



“Sharing Experience with Implementation of Stormwater Requirements at Development Projects”



Inspection & Maintenance of
Landscaping in Stormwater
Treatment Measures

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Santa Clara Valley Urban Runoff Pollution Prevention Program | *June 3, 2008*



PRESENTATION OVERVIEW

- ◆ Submittals/Communication
- ◆ Specific Issues per Stage of Construction
- ◆ Examples of Treatment Measures
- ◆ Landscape Maintenance Tips



SUBMITTALS/COMMUNICATION

- ◆ Confirm communication channels on-site
- ◆ Determine who is responsible for reviewing submittals prior to delivery and installation
- ◆ Review plant materials, irrigation, compost, mulch
- ◆ Verify submittals have been approved



CONSTRUCTION STAGES

- ◆ Stage 1: Pre-Construction Site Visit
- ◆ Stage 2: Layout and Grading
- ◆ Stage 3: Planting and Irrigation



PRE-CONSTRUCTION SITE VISIT

- ◆ Review schedule for construction of stormwater features
- ◆ Verify submittals required and who will inspect
- ◆ Confirm who will inspect soil preparation, irrigation and planting installation
- ◆ Review vegetation to be protected



LAYOUT AND GRADING

- ◆ Confirm available planting space
- ◆ Review drainage patterns – swales, slopes
- ◆ Advise design consultant if not consistent with original design and obtain written recommendations

Trees to be 3' min. from curbs and outside of flowline



PLANTING AND IRRIGATION

General Issues

- ◆ Is planting filled in?
- ◆ Is mulch cover in place?
- ◆ Is there erosion at curb cuts?



PLANTING AND IRRIGATION

Irrigation System

- ◆ Ensure system has been installed and tested prior to installation of planting
- ◆ Look for obvious problems including:
 - Heads watering pavement
 - Damaged or leaking heads
 - Excessively wet or dry areas



PLANTING AND IRRIGATION

Planting Installation

- ◆ Verify plants have been inspected and match plant list
- ◆ Does the planting layout agree with plans?
- ◆ Look for key treatment issues:
 - Trees, shrubs not in flowline
 - Proximity of trees to walls, drainage structures



PLANTING AND IRRIGATION

Mulch

- ◆ Confirm minimum 3" depth throughout planting areas
- ◆ Hold mulch 6" away from tree trunks and 4" from shrub crowns
- ◆ Mulch is stable in flowline and away from drain inlets

Do NOT bury trunks with mulch!



SAMPLE TREATMENT MEASURES

- ◆ Vegetated Swale
- ◆ Tree Well Filter
- ◆ Flow-Thru Planter
- ◆ Bioretention Area
- ◆ Infiltration Trench
- ◆ Extended Detention Basin



VEGETATED SWALE

- ◆ Verify proper length and width
- ◆ Keep trees out of flow line
- ◆ Protect drain from mulch, debris



VEGETATED SWALE

Problems to Avoid

- ◆ Flat grade, no flow line
- ◆ Swale too narrow
- ◆ Plant cover sparse
- ◆ No mulch



VEGETATED BUFFER STRIP

- ◆ Ensure sheet drainage is sufficient
- ◆ Verify planting (usually seeding) has filled in



Source: www.cabmphandbooks.com

TREE WELL FILTER



Source: www.filterra.com

- ◆ Check vault for debris
- ◆ Verify plant is set at proper height
- ◆ Confirm mulch is proper depth

FLOW-THROUGH PLANTER

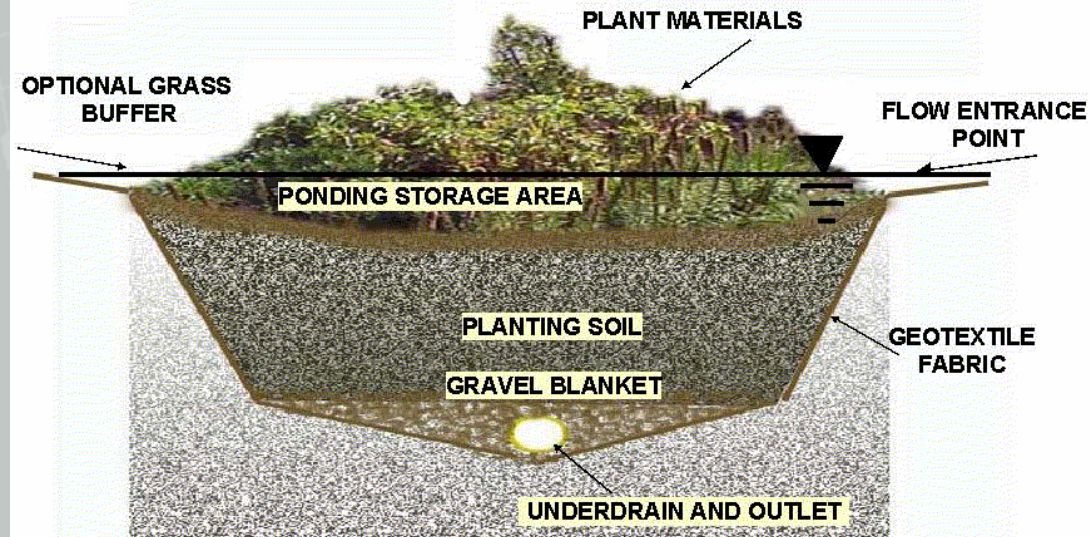
- ◆ Check mulch and planting does not block drains
- ◆ Look for moss – a sure sign of too much water from irrigation and/or planter is not draining properly



