



Arlington County Water Pollution Control Plant

# Solids Master Plan

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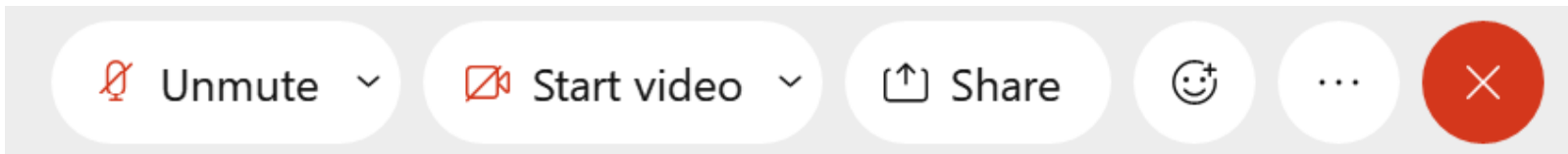
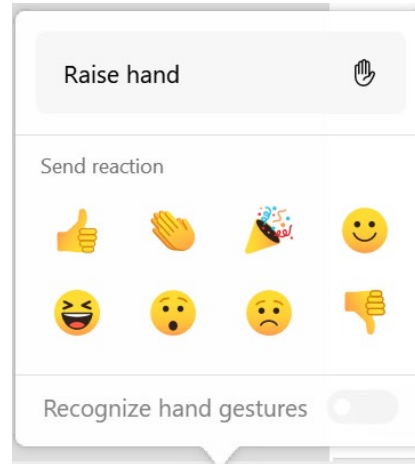
## Biosolids Advisory Panel

October 6, 2022



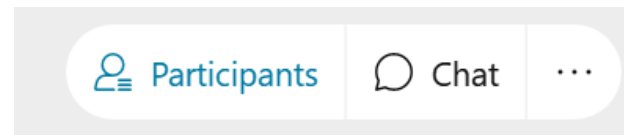
# Meeting Logistics

## WEBEX CONTROLS



### MEETING PREVIEW AUDIO SELECTION

- Use computer for audio
- Call me
- Call in
- Don't connect to audio



### TO BE UNMUTED

*Click the “Raise Hand” button pressing \*3 on your phone*

*You can also ask to be unmuted in the “Chat” box*

### ISSUES HEARING AUDIO?

*Re-join using “Call me” Audio Selection*

# Agenda

- 01** 6:00 – 6:05 **Introductions**
- 02** 6:05 – 6:15 **Program and Procurement Updates**
- 03** 6:15 – 6:20 **Outreach**
- 04** 6:20 – 7:00 **Re-Gen Program Sustainability: Envision and Leadership in Energy and Environmental Design (LEED)**
- 05** 7:00 – 7:05 **Website Updates**
- 06** 7:05 – 7:25 **PFAS Update**
- 07** 7:25 – 7:30 **Next Steps**

