



**IDENTIFY. RESOLVE.**

# **AECOM's Solutions for Per- and Polyfluoroalkyl Substances (PFAS)**

December 2021

# Disclosures

## Safe Harbor

All statements in this communication other than statements of historical fact are “forward-looking statements” for purposes of federal and state securities laws, including any statements of the plans, strategies and objectives for future operations, profitability, strategic value creation, coronavirus impacts, risk profile and investment strategies, and any statements regarding future economic conditions or performance, and the expected financial and operational results of AECOM.

Although we believe that the expectations reflected in our forward-looking statements are reasonable, actual results could differ materially from those projected or assumed in any of our forward-looking statements. Important factors that could cause our actual results, performance and achievements, or industry results to differ materially from estimates or projections contained in our forward-looking statements include, but are not limited to, the following: our business is cyclical and vulnerable to economic downturns and client spending reductions; impacts caused by the coronavirus and the related economic instability and market volatility, including the reaction of governments to the coronavirus, including any prolonged period of travel, commercial or other similar restrictions, the delay in commencement, or temporary or permanent halting of construction, infrastructure or other projects, requirements that we remove our employees or personnel from the field for their protection, and delays or reductions in planned initiatives by our governmental or commercial clients or potential clients; losses under fixed-price contracts; limited control over operations run through our joint venture entities; liability for misconduct by our employees or consultants; failure to comply with laws or regulations applicable to our business; maintaining adequate surety and financial capacity; high leverage and potential inability to service our debt and guarantees; exposure to Brexit; exposure to political and economic risks in different countries; currency exchange rate fluctuations; retaining and recruiting key technical and management personnel; legal claims; inadequate insurance coverage; environmental law compliance and adequate nuclear indemnification; unexpected adjustments and cancellations related to our backlog; partners and third parties who may fail to satisfy their legal obligations; AECOM Capital real estate development projects; managing pension cost; cybersecurity issues, IT outages and data privacy; risks associated with the benefits and costs of the Management Services transaction, including the risk that the expected benefits of the Management Services transaction or any contingent purchase price will not be realized within the expected time frame, in full or at all; the risk that costs of restructuring transactions and other costs incurred in connection with the Management Services transaction will exceed our estimates or otherwise adversely affect our business or operations; as well as other additional risks and factors that could cause actual results to differ materially from our forward-looking statements set forth in our reports filed with the Securities and Exchange Commission. Any forward-looking statements are made as of the date hereof. We do not intend, and undertake no obligation, to update any forward-looking statement.

# We are the world's trusted infrastructure consulting firm

## OUR INHERENT COMPETITIVE ADVANTAGES

- ✓ Unrivalled technical expertise and scale
- ✓ Established history of delivering on our clients' most complex projects
- ✓ Proven agility to perform through periods of uncertainty
- ✓ Substantial backlog and visibility
- ✓ Highly cash generative business model

## CAPITALIZING ON OUR STRENGTHS

- ✓ Focused on ESG mega trends
- ✓ Well-positioned for IIJA funding, record state and local budgets and the global infrastructure investment renaissance
- ✓ Enhanced collaboration across the business to leverage global capabilities
- ✓ Leading with advisory and program management to expand opportunities
- ✓ Leveraging high client satisfaction and win rates to accelerate growth

## UNPARALLELED TECHNICAL EXPERTISE

# ENR

#1

Environmental  
Engineering Firm  
Transportation  
Facilities  
Airports  
Bridges  
Dams & Reservoirs  
Education  
Health Care  
Water Treatment  
Lines and Aqueducts

#2

Green Design Firm  
Water Supply  
Hazardous Waste  
Chemical  
Remediation  
Site Assessment  
and Compliance

#3

Marine and Ports  
Sewer and Waste  
Water Treatment  
Clean Air Compliance

Source: 2020 and 2021 ENR Rankings, reflecting global revenue.

