

Environmental Plan

(approved by Faculty Meeting, November 3, 2004 and by the Board of Trustees, June 5, 2005)

Introduction

At Earlham College, education is carried on with a concern for the world in which we live and for improving human society.* Therefore, the College is committed to educating its students about how environmental problems arise, the impacts these problems have on human societies and the natural world, and about potential solutions. The environmental issues we face now and in the future are complex and vexing, and addressing them requires both highly interdisciplinary approaches and a sense of urgency.

The College is committed to educating its students by example, as well as by theory and fact. Earlham's commitment to the Quaker principles of simplicity and respect for others, including the natural world, should be reflected in its actions, both by individuals in the community and by the institution as a whole. For these reasons, the College is committed to reducing its ecological footprint on the Earth.

Earlham's President, Doug Bennett, has charged the *ad hoc* Environmental Planning Committee to create an environmental plan for the College, a plan that would reduce its physical impact on the environment. This document is that environmental plan. In it we do not offer a prescription for what the College must do to reduce its environmental impact, but rather a description of the impact the College is having, what measures the College is already taking to become "greener", and what directions the College could take to significantly reduce its future impact. This plan is based on a much larger report that more completely reflects the research and thinking of the *ad hoc* committee. That report can be found at

<http://www.cs.earlham.edu/~micj/EnvrPlanCmte/MinuteEEPC.html>.

Earlham's Present-day Environmental Impact

Modern industrialized societies are consuming finite resources and polluting and otherwise degrading the environment at rates that cannot be sustained. Earlham, like all other educational institutions to varying degrees, contributes to this unsustainable life-style. The following are major ways in which Earlham impacts the environment.

Earlham consumes considerable amounts of fossil fuels in meeting its lighting, heating, cooling and transportation needs, and therefore is a significant consumer of a non-renewable resource, and a significant contributor to air pollution leading to acid rain and global climate change. Presently, the College does not use a single kilowatt of power generated from alternative energy sources. Moreover, much of the fossil fuel energy the College consumes is wasted. Particularly problematic are the subterranean tunnels that distribute steam throughout campus for heating. This centralized distribution system is old and inefficient, and the College is losing much of the heat that the boiler generates before it is delivered to buildings across campus, significantly increasing our consumption of natural gas to generate steam. In addition, local climate control systems in some buildings seem to have little effect on the actual indoor climate. Open windows

in the dead of winter are a frequent sight in some buildings on campus, as are employees hunched over space heaters. In summer, some employees work in sweltering conditions, while others wear sweaters in over-cooled rooms. Additional energy is squandered simply through wasteful behaviors such as long, hot showers, leaving lights on, and not shutting down computers.

With its 1,400 occupants, the College consumes a large amount of water, much of which ends up as sewage. Depleting water supplies is less of an issue in Indiana than what happens after water is used. Since the municipal sewage plant employs only secondary treatment of effluent at the present time, the College's sewage contributes to the pollution of local streams. In addition, use of biocides (both herbicides and insecticides) and inorganic fertilizers on front campus could lead to ground and surface water contamination. Another water issue is stormwater run-off from impervious surfaces such as building roofs, roadways and parking lots during heavy thunderstorms. Most of the campus roadways and parking lots are designed to drain surface water rapidly. This runoff flows directly into Clear Creek unimpeded and contributes to erosive flash-floods and water contamination from substances spilled on those surfaces (e.g. automotive fluids).

The College imports resources such as food, paper, furniture, equipment, construction and maintenance materials whose manufacture and transport consumes fossil fuel energy and other resources, and when used, produces solid waste that is disposed of in ways that can have a significant environmental impact. Paper use at the college is heavy and expanding rapidly, particularly with increased (and free) computer printing of downloaded material from the internet.

The College owns over 400 acres of farmland mostly south of Test Road that are managed as a commercial, industrial farm. Though the Earlham Farm is managed rather well by current conservation standards (e.g. no-till over 90% of the acreage, virtually no insecticide use), the system is still not sustainable over the long term. Soil erosion losses (though reduced in recent years), soil compaction, heavy fuel consumption, high inorganic fertilizer use, and heavy herbicide use are contributing factors.

Maintaining vast expanses of lawn and landscape plantings that require intensive management and care is not ecologically sustainable. Maintaining such an artificial landscape involves heavy fossil fuel use, and runoff from biocides and fertilizers is polluting. The use of herbicides and insecticides on lawn and landscape plantings is a complex issue, however. Uneven ground caused by weeds and mole burrows is a safety concern on athletic fields. Weed-riddled lawns on front campus is also a marketing issue; some alumni, friends, and prospective students and their families may be put-off by lawns that appear unkempt. Alternatively, health risks to members of the Earlham community from biocide application, due to allergies or direct toxicity, are, and should be, a significant concern. The full risks of many biocides are not yet fully known by the broader scientific community. For example, it has only recently been discovered that some biocides act physiologically as hormone mimics (e.g. Atrazine, a very widely used herbicide on farms), which can lead to hormone-imbalance diseases.

