

The
NATIONAL INSTITUTES OF HEALTH'S
GREEN FEATURES

The National Institutes of Health is a beacon in the world of biomedical research. It is also an innovator in the world of environmental stewardship. Over the years, the NIH has incorporated technology, processes, and programs that increase the sustainability and environmental stewardship of the NIH's Bethesda campus. These are known as "green features" and range from LEED-certified buildings, solar panels, green roofs, natural areas, stormwater management efficiencies, and animal sanctuaries.

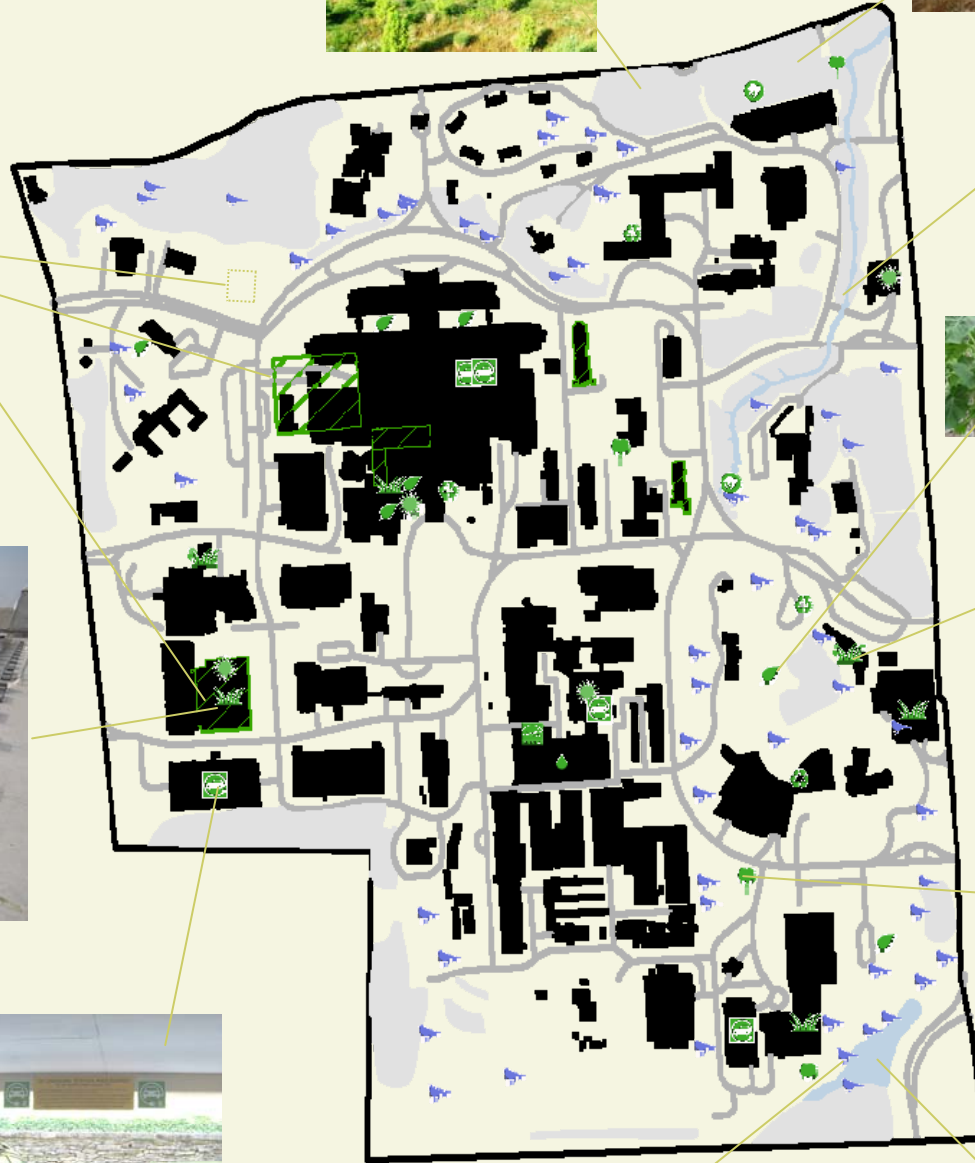
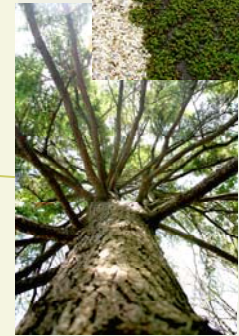


The National Institutes of Health's mission includes studying the biological effects of contaminants. As a leader in research on environmental health the NIH also strives to reduce the impacts of our research and operations. By proactively addressing energy use, toxicity of the chemicals used, impacts of procured items, and water runoff the NIH fosters a healthier environment.

