EnviroStream

Catchment Management

CLEANING AND MAINTENANCE GUIDELINES

eco-*BITE* Multi Pollutant Traps (MPT's)

Introduction

Gross pollutants (litter and debris) in urban waterways are unattractive, disturb the physical habitat, degrade the water, attract pests and vermin, can cause marine animal deaths, and can promote littering and reduce amenity values.

(Extract from "From Roads To Rivers-Gross Pollutant Removal From Urban Waterways" Allison, Walker, Chiew, O'Neill, McMahon, May 1998.)

These guidelines have been prepared in accordance with the principles of Best Management Practice (BMP) as it relates to stormwater quality and is only applicable for eco-*BITE* MPT's.

The guidelines assume that the appropriate pollutant trap has been selected based upon the type of pollutants that the unit is expected to trap, and it is fit for the engineering and hydraulic requirements for the chosen location. (I.e. flow rates, pipe size, capacity, cover type etc.)

eco-*BITE* MPT's trap gross pollutants, sediments and hydrocarbons (refer to Glossary), before they enter a waterway, wetland, pond, or other stormwater treatment device, thereby preventing unsightly litter and pollutants entering these water bodies whilst also preserving capacity and pond / wetland shape.

eco-*BITE* MPT's concentrate litter at a single location for easy removal and are appropriate for greenfields sites and retrofitting into existing urban / rural residential and industrial areas.

The effectiveness of eco-*BITE* MPT'*s* like any pollutant trap, is dependent to a large degree upon the cleaning and maintenance program put into place for each unit. The two primary characteristics that determine long-term effectiveness of a gross pollutant trapping system are the trapping efficiency and the maintenance program.

The trapping efficiency of any pollutant trap can be negatively impacted upon by lack of a regular cleaning and maintenance program specifically tailored to the particular requirements of the catchment area it is located in.

Gross pollutants are defined as material that would be retained by a five millimetre mesh screen.
Independent testing has proven that a range of pollutants including nutrients and hydrocarbons are also trapped due to their adherence to coarser trapped litter such as leaves and sticks and trapped sediments. Additionally, the vortex action attributable to the 'V' shaped solids in flow splitting nose piece causes sediments to be deposited in the base of the eco-*BITE* MPT.

Access & Cleaning Methods

LITTER TRAPS AND GROSS POLLUTANT TRAPS

Litter trapping devices require regular clearing of trapped material to minimise their impact on upstream hydraulics, especially during high flow periods, and to optimise capture of gross solids.

(Extract from "A Manual for Managing Urban Stormwater Quality in Western Australia" Water & Rivers Commission, August 1998)

eco-*BITE* MPT's are designed to be cleaned using vacuum eduction trucks.

In areas where accessibility for these trucks may be difficult due to poor surrounding ground conditions (i.e. waterlogged soils, spongy parklands etc.) the option of a removable stainless steel basket is available. Custom made units can be manufactured to suit.

Consideration needs to be given to these issues at the design stage and selection of appropriate unit and location. Units installed in roadside and car park locations should present little access difficulties, as opposed to units located away from hard pavement surfaces.

There may be a need to provide a purpose made hardstand and / or access road for allowing cleaning and maintenance vehicles to park adjacent to the MPT.

Access to the units is via one or more surface lids, which can be easily removed with appropriate lifting devices. Once removed these lids allow the eduction truck operator to insert the vacuum hose into the MPT to remove any trapped pollutants.

Care must be taken to ensure that the stainless steel screens are not damaged by the movement of the eduction hose inside chamber one.

Normally human access to the inside of eco-*BITE* MPT's is not required. If large blocking items are observed within the system, which need to be removed manually, normal safety precautions for working in a confined space should be observed.

Maintenance personnel can use the peak flow bypass channel as a working platform if required. Deeper eco-*BITE* MPT's (i.e. greater than 3 metres) may require a portable ladder if access to base of the MPT is necessary.

Although eco-*BITE* MPT's feature unique non-blocking stainless steel screens, it is recommended that the screens are also visually inspected to ensure they don't become clogged with algae or detritus. In the unlikely event that the screens require cleaning, they should preferably be jet cleaned with a high pressure hose. Alternatively a stiff bristled broom brushed back and forth across the surface is recommended to unclog the screens.

Cleaning and Inspection Frequency

MANAGING FIRST FLUSH POLLUTANTS

The first flush of pollutants conveyed by storm events during the early periods of autumn in the months of March and April has been identified as of significance and requiring special treatment.