# Introductions

**Mary  
Strawn**

Arlington County Water  
Pollution Control Bureau

**Antron  
Sutton**

Arlington County Water  
Pollution Control Bureau

**Lisa  
Racey**

Arlington County Water  
Pollution Control Bureau

**Fasil  
Haile**

Arlington County Water  
Pollution Control Bureau

**Peter  
Golkin**

Arlington County DES  
Communications

**Mike  
Collins**

Arlington County DES

**Brian  
Balchunas**

HDR

**Stephanie  
Spalding**

HDR

**Jennifer  
Ninete**

HDR

**Rahkia  
Nance**

HDR

**Jessica  
Host**

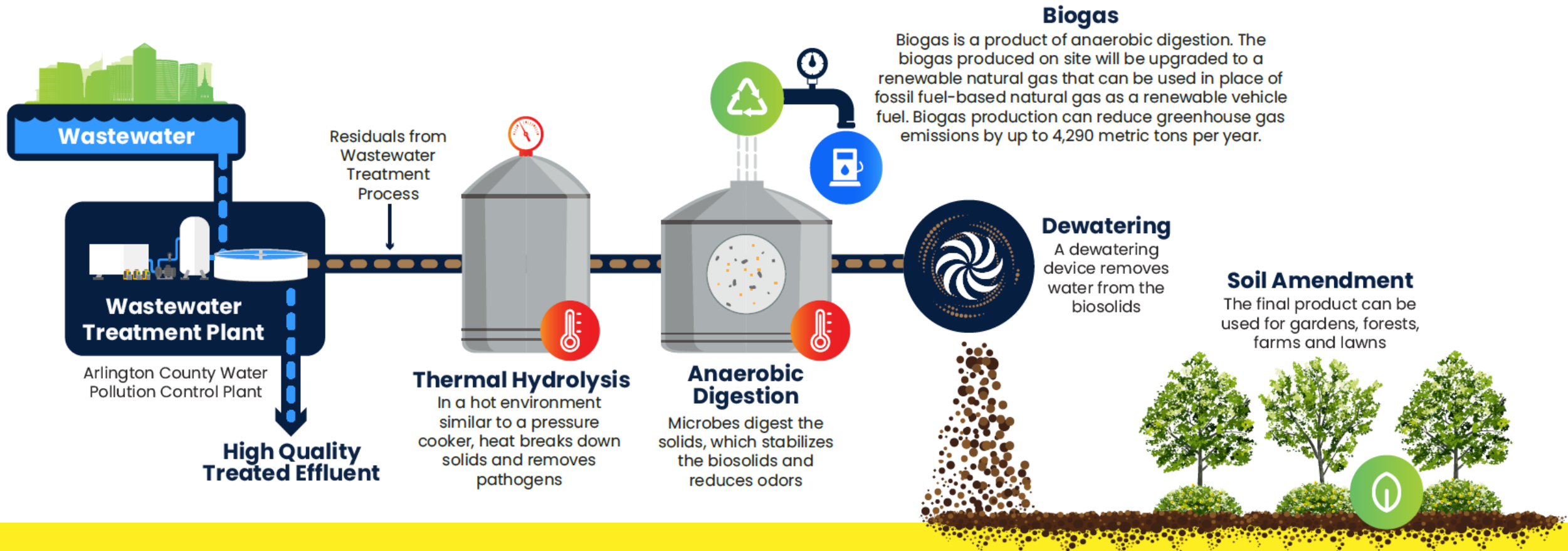
HDR

**Samantha  
Villegas**

Raftelis

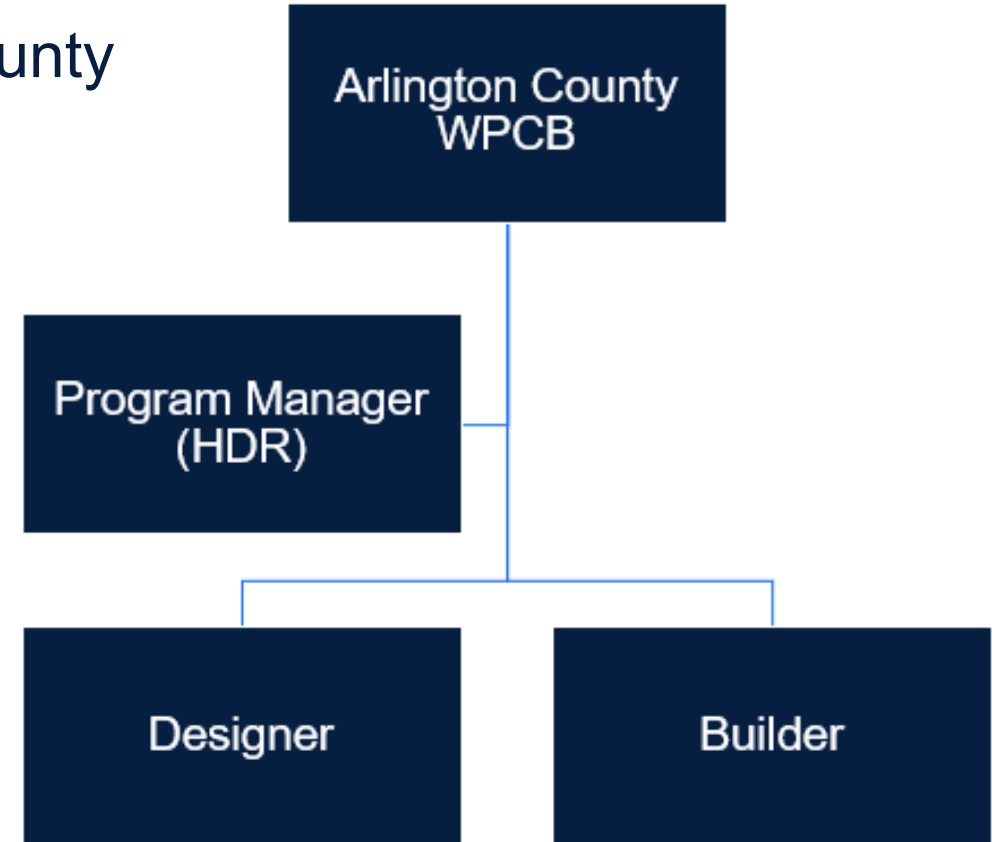
# Program Overview

## Recovering renewable resources from wastewater



# Roles and Responsibilities

- HDR serves as an advisor to Arlington County
- Current phase:
  - Define program scope
  - Define program delivery
- Future phases:
  - Oversee design and construction
  - Assist with start-up and commissioning
- HDR is prohibited from participating in any design and construction

