



with assistance from
New Zealand Water and Wastes Association
presents

**Managing Stormwater
and Road Run-off
Tools, Techniques and Devices**





Innovative Stormwater Technologies for Road Runoff

Innovative Stormwater Treatment Technologies

- Introduction
- Contaminants in Road Runoff
- Stormwater treatment technologies
- Other considerations
- Conclusions

Introduction

- Stormwater pollution is one of NZ biggest environmental problems
- “Every Time it Rains It Poisons”
- Stormwater pollution is seriously effecting all of New Zealand's urban waterways



Introduction

- Auckland, Canterbury, Waikato and Northland have implemented stormwater regulations
- Transit has made a commitment to address stormwater issues of their assets near sensitive environments
- There are many new methods of controlling contaminants in stormwater

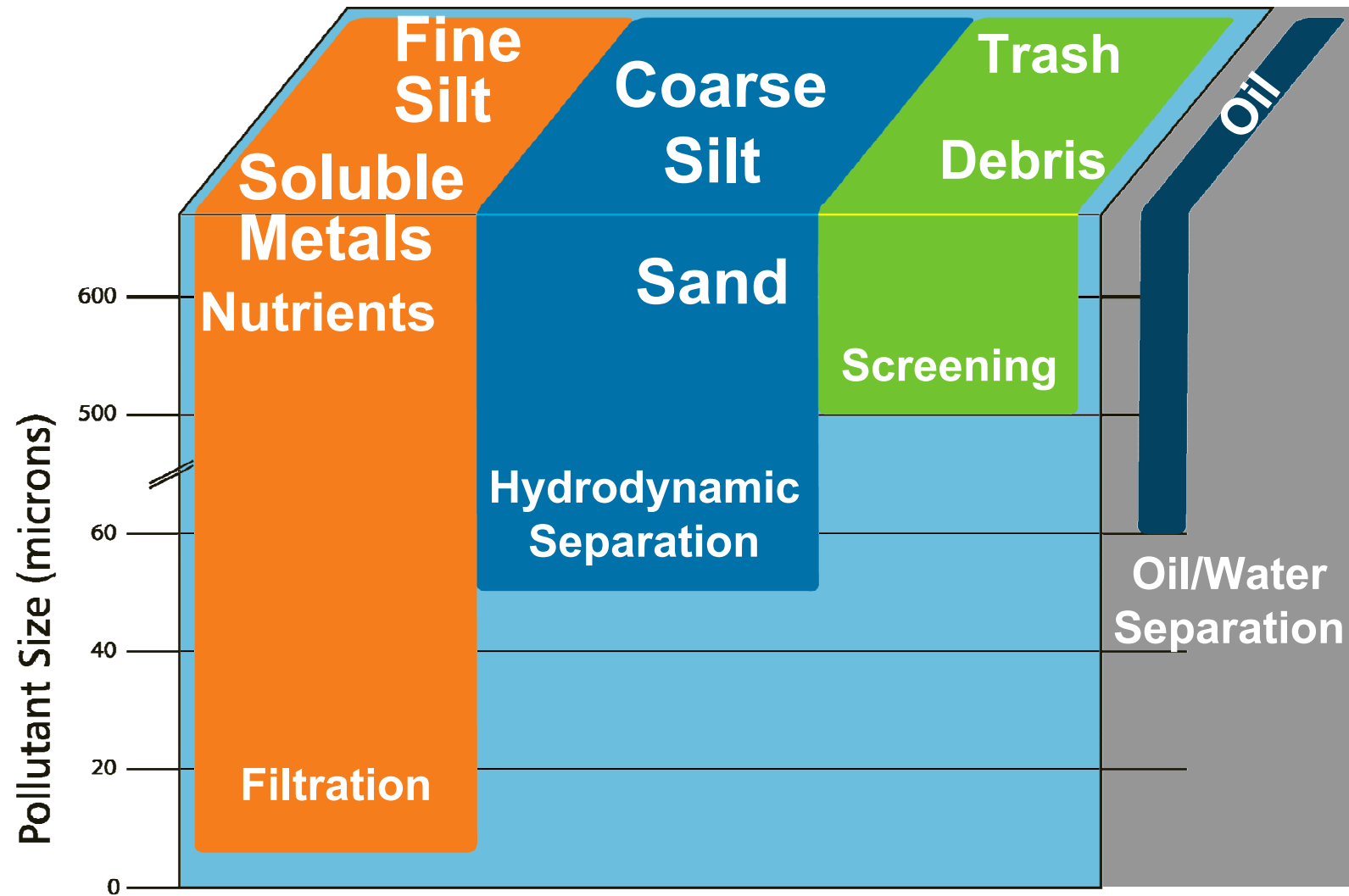


Common Pollutants Stormwater

- Trash and Debris
- Sediments (TSS)
- Nutrients
- Petroleum Hydrocarbons (TPH)
- Heavy Metals
- Polycyclic Aromatic Hydrocarbons (PAH's) and other organics
- Biological – e.g. Fecal Coliform
- Temperature