# Per- and Polyfluoroalkyl Substances in the Environment



Persistent, bioaccumulative, and toxic<sup>1</sup> substances



Significantly mobile in water – impacting many stakeholders



Regulations vary, tend to be very conservative to address their persistence and bioaccumulation



Toxicity studies are open to interpretation – more compounds being studied



Compounds occur widely in everyday applications



Regulatory drivers – Federal Health Advisories; state drinking water limits; fish and tissue limits



Remediation estimated at \$160 billion<sup>2</sup>

## <sup>1</sup> Human Toxicity:

- Bioaccumulative in tissue, present in blood serum
- Linked with autoimmune and endocrine disorders
- Concerns with development during fetal development or breastfeeding
- Believed to be human carcinogens: testicular, kidney and liver cancer

## <sup>2</sup> Environmental Business Journal estimates over 40k PFAS sites and \$160B in environmental restoration, system upgrade and lifecycle costs

- Estimates from EPA, ITRC, US Canus, US DOT FAA, water and solid waste industry associations, and a consensus of expert respondents
- Environmental Business Journal, Volume 32, 5/6, 2019

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# PFAS Challenges

## WHAT ARE PFAS?

- Class of >4,000 synthetic compounds
- Contain at least one F-C-F moiety
- Many **resist** thermal, chemical, and biological **degradation**
- Many act as **surfactants**
- Highly **soluble** in water
- **Toxic** to humans at low concentrations
- **Common** in water- and stain proofing household goods, and waxes, lubricants, food packaging
- Component of **Aqueous Film Forming Foam (AFFF)** used to fight liquid pool fires
- Present throughout the One-Water Cycle

## WHY ARE PFAS SO DIFFICULT TO REMEDIATE?

- Carbon-Fluorine one of the **strongest chemical bonds**
- Widely distributed due to **extreme mobility**
- **Toxicity** drives clean up to very low concentrations
- Chemical stability makes destruction challenging

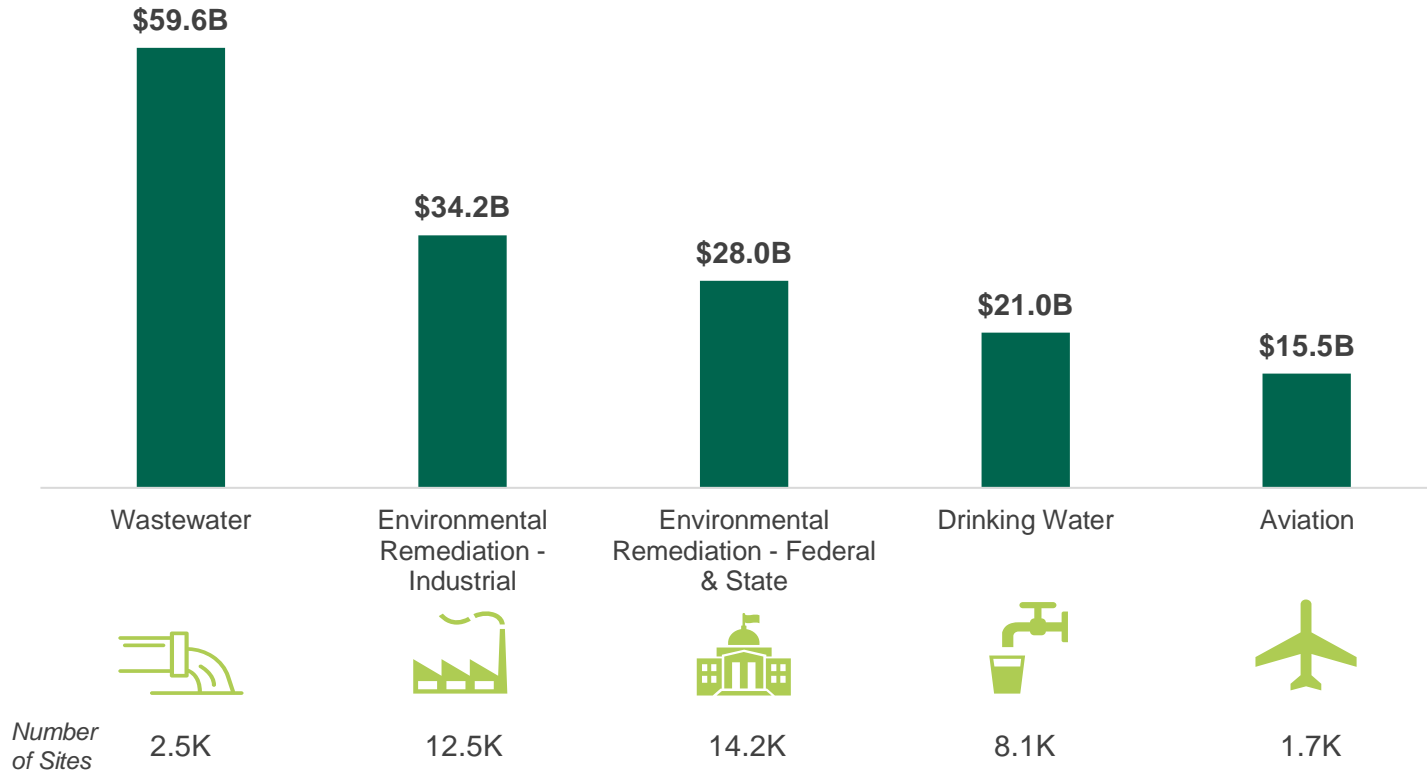
## WHY IS THERE URGENCY AROUND PFAS SOLUTIONS?