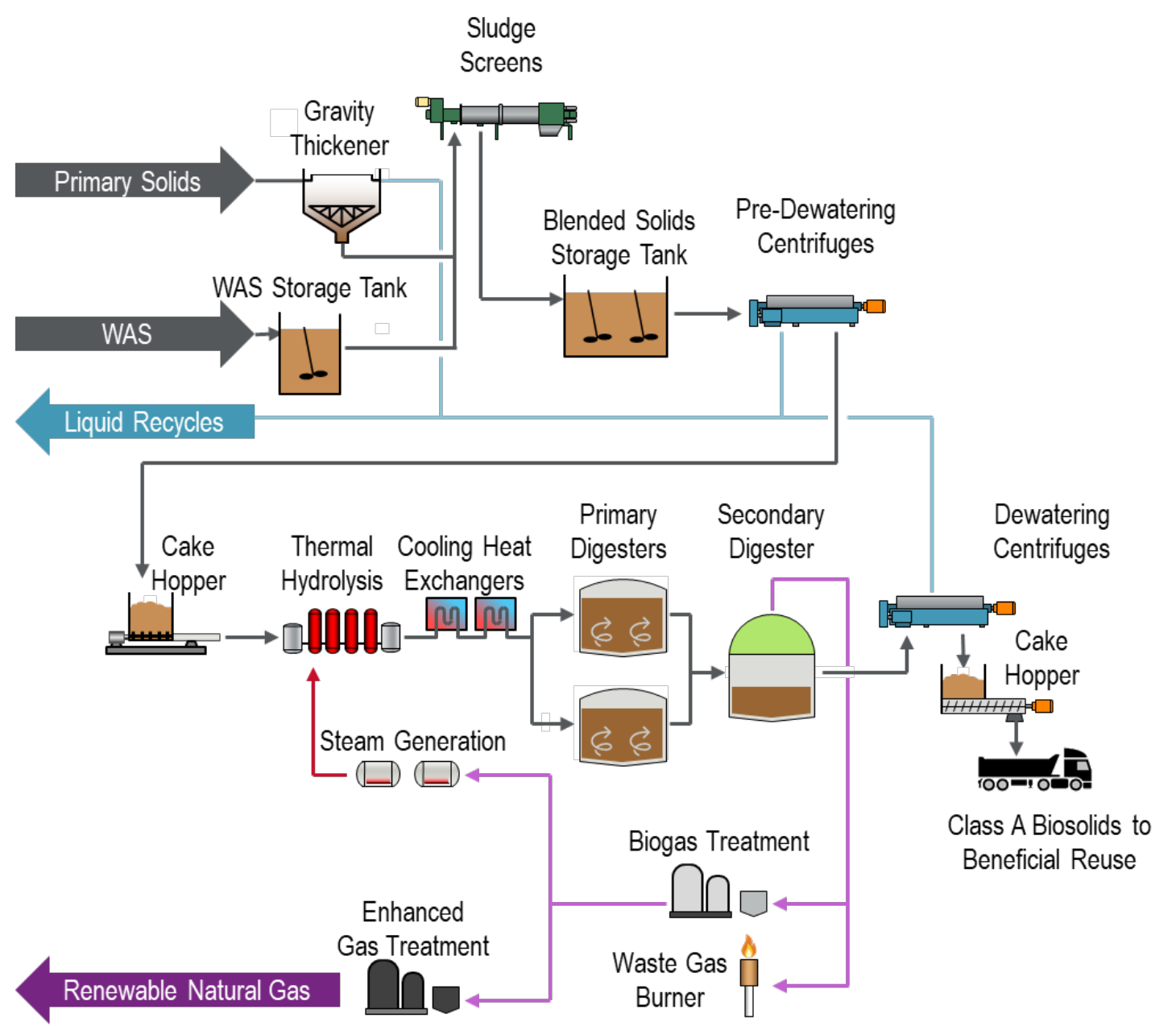




# 02

## Program and Procurement Updates

# New Solids Handling Process





# Program Components

## Program Management

- Assistance with program development and oversight

## Gravity Thickeners

- Rehabilitate existing gravity thickeners

## Early Work Package

- Demolition
- Utility relocation
- Site Preparation

## Main Work Package

- New processes and facilities

# Tentative Program Timeline



	2021	2022	2023	2024	2025	2026	2027	2028	2029
Program Management	Facilities Plan Biogas Utilization	<b>Procurement Design Oversight</b>	Design and Construction Oversight	Design and Construction Oversight	Construction Oversight	Construction Oversight	Construction Oversight	Start-up Assistance	Start-up Assistance
Gravity Thickeners	--	<b>Design</b>	Design and Construction	Construction and Start-up					
Early Work	--	--	Design	Design and Construction	Construction				
Main Work Package	--	--	Design	Design	Construction	Construction	Construction	Commission	Start-up

