



Front Range Sustainable
Landscaping Coalition

Best Practices

for a Sustainable Colorado Landscape

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A sustainable Colorado landscape balances resource use with tangible benefits to the local, regional and global environment throughout its lifespan.

This checklist of best practices represents the collective work of over 40 green industry professionals from Colorado's Front Range. These professionals include landscape contractors, landscape designers, landscape architects, nursery owners, and educators. Please feel free to use this checklist in your business. If you wish to suggest revisions, please contact the Coalition via our website: frslc.wetpaint.com. Or join the Coalition as we work to educate ourselves and others about sustainable landscaping in our region.

The checklist is divided into seven categories:

- SP - Site Preparation, Grading and Soil Improvement
- WC - Water Conservation and Irrigation
- PL - Planting, Plant Choices and Plant Production
- HA - Hardscape and Rockwork
- MU - Mulch and Mulching
- MC - Mobilization and Clean Up
- MA - Maintenance

Each practice is identified as belonging to one of six subcategories:

- DS - Design
- MP - Materials/Products
- MT - Methods
- EN - Energy Use
- EC - Ecology
- ES - Economy/Social

Finally, each practice is rated as meeting one of three levels:

- B - Basic - Practices that any landscape that call itself sustainable should follow; often already common industry practices.
- M - Moderate - Practices that fall between basics and advanced.
- A - Advanced - Practices that would require a significant shift in the way the industry does business, may be more costly.

Website links included in this document:

GreenCo Best Management Practices: www.greenco.org/bmp_list.htm

Noxious weed list: <http://plants.usda.gov/java/noxious?rptType=State&statefips=08>

Dark Sky guidelines website: www.darksky.org

I. Site Preparation, Grading and Soil Improvement

Category
Sub-Category
Level

Practice-Soil improvement and grading are the most fundamental and one of the hardest things to re-do or fix in the landscape.

NOTES:

1	SP	MT	B	Site Assessment	Assess site before beginning work for: hazardous materials, wind and water erosion potential, noxious weeds, site history, soil seed bank.
2	SP	MT		Weed Control	Design, install and maintain landscape to minimize weed problems:
2.1	SP	MT	B		Tailor weed control practices for conditions of site.
2.2	SP	DS	B		Design landscape with potential weed invasion from surrounding areas in mind.
2.3	SP	MT	B		Use least toxic strategies for weed control.
2.4	SP	MT	B		Use thick mulches (4" settled organic mulch).
2.5	SP	MT	A		Consider use of cover crops to: outcompete weeds, exhaust soil seed bank, and improve soil the season before landscaping.
2.6	SP	MT	A		Consider using sheet mulch to smother weeds.
3	SP	MT		Vegetation Protection	Protect vegetation to be retained:
3.1	SP	MT	B		Follow a tree protection plan per ISA standards or certified arborist recommendations.
4	SP	MT		Avoid Soil Compaction	Don't compact soil and create hard-pan:
4.1	SP	MT	B		Designate site access and material storage areas. Fence off if needed.
4.2	SP	MT	B		Avoid traffic on soil when wet.
4.3	SP	MT	M		Use light weight equipment and hand labor.
4.4	SP	MT	M		Use track vs wheeled equipment.
5	SP	MT		Minimize Waste Hauling	Minimize debris hauled off site:
5.1	SP	MT	B		Dispose of hazardous materials appropriately (e.g. railroad ties, lead paint, asbestos).
5.2	SP	MT	M		Keep existing landscape features as much as possible.
5.3	SP	MT	M		Re-use materials from existing landscape, if possible (e.g. use concrete debris to make retaining walls, tree limbs to make mulch).
5.4	SP	MT	A		Deconstruct rather than demolish.
6	SP	MT	B	Recycling	When removing debris from site, recycle as much as possible (as close to site as possible).
7	SP	MT	B	Erosion Control	Follow GreenCO BMPs "Landscape Installation and Erosion and Sediment Control" guidelines during grading and construction.
8	SP	DS		Grading	Grade to accomplish design goals while minimizing site disturbance and accomplishing the following:
8.1	SP	DS	B		Grade to minimize erosion.
8.2	SP	DS	B		Grade to conserve water use (e.g. avoid steep sodded berms).
8.3	SP	DS	M		Grade to balance cut and fill. Minimize soil moved into or off of site.
8.4	SP	DS	M		Grade to allow groundwater recharge without endangering structures. Create rain gardens, recharge swales.



