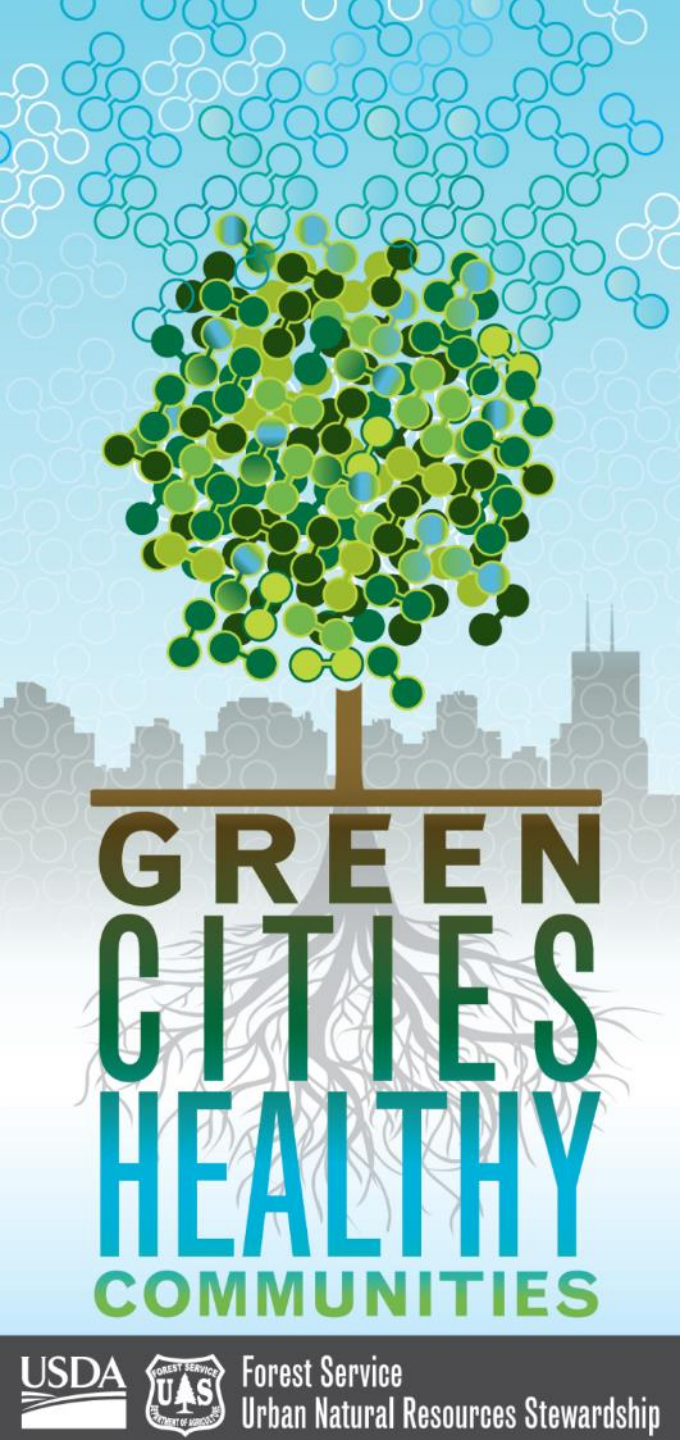


USDA Forest Service

URBAN FOREST CONNECTIONS

webinar series

Second Wednesdays | 1:00 – 2:15 pm ET

www.fs.fed.us/research/urban-webinars

USDA is an equal opportunity provider and employer.

