440	-		-	
Cookeville	Putnam	The Bluffs at Cumberland Cove Subdivision	SOP-07008	0.04375	43750	175	250
Cookeville	Smith	TDOT I-40 Welcome Center - Smith County	SOP-02045	0.017	17000	1	17000
Cookeville	Warren	Dibrell School STP	SOP-10039	0.01095	10950	1	10950
Jackson	Benton	TDOT - I-40 Rest Area-	SOP-97014	0.006	6000	1	6000

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EFO	County	Site (Updated 11/29/11)	Permit #	Design Flow MGD	Gal/Day	Number Of Lots	GPD/LOT
		Westbound					
Jackson	Decatur	IRM Utility, Inc - Riverstone Estates Wastewater Treatment Plant	SOP-09005	0.0483	48300	-	
Jackson	Hardin	Aqua Utilities Company, Inc.	SOP-92082	0.01481	14810	49	302
Jackson	Henderson	Pin Oak School	SOP-09015	0.01	10000	1	10000
Jackson	Henderson	Scotts Hill School	SOP-09016	0.0095	9500	1	9500
Jackson	Henderson	South Haven Elementary School	SOP-09017	0.0115	11500	1	11500
Jackson	Henderson	Westover Elementary School	SOP-09018	0.013	13000	1	13000
Johnson City	Greene	Timberfell Lodge, LLC	SOP-07037	0.01	10000	10	1000
Johnson City	Hawkins	Clinch School	SOP-08064	0.008	8000	1	8000
Knoxville	Blount	Tennessee Wastewater Systems, Inc. - Trillium Cove Development	SOP-04065	0.01	10000	10	1000
Knoxville	Blount	Tennessee Wastewater Systems, Inc. - Griffiths Mill Subdivision	SOP-06033	0.06	60000	300	200
Knoxville	Blount	South Blount County Utilities District - The Reserve at Tuckaleechee Cove	SOP-06046	0.0198	19800	66	300
Knoxville	Blount	Blackberry Farm, LLC	SOP-07002	0.009	9000	1	9000
Knoxville	Blount	Tennessee Wastewater Systems, Inc. - The Reserve on the Tennessee River	SOP-07003	0.041	41000	164	250
Knoxville	Blount	Ashley Meadows Subdivision	SOP-07006	0.006	6000	22	273
Knoxville	Blount	Sharondel Estates	SOP-07010	0.01342	13420	61	220
Knoxville	Blount	Miss Lily's Cafe & Lodge	SOP-07078	0.00465	4650	1	4650
Knoxville	Blount	South Blount County Utility District - Farmington Subdivision	SOP-07079	0.0423	42300	141	300
Knoxville	Blount	TWS-Fairway Vistas Subdivision	SOP-08014	0.0057	5700	19	300
Knoxville	Blount	South Blount County Utility District	SOP-08022	0.0004	400	2	200
Knoxville	Blount	South Blount County U.D.-The Terraces At Blount Ridge	SOP-08026	0.0123	12300	41	300
Knoxville	Blount	Seymour Air Park Subdivision	SOP-08041	0.0078	7800	26	300