City of Portland 2004 *Stormwater Manual*

BIORETENTION AREA

- ◆ Keep trees, shrubs along outer edges
- ◆ Check finished grade of soils and mulch next to walkways



INFILTRATION TRENCH

- ◆ Is surrounding vegetation sufficient to slow and pre-treat runoff?



INFILTRATION TRENCH

Problems to Avoid

Grassy plants missing between trench and adjacent paving



EXTENDED DETENTION BASIN

Trees and shrubs are only planted along top of bank



EXTENDED DETENTION BASIN

Problems to Avoid

- ◆ Look for signs of standing water and algae
- ◆ If during dry season, most likely irrigation system is overwatering
- ◆ Check controller schedule



LANDSCAPE MAINTENANCE

Maintain Stormwater Functions

- ◆ Maintain clear drainage flow
- ◆ Clear blocked or covered drains
- ◆ Correct erosion problems – replant as needed



LANDSCAPE MAINTENANCE

Monitor and Protect Soil

- ◆ Maintain 3" minimum cover of mulch
- ◆ Avoid working soil when wet
- ◆ Protect soil from compaction



LANDSCAPE MAINTENANCE

Plant Care

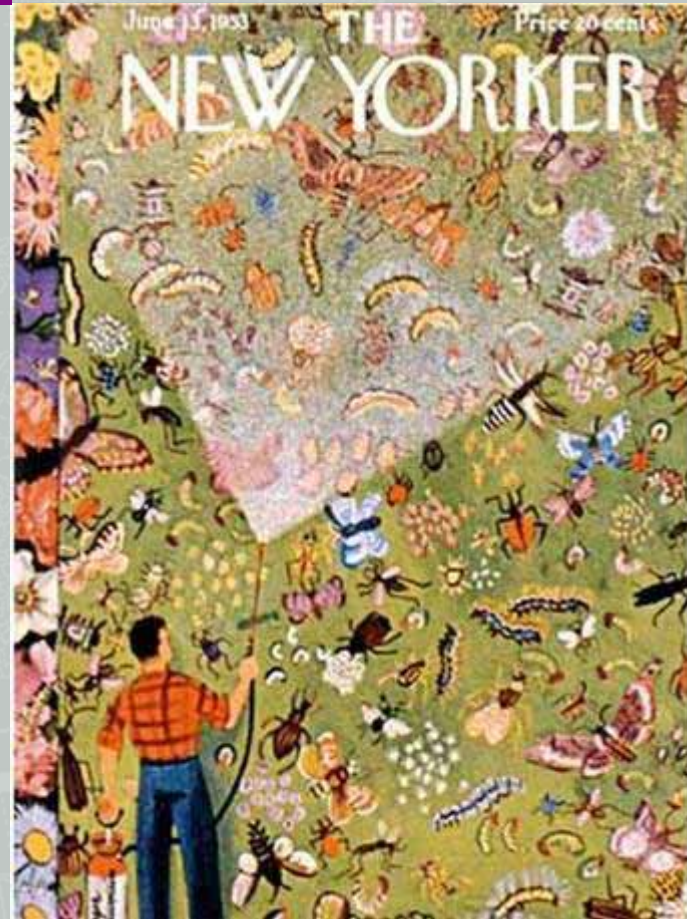
- ◆ Utilize slow-release organic fertilizers such as compost and compost tea
- ◆ Assess plant health and replace early, if necessary
- ◆ Avoid hedging or excessive trimming
- ◆ Turn trimmings into mulch for use onsite



LANDSCAPE MAINTENANCE

Utilize Integrated Pest Management

- ◆ Avoids additional chemical inputs
- ◆ Prevents pest problems in the first place
- ◆ Utilizes mechanical and physical controls first
- ◆ Nurtures healthy biodiversity which will naturally limit pest and disease



LANDSCAPE MAINTENANCE

Irrigation Systems

- ◆ Monitor and adjust watering schedule to avoid runoff
- ◆ Check soil moisture content with probes and/or moisture sensors to avoid overwatering
- ◆ Utilize “smart controllers” to self-adjust watering frequency





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