

### METROPOLITAN WASHINGTON DISTRICT OF COLUMBIA COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY

# INTEGRATED FEASIBILITY REPORT & ENVIRONMENTAL ASSESSMENT

## APPENDIX H: NATIONAL ECONOMIC DEVELOPMENT POLICY EXCEPTION

**APRIL 2024** 



SACW

18 March 2024

MEMORANDUM FOR COMMANDING GENERAL, U.S. ARMY CORPS OF ENGINEERS

SUBJECT: Metropolitan Washington District of Columbia Coastal Storm Risk Management (CSRM) Feasibility Study, Northern Virginia, National Economic Development (NED) Plan Policy Exception Request

1. Reference HQ, USACE, CECW-NAD memorandum (Metropolitan Washington District of Columbia Coastal Storm Risk Management (CSRM) Feasibility Study, Northern Virginia, National Economic Development (NED) Policy Exception Request), 12 February 2024.

2. I am responding to the memorandum requesting an exception to the requirement to recommend the National Economic Development (NED) plan and allow the U.S. Army Corps of Engineers (Corps) to recommend a plan that includes non-economically justified separable elements based on environmental and other social effects.

3. My staff has reviewed the memorandum and recommendations by the North Atlantic Division Commander and the assessment by Corps Headquarters and has concluded providing a coastal storm risk management solution at the Arlington Water Pollution Control Plant (WPCP) is necessary to ensure this piece of critical infrastructure is not at risk of operational failure due to flooding. Failure to include this component in the Recommended Plan would result in unacceptable risk to the environment and the communities dependent on the services provided by the WPCP. I approve the requested policy exception to include in the Recommended Plan a floodwall protecting the WPCP despite that alternative not being justified solely on NED benefits.

4. If there are any questions, your staff may contact Mr. Douglas J. Gorecki, Project Planning and Review at (571) 733-0066.

MICHAEL L. CONNOR Assistant Secretary of the Army (Civil Works)

CF: CECW-ZA CECW-ZB



#### DEPARTMENT OF THE ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT 2 HOPKINS PLAZA BALTIMORE, MD 21201

CENAB-PL-P (404561)

12 December 2023

MEMORANDUM FOR Commander, U.S. Army Corps and Engineers North Atlantic Division, ATTN: CENAD-PD-C (Mr. Smith), 302 John Warren Avenue, Brooklyn, New York 11252

SUBJECT: Metropolitan Washington District of Columbia Coastal Storm Risk Management (CSRM) Feasibility Study, Northern Virginia, National Economic Development (NED) Policy Exception

1. Reference Notes, CENAB-PL-P, 26 SEP 2023. SUBJECT: Metropolitan Washington District of Columbia Coastal Storm Risk Management (CSRM) Feasibility Study, Northern Virginia, NED Policy Exception, Review Coordination Call.

2. Authority. The study authority is a resolution of the U.S. Senate Committee on Environment and Public Works, dated 23 May 2001:

"That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Potomac River and Tributaries in Maryland, Virginia, and Pennsylvania published in House Document 343, ninety-first Congress, second session, and other pertinent reports, with a view to conducting a study, in cooperation with the States of Maryland and West Virginia, the Commonwealths of Pennsylvania and Virginia, and the District of Columbia, their political subdivisions and agencies and instrumentalities thereof, other Federal agencies and entities, for improvements in the interest of the ecosystem restoration and protection, flood plain management, and other allied purposes for the middle Potomac River watershed."

3. Purpose. To request a policy exception from the requirement to recommend a plan based upon NED criteria. Per Engineering Regulation (ER) 1105-2-100, Planning Guidance Notebook, an exception may be made when there are overriding reasons for recommending another plan, based on other Federal, state, local and international concerns. ER 1105-2-100 requires that all separable elements of the Recommended Plan be incrementally justified. The U.S. Army Corps of Engineers (USACE), Baltimore District (NAB) requests approval for the Recommended Plan that includes elements based on Other Social Effects (OSE) and Environmental Quality (EQ). The Recommended Plan involves critical infrastructure, a treatment plant, that treats wastewater each day for residential and commercial structures, and services multiple

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jurisdictions including Arlington County, Alexandria County, Fairfax County, and Falls Church. This critical infrastructure serves six economically disadvantaged communities within Lee Boulevard Heights, Glencarlyn, Arlington Forest, Barcroft, Arlington Mill, and Buckingham located in Fairfax and Arlington Counties. The six economically disadvantaged communities comprise nearly 13 percent of the total population served by Arlington WPCP.