NUCFAC Highlights: Cultivating and Activating a Natural Infrastructure Workforce

Lisa Ortega

Member

National Urban and Community Forestry Advisory Council

Sara Lamback

Senior Program Manager

Jobs for the Future

Dave Gamstetter

Natural Resource Manager

Cincinnati Parks

Cincinnati: Green Infrastructure & Training

David Gamstetter Cincinnati Park Board

Dave.Gamstetter@Cincinnati-Oh.Gov

Cincinnati Parks...*the best at getting better*

Cincinnati Park Board

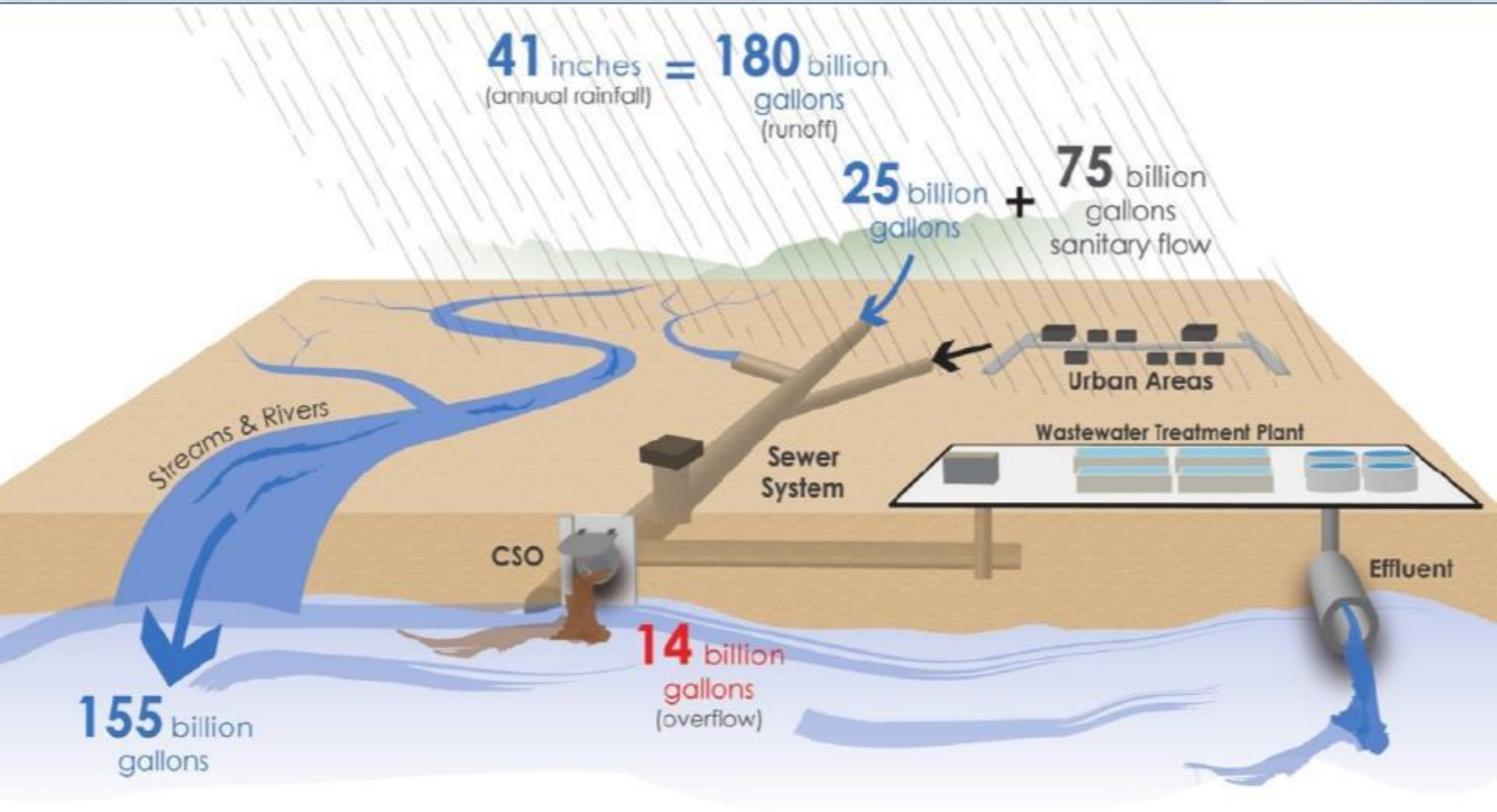
- Six regional parks
- 70 neighborhood parks
- 34 nature preserves
- Rated ‘excellent’ by the Trust for Public Land.
- Rated in top three urban park systems by USA Today.

- 5000 acres of forests
- 85,000 street trees
- 60 miles hiking trails
- 10% of the land in Cincinnati

Aging Sewer Infrastructure

- Cincinnati/Hamilton County is one of 772 cities in the US with a combined sewer system.
- Hamilton County ranks 5th in the nation for urban combined sewer overflow (CSO) volume.
- Up to 105 overflows/year in some CSOs resulting in 11 billion gallons annually overflowing into waterways.
- Over 300 miles of streams once flowed through the lower Mill Creek, today only 75 miles remain with over 600 miles of combined sewers.

