"GOOD ECOLOGISTS STRIVE CONSTANTLY TO IMPROVE THEIR UNDERSTANDING OF THE MUTUAL CONNECTIONS, COMMUNICATIONS, AND RELATIONSHIPS BETWEEN SPECIES..."

guidelines

FOR CREATING ENVIRONMENTALLY RESPONSIBLE LANDSCAPES

APLD

Association of Professional Landscape Designers®

> **WE HAVE ENTERED A NEW AGE... AN AGE WHERE ALL OF US WILL HAVE TO SIGN A NEW COMPACT WITH OUR ENVIRONMENT... AND ENTER INTO THE LARGER COMMUNITY OF ALL LIVING BEINGS. A NEW SENSE OF OUR COMMUNION WITH PLANET EARTH MUST ENTER OUR MINDS.**
>
> KLAUS TOPFER[1]

introduction

THIS PUBLICATION REPRESENTS the desire of the landscape design community to better assist in making more prudent and informed environmental decisions in landscapes. Consequences of previous decision-making now threaten not only the well-being of the air, water, land, and wildlife, but of our own human community as well.

We all feel keenly the desire to make a difference, but are often unsure what action to take to effect significant change. Perhaps our first action should be simply the willingness to change our thoughts, to be willing to think ecologically instead of just economically.

Good ecologists strive constantly to improve their understanding of the mutual connections, communications, and relationships between species and their interrelated physical and chemical environments. Many of the ideas presented in this brochure attempt to follow this lead, to "think ecologically" by examining alternative, more holistic methods of dealing with common issues that arise in landscapes.

By making better environmental decisions on an individual basis, one yard at a time, we enter into a powerful agreement: the agreement to share the incredible experience of creating a world that is healthier, more loving, and more sustainable to all forms of life.

"Our behavior toward the land is an eloquent and detailed expression of our own character". — ALDO LEOPOLD[2]

> **WE HAVE ALL GROWN UP WITH THE AMERICAN LAWN, BUT WE MUST... SHAPE A NEW AESTHETIC TO GO WITH OUR NEW ECOLOGICAL ETHIC. THESE NEW VISIONS OF OUR LANDSCAPES, ECOLOGICALLY SOUND AND AESTHETICALLY PLEASING, MIGHT ALSO GUIDE THE WAY WE BUILD OUR CITIES AND COMMUNITIES, AND, IN FACT, THE WAY WE CONDUCT OUR LIVES.**
>
> F. HERBERT BORMANN [3]

lawns

NORTH AMERICAN LANDSCAPES EMBRACE

a diversity of unique climates and soils. Many of these ecosystems are not conducive to maintaining a traditional three-season bluegrass lawn, thus our current predicament: turfgrass that must be artificially sustained by heavy doses of fossil-fuel fertilizer, pesticide, and herbicide, as well as frequent costly irrigation and mowing.

Traditional lawn fertilizers have created wide-spectrum problems: precious fossil fuels are necessary for their creation, and they contribute to groundwater pollution. **Organic fertilizers** made from blends of natural by-products such as manure, feather meal, blood meal, and kelp create more sustainable green lawns: naturally-occurring microorganisms decompose grass clippings and prevent thatch build-up. Minerals and trace elements promote healthy growth and enhance resistance to stress.

Synthetic herbicides and pesticides adversely affect humans and pets, wildlife, beneficial soil organisms, and surrounding plantings. **Corn gluten meal**, a natural byproduct of the wet-milling of corn, contains an acid that disrupts germination in most common turfgrass weeds. A fine yellow powder that can be applied with traditional spreaders, the meal contains high levels of nitrogen and protein for fertilizing and amending the soil, leading to a more naturally-sustainable lawn.

Mowing with gas-powered machines consumes valuable fossil fuels and contributes to noise and air pollution. **Hand-pushed reel mowers** can be good alternatives for relatively small lawn areas. Creating designed, defined "no-mow" areas within the lawn reduces mowing and creates valuable wildlife habitat and forage.

Irrigated lawns have put unnecessary burdens on already strained aquifers. Most turfgrasses will naturally "brown out" under hot, dry conditions, and "green up" when rainfall returns; a simple appreciation and **tolerance** for this natural cycle eliminates nonessential water usage. Careful use of existing site water can be helpful as well: water from gutters and downspouts can often be redirected with perforated flexible PVC to water lawn and bed areas.

