

Hampton Roads Regional Sewage Flow

Projection Data

V 2.0 April 21, 2008

Discharge Facility	Contributing Design Units	Flow gpd/Unit	Flow Duration hours	Peak Factor
Dwellings	Per Residential Unit	310	24	2.5
Schools	Per Person	10	8	3
Boarding Schools	Per Person	75	16	3
Motels & Hotels	Per Room	130	24	3
Trailer courts, Apartments, Condos, Townhomes, & Time Shares	Per Unit	310	24	2.5
Restaurants (including fast food)	Per Seat	30	16	3
Service Stations	Per Gross SF	0.4	16	3
Shopping Centers	Per Gross SF	0.2	12	3
Hospitals	Per Bed	300	24	3
Nursing Homes/Assisted Living	Per Bed	160	24	3
Doctor's offices in medical centers	Per Gross SF	0.25	12	3
Laundromats	Per Machine	500	16	3
Community colleges	Per Student & Faculty	10	12	3
Theaters (auditorium type)	Per Seat	2.5	12	3
Picnic areas	Per Person	5	12	3
Camps, resort day & night w/limited plumbing	Per Site	50	24	3
Luxury camps w/flush toilets	Per Site	100	24	3
Warehouse	Per Gross SF	0.05	24	3
Convenient Store	Per Gross SF	0.3	24	3
Office Building	Per Gross SF	0.1	12	3
Fitness Center	Per Gross SF	0.1	16	3
Religious Assembly	Per Seat in Main Assembly Room	2.5	6	3
Heavy Industrial	Per Gross SF	0.35 ⁽¹⁾	16	3
Light Industrial	Per Gross SF	0.1 ⁽¹⁾	16	3

(1) The stated flow per day per unit is provided as a guide and should only be used if known data for similar heavy or light industrial facilities is not available.

For undeveloped property zoned ***other than residential***, average daily flows may be projected at a rate of 1,000 gpd per acre. Consideration should be given to designated wetlands and Chesapeake Bay Preservation Act Resource Protection Areas which should be excluded from the gross acreage. A peaking factor of 3 shall be used.

For undeveloped property zoned ***residential***, average daily flows may be projected at a rate of 310 gpd per unit based on the zoning density. A peaking factor of 2.5 shall be used.

Flow duration should be taken into account for the design of on-site infrastructure and when discharging into Publicly owned force mains, but need not be considered for downstream publically owned gravity collections systems. Additionally, the SCAT Regulations require a peaking factor of 4 be applied to the average daily flow when designing laterals and submains. For example in designing an ***on-site sewer lateral*** or an ***on-site/private pump station*** for a shopping center that has a gross square footage of 7,500 SF the flow duration should be applied as follows:

$$7,500 \text{ SF} \times 0.20 \text{ gpd/SF} = 1,500 \text{ gpd}$$

$$1,500 \text{ gpd} / (12 \text{ hr duration day} \times 60 \text{ min/hr}) = 2.08 \text{ gpm}$$

$$2.08 \text{ gpm} \times 4 \text{ (peak factor per SCAT Regulations)} = 8.32 \text{ gpm}$$

Sound engineering judgment must be used in all applications of these flow projection guidelines.