4. Background. The Metropolitan Washington District of Columbia CSRM study evaluated coastal storm risk management alternatives throughout Northern Virginia to manage coastal storm risk for vulnerable populations, property, ecosystems, and infrastructure. Following Hurricane Sandy in 2012, USACE completed the North Atlantic Coast Comprehensive Study (NAACS), which identified nine high-risk areas on the Atlantic Coast that warranted further investigation of CSRM solutions. The Metropolitan Washington, D.C. Region was one of the nine high-risk areas recommended for investigation under NAACS. Problems identified within the study area include concerns for life safety, economic damages, and critical infrastructure disruption resulting from storm surge inundation caused by coastal storms.

5. NED Plan. The NED plan is the plan that maximizes average annual net benefits consistent with the study purpose. Within the approximately 76 square miles of study area, critical infrastructure was identified and alternatives to manage flood risk were formulated and evaluated. In the determination of the NED Plan, the benefit-to-cost ratio (BCR) was calculated for the various structural and nonstructural alternatives. Most alternatives were far below a BCR of 1 except Alternative 4c and Alternative 5c that were combined into Alternative 8. The Recommended Plan (Alternative 8) includes construction of a floodwall at both Arlington Water Pollution Control Plan (WPCP) (Alternative 4c) and a floodwall and levee with pump stations at the community of Belle Haven (Alternative 5c). However, due to lack of community support based on aesthetic and recreational impacts, the non-Federal sponsor (Fairfax County) requested that the Belle Haven separable element be omitted. Belle Haven (Alternative 5c) held a BCR of 1.3 and positive average annualized net benefits of \$827,000 when optimized after the ADM milestone (FY23, October 2022 price level and 2.5 percent discount rate).

With the omission of the Belle Haven separable element, the floodwall at the Arlington WPCP (Alternative 4c) is the only element of the Recommended Plan moving forward and the max net benefits plan. This plan exhibits negative average annualized net benefits of -\$36,584, a BCR of 0.92, and a project first cost of \$14.97 million (including contingency and is at the FY24, October 2023 Price Level). Alternative 4c is a separable element of Alternative 8, and due to negative average annualize net benefits is not an NED Plan. The economic benefits captured are limited to only direct replacement costs and are not capturing certain economic elements that would occur in an event of the Arlington WPCP becoming non-operational due to a storm event. Some elements not captured are business interruptions, temporary relocations of businesses

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and residents, labor costs for the Arlington WPCP, and clean up costs. Additionally, for the Arlington WPCP location, a floodwall was the only appropriate type of flood management alternative considered during this feasibility phase of the project due to real estate constraints. The recreational trail next to the Arlington WPCP (that the WPCP does not own) is a limiting factor. Construction of an embankment in lieu of a floodwall or in combination with a floodwall would greatly impact surrounding real-estate since the area is highly confined and restricted; thus a floodwall is the only appropriate type of flood management alternative considered at the Arlington WPCP during this feasibility phase.

6. Other Social Effects (OSE)/ Environmental Quality (EQ) Benefits. The Recommended Plan (Arlington WPCP Floodwall) would reduce the plant's susceptibility to flood events and reduce the risk of operational failure. Without the proposed project, flooding from Four Mile Run may result in disruption to the operations and damage to the equipment at the facility. It could take weeks or months to place the systems back into operation, presenting public health risks to the service area of 220,000 people. Flooding may also result in impacting approximately 117 acres of wetlands and 812 acres of aquatic habitat through release of contaminated effluent. Arlington County owns the Arlington WPCP. Without CSRM measures to reduce risk to the plant, the plant will not be able to uphold its mission to safely and economically process wastewater and hazardous waste materials to protect the environment: especially Four Mile Run, the Potomac River, and the Chesapeake Bay. Further information on the WPCP and OSE/EQ Benefits are located within the enclosed white paper.

7. Recommendation. The Baltimore District recommends approval of the remaining Recommended Plan, Alternative 4c. The Recommended Plan (Arlington WPCP Floodwall) is a critical infrastructure structural solution that includes construction of an approximately 1,180-linear-foot floodwall to the south of Arlington WPCP. The plan provides for significant positive OSE (including serving six economically disadvantaged communities) and EQ benefits, as well as community resilience. The Recommended Plan (Arlington WPCP Floodwall) has a BCR of 0.92. Due to the timeline to a Chiefs Report, it is imperative to route this request for a policy exception now, given the known comprehensive benefits and economically disadvantaged populations, and the BCR is slightly below 1.0. This recommendation is responsive to the Policy Directive for the Comprehensive Documentation of Benefits in Decision Document, dated 5 January 2021, in response to the Assistant Secretary of the Army for Civil Works (ASA(CW)) memorandum, dated 3 April 2020, that directed teams to consider total project benefits including economic, environmental, and social categories.