9	SP	DS	A	Create Microclimates	Use grading to create beneficial microclimates for plants and people.
10	SP	MT		Conserve Native Soil	Conserve native soil, including topsoil:
10.1	SP	MT	B		Store topsoil, if necessary, in a way to preserve soil life. Ie. In piles no more than 3' tall.
11	SP	MT	M	Soil Improvement	Only improve soil where needed for plants that are not adapted to existing conditions.
12	SP	MT		On Site Soil Improvement	Improve soil using on site resources:
12.2	SP	MT	B		Till in organic matter produced by site preparation.
12.3	SP	MT	M		Use removed sod to build berms.
12.4	SP	MT	M		Compost organic matter from site for use on site.
12.5	SP	MT	A		Before landscaping, sow cover crops to prevent erosion, grow out weed seeds in soil seed bank, and increase soil organic matter. Can choose cover crop to correct soil deficiencies (e.g. can fix nitrogen).
12.6	SP	MT	M		Lay sheet mulch.
12.7	SP	MT	A		Chip larger organic debris from site into mulch.
13	SP	MT		Soil Amendments	As needed, bring in soil amendments that build soil health:
13.1	SP	MP	B		Use local, non-toxic, recycled materials (e.g. manure, brewery waste, sawdust and wood chips, yard waste, agricultural waste, sewage sludge (on non-edible plants).
13.2	SP	MP	B		Add compost to existing soil to create topsoil.
13.3	SP	MT	B		Till compost in 6-8" deep.
13.4	SP	MT	B		Choose bulk soil amendments over bagged.
13.5	SP	MP	B		Use organic soil amendments, not fertilizers. Organic soil amendments contain a full range of plant nutrients, add organic matter which improves the structure, water holding capacity and pollution mitigation potential of the soil, and feed soil life.
13.6	SP	MT	A		Loosen subsoil with deep treading, deep forking, chisel plow to encourage deep rooting and water penetration.
14	SP	MT	A	Soil Life	Restore life to soil with worms, mycorrhizae, compost and biologically active compost tea.
15	SP	MT	A	Structural Soil	Consider using structural soil in urban or high traffic areas.



II. Water Conservation and Irrigation

#	Category code	Subcategory code	Level		Practice - As in all sustainable design, it is important to balance water use with the benefits it creates (e.g. neighborhood character, recreation, food production, preservation of trees). Irrigation practices included at basic level are not meant to exclude a landscape that requires no irrigation
1	WC	DS	B	Rainwater	Make use of runoff from roofs, hardscapes, and drainage from neighbors.
1.1	WC	DS	M		Grade landscape (using swales, terraces, detention ponds, etc.) to encourage infiltration in desired areas (not next to foundation!).
2	WC	DS		Water Budgeting	Design and install landscape for a particular water conserving water budget. The following are approximate guidelines and will vary with city codes and climate:
2.1	WC	DS	B		10-14 gallons/square foot/season supplemental water.
2.2	WC	DS	M		5-9 gallons/square foot/season supplemental water.
2.3	WC	DS	A		0-4 gallons/square foot/season supplemental water.
3	WC	DS		Water-conserving Landscape Design	Integrate water conservation into all aspects of the landscape design:
3.1	WC	DS	B		Design lawn areas for efficient water coverage (limit overspray, no slopes, proper size, etc.).
3.2	WC	DS	B		Group plants according to their water needs.
3.3	WC	DS	M		Reduce ET rates for higher water use zones by using windbreaks, canopy/understory levels, solar orientation; soil amendment.
3.4	WC	MT	A		Capture snow in windbreaks and use for winter watering.
4	WC	DS		Irrigation Design	Design irrigation system to minimize water use:
4.1	WC	DS	B		Zone irrigation system according to microclimates.
4.2	WC	MP	B		Use low-volume irrigation (drip, soaker, large droplet sprayhead) for planting beds where ongoing irrigation is required.
4.3	WC	MP	B		Design and operate system so that all components are operating at proper pressure.
4.4	WC	MP	M		Use subsurface irrigation for lawns.
4.5	WC	MP	M		Include a master valve before manifold to eliminate manifold leaks.
4.6	WC	RQ	M		Minimize use of PVC. PVC production and use results in the release of dangerous amounts of carcinogens.
4.7	WC	MT	A		Use a temporary/removeable irrigation system for low and very-low water use landscapes.

