

# 2671 - Army Base Treatment Plan Generator Controls Replacement

## Application Details

Funding Opportunity:	2336-Virginia Community Flood Preparedness Fund - Project Grants - CY24 Round 5
Funding Opportunity Due Date:	Jan 24, 2025 11:59 PM
Program Area:	Virginia Community Flood Preparedness Fund
Status:	Under Review
Stage:	Final Application
Initial Submit Date:	Jan 22, 2025 11:02 AM
Initially Submitted By:	Christina Condon
Last Submit Date:	
Last Submitted By:	

## Contact Information

### Primary Contact Information

Active User*:	Yes
Type:	External User
Name*:	Ms. Christina Marie Condon Salutation First Name Middle Name Last Name
Title:	Grants Analyst
Email*:	ccondon@hrsdc.com
Address*:	1434 Air Rail Avenue  Virginia Beach Virginia 23455 City State/Province Postal Code/Zip
Phone*:	(757) 460-7015 Ext. Phone ###-###-####
Fax:	###-###-####
Comments:	

### Organization Information

Status*:	Approved
Name*:	Hampton Roads Sanitation District - HRSD
Organization Type*:	Local Government
Tax ID*:	54-6001749
Unique Entity Identifier (UEI)*:	NLNLKTGGRKZ6
Organization Website:	<a href="https://www.hrsdc.com">https://www.hrsdc.com</a>

**Address\*:** 1434 Air Rail Avenue

Virginia Beach Virginia 23455-  
City State/Province Postal Code/Zip

**Phone\*:** (757) 460-2261 Ext.  
### ### #####

**Fax:** ### ### #####

**Benefactor:**

**Vendor ID:**

**Comments:**

## VCFPF Applicant Information

### *Project Description*

**Name of Local Government\*:** Hampton Roads Sanitation District

Your locality's CID number can be found at the following link: [Community Status Book Report](#)

**NFIP/DCR Community Identification Number (CID)\*:** 519999

If a state or federally recognized Indian tribe,

**Name of Tribe:**

**Authorized Individual\*:** Steve de Mik  
First Name Last Name

**Mailing Address\*:** 1434 Air Rail Avenue  
Address Line 1  
Address Line 2

Virginia Beach Virginia 23455  
City State Zip Code

**Telephone Number\*:** 757-460-7240

**Cell Phone Number\*:** 757-274-5340

**Email\*:** [sdemik@hrsd.com](mailto:sdemik@hrsd.com)

Is the contact person different than the authorized individual?

**Contact Person\*:** Yes

**Contact:** Christina Condon  
First Name Last Name

1434 Air Rail Avenue  
Address Line 1  
Address Line 2

Virginia Beach Virginia 23455  
City State Zip Code

**Telephone Number:** 757-460-7015

**Cell Phone Number:** 757-510-6489

**Email Address:** [ccondon@hrsd.com](mailto:ccondon@hrsd.com)

Enter a description of the project for which you are applying to this funding opportunity

**Project Description\*:**

Replacement of generator controls including equipment procurement, design to integrate controls with existing generators, construction, and startup. The completed project will ensure reliable backup power to support the wastewater treatment process loads in the event of utility power

loss due to flood, inclement weather, or other causes. This protects the natural environment, residents, and businesses from process disruptions that could result in discharges of raw or partially treated sewage.

Low-income geographic area means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Is the proposal in this application intended to benefit a low-income geographic area as defined above?

**Benefit a low-income geographic area\*:** Yes

Information regarding your census block(s) can be found at [census.gov](https://www.census.gov)

**Census Block(s) Where Project will Occur\*:** 517100009021091

**Is Project Located in an NFIP Participating Community?\*** Yes

**Is Project Located in a Special Flood Hazard Area?\*** No

**Flood Zone(s) (if applicable):** AE, X

**Flood Insurance Rate Map Number(s) (if applicable):** 5101040012H

## Eligibility CFPF - Round 4 - Projects

### Eligibility

Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?

**Local Government\*:** Yes  
Yes - Eligible for consideration  
No - Not eligible for consideration

Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?

**Resilience Plan\*:** Yes  
Yes - Eligible for consideration under all categories  
No - Eligible for consideration for studies, capacity building, and planning only

If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?

**Letters of Support\*:** Yes  
Yes - Eligible for consideration  
No - Not eligible for consideration  
N/A - Not applicable

Has this or any portion of this project been included in any application or program previously funded by the Department?

**Previously Funded\*:** No  
Yes - Not eligible for consideration  
No - Eligible for consideration

Has the applicant provided evidence of an ability to provide the required matching funds?

**Evidence of Match Funds\*:** Yes  
Yes - Eligible for consideration  
No - Not eligible for consideration  
N/A - Match not required

## Scoring Criteria for Flood Prevention and Protection Projects - Round 4

### Scoring

#### Category Scoring:

Hold CTRL to select multiple options

**Project Category\*:** All other projects

Is the project area socially vulnerable? (based on [ADAPT Virginia's Social Vulnerability Index Score](#))

Social Vulnerability Scoring:

Very High Social Vulnerability (More than 1.5)  
High Social Vulnerability (1.0 to 1.5)  
Moderate Social Vulnerability (0.0 to 1.0)  
Low Social Vulnerability (-1.0 to 0.0)  
Very Low Social Vulnerability (Less than -1.0)

**Socially Vulnerable\*:** High Social Vulnerability (1.0 to 1.5)

Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NRP?

**NFIP\*:** No

Is the proposed project in a low-income geographic area as defined below?

"Low-income geographic area" means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

**Low-Income Geographic Area\*:** Yes

Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?

**Reduction of Nutrient and Sediment Pollution\*:** No

Does this project provide ?community scale? benefits?

**Community Scale Benefits\*:** More than one census block

Expected Lifespan of Project

**Expected Lifespan of Project\*:** Over 20 Years

**Comments:**

The HRSD Asset Management Plan uses generator book value useful life of 24 years. Listed in the BCA, ITAC generator control system has a useful life of 20 years. FEMA book value for generator control useful life is 19 years.

## Scope of Work - Projects - Round 4

### Scope of Work

Upload your Scope of Work

Please refer to Part IV, Section B. of the grant manual for guidance on how to create your scope of work

**Scope of Work\*:** [CID519999\\_HRSD\\_CFPF-3\\_SOW.pdf](#)

**Comments:**

The attached scope of work focuses on the need for replacement generator controls at the Army Base Wastewater Treatment Plant and the project's importance to the local community.

### Budget Narrative

**Budget Narrative Attachment\*:** [CID519999\\_HRSD\\_CFPF-3\\_BudgetNarrative.pdf](#)

**Comments:**

The proposed budget and budget narrative provides the cost, match, and justifications for the generator controls; and provides assurance that costs are necessary and reasonable for the reliable operation of backup power.