A simple change in the **type of grass** utilized in lawn areas can make a major ecological impact. Blends of sturdy fescues work well in many areas of the northeastern United States. Low-growing prairie grasses or buffalo grass create beautiful, low-maintenance, natural alternative lawns in central and western states.

An honest evaluation of the current **allotment of space for lawn** can be helpful. Often this percentage can be downsized and still allow for family lawn needs. Look for spaces where grass is declining or struggling, such as shady or wet areas. Instead of lawn, create focal-point areas of appropriate native plants that will thrive under these conditions.

A final alternative is encouraging a "**Freedom Lawn**". A Freedom Lawn utilizes a "hands-off" approach: all watering, fertilizing, pesticide and herbicide use are discontinued. Less frequent mowing permits a range of plants to naturally seed themselves into lawn areas, resulting in a lawn that naturally sustains itself by rainfall and nutrients found in the soil. Clover, dandelions, and crabgrass are no longer viewed as enemies of the homeowner, but participants in a natural cycle of sustainability.

PLAN FOR ACTION:

Investigate organic **ALTERNATIVES** to fertilizer, herbicides, and pesticides

Reduce **MOWING REQUIREMENTS** by creating "no-mow" areas, utilizing hand-powered mowers where appropriate

Utilize site water and practice **TOLERANCE** for the natural growth cycle of turfgrasses to reduce irrigation requirements

Use low-maintenance site-appropriate **GRASS BLENDS** in lawn areas

Evaluate **DOWNSIZING** current lawn areas; consider native plantings where grass is unwanted or unfeasible

Install a **"FREEDOM LAWN"**!

"By choosing aesthetically-pleasing but environmentally-sound alternatives to the classic American lawn, we can...draw the line on environmental degradation in our own yard". — F. HERBERT BORMANN [3]

RESOURCES:

REDESIGNING THE AMERICAN LAWN: A SEARCH FOR ENVIRONMENTAL HARMONY; F. HERBERT BORMANN, 1993.

BUILDING A HEALTHY LAWN: A SAFE AND NATURAL APPROACH; STUART FRANKLIN, 1988.

SAFE & EASY LAWN CARE: THE COMPLETE GUIDE TO ORGANIC LOW-MAINTENANCE LAWNS; TAYLOR'S WEEKEND GARDENING GUIDES, 1997.

WWW.ENVIRONMENTALFACTOR.COM-ORGANIC LAWN CARE, CORN GLUTEN, GRUB CONTROL

WWW.EXTREMELYGREEN.COM-ORGANIC LAWN CARE GUIDE AND PRODUCTS

WWW.COMPOSTERS.COM-REEL MOWERS, ELECTRIC MOWERS, COMPOST BINS

WWW.BRADFIELDIND.COM-ORGANIC FERTILIZERS, CORN GLUTEN, ORGANIC HERBICIDES

WWW.OHIOEARTHFOOD.COM-ORGANIC INSECTICIDES AND LAWN FERTILIZER

> **AMONG THE ORDINARY YARDSTICKS, I CAN THINK OF BUT ONE WHICH IS OBVIOUSLY A COMMON DENOMINATOR OF SUCCESS IN ALL TECHNOLOGIES: SOIL FERTILITY. THAT THE MAINTENANCE OF AT LEAST THE ORIGINAL FERTILITY IS ESSENTIAL TO LAND HEALTH IS NOW A TRUISM, AND NEEDS NO FURTHER DISCUSSION.**
>
> ALDO LEOPOLD[4]

soil

SOIL IS a complex combination of air, humus, macro- and microorganisms, minerals, organic and inorganic matter, water, and other animals. Soil plays an important role in many crucial areas, including erosion, residential and commercial landscape applications, and agricultural crop production.

Soil texture falls into three size classes: sand, silt, and clay. Soil texture affects the rate at which water will percolate through it, the ease with which it can be tilled, and the ability to provide nutrients for good plant growth under stress conditions. Soil testing is suggested in order to address potential problems with drainage and what amendments may be needed.