Notes:



5	WC	MP		Operation and Maintenance	Operate and maintain irrigation system to conserve water:
5.1	WC	MP	B		Adjust irrigation schedule according to soil and weather conditions (manual adjustment, water budget timers, ET timers, soil moisture sensors).
5.2	WC	ES	B		Educate customer on proper operation and maintenance of irrigation system including seasonal adjustments.
5.3	WC	DS	B		Use sprinkler systems achieving a Distribution Uniformity of at least 60%.
5.4	WC	EC	B		Match irrigation schedule to soil type (e.g. soak-n-cycle irrigation for high clay).
5.5	WC	MT	B		Maintain irrigation system throughout the year.
5.6	WC	MT	B		Reduce watering frequency as plants become established.
5.7	WC	MT	A		Don't water (or limit watering) cool-season grasses in heat of summer (Kentucky Bluegrass & Perennial Rye will go dormant).
5.8	WC	ES	A		Check actual water use of established landscape against designed water budget.
6	WC	DS	B	Water Features	Design water features for minimal water use (recirculating, shaded, pondless, no exposed water, no mist) and consider alternatives such as dry stream beds.



III. Planting, Plant Choices and Plant Production

Practice - Sustainable planting design must consider the functions and usefulness of a planting as well as the appearance. If a planting is productive of food or useful as a screen or for cooling the house, for example, it makes sense for it to use more resources and/or maintenance than a planting that is only ornamental.

Notes:

#	Category code	Subcategory code	Level		
1	PL	DS		Basic Planting Design	Alter plant choice for site, not site for plants. Consider: plant hardiness, microclimate, water usage, sunlight requirements, soil pH, soil texture/structure, humidity, ultimate mature size, longevity:
1.1	PL	DS	B		Create practical turf areas: size, location, scope, grass type, use, irrigation (see irrigation section). Size: sufficient, but not larger than needed, for desired uses. Location: choose best location and microclimate. Grass type: choose best variety for soils, use and climate.
1.2	PL	DS	B		Group plants according to their water needs.
1.3	PL	DS	B		Don't plant trees and shrubs in irrigated lawns.
1.4	PL	DS	B		Don't plant invasive ornamentals that are on the noxious weeds list. See web site list on front page.
1.5	PL	DS	B		Don't include plants with known severe insect & disease problems (ie. Fireblight susceptible like Jonathan apples. Aphid susceptible like Snowball Viburnum).
2	PL	MT		Plant Preservation	Preserve existing plants that support overall sustainability and incorporate into design. Protect with fencing during construction.
3	PL	DS	M	Plant Choice	Choose plants that support many aspects of sustainable landscaping:
3.1	PL	DS	M		Choose Colorado natives or plants adapted to our soils and climate.
3.2	PL	DS	M		Choose plants that have multiple functions (aesthetics, erosion control, provide wildlife habitat, food production).
3.3	PL	MT	M		Use plants grown locally, and ask for them from local suppliers.
3.4	PL	DS	A		Choose plants and create designs for <u>net</u> productivity and beneficial effect. Higher use of (local renewable) resources is justified by more production and beneficial use. Design for net, not gross, resource use (or even production!).
3.5	PL	DS	A		Choose plants that are adaptable to climate change, that are heat and drought tolerant.
3.6	PL	ES	A		Work with municipalities to promote use of sustainable plants in their forestry, city tree, and/or streetscaping programs and encourage rebates for their use.
4	PL	EC	B	Diversity	Use a variety of plants to create resilient, healthy landscapes:
4.1	PL	EC	M		Don't plant mono cultures of cloned (named) varieties.
4.2	PL	EC	A		Use seed grown plants for genetic diversity (avoid cloned, named varieties).
5	PL	EC	B	Moderate Climate	Use plants to beneficially moderate climate for buildings and hardscape:
5.1	PL	E	B		Create shade to reduce need for A/C, mitigate heat islands. Use solar shade trees which preserve solar access while providing summer shade. Plant these to south or southwest of buildings and hardscapes. These are trees with fewer branches and twigs (e.g. Kentucky Coffeetree, Honeylocust).
5.2	PL	E	B		
5.3	PL	E	M		Direct wind with plantings. This can provide cooling summer breezes or mitigate cold winter winds.