# Delivery Updates

## “How”

- Risk Analysis
- Project Packaging
- Delivery Evaluation
- Procurement of Delivery Teams

### Completed since last meeting

- Gravity thickeners – reviewed response to solicitation for design services
- Remainder of work – received applications and qualified prospective offerors

### Upcoming

- Begin design of gravity thickeners
- Issue Request for Proposals to qualified offerors for remaining work



## Thank you for detailed and informative feedback from June meeting

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- Comments received from C2E2, FAAC, and Steve Young
- These will be taken under consideration as the program advances
- County is continuing to monitor novel technologies for future implementation
- PFAS sampling underway – to be discussed later in this presentation
- Any further comments or discussions?



# 03

## Outreach

# Rock-N-Recycle



- Second year participating
- Increasing interest in program
- Excitement about potential to use biosolids as soil amendment



# 04

## Program Sustainability: Envision & Leadership in Energy and Environmental Design (LEED)

<b>Subject/Topic:</b>	Facility Sustainability Policy – for New Construction and Major Renovation (Green Building Policy)
<b>Topic Category:</b>	Green Buildings/Environmental Management/Sustainability
<b>Department Lead:</b>	Environmental Services
<b>Last Revised:</b>	April 30, 2019

**Summary:** All County buildings and public facilities shall strive to incorporate the highest environmental performance standards using the LEED, International Living Futures Institute (ILFI), or Viridian's Earthcraft Virginia green building rating system. This Policy was developed to support Arlington County's mission of sustainability and to support the County's overall greenhouse gas reduction goals.

**Purpose:**

- To reduce operating costs through energy and water efficiency;
- To achieve high-performing, durable, and efficient buildings that are easy to operate and maintain;
- To invest in healthy indoor environments for staff and visitors;
- To demonstrate Arlington's commitment to environmental, economic, and social stewardship;
- To set a community standard of sustainable building practices.

**Scope:** Applies to all County Departments and Agencies and their contractors responsible for financing, planning, designing, developing, constructing, renovating, managing, and decommissioning County owned and leased facilities and buildings. This policy applies to new construction and major renovation projects. Incremental improvements to existing buildings should incorporate the Guiding Principles of this Policy, Arlington's County Operations Energy Plan, and other best management practices when practicable.

**Policy Detail:**

**Guiding Principles.** The intent of the following Guiding Principles is to clearly define Arlington County's sustainability priorities in order to build well-functioning, easy to maintain buildings and facilities with low energy demands and excellent indoor environmental quality.

- 1) **Function** - Achieve high performing and efficient building operations with systems and components that are easy to use and maintain. Ensure the building operates as intended and reduce long-term operating costs:
  - Prioritize simple, passive solutions over mechanical solutions for energy use reduction and stormwater management.
  - Minimize use of complicated sensor and control systems.
  - Design and locate building systems for ease of access and maintenance.
  - Ensure building systems are compatible with the building programming, fully functional and operate as intended before the building is accepted.
  - As new facilities are acquired or built, facilities maintenance budgets should be reassessed and planned.
- 2) **Energy** - Use integrated design and passive strategies to minimize heating, cooling, and lighting loads and reduce long-term operating costs:

# Re-Gen Program Sustainability

- Program's Sustainability goals are aligned with and support the Arlington County Facility Sustainability Policy
- Re-Gen program will use the Envision Sustainable Infrastructure framework to track and verify the program's sustainable elements
- Why use Envision instead of LEED for a process-oriented project?
  - Sustainability Framework developed specifically for infrastructure projects
  - Greater flexibility



# Re-Gen Program Sustainability Goals

## Sustainability Goals

Reduce **operating costs**

Achieve high-performing, **durable, adaptable** and **efficient** facilities.

Support **staff and community health** and well-being through the implementation of **safe facilities**.

Demonstrate Arlington's commitment to **environmental, economic, and social stewardship**.

Support the County's goal of becoming **carbon-neutral by 2050**.

Facilitate an **open, transparent and collaborative process**.

Convert wastewater to Class A biosolids and biogas for **renewable energy**.

## Facility Sustainability Policy Purpose

Reduce **operating costs**

Achieve high-performing, **durable, adaptable** and **efficient** facilities.

Invest in **healthy indoor environments** for staff and visitors.