Most plants can tolerate a wide range of **soil pH**, however, it will affect whether plants can take up nutrients through their roots. If the pH is too low (below 6.0) the soil becomes too acidic; too high (above 7.0) and the soil becomes too alkaline. Soil pH can be adjusted by the periodic application of organic and inorganic **soil amendments**. Organic amendments include bone meal, leaf humus, green manure, and compost. Calcinated clay is an inorganic soil amendment.

Compost tea, a mixture of compost and water, can be sprayed topically on plant foliage. Plants treated with compost tea are more resistant to fungal diseases and damage from chewing insects. (See related website for compost tea brewing manual.)

Fertilizer contains three macronutrients: nitrogen, phosphorus, and potassium. These are often shown as percentages, listing nitrogen first

(10-6-4 or 10-20-10). Use of fish emulsion or other **organic fertilizers** in proper amounts on new or existing plant material assist in keeping the delicate balance of nature in check.

Many **beneficial insects**, along with worms, fungi, nematodes, and a host of other microorganisms, infiltrate the soil and keep pest problems in check without the use of harmful chemicals. Keep a handbook of garden insects on hand to identify them, as early detection and planning can eliminate potential problems.

Garden **tools** that are used in soil preparation need special care. If a garden tool has been used in one location and is carried to another location, it can carry diseases to that part of the garden. Help to stop the spread of diseases by taking the time to wash and take care of those tools.

Mulch is more than just a topping to enhance the appearance of flower and landscape beds. By using the right kind of mulch, it not only keeps the roots from baking in the sun, it holds the moisture close to the plant material while it feeds the roots as it decomposes. Utilizing renewable local materials, such as composted fall leaves, usually makes sense for a variety of reasons: the cost is often reasonable, and the materials are appropriate for the type of soil.

PLAN FOR ACTION:

SOIL TEXTURE Learn about your soil (do a SOIL TEST to determine soil texture)

Balance the pH by periodically adding organic and inorganic **SOIL AMENDMENTS**

Use **COMPOST** (make your own or purchase) to amend soil

Utilize **COMPOST TEA** to reduce fungal diseases and chewing insects

SOIL FERTILITY Use organic fertilizers to feed your plants

BENEFICIAL INSECTS Learn to identify the "good guys" from the "bad guys"

TOOL CARE Take care of the tools you use in your soil (to avoid the spread of disease)

MULCH Suppresses weeds, deters snails & slugs, improves soil, retains moisture, environmentally friendly

RESOURCES:

ORGANIC GARDENING BASICS: SOIL, RODALE, 2000.

HOME LANDSCAPING IN THE NORTHEAST & MIDWEST; KEN SMITH, 1985.

TALES FROM THE UNDERGROUND, A NATURAL HISTORY OF SUBTERRANEAN LIFE; DAVID W. WOLFE, 2001.

URBAN/SUBURBAN COMPOSTER: THE COMPLETE GUIDE TO BACKYARD, BALCONY, & APARTMENT COMPOSTING; MARK CULLEN & LORRAINE JOHNSON, 1992.

COLOR HANDBOOK OF GARDEN INSECTS, ANNA CARR, 1979.

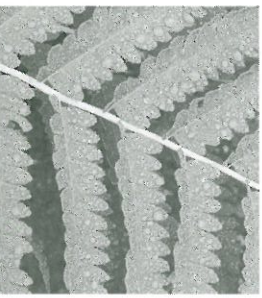
WWW.SOILFOODWEB.COM-DR. ELAINE INGHAM'S MONTHLY "E-ZINE" ON MONITORING SOIL FERTILITY & VIGOR

> **EVERY PLANT HAS ITS FITNESS AND MUST BE PLACED IN ITS PROPER SURROUNDINGS SO AS TO BRING OUT ITS FULL BEAUTY. WHEN WE FIRST UNDERSTAND THE CHARACTER OF THE INDIVIDUAL PLANT, WHEN WE ARE WILLING TO GIVE EACH PLANT A CHANCE FULLY TO DEVELOP ITS BEAUTY, THEN, AND ONLY THEN, SHALL WE ENJOY IDEAL LANDSCAPES MADE BY MAN.**
>
> JENS JENSEN [5]

plants

WITHOUT PLANTS, LIFE ON EARTH AS WE KNOW IT WOULD NOT EXIST. Besides creating the air that we breathe, plants play many other critical roles in nature. As more habitats are destroyed, compromising this natural cycle, it is crucial that we plant our gardens with sustainability in mind. Beautiful and functional gardens that have a beneficial effect on our environment can be satisfying to create and easy to maintain.