## Scope of Work Supporting Information - Projects

### Supporting Information - Projects

Provide population data for the local government in which the project is taking place

**Population\*:** 238005.00

Provide information on the flood risk of the project area, including whether the project is in a mapped floodplain, what flood zone it is in, and when it was last mapped. If the property or area around it has been flooded before, share information on the dates of past flood events and the amount of damage sustained

**Historic Flooding data and Hydrologic Studies\*:** [CID519999\\_HRSD\\_CFPF-3\\_HistoricFloodData.pdf](#)

Include studies, data, reports that demonstrate the proposed project minimizes flood vulnerabilities and does not create flooding or increased flooding (adverse impact) to other properties

**No Adverse Impact\*:**

[CID519999\\_HRSD\\_CFPF-3\\_NoAdverseImpactCFM.pdf](#)

Include supporting documents demonstrating the local government's ability to provide its share of the project costs. This must include an estimate of the total project cost, a description of the source of the funds being used, evidence of the local government's ability to pay for the project in full or quarterly prior to reimbursement, and a signed pledge agreement from each contributing organization

**Ability to Provide Share of Cost\*:**

[CID519999\\_HRSD\\_CFPF-3\\_PledgeCFO.pdf](#)

A benefit-cost analysis must be submitted with the project application

**Benefit-Cost Analysis\*:**

[CID519999\\_HRSD\\_CFPF-3\\_BCAREport.pdf](#)

Provide a list of repetitive loss and/or severe repetitive loss properties. Do not provide the addresses for the properties, but include an exact number of repetitive loss and/or severe repetitive loss structures within the project area

**Repetitive Loss and/or Severe Repetitive Loss Properties\*:**

[CID519999\\_HRSD\\_CFPF-3\\_RepetitiveLoss.pdf](#)

Describe the residential and commercial structures impacted by this project, including how they contribute to the community such as historic, economic, or social value. Provide an exact number of residential structures and commercial structures in the project area

**Residential and/or Commercial Structures\*:**

This project will occur at the Army Base Treatment Plant (ABTP) property owned and operated by Hampton Roads Sanitation District. There are no residential or commercial structures where the project will occur; however, the project service area includes approximately 35,000 residential and commercial structures. The upgraded generator controls will help to protect these structures from potential sewer overflow that may occur during floods and power outages.

If there are critical facilities/infrastructure within the project area, describe each facility

**Critical Facilities/Infrastructure\*:**

The Army Base Treatment Plant (ABTP) is a wastewater facility and a critical community lifeline as defined by FEMA (reference: <https://www.fema.gov/emergency-managers/practitioners/lifelines>). The ABTP provides secondary treatment and nutrient removal of approximately 10 million gallons of wastewater per day.

Additional critical facilities/infrastructure in the project service area include:

Transportation: 1) The Port of Virginia Norfolk International Terminal, one of the largest shipping ports on the eastern seaboard. It is located on the mouth of the Chesapeake Bay on the banks of the Elizabeth River, close to the ABTP. 2) The railways and intermodal access to transport the shipping containers of goods and materials.

Defense Facilities: 1) Naval Station Norfolk, home to the largest concentration of U.S. naval forces, and hosts personnel from the Marine Corp, Army Air Force, and Coast Guard. 2) Defense Logistics Agency Distribution supporting worldwide activities, import/export cargo at the Norfolk Intermodal Hub, and delivery to all afloat units in the Hampton Roads region. 3) NATO Joint Force Command Norfolk, the headquarters for the NATO Military Command Structure under Allied Command Operations, which provides operational level command and control defense capabilities, crisis management, and security in Europe and North America.

Ensuring continued wastewater treatment and preventing sewage overflows are vital for these critical facilities and infrastructure to operate effectively.

Explain the local government's financial and staff resources. How many relevant staff members does the local government have? To what relevant software does the local government have access? What are the local government's capabilities?

**Financial and Staff Resources\*:**

HRSD was established in 1940 and has more than 80 years building and maintaining sustainable wastewater treatment infrastructure within the region. We have workforce expertise with approximately 900 highly skilled employees to provide wastewater treatment, scientific, and ancillary services to 20 cities and counties in southeast and eastern Virginia. Additionally, we hire qualified consultants and contractors to assist with facilities design and construction.

HRSD has AA+ S&P and Fitch ratings and is able to competently administer the project budget. HRSD has received and successfully manages both federal and state loans and grants as detailed in the Relationship to Other Projects section of this application. A copy of our annual comprehensive financial report is available at <https://www.hrsd.com/finance#annfinrpt>.

HRSD has teams in place to handle the financials, procurement, project management, engineering, operations, and technologies associated with this grant proposal. HRSD utilizes numerous software to achieve our mission within a framework of robust network communications, information security and technology systems. These include but are not limited to: Oracle E-Business including Enterprise Resource Planning for Finance, CIP budgeting, and timekeeping; Oracle Utilities for the Customer Care and billing; Hexagon CMMS for asset management; Enterprise project management systems, including Unifier for project management and contractor invoicing; Microsoft Office Suite; GIS mapping systems; and specialized pretreatment and operations systems.

Identify and describe the goals and objectives of the project. Include a description of the expected results of the completed project and explain the expected

benefits of the project. This may include financial benefits, increased awareness, decreased risk, etc.

#### Goals and Objectives\*:

The goal of the ABTP Generator Controls Replacement project is to safely maintain wastewater treatment processes and prevent sewage overflow due to power outage. This will be accomplished by replacing obsolete equipment and installing functional generator controls to run an operational back-up generator that can maintain power for wastewater treatment processes during a utility outage or flood event. The objectives of this project are to enter into contracts for design, equipment, and construction installation of the generator controls. These objectives will be measured by a planned schedule, the budget, inspections, successful testing and startup of the new equipment, and training of HRSD staff. HRSD anticipates project completion within 31 months. The benefits of this project are to protect the environment and public health through a decreased risk of sewage overflow, and to protect employees from injury by removing risks of safety hazards due to operating outdated equipment. An additional benefit is the cost savings. HRSD has no taxing authority and meets its obligations by charging service fees. Grant funds are used to help offset costs that would otherwise be passed to our customers, the residents and businesses in eastern Virginia.

Outline a plan of action laying out the scope and detail of how the proposed work will be accomplished with a timeline identifying expected completion dates. Determine milestones for the project that will be used to track progress. Explain what deliverables can be expected at each milestone, and what the final project deliverables will be. Identify other project partners

#### Approach, Milestones, and Deliverables\*:

[CID519999\\_HRSD\\_CFPF-3\\_Deliverables.pdf](#)

Where applicable, briefly describe the relationship between this project and other past, current, or future resilience projects. If the applicant has received or applied for any other grants or loans, please identify those projects, and, if applicable, describe any problems that arose with meeting the obligations of the grant and how the obligations of this project will be met

#### Relationship to Other Projects\*:

HRSD has comprehensive plans and standards for its operations and capital projects, and resilience is integral to these. The ABTP Generator Controls Replacement is identified in the HRSD Resilience Plan as part of the overall effort to proactively protect our infrastructure, reduce flood risk, and ensure continuous operation.

A similar project was the Boat Harbor Switchgear Upgrade. The project replaced a 35-year-old generator switchgear that was near the end of its useful life. The main and generator switchgear were becoming unreliable, and replacement parts were difficult to obtain. That project was completed in 41 months in 2020 at a cost of \$8,603,759. Funding for this project was provided by Virginia DEQ Clean Water Revolving Loan Fund C-515604-02.

HRSD has not applied for any other funding for the ABTP generator controls project. However, HRSD has received other (active) grants and loans listed below.

\* Congressionally Directed Spending FY24 appropriation \$1.25M for Chincoteague Treatment Plant. FY25 \$1M appropriation pending.

\* VDCR - FHWA Recreational Trails Program 339N210, \$300,000 with \$75,000 match for Flax Mill Creek Trail. POP 12/6/21-12/31/24.

\* Virginia Department of Health / Fish & Wildlife. VDH-24-619-0017, \$57,700 for Boater Education and Pump-Out Program. POP 7/1/24-6/30/25. Has been awarded to HRSD annually since 1996.

\* Virginia Department of Environmental Quality (DEQ), ARPA, three awards: ENRCPP-03, ENRCPP-04, and SCS-08, total \$72,001,566, plus HRSD share \$36,365,434.