Another issue with landscaping is the planting of non-native species that are invasive in nearby natural forests. This is not a big problem with Earlham's front campus at present, though some

invasives (e.g. Norway maple and Japanese barberry) are currently planted there. Invasives such as Amur honeysuckle and garlic mustard that have seeded in from the regional landscape are a major problem in College-owned forests, often leading to the competitive exclusion of native species. These properties in turn serve as seed sources for invasions elsewhere.

Current "Green" Practices at the College

Earlham has made significant progress in reducing its ecological footprint in recent years, particularly in energy conservation measures. Recent replacement of the old boiler, replacement of leaky windows in several dorms and classroom buildings, widespread use of compact fluorescent lighting, replacement of T12 fluorescent lighting with more efficient T8, use of motion sensor-based lighting, and the recent decision to replace fleet vehicles with hybrid vehicles as various models become available, are examples. A number of small, green technologies that will reduce energy and water consumption are being incorporated in the East dorm currently under construction. In addition, a donor has recently provided funding for a small group of students and faculty to electronically monitor wind velocities, and to build a prototype wind generator and solar panel hybrid system planned for installation on the Dennis Hall roof.

Earlham saves water by not irrigating its lawns and landscape beds. Exceptions are the athletic fields and new tree and landscape plantings. In addition, some of the College's paved surfaces, and all new buildings and paved surfaces have designed detention facilities for stormwater runoff.

Earlham's recycling program has expanded and become more available across campus in recent years, though its implementation is often spotty. A student-initiated program of composting of food waste from the dining facilities to be used in the gardens at Miller Farm is an exciting recent development. The College employs several work-study students to do recycling and food composting.

Relative to some other institutions, Earlham takes a minimalist approach to the use of biocides and fertilizers on lawns other than practice and athletic fields. The College contracts with a commercial lawn care company who applies broad-leaf and pre-emergent crabgrass herbicides along with fertilizer once a year. This application occurs during spring break when the campus population is much reduced, and when these herbicides (particularly the pre-emergent crabgrass herbicide) are most effective. The goal is weed management, not a weed-free lawn.

Active elimination of exotic, invasive shrubs and herbs is ongoing at several forested properties owned by Earlham, including some places on backcampus. The College owns several biological reserves (Wildman Woods, Sedgwick's Rock Preserve, Reller Woods, Cring Woods, Whitewater River floodplain) that are currently managed as old-growth forests with no plans for selective logging or timber stand improvement in the future. Maintaining undisturbed, old-growth forests in a disturbed, fragmented landscape helps sustain regional biodiversity.

Future Efforts to "Green" Earlham

Earlham College still has a long way to go in reducing its ecological footprint on the world.

Listed below are a number of changes in current practice that the College could adopt that would significantly reduce its environmental impact. (Fuller explanations and many more suggestions are given in the committee report). Some of these suggestions, however, may become obsolete as new discoveries are made and as new technologies are developed. This section ends with one action the ad hoc committee feels the College should take.

- New and remodeled buildings:
 - o Hire architects and engineers with an established record of forward-thinking, environmentally-sound design.
 - o Seek LEED (Leadership in Energy and Environmental Design) or similar certification through use of sustainable and energy-efficient materials and systems.
 - o Design and site new buildings to maximize winter solar gain and minimize solar gain in the summer.
 - o Incorporate wherever possible effective utility systems that use alternative energy sources to fossil fuel.
 - o Evaluate the full costs of materials and systems for new buildings and renovations over the lifetime of the structure rather than on initial capital costs alone.
 - o Increase the proportion of construction waste that is recycled, and increase use of locally produced or recycled products.
- Energy conservation -- present utilities:
 - o Hire a professional firm for an energy or sustainability audit of the campus. Do these audits on a five-year rotation.
 - o Completely renovate the steam tunnel system, or decentralize the system so that each building has independent heating.
 - o Improve climate control systems within buildings.
 - o Devise an effective and on-going education program for the Earlham community that would reduce energy-wasteful practices.
 - o Replace the single-walled fuel oil tanks in the maintenance area to avoid leakage.
 - o Charge for use of electric and gas clothes driers to encourage appropriate use.
- Energy conservation -- transportation:
 - o Replace existing fleet with hybrid vehicles as various models become available.
 - o Adopt new environmentally-friendly transportation technologies as they become available and cost-effective.
 - o Reduce College-related travel
- Water inflow and outflow on campus:
 - o Employ a variety of devices that would reduce domestic water use.
 - o Continue to not water lawns and ornamental beds.
 - o Continue to plant drought-tolerant native plants.
 - o Investigate the feasibility of separating sewage water that flows down drains (i.e. grey-water) from toilet-water, and the feasibility and safety of using grey-water and toilet-water for various purposes.
 - o Investigate the feasibility of permeable sidewalks, roadways, and parking lot surfaces.
 - o Detain stormwater runoff with appropriate topography and plantings. Investigate the feasibility and safety of diverting stormwater to cisterns that could be used to water athletic fields.
- Solid waste:

