

# APLD Sustainability Guidelines for Landscape Design

## Forward

The APLD is committed to the principle of sustainability. This guideline is meant to be community-based: it is an evolving document amended and supplemented by the APLD membership. As we define what sustainability means for landscape design, let's share that knowledge with everyone else. Let us know what works, what we are missing or what needs clarification. We are moving toward sustainability together.

Please send your suggestions, knowledge and experience to [communications@apld.org](mailto:communications@apld.org). Please mark your email as SUSTAINABILITY INFO.

## Sustainability

As defined by the United Nation's Bruntland Commission of 1987 sustainability "meets the needs of the present generation without compromising the ability of future generations to meet their own needs". We'll paraphrase that as *living today without borrowing from tomorrow*.

As co-designers of the built environment, landscape designers occupy a unique role. We not only take our client's intentions and create a plan for a new reality, we design that plan at the edge of the built environment where human activity meets the natural world. We rely on the strength of our living plant materials and the natural rules that govern them to get our designs to thrive. When our clients say yes, our plans become reality. We literally design part of the future one plan, one decision at a time. Every decision counts. *Sustainability is just a goal; a balance point between degradation and renewal*. Healthy systems grow, pushing beyond sustainability into regeneration. Our landscapes should follow.

*At the core of sustainability is a fundamental value that says Human and ecosystem health are one and the same. Humankind is a part of the larger natural world, and by valuing all that world, we protect ourselves, our children and the children of all species now and for the indefinite future.*

## General Concepts

The designed landscape is a mini-ecosystem that connects to the world at large. Our plant materials connect directly to the living local ecology, and the balance of our designed non-living materials influence that ecology in various ways. Both elements, the living and non-living, have broad connections to the world well beyond the locality where they reside.

Several key concepts help describe the broad global ties created by our landscape designs.

A landscape **Footprint** is the totality of all that goes into a landscape over its lifetime. The smaller the footprint, the less cost in energy, materials and environmental quality there is for a given project. Through **Life Cycle Analysis**, we measure the environmental impact of our projects by breaking down all our landscape elements into measures of materials, energy and labor over their lifetime. We can then compare and select the least burdensome element for our landscapes.

This life cycle comes from backtracking the material, energy and labor stream. Count every pond of raw material, every by-product, every drop of water, fertilizer and plastic, every toxic or hazardous material used or generated in a material's production or extraction. Add the fossil fuel energy that goes into the production of each material: the direct energy use for each step of the production process, the indirect use in transportation of the raw materials, by-products and the finished product to its final location, and the materials eventual disposal. Labor analysis includes the labor required to extract the raw materials, manufacture, transport to each location in the process, install each material at the jobsite and maintain and dispose of those materials over the life of the landscape.

**Sustainability aims to reduce or redefine the footprint of our activities into the least burdensome and most beneficial for all involved.**

## The Soil Food Web

The soil food web describes the natural complex interaction between soil-born organisms, organic matter and the transfer of energy between species in a given ecosystem. This diverse community of organisms includes bacteria, fungi, protozoa, nematodes, arthropods and more, all of which number in the billions per gram of soil. The soil food web is responsible for decomposing organic matter and making available the nutrients necessary for the ongoing growth of plants and animals of a given ecosystem.

By matching plant communities to the existing soil type and maximizing soil food web diversity, we are utilizing Nature's best method for getting our living materials to thrive, all without the use of synthetic / fossil-fueled based inorganic chemicals, many of which are disruptive and even damaging to the soil food-web.

Many landscape soils have been severely damaged due to construction, and require remediation (replenishment/rebuilding) to restore the soils close to their original productive state. Rebuilding the soil food web is slowly accomplished with the repeated addition of compost or compost tea (a liquid brewed from compost that contains the essential soil organisms) as necessary after testing the existing soil to determine its needs.

## Biodiversity

The hallmark of a healthy ecosystem is diversity. The greater the number of different species, and the larger the numbers of individuals found in each species, the stronger a given system becomes. Monoculture, the large scale massing of a single species, is a rarity in nature. **Succession** is the method Nature uses to increase diversity in an ecosystem. Succession is the slow introduction of new species through a variety of natural methods into a given area. When we stop pesticide applications to turfgrass lawns, the encroaching 'weeds' signal succession at work. There are no weeds in Nature. A healthy community of plants is its own best protection against stress and disease.

The introduction of exotic, non-native species through unnatural means has become a major problem in many areas. The natural systems have no means to check and balance such invasives and their continued spread becomes a problem as their growing numbers overwhelm the native growth, destabilizing ecosystems over time. Know the invasive plants found in your region.

## The Movement of Materials and Energy in Nature

Think in **cycles**, the way of Nature. All nutrients and materials used by life forms move in established cycles in Nature. There are no linear take-make-waste movements in Nature as you find in human activities. The exception is the only natural income the planet has: solar energy. Waste equals food in the natural world. We are finding that if we mimic the ways of nature, we can accomplish our activities with the least amount of footprint. Leaves decompose where they drop and returns fertility to the plant. Turfgrass clippings that remain return their nutrients to the lawn. Rain is absorbed where it drops. The shortest loop is the most effective.

### **Broaden our thoughts when we design.**

Think through the material choices.

Think through the installation procedures.

Think through the maintenance procedures

Think through the lifetime of the landscape

Think in cycles, the way of Nature.

## General principals:

Design with recycled over new, virgin materials.