“The NIH is on the cutting edge of biomedical research. [The NIH] is also on the cutting edge of sustainability and climate change resilience. There are few federal (and non-federal) agencies that can boast green features as advanced and innovative as ours.”

Tony Clifford, ORF Chief Engineer

SELECTED GREEN FEATURES





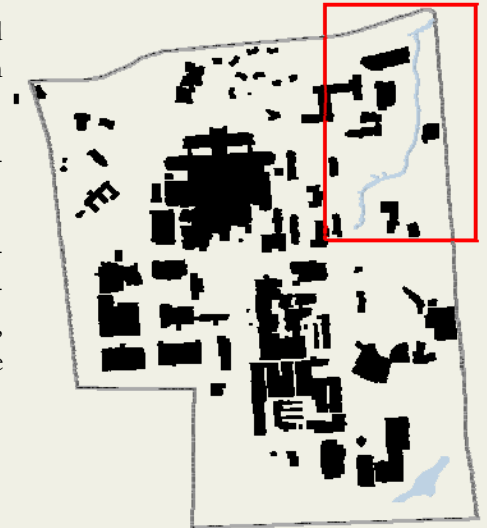
Rocks and boulders in the stream help to aerate the water.

THE NIH STREAM

In 2003, the NIH began work on the NIH Stream Restoration Project which was designed to restore the main stormwater outlet for the Bethesda campus. This project upgraded the water quality of the stream, and improved the aesthetics of the campus. The project was completed in 2004.

The NIH Stream is the main stormwater outfall for the campus. It collects drainage from over 210 acres.

The stream remains one of the most important green features on the Bethesda campus. The flora that covers the banks of the stream, in conjunction with other stormwater management and best management practices, helps to filter environmentally detrimental substances before entering the greater Chesapeake Bay Watershed.



(Above/ Right) Before and after photos of the stream restoration project. The above photo is from 2004 and the photo to the right is from 2006.



(Left) Water flows freely through the stream, bounded by rocks.





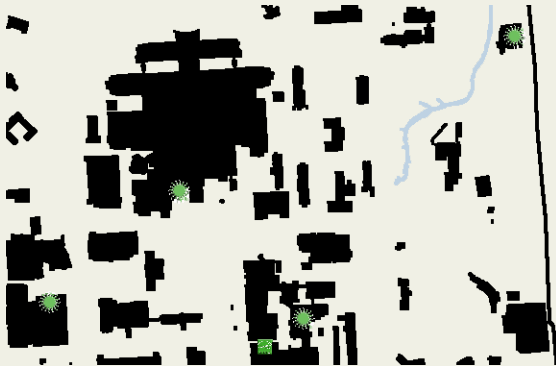
Solar panels help to operate a water pump that serves to beautify the Building 10 library terrace.

SOLAR PANELS

Powered by the sun, solar panels help to offset the reliance on electricity produced by the combustion of fossil fuels. The panels on the NIH campus serve a variety of purposes; some panels operate a water pump at the NIH Library Terrace and others help to produce electricity, such as those at the newly completed PNRC II facility.



Building 10, CVIF, PNRC II, Switching Station



The underground parking garage that services the CRC is home to several electric vehicle charging stations.

PUBLIC & EMPLOYEE ELECTRIC VEHICLE CHARGING STATIONS



These areas provide space for employee electric vehicles, public electric vehicles, and the government's fleet of electric vehicles to charge.



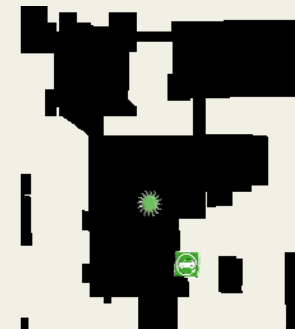
Buildings 10, 12, MLP6, MLP7



ELECTRIC VEHICLE CHARGING STATION SOLAR PANEL ARRAY



This twenty kilowatt system provides electric power for the government's fleet of electric vehicles via a charging station located between Building 12 and Building 13.



Building 12

BIRD BOXES



A collection of the different types of bird boxes on campus.