Careful **site analysis** should be done in the planning stages to maximize the beneficial uses of proposed plantings. Thoughtful use of plant material can ease microclimatic issues such as solar radiation, precipitation, and wind control, as well as excessive UV exposure to constructed surfaces. Plants also possess the ability to diminish man-made **environmental problems** by purifying the atmosphere, slowing runoff, reducing glare and reflection, controlling acoustics, and reducing undesirable odors. They also play a major role in controlling soil erosion from wind and water.



Once the design requirements are determined, the actual plants can be chosen. Realistically evaluate the **climate**, including precipitation, type of soil, and other factors that will affect the plants' ability to thrive in a sustainable way with little intervention. Utilizing a high percentage of indigenous plants can greatly diminish the need for long-term irrigation and

maintenance. Study **native plant communities** in your area to learn more about utilizing native plants in the landscape. Remember to include plants that create habitat for birds, butterflies, and other wildlife.

Biodiversity, the use of a variety of plant species instead of just a few, creates a more stable environment that is less vulnerable to damage by disease or insects. However, care should be taken not to introduce **invasive plant species** that can out-compete native plants. Invasive species quickly take over a garden, moving on to cause havoc in nearby farmlands or natural areas.

PLAN FOR ACTION:

Analyze your site for potential **ENVIRONMENTAL PROBLEMS** that could be eased by proper use of plant material

Evaluate local **CLIMATE**, paying attention to precipitation, type of soil, and other factors that could affect plants' ability to thrive

Study **NATIVE PLANT COMMUNITIES** to learn more about plants that naturally occur and thrive in your area

Practice **BIODIVERSITY** by utilizing a variety of plant species; learn what plant species are **INVASIVE** in your area

Include plants that honor the **NEEDS** of other species, including birds, butterflies, and wildlife

"I have often marveled at the friendliness of certain plants for each other, which, through thousands of years of selection, have lived in harmonious relations". — JENS JENSEN [5]

RESOURCES:

THE NATIVE PLANT PRIMER: TREES, SHRUBS, AND WILDFLOWERS FOR NATURAL GARDENS; CAROLE OTTESEN, 1995.

STALKING THE WILD AMARANTH: GARDENING IN THE AGE OF EXTINCTION; JANET MARINELLI, 1998.

THE NATURAL GARDEN; KEN DRUSE, 1989.

NOAH'S GARDEN: RESTORING THE ECOLOGY OF OUR OWN BACK YARDS; SARAH STEIN, 1993.

WWW.INVASIVESPECIES.GOV-VERY INFORMATIVE FEDERAL SITE ON INVASIVE SPECIES WITH LINKS TO MANY SITES

> **UNTIL HE EXTENDS THE CIRCLE OF HIS COMPASSION TO ALL LIVING THINGS, MAN WILL NOT HIMSELF FIND PEACE.**
>
> ALBERT SCHWEITZER[1]

wildlife

WILDLIFE IS defined as any animals, trees, and plants that collectively inhabit an area. **Habitat** is the natural environment or region where a race, species, or individual naturally lives or is found. An important part of creating an environmentally-responsible landscape is the recognition that we share our habitat with any number of species of wildlife; our decisions should encourage and respect the needs of these other inhabitants of our landscape.

All forms of life require **shelter** to protect nesting sites from predators, and to provide protection from variations in weather conditions. Trees ensure shelter for a broad diversity of species, including squirrels, raccoons, and many bird species. Shrubs offer shelter as well, and are valuable for their fast growth rate. Low vegetation provides critical cover for many small animal species, including toads, rabbits, garden snakes, and ground birds. Simply leaving some part of our landscape in its natural state helps preserve valuable natural habitat: allow stumps and standing dead trees to remain in out-of-the-way areas of the garden.