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EFO	County	Site (Updated 11/29/11)	Permit #	Design Flow MGD	Gal/Day	Number Of Lots	GPD/LOT
Knoxville	Campbell	Integrated Resource Management, Inc. - Flat Hollow Subdivision	SOP-06039	0.006	6000	23	261
Knoxville	Campbell	Caryville Jacksboro Utilities Commission - The Peninsula	SOP-06059	0.00665	6650	19	350
Knoxville	Campbell	Tennessee Wastewater Systems, Inc. - Villages at Norris Lake	SOP-07001	0.18	180000	600	300
Knoxville	Campbell	Deer Hill Village	SOP-07052	0.0408	40800	96	425
Knoxville	Campbell	DSH & Associates formerly LaFollette Utilities Board - Lakeside Estates WWTP	SOP-07073	0.123	123000	410	300
Knoxville	Campbell	Flat Hollow Condominiums	SOP-08043	0.0072	7200	24	300
Knoxville	Claiborne	Buddy Daniels R.V. Park - Chapel Landing	SOP-00067	0.01	10000	50	200
Knoxville	Cocke	Maranatha Resort Subdivision	SOP-08036	0.01	10000	33	303
Knoxville	Grainger	Integrated Resource Management, Inc. - The Landing at River's Edge Subdivision	SOP-07056	0.02793	27930	93	300
Knoxville	Hamblen	The Preserve at Eagle Rock	SOP-08006	0.0327	32700	109	300
Knoxville	Jefferson	The Peninsula	SOP-06017	0.016	16000	80	200
Knoxville	Jefferson	Tennessee Wastewater Systems, Inc. - Shady Cove	SOP-06022	0.00175	1750	7	250
Knoxville	Jefferson	Hickory Landing Development WWTP	SOP-07009	0.012	12000	40	300
Knoxville	Jefferson	East sevier County Utility District - Bouldercrest Villas	SOP-07032	0.0084	8400	28	300
Knoxville	Jefferson	TWS-Paradise Acres Subdivision	SOP-08024	0.0273	27300	91	300
Knoxville	Jefferson	The Peninsula	SOP-09022	0.0175	17500	70	250
Knoxville	Jefferson	East Sevier County Utility District - Douglas Lake Wastewater Treatment Plant	SOP-09041	0.035	35000	128	273
Knoxville	Knox	Tennessee Wastewater Systems, Inc.-Browning Subdivision	SOP-01024	0.0012	1200	4	300
Knoxville	Monroe	Saddle Ridge Community	SOP-07092	0.12125	121250	485	250

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EFO	County	Site (Updated 11/29/11)	Permit #	Design Flow MGD	Gal/Day	Number Of Lots	GPD/LOT
Knoxville	Monroe	Monroe County Schools-Rural Vale School	SOP-08005	0.008	8000	1	8000
Knoxville	Monroe	Lakeside Meadows	SOP-08048	0.03	30000	100	300
Knoxville	Monroe	Scenic River Development	SOP-08056	0.003	3000	10	300
Knoxville	Morgan	Sunbright Municipal WWTP	SOP-08063	0.02	20000	70	286
Knoxville	Roane	Watts Bar Utility District - Highland Reserve	SOP-07036	0.0303	30300	101	300
Knoxville	Roane	Camelot Care Center, Inc.	SOP-07054	0.00015	150	1	150
Knoxville	Roane	Triana at Watts Bar Lake	SOP-08025	0.024	24000	80	300
Knoxville	Sevier	Hidden Springs Resort	SOP-00068	0.03075	30750	145	212
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Starr Crest II Resorts	SOP-01033	0.069	69000	230	300
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Falling Waters	SOP-02023	0.0065	6500	14	464
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Black Bear Ridge Resort	SOP-03002	0.03	30000	150	200
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Keene's Island Condominiums	SOP-05076	0.0015	1500	6	250
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Black Bear Ridge Resort #2	SOP-05077	0.014	14000	70	200
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Legacy Mountain North	SOP-06002	0.04	40000	160	250
Knoxville	Sevier	East Sevier County Utility District - Little Cove Commons	SOP-06005	-			
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Summit View Resort	SOP-06035	0.008	8000	32	250
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Happy Creek Equestrian Subdivision	SOP-06036	0.0075	7500	-	

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Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Settler's Ridge Resort	SOP-06038	0.0105	10500	40	263
Knoxville	Sevier	The Preserve at English Mountain-East Sevier County Utility-Eagle Rock	SOP-06050	0.0044	4400	22	200
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Providence Hill Subdivision	SOP-06052	0.018	18000	90	200
Knoxville	Sevier	Integrated Resource Management, Inc. - The Landing at Bird's Creek Subdivision	SOP-07004	0.009	9000	-	
Knoxville	Sevier	King's Bluff Cabins	SOP-07011	0.007	7000	23	304
Knoxville	Sevier	Norton Creek - Hickory Gap STP	SOP-07021	0.06	60000	200	300
Knoxville	Sevier	TWSI Hidden Springs Resort-Wastewater System #2	SOP-07047	0.12	120000	400	300
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Greenbriar Subdivision Wastewater System	SOP-07055	0.0153	15300	51	300
Knoxville	Sevier	Tennessee Wastewater Systems, Inc. - Mountain Folks Community	SOP-07057	0.0069	6900	14	493
Knoxville	Sevier	Integrated Resource Management, Inc. - Mountainscape Subdivision	SOP-07080	0.01	10000	31	323
Knoxville	Sevier	East Sevier County Utility District - The Flats Resort	SOP-08001	0.0569	56900	186	306
Knoxville	Sevier	IRM Utility, Inc.-Cove Creek Resort	SOP-08013	0.017385	17385	125	139
Knoxville	Sevier	Tenn-issippi Cabin Rentals Wonderland Acres RV Park	SOP-08032	0.0079	7900	79	100
Knoxville	Sevier	East Sevier U. D. - Parkside Resort PUD	SOP-08053	0.0205	20500	68	301
Knoxville	Union	Sunset Bay Subdivision Phase 1-A, Lot 189	SOP-02022	0.037	37000	122	303
Knoxville	Union	Hallsdale Powell Utility District - Norris Lake	SOP-04068	0.0366	36600	122	300