In 2001, dozens of bird boxes were added to the NIH. This initiative is intended to encourage cavity nesting birds, particularly Eastern blue birds, to nest and raise their young on the campus. Special bird boxes were installed to attract purple martins, as well. Cavity, or supplemental bird boxes, attract and retain a number of insect eating bird species (such as the eastern blue birds and purple martins) in an effort to provide a major source of insect reduction. Natural insect reduction directly relates to pesticide application reduction. The presence of many birds on campus helps to reduce the risk of insect-borne diseases. Eastern blue birds and purple martins are a joy to be seen and heard by patients, visitors, and employees alike.



NATURAL & REFORESTATION AREAS

NIH's natural areas are spaces containing trees or otherwise covered with assorted vegetation that is not maintained for the purpose of improving ecological diversity. These areas consist of acreage set aside for natural regeneration of meadows and forests. Some areas are marked with signs to help the employees, visitors, and the public identify the spaces.

By design, the natural and reforested areas are not maintained. This lack of lawn mowing and maintenance reduces emissions from the engines powering the mowers and other equipment. This also saves the NIH thousands of dollars per year in maintenance costs. By allowing natural reforestation, stormwater run-off is able to filter out excess nutrients and sediments prior to entering our creeks. Additionally, these areas enhance wildlife habitat and encourage diversity of bird, mammal, and insects which leads to a more balanced ecology and environment.



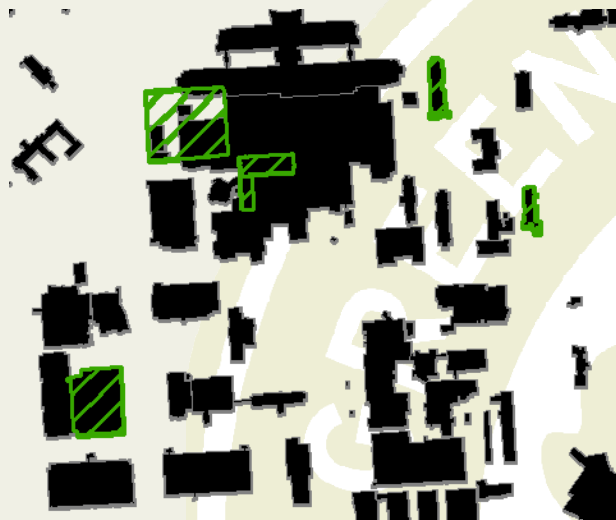
A natural area north of Building 31. This area bides



A natural area behind Building 45; the area is marked with a sign to increase awareness of its use and presence.

NIH'S ENVIRONMENTALLY CERTIFIED BUILDINGS

Leadership in Energy and Environmental Design (LEED) is a system used to define and measure green buildings. The system is comprised of a set of performance standards that can certify buildings of all sizes, both public and private. The intent is to promote healthy, durable, affordable, and environmentally-friendly buildings.



PORTER NEUROSCIENCE RESEARCH CENTER, PHASE II

The Porter Neuroscience Research Center Phase II is targeted to achieve LEED Gold and Green Globe 3Globe certifications.

The completed PNRClI facility.



The PET cGMP area (targeted Silver) will be located on the existing B3 level consisting of a hot cell lab with 10 lead-shielded hot-cells; supply and kit preparation room meeting classified clean room criteria; a receiving/quarantine/storage area; a chemistry support area.

BUILDING 10

Building 10 is home to several LEED-certified areas. The Building 10 F-Wing is targeted for a LEED-certified Silver rating and in 2014, the renovation of the Building 10 G Wing (floors 2 through 10), will be targeted for a LEED-certified Silver rating. Additionally, there will be a PET cGMP lab (described above) that is targeted for a LEED-certified Silver rating.



Building 3 (Certified Silver)

BUILDINGS 3 & 4

Following extensive renovations to the building, NIH's Building 3 is targeted for a LEED-certified Silver rating. Additionally, the first and second floors of Building 4, pending renovations to parts of it, are also expected to achieve a LEED-certified Silver rating.

Building 4 (1st and 2nd floors will be certified Silver)



MONTGOMERY COUNTY CHAMPION TREES

A Champion Tree is a specimen that meets "champion size" requirements. This means the tree is the largest known specimen of that species in a particular geographic area.

Japanese Zelkova (Building 1)

Weeping Willow (MLP 10)

Carolina Hemlock (East of Building 14 complex)

Black Willow (Building 38A)



Japanese Zelkova champion tree located next to Building 1



Black Willow champion tree near Building 38A



Carolina Hemlock champion tree near Building 14 and Building 45





(Above) The Stoney Creek Pond, facing East.