\* DEQ, Water Quality Improvement Fund, two awards: 440-S-22-02 and 440-S-23-04, total \$83,213,008, plus HRSD share \$27,737,670. Three other WQIF applications submitted, two have approved budgets pending funding.

\* EPA Water Infrastructure Finance Innovation Act Loans, total \$702,447,235 for Sustainable Water Initiative for Tomorrow projects.

\* DEQ, Clean Water Revolving Loan Fund, three active loans total \$106,163,013.

To date, no material problems have occurred on any of the grants or loans, and HRSD has encountered no issues meeting the funding obligations. HRSD has systems in place and is prepared to accurately manage the requirements. Our Design and Construction team oversees projects to ensure contract compliance. The project manager and financial analyst ensure project milestones are met and reported, invoices reviewed for accuracy, and reimbursement requests submitted on time.

For ongoing projects or projects that will require future maintenance, such as infrastructure, flood warning and response systems, signs, websites, or flood risk applications, a maintenance, management, and monitoring plan for the projects must be provided

#### Maintenance Plan\*:

[CID519999\\_HRSD\\_CFPF-3\\_MMPlan.pdf](#)

Describe how the project meets each of the applicable scoring criteria contained in Appendix B. Documentation can be incorporated into the Scope of Work Narrative

#### Criteria\*:

The Army Base Treatment Plant Generator Controls Replacement project meets the CFPF criteria and scores as follows:

1. Eligible project under the description for "all other projects" = 10 points
2. High Social Vulnerability index score (reference VFRIS map) = 8 points
3. Community scale of benefits is more than one census block (reference Service Area map) = 30 points
4. Expected lifespan of the project is over 20 years = 10 points
5. It is not a remedy for NFIP probation or suspension = 0 points
6. Project is in a low-income geographic area (reference Census map) = 10 points
7. The project does not implement a Chesapeake Bay TMDL BMP = 0 points

Total score = 68 points

Budget

Budget Summary

**Grant Matching Requirement\*:** LOW INCOME - All other Projects Fund 85%/Match 15%

Is a match waiver being requested?

**Match Waiver Request** No

Note: only low-income communities are eligible for a match waiver.

**\***:

**I certify that my project is in a low-income geographic area:** Yes

**Total Project Amount (Request + Match)\*:** \$6,439,410.00

\*\*This amount should equal the sum of your request and match figures

**REQUIRED Match Percentage Amount:** \$965,911.50

BUDGET TOTALS

**Before submitting your application be sure that you meet the match requirements for your project type.**

**Match Percentage:** 14.99%

Verify that your match percentage matches your required match percentage amount above.

**Total Requested Fund Amount:** \$5,473,498.00

**Total Match Amount:** \$965,912.00

**TOTAL:** \$6,439,410.00

Personnel

Description	Requested Fund Amount	Match Amount	Match Source
N/A	\$0.00	\$0.00	In kind
	\$0.00	\$0.00	

Fringe Benefits

Description	Requested Fund Amount	Match Amount	Match Source
N/A	\$0.00	\$0.00	In kind
	\$0.00	\$0.00	

Travel

Description	Requested Fund Amount	Match Amount	Match Source
N/A	\$0.00	\$0.00	In kind
	\$0.00	\$0.00	

Equipment

Description	Requested Fund Amount	Match Amount	Match Source
Generator Controls	\$2,658,800.00	\$469,200.00	Cash
	\$2,658,800.00	\$469,200.00	

Supplies

Description	Requested Fund Amount	Match Amount	Match Source
N/A	\$0.00	\$0.00	In kind
	<b>\$0.00</b>	<b>\$0.00</b>	

#### Construction

Description	Requested Fund Amount	Match Amount	Match Source
Construction Contract	\$2,040,000.00	\$360,000.00	Cash
	<b>\$2,040,000.00</b>	<b>\$360,000.00</b>	

#### Contracts

Description	Requested Fund Amount	Match Amount	Match Source
Design Contract not pre-award	\$36,474.00	\$5,471.00	Cash
	<b>\$36,474.00</b>	<b>\$5,471.00</b>	

#### Maintenance Costs

Description	Requested Fund Amount	Match Amount	Match Source
N/A	\$0.00	\$0.00	In kind
	<b>\$0.00</b>	<b>\$0.00</b>	

#### PreAward and Startup Costs

Description	Requested Fund Amount	Match Amount	Match Source
Design Contract	\$269,024.00	\$48,441.00	Cash
Generator Controls Equipment Pre-Award as Match	\$469,200.00	\$82,800.00	Cash
		<b>\$131,241.00</b>	

#### Other Direct Costs

Description	Requested Fund Amount	Match Amount	Match Source
N/A	\$0.00	\$0.00	In kind
	<b>\$0.00</b>	<b>\$0.00</b>	

## Long and Short Term Loan Budget - Projects - VCFPF

#### Budget Summary

Are you applying for a short term, long term, or no loan as part of your application?

If you are not applying for a loan, select "not applying for loan" and leave all other fields on this screen blank

**Long or Short Term\*:** Long-Term Loan

**Total Project Amount:** \$6,439,410.00

**Total Requested Fund Amount:** \$6,439,410.00

**TOTAL:** \$6,439,410.00

#### Salaries



Description	Requested Fund Amount
No Data for Table	

*Fringe Benefits*

Description	Requested Fund Amount
No Data for Table	

*Travel*

Description	Requested Fund Amount
No Data for Table	

*Equipment*

Description	Requested Fund Amount
Generator Controls	\$3,680,000.00
	<b>\$3,680,000.00</b>

*Supplies*

Description	Requested Fund Amount
No Data for Table	

*Construction*

Description	Requested Fund Amount
Construction	\$2,400,000.00
	<b>\$2,400,000.00</b>

*Contracts*

Description	Requested Fund Amount
Design Contract	\$359,410.00
	<b>\$359,410.00</b>

