

**Projects Supported by the Water Research Foundation During 2022
Relevant to the Metropolitan Water Reclamation District of Greater Chicago**

- 1 Project TBD Crossing the Finish Line: Integration of Data-Driven Process Control for Maximization of Energy and Resource Efficiency in Advanced WRRFs - \$2,274,039
- 2 Project 5131 Holistic Wet Weather Management through Adaptive Volume and Pollutant Source Control at a Community Scale: Finding the Sweet Spot - \$150,000
- 3 Project 5130 Advancement of Densification to Implement and Achieve More Efficient BNR Processes: Granule Generation, Retention and Management - \$200,000
- 4 Project 5128 Advancing Adaptive Wet Weather Management Approaches to Meet Emerging Challenges for Extreme Snowstorms and Cold Climate Impacts - \$50,000
- 5 Project 5125 Unregulated Organic Chemicals in Biosolids: Prioritization, Fate and Risk Evaluation for Land Application - \$2,262,881
- 6 Project 5124 PFAS Risk Communication Messaging for Water Sector Professionals - \$150,000
- 7 Project 5123 Establishing Seasonal Targets for Receiving Waters: Rethinking Wet Weather versus Dry Weather Expectations - \$200,000
- 8 Project 5121 Development of Innovative Predictive Control Strategies for Nutrient Removal - \$205,000
- 9 Project 5119 Using Phosphate-Based Corrosion Inhibitors and Sequestrants to Meet Multiple Water Treatment Objectives - \$250,000
- 10 Project 5105 Advancing Benefits and Co-Benefits Quantification and Monetization for Green Stormwater Infrastructure: An Interactive Guidebook for Utilities and Municipalities - \$52,000
- 11 Project 5101 Real Time Carbon Management of Water Resource Recovery Facilities using In-Situ Bio-Electrochemical Sensors
- \$175,000
- 12 Project 5100 Rapid Detection and Quantitation of Active Microorganisms - \$170,000
- 13 Project 5099 Mainstream Deammonification with Biological Phosphorus Removal - D - \$105,000
- 14 Project 5098 Mainstream Deammonification with Biological Phosphorus Removal - C - \$249,670
- 15 Project 5097 Mainstream Deammonification with Biological Phosphorus Removal - B - \$250,000
- 16 Project 5096 Mainstream Deammonification with Biological Phosphorus Removal - A - \$250,000
- 17 Project 5095 Mainstream Deammonification with Biological Phosphorus Removal - \$0
- 18 Project 5093 Understanding the Factors That Affect the Detection and Variability of SARS-CoV-2 in Wastewater - \$300,000
- 19 Project 5091 Developing a Framework for Quantifying Energy Optimization Reporting - \$100,000
- 20 Project 5088 Defining Exposures of Microplastics/Fibers (MPs) in Treated Waters and Wastewaters: Occurrence, Monitoring, and Management Strategies - \$225,000
- 21 Project 5087 Driving Implementation of Innovative and Efficient Biological Nutrient Removal Processes through Improvement of Control Systems and Relevant On-line Analytical Measurement Reliability Accuracy - \$100,000
- 22 Project 5086 Case Studies on Management of Cross-sector Dependencies - \$200,000
- 23 Project 5084 Holistic and Innovative Approaches for Flood Mitigation Planning and Modeling under Extreme Wet Weather Events and Climate Impacts - \$100,000
- 24 Project 5083 Advancing Low Energy Biological Nitrogen and Phosphorus Removal - \$200,000
- 25 Project 5082 Investigation of Alternative Management Strategies to Prevent PFAS From Entering Drinking Water Supplies and Wastewater - \$350,000
- 26 Project 5078 Linking Nutrient Reductions to Receiving Water Responses - \$150,000
- 27 Project 5074 Evaluating Utility staff training to Improve Knowledge Retention - \$100,000
- 28 Project 5072 Mitigation Strategy Plan for Direct Greenhouse Gas Emissions from BNR Processes in New York City - \$100,000
- 29 Project 5071 Demonstration of Progressive Carbon Efficient Nitrogen with Biological Phosphorous Removal in a Conventional BNR Facility - \$200,000
- 30 Project 5052 Standardizing Methods with QA/QC Standards for Investigating the Occurrence and Removal of Antibiotic Resistant Bacteria/Antibiotic Resistance Genes (ARB/ARGs) in Surface Water, Wastewater, and Recycled Water - \$200,000

31 Project 5047 Guidelines for the Demonstration of Pathogen Log Removal Credits in Wastewater Treatment - \$80,000

32 Project 5045 Biogas Harvester Pilot Test - \$66,516

33 Project 5044 Modernizing the Biological Nutrient Removal Monitoring Tool Kit - \$44,074

34 Project 5042 Assessing Poly- and Perfluoroalkyl Substance Release from Finished Biosolids - \$104,000

35 Project 5041 Enteric Virus Log Removal in Wastewater Treatment for Potable Reuse - \$75,000

36 Project 5039 Definition of a Smart Utility - How to Be a Digital Utility and the Framework for an Intelligent Water System - \$75,000

37 Project 5038 2019 Roadmap Workshop on Prioritizing Permitting and Linkages Research in Water Quality - \$75,000

38 Project 5037 Evaluation of Existing Source Separated Organic Feedstock Pre-Treatment and Management Practices - \$150,000