5.4	PL	DS	M		Reduce need for watering by creating shade and windbreaks.
5.5	PL	DS	M		Retain run-off on-site. Use catchment gardens, recharge swales, green roofs and other methods.
6	PL	DS	M	Habitat	Design symbiotic ecosystems (plants that help each other) include nitrogen-fixing plants and plants that provide habitat for beneficial insects.
6.1	PL	DS	M		Preserve and/or recreate native ecosystems to support native wildlife (soil life, insects, birds and animals).
7	PL			Growth and Change	Design plantings for growth and change over time (increasing shade, changing soil)
7.1	PL	DS	B		Plant for intended life of site (short or long term).
7.2	PL	DS	B		Consider including suckering and self-sowing plants in design, as site appropriate.
7.3	PL	DS	M		Include succession plantings (e.g. Quick growing shade trees underplanted with slower-growing, long-lived trees).
8	PL	MT		Planting	Plant to insure future plant health and minimize resource use and pollution:
8.1	PL	MT	B		Consult GreenCo's BMPs for proper planting techniques.
8.2	PL	MT	B		Select trees with central leader all the way to the top (for trees that have central leaders).
8.3	PL	MP	B		Recycle plastic pots to nurseries that take them.
8.4	PL	MP	M		Shop at nurseries that have green practices such as: recycling water, recycling pots, reduced use of petroleum-derived products (poly greenhouse covers), reduced use of herbicides, pesticides, solar and geothermal fuels for greenhouses, use of compost-based, locally-sourced potting soil.
9	PL	MP		Plant Production	Grow plants adapted to local soils and climates; produce them in a sustainable way:
9.1	PL	MP	B		Grow plants that are drought tolerant and adapted to local soils.
9.2	PL	MP	B		Grow plants that are disease resistant and or disease tolerant.
9.3	PL	MP	B		Minimize pesticide usage by growing healthy and appropriate plants. Use GreenCo's BMPs to create healthy plants.
9.4	PL	MP	M		Grow plants that have few pest insect problems or tolerate pests or attract beneficials.
9.5	PL	MP	M		Grow plants that are long lived or self renewing.
9.6	PL	MP	M		Grow plants using microorganisms, like beneficial fungi and bacteria, that produces healthier plants and will inoculate the planting area.
9.7	PL	MP	M		Design and produce locally sourced potting soil, use compost based rather than Canadian spagnum peat based.
9.8	PL	MP	M		For healthier plants, use organic fertilizers rather than petroleum derived, to save labor costs and run off.
9.9	PL	MP	M		Water less frequently and with more skill. Use a soil mix that retains water or heavier soil mix. Reuse water and prevent water run-off. Use water efficient drip or hand water vs. sprinklers.
9.10	PL	MP	A		Use minimum of petroleum derived products like polycovered greenhouse covers.
9.11	PL	MP	A		Grow plants from local seed to continue local adaptive genotype.



IV. Hardscape and Rockwork

Practice - Recognize that hardscapes are the most permanent and most energy-, labor- and resource-intensive elements of the landscape. Use them wisely.