- PFAS appear in drinking water of **millions of people**
- **Public sentiment** has driven many responses
- **Evolving regulations** in US, Australia, and Europe are increasingly **stringent**
- **Liability** is incurred in absence of **destructive solution**

# PFAS US Market Size Estimate

## EBJ 2019 ESTIMATED US MARKET SIZE:

(INCLUDES ASSESSMENT AND REMEDIATION LIABILITIES EX. LITIGATION AND HEALTH COSTS)



Source: Environmental Business Journal, Volume 32, 5/6, 2019

• Since the 2019 EBJ estimate, changes in regulation have driven an increased opportunity both in the US and globally

• USEPA's PFAS Strategic Roadmap (OCT21) will expand market into:

- Additional PFAS
- Air emissions
- Biosolids
- Manufacturing compliance
- Water treatment

• Infrastructure Investment and Jobs Act (NOV21) funds:

- Water treatment in underserved communities
- State/ Municipal responses

**AECOM OFFERS CLIENTS A COMPLETE SOLUTION ACROSS EACH ADDRESSABLE MARKET**

# AECOM is positioned to serve all aspects of our clients' PFAS needs

## OUR SERVICES AND SOLUTIONS:

AECOM'S DESTRUCTION TECHNOLOGY DE-FLUORO™	SOURCE IDENTIFICATION AND FORENSIC ANALYSIS	TREATABILITY STUDIES AND SOURCE CONTROL
HUMAN AND ECOLOGICAL RISK ASSESSMENT	WASTE MANAGEMENT AND DISPOSAL, INCLUDING AFFF	REGULATORY NAVIGATION
REMEDiation MANAGEMENT AND SOLUTIONS	WATER TREATMENT – SMALL TO VERY LARGE SCALE	WASTEWATER AND BIOSOLIDS

- Serves as trusted advisor to clients' evolving concerns AHEAD of unfolding regulations
- Provides PFAS services for nearly 300 unique clients globally, expanding rapidly worldwide
- Started over 100 new PFAS-related projects in the Americas in FY19 and FY20, and nearly 200 in FY21
- Is the only professional services consultant with exposure to Australia Defence and all branches of the U.S. DoD where the majority of the PFAS spend has been and is expected to be near-term
- Supports other U.S. government (defense and civilian), manufacturing, industrial, oil and gas, and waste management clients with environmental and water treatment services
- Supports design/ build for potable water and wastewater clients globally