39 Project 5034 Assessing the Microbial Risks and Potential Impacts from Stormwater Collection and Uses to Establish Appropriate Best Management Practices - \$75,000

40 Project 5031 Occurrence of PFAs Compounds in US Wastewater Treatment Plant - \$250,000

41 Project 5029 Environmental Persistence and Disinfection of Lassa Virus and SARS-CoV-2 to protect Worker and Public Safety - \$85,987

42 Project 5028 Fate of Antibiotic Resistance Genes ARGs and Antibiotic Resistant Pathogens in Full-Scale Activated Sludge Processes and the Optimization of Activated Sludge Processes for Reducing ARGs - \$144,102

43 Project 5027 Partial Denitrification Anammox as Alternative Pathway to Achieve Mainstream Short-Cut Nitrogen Removal - \$147,161

44 Project 4998 Risk Benefit Assessment of Chlorite as a Co-Disinfectant for Nitrification Control in Chloraminated Drinking Water Systems - \$150,000

45 Project 4996 Co-Digestion of Organic Waste-Addressing Operational Side-effects - \$253,022

46 Project 4994 Follow-Up Efforts on Urban Planning and Water Management - \$3,000

47 Project 4988 Pathogen Prescreening Method Optimization Study - \$24,500

48 Project 4984 Impact of Intermittent Operation on Biofilter Performance - \$196,980

49 Project 4982 Strategic Workforce Plan and Employee Value Proposition - \$41,271

50 Project 4980 Toolkit to Communicate Technical Findings to a Non-Expert Audience - \$80,000

51 Project 4975 Practices to Enhance Internal Fermentation - \$125,000

52 Project 4974 New Regulatory Approaches for Improved Nutrient Removal - \$150,000

53 Project 4973 Guidelines for Optimizing Nutrient Removal Plant Performance - \$130,000

54 Project 4972 Expanding the Use of Wastewater Epidemiology Tools to Identify Population within Service Area under Stress and Explore Potential to Affect Change - \$200,000

55 Project 4971 Leveraging the Role of Pretreatment Programs in One Water Initiatives: Synthesis of Best Practices and Path Forward - \$100,000

56 Project 4965 Development of a Community-Based Lead Risk and Mitigation Model - \$2,042,031

57 Project 4961 The Use of Next Generation Sequencing (NGS) and Metagenomics Approaches to Evaluate Anti-Microbial Resistance, Plant Challenge, Biological Removal Processes - \$300,000

58 Project 4915 Characterization and Contamination Testing of Source Separated Organic Feedstocks and Slurries for Co-Digestion at Resource Recovery Focus Areailities - \$390,000

59 Project 4907 Leading Water Utility Innovation - \$450,850

60 Project 4901 Combining Nitrite Stunt Anammox Process with the Sidestream Enhanced Biological Phosphorous Removal Ebpr Process for Simultaneous and Sustainable Nitrogen and Phosphorous Removal - \$136,099

61 Project 4900 Unlocking the Potential of Mixed-Microbial Fermentation for Enhancing Carbonaceous Resource Recovery from organic "Wastes" - \$138,447

62 Project 4892 Characterizing the Quality of Biogas Derived from Wastewater Solids Codigested Organic Wastes and Other Digestion Enhancements - \$100,000

63 Project 4882 Phase-3 Development of Wastewater Pipeline Deterioration Model - \$142,500

64 Project 4876 Next Generation Anaerobic Membrane Bioreactor for Low Temperature Domestic Wastewater Treatment: Pilot - \$163,294

- 65 Project 4864 Bioaugmentation of Activated Sludge with High Activity Nitrifying Granules/Flocs: Population Selection, Survival, Biokinetics - \$130,000
- 66 Project 4863 Hybrid Anaerobic Primary and Secondary Treatment with Energy Recovery - \$101,593
- 67 Project 4849 Exploring Cost-Benefit Analysis of Post Long-Term Control Plan Approaches to Wet Weather Management - \$50,000
- 68 Project 4842 Enhancement of Resilience to Extreme Weather and Climate Events - \$50,000
- 69 Project 4841 Exploratory Effort of Pathways for StormWater Harvesting - \$20,000
- 70 Project 4833 Impact of Wastewater Treatment Performance on Advanced Water Treatment Processes and Finished Water Quality - \$300,000
- 71 Project 4826 Towards Innovation-Stimulating Regulations-Nutrient Regulations: a Global Perspective with Implications for the United States - \$125,000
- 72 Project 4813 A Critical Review and Evaluation of Antibiotic Resistance in the Wastewater Environment - A Risk Assessment - \$140,000
- 73 Project 4797 Designing Sensor Networks and Locations on an Urban Sewershed Scale with Big Data Management and Analytics - \$200,000
- 74 Project 4760 Establishing Additional Log Reduction Credits for WWTPs - \$400,000
- 75 Project 4753 Development of Innovative Project Delivery Strategies - \$78,143
- 76 Project 4734 Real-life Enterprise Resilience - \$160,000
- 77 Project 4666 Case Study Compilation on Applying Risk Management Principles and Innovative Technologies to Effectively Manage Deteriorating Infrastructure - \$250,000