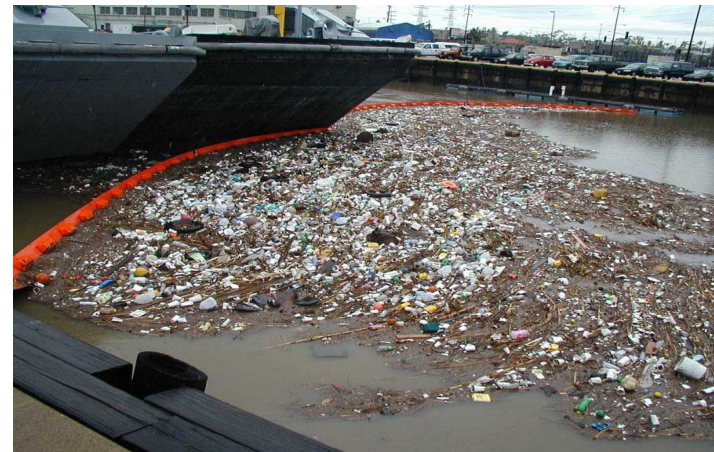


Pollutant Characterization



Trash and Debris

- *Gross pollutants*
- *Aesthetic effects*
- *Biological effects*



Trash and Debris

- *Economic effects*
- *Sources of other pollutants*
- *Can affect the performance of treatment options*

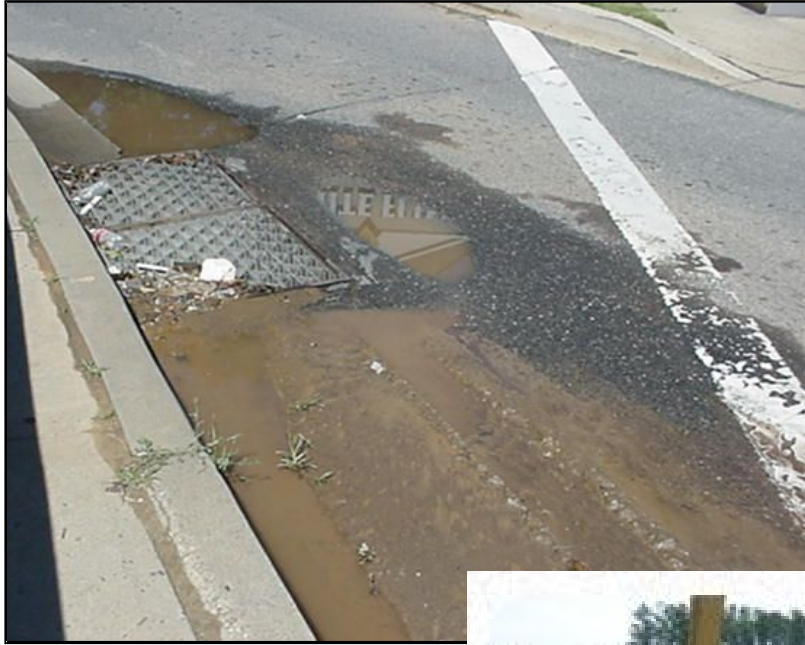


Suspended Solids

- Sediments can change stream geometry
- Impact habitats of benthic organisms (smothering)
- Transport other pollutants – Heavy Metals



Suspended Solids



Metals

Copper is commonly found in
brake linings, bushings,
windings, biocides

Zinc in tires and coatings

Industrial sources

Particulate and dissolved



Nutrients — Environmental Impact



- Nitrogen
- Phosphorus

Fecal Coliform



Pesticides and Herbicides



Oil and Grease



Questions?

- Mike Hannah, Stormwater 360
- Chris Thorpe, Humes
- Peter Carroll, Hynds
- Keith Caldwell / Sue-Ellen Fenelon, Beca