Infiltration Trench Factsheet

1.0 General Description

Potential Treatment Mechanisms								
I	ET	FA	B	RH	S	F	P	T
✓		✓		✓				✓

Legend:
I = Infiltration
ET = Evapotranspiration
FA = Filtration and/or Adsorption
B = Biochemical Transformation
RH = Rainfall and Runoff Harvest
S = Sedimentation
F = Floatation
P = Plant Uptake
T = Trash Capture

Figure 1. Infiltration trench (Richland Soil and Water Conservation)

Infiltration trenches are long, narrow trenches typically filled with sand, rocks, and gravel into which stormwater runoff collects in pore spaces and infiltrates into surrounding soils. Their primary function is to provide infiltration within a smaller, more flexible footprint than infiltration basins. The depth or bottom surface area must be sufficiently large enough to allow the trench to drain within 72 hours. A schematic of a basic infiltration trench is shown in Figure 2.

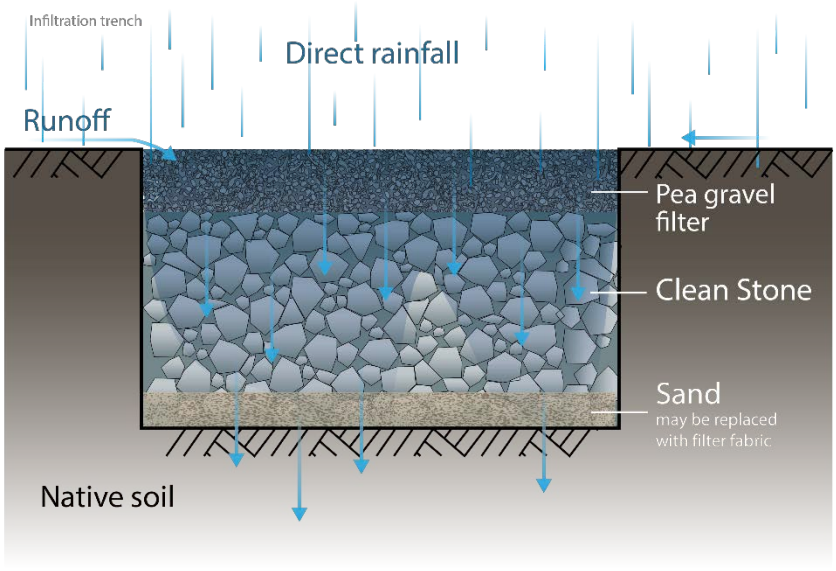

Figure 2. Basic schematic of an infiltration trench

1.1 Variations and Alternative Names

- Rock swales

2.0 Advantages & Limitations

2.1 Advantages

✓ Infiltration trenches can be integrated into an aesthetically appealing landscape design
✓ Provides substantial reduction of pollutant load discharged to surface waters

2.2 Limitations

× May not be suitable for:
  - areas with low infiltration rates (slowly permeable soils)
  - areas with steep slopes

- areas where the water table is near the ground surface and/or there is existing groundwater contamination
- industrial sites where spills may occur

- If the trench becomes clogged with sediment, reconstruction will likely be required to restore infiltration rates to an acceptable level

3.0 SITING

The site should not have the potential for spills nor can the groundwater level be too high or have previous contamination. The site also should not have soils throughout the vadose zone that infiltrate too quickly (i.e. have little pollutant removal capacity). However, if the infiltration rate is too fast, pretreatment (e.g., soil amendments or filter layers) may be used to protect groundwater.

Infiltration trenches must be set back from buildings, slopes, highway pavement, and bridges that are not designed for sustained soil saturation, as well as septic fields and water supply wells.

4.0 DESIGN CONSIDERATIONS

When designing an infiltration trench, the following parameters should be considered:

- ❑ Contributing drainage area (CDA)
- ❑ Groundwater depth
- ❑ Soil type/infiltration rate
- ❑ Drawdown time
- ❑ Trench depth
- ❑ Trench lining
- ❑ Trench media
- ❑ Observation well size
- ❑ Underdrain (optional)
- ❑ Setbacks

5.0 CONSTRUCTION CONSIDERATIONS

- ❑ Stabilization of the CDA or diversion of flows during construction to prevent sediment loading

6.0 MAINTENANCE

- ❑ Inspections for ponding that is not draining adequately
  - If trench becomes clogged, the rock will need to be removed and replaced

7.0 REFERENCES

California Stormwater Quality Association (CASQA 2003). *Stormwater Best Management Practice Handbook: New Development and Redevelopment*. January 2003.

California Stormwater Quality Association (CASQA 2017). *Draft Stormwater Best Management Practice Handbook: New Development and Redevelopment*. April 2017.

Sacramento Stormwater Quality Partnership (SSQP 2018). *Stormwater Quality Design Manual*. July 2018.