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8. The District point of contact for this request is Ms. Amy Guise, Chief, Planning Division, at 410-227-5144 or <u>amy.m.guise@usace.army.mil</u>, or Mr. Daniel Bierly, Chief, Civil Works Project Development Branch, at 410-962-6139 or Daniel.M.Bierly@usace.army.mil.

2 Encls 1. White Paper, 07 DEC 23 2. Report Summary MYERS.DAVID.M Digitally signed by MYERS.DAVID.M.1014711291 Date: 2023.12.12 12:36:20 -05'00' DAVID M. MYERS LTC, EN NAB DDE Enclosure 1: White Paper, 07 DECEMBER 2023

#### Metropolitan Washington, District of Columbia, Coastal Storm Risk Management Feasibility Study

#### **Arlington Water Pollution Control Plant**

#### Other Social Effects/Environmental Quality Benefits White Paper December 2023

The U.S. Army Corps of Engineers, Baltimore District, recommends approval of the remaining element of the Recommended Plan, Alternative 4c. The Recommended Plan (Arlington Water Pollution Control Plant (WPCP) Floodwall) is a critical infrastructure structural solution that includes construction of an approximately 1,180-linear-foot floodwall to the south of the Arlington WPCP. The purpose of this white paper is to document Other Social Effects (OSE) and Environmental Quality (EQ) benefits that could be realized by implementation of the Recommended Plan. This paper provides a general overview of the Arlington WPCP and the damage that may be incurred to the plant from a flood event, describes the existing conditions of the surrounding community including economically disadvantaged communities and the environment, and describes the potential effects from WPCP flooding and the benefits of the Recommended Plan to the community and the environment.

#### **Arlington WPCP**

The Arlington WPCP is a wastewater treatment plant located on South Glebe Road in Arlington, Virginia with capacity to treat up to 40 million gallons per day. The Arlington WPCP receives and treats wastewater from most of Arlington County, and portions of Fairfax County, Falls Church, and Alexandria; a population of more than 220,000 people. The area is densely populated with a mix of residential, institutional, and commercial customers. The Ronald Reagan Washington National Airport (National Airport), and federal facilities in Arlington, such as the Pentagon, Navy Annex and Fort Myer, operate their own collection systems and pump their wastewater into the Arlington WPCP for treatment. The WPCP also conveys flow from a portion of Alexandria to Fairfax County – these flows are then conveyed to the Blue Plains Sewage Treatment Plant in Washington, D.C. The Blue Plains Sewage Treatment Plant is currently constructing a +17-foot NAVD88 floodwall (top elevation of wall) to manage risk to the plant from flooding from a 500-year storm (DC Water, 2021). The Arlington WPCP sewershed (the community area served by a water collection system) is shown in Figure 1 of the attachment.

Flooding from storm surge may result in damage to the components and infrastructure of the WPCP facility. Wastewater treatment plants include buildings, system components and equipment needed to treat wastewater. Wastewater treatment system buildings that are key to system operation must be protected from water entry before, during, and after a flood. Flooding or surge can damage the buildings and destroy process equipment, communications controls, field equipment, and important data records while blocking access to the plant. A constant supply of treatment chemicals and fuel is needed to operate a wastewater treatment system, particularly after a flood. Flooding can slow down or completely stop delivery of chemicals or fuel to the facility if access to the treatment plant is blocked or if the availability of these items is impacted. Wastewater treatment plants use a large amount of power to complete the treatment process. If the treatment plant does not have redundant systems for critical parts of the process that depend on power, service may be disrupted during floods. This disruption could result in a raw sewage backup or even discharge of raw sewage following floods (FEMA, 2022).

The extent of wastewater service disruption in the service area will depend upon the combination of components and structures that are inundated and the depth of inundation. Many of the

components and structures at the WPCP may be elevated in a way that manages risk from flood damage or from flood service disruption. For example, operational controls may be housed in buildings with elevated first floors or aeration tanks may be surrounded by rims that manage risk from up to several feet of flooding (USACE, 2022).