(Extract from "A Manual for Managing Urban Stormwater Quality in Western Australia" Water & Rivers Commission, August 1998)

eco-*BITE* MPT's should be cleaned after the first flushing rains occur.

Cleaning frequency will depend upon the size and type of catchment area with pollutant types and volumes differing according to land-use categories.

For example a greenfields project in early stages of development would be expected to have a higher proportion of sediments, with a mature, well established residential land development expected to have a higher proportion of floatables, and in particular leaf litter.

An eco-*BITE* MPT servicing a commercial shopping centre would be expected to have a higher proportion of plastic bags and paper, whilst industrial areas would be expected to have a higher proportion of hydrocarbons.

The eco-*BITE* MPT should be inspected at practical completion, as there is a strong likelihood of heavy loads of sediment being deposited in the trap attributable to construction work in the surrounding site, particularly on sandy or clayey sites. Severe storm events that occur whilst the site is undergoing construction would also be expected to increase the volume of sediments entering the trap. If these inspections confirm that there is a significant build-up of sediment, a clean out should be programmed as soon as practicable prior to hand over.

Quarterly inspections of eco-*BITE* MPT's are recommended. Depending upon local conditions, more frequent inspections may be required.

Likewise, frequency of clean outs may vary depending upon local conditions and rainfall volume and frequency. As a maintenance program is implemented and a number of cleanouts have been carried out, which provide a track record of pollutant types and volume being trapped, it may be possible to alter the frequency of

inspections and cleanouts accordingly, either more frequent or less frequent as the case may be.

Easy access from the surface for visual inspections is afforded by removal of the access covers with appropriate lifting equipment.

Dipsticks or a Surveyor's staff used in conjunction with a strong flashlight should provide for efficient visual assessment as to the volume of sediment build-up and hydrocarbons present on the water surface. Volumes of floatable litter will be readily apparent floating on the surface.

More detailed inspections can also be carried out using a sediment depth measurement device.

When the sediment depth has reached the bottom level of the stainless steel screens, and/or hydrocarbons are present in excess of 25mm in depth on the water surface, it is advisable to program an eduction clean out as soon as practicable.

CONCLUSIONS FROM STORM EVENT MONITORING

Observations from limited data suggest that:

- *Organic material (leaves and twigs) contribute at least two thirds of gross pollutants in all areas except light industrial areas where figures are inconclusive;*
- *There are higher amounts of litter (paper and plastics) transported from commercial areas than residential and light industrial areas;*
- *The composition of gross pollutants during events appears to remain relatively constant compared to the concentration and load fluctuations; and*
- *Gross pollutant concentrations are generally highest during early stages of runoff, but the most load is transported during times of high discharge*

GROSS POLLUTANT COMPOSITIONS AND LOADS

Data from the monitoring program indicate that urban areas contribute approximately 30 kilograms per hectare per year of dry gross pollutants to the stormwater system.

(Extracts from "From Roads To Rivers-Gross Pollutant Removal From Urban Waterways" Allison, Walker, Chiew, O'Neill, McMahon, May 1998.)

Disposal

Pollutants trapped in eco-*BITE* MPT's should be removed by a suitably qualified waste disposal company in accordance with local authorities' waste management requirements.

Large Scale Spills

In the event of a large scale spill of pollutant occurring, the eco-*BITE* MPT should be cleaned as soon as practicable after the surface clean up has been completed or if the trap is observed to be full. The appropriate authorities should also be notified in the case of a major spill occurring, with disposal effected using a licensed waste management company.

Glossary

Gross pollutants: *trash, litter and vegetation larger than five millimetres;*

Coarse sediment: *contaminant particles between 5 and 0.5 millimetres;*

Medium sediment: *contaminant particles between 0.5 and 0.062 millimetres;*

Fine sediments: *contaminant particles smaller than 0.062 millimetres;*

Attached pollutants: *those that are attached to fine sediments-specifically nutrients, heavy metals, toxicants, and hydrocarbons; and / or*

Dissolved pollutants: *typically, nutrients, metals and salts.*

~Taking the market by storm~

COSTS

SERVICE	DETAILS	COST (ex GST)
Data Collection and Reporting	Full report issued detailing results	**Available on Request**
Sample Collection and Testing	Total Nitrogen, Total Phosphorous, BOD_5, pH, Conductivity, TDS	**Available on Request**
	Bacterial Testing	**Available on Request**
	Sediment/Gross Pollutant Testing	**Available on Request**
Eduction	Educt / Clean / Dispose of Waste and Report compiled on Empty Structure	**Available on Request**