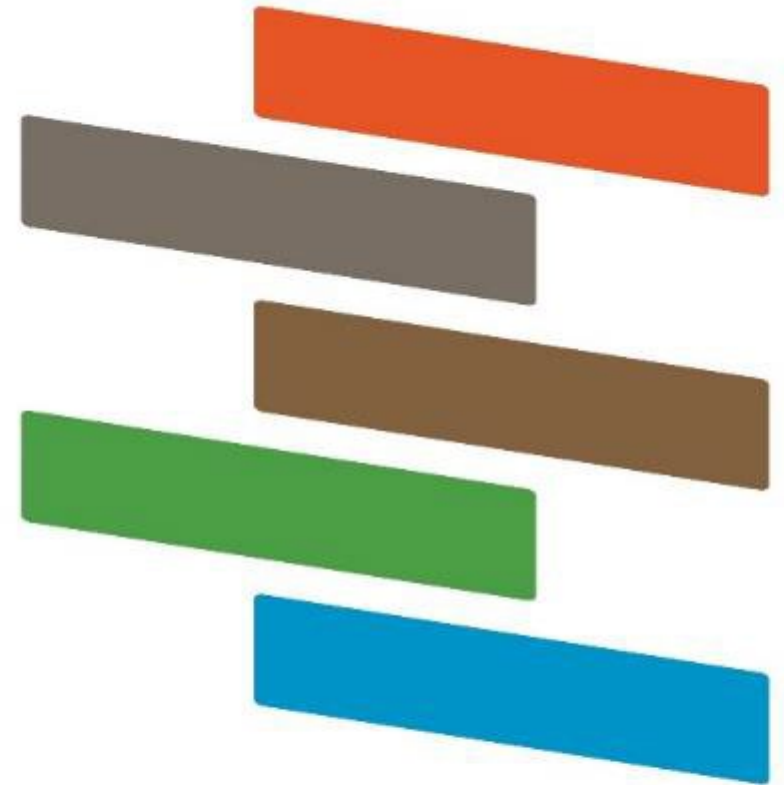
Demonstrate Arlington's commitment to **environmental, economic, and social stewardship**.

Set a **community standard of sustainable building practices**.

# Envision is...

**A sustainable infrastructure framework that:**

- Helps define sustainable, smart, and resilient infrastructure
- Allows flexibility
- Promotes infrastructure integration
- Sets a standard
- Provides third-party credibility



ENVISION™



## Quality of Life

Well-being ♦ Mobility ♦ Community



## Leadership

Collaboration ♦ Planning ♦ Economy



## Resource Allocation

Materials ♦ Energy ♦ Water



## Natural World

Siting ♦ Conservation ♦ Ecology



## Climate & Resilience

Emissions ♦ Resilience

# Re-Gen Program Sustainability Goals

## Envision Alignment



## Sustainability Goals

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# Envision Credits and Points

Categories	# Credits	Max Points
Quality of Life	13	200
Leadership	11	182
Resource Allocation	13	196
Natural World	13	232
Climate & Resilience	9	190
Totals	59	1,000

# Envision Categories


 <p><b>Quality of Life</b></p>	<b>Purpose</b>	QL1.1 Improve Community Quality of Life
		QL1.2 Enhance Public Health & Safety
		QL1.3 Improve Construction Safety
		QL1.4 Minimize Noise & Vibration
		QL1.5 Minimize Light Pollution
		QL1.6 Minimize Construction Impacts
	<b>Wellbeing</b>	QL2.1 Improve Community Mobility
		QL2.2 Encourage Sustainable Transportation
		QL2.3 Improve Access & Wayfinding
	<b>Community</b>	QL3.1 Advance Equity & Social Justice
		QL3.2 Preserve Historic & Cultural Resources
		QL3.3 Enhance Views & Local Character
		QL3.4 Enhance Public Space & Amenities

# Envision Categories

 <p><b>Leadership</b></p>	<b>Collaboration</b>	LD1.1 Provide Effective Leadership & Commitment
		LD1.2 Foster Collaboration & Teamwork
		LD1.3 Provide for Stakeholder Involvement
		LD1.4 Pursue Byproduct Synergies
	<b>Planning</b>	LD2.1 Establish a Sustainability Management Plan
		LD2.2 Plan for Sustainable Communities
		LD2.3 Plan for Long-Term Monitoring & Maintenance
		LD2.4 Plan for End-of-Life
	<b>Economy</b>	LD3.1 Stimulate Economic Prosperity & Development
		LD3.2 Develop Local Skills & Capabilities
		LD3.3 Conduct a Life-Cycle Economic Evaluation

 <p><b>Resource Allocation</b></p>	<b>Materials</b>	RA1.1 Support Sustainable Procurement Practices
		RA1.2 Use Recycled Materials
		RA1.3 Reduce Operational Waste
		RA1.4 Reduce Construction Waste
		RA1.5 Balance Earthwork On Site
	<b>Energy</b>	RA2.1 Reduce Operational Energy Consumption
		RA2.2 Reduce Construction Energy Consumption
		RA2.3 Use Renewable Energy
		RA2.4 Commission & Monitor Energy Systems
	<b>Water</b>	RA3.1 Preserve Water Resources
		RA3.2 Reduce Operational Water Consumption
		RA3.3 Reduce Construction Water Consumption
		RA3.4 Monitor Water Systems