*Other Direct Costs*

Description	Requested Fund Amount
No Data for Table	

# Supporting Documentation

*Supporting Documentation*

Named Attachment	Required	Description	File Name	Type	Size	Upload Date
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Detailed map of the project area(s) (Projects/Studies)	CID519999_HRSD_CFPF-3_MapProjectArea contains a cover sheet and two detailed maps. One map is an aerial view of the treatment plant, generator building, and flood risk. The 2nd map is the project service area by Census Group; it overlays of the Norfolk neighborhoods and details the ABTP location, pump stations, and mains in the service area.	<a href="#">CID519999_HRSD_CFPF-3_MapProjectArea.pdf</a>	pdf	1	01/17/2025	MB	01:50 PM
FIRMette of the project area(s) (Projects/Studies)	CID51999_HRSD_CFPF-3_MapFIRMette.pdf contains a cover sheet and a FEMA FIRMette map of the Army Base Treatment Plant location. Please note, this is not the entire project service area location.	<a href="#">CID519999_HRSD_CFPF-3_MapFIRMette.pdf</a>	pdf	748	01/15/2025	KB	04:20 PM
Historic flood damage data and/or images (Projects/Studies)	CID519999_HRSD_CFPF-3_HistoricFloodData2.pdf contains a cover sheet with references flood data, and a Norfolk FIRM map attached. No flood has occurred at the project site, although flooding has occurred in the project service area.	<a href="#">CID519999_HRSD_CFPF-3_HistoricFloodData2.pdf</a>	pdf	678	01/17/2025	KB	03:27 PM
A link to or a copy of the current floodplain ordinance	CID519999_HRSD_CFPF-3_FloodplainOrdinance.pdf contains a cover sheet with links to the City of Norfolk's Ordinances and Comprehensive Plan. The Norfolk information is provided since HRSD is not a municipality and does not have Ordinances. The project is located in Norfolk and has the City's support.	<a href="#">CID519999_HRSD_CFPF-3_FloodplainOrdinance.pdf</a>	pdf	96	01/16/2025	KB	08:56 AM
Maintenance and management plan for project	CID519999_HRSD_CFPF-3_MMPlan.pdf contains a cover page and attachments for the maintenance and management of the generator controls.	<a href="#">CID519999_HRSD_CFPF-3_MMPlan.pdf</a>	pdf	74	01/16/2025	KB	08:33 AM
A link to or a copy of the current hazard mitigation plan	CID519999_HRSD_CFPF-3_HazMitPlan.pdf contains a cover page with links to the regional hazard mitigation plan and approval letter from FEMA. The HRSD Hazard Mitigation Plan is also included in our Resilience Plan approved by VDCR.	<a href="#">CID519999_HRSD_CFPF-3_HazMitPlan.pdf</a>	pdf	310	01/16/2025	KB	09:44 AM
A link to or a copy of the current comprehensive plan	CID519999_HRSD_CFPF-3_CompPlan.pdf contains a cover page with links to Norfolk's Comprehensive Plans and the HRSD Capital Improvement Program.	<a href="#">CID519999_HRSD_CFPF-3_CompPlan.pdf</a>	pdf	95	01/21/2025	KB	01:13 PM
Social vulnerability index score(s) for the project area	CID519999_HRSD_CFPF-3_MapSVI.pdf contains a cover page and two maps showing the High Social Vulnerability Index score for the project location and the project service area.	<a href="#">CID519999_HRSD_CFPF-3_MapSVI.pdf</a>	pdf	923	01/16/2025	KB	03:37 PM
Authorization to request funding from the Fund from governing body or chief executive of the local government	CID519999_HRSD_CFPF-3_Authorization.pdf contains a cover page and two attachments. 1) a letter from the HRSD Deputy General Manager and CFO, who holds the authority to authorize the funding request; and 2) the HRSD Commission minutes approving the initial project appropriation.	<a href="#">CID519999_HRSD_CFPF-3_Authorization.pdf</a>	pdf	1	01/16/2025	MB	03:23 PM
Signed pledge agreement from each contributing organization	CID519999_HRSD_CFPF-3_PledgeCFO.pdf contains a cover page explaining HRSD's ability to pay for the project prior to reimbursement and a letter from the HRSD Deputy and CFO as a signed pledge agreement. There are no other contributing organizations to this project.	<a href="#">CID519999_HRSD_CFPF-3_PledgeCFO.pdf</a>	pdf	701	01/21/2025	KB	01:34 PM
Maintenance Plan	CID519999_HRSD_CFPF-3_MaintenancePlan.pdf is a cover page only that explains the Maintenance Plan is provided in two other sections of the application.	<a href="#">CID519999_HRSD_CFPF-3_MaintenancePlan.pdf</a>	pdf	62	01/16/2025	KB	08:32 AM
<i>Benefit-cost analysis must be submitted with project applications over \$2,000,000. in lieu of using the FEMA benefit-cost analysis tool, applicants may submit a narrative to describe in detail the cost benefits and value. The narrative must explicitly indicate the risk reduction benefits of a flood mitigation project and compares those benefits to its cost-effectiveness.</i>							
Benefit Cost Analysis	CID519999_HRSD_CFPF-3_BCAREport.pdf is a 4-page FEMA benefit-cost analysis report for the generator project.	<a href="#">CID519999_HRSD_CFPF-3_BCAREport.pdf</a>	pdf	686	01/17/2025	KB	08:55 AM
Other Relevant Attachments							

### Letters of Support

Description	File Name	Type	Size	Upload Date
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CID519999\_HRSD\_CFPF-3\_LOS.pdf contains a cover page and two letters of support. One from the City of Norfolk, where the project is located, and the other from the Virginia Port Authority, an affected large industry within the community.

[CID519999\\_HRSD\\_CFPF-3\\_LOS.pdf](#) pdf 492 KB 01/17/2025 09:11 AM

## Resilience Plan

**Resilience Plan**

Description	File Name	Type	Size	Upload Date
CID519999_HRSD_CFPF-3_ResiliencePlanApproval.pdf contains a cover page and copy of the approval letter from Virginia Department of Conservation and Recreation for the HRSD Resilience Plan.	<a href="#">CID519999_HRSD_CFPF-3_ResiliencePlanApproval.pdf</a>	pdf	219 KB	01/17/2025 03:41 PM

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

### Scope of Work Narrative

1. **Need:** Hampton Roads Sanitation District (HRSD) is submitting a grant proposal to Virginia Department of Conservation and Recreation for Community Flood Preparedness funding to replace wastewater treatment plant generator controls to reduce risk to the neighborhoods and businesses. Reliable wastewater treatment is necessary to protect public health and avert pollution from entering the waterways that are vital to Hampton Roads. Well-functioning generators and controls are critical to prevent process disruptions, provide ride-through capability during inclement weather, safeguard staff, protect public health, and maintain regulatory compliance. The project will include procurement of generator controls, design to integrate the controls with the existing generators, construction, installation and startup to verify the equipment functions properly. The completed project will ensure reliable backup power to support the treatment process loads in the event of utility power loss.

- a. The specific problem being solved is the HRSD's Army Base Wastewater Treatment Plant (ABTP) standby generator controls. These controls need to be replaced for back-up power to maintain wastewater treatment operations in the event of a power outage that may occur during a flood or other event.

The existing controls have reached the end of their useful life. The redundant programmable logic controller (PLC) has failed, and replacement parts are no longer supported. These controls are important because HRSD ABTP provides public wastewater treatment services in the City of Norfolk. These services are a critical community lifeline as defined by FEMA.<sup>1</sup> The plant must be operational all-day, every day to treat wastewater effectively and to avoid sanitary sewer overflows.

The project will take place on HRSD property and will benefit a large service area. Maintaining wastewater treatment operations protects the surrounding residents and businesses by preventing potential sewage overflow to the community and nearby waterways. The ABTP is located 401 Lagoon Road, Norfolk, on the Elizabeth River and within the Chesapeake Bay Watershed. The ABTP serves approximately 95,000 Norfolk residents as well as public and commercial enterprises including Naval Station Norfolk and the Port of Virginia's Norfolk International Terminals.

ABTP service area contains socially vulnerable areas<sup>2</sup> that are already at risk for flooding and hurricanes. These include Norfolk's Census Tracts 000901 and 000902 (Attachment 1 - FEMA Hurricane Risk map).

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<sup>1</sup> <https://www.fema.gov/emergency-managers/practitioners/lifelines>

<sup>2</sup> CID519999\_HRSD\_CFPF-3\_MapSVI in the Supporting Documentation section of the application

This project represents a substantial investment for our region by ensuring resilient power supply supporting essential wastewater treatment for the City of Norfolk, low-income neighborhoods, and critical port and defense facilities. Recent catastrophic weather impacts on water and wastewater systems highlight the importance of proactive resilience investments in Virginia's critical community lifelines. At the time of this application, flooding has not caused power outages at ABTP; however, flooding has occurred in the adjacent communities and HRSD identified this project as vital to protect the infrastructure and service continuity.

b. Factors which contribute to the identified problem.

The Army Base Treatment Plant (ABTP) generator controls have reached the end of their useful life. The redundant programmable logic controller (PLC) has failed, and replacement parts are no longer available.