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		RV Resort					
Knoxville	Union	City of Maynardville - Sunset Cove Condominiums	SOP-08023	0.00138	1380	12	115
Memphis	Fayette	City of Piperton, Ridgewood Grove	SOP-06018	0.014	14000	48	292
Memphis	Fayette	City of Piperton - Fisherville Road Subdivision	SOP-06031	0.032	32000	85	376
Memphis	Fayette	City of Piperton - Twin Lakes Subdivision	SOP-06040	0.074	74000	-	
Memphis	Fayette	City of Piperton - Shaws Creek Subdivision	SOP-06057	0.042	42000	148	284
Memphis	Fayette	City of Piperton - Lakes of Greenbrier Subdivision	SOP-06058	0.0366	36600	130	282
Memphis	Fayette	LaGrange Pointe Phase I	SOP-07038	0.0618	61800	206	300
Memphis	Fayette	Chelsea Ridge Subdivision	SOP-08054	0.0555	55500	185	300
Nashville	Cheatham	Hidden Lakes Resort	SOP-07077	0.039	39000	130	300
Nashville	Cheatham	Pleasant View Utility District	SOP-95027	0.22575	225750	750	301
Nashville	Davidson	Open Arms Care Corp. - Burkitt Road	SOP-97009	0.0025	2500	1	2500
Nashville	Dickson	Love's Travel Stop - Hwy 48	SOP-10008	0.015	15000	1	15000
Nashville	Humphreys	Tennessee Wastewater Systems, Inc. - Richland Creek Subdivision	SOP-06045	0.045	45000	150	300
Nashville	Robertson	Tennessee Wastewater Systems, Inc. - Maple Green Reclamation Facility	SOP-01028	0.2	200000	175	1143
Nashville	Robertson	Tennessee Wastewater Systems, Inc. - Cedar Hill Treatment Facility	SOP-05039	-		-	
Nashville	Robertson	Tennessee Wastewater Systems, Inc. - Cross Plains Treatment Facility	SOP-05057	0.074	74000	400	185
Nashville	Robertson	Washington Road Treatment Facility	SOP-08045	0.0141	14100	47	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Riverwalk	SOP-00028	0.0417	41700	139	300



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		Subdivision					
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Waldron Farms Subdivision	SOP-00048	0.057	57000	190	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County-Eagle Creek Subdivision	SOP-00051	0.0273	27300	91	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Maxwell Property Subdivision(aka Thompson Farms)	SOP-02040	0.0213	21300	71	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Gatewood Subdivision Section II	SOP-02041	0.0189	18900	63	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Draper Property Subdivision	SOP-02042	0.0576	57600	192	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County-Fleming Farms S/D	SOP-03008	0.057	57000	190	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Stewart Creek Subdivision	SOP-04052	0.0717	71700	239	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Rachel's Place Subdivision	SOP-05075	0.0331	33100	107	309
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Twelve Corners Subdivision	SOP-06008	-			
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Pinnacle Hills Subdivision	SOP-06019	0.048	48000	160	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Crescent Ridge Subdivision	SOP-06023	0.04	40000	130	308