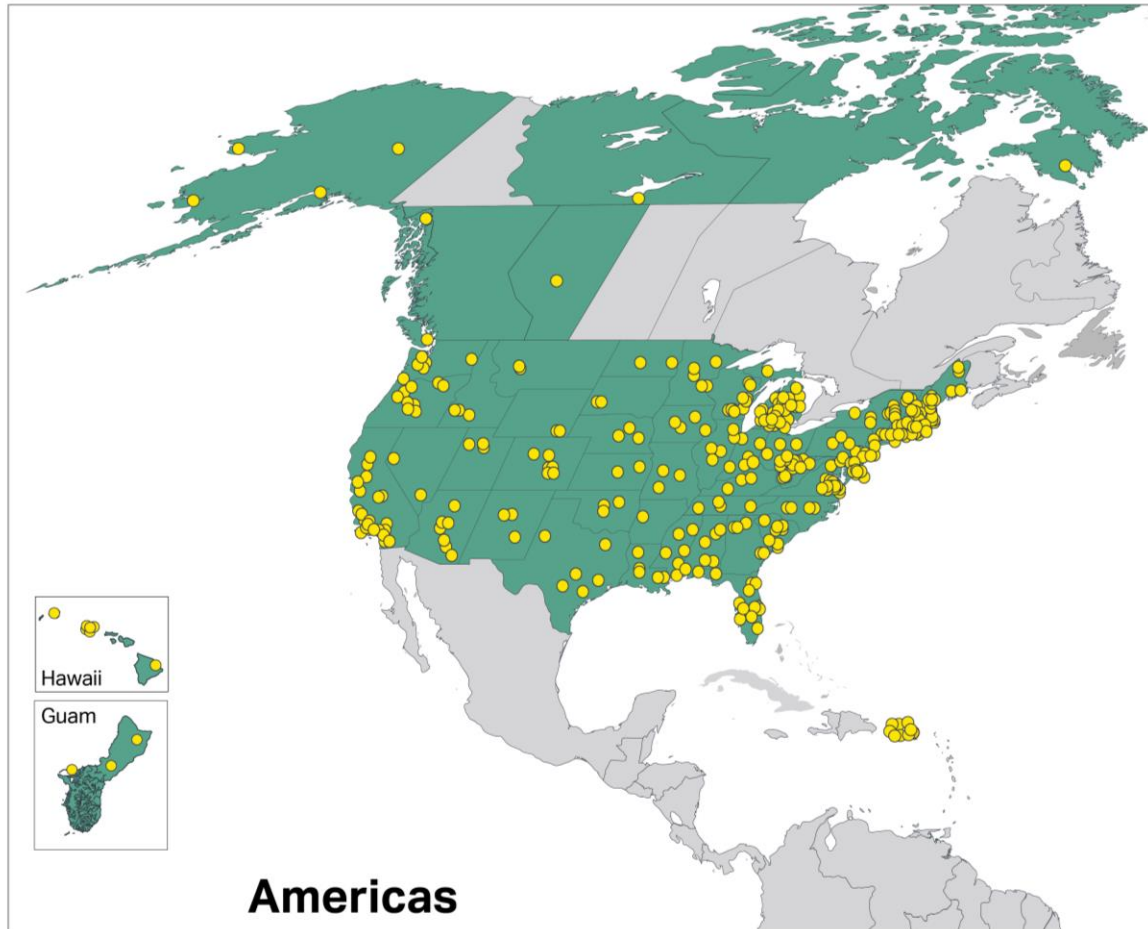
# AECOM's Unrivalled Global Experience

**20** Years

**500+** PFAS Project Sites

**75,000+** PFAS Samples

## Global AECOM PFAS Sites





# DE-FLUORO™

## PFAS DESTRUCTION TECHNOLOGY

Under development by AECOM in collaboration with our partners, DE-FLUORO™ is a **world-first economically and environmentally sustainable treatment technology** that destroys PFAS from contaminated liquids without generating hazardous waste.

Unlike existing treatment technologies, **DE-FLUORO™ offers a complete PFAS destruction solution through electrochemical oxidation**. It can be coupled with non-destructive technologies to deliver a 'whole of life cycle' solution, or as a stand-alone onsite destruction technology.

**DE-FLUORO™ has been proven** in a series of trials associated with a key market sector, with development continuing to evaluate its suitability for additional market sectors.