During the ABTP Improvements Phase III project, a generator building was constructed in 2013, housing two 2,000-kW standby engine generators manufactured by Cummins Power Generation (Cummins). The engine generators provide emergency backup power to the facility and can meet the entire plant electrical demand in the event of a loss of utility service. Within the original construction, Cummins supplied two local control panels, one master control panel with the engine generators, and the main generator paralleling switchgear. The master control panel controls the operation of the generator system and paralleling switchgear. This master control panel utilizes Allen-Bradley PLCs that are no longer supported by the PLC manufacturer or Cummins, and they must be replaced along with other outdated controls components. While the controls replacement is performed and the switchgear equipment is out of service, specific improvements to the switchgear equipment will need to be made.

- c. The ABTP Generator Controls Replacement project is needed locally to have continuous wastewater treatment, which is essential for supporting public health and community infrastructure. The plant's service area consists of residential properties as well as commercial, critical port, and DOD facilities that have a broader regional impact. The plant is located within a high social vulnerability area and serves census block groups which are rated as high and very high social vulnerability<sup>3</sup>. This service area also faces risks from hurricanes with its proximity to the Virginia coastline. The new generator controls will allow for safe operation of the standby generators ensuring reliable backup power to maintain treatment processes and prevent discharges of raw or partially treated sewage within the communities during storm or flood events.
- d. The ABTP Generator Controls Replacement will decrease the risk to public safety through flood risk reduction. The new generator controls will ensure the wastewater treatment service can continue in the event of power outages. Investment in the resiliency of these services mitigates disruptions from weather events or other scenarios that result in loss of utility power. In the absence of

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<sup>3</sup> Reference *CID519999\_HRSD\_CFPF-3\_MapSVI* in the Supporting Documentation section of the application.

effective wastewater treatment, public health is at risk from exposure to untreated sewage.

Recent events are evidence of the importance of having operable generator systems in place. On January 7, 2025, due to a winter storm, the power was lost to the Richmond, VA, water system. "According to officials with the city's Department of Public Utilities, a winter storm knocked out the plant's power around 7:30 a.m. Monday. The backup generators turned on, but officials said a separate battery back-up and redundant system both failed."<sup>4</sup> "On Thursday afternoon, Mayor Danny Avula said the failure of an automatic "switch-gear" that would have transferred the city's water treatment plant to its primary backup power source failed during Monday afternoon's blackout, leading to flooding in the facility and city-wide water pressure loss."<sup>5</sup>

- e. The ABTP Generator Controls Replacement project protects and conserves natural resources. The project will ensure that the treatment plant has reliable backup power to maintain continuous and effective wastewater treatment essential to water pollution prevention. One of the key factors to healthier water is the effective treatment of wastewater, which is the purpose of the ABTP.

Wastewater treatment is vital because, left untreated, wastewater contains excess nutrients such as nitrogen, which leads to algae blooms that consume oxygen needed for marine life. The ABTP also removes harmful pathogens that would otherwise lead to critical public health concerns. This benefit is not isolated to a moment in time but is continuous as is wastewater treatment.

The Virginia waterways and coastal ecosystems are prime beneficiaries of effective wastewater treatment. Norfolk and the greater Hampton Roads region depend on these natural resources. The environmental health of our water is essential to the livelihood of the citizens of Hampton Roads for economic opportunity, recreation, food, and healthy living, as described in Virginia's Coastal Zone Management<sup>6</sup>.

- f. Who or what is protected? Within the ABTP service area, Norfolk residents, businesses, the surrounding natural environment, and HRSD plant operators, are protected by this project. The proposed generator control upgrades will provide safe and reliable backup power to the treatment plant in the event of utility power loss. In turn, this ensures critical community lifeline wastewater service is operational.
- g. The safety threats and environmental concerns related to flood risk:
  - i. The safety of HRSD employees is a top priority. To ensure continuous, around-the-clock services, HRSD staff are required to be on-site during flood or storm events. When a power outage occurs, diesel generators are used to keep treatment plant operations running. Without these

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<sup>4</sup> <https://www.wtvr.com/news/local-news/richmond-water-investigation-jan-7-2025>

<sup>5</sup> Richmond Times-Dispatch, <https://archive.is/JliRB#selection-4549.87-4549.223>

<sup>6</sup> [Coastal Resources | Hampton Roads, VA](#)

generator controls, employees must manually operate generator equipment and circuit breakers, which increases risk of safety hazards, such as arc flash incidents. The existing generator control systems have reached the end of their useful life, and replacement parts are no longer available, heightening the risk of unsafe manual operations.

- ii. Environmental concerns related to flood and storm risk are the potential loss of treatment processes due to utility power loss. Without reliable backup power, millions of gallons of wastewater would be unable to be properly conveyed and treated, resulting in sewer discharges detrimental to the public health and riparian ecosystems.
- h. The groups that will benefit from this flood risk reduction project to replace the generator controls are the HRSD customers, residents, property owners, coastal recreational users, and water-based industries within the service. HRSD employees will also benefit from the replacement controls by improved operational safety.
- i. If HRSD does not receive CFPF grant funding, we request a Resilient Virginia Revolving Fund (RVRF) long-term loan. If neither funding is awarded, HRSD will proceed with the project; however, it will delay implementing an equal value non-regulatory project(s). Our ability to invest capital is primarily limited by regulatory requirements, and this project is non-regulatory. In fact, about 75% of HRSD's capital spending over the next five years is driven by regulatory needs, totaling approximately \$2 billion.
- j. Alternatives analysis of the viability of the Army Base Treatment Plant Generator Controls Replacement project was conducted. This selected project reduces risk to populations at risk of flooding.
  - i. The proposed project consists of equipment procurement, professional design development, construction, and installation. A memorandum was completed by HDR listing the acceptable contractors that could furnish the goods and services for the project and a recommended equipment procurement approach (Attachment 2). Please note, funding is not requested for the preparation of the HDR memorandum.
  - ii. Risk assessments are a standard practice for all HRSD infrastructure projects and include impact to local population, the environment, and flooding. This generator controls replacement project reduces risks to the communities and natural environment by allowing continuous wastewater treatment operations and preventing sewage overflow.
  - iii. An example of a previous related project is the Boat Harbor Switchgear Upgrade. The project replaced a 35-year-old generator switchgear that was near the end of its useful life. The main and generator switchgear were becoming unreliable, and replacement parts were difficult to obtain. The Preliminary Engineering Report (PER), design, and construction was completed in 41 months at cost of \$8,603,759, with an estimated life of 20 years.

## **2. Goals and Objectives:**

### **a. Goal:**

The goal of this project is to safely maintain wastewater treatment processes and prevent sewage overflow due to power outage. The goal will be accomplished by replacing obsolete equipment and installing functional generator controls to run an operational back-up generator capable of maintaining wastewater treatment processes during a power outage caused by flooding or another event.

### **b. Objectives:**

- i. HRSD will enter a contract for the equipment prior to the CFPF award. Procurement and delivery of the equipment is estimated to take 17 months. Please note, HRSD requests approval from Virginia DCR for pre-award equipment procurement of \$821,024 due to long lead times. With the pre-award procurement, the project objectives can be completed within the agreement period.
- ii. The design phase will begin after the equipment contract award and is estimated to take nine months.
- iii. Upon completion of the design documents and delivery of the equipment, a construction contract will be awarded with an expected duration of 12 months.