#	Category code	Subcategory code	Level			Notes:
1	HA	MT	B	Minimize Disturbance	Minimize disturbance to site while moving and stockpiling materials.	
2	HA	DS	B	Practical Hardscapes	Design practical hardscape areas - size sufficient, but not larger than needed, for desired uses.	
3	HA	MT	B	On Site Resources	Use on site resources (e.g. recycled concrete wall, gravel in french drain).	
4	HA	MT	B	Proper Installation	Build it well so it's not redone next year or removed.	
5	HA	MT	M	Local Sourcing	The majority of heavy and bulky materials should be sourced from within 100 miles.	
6	HA	MT	M	Reduced Machinery	Use non-motorized options for moving and setting materials.	
7	HA	DS	M	Alternate Focal Objects	Save use of large boulders for maximum impact, consider alternate focal objects.	
8	HA	DS		Hardscape Effects	Recognize effects of hardscape on landscape:	
8.1	HA	DS	B		Create microclimates for plants.	
8.2	HA	DS	B		Redirect runoff to plantings.	
8.3	HA	MP	B		Use permeable materials in appropriate areas.	
8.4	HA	DS	M		Locate hardscape and select colors with consideration for reflective and heat absorbing qualities (e.g.) use light materials to minimize temperatures and dark materials to retain warmth.	
8.5	HA	DS	M		Balance benefits of raised beds with increased drainage and water use.	
8.6	HA	DS	A		Put channel drains in driveways to catch and redirect water into landscapes.	
9	HA	MP		Green Materials	Use "green" materials. This is an area of ongoing research:	
9.1	HA	MP	B		Use recycled / reused materials instead of new.	
9.2	HA	MP	B		When buying new materials look at benefits of materials with recycled content.	
9.3	HA	E	B		Avoid toxic materials - ingredients/production/installation/maintenance; adhesives/additives/treatments/coatings; radioactivity, selenium(in sandstone), creosote timbers.	
9.4	HA	EN	M		Consider alternatives to concrete - both for paving (stabilized soil?) and support (compacted soil footers for boulders/dry stack walls).	
9.5	HA	MP	A		Use FSC (Forest Stewardship Council) certified lumber.	
9.6	HA	MT	A		Don't use materials that cause damage when harvested or produced.	
10	HA	DS		Evolution of Hardscape	Allow for evolution of hardscape and to minimize destruction of hardscape:	
10.1	HA	MT	B		Use weed barrier / geotextile to separate soil from gravel / road base paving.	
10.2	HA	DS	M		Match materials and methods to anticipated longevity of landscape.	
10.3	HA	MT	M		Design to be disassembled. Use materials and construction methods that allow for re-use of materials. (e.g. drystack not mortar).	
11	HA	DS		Outdoor Lighting	Minimize energy use of outdoor lighting (e.g. solar, LED):	
11.1	HA	DS	B		Minimize light pollution from outdoor lighting (follow Dark Sky guidelines website).	



V. Mulch and Mulching

Practice - Organic mulch mimics the organic soil cover found in most healthy ecosystems, and is a vital part of a new landscape.

Category code Subcategory code Level

Notes:

1	MU	MT	B	Organic Mulch	Use organic mulch in newly planted areas
2	MU	MP	M	Local, Recycled Mulch	Use locally-produced, recycled mulch
3	MU	MT	M	Avoid Plastic and Fabric	Avoid use of black plastic and landscape fabrics in planting beds
4	MU	MT	A	Recycle	Where possible, recycle plant trimmings and annual leaf litter (chipped or shredded, if necessary) on site as mulch
5	MU	DS	M	Self-Mulching	Choose self-mulching plants (plants whose leaf litter can be left as mulch, such as pines)
<p>SUPPORTING INFORMATION</p> <p>Mulch reduces erosion, keeps soil moist and cool, and reduces weed growth. Organic mulches feed soil life. Avoid using large expanses of mulch in lieu of plantings. Mulched areas may be appropriate for paths, play areas and dog runs, or as temporary weed-suppressing cover. Use inorganic mulches only for rock gardens and drought-adapted plantings, on especially windy sites, or where it is critical to achieve the design intent. Rock and gravel mulches are produced with environmentally destructive practices such as dredging, are heavy and therefore require a lot of energy to transport, retain heat that contributes to urban heat islands and that is stressful for many plants, are more difficult to weed than organic mulches, and are difficult to remove if changes to landscape are required.</p> <p>Use 1-2" of fine mulch on flower beds and groundcovers. Use 3-4" of coarser mulch for shrub beds and around trees. Match mulch longevity to expected maintenance of planting area (finer mulches such as leaf mold or compost for flower beds, coarser and more recalcitrant mulches for shrub beds and lower-maintenance areas). Renew mulch periodically to feed soil organisms and plants. Once plant cover is established in low-maintenance tree and shrub beds, mulching can be discontinued, except as necessary.</p> <p>Use sheet mulch (a layer of newspaper and cardboard covered in straw, compost, other organic matter) in weedy areas or to create soil over barren ground.</p> <p>Use only disease-free materials as mulch.</p>					



VI. Mobilization and Clean Up

Practice - Transportation of materials and people is one of the largest uses of energy for most landscaping. Careful material storage, handling, reuse and recycling can significantly reduce resource use and pollution.