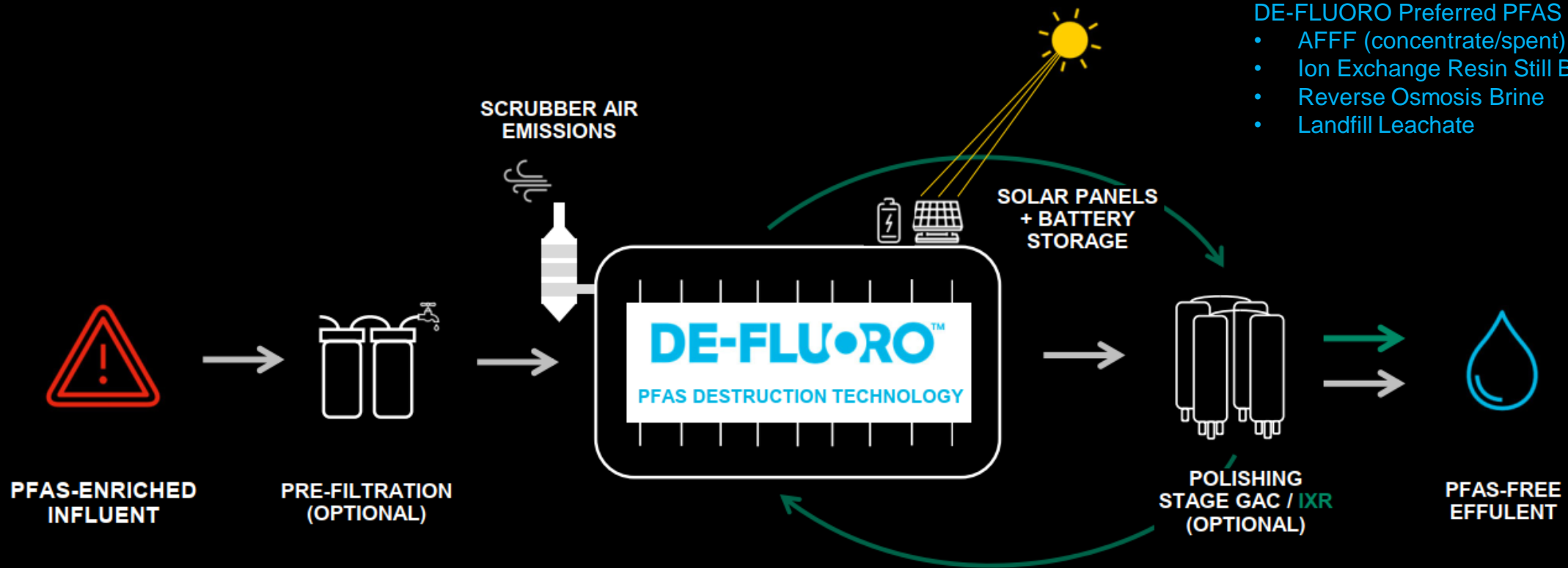
## DE-FLUORO™ Batch System



# DE-FLUORO™ – Commercial Application

## DE-FLUORO™ commercial applications include:

1. Standalone system supplemented by an existing onsite water treatment plant
2. Closed loop treatment train, incorporating a secondary polishing stage
3. System at a fixed licensed waste treatment facility



## DE-FLUORO Preferred PFAS Waste Streams:

- AFFF (concentrate/spent)
- Ion Exchange Resin Still Bottom Waste
- Reverse Osmosis Brine
- Landfill Leachate

# DE-FLUORO™ Market Approach

DE-FLUORO™ may be introduced to the market as:

- Licensed Technology
- Partnered Technology

We are aggressively positioning DE-FLUORO in three key areas that are being driven by regulatory changes:

- Wash Waters
- AFFF Concentrate
- Waste Waters

This includes pursuing commercial opportunities, as we are currently negotiating a DE-FLUORO treatment program with an Australian Government Client, with the contract anticipated to be signed in early 2022.

## DE-FLUORO™ Flow-Through System



**AECOM** Delivering a  
better world