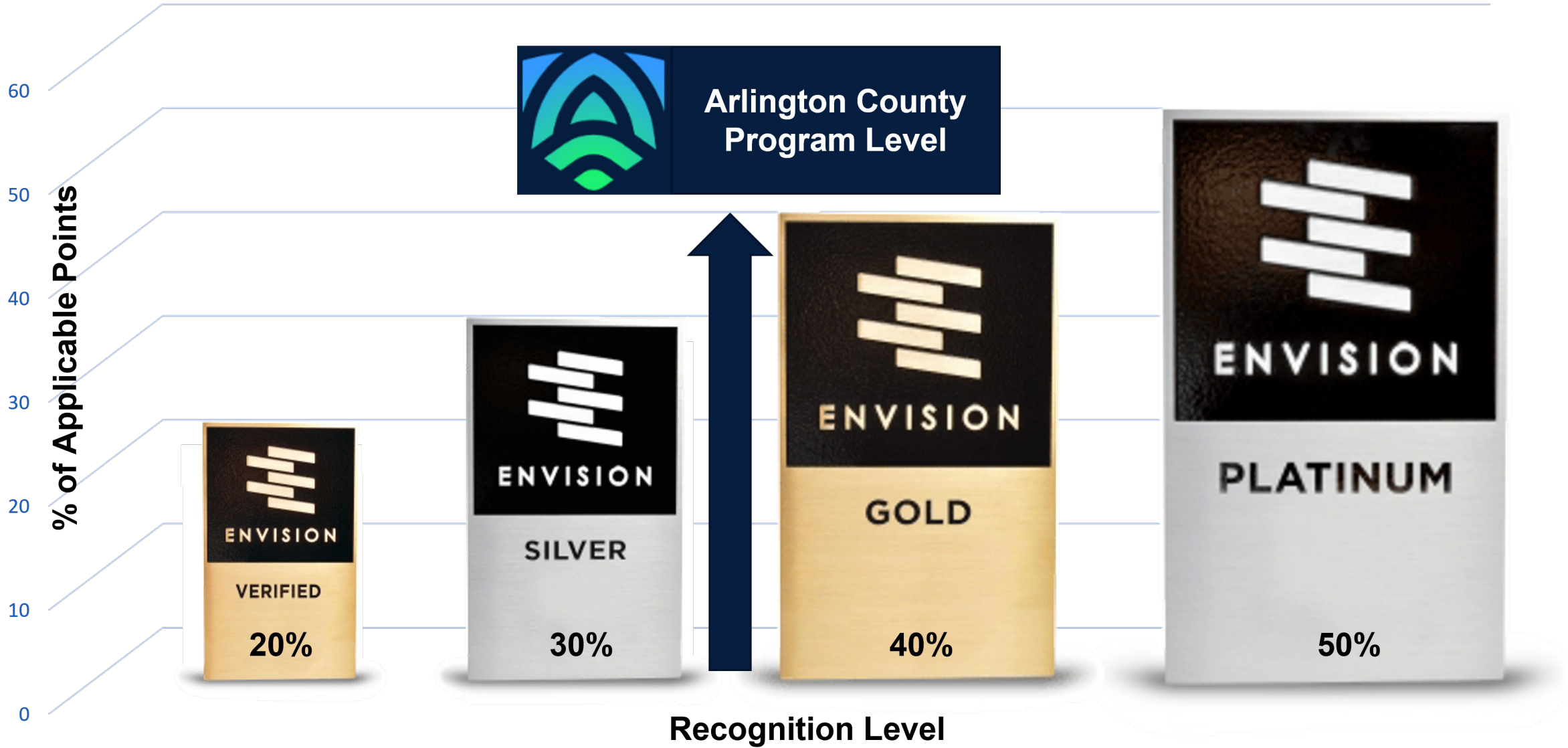
# Envision Categories

 <p><b>Climate and Resilience</b></p>	<b>Emissions</b>	CR1.1 Reduce Net Embodied Carbon
		CR1.2 Reduce Greenhouse Gas Emissions
		CR1.3 Reduce Air Pollutant Emissions
	<b>Resilience</b>	CR2.1 Avoid Unsuitable Development
		CR2.2 Assess Climate Change Vulnerability
		CR2.3 Evaluate Risk and Resilience
		CR2.4 Establish Resilience Goals and Strategies
		CR2.5 Maximize Resilience
		CR2.6 Improve Infrastructure Integration