Ready-made wildlife shelter in the form of birdhouses, butterfly havens, ladybug villas, bat cages, and toad homes is available at most garden centers. Gourds can be easily made into birdhouses: dry until the seeds shake, cut circular openings for entry, and shake out the seeds. Simple kits for wildlife housing are available at most craft stores, and offer great opportunities for expressing creativity as well as providing quick wildlife habitat.

Water is another critical element for wildlife. Obvious water sources such as lakes, streams, and melting snow are important, but even in small yards there are opportunities for increasing available water. Shallow birdbaths or saucers provide drinking and bath water for bird populations and

butterflies. Create moving water by adding small pumps to still ponds or water features.

Year-round **food** supplies encourage healthy, abundant wildlife populations. A diverse community of native plants, selected for nectar-rich flowers, fruits, berries, nuts and seeds, will help provide for the food needs of a diverse wildlife community. Allowing vegetable and herb gardens to go to seed helps furnish food material for wildlife well into winter months. Bird feeders provide important supplemental nourishment as well.

Eliminate toxic chemicals such as pesticides, fungicides, and herbicides by utilizing safe herbal or natural pest controls. Maintaining a diverse, healthy bird population is one of the best natural pest controls; encouraging beneficial insect populations and toads is another. Insect culprits can be removed by hand, or sprayed with a strong stream of water. Substances such as diatomaceous earth discourage soft-bodied insects from feeding on specific plants.

Responsible stewardship requires tolerance of short-term pest infestations with minimal intervention, and a trust in Nature's capacity to promote diversity and balance among species.

PLAN FOR ACTION:

Provide adequate wildlife **SHELTER** by incorporating a diversity of plant material, and by including ready-made wildlife housing in the landscape

Install areas of standing and moving **WATER** throughout the garden

Select plants and utilize feeders that offer diverse **FOOD** opportunities to a variety of wildlife species

ELIMINATE TOXIC CHEMICALS such as pesticides, fungicides, and herbicides; investigate alternatives, and practice tolerance of short-term infestations

"If all the animals ceased to exist, human beings would die of a great loneliness of the spirit". — CHIEF SEATTLE [1]

RESOURCES:

BIRDSCAPING YOUR GARDEN; GEORGE ADAMS, 1994.

THE GARDENER'S BUG BOOK: EARTH-SAFE INSECT CONTROL; BARBARA PLEASANT, 1994.

WWW.WBU.COM-WILD BIRDS UNLIMITED SITE, RESOURCE FOR SPECIALTY BIRD FEEDERS, NESTING BOXES, BIRD BATHS, AND NATURE GIFTS

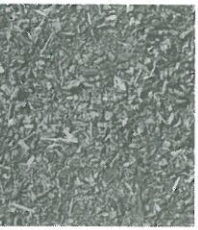
WWW.NWF.ORG-NATIONAL WILDLIFE FEDERATION'S SITE FOR EDUCATIONAL MATERIALS ON CONSERVING WILDLIFE AND THE ENVIRONMENT

WWW.NWF.ORG/BACKYARDWILDLIFEHABITAT-NWF'S SUBSITE WITH INFORMATION ON BECOMING A 'HABITAT STEWARD', GUIDELINES FOR CERTIFYING YOUR YARD AS A BACKYARD WILDLIFE HABITAT SITE

> **CONSERVATION MEANS HARMONY BETWEEN MEN AND LAND. WHEN LAND DOES WELL FOR ITS OWNER, AND THE OWNER DOES WELL BY HIS LAND; WHEN BOTH END UP BETTER BY REASON OF THEIR PARTNERSHIP, WE HAVE CONSERVATION. WHEN ONE OR THE OTHER GROWS POORER, WE DO NOT.**
>
> ALDO LEOPOLD[4]

paved surfaces

HEALTHY, FUNCTIONING NATURAL ECOSYSTEMS CONTAIN surfaces of varying permeability. Vegetated areas absorb rainwater, allowing it to cycle gradually into pebbled streams and creekbeds. This gentle infiltration system ensures groundwater recharge, and helps stabilize ambient temperatures.



Impervious paving surfaces, such as concrete or asphalt, have a dramatically different effect on the hydrology of an area. Runoff has no opportunity to soak back into the soil; instead, it is directed in torrents into storm drains that empty into creeks, causing tremendous undercutting and erosion of streambeds. Utilizing permeable surfaces in the landscape wherever possible keeps water on site, and minimizes stress on local waterways.