Combined Sewer Overflows



MSD's sewer system during wet weather based on the typical year rainfall.

Metropolitan Sewer District of Greater Cincinnati

The Metropolitan Sewer District of Greater Cincinnati (known as MSD) protects public health and the environment through the safe and efficient collection and treatment of wastewater for 43 of the 49 surrounding communities and small parts of Butler, Clermont, and Warren counties.

Combined Sewer Overflows

Hamilton County CSOs - 212

Annually 11 billion gallons of untreated stormwater and sewage overflows from CSOs

Consent Decree

The consent decree with the US EPA, Ohio EPA, and ORSANCO (the regulators) mandates that Metropolitan Sewer District (MSD):

- Capture, treat, or remove at least 85% of the 11 billion gallons of annual overflows from CSOs
- Eliminate all overflows from sanitary sewers (about 100 million gallons annually)

CSO Reduction

1 Source Control (removing stormwater)

Prevent or delay stormwater from reaching combined sewers, such as separating the sewers, installing stormwater retention ponds and controlling stormwater that flows down hillsides.

2 Conveyance and Storage

Build larger sewers to "convey" or transport wastewater to treatment plants and/or construct underground storage tunnels to "store" excess stormwater and sewage during heavy rains.

3 Product Control (treatment of flows)

Upgrade existing wastewater treatment plants to handle more wastewater and construct special treatment facilities to treat flows at the CSO outfall prior to being discharged into a waterway.

Cincinnati Parks MSDGC Partnership

The Cincinnati Park Board formed a partnership with MSDGC for 5 years to:

- Inspect GI projects either under construction by private or non-profit partners, or recently constructed projects
- Construct GI projects using park contractors and personnel
- Maintain GI projects (primarily landscape type work)

METROPOLITAN SEWER DISTRICT of greater CINCINNATI

Cincinnati Parks MSDGC Partnership

The Cincinnati Park Board constructed GI projects such as bioinfiltration swales, and basins

Cincinnati Parks MSDGC Partnership

Pervious paving systems

And stream daylighting

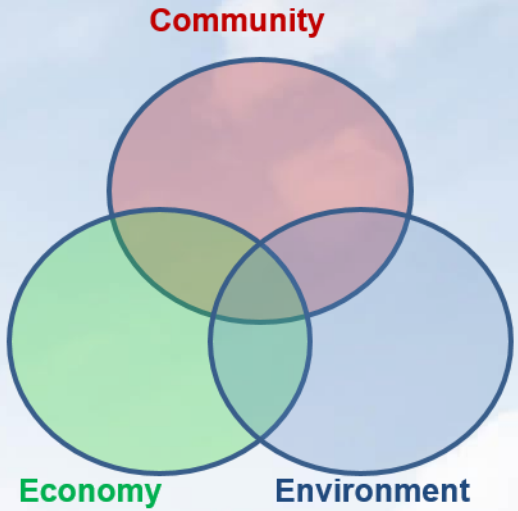
Triple Bottom Line

Weighs the economic, social, and environmental cost-benefits of a project.

Economic: Jobs, business and growth

Social: Community revitalization, parks

Environmental: stream ecology, health, UTC



www.projectgroundwork.org

PROJECT GROUNDWORK
your pipeline to clean water

Job Creation
*Full Time Equivalent (FTE) jobs**

Nearly 900 full time equivalent construction jobs to build sustainable infrastructure projects in the Lower Mill Creek by 2018 to comply with Consent Decree

Lick Run

760 Construction/ Trade Jobs

- 54,300 feet of storm sewer
- 3,600 feet of relocated combined
- 8 detention basins/floodplain enhancements;
- 8,700 feet of valley conveyance system
- 9,900 feet of natural conveyance; inlet sealing

Kings Run

72 Construction/ Trade Jobs

- 5,700 feet of storm sewer
- 7,200 feet of new combined sewer
- 1.5 million gallons combined storage at CSO 217
- 3 SW detention basins
- Streambank Stabilization and restoration measures