Design to be disassembled/recycled over time

(i.e.: dry laid stone vs. mortared stone, screwed lumber vs. nailed / glued)

Design for durability

Design with materials that are/can be *upcycled* (same/equivalent/increased value use)  
over *downcycled* materials (downgraded use in lesser products)

Design with local materials over regional/national/international sourced materials,  
reducing transportation costs. Consider *Local Identity* as an organizing element of design.

Design with locally fabricated materials. (Identity again).

Design with simple materials over complex/composite materials.

Design with modular materials over custom installed materials.

Design with light materials over heavy materials.

Design with biodegradable materials when appropriate.

Design with proven 'Green' materials.

Design with Eco-Effectiveness (positive/regenerative properties) over Eco-Efficiency  
(less bad properties)

Design for multi-use over dedicated use

Design for renewable energy use

Design to reduce maintenance

Design to reduce inputs over time

Minimize/eliminate toxic/hazardous materials

Know your suppliers

Know your materials

## Guidelines

### Site, soil, materials, energy, waste, water, maintenance

**1. Where to start.** Sustainable thinking begins in the Mind and Heart: structure your business practice to be sustainable / structure APLD to be sustainable.

The office you work from

The materials you use for business

The methods you use for business

The way you live

**Design.** Design is increasingly becoming a collaborative venture. It's difficult to know all that's required to think through the complexities of a given project. Design now calls for specialists for many areas. Water features, irrigation, lighting, hardscape engineering, soil engineering, etc. are now separate specialties in landscape design and installation. The earlier we can insert ourselves in a larger design project (i.e., new construction), the better chance we have of achieving a successful design by working through the overall complexities and design challenges with a team approach. Knowing the limits of your knowledge is as important as knowing who to call when you've reached them.

## 2. The Elements of Landscaping

### a. Site

Review and consider site options carefully. Use/work with the existing site elements and conditions (plant materials, hardscape materials, sun/shade, wet/dry conditions, etc.) as much as possible. Avoid the 'clean-slate' approach. Let the existing elements lead your design direction.

### b. Soil

Restore/renew the soil food web instead of relying on fossil fuel/chemical sources for fertility. Proper soil health yields good plant health.

1. Protect undisturbed on-site topsoil. If necessary, harvest topsoil layer and store for reapplication at the appropriate time. Protect soil from erosion on sloped sites at time of landscape construction and over the life of the landscape. Plan for erosion control on sloped sites.
2. Do not import soil harvested from natural areas. Check your supplier on the source of your fill soil / topsoil / organic materials. Check that the soils you use are free from toxins and non-degradable rubbish.
3. Keep the organic material loop on-site and as small as possible. Keep grass clippings on the lawn (use mulching blades). Compost landscape organic waste on-site and return to the soil.

### c. Fertility

1. Rely on the natural organic soil food web as your source of fertility. Understand the soil food web and the soil organisms that make up a rich organic soil.
2. Test your soil for NPK, micro nutrients, heavy metal contamination and soil organism balance. Rebuild / amend the soil food web on your soils as needed, using concentrated organic materials with the proper organisms needed (Compost, compost teas, etc.)
3. Use only organic fertilizers from non-chemical/non-fossil fuel sources. Read your labels.

### d. Hardscapes

1. Use recycled materials over virgin materials.
2. Select new materials with recycled content.
3. Do not harvest natural materials from existing ecosystems.
4. Use the most permeable material possible to reduce runoff and maximize soil absorption.
5. Minimize the size of hardscape surface areas to reduce runoff.

### e. Plantings

Know the ecological/environmental dictates of your site and select the appropriate plant communities that fit. Design your plantings accordingly.

1. Select native plantings over non-natives. They are generally more adaptable, better suited to local conditions and require less maintenance than non-natives.
2. Select low input (water/fertility/maintenance) plantings over high input plantings.
3. All plants are not grown the same. Find and use 'Green' growers that minimize energy, pesticides and water use. Find growers that practice IPM (Integrated Pest Management) and BMP (Best Management Practices). Horticulture is high intensity agriculture.
4. Design for multi-use plantings: evergreens as a wind break, winter structure and visual screen.

### f. Turfgrass Lawns

Turfgrass lawns use more energy, pesticides and water than any other crop in agriculture.

1. Consider non-turfgrass alternatives.
2. Reduce lawn size.
3. Select turfgrass varieties for lowest input. Use multiple

variety blends for strength through diversity.

4. Reduce maintenance requirements:
  - a. Minimize fertilizer amounts, strengths and frequency. Use organic fertilizers, build your soils.
  - b. Keep grass clippings on the lawn (use mulching blades).
  - c. Minimize pesticide use.
  - d. Mow at a longer length.
  - e. Mow less often.

**g. Irrigation**

1. Consider/ design for no additional irrigation.
2. Consider temporary irrigation for establishment period only.
3. Use low volume/low flow irrigation (drip/trickle) over standard overhead irrigation.
4. Reduce irrigation use through good sensor/timer management.
5. Consider Solar based timing / control systems

**h. Lighting**

1. Maximize effectiveness with a minimal amount of lighting
2. Use low voltage systems over standard (line) voltage.
3. Use lowest wattage possible to achieve desired goal.
4. Use Solar over Fossil Fuel energy sources
5. Use Solar collecting fixtures
6. Consider Solar offset systems (independent solar collector/inverter systems that feed energy back to the power grid, offsetting landscape energy use)

**i. Maintenance**

Choose the elements of your landscape with the least required maintenance possible. Think of your plantings in 50 and 100 years. What elements should survive. What role will they play in the distant future. What will their longevity require. If the landscape changes, what will disposal of your designed elements require. Design for longevity, durability, disassembly and disposal.