 <p><b>Natural World</b></p>	<b>Siting</b>	NW1.1 Preserve Sites of High Ecological Value
		NW1.2 Provide Wetland & Surface Water Buffers
		NW1.3 Preserve Prime Farmland
		NW1.4 Preserve Undeveloped Land
	<b>Conservation</b>	NW2.1 Reclaim Brownfields
		NW2.2 Manage Stormwater
		NW2.3 Reduce Pesticide & Fertilizer Impacts
		NW2.4 Protect Surface & Groundwater Quality
	<b>Ecology</b>	NW3.1 Enhance Functional Habitats
		NW3.2 Enhance Wetland & Surface Water Functions
		NW3.3 Maintain Floodplain Functions
		NW3.4 Control Invasive Species
		NW3.5 Protect Soil Health



# Envision Recognition Levels





# Envision Project Examples

✓ 119

Verified, publicly announced, projects

53   


Water projects

20  
Wastewater

8 Drinking Water

25  
Water Resources

4



Projects in Virginia



# Envision Platinum November 2016

## AlexRenew, Nutrient Management Facility (NMF), Alexandria, VA

Key factors contributing to earning Envision Platinum:

- Removing 85,000 cubic yards of contaminated soil from the site
- Selecting only native plant species with high habitat value that require no pesticides, herbicides, and fertilizers
- Incorporating community quality of life considerations, including multi-purpose lit athletic field, built on top of the NMF
- Replacing acres of impervious surface with vegetated areas



# Envision Silver September 2021

## Little Patuxent Water Reclamation Plant Biosolids Processing Facilities Improvement Project, Howard County, MD

Key factors contributing to earning  
Envision Silver:

- Stimulating sustainable growth and development
- Finding beneficial uses for waste products
- Using of recycled and regionally sourced materials
- Keeping more than 80% of excavated materials on site



# Envision

- Holistic view of **infrastructure development**.
- **One framework** for all infrastructure projects. Recognized and rapidly growing program.
- Gives recognition to projects that make significant contributions to sustainability, resiliency, and equity.
- Specific credits are not required – level of verification achievement (silver, gold, platinum) is based on number of credit points verified.

# LEED

- Most-recognizable sustainable certification available for **occupied buildings**.
- Standards that encourage improved building performance and occupant well-being.
- **Prerequisite requirements** must be met if a project is to be considered for certification.
- Building rating systems (BD+C, ID+C, O&M) for occupied buildings.



# 05

## Website Updates



## ARLINGTON RE-GEN



### About the program

The Water Pollution Control Bureau plays a pivotal role in Arlington County's path toward improved sustainability by improving its solids processing facilities into a state-of-the-art operation.

This program will provide long-term resource recovery and prioritize safe and sustainable operations that provide quality end products for use in our community. For more information about the planning process and to view meeting materials, please visit our [Resources](#) page.



## Recovering renewable resources from wastewater

We are using innovative practices and cutting-edge technology to capture renewable energy and a nutrient-rich-soil additive.





## Biosolids and PFAS

### ▼ What are PFAS?

Per- and poly-fluoroalkyl substances-- known as PFAS-- are a group of synthetic chemicals found in everyday items such as nonstick cooking surfaces, water-resistant clothing, stain-resistant furniture coatings and grease-resistant food containers. The chemical structure of PFAS causes them to break down very slowly and remain in the environment. Scientists are continuing to study the impact of elevated PFAS levels on human health and the environment.

### ▼ Are PFAS present in water sources?

PFAS can be introduced into water systems from industry and human activity. Wastewater treatment plants do not produce PFAS. The Virginia Department of Health has formed a workgroup to study the occurrence of specific PFAS compounds throughout the state.

### ▼ Are PFAS present in biosolids?

Arlington County biosolids are at low risk for elevated PFAS levels given the lack of industrial discharges in the County. Most research has been focused on drinking water and wastewater studies are ongoing to determine the impact of PFAS in biosolids. Arlington County is reviewing testing protocols and plans to begin monitoring and testing for PFAS in accordance with state and federal guidelines in the near future.

### ▼ Should I be concerned about exposure to PFAS through biosolids?

In most cases, the amount of PFAS found in biosolids is much less than what is found in everyday products. (Source: Letcher et al., 2020. <https://doi.org/10.1016/j.jhazmat.2020.122044>)

## PFAS Resources

- *"Emerging Contaminants in the Waters of Virginia,"* Virginia Water Research Center Academic Advisory Committee (2019)
- *"PFAS in Biosolids: A Southern Arizona Case Study,"* Pima County Regional Water Reclamation Department, Jacobs Engineering, the University of Arizona, and the National Science Foundation (2020)
- Virginia Biosolids Council
- Water Environment Federation