West Fork

73 Construction/ Trade Jobs (CSO's 125, 127, 128)

500 feet of storm sewer

7,600 feet of basin discharge pipe

2 SW detention basins; approximately 23 acre feet of storage

PROJECT GROUNDWORK
your pipeline to clean water

***predicted; generated by the Lower Mill Creek Study for identified watersheds**

Thirty GI Occupations Identified

- Septic Tank Servicer
- Sewer Pipe Cleaner
- Env Engineering Tech
- Tree Pruner
- Landscaper
- Roofer
- Pesticide Applicator
- Helpers
- Masons
- Laborers
- Maintenance Workers
- Inspectors
- Equipment Operators
- Forest Workers
- Supervisors
- Construction Laborer
- Wastewater Operator
- Pipelayer
- Paving
- Engineers
- Segmental Paver
- Valve Installer
- Earth Drillers
- Nurserymen
- Pump Operator
- Excavating

CINCINNATI ZOO AND BOTANICAL GARDENS:
AFRICAN SAFARI

RAINWATER HARVESTING: 119,501 GALLONS
BIOINFILTRATION: 3,500 SF
STORMWATER IS USED FOR IRRIGATION


Pipelayers, Plumbers
Environmental Engineer
Excavating and Loading
Operating Engineers
Helpers, Installation

- Cement Masons
- Concrete Finishers
- Laborers
- Truck Operators
- Supervisors of Construction


Construction Lab
Helpers
Plumbers
Paving


REED

- Plumbers
- Water System Operators
- Electricians
- Valve Installers
- Pump Operators
- Inspectors

- Tree Pruners
- Landscaping Workers
- Groundskeepers
- Laborers
- Truck Operators
- Nurserymen

One Project = Green Jobs!

- Septic Tank Servicer
- Sewer Pipe Cleaner
- Env Engineering Tech
- Tree Pruner
- Landscaper
- Roofer
- Pesticide Applicator
- Helpers
- Masons
- Laborers
- Maintenance Workers
- Inspectors
- Equipment Operators
- Forest Workers
- Supervisors
- Construction Laborer
- Wastewater Operator
- Pipelayer
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- Engineers
- Segmental Paver
- Valve Installer
- Earth Drillers
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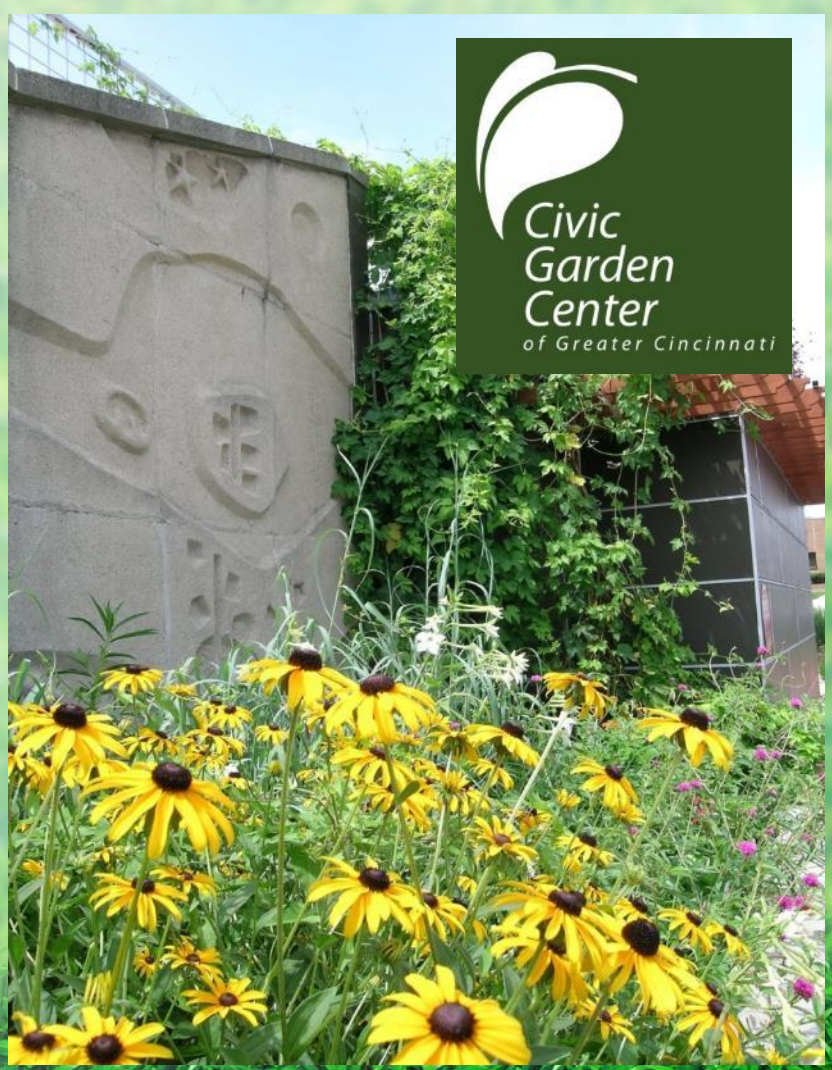
- Pump Operator
- Excavating