The Northern Virginia Infrastructure System Vulnerability Assessment conducted by the Engineer Research and Development Center (ERDC) for this study identified the following WPCP components and infrastructure that are vulnerable to flooding from a 100-year coastal storm under seven sea level rise scenarios: Secondary Aeration Tank 5-6 (ID#30), Secondary Aeration Tank 1-4 (ID#9), West Mixed Liquor Flow (ID#62), Secondary Clarifier 7 (ID#47), Secondary Clarifier 8 (ID#46), Advanced Backwash Building (ID#42), Wet Weather Filter Facility (ID#4), Filtration and Disinfection Facility (ID#17), PTB Backup Flow Distribution Structure (ID#57), and PTB Structure (ID#58). Figure 2 in the attachment shows the location of these components and structures and the inundation footprint under a 100-year coastal storm given existing sea-level and three sea-level rise scenarios (USACE, 2022).

#### **Economically Disadvantaged Communities**

Six economically disadvantaged communities are served by the Arlington WPCP. Economically disadvantaged communities make up approximately 13 percent of the population that is located within the Arlington WPCP sewershed (approximately 27,500 residents and 11,653 households). The communities highlighted in Figure 1 of the attachment and summarized in Table 1 below are identified as economically disadvantaged primarily due to the following indicators of burdens (as compared to the rest of the United States): housing cost, linguistic isolation, lack of high school education, low median income, and low income (CEQ, 2022). The economically disadvantaged communities are primarily Hispanic and white with Spanish and Asian pacific island as the primary language (EPA, 2023). These communities are in Fairfax and Arlington Counties, Virginia, approximately 2.5 to 5 miles northeast of the WPCP. The percentiles for the indicators of burdens are mostly comparable between the state and national levels (Table 1).

Due to high housing prices in Arlington County (approximately 220 percent higher than the national average), Arlington's poverty level line is approximately 150 percent above the federal poverty level. The highest poverty zip code in Arlington is 22204, which includes three of the economically disadvantaged communities served by the Arlington WPCP. Approximately 14 percent of the population living in this zip code are below the Arlington County poverty level. The Barcroft, Arlington Mill, and Buckingham neighborhoods are the highest poverty neighborhoods in Arlington. These neighborhoods are in the economically disadvantaged communities served by the Arlington WPCP (Arlington Community Foundation, 2023).

The cumulative environmental justice (EJ) impact represents the overall environmental impacts and vulnerabilities in a census tract compared to other census tracts in the state. Four economically disadvantaged communities served by the Arlington WPCP are identified as having the highest cumulative EJ impacts as compared to the rest of the state. The other two economically disadvantaged communities served by the WPCP have high cumulative EJ impacts as compared to the rest of the state. Figure 3 in the attachment shows the cumulative EJ impacts for the six economically disadvantaged communities (Mapping for Environmental Justice, 2021).

Census tracts located directly south of the WPCP (across Four Mile Run), and one tract located approximately 0.5 miles north of the WPCP are in the 95<sup>th</sup> to 99<sup>th</sup> percentiles (as compared to the state) for potential exposure to toxic chemicals in wastewater discharge. Although the census tract located directly south of the WPCP is not served by the Arlington WPCP, it is an economically disadvantaged community (CEQ, 2022; EPA, 2023). The wastewater discharge environmental

indicator uses the EPA's Risk Screening Environmental Indicators Model to determine the amount of toxic chemicals released or transferred from facilities, together with factors such as the chemical's fate and transport through the environment, each chemical's relative toxicity, and potential human exposure (EPA, 2023).

#### **Environmental Setting**

The study area is in a densely populated urban setting that is primarily residential, but also includes commercial districts, industrial facilities, federal facilities, and transportation infrastructure as well as natural areas, green spaces, and historic properties. Although the area is extensively developed, the study area also includes a variety of habitat types including mature mixed hardwood forests, young forests, retired agricultural land, tidal and non-tidal wetlands, and tidally influenced streams and riparian habitats. The study area also includes submerged aquatic vegetation (SAV) including hydrilla (*Hydrilla verticillata*), spiny naiad (*Najas minor*), coontail (*Ceratophyllum demersum*), water stargrass (*Heteranthera dubia*), wild celery (*Vallisneria americana*), and southern naiad (*Najas guadalupensis*), with hydrilla being the dominant species of SAV. Approximately 10 acres of freshwater forested/shrub wetlands, 14.5 acres of emergent wetlands, and 0.23 acres of SAV are in Four Mile Run. Approximately 85 acres of freshwater forested/shrub wetlands, and 812 acres of SAV are within 4 miles downstream (to the Woodrow Wilson Memorial Bridge) of the WPCP (USFWS, n.d.; VIMS, 2017).