## **3. Work Plan:**

- a. The proposed ABTP Generator Controls Replacement project consists of three key phases: 1) equipment procurement, 2) design development, 3) construction and equipment installation.
- b. Major project activities:
  - i. Engagement with locality and state regulators.
  - ii. Procurement of professional services firm and scope negotiation for the development of a technical memorandum – completed, and funding is not requested for this activity.
  - iii. Pre-design – completed, and no funding is requested for this activity.
  - iv. Equipment procurement and delivery. Procurement will occur pre-award due to extensive lead times (17 months).
    1. Shop drawing approval
    2. Equipment delivery
  - v. Design will commence after the equipment procurement contract is executed (9 months)



1. Design phase kickoff
2. 60% design review
3. 90% design review
4. Bid-ready documents
- vi. Construction (12 months)
  1. Set-up temporary power
  2. Install equipment
  3. Testing
  4. Final completion
  5. Employee training
- c. Responsibilities:
 

HRSD has assigned a project manager from its Engineering Department to be responsible for completing the project activities and tasks. The project manager will coordinate HRSD Army Base Treatment Plant (ABTP) staff input; obtain all necessary site plan approvals and permits; and oversee the professional services firm throughout construction administration and construction inspection activities to ensure the project is constructed as designed and functions as intended.
- d. Timeline for accomplishing activities:

Activity	Timeframe	Projected Dates
HRSD Commission additional appropriation	Pre-award	Jan 2025
Equipment contract	Pre-award	Jan 2025
Design task order	Pre-award	Feb 2025
Fully executed grant agreement	1 month	April 2025
Equipment delivery	17 months	Jan 2025 – May 2026
Design documents	9 months	Feb 2025 – Nov 2025
Construction and equipment installation	12 months	Apr 2026 – Apr 2027
Construction and equipment testing and acceptance	1 month	Apr 2027
Employee training on new equipment	1 week	May 2027
Financial and Progress Reports	<i>In accordance with award agreement</i>	
Grant Closeout	3 months	May 2027 – Aug 2027
<b>Total time</b>	<b>31 months</b>	

e. Partners:

There are no grant partners with this project; however, the City of Norfolk and the Virginia Port Authority have provided letters of support<sup>7</sup> and there will be contractors as noted in the major activities listed above.

f. Deliverables:

- i. Equipment shop drawings
- ii. 60% design documents
- iii. 90% design documents
- iv. Bid-ready documents
- v. Construction and equipment installation
- vi. Testing

g. Maintenance Plan:

The maintenance plan for this project is documented in HRSD's Computerized Maintenance Management System (CMMS) and the specific maintenance tasks for the generator and controls are already part of normal maintenance. The replacement controls will be maintained according to the existing documented procedures which may ultimately be updated to satisfy equipment manufacturer recommendations. For details, please reference *CID519999\_HRSD\_CFPF-3\_MMMPlan* in the Supporting Documentation section of the application.

#### 4. Evaluation

- a. Success indicators throughout the project will be measured against the schedule outlined in the Work Plan. Indicators of success include:
  - i. A technical memorandum that evaluates practicable alternatives for achieving safe and resilient generator operation (completed)
  - ii. A design based on the procured equipment package that satisfies the project scope and meets all applicable state and local codes necessary for site plan approval and bid ready documents.
  - iii. Installation of the procured equipment and construction of ancillary electrical components consistent with contract documents and according to the project budget and schedule.
  - iv. Finally, successful testing and startup of the new equipment and training of HRSD staff.
- b. What data will be collected and how will it be used to measure success?

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<sup>7</sup> Reference *CID519999\_HRSD\_CFPF-3\_LOS*, in the Letters of Support section of the application

- i. HRSD tracks the risk assessment, timeline for milestones, and qualitative data to ensure that the project is completed on schedule, meets the contracted expectations, and within budget.
  - ii. Quality is the primary measure of success for HRSD infrastructure projects. For the final completed project, this will be determined jointly by HRSD staff, HRSD's consultant team, and the contractor.
  - iii. HRSD will also collect budget and schedule data to measure variance from the baseline estimates at different phases throughout the progression of the project.
- c. How is cost effectiveness evaluated and measured against the expected outcomes?
  - i. Cost effectiveness is reviewed during professional services procurement and scope negotiation. Qualifications based procurement is used for the technical memorandum and design phase selection. The negotiated scope will be reviewed to verify reasonable schedule and budget. The required equipment will be procured from a pre-approved list and purchased ahead of construction bid award to mitigate excessive lead times for delivery resulting in a shorter overall project duration and therefore reduction in risk.
  - ii. A Benefit-Cost Analysis (BCA) was performed using FEMA's BCA Toolkit. The Project Report is included as part of the submission package. HRSD is happy to provide the supporting documentation referenced in the BCA upon request. The Benefit Cost Ratio (BCR) for Army Base Treatment Plant Generator Controls is 7.32.
- d. What products, services, meetings, outreach efforts etc. will be conducted and how will success be measured?
  - i. The design phase will include engagement with local jurisdictions and state regulators as necessary.
  - ii. Public communication regarding the project will occur during regular HRSD Commission meetings when the necessary funds are appropriated.
  - iii. Contracts and projects are available on the public-facing website: [BIDs and RFPs | HRSD](#).
  - iv. Success is measured by approval of the bid-ready site plan. HRSD has already secured letters of support from the City of Norfolk and the Virginia Port Authority for the project. In addition, Certified Flood Managers (CFM) from the City of Norfolk are signatories on the project endorsement letter.
- e. Project progress monitoring plan:
  - i. Enterprise project management systems are used to track and approve real time schedule changes, invoices and deliverables. HRSD standards

for project progress at key deliverables and milestones are included in the contract for professional services<sup>8</sup>.

- ii. The potential for project delays is acknowledged and communicated through development of a risk register which serves to anticipate risks and mitigate their effect.
- iii. Reports to demonstrate project progress will be delivered on time and as established in the grant award agreement. Reports are scheduled in Outlook, tracked in Excel, and saved to a network folder.

## 5. Scoring Criteria

Scores for the ABTP Generator Controls Replacement project per the *2024 Funding Manual for the Virginia Community Flood Preparedness Fund Round 5*

Criteria Description	Response	Points
Eligible Project	All other projects	10
Social Vulnerability Index Score	High Social Vulnerability	8
Community scale of benefits	More than one census block	30
Expected lifespan of project	Over 20 years	10
Remedy for NFIP probation or suspension	Not Applicable	0
Proposed project part of a low-income geographic area	Yes	10
Project implements a Chesapeake Bay TMDL BMP	No	0
<b>Total Points</b>		<b>68</b>

## 6. Conclusion

Virginia Department of Conservation and Recreation (DCR) values diversity of nature, culture and communities to ensure a sustainable and equitable future for recreational access and a healthy environment for all Virginians to enjoy.

The HRSD vision and promise align with the DCR values and are at the core of each project we pursue.

HRSD's Promise: We promise to treat wastewater and recover natural resources to protect public health and the environment.

HRSD's Vision: Our communities will have clean waterways and reliable water resources for generations to come.

<sup>8</sup> Design and Construction Standards | HRSD, <https://www.hrsd.com/standards>

We believe the Army Base Treatment Plant Generator Controls Replacement project is an appropriate investment for the Virginia DCR Community Flood Prevention Funds as it:

- Reduces negative impact of flooding by providing power to maintain the wastewater treatment plant and prevent sewage overflow.
- Aligns with the objective of the Community Flood Preparedness Fund, the floodplain management standards, and local, regional, and statewide resilience plans.
- Has a community-scale benefit to the public and in a low-income area.
- Is a cost-effective solution to minimize flood vulnerabilities and prevent adverse impact to other properties and waterways, and with an expected lifespan of over 20 years.