Category code Subcategory code Level

Notes:

1	MC	ES	B	Preconstruction Meeting	Hold a preconstruction meeting for understanding green goals among all parties: owner, general, subs, designers, maintenance
2	MC	EN		Fuel Efficiency	Use fuel efficiently and minimize air pollution:
2.1	MC	EN	B		Use proper equipment: appropriate size and power.
2.2	MC	EN	B		Establish company policies that encourage fuel efficiency (e.g. carpooling, 1 vehicle to jobsite).
2.3	MC	EN	M		Use fuel efficient vehicles.
2.4	MC	EN	M		Fuel vehicles when it's cooler.
2.5	MC	EN	M		Use hand labor if overall energy use is lower (include on-site and transportation energy).
2.6	MC	EN	M		Use alternative transportation to get to work--bike, bus, walk.
3	MC	EN	M	Alternative Fuels	Use alternative fuels (e.g. biodiesel, ethanol, propane for trucks and equipment; electric tools powered by solar, wind).
4	MC	EN		Energy-efficient Project Management	Manage projects to reduce energy use:
4.1	MC	EN	B		Practice one stop shopping or shipping.
4.2	MC	EN	B		Make sure trucks are stocked for project with materials and tools.
4.3	MC	EN	B		Reduce number of daily trips.
4.4	MC	EN	B		Use site specific daily task lists to get everyone and everything at the right time.
4.5	MC	ES	B		Communicate goals and objectives to crew.
4.6	MC	EN	B		Minimize number and distance of deliveries (sequence deliveries efficiently, combine deliveries when possible, split loads, plants for multiple jobs).
4.7	MC	EN	B		Buy in bulk, when possible.
4.8	MC	EN	B		Coordinate for construction sequencing.
4.9	MC	ES	B		Contract out work that can be done more efficiently by others.
4.10	MC	EN	B		Have good site security to minimize mobilization.
4.11	MC	EN	M		Employ central coordination of resource management (ordering, delivery).
4.12	MC	ES	M		Use professional networking-share deliveries, equipment, waste hauling.
5	MC	ES	B	Training	Train crew in environmentally sound practices.
6	MC	EN	M	Local Sourcing	Buy local materials.
7	MC	EC	B	Material Storage	Store materials to prevent soil, air, & water contamination. Consult local BMPs.
8	MC	EC		Equipment Maintenance	Maintain tools and equipment:
8.1	MC	EC	M		Repair rather than replace.



9	MC	EC	B	Minimize Waste	Minimize waste hauled to dump:
9.1	MC	MT	B		Separate out reusable and recyclable materials.
9.2	MC	MT	B		Return pallets for reuse.
9.3	MC	MT	B		Return pots and containers.
9.4	MC	MT	M		Post unused materials on web (e.g. freecycle.org, craigslist).



VII. Maintenance

Practice - Maintenance currently accounts for more resource consumption and pollution than installation.