Water quality in the Potomac River estuary is affected by three major water pollution inputs: wastewater treatment plant discharges into the river; stormwater runoff and other non-point discharges from urban development; and water flowing from the non-tidal portion of the river into the Potomac River estuary, which is heavily impacted by agriculture. Local governments and water utilities in the region are making progress in reducing the amount of nutrients discharged from wastewater treatment plants. Nitrogen and phosphorus (which in excess contribute to water quality problems) contained in the discharge from wastewater treatment plants has declined since the 1980s. There has also been some progress in achieving reductions from other nutrient sources (MWCOG, 2019).

Water quality data collected from the Potomac River estuary and the Chesapeake Bay since 1985 provides a picture of mixed progress in improvement of water quality in the region. For three of the Chesapeake Bay total maximum daily load (TMDL) major water quality standards – dissolved oxygen (DO), water clarity, and chlorophyll-a, data show that in some areas of the Potomac River estuary water quality is improving and in other areas it is degrading. In some areas of the estuary, water quality meets the current standards set by Maryland, Virginia, and D.C., and in other areas it does not. However, signs of improvement in overall DO levels indicates that efforts to improve water quality are having an impact (MWCOG, 2019).

Four Mile Run flows through residential areas and urban corridors in south and western Arlington County. Four Mile Run is impaired for fecal coliform bacteria and PCB contamination (polychlorinated biphenyls – a highly toxic industrial compound) in fish tissue (Arlington County Virginia, 2022).

The WPCP discharges treated wastewater effluent into Four Mile Run, part of the lower Potomac River sub-basin in the Chesapeake Bay watershed, under Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0025143 (Arlington, Virginia; 2018). A VPDES permit places limits on pollutants entering streams, rivers, and bays.

#### Potential Effects from WPCP Flooding to the Community and the Environment

The Arlington WPCP is considered critical infrastructure that operates 24 hours per day, 7 days per week, 365 days per year. Critical infrastructure includes structures in the floodplain that are critical to the nation or a particular region (USACE, 2023a). The Arlington WPCP is infrastructure that has a tremendous service value to the community, but also poses as a risk to the population due to the presence of chemical materials. Damage to the components and infrastructure of the WPCP facility and disruption of service could have detrimental effects on the community including economically disadvantaged communities, as well as the environment. Replacing equipment at the WPCP could cost up to \$5,954,000. Risk management to the WPCP from coastal flooding would reduce the cost of damages to \$626,000 (89 percent reduction in damages) (USACE, 2023b). The time it would take to place the systems back in operation after a flood event could be weeks or months.

The WPCP not being able to accept wastewater or discharging untreated wastewater can result in public health impacts to the entire sewershed and the region. Wastewater contains a wide range of hazardous constituents including microbial pathogens and toxic chemicals. If not properly treated, wastewater discharge can cause serious public health outcomes, such as outbreaks of infectious diseases and acute and chronic toxicity events. The COVID-19 virus (SARS-CoV-2) can be detected in untreated wastewater. In fact, the Centers for Disease Control and Prevention's (CDC) National Wastewater Surveillance System tracks the presence of SARS-CoV-2 in wastewater samples to determine the spread of COVID-19 in a community (CDC, 2023).

Economically disadvantaged communities identified as low income typically have less resources to cope with crises or disasters. Vulnerable residents may be less able to afford preparedness actions such as making home improvements to increase resilience to disasters. Paying to fix damages from sewer backups places an extra burden on vulnerable residents that are already in an area with high housing cost (spending more than 30 percent of income on housing), and who have low incomes.

Approximately 27,500 vulnerable residents in the Arlington WPCP sewershed face multiple barriers to receiving aid to help them repair their homes and meeting their other needs:

- Due to the language barrier, linguistically isolated communities may have a harder time finding programs to help pay for the cost of repairs.
- Vulnerable residents may have a harder time finding alternative housing if their residence is uninhabitable due to a sewer backup.
- Vulnerable residents may not have the means to drive farther away to find food and other essential needs if these businesses are shut down.
- Vulnerable residents may not have the means to find childcare if schools are shut down.
- Fishing in Arlington/Alexandria along the Potomac River may be unsafe for vulnerable residents who rely on fishing for food.