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Nashville	Rutherford	Consolidated Utility District of Rutherford County - Silver Hill Subdivision	SOP-06025	0.105	105000	350	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Cascade Falls Subdivision	SOP-06034	0.135	135000	450	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Lewis Downs Subdivision	SOP-06044	0.078	78000	260	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Malibu Estates Subdivision	SOP-06048	0.04	40000	130	308
Nashville	Rutherford	Kingsmill Subdivision	SOP-06056	0.0165	16500	55	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Manor Farm Subdivision	SOP-06062	0.0156	15600	52	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Springhouse Subdivision	SOP-06066	0.09	90000	300	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Waldron Crossing Subdivision	SOP-06068	0.021	21000	70	300
Nashville	Rutherford	Coloniel Estates Subdivision, Section XII	SOP-07022	0.051	51000	170	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County Davenport Station Subdivision	SOP-07026	0.192	192000	640	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County-Harvest Woods Subdivision Section I, Phases I & II	SOP-07040	0.0456	45600	152	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County-Eagle Crest Subdivision Sec. III Phases I-IV	SOP-07041	0.0309	30900	103	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Baird's Corner Subdivision	SOP-07046	0.0183	18300	61	300

## Stonebridge – Basis for Design Flow

EFO	County	Site (Updated 11/29/11)	Permit #	Design Flow MGD	Gal/Day	Number Of Lots	GPD/LOT
Nashville	Rutherford	Consolidated Utility District of Rutherford County - The Views at Lytle Creek	SOP-07062	0.0408	40800	136	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Alameda Subdivison	SOP-07074	0.0186	18600	62	300
Nashville	Rutherford	Consolidated Utility District of Rutherford County - Creekside Estates, Section I, Phase I and II, Section II	SOP-07081	0.0306	30600	102	300
Nashville	Rutherford	Richmond's Retreat	SOP-08044	0.0396	39600	126	314
Nashville	Rutherford	Brown's Chapel Elementary School and Foxfire Meadows Subdivision	SOP-09004	0.0338	33800	66	512
Nashville	Sumner	Hickory Ridge Treatment Facility	SOP-08039	0.0213	21300	71	300
Nashville	Sumner	Lockett Treatment Facility	SOP-08055	0.06	60000	200	300
Nashville	Sumner	Highland Academy	SOP-09038	0.05	50000	2	25000
Nashville	Williamson	Tennessee Wastewater Systems, Inc. - Millview Treatment Facility	SOP-03038	0.031	31000	103	301
Nashville	Williamson	Deer Run Retreat Center	SOP-04029	0.016	16000	1	16000
Nashville	Williamson	Eudailey Treatment Facility - Laurel Cove	SOP-05036	0.42	420000	1151	365
Nashville	Williamson	Clovercroft Treatment Facility	SOP-07015	0.04	40000	130	308
Nashville	Williamson	Tennessee Wastewater Systems, Inc. - Trinity Treatment Facility	SOP-07066	0.0102	10200	34	300
Nashville	Williamson	Stillwater Resource Conservation Development WWTP	SOP-07090	0.1485	148500	495	300
Nashville	Williamson	Polston Place Subdivision	SOP-08057	0.03	30000	100	300
Nashville	Williamson	Grace Chapel	SOP-09037	0.008	8000	1	8000
Nashville	Wilson	Water & Wastewater Authority of Wilson County - Clay Estates	SOP-02051	0.0224	22400	112	200
Nashville	Wilson	Water & Wastewater Authority of Wilson County - Ridgewater	SOP-03009	0.06	60000	185	324

## Stonebridge – Basis for Design Flow

EFO	County	Site (Updated 11/29/11)	Permit #	Design Flow MGD	Gal/Day	Number Of Lots	GPD/LOT
		Treatment Facility					
Nashville	Wilson	Water & Wastewater Authority of Wilson County - Cairo Bend	SOP-04044	0.0195	19500	65	300
Nashville	Wilson	Water & Wastewater Authority of Wilson County - Sunset Harbor Treatment Facility	SOP-05019	0.1	100000	330	303
Nashville	Wilson	Water & Wastewater Authority of Wilson County - Legends Ridge Treatment Facility	SOP-06055	0.021	21000	70	300
Nashville	Wilson	Water and wastewater Authority of Wilson County - Cave Springs Treatment Facility	SOP-06067	0.002	2000	5	400
Nashville	Wilson	Big Springs Road Treatment Facility	SOP-07013	0.021	21000	70	300
Nashville	Wilson	Belle Isle Treatment Facility	SOP-07023	0.0807	80700	269	300
Nashville	Wilson	Summitt Treatment Facility	SOP-07024	0.027	27000	90	300
Nashville	Wilson	Vesta Road Treatment Facility	SOP-07027	0.0174	17400	58	300
Nashville	Wilson	Water and Wastewater Authority of Wilson County - Cooks Road Treatment Facility	SOP-07058	0.018	18000	60	300
Nashville	Wilson	Water and Wastewater Authority of Wilson County - Barton's Treatment Facility	SOP-07076	0.04	40000	128	313
Nashville	Wilson	Northgate Business Park II	SOP-08066	0.0005	500	1	500
Nashville	Wilson	Water & Wastewater Authority of Wilson County - Tucker's Crossroads School	SOP-98049	0.006	6000	-	
Nashville	Wilson	Water & Wastewater Authority of Wilson County - Logue Road STP	SOP-99038	0.3	300000	-	