STONEY CREEK POND

Located in the Southeast corner of campus, the Stoney Creek Pond is a bastion of environmental health. It acts as a retention pond for a 204 acre drainage area. From the terrace of Building 38, one can take in the wildlife that call the pond home.

Stoney Creek Pond has a permanent water surface area of 1.3 acres and a maximum depth of 6 feet. The pond also features landscaping that includes native trees, shrubs, herbaceous plants, grasses, and wetland vegetation. These features support a diverse and balanced ecosystem.

The features, described above, of the pond help to restore water quality and pond habitat in lower Bethesda (Rock Creek) area by reducing stormwater flow rates. This addresses bank erosion by improving runoff water quality from downtown Bethesda and Chevy Chase. The inclusion of these business districts' runoff helps to facilitate a “good neighbor policy” between the NIH and nearby metropolitan areas.



(Left) Purple Martins rest on the railing of a bird house located on the NIH campus.



(Right) Many types of flora and fauna can be found in the ecology of the Stoney Creek Pond.



The Building 10 Courtyard provides patients, visitors, and employees a place to enjoy a piece of nature.

BUILDING 10 COURTYARD

The Building 10 courtyard garden allows patients and NIH employees to connect with nature, learn about plant materials, and enjoy the outdoors in the confines of Building 10. The courtyard garden features various shrubs, perennials, vines, and groundcover.



(Right) This community garden is located behind Building 16. This garden is maintained by employees of the NIH.



The Library Terrace features pond fountains, benches, tables, and shade canopies.

BUILDING 10 LIBRARY TERRACE

The Building 10 library terrace provides a verdant atmosphere by featuring plants, seating areas, green roofing, and a small water feature.



BUILDING 38 HERB GARDEN

The Building 38 herb garden (picture above) helps to showcase the natural areas of the NIH campus by featuring about 100 types of medicinal herbs.

This green roof sits above the NIH Visitor Center.



GREEN ROOFING

A green roof is a vertical extension of the existing roofing material and is comprised of a light weight growing medium and vegetation that can assimilate large amounts of rain-water.



Visitor's Center
 Building 10 Library
 Building 38a
 PNR C II
 Switching Station
 MLP 11



The Envirotower sits amongst the other media filters in Building 11.

ENVIROTOWER

The Envirotower is a mechanical device to clean spent water from cooling towers in the Building 11 power plant. The treated water can be recycled and used again in the same cooling tower.



Building 11



The COGEN is a complex system of machinery located inside Building 11.

COGENERATION SYSTEM

The NIH Power Plant Cogeneration System (COGEN), fueled by natural gas, produces both steam and electricity simultaneously. This creates fewer emissions to the atmosphere than a conventional power plant. This is an environmentally-driven project that has positive economic effects for the NIH; because of the efficiency in the generation of steam and electricity, the NIH saves millions of dollars per year.



Building 11

NIH ENVIRONMENTAL MANAGEMENT SYSTEM (NEMS)

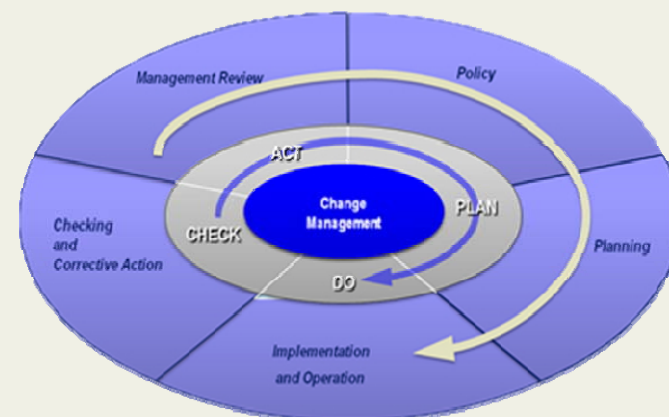
The NEMS program is a tool used by the NIH to manage environmental impacts and to drive continual environmental improvement. The NEMS program was implemented in accordance with Executive Order (EO) 13423, “*Strengthening Federal Environmental, Energy, and Transportation Management*,” and incorporates the requirements and goals of Executive Order 13514: “*Federal Leadership in Environmental, Energy, and Economic Performance*.”

Every person at the NIH is a steward of the environment; NEMS encourages responsible actions by employees, visitors, and the public in order to protect the environment. To accomplish this, NEMS touts a four-phase framework: planning, doing, checking, and acting (or improving). This framework is often referred to as a Plan-Do-Check-Act cycle.