Civic Garden Center
GI Job Training Program

The Metropolitan Sewer District quickly realized the need for a trained professional workforce to construct, inspect, and maintain the GI that is being built in the region. MSDGC formed a partnership with the Civic Garden Center to host and facilitate a training program. The training will follow the format of the National Green Infrastructure Certification Program.



Civic Garden Center

Established in 1942, the Civic Garden Center's mission is to **build community** through **gardening**, **education** and **environmental stewardship**.

What They Do…

- Community Gardens
- Children's Programming
- Gardening Education
- Stormwater Education

Horticulture Resources:

- Hoffman Library
- Horticulture Helpline
- Green Learning Center

www.civicgardencenter.org

National Green Infrastructure Certification Program (NGICP)

- Sets national certification standards for construction, inspection, and maintenance workers.
- Meets international best practice standards
- Advances sustainable communities by promoting GI
- Develops a proficient green workforce
- Establishes a career path for skilled GI workers

National Green Infrastructure Certification Program (NGICP)

- Initiated by District of Columbia and Water Environment Federation
- Includes 13 partners including Greater Cincinnati MSD
- Led by a governing body and includes strategic planning and technical advisory groups
- Testing provides confirmation that the level of understanding meets a basic threshold.

National Green Infrastructure Certification Program (NGICP)

35 Hours of Training

Classroom Training

- Lecture
- Interactive group exercises
- Quizzes

In-field Training

- Site visits to GI practices and sites
- Mock inspections
- Key components of GI practices/systems


Features of the Green Learning Station
COMPOSTING
Turning trash into treasure
BACKYARD VEGETABLE GARDEN
Food and beauty
GREEN ROOFS
Making the most of rain & sun
OUTDOOR LEARNING THEATER
PERVIOUS PAVEMENT
Letting rain sink in
VERTICAL GROWING
for small spaces
READING RD.
OAK ST.
RAIN GARDENS
Filtering & holding rainwater
GREEN LEARNING STATION
Civic Garden Center
of Greater Cincinnati

National Green Infrastructure Certification Program (NGICP)

Training Content

Background Information:

- Introduction to stormwater management and GI
- Materials and vegetation used in GI practices and systems
- Safety, site management, and managing for long-term

Green Learning Station

- Opened in 2011
- LEED Platinum Certified (2nd "greenest" building in Cincinnati)
- Partnership with the Metropolitan Sewer District (MSD)
- Field trips for stormwater management, composting, gardening

National Green Infrastructure Certification Program (NGICP)

Training Content

Green Infrastructure Practices:

- Bioretention
- Permeable/porous pavement
- Rainwater harvesting
- Green roofs
- Dry wells
- Constructed stormwater wetlands

GREEN
LEARNING
STATION

The GLS with Pervious Pavement demonstrations

GREEN LEARNING

Civic Garden Center

GREEN LEARNING STATION

Harvesting Rainwater

- From simple 55 gallon drums to gigantic underwater storage tanks
- Catch water from roofs or pavement to use later for irrigation (or even flushing toilets or doing laundry)
- If half of Cincinnati households had a 55 gallon rain barrel, 4 million gallons of water could be diverted from the sewer system in every significant rain

2500 gallon rain tank

GLS Bioswale – excess rainwater pumped through bed along Reading Road

National Green Infrastructure Certification Program (NGICP)

Test Information and Preparation

Qualifications: High School Diploma or GED; 35 hours of training

Test based on exam blueprint available on the NGICP website
http://ngicp.org/wp-content/uploads/2016/11/NGICP-Exam-Blueprint-Summary.Nov-2016.pdf

100 – 140 multiple choice questions

Cost: For Profit Company = $400
Non-profit organization = $250
Scholarships are Available