- o Increase the purchase of materials that have been, and can be, reused or recycled. Whenever feasible, buy environmentally-friendly materials that biodegrade.
- o Run a more efficient and consistent recycling program. Expand the program to include more kinds of materials whenever a market emerges. Require the food service to recycle.
- o Continue and possibly expand the food composting program.
- o Use only 100% post-consumer recycled paper in printers and copiers. Reduce paper consumption drastically. Charge for computer printing. Make two-sided copying the default setting on all printers and copiers. Reduce the use of handouts whenever possible. Drop the use of highly colored paper.
- Land use and stewardship:
 - o Thoroughly investigate the health risks of all biocides used on campus. Reduce or eliminate herbicide use on lawns and non-athletic fields. Cut grass every other week or less frequently and at a higher height to discourage weeds. Do not knowingly plant species that are potentially invasive. Remove plantings of invasive species that exist on campus now.
 - o Continue present management practices of College-owned old-growth forests, and continue efforts to enhance native species diversity and eliminate invasives.
 - o Use Miller Farm as a resource for greater environmental education on campus and as a model for sustainable living. Student interest is high, but there is a lack of structure, central organization and institutional support.
 - o Convert some of front campus to low-maintenance deciduous forest, and protect the small parcels that exist on frontcampus presently.
 - o A number of options exist for changes in the management and use of the Earlham Farm:
 - . Expand conservation tillage and crop rotation practices. Plant fall cover crops. Reduce use of commercial fertilizers and biocides.
 - . Employ strictly organic farming methods.
 - . Allow the farm to go fallow and let plant succession take its course.
 - . Convert some or all of the farm to a tree plantation of native hardwoods, a much more sustainable crop. Harvested trees could be sold or the lumber used in future Earlham buildings.
 - . Convert the field immediately south of Test Road to a wind farm. The electricity generated could feed into the Richmond Power and Light grid, crediting the College, and increasing the availability of "green energy" to local consumers.

Other actions the College could take:

- o Make an institutional commitment to sustainability by becoming a signatory of the Talloires Declaration.
- o Create a Sustainability Coordinator position at the College.
 - o Revise *Principles and Practices* to reflect our deepening awareness of the importance of environmental sustainability.

An action the College should take:

Create an Environmental Advisory Committee that would champion and promote stewardship of this environmental plan and its accompanying report, among other duties. A proposal for

creating this committee will be submitted by the ad hoc Environmental Planning Committee to the Nominating Committee for faculty discussion and approval.

Environmental Responsibility, Cost-effectiveness, and Competing Interests and Values

Reducing Earlham's footprint on the world will not be an easy task. Decisions that would significantly lessen the College's environmental impact must necessarily be balanced with their associated costs and practicality, and, in some cases, with competing interests, aspirations and values at the College.

Cost-effectiveness varies greatly among the many environmentally responsible actions that the College could take. Some are very cost-effective in the short term. The initial higher costs of compact fluorescent lighting, for example, are more than compensated for in lower electricity costs (and hence reduced fossil fuels consumed) in a short amount of time. Others, such as erecting green buildings or refurbishing steam tunnels may have high initial capital costs and may pay off only in the longer term. Some measures bring immediate savings or cost very little, but other considerations may preclude their implementation. Examples are reduced herbicide use and eliminating invasive species and attendant safety and/or aesthetic considerations. Finally, other actions that would significantly reduce Earlham's impact are simply not cost effective, such as taking the Earlham Farm out of production.

At issue is whether or not Earlham takes environmentally responsible actions only when they bring economic savings to the College. If it does, over what time frame is that savings to be calculated? Is the College willing to outlay significantly higher initial costs for technologies that bring only a long-term savings? It is clear that the true, long-term costs of environmental degradation are not fully reflected in the actual costs for resource extraction, use and disposal that are expended in today's economies. Is the College willing and able to invest in measures that benefit the environment, but are not cost effective as measured by present-day conventional means?

Obviously, the financial resources of Earlham are finite, and there are a variety of needs and aspirations at the College that compete for those limited resources. Outside funds, such as grants from various agencies and gifts from environmentally-active donors, could significantly green the College without affecting endowment income or the operating budget. Earlham should pursue those opportunities vigorously. But in many cases, priorities among competing interests will need to be made, and the community may decide to delay, scale-down or simply reject proposals aimed at reducing Earlham's environmental impact. The Earlham community needs to be mindful, however, that our society's actions to reduce its consumption of resources and abate its pollution now means that our descendents, indeed the world's descendents, will likely live lives that are more fulfilling and healthy. This plan asks that environmentally responsible actions be among the values considered by the College in its decision-making processes.

* From the *Mission Statement* of Earlham College