

Article 111

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Multi-Chamber Treatment Train Developed for Stormwater Hot Spots

Stormwater runoff from paved urban “hot spots,” particularly automotive service and repair stations, can contain pollutant concentrations three to 600 times greater than those found in other urban sources. The higher potential for heavy stormwater pollutant loading becomes apparent when one also considers the multitude of potential hot spots located throughout urban areas (Table 1). This being the case, it becomes prudent to treat a relatively small amount of runoff at the source as opposed to allowing contaminated runoff to become part of a much larger volume that may or may not be effectively treated at the end of the pipe.

Effective, on-site treatment of stormwater hot spots has been a problem for several reasons. First, most hot spots tend to be small in size and lack adequate space for the installation of typical stormwater management practices such as ponds and wetlands. Second, the use of gravitational settling as a sole pollutant removal mechanism does not provide sufficient hot spot pollutant removal. Third, infiltration is not an option due to risks of groundwater contamination. Lastly, the traditional underground approaches using oil grit separators have not been reported to be effective (Schueler, 1994).

To help solve the hot spot treatment problem, Robert Pitt and his colleagues at the University of Alabama-Birmingham have developed and tested a

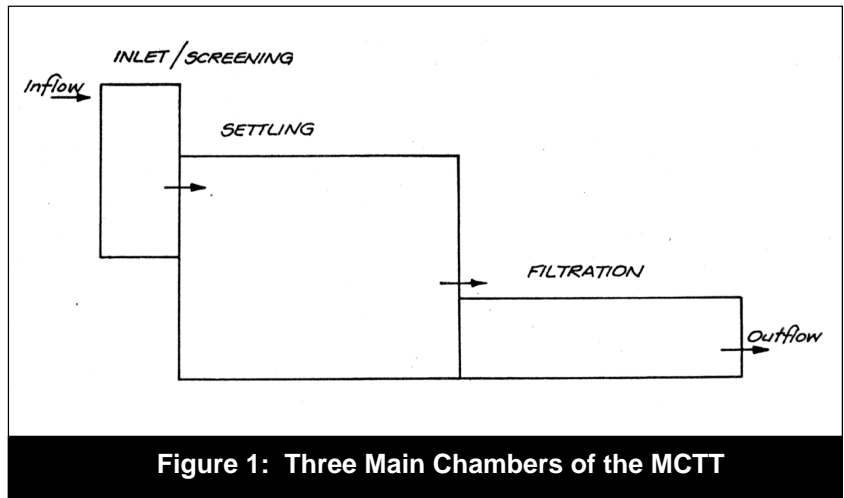


Figure 1: Three Main Chambers of the MCTT

prototype known as the multi-chambered treatment train (MCTT). This device employs screening in the first chamber, settling in the next, and filtration in the last (Figure 1). It is designed for underground use. It can be sized to contain runoff from various rain events and typically requires between 0.5 and 1.5% of the paved drainage area. Present information places construction costs of the MCTT ranging from \$10,000 to \$20,000 per one-quarter acre of drainage area, assuming use and availability of prefabricated units (Pitt, personal com-

Table 1: Potential Stormwater Hot Spots (Schueler, 1996)

- Commercial nursery
- Auto recycle facilities
- Commercial parking lots
- Fueling stations
- Fleet storage areas
- Industrial rooftops
- Marinas
- Outdoor container storage of liquids
- Outdoor loading/unloading facilities
- Public works storage areas
- SARA Title III Section 312 hazmat generators (if containers are exposed to rainfall)
- Vehicle service and maintenance areas
- Vehicle and equipment washing/steam cleaning facilities