A disruption in wastewater service may have public health impacts if nursing homes, hospitals, urgent care centers, etc. are shut down. There are three hospitals, two nursing homes, and two health clinics located with the Arlington WPCP sewershed. One of the nursing homes is in the neighborhood of Glencarlyn, which is an economically disadvantaged community served by the sewershed (EPA, 2022). Nursing homes and assisted living facilities provide safe housing, specialized on-site medical and nursing care for the most vulnerable members of the community. These facilities also provide a sense of community for their residents. If a nursing homes or

assisted living facility experience damage, the residents would have to be relocated to other sites to provide for their needs, ultimately disrupting the community.

Large volumes of water are generated at airports. Certain types of water at airports, including from aircraft lavatories and recaptured de-icing fluids, are wastewater. The wastewater generated at National Airport is collected on site and sent to the Arlington WPCP for treatment. If left untreated, wastewater generated at the airport could have a negative effect on the environment since it contains a relatively high concentration of contaminants. It is unclear how much wastewater can be collected and stored in the airport's wastewater collection system and for how long; however, backup of wastewater at National Airport may result in flight delays and cancelled flights. Due to its proximity to the national capital, National Airport is the primary airport for members of Congress to arrive and depart from Washington, D.C. National Airport has 819 scheduled arrivals and departures of commercial flights per day. The airport's main runway is the busiest in the U.S. (MWAA, 2023).

Federal facilities in Arlington including the Pentagon, Navy Annex, and Fort Myer collect and pump their wastewater to the Arlington WPCP. Government officials and military personnel may not be able to work at the facilities if there is a disruption of wastewater service.

If WPCP infrastructure is damaged or chemicals to treat the water are not available, wastewater would flow through the plant without any treatment and into Four Mile Run/Potomac River. There is no backup treatment facility. In a disaster scenario, the WPCP would send partially treated or untreated wastewater directly into Four Mile Run. Untreated sewage carries organic waste and nutrients leading to oxygen depletion and disease-causing bacteria and parasites if the exposure to elevated nutrients in untreated wastewater persists for weeks or months. This can temporarily affect fish and wildlife and submerged aquatic vegetation found in the Potomac River. Approximately 117 acres of wetlands and 812 acres of SAV could be affected. The river may also be temporarily unfit for recreational purposes.

#### Other Social Effects (OSE) Benefits

The Recommended Plan (proposed floodwall at the Arlington WPCP) would keep the WPCP fully functional (receive and treat wastewater) during and after a flood event. The main goal of wastewater treatment facilities is to protect humans and the ecosystem from harmful and toxic elements found in wastewater. Keeping the wastewater treatment plant operational is one piece of the overall storm recovery picture. The Recommended Plan would provide the following benefits to the surrounding community:

- The WPCP promotes human health and safety by collecting and treating sewage and wastewater from residential and commercial facilities.
- Maintain community cohesion, identity, and resiliency by avoiding displacement of residents.
- Supports recreational activities such as kayaking and fishing on the Potomac River in Arlington and Alexandria, Virginia.
- Supports physical health and safety of residents of economically disadvantaged communities by increasing resiliency of the community.
- Removing impurities from sewage prevents diseases and other health issues. Safely managed water, sanitation and hygiene services are an essential part of preventing disease and protecting human health during infectious disease outbreaks, including the COVID-19 pandemic.
- Manage the risk of the immediate and long-term impacts of natural disasters on vulnerable communities by protecting the limited financial assets of community members.

- Protects critical infrastructure so that these services are still available during and after disaster events.
- Meets the requirements of Executive Orders 12898 and 13390 and complies with the current administration's Justice40 Initiative.

#### **Environmental Quality (EQ) Benefits**

The Recommended Plan would provide the following environmental benefits:

• The wastewater treatment process preserves the environment, preventing contaminated effluent from damaging sensitive ecosystems.

Table 2 below provides a synopsis of the OSE and EQ benefits to the community served by the Arlington WPCP, including economically disadvantaged communities, by managing coastal storm risk.

In conclusion, the remaining element of the Recommended Plan (Arlington WPCP Floodwall) provides for significant positive OSE (including serving six economically disadvantaged communities) and EQ benefits, as well as community resilience. The Recommended Plan would reduce the plant's susceptibility to flood events and reduce the risk of operational failure. Without the proposed project, flooding from Four Mile Run may result in disruption to the operations and damage to the equipment at the facility. It could take weeks to months to place the systems back into operation (DC Water, 2021), presenting public health risks to the service area of 220,000 people. Flooding may also result in impacting approximately 117 acres of wetlands and 812 acres of aquatic habitat through release of contaminated effluent. Arlington County owns the Arlington WPCP. Without CSRM measures to reduce risk to the plant, the plant will not be able to uphold its mission to safely and economically process wastewater and hazardous waste materials to protect the environment: especially Four Mile Run, the Potomac River, and the Chesapeake Bay.