**Attachments:**

1. FEMA map of project service area
2. HDR Procurement Approach memo dated April 3, 2024 (4 pages)



## Explore


## Community Resilience

### Census Tract View

401 Lagoon Rd, Norfolk, VA

Legend

### Hurricane Risk

 Very High

 Relatively High

 Relatively Moderate

■ Relatively Low

Very Low

☐ No Rating☐ Not Applicable

■ Insufficient Data

**Expected Annual Loss**  
**× Social Vulnerability**  
**+ Community Resilience**

= Risk Index

## Basemaps



# Memo

Date:	Wednesday, April 03, 2024
Project:	Army Base Treatment Plant Generator Controls Replacement (AB012100)
To:	Shirley Smith, HRSD
From:	Natalie Wieszek, HDR Stephen Henning, HDR Bill M’Coy, HDR
Subject:	Procurement Approach

**Background and Purpose**

Under the Army Base Treatment Plant (ABTP) Improvements Phase III project, a new Generator Building was constructed housing two, 2,000-kW Standby engine generators manufactured by Cummins Power Generation (Cummins). The engine generators provide emergency backup power to the facility and can meet the entire plant electrical demand in the event of a loss of utility service.

As part of the original construction, Cummins supplied two local control panels and one master control panel with the engine generators as well as the main and generator paralleling switchgear at Army Base. The master control panel which controls the operation of the generator system and paralleling switchgear utilizes Allen-Bradley PLCs that are no longer supported by the PLC manufacturer and Cummins and must be replaced along with other outdated controls components. While the controls replacement is performed and the switchgear equipment is out of service, specific improvements to the switchgear equipment will be made.

**Project Scope of Work and Acceptable Contractors**

Table 1 provides a brief description of the work required under this project and contractor’s that could furnish the goods and services at Army Base.



**Table 1. Project Scope of Work**

<b>Item No.</b>	<b>Scope Item</b>	<b>Acceptable Contractors</b>	<b>Comments</b>
1	Furnish & Install Generator Master Controls, including Generator Master Control Panel, Remote HMI, and Modifications in Main and Generator Switchgear	Cummins, ITAC	These are the only contractors that have the technical capabilities to perform this replacement.
2	Furnish & Install Temporary Power System to Maintain Continuous Plant Operation During Generator/Switchgear Outages. Test, Operate & Fuel Temporary Power System.	Cummins, ITAC	The temporary power system should be the responsibility of the contractor that replaces the controls system to ensure coordination and continuous power to the plant.
3	Furnish & Install Integrated, Remote Breaker Racking System in Main and Generator Switchgear	Cummins, ITAC	Modifications to the Cummins switchgear must be performed by a qualified switchgear contractor.
4	Furnish & Install Arc Flash Reduction Switches in the Main Switchgear	Cummins, ITAC	Modifications to the Cummins switchgear must be performed by a qualified switchgear contractor.
5	Furnish & Replace SEL 551 Protective Relays in the Main Switchgear with SEL 751 Feeder Protection Relays	Cummins, ITAC	Modifications to the Cummins switchgear must be performed by a qualified switchgear contractor.
6	Modify the MV Cable Shield Routing in the Main and Generator Switchgear	JC Driskill, REW, EG Middleton, ITAC	Only qualified electrical contractors should perform work within medium voltage switchgear.
7	Furnish & Install Conduit & Wiring	JC Driskill, REW, EG Middleton, ITAC, or other Class A electrical contractor	Work can be performed by any Class A electrical contractor.
8	Furnish & Install Panel/Cabinet Pads and Set Panels/Cabinets	JC Driskill, REW, EG Middleton, ITAC, or other Class A electrical contractor	Work can be performed by any Class A electrical contractor.
9	Perform Generator Controls System Testing, Dominion Energy Interconnect Testing, Start-up, and Commissioning	Cummins, ITAC	Contractor that performs the controls replacement must also perform the testing, start-up, and commissioning.





The existing engine generators and generator controls were supplied by Cummins. ITAC has provided generator controls for engine generators at two other HRSD treatment plants (Boat Harbor and Williamsburg) and is in the process of supplying generator controls at HRSD's Nansemond Treatment Plant.

The generator controls systems provided by ITAC and Cummins are significantly different in design and function. The Cummins system is a Schneider Electric programmable logic controller (PLC)-based system architecture with one primary and one hot-standby PLC. The ITAC system utilizes a "master-less" system architecture with multiple Woodward, Inc. microprocessor-based controllers. The distributed approach does not concentrate all controls in a single device, so it is a more reliable system. HRSD's experience with the ITAC system at Boat Harbor and Williamsburg is excellent as they find it is a very reliable and user-friendly design.

### **Procurement Approach**

Issuance of an Invitation for Bid (IFB) for procuring the generator controls is not recommended since Cummins and ITAC provide very different systems with a different end-product from an O&M perspective. Both systems work, but there are some very important advantages to the ITAC system based on HRSD's experience operating and maintaining both systems. A sealed bidding process would require HRSD to award to the contractor with the lowest price assuming they both submit responsive and responsible bids.

It is recommended that a Request for Proposal (RFP) be issued for the procurement of Scope Items 1 through 5 and 9. These scope items need to be furnished by either Cummins or ITAC. HDR will prepare technical specifications that will be included with the RFP. The RFP will include the factors that HRSD will use to evaluate proposals and award to the proposer who best serves the needs of HRSD. Factors will include such criteria as:

- Service/Support
- Outages/Duration
- Price
- System Reliability
- Replacement Parts Availability

HRSD will then award a contract to procure the goods and services for Scope Items 1 through 5 and 9 to the Cummins or ITAC.

Upon approval of shop drawing submittals from Cummins or ITAC, Scope Items 6 through 8 can be procured through an IFB from qualified contractors. Minimum qualifications will be specified such that only contractors with qualifications to work in medium voltage switchgear can submit bids.

### **Implementation Schedule**

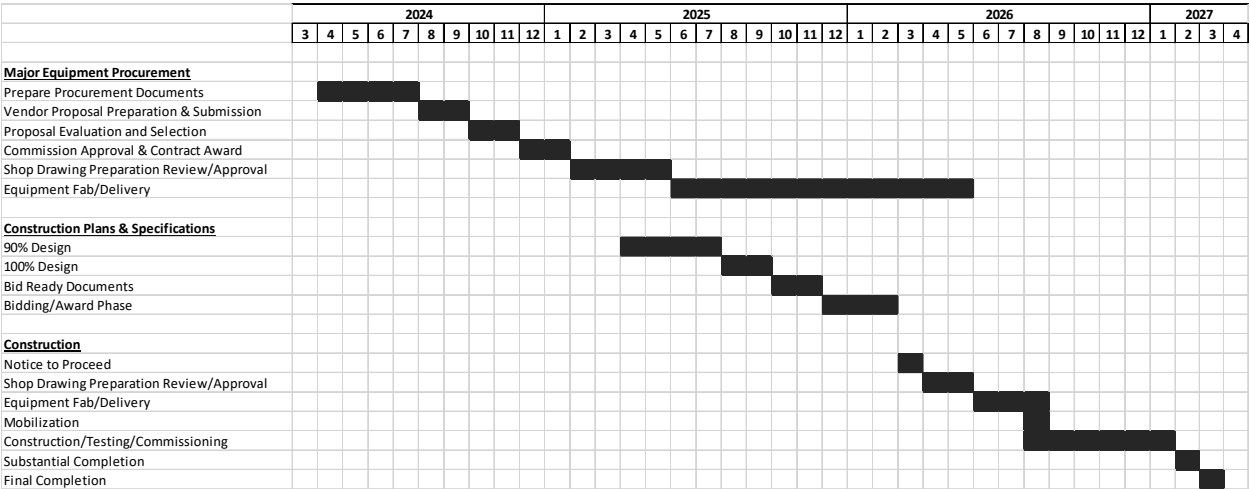
Figure 1 is a projected schedule for project implementation based on the recommended procurement approach. HRSD will first procure Scope Items 1 through 5 and 9 from Cummins or ITAC. Once the shop drawings are approved, plans and specifications for the construction work can be completed, then bid. ITAC has indicated a 5-month shorter fabrication and delivery schedule than Cummins. However, as shown in the schedule, this shorter duration does not result in earlier



completion of the project due to the time to prepare plans and specifications and bid the construction work. Should ITAC be selected, we suggest that we explore other approaches to procuring the construction work, such as negotiation and award to an electrical contractor already under contract with HRSD. The value of this contract may be relatively small and allow for alternative procurement approaches. Once we develop an opinion of probable construction cost (OPCC) this approach can be further evaluated.