Gravel and **wood chips** have many advantages, including low cost and good permeability. Local aggregate gravels are readily available in most areas; wood chips are often available at little or no cost from arborists. Negatives include the tendency to wash out on sloped areas and heavy-traffic areas, although this can be avoided by using compactable aggregates with edge restraint as needed. In areas with cold winters, gravel may be inappropriate for driveways due to difficulties with snow removal. Wood chips can contain weed seeds, and may require an underlaying material.

Plantable pavings are relatively recent pavement options. Modular forms composed of concrete or plastic have open "honeycomb" surfaces for plantings. Most interlock, and are installed over a base of crushed gravel.

Openings are filled with topsoil and planted with turf or other low groundcovers.

Flagstone, brick or concrete **pavers** can be good options if installed over a compacted gravel base to allow drainage. In many areas, hardwood rounds sliced from undecayed dead trees can be used to create beautiful rustic paved areas. When solid concrete or asphalt surfaces are required, the surface can be sloped to direct runoff into planted drainage berms. Paving can be laid in two parallel strips with planted "**troughs**" down the center to absorb runoff, giving the impression of two pathways meandering through the garden.

Regardless of the materials selected for paved surfaces, consider various methods to ensure percolation of runoff from the surface back into the soil.

PLAN FOR ACTION:

Consider **GRAVEL** or **WOOD CHIPS** in areas that are relatively flat where long-term snow removal is not necessary

PLANTABLE PAVINGS offer the benefits of both traditional paved surfaces and planted areas for heavy traffic areas

Flagstone, brick, or concrete **PAVERS** over a compacted gravel base offer a traditional look with good permeability

Hardwood **ROUNDS** make good use of on-site materials for a rustic look.

Planted **DRAINAGE TROUGHS** around concrete or asphalt surfaces improve water permeability and keep water on site

RESOURCES:

PATHS AND WALKWAYS FOR YOUR GARDEN; DARIA PRICE BOWMAN, 1997.

WWW.TRENDSET.NET/TURFSTON.HTM-BEND INDUSTRY'S PLANTABLE PAVING PRODUCT, "TURFSTONE"

WWW.SSPCO.COM/GEOBLOCK.HTML-"GEOBLOCK" POROUS PAVING BY PRESTO PRODUCTS

WWW.CONCRETENETWORK.COM/CONCRETE/GRASSCRETE.HTML-"GRASSCRETE" POROUS PAVING SYSTEM BY THE BOMANITE CORPORATION

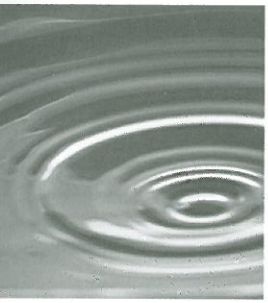
> **IT IS A FASCINATING AND PROVOCATIVE THOUGHT THAT A BODY OF WATER DESERVES TO BE CONSIDERED AS AN ORGANISM IN ITS OWN RIGHT.**
>
> LYALL WATSON [6]

water

WATER IS essential not only for our own survival, but for all forms of life.

There is an abundance of water on earth: bodies of water compose the largest ecosystem on our planet. In spite of this seeming abundance, our global community now faces a future with scarcity of one of the very elements that are crucial to life itself.

Current methods of development endanger crucial freshwater supplies. Parking lots, roofs, and streets replace previously vegetated areas. These impermeable surfaces offer no opportunity for filtering or percolation; rainwater is sent racing through storm drains at tremendous velocities. These seasonal torrents erode natural streams, compromise natural habitats, and send precious topsoil downstream. When the natural, gentler cycle of filtering water gradually through vegetated areas is disturbed, aquifers, or natural groundwater supplies, are not "recharged".



Every property owner has an opportunity to responsibly monitor his own small portion of the greater **watershed**. A watershed is any region that contributes to the supply of a natural body of water; each part of a watershed has a direct effect on the other parts. An understanding of the importance of our own crucial role in a watershed, and a willingness to make decisions to manage the water supply in our backyard, could make dramatic changes in the future of water for our world.

