

Greywater Treatment at Hard Bargain Farm

Accokeek, Maryland



Newly planted native grasses within the greywater land application field

The Alice Ferguson Foundation's mission is to connect people to the natural world, sustainable agricultural practices, and the cultural heritage of the Potomac River watershed. The key to this mission is the Foundation's 330-acre Hard Bargain Farm, which serves as an environmental education center. Programs at the farm provide elementary and middle school students, as well as teachers and environmental educators, with hands-on activities, models, and field studies amid a diverse range of habitats.

When the Foundation needed a new education building, they wanted to build one that was aligned with their mission. They opted to pursue Living Building Challenge™ (LBC) certification, the most

rigorous standard known for sustainability. Among other requirements, Living Buildings must be self-sufficient for energy and water for at least 12 continuous months. For help in designing a greywater (lightly used water from sinks and showers) system that would achieve these stringent requirements, the Foundation turned to Biohabitats.

Carefully harvesting, recycling, and balancing water and nutrients is a key component for Living Buildings, and is often one of the more challenging aspects of LBC certification. Regional regulations are not always in alignment with LBC goals, and therefore collaboration with local regulatory authorities to introduce decentralized water/waste systems and innovation is crucial. At

A low-energy and simple soil-based greywater treatment/dispersal system designed to Living Building standards sustainably manages water while furthering understanding and stewardship of Potomac River watershed ecology.

Hard Bargain Farm, although composting toilets are used throughout for handling sanitary wastes with minimal water requirements, the greywater still required treatment. A conventional septic system, originally proposed for managing greywater, was prohibitively expensive due to site soil constraints and a large pumping system needed to deliver water to a suitable drainfield area thousands of feet away from the buildings.

Biohabitats designed and permitted a greywater system that provides a low energy solution to safely recharge treated greywater back to the aquifer. The core of the system is a land application subsurface drip irrigation system that slowly treats greywater through biologically active soils and plant roots in an existing meadow. Greywater is collected, settled, equalized, and filtered prior to

the subsurface drip irrigation system which has been engineered to operate year-round, even through the winter and freezing temperatures. Native grasses are used within the land application field and ultimately the system will disappear back into the natural landscape of the farm.

The system treats up to 1,840 gallons of grey water per day and disperses it in a way that recharges the groundwater and improves the quality of water entering the Potomac River. It is a new type of system in this County, and an educational model to help students and educators learn about integrated water strategies and better understand the connections between human actions and local ecology.

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