Stonebridge – Basis for Design Flow

**APPENDIX 6**

EFO	County	Site (Updated 8/9/10)	Permit #	Design Flow MGD	GALS/DAY	Number Of Lots	GPD/LOT	COMMENT
K	Claiborne	Buddy Daniels R.V. Park - Chapel Landing	SOP-00067	0.01	10000	50	200	SOP Application Rec'd Prior to 7/29/07
K	Sevier	Hidden Springs Resort	SOP-00068	0.03075	30750	145	212	SOP Application Rec'd Prior to 7/29/07
C	Bedford	Tennessee Wastewater Systems, Inc. - Horseshoe Bend Condominiums	SOP-01048	0.007	7000	26	269	SOP Application Rec'd Prior to 7/29/07
N	Wilson	Water & Wastewater Authority of Wilson County - Clay Estates	SOP-02051	0.0224	22400	112	200	SOP Application Rec'd Prior to 7/29/07
K	Sevier	Tennessee Wastewater Systems, Inc. - Black Bear Ridge Resort	SOP-03002	0.03	30000	150	200	SOP Application Rec'd Prior to 7/29/07
N	Robertson	Tennessee Wastewater Systems, Inc. - Cross Plains Treatment Facility	SOP-05057	0.074	74000	400	185	SOP Application Rec'd Prior to 7/29/07
K	Sevier	Tennessee Wastewater Systems, Inc. - Keene's Island Condominiums	SOP-05076	0.0015	1500	6	250	SOP Application Rec'd Prior to 7/29/07
K	Sevier	Tennessee Wastewater Systems, Inc. - Black Bear Ridge Resort #2	SOP-05077	0.014	14000	70	200	SOP Application Rec'd Prior to 7/29/07

## Stonebridge – Basis for Design Flow

EFO	County	Site (Updated 8/9/10)	Permit #	Design Flow MGD	GALS/DAY	Number Of Lots	GPD/LOT	COMMENT
K	Sevier	Tennessee Wastewater Systems, Inc. - Legacy Mountain North	SOP-06002	0.04	40000	160	250	SOP Application Rec'd Prior to 7/29/07
K	Jefferson	Parrott's Bay Subdivision	SOP-06017	0.016	16000	80	200	SOP Application Rec'd Prior to 7/29/07
M	Fayette	City of Piperton, Ridgewood Grove	SOP-06018	0.014	14000	48	292	SOP Application Rec'd Prior to 7/29/07
K	Jefferson	Tennessee Wastewater Systems, Inc. - Shady Grove	SOP-06022	0.00175	1750	7	250	SOP Application Rec'd Prior to 7/29/07
K	Blount	Tennessee Wastewater Systems, Inc. - Griffiths Mill Subdivision	SOP-06033	0.06	60000	300	200	SOP Application Rec'd Prior to 7/29/07
K	Sevier	Tennessee Wastewater Systems, Inc. - Summit View Resort	SOP-06035	0.008	8000	32	250	SOP Application Rec'd Prior to 7/29/07
K	Sevier	Tennessee Wastewater Systems, Inc. - Settler's Ridge Resort	SOP-06038	0.0105	10500	40	263	SOP Application Rec'd Prior to 7/29/07
K	Campbell	Integrated Resource Management, Inc. - Flat Hollow Subdivision	SOP-06039	0.006	6000	23	261	SOP Application Rec'd Prior to 7/29/07
CK	Jackson	Scheley's Wild Acres	SOP-06043	0.0077	7700	28	275	SOP Application Rec'd Prior to 7/29/07
K	Sevier	The Preserve at English Mountain-East Sevier County Utility-Eagle Rock	SOP-06050	0.0044	4400	22	200	SOP Application Rec'd Prior to 7/29/07