#	Category code	Subcategory code	Level			Notes:
1	MA	MT		Pruning	Use techniques and tools to maximize plant health and minimize resource use:	
1.1	MA	MT	B		Prune appropriately for plant (keeping character of space or garden in mind - formal vs natural), considering bloom time, health and need for rejuvenation.	
1.2	MA	MT	B		Use the correct tool for the task and use well maintained tools.	
1.3	MA	MT	B		Use clean tools when working with diseased plants (disinfect to avoid spreading disease and pests).	
1.4		MT	B		Prune at right time (e.g. prune maples in late winter, before sap starts to flow).	
1.5	MA	MT	B		Check structure of trees annually and prune as needed.	
1.6	MA	EC	B		Cut back perennials in early spring instead of fall; leave seeds and leaves for winter habitat and to protect crowns.	
1.7	MA	MT	B		Clean up debris and recycle except for diseased and/infested materials.	
1.8	MA	MT	M		If possible, re-use debris on site (e.g. chip healthy tree branches and use for mulch).	
2	MA	MT		Fertilizers	Fertilize to balance ecosystem health and avoid pollution:	
2.1	MA	MP	B		"Feed" the soil with high-quality organic matter (compost, worm castings, etc.), not the plant.	
2.2	MA	MP	M		If feeding the soil is inadequate, apply organic fertilizers, with following conditions (see 2.3 below).	
2.3	MA	MT	M		If organic fertilizers inadequate, apply chemical fertilizers, with following conditions. Perform a soil analysis and fertilize according to results and plant type. Apply at appropriate times (during low people use, weather conditions - wind, rain). Apply appropriate amounts (be especially aware near water systems). Use specific products for specific circumstance or problem (no weed and feed products).	
3	MA	MT		Pest Management	Insect and animal control - build ecosystem health and minimize resource use and pollution:	
3.1	MA	MT	B		Build soil for plant health.	
3.2	MA	MT	B		Do nothing - is it really a problem? Is it self-correcting?	
3.3	MA	MP	B		Use natural repellents (hot pepper, garlic).	
3.4	MA	MP	B		Use organic and natural pesticides ("soft controls" - insecticidal soap, vinegar, horticultural oil, diatomaceous earth).	
3.5	MA	MP	B		Eliminate or minimize use of non-organic/chemical pesticides.	
3.6	MA	MT	B		Physically exclude animals (e.g. rabbits, deer, voles) instead of using pesticides. (e.g. fencing).	
3.7	MA	EC	B		Design landscape to coexist with local wildlife (e.g. rabbit-resistant plants, Reduced fertilization will reduce palatability of plants).	
3.8	MA	EC	M		Use appropriate and diverse plant material, create a healthy ecosystem that helps control insect and disease problems.	



3.9	MA	MT	M	Use Integrated Pest Management methods (Eliminate or minimize use of pesticides: analyze problem, apply only when necessary, at appropriate times and appropriate amounts). Consider over-irrigation as a source of disease problems. Introduce beneficial insects to lure them in.
4	MA	MT		Weed Control Minimize use of herbicides:
4.1	MA	MT	B	Hand weed, get the root! Weed before seed sets.
4.2	MA	MT	B	Apply herbicides only at appropriate times (during low people use, weather conditions - wind).
4.3	MA	MP	B	Choose herbicides with minimal toxicity and persistence for active and inert ingredients.
4.5	MA	MP	M	Eliminate use of non-organic/chemical herbicides.
4.6	MA	MP	M	Apply pre-emergent (e.g. corn gluten meal) prior to season to minimize need for herbicide.
4.7	MA	MP	A	Use goats to weed larger areas.
5	MA			Disease Minimize use of disease control:
5.1	MA	MT	B	Do nothing - is it really a problem?
5.2	MA	MT	B	Address environmental conditions contributing to disease.
5.3	MA	MP	B	Use least toxic chemical controls.
5.4	MA	DS	M	Replace problem plants with better adapted varieties.
6	MA			Turf Maintenance Maintain turf to maximize grass health and minimize resource use and pollution:
6.1	MA	MT	B	Follow (GreenCo's BMPs) for seasonal practices for healthy turf - topdressing, aeration, dethatching, rerolling, etc.
6.2	MA	MT	B	Mow to appropriate height, in cross patterns, leave clippings.
6.3	MA	MT	B	Clean clippings off of hardscape areas.
6.4	MA	MP	B	Use on-site resources for fertility, such as grass clippings left on turf.
7	MA	MT	B	Irrigation System Maintain and adjust seasonally for maximum efficiency:
7.1	MA	MT	B	Audit annually for efficiency adjustments.
7.2	MA	MT	B	Make repairs asap - consider using controllers that detect, report and handle damage causing high water flow.
8	MA	MT	B	Hardscape Maintain hardscapes so they last.
9	MA	EN		Equipment and Tools Choose and use tools to minimize resource use and pollution.
9.1	MA	EN	B	Use the right size of tool for the task to minimize trips, etc.
9.2	MA	EN	M	Purchase multi function tools - mulching mower, dingo with multiple attachments.
9.3	MA	EN	M	Do by hand where appropriate. Rake vs. blower.
9.4	MA	EN	M	Minimize use of two-cycle engines.
9.5	MA	EN	A	Use alternative fuel for motorized equipment (solar or electric vs gas).
10	MA	ES		Operating and Maintenance Operations and maintenance are as crucial as the original design and installation:
10.1	MA	ES	M	Create a landscape O&M manual for client, owner and/or maintenance company.
10.2	MA	ES	M	Audit and update maintenance plan.

