

**ON SITE SEWAGE TREATMENT AND DISPOSAL**

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**Site characterization**

Soils	grain size curves, density, structure and saturation (test pits best)
Hydrogeology	water table depth, flow directions, sensitivity of aquifer to contamination
Drainage	topography, slopes, surface water flows and water bodies
Site	trees, possible traffic or parking, future site uses (pool and landscaping)

**Sewage characteristics**

Volumes	average day and peak periods
Organic strength	Biological Oxygen Demand, variations through the day or week
Nitrogen species	sources of nitrogen - human wastes, process wastes, cleaning products
Other factors	bleaches, process chemicals (flour and sugars in bakeries, waste soft drink syrups, lint in laundries, oils and greases)

**System design**

Grease trap	restaurant and similar uses
Septic tank	two times daily flow for residential, three times for other uses
Effluent filter	on outlet from septic tank
Balancing system	stores sewage for timed discharge at average rates
Treatment plant	Secondary and tertiary - variety of plants including extended aeration, rotating discs, peat and synthetic filters (Waterloo Biofilter), sand filters
Nutrient reduction	Nitrogen removal by recirculation to anaerobic chambers, phosphorous removal be chemical feeding

**Disposal systems**

Loading rates	based on soil and effluent characteristics and bed type
Trenches	pipes in stone in trenches cut into the soil
Sand fill beds	trench beds in imported sand fill (raised bed)
Shallow buried	chambers in shallow trenches close to surface (tertiary effluent)
Filter beds	special sand media with pipes in a stone blanket
Area beds	stone blanket with pipes over specified sand (tertiary effluent)
Mantles	beds raised above grade require a 15 metre downslope sand mantle

**Design approval**

Under 10,000 litres per day on a single parcel approval by local municipality (Building Department, Health Unit or Conservation Authority). Over 10,000 litres per day, Ministry of the Environment approval generally requires a hydrogeologic study to identify the receiving aquifer and potential impacts (generally nitrates)

**System Construction**

Licensed contractor, engineering inspections, as-built documentation, operations manual possible monitoring and reporting