## Stonebridge – Basis for Design Flow

EFO	County	Site (Updated 8/9/10)	Permit #	Design Flow MGD	GALS/DAY	Number Of Lots	GPD/LOT	COMMENT
K	Sevier	Tennessee Wastewater Systems, Inc. - Providence Hill Subdivision	SOP-06052	0.018	18000	90	200	SOP Application Rec'd Prior to 7/29/07
CH	Rhea	Tennessee Wastewater Systems, Inc. - Piney Bay Subdivision	SOP-06053	0.004	4000	14	286	SOP Application Rec'd Prior to 7/29/07
M	Fayette	City of Piperton - Shaws Creek Subdivision	SOP-06057	0.042	42000	148	284	SOP Application Rec'd Prior to 7/29/07
M	Fayette	City of Piperton - Lakes of Greenbrier Subdivision	SOP-06058	0.0366	36600	130	282	SOP Application Rec'd Prior to 7/29/07
K	Blount	Tennessee Wastewater Systems, Inc. - The Reserve on the Tennessee River	SOP-07003	0.041	41000	164	250	SOP Application Rec'd Prior to 7/29/07
K	Blount	Ashley Meadows Subdivision	SOP-07006	0.006	6000	22	273	SOP Application Rec'd Prior to 7/29/07
CK	Putnam	The Bluffs at Cumberland Cove Subdivision	SOP-07008	0.04375	43750	175	250	SOP Application Rec'd Prior to 7/29/07
K	Blount	Sharondel Estates	SOP-07010	0.01342	13420	61	220	SOP Application Rec'd Prior to 7/29/07
CH	Bradley	Ocoee Utility District - Brighton Ridge & Woodbridge Subdivisions	SOP-07034	0.02184	21840	80	273	SOP Application Rec'd Prior to 7/29/07
CK	Jackson	Cumberland Valley Sewer District for Cumberland Estates	SOP-07044	0.0198	19800	72	275	SOP Application Rec'd Prior to 7/29/07
K	Roane	Camelot Care Center, Inc.	SOP-07054	0.00015	150	1	150	SOP Application Rec'd Prior to 7/29/07

## Stonebridge – Basis for Design Flow

EFO	County	Site (Updated 8/9/10)	Permit #	Design Flow MGD	GALS/DAY	Number Of Lots	GPD/LOT	COMMENT
K	Monroe	Saddle Ridge Community	<b>SOP-07092</b>	0.12125	121250	485	250	Provided flow data from 5 other similar projects
CK	Clay	Mitchell Creek Marina, LLC	<b>SOP-08004</b>	0.03	30000	342	88	N/A - Marina
K	Sevier	IRM Utility, Inc.-Cove Creek Resort	<b>SOP-08013</b>	0.017385	17385	125	139	N/A - RV units and rental space
K	Blount	South Blount County Utility District	<b>SOP-08022</b>	0.0004	400	2	200	Merrill Taylor/Creed Headrick 2 small lake front homes
K	Union	City of Maynardville - Sunset Cove Condominiums	<b>SOP-08023</b>	0.00138	1380	12	115	<b>SOP pending termination</b>
K	Sevier	Tenn-issippi Cabin Rentals Wonderland Acres RV Park	<b>SOP-08032</b>	0.0079	7900	79	100	N/A - RV units and rental space
K	Morgan	Sunbright Municipal WWTP	<b>SOP-08063</b>	0.02	20000	70	286	Homes, school and commercial
K	Jefferson	Aqua Green Utility - Peninsula	<b>SOP-09022</b>	0.0175	17500	70	250	Gave variance because of change in previous SOP (Parrott's Bay)
K	Jefferson	East Sevier County Utility District - Douglas Lake Wastewater Treatment Plant	<b>SOP-09041</b>	0.035	35000	128	273	Cabins, conference center, lodge, club house and 4 homes @ 300 GPD
CK	Cumberland	Four Seasons Townhomes Association (Formerly D & R Properties, LLC)	<b>SOP-90182</b>	0.0035	3500	14	250	<b>SOP Application Rec'd Prior to 7/29/07</b>