

City of Avondale | Low Impact Development Street Tree Master Plan Supplement for Integrating Green Stormwater Infrastructure

Learn More: watershedmg.org/GSI

Supplement Includes: Green Streets Performance Goals and Metrics



Drainage Performance Goals

1. Stormwater runoff from roadway directed through GSI basin features before entering storm drains or natural drainage ways
2. Curbside landscape basin areas designed to retain at least a 1" rainfall falling on the roadway
3. Median landscape areas on arterial streets are designed to retain at least a 2" rainfall event within the median.
4. GSI basins are designed to accept a maximum final pooling depth of 12 inches of stormwater.
5. All GSI basins must infiltrate retained stormwater within 24 hours following the end of the latest rain event.



Landscape Performance Goals

1. Planting plan and associated plant water demand – once plants are established – is based on potential stormwater supply for average rainfall years.
2. Plant composition includes a minimum of 75% native, low water use plants (based on number of plants).
3. Canopy of shade trees covers 20-25% of the public rights-of-way area (excluding the PUE) wherever possible given sight visibility constraints
4. Coverage of understory vegetation, based on 100% of mature diameter, covers at least 25% of the curbside landscape area to ensure GSI basin infiltration function

Supplement Includes: Green Stormwater Infrastructure Best Practices

- Inlets, Flow Routing, and Grading
- Surface Materials Selection and Placement
- Plant Selection and Placement
- Irrigation Budgeting with Stormwater
- Nurturing Maintenance Practices

Supplement Includes: Rainfall Analysis, Benefit-Cost Analysis, Plant Palettes, Standard Detail References, and more...

Irrigation Budgeting and Maintenance Highlights

Table 3. Irrigation guide for green stormwater infrastructure features with low-water use, native plants.

Year	Months					
	Jan - Feb	March- April	May-June	July-Aug	Sept-Oct	Nov-Dec
1	Follow general establishment schedule based on soil type, season, and canopy size.					
2	1x/month	deep soak 2x/month	deep soak 2x/month	deep soak 2x/month	deep soak 2x/month	1x/month
3	None	deep soak 1x/month	deep soak 1x/month	deep soak 1x/month	deep soak 1x/month	None
4	None	deep soak 1x/month	deep soak 1x/month	deep soak 1x/month if no recent rain	deep soak 1x/month if no recent rain	None
5+	None	None	deep soak 1x/month may be desired for aesthetics	deep soak 1x/month if no recent rain	deep soak 1x/month if no recent rain	None

Note: If temperatures are above average and without meaningful rainfall (>0.1") for a month or more than an irrigation cycle may be needed to maintain desired plant aesthetics.

Stormwater Supply and Irrigation Demand for Typical Collector Street Rights-of-Way

	Month (values reported in gallons)												Annual
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Rainfall Supply	4690	3830	4400	990	370	80	4770	5180	3580	3000	2340	3210	36,450
Plant Water Demand	680	1230	2250	3920	5000	5370	4560	3950	3310	2400	1340	750	34,770
Supplemental Demand*	0	0	0	-2930	-4630	-5290	0	0	0	0	0	0	1,680 Surplus

Table 7. Current and recommended maintenance items for green stormwater infrastructure features.

Maintenance Item	Current Frequency	Recommendation
Cleaning/Weed Control	Bi-weekly to Monthly	Focus on trash removal and manual removal of problematic weeds (no spray or raking options). Frequency should be greater during wetter months.
Mulch replenishment	Every 2-5 years	Inspect for need to replenish organic mulch if not sufficiently replenished during plant pruning and chipping process. Typically, plant leaf litter and pruning chippings are sufficient to maintain organic mulch cover.
Pre-Emergence	Semi-annual	Shift to an Integrative Pest Management system to eliminate/minimize need for herbicide applications.
Post-Emergent	Semi-annual	Shift to an Integrative Pest Management system to eliminate/minimize need for herbicide applications.
Shrub/Groundcover Maintenance	Quarterly	No topiary pruning or hedging; replace groundcover as needed to maintain minimum 25% coverage.
Tree Maintenance	Annually	Years 1-3: Conducted semi-annually before and after growing season, light pruning to maintain site visibility and clearance, overseen by certified arborist Years 4+: Annual pruning, overseen by certified arborist; avoid summer pruning
Irrigation Inspection & Maintenance	Monthly	Years 1-2: Regular irrigation schedule Years 3-5: Reduce/eliminate irrigation during winter months (Nov – Feb) Years 5+: Reduce/eliminate irrigation for most of year unless abnormally dry & hot or to maintain aesthetics May – June. Supplemental watering 1/month during warm, dry season may be desired to maintain plant aesthetics
GSI Performance Inspection & Maintenance	Semi-annual / Periodic	Sediment: accumulation of sediment in the sediment trap or basin bottom should be removed only if it reduces the ability to meet performance objectives of the GSI feature from either a water quality or retention volume perspective. Often sediment acts as a mulch as long as vegetative cover is present to reduce evaporative water loss and infiltration rates are not impacted. Ponding: check for ponded water 2-3 days following rain events. If ponding persists then take appropriate action to A) decompact underlying soil, B) integrate organic mulch or compost, and C) re-establish native plants (i.e. native grasses) to facilitate infiltration