## Table 1. Description of Economically Disadvantaged Communities in the Arlington Wastewater Treatment Plant Sewershed

Census Tract	Population	Households	Categories	Percentiles Compared to US (CEQ,	Percentiles Compared to the state (EPA,	Virginia Mapping for Environmental Justice
1. 51059451400, Fairfax County, VA	3,159 – This tract contains three shopping centers, the Willston Multicultural center, a portion of Upton Hill Regional Park, apartment/condo complexes, and a waterpark. No single-family residences observed. Adjacent to major roadways.	1,305	<ul> <li>Housing cost - Share of households making less than 80% of the area median family income and spending more than 30% income on housing</li> <li>Underground storage tanks and releases - Formula of the density of leaking underground storage tanks and number of all active underground storage tanks within 1500 feet of the census tract boundaries.</li> <li>Linguistic isolation - share of households where no one over 4 yrs. old speaks English very well.</li> <li>High school education - percent of people aged 25 and older whose high school education is less than a high</li> </ul>	2022) 92 <sup>nd</sup> percentile (above 90 <sup>th</sup> percentile) 91 <sup>st</sup> percentile (above 90 <sup>th</sup> percentile) 97 <sup>th</sup> percentile (above 90 <sup>th</sup> percentile) 35% (above 10%)	90 <sup>th</sup> percentile 98 <sup>th</sup> percentile 97 <sup>th</sup> percentile	Highest cumulative EJ impact
			Low median income - Comparison of median income in the tract to median incomes in the area. Low Income - people in households where income is less than or equal to twice the federal poverty level.	96 <sup>th</sup> percentile (above 90 <sup>th</sup> percentile) 89 <sup>th</sup> percentile (above 65 <sup>th</sup> percentile)	85 <sup>th</sup> percentile	

Census Tract	Population	Households	Categories	Percentiles Compared to US (CEQ, 2022)	Percentiles Compared to the state (EPA, 2023)	Virginia Mapping for Environmental Justice
2. 51059451501, Fairfax County, VA Several other large businesses, a hotel, apartment/condo complexes, and single-family residences. Adjacent to major roadways.	5,572 – This tract contains a large shopping center, several other large businesses, a hotel,	2,282	Linguistic isolation	91 <sup>st</sup> percentile (above 90 <sup>th</sup> percentile)	71 <sup>st</sup> percentile	High cumulative EJ impact
		High school education	23% (above 10%)	67 <sup>th</sup> percentile		
		Low income	68 <sup>th</sup> percentile (above 65 <sup>th</sup> percentile)	72 <sup>nd</sup> percentile		
3. 51013102003 – Arlington County, VA 4,041 – This tract contains a shopping center, businesses along N Glebe Rd., apartment/condo complexes, single- family residences, a senior center, several churches, a school, and a couple of parks. Adjacent to major roadways.	4,041 – This tract contains a shopping center, businesses along N Glebe Rd., apartment/condo complexes, single-	2,610	High school education	17% (above 57 <sup>th</sup> 10%) percentile	57 <sup>th</sup> percentile	Highest cumulative EJ impact
		Low median income	97 <sup>th</sup> percentile (above 90 <sup>th</sup> percentile)			
			Low income	67 <sup>th</sup> percentile (above 65 <sup>th</sup> percentile)	67 <sup>th</sup> percentile	

Census Tract	Population	Households	Categories	Percentiles Compared to US (CEQ, 2022)	Percentiles Compared to the state (EPA, 2023)	Virginia Mapping for Environmental Justice
4. 51013102100, Arlington County, VA 2,394 – This tract contains primarily single-family residences. Schools, a library, hospital, and several parks are also located in this tract. A large green space (Glencarlyn Park) associated with Four Mile Run is in the SE portion of the tract	2,394 – This tract contains primarily single-family residences. Schools, a library, hospital,	997	Linguistic isolation	94 <sup>th</sup> percentile (above 90 <sup>th</sup> percentile)	83 <sup>rd</sup> percentile	High cumulative EJ impact
		High school education	11% (above 10%)	59 <sup>th</sup> percentile		
5. 51013102200 – Arlington County, VA apartment/condo complexes, single- family residences, an elementary school, church, and several businesses along Columbia Pike. A large green space (Glencarlyn Park) associated with Four Mile Run	3,074	Housing cost	97 <sup>th</sup> percentile (above 90 <sup>th</sup> percentile)		Highest cumulative EJ impact	
		High school education	25% (above 10 percent)	91 <sup>st</sup> percentile		
		Low median income	92 <sup>nd</sup> percentile (above 90 <sup>th</sup> percentile)			
	is in the north portion of the tract.		Low income	71 <sup>st</sup> percentile (above 65 <sup>th</sup> percentile)	56 <sup>th</sup> percentile	

