INTERNATIONAL LIVING FUTURE INSTITUTE™

PHOTO COURTESY ALICE FERGUSON FOUNDATION

WATER PETAL CASE STUDY

MORRIS & GWENDOLYN CAFRITZ FOUNDATION ENVIRONMENTAL CENTER

LOCATION
ACCOKEEK, MD

TYPE
ENVIRONMENTAL CENTER

SIZE
3,072 SQUARE FEET

DAILY OCCUPANTS
20 - 40 FULL-TIME,
VARIES SEASONALLY

WATER CAPACITY FROM ROOF
77,700 GALLONS
(enough to meet the building's potable and non-potable needs)

WATER USE INTENSITY (WUI)
18 GALLONS/SF/YEAR

CLIMATE
HUMID SUBTROPICAL
42 inches of rain/year
74 days of precipitation/year

Alice Ferguson Foundation (AFF) is a nonprofit organization, chartered in 1954, that is based at Hard Bargain Farm Environmental Center in Accokeek, Maryland. The Foundation's mission is to provide experiences that encourage connections between people, the natural environment, farming and the cultural heritage of the Potomac River Watershed that lead to personal environmental responsibility. The Morris and Gwendolyn Cafritz Foundation Environmental Center (the Center) is an environmental educational day-use building located on the Farm and the state's first Living-certified Living Building. This new building is the first phase of a larger project known as the Potomac Watershed Study Center.

SYSTEMS

RAINWATER HARVESTING

The Center is currently integrated into the larger campus' existing well water system. It was constructed such that in the future, after further research is conducted, collected rainwater can be used for all its water supply.

GREYWATER REUSE

Greywater is collected, settled, equalized, and filtered prior to use in a 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.

BLACKWATER TREATMENT

The Center's composting toilets transform human body products into odor-free and safe-to-handle compost and liquid fertilizer, which are used in the landscape. Since the greywater system is also nutrient recycling (root zone irrigation), the total effect of the composting toilet/greywater system is non-polluting and beneficial to the site.

BATHROOMS WITHIN THE CENTER

DIAGRAM COURTESY RE:VISION ARCHITECTS

WATER PETAL CASE STUDY
POLICY SOLUTIONS

RAINWATER HARVESTING

AFF's water system is classified as a Transient Non-community Public Water System because it regularly supplies water to at least 25 of the same people at least six months per year. As such, it is subject to regulation at the state and county level. Early in project development, AFF consultants met with representatives of Prince George's County Health Department and Department of Permits, Inspections and Enforcement and were told that they would not permit the use of captured rainwater.

AFF and its consultants subsequently met with Maryland Department of Environment, including the Secretary of the Department, and were informed that it was not possible to use captured rainwater for potable water purposes in MD and that the state followed the regulatory requirements of US EPA, which had no framework providing for the use of captured rainwater for potable purposes in a public water system.

AFF subsequently met with the Director of the Water Protection Division for US EPA Region III and other EPA staff to discuss whether there was an opportunity to work with EPA to establish the viability of captured rainwater for potable purposes in Public Water Systems. The inquiry was well received and the Director subsequently invited AFF's team to present the idea at a regional conference of water authorities. However, Region III EPA ultimately deferred to the judgment of the national office.

AFF and its consultants began reaching out to other projects aspiring to Net Positive Water to enlist their collaboration, most notably the Bullitt Foundation in Seattle and the Stroud Water Research Center in Southeastern Pennsylvania. A meeting with EPA's national Office of Water was organized by AFF and joined by all three institutions with the objective of engaging EPA in a pilot project using the three facilities and others that were enrolled in LBC to develop a new classification for captured rainwater as a potable water source and an appropriate testing protocol and regulatory regime for the same.

Multiple senior members of the Office of Water, including the Deputy Assistant Administrator and members of EPA's Research and Development staff attended. While the EPA expressed interest, no EPA funding was available to support the research. AFF and Stroud made subsequent attempts to find grant funding to support the necessary research without success, and the problem remains unresolved.

BLACKWATER AND GREYWATER

Prior to this project, AFF facilities used conventional on-site septic systems for sanitary treatment. In their initial meeting with representatives of Prince George's County, the project team was told that they would not permit the use of composting toilets or alternative treatment systems and stipulated that AFF would have to install a large new conventional septic system. With respect to use of composting toilets and alternative treatment, AFF again approached Maryland Department of Environment (MDE), where it garnered support for both. However, MDE would not directly interfere with decisions made by the County health department.

AFF and its consultants embarked on a lengthy education campaign with the County, which included submission of technical documentation from other states that was corroborated by MDE. After 3 years of effort, Prince George's County permitted the installation of an "experimental" greywater drip irrigation system and acquiesced to installation of composting toilets which were authorized through an MDE Wastewater Discharge Permit.

LESSONS LEARNED

The project team believes that tackling the Water Petal's regulatory issues on a project by project basis is inefficient and overly time and resource intensive. They advocate for a broader, national approach, particularly with respect to developing an EPA classification and regulatory framework for captured rainwater as a potable water source.