Utilizing **permeable surfaces** in the landscape wherever possible allows rain to percolate back into the soil. Installing materials such as gravel, dry-laid pavers or flagstone where hard surfaces are needed is one way to improve water percolation. Special paving stones that have perforations to allow plantings of grass or groundcover provide a "green" surface that

is also durable and long-lasting. Gravel-filled trenches along impermeable surfaces such as concrete can allow water to soak back into soil and plantings.

Rain barrels are an inexpensive way to collect water from downspouts for use on plant material. Utilize pre-fab units, or make your own from heavy-duty trash barrels lined at the top with screen fabric to control mosquito larvae. Taps can be installed about two feet from the bottom to allow easy filling of watering cans.

Sections of **perforated PVC pipe**, connected to downspouts around the property, can be directed into beds to provide no-cost irrigation of plantings. Downspout water can also be diverted into "**rain gardens**", plantings selected specifically for their wet-tolerant properties. Well-designed rain gardens can be beautiful focal points in the landscape.

PLAN FOR ACTION:

Get to know your **WATERSHED** and the bodies of water that compose it.

Utilize **PERMEABLE HARD MATERIALS** wherever possible, and install percolation areas alongside impermeable areas to capture runoff.

Install rain **BARRELS** to better collect water supplies from roof areas.

Add perforated **PVC EXTENSIONS** to downspouts and route them into bed areas to irrigate plants.

Consider planting a **"RAIN GARDEN"** with plants that enjoy moist conditions.

RESOURCES:

HANDBOOK OF WATER USE AND CONSERVATION; AMY VICKERS, 2001.

WWW.CONCRETENETWORK.COM/CONCRETE/GRASSCRETE.HTML-"GRASSCRETE" POROUS PAVING SYSTEM BY THE BOMANITE CORPORATION

WWW.GARDENERS.COM OR 1-888-833-1412, GARDENER'S SUPPLY COMPANY; CARRIES PREFABRICATED RAIN BARRELS

WWW.DNR.STATE.MD.US/SMARTGROWTH/GREENBUILDING/RAINBARREL.HTML-DIRECTIONS ON MAKING YOUR OWN RAIN BARREL

STATE.VIPNET.ORG/DOF/RFB.RIPARIAN/RAIN_GARDENS.HTM-EXCELLENT PHOTOS AND DIRECTIONS FOR MAKING A RAIN GARDEN

> GARDENERS SHOULD BE FREE TO EXPERIMENT, TO LET OUR IMAGINATIONS RUN WILD, TO LEARN HOW TO BE THE CREATORS OF BIODIVERSITY AS WELL AS THE PRESERVERS AND RESTORERS.
>
> JANET MARINELLI[7]

THANK YOU for allowing us to share the wonderful experience of transforming your backyard into a more peaceful, respectful, and healthy part of the planet!

— THE ENVIRONMENTAL COMMITTEE, APLD, 2002

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2 *A SAND COUNTY ALMANAC;* ALDO LEOPOLD, 1949.

3 *REDESIGNING THE AMERICAN LAWN - A SEARCH FOR ENVIRONMENTAL HARMONY;* F. HERBERT BORMANN, 1993.

4 *FOR THE HEALTH OF THE LAND;* ALDO LEOPOLD, 1999

5 *SIFTINGS;* JENS JENSEN, 1990.

6 *THE SANCTUARY GARDEN - CREATING A PLACE OF REFUGE IN YOUR GARDEN;* CHRISTOPHER FORREST MCDOWELL & TRICIA CLARK MCDOWELL, 1998

7 *STALKING THE WILD AMARANTH - GARDENING IN THE AGE OF EXTINCTION;* JANET MARINELLI, 1998.

(ALL RESOURCES LISTED IN THIS BOOK ARE PRESENTED FOR INFORMATIONAL PURPOSES ONLY, AND DO NOT CONSTITUTE OR IMPLY AN ENDORSEMENT BY THE ASSOCIATION OF PROFESSIONAL LANDSCAPE DESIGNERS)

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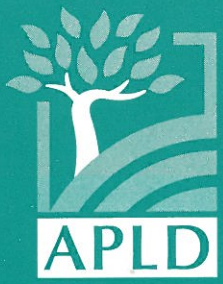

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