Census Tract	Population	Households	Categories	Percentiles Compared to US (CEQ, 2022)	Percentiles Compared to the state (EPA, 2023)	Virginia Mapping for Environmental Justice
<ul> <li>6. 51013102701 <ul> <li>Arlington</li> <li>County, VA</li> </ul> </li> <li>4,135 – This tract contains primarily apartment/condo complexes, single-family residences, Doctor's Branch Park, and an elementary school.</li> </ul>	4,135 – This tract contains primarily apartment/condo complexes, single-	1,385	Housing cost	90 <sup>th</sup> percentile (above 90 <sup>th</sup> percentile)		Highest cumulative EJ impact
		Linguistic isolation	90 <sup>th</sup> percentile (above 90 <sup>th</sup> percentile)	87 <sup>th</sup> percentile		
		Low median income (above 90 <sup>th</sup> percentile)				
		High school education	on 14% (above 77 <sup>th</sup> 10%) percentile	77 <sup>th</sup> percentile		
			Low income	70 <sup>th</sup> percentile (above 65 <sup>th</sup> percentile)	86 <sup>th</sup> percentile	

Element	Benefits
Community Served by the Arlington WPCP	OSE Benefits
	Supports the health and safety of over 220,000 residents by providing wastewater service to residences, critical infrastructure, and the surrounding community.
	Protection from harmful pollutants including complex organic materials, nitrogen and phosphorus-rich compounds, and pathogenic organisms (bacteria and viruses) found in wastewater that could result in serious public health outcomes after a storm.
	Maintains community cohesion and resiliency by avoiding displacement of residents.
	Keeps critical services open including three hospitals, two nursing homes, eight fire stations, and three police stations during and after a storm.
	National Airport and federal facilities such as the Pentagon, Navy Annex, and Fort Myer could remain operational following a storm.
	No disruption in the conveyance of wastewater from a portion of Alexandria to Fairfax County to the Blue Plains Sewage Treatment Plant in Washington, D.C.
	EQ Benefits
	Preserves the environment, preventing contaminated effluent from damaging sensitive ecosystems including approximately 24.5 acres wetlands located directly south of the WPCP in Four Mile Run Park.
	kavaking following a storm.
Economically Disadvantaged	OSE Benefits
Communities	Supports the health and safety of approximately 27,500 vulnerable residents by providing wastewater service. Would not place an extra burden on residents to repair damages or find alternative housing during a disruption of wastewater service.
	Would not place an extra burden on linguistically isolated communities that may have a harder time finding services to fix the damage or alternative housing due to the language barrier.
	Vulnerable residents would not have to drive in unsafe conditions following a storm to find food or other essentials if businesses in the area are shut down due to a disruption in wastewater service.
	Childcare facilities (daycares and schools) may remain open, which would lessen the burden on vulnerable residents that may not have alternative childcare.
	Preserves fishing in Arlington/Alexandria along the Potomac River for vulnerable residents that rely on fishing for food.

 Table 2. Other Social Effects and Environmental Quality Benefits Gained by Managing

 Coastal Storm Risk

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Figure 2: Arlington Water Pollution Control Plant (AWPCP), 100-year coastal storm. Inundation of AWPCP components and structures by a 100-year coastal storm given existing sea level and three sea level rise scenarios (1.08 ft., 3.27 ft., 8.64 ft.).



Figure 3. Cumulative Environmental Justice Impacts for the Disadvantaged Communities served by the Arlington Water Pollution Control Plant.

Enclosure 2: Draft Report Summary, 11 DECEMBER 2023

The Report Summary sent with the NED Policy Exception on 12 December 2023 was similar to the Final Report Summary. Additionally, cost estimates and economic values were updated as needed during the NED Policy Exception Request review period. Please see Final Report Summary.