# 06

## PFAS Updates

# PFAS Update – Relative Concentrations

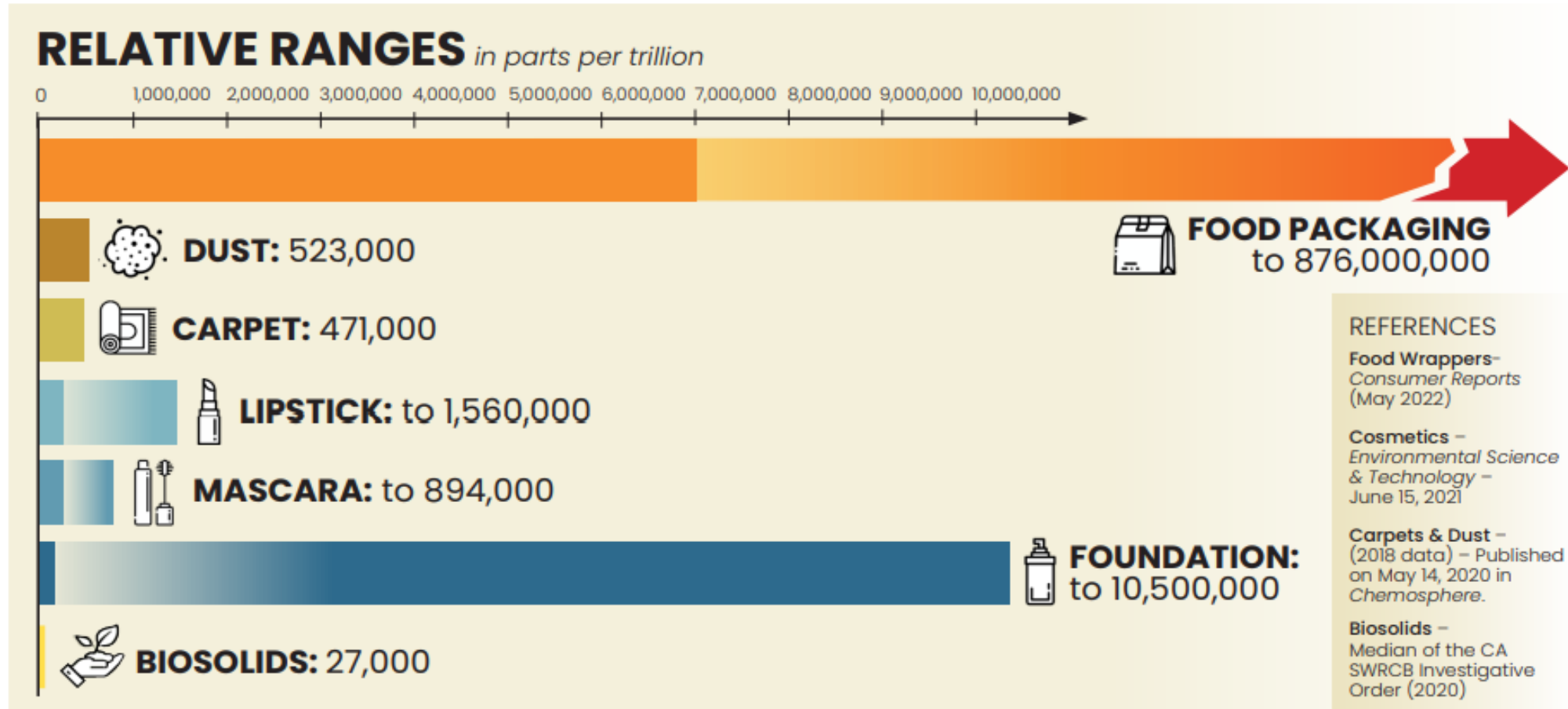
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[https://www.virginiabiosolids.com/wp-content/uploads/2022/08/Pie\\_Chart\\_PFAS\\_2022 - Graph for VBC web.pdf](https://www.virginiabiosolids.com/wp-content/uploads/2022/08/Pie_Chart_PFAS_2022_-_Graph_for_VBC_web.pdf)

1,000 part per trillion =  
1 sheet in a roll of toilet  
paper stretching from  
New York to London

or

30 seconds out of a  
thousand years.



# PFAS Update

- County has initiated sampling and testing program specifically for Arlington biosolids using EPA approved methods
- Results are expected by the end of 2022 (significant backlog at all laboratories capable of completing tests)
- Low levels expected based on lack of industrial contributors and drinking water results
- County has contacted Reagan National Airport to understand usage



# 07

## Next Steps

# Next Steps

- Next meeting in early 2023
  - Agenda topics TBD
  - Preferred meeting format—virtual or hybrid?
- Will notify panel of website launch and additional outreach opportunities
  - November 17, 2022: Arlington Ridge Civic Association meeting
  - Crystal City Civic Association newsletter item
  - Outreach or engagement ideas from the panel?

# Project Contact

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**Thank you!**