ENVIRONMENTAL POLICY

During the development of the NEMS in 2005, the NIH implemented the NIH Environmental Policy. This policy demonstrates NIH's commitment to:

- Compliance with all federal, state, and local environmental laws, regulations, and Executive Orders
- Preventing pollution by minimizing the generation of wastes where possible
- Continually improving the NEMS to better NIH's environmental performance



NEMS IN ACTION

All NIH Institutes and Centers (ICs) have IC Green Teams that promote sustainability, identify environmental issues for their IC to focus on, set goals to address those issues, make changes in how activities are conducted, track the resulting improvements in environmental performance, and celebrate successes. Representatives of the twenty-eight IC Green Teams meet monthly in the Green Team Leads Council to work on trans-NIH goals. The NIH Sustainable Lab Practices Working Group meets monthly to promote trans-NIH green practices in intramural research. NEMS processes are overseen by the Sustainability Management Team (SMT). The NIH SMT provides oversight and direction for agency sustainability and for the NEMS.

NIH is proactive and progressive with its environmental compliance program. This program includes permit management, monitoring, regulatory reporting, and environmental audits. Environmental compliance and management is an important cornerstone of the NEMS.

The NEMS, Green Features, and other innovative strategies will be potent tools as NIH strengthens its environmental stewardship and incorporates climate change resilience into its operations.



A portion of one of NIH's bike paths.

GREEN COMMUTING

Alternate forms of commuting at NIH include the Transhare Program, Ridefinders Network, bicycle amenities, vanpool, and campus shuttles. Through these efforts, the NIH has been able to reduce single occupancy vehicles by more than 30 percent over a period of 10 years. Approximately 55 percent of commuters at NIH use a mode of transportation other than a single occupancy vehicle.

NIH has an active cadre of bike commuters; these commuters are eligible to receive a monthly subsidy of \$20 to assist them with their transportation costs.

One of NIH's many bike racks; bike racks serve to provide convenient storage for bike commuters.



Known colloquially as "Big Bellies," these units rely on solar energy to power trash compaction.

"BIG BELLY" SOLAR TRASH COMPACTORS



Big Belly Solar Compactors have increased capacity - five times the amount of a typical waste container - which reduces the need for collection trips by about 80 percent. This conserves fuel, reduces emissions, and frees up staff time for other high-priority activities.



**Building 31, Building 10, Building 45 ,
Visitor's Center**



Once completed, these underground detention pipes will aid in slowing down runoff water from the NIH's Clinical Research Center before it reaches the NIH stream.

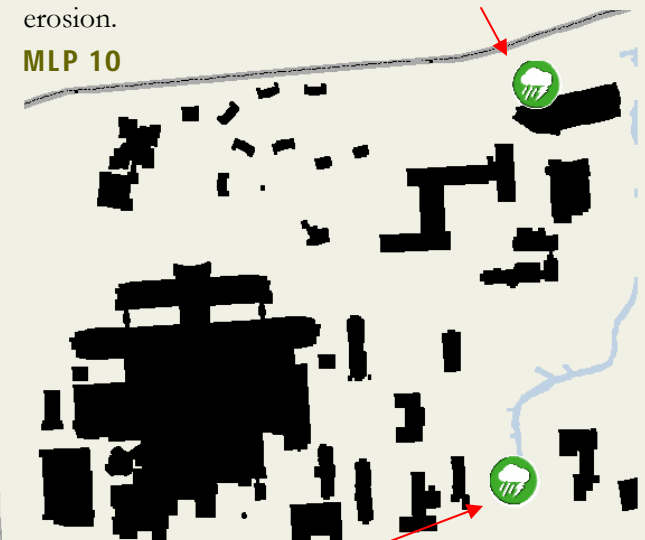
STORMWATER MANAGEMENT

Underground Detention Pipes (MLP 10)



The underground detention pipes provide run-off volume control by catching run-off water and releasing it gradually to reduce downstream erosion.

MLP 10



Streamside Settling Basin

The settling basin allows debris in the water to settle before run-off is discharged to the stream. This helps to ensure water quality entering the NIH stream.

Mouth of the NIH Stream

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More Information:

<http://nems.nih.gov/>
<http://www.nlm.nih.gov/about/herbgarden/>
http://orf.od.nih.gov/AboutORF/Organization/Pages/dep_info.aspx
<http://www.montgomerycountymd.gov/DEP/Tree/champion-trees.html>