Following delivery of the major equipment and other materials, the on-site work can be completed, and the new generator controls tested and commissioned. All work should be completed during the 1<sup>st</sup> quarter of 2027 at the latest.

Figure 1. Project Schedule



**Budget Narrative:** Community Flood Preparedness Fund (CFPF) Grant

Applicant	Hampton Roads Sanitation District (HRSD)
Project Name	Army Base Treatment Plant Generator Controls Replacement
Period of Performance	January 1, 2025, through December 30, 2028
State Share Requested	\$5,473,498
Local (HRSD) Match 15%	\$965,912
Federal Funding	\$0
Total Project Cost	\$6,439,410

**Project Description**

Hampton Roads Sanitation District is applying for CFPF funding to procure, design, and install generator controls for back-up power to maintain wastewater treatment plant operations. Maintaining wastewater treatment operations protects the surrounding residents and businesses by preventing potential sewage overflow to the community and nearby waterways.

The Army Base Treatment Plant (ABTP) generator building was constructed in 2013. Two new Cummins Power Generation 2,000 kW standby engine generators were installed at that time. These generators provide emergency backup power to the facility and can meet the entire plant electrical demand. However, the controls are now outdated and do not interface with the new generator. This project is to replace those controls and is necessary for wastewater treatment operations at the facility in the event of a power failure during floods, storms, or other outage.

**Budget Worksheet**

Funding Source	Equipment	Contracts	Total Grant	Total Loan*	Comments
Federal Share	-	-	-		No federal share
Local Share	552,000	413,912	965,912		
State CFPF Grant	2,576,000	2,076,474	4,652,474		
State RVRF Loan*	-	-	-	\$6,439,410	Only if not awarded grant
Pre-Award/Startup as State CFPF	552,000	269,024	821,024		May apply pre-award costs toward Local Share
<b>Total</b>	<b>\$3,680,000</b>	<b>\$2,759,410</b>	<b>\$6,439,410</b>	<b>\$6,439,410</b>	

\*If a grant is not awarded to HRSD, then we would like to be considered for a Resilient Virginia Revolving Fund (RVRF) long-term loan in the amount of \$6,439,410.

**Estimated Total Project Costs: \$6,439,410**

HRSD is using the HDR total project estimate of \$6,439,410 for the ABTP Generator Controls Replacement (Attachment 1). This amount reflects the FY2025 estimates for procuring third-party contractors, equipment, and installation to complete the project.

**Pre-Award Costs: \$821,024**

HRSD requests that Virginia Department of Conservation and Recreation (VDCR) approve pre-award costs of \$821,024 (15% of the proposed state share):

$$\text{State share} = \$5,473,498 \times \text{Pre-award maximum } 0.15 = \$821,024$$

The pre-award equipment procurement was initiated in November 2024 based on the original CFPF application due date of November 9, 2024. A down-payment will be made pre-award for the generator equipment (\$552,000) with the remaining equipment costs paid during the period of performance and based on deliverables. The Design contractor was selected following state procurement guidelines. A task order for the design of this project and the associated expenditures will occur after the equipment contract is approved. A portion of the design contract (\$269,024) is requested as a pre-award expense, with the remainder paid during the post-award period.

$$\$552,000 \text{ equipment} + \$269,024 \text{ design} = \$821,024 \text{ pre-award expenditures}$$

The pre-award costs allow HRSD to address a critical need and mitigate long lead times on equipment procurement. This will enable HRSD to obtain the needed generator controls and have them installed and operable as soon as possible for safety and resiliency. Please reference the attached email from VDCR regarding pre-award expenses (Attachment 2).

HRSD is amenable to having the pre-award costs applied toward the 15% cash match (\$965,912) for this project. In other words, HRSD would pay a significant portion of the local match up front.

**Amount of Funds Requested from the Fund \$5,473,498**

State Share: \$5,473,498 is requested from the Community Flood Preparedness Fund Grant. The state share is 85% of the project total \$6,439,410.

$$\$6,439,410 \times 0.85 = \$5,473,498$$

If grant funding is not awarded for this project, HRSD asks VDCR to kindly consider this project for a RVRP Long-Term Loan.

If expenditures exceed the proposed budget, HRSD will pay the difference and will not seek grant fund reimbursement for the overage.

**Local Match \$965,912:**

HRSD will contribute a cash match of \$965,912, which is 15% of the project total. The 15% match is determined by the project designated as "other" (not hybrid or nature based) and located in a low-income geographic area defined as less than 80% of the state median household income (MHI). The project is in Norfolk, Virginia, in a low-

income community (Attachment 3 Census, Tract 9.02). Virginia's MHI is \$87,249 and Norfolk's MHI is \$62,382<sup>1</sup>, less than 72% of the state's MHI.

\$6,439,410 total project x 0.15 = \$965,912

The local match plus the state share equals the total project cost.

\$5,473,498 State share + \$965,912 match = \$6,439,410 total project

As noted in the Pre-Award Costs section, HRSD is requesting approval for the pre-award costs of \$821,024, and willing to apply these costs to the local match, with the remaining \$144,888 cash match, for a total match of \$965,912.

\$821,024 pre-award costs as match + 144,888 cash match = \$965,912

## Detailed Breakdown of Costs by Category

### 1. Equipment: \$3,680,000 total

	Equipment Total	Equipment Award	Equipment Pre-Award
Total project cost	3,680,000	3,128,000	552,000
Match	15%	15%	15%
Match % x Total project	552,000	469,200	82,800
Proposed State Share	<u>3,128,000</u>	<u>2,658,800</u>	<u>469,200</u>

The project total for equipment consists of pre-award costs of \$552,000 and post-award costs of \$3,128,000. The pre-award costs are a down-payment on the equipment. The remaining equipment costs will be paid with deliverables, post-award.

The proposed State share for equipment is \$2,658,800.

The 15% cash match for equipment is \$552,000 local share. In the online application, this is budgeted as \$82,800 on the pre-award costs plus \$469,200 post-award.

#### Equipment Description:

- Master control panel for two 2,000kW standby engine generators manufactured by Cummins Power Generation (Cummins). The master control panel controls the operation of the generator system and switchgear.
- Control components to replace outdated controls, and improvements to the switchgear equipment.
- Start-up to ensure the installed equipment functions correctly.
- A minimum one-year warranty in the contract documents.

<sup>1</sup> Census.gov: [https://data.census.gov/profile/Norfolk\\_city\\_Virginia?q=160XX00US5157000](https://data.census.gov/profile/Norfolk_city_Virginia?q=160XX00US5157000) and <https://www.census.gov/quickfacts/fact/table/VA,norfolkcityvirginia>

**2. Contracts: \$2,759,410 total**

	Contracts Total	Construction	Design Total	Design Pre- Award	Design Post- Award
Total project cost	2,759,410	2,400,000	359,410	317,465	41,945
Match	15%	15%	15%		
Match % x Total project	413,912	360,000	53,912	48,441	5,471
Proposed State Share	<u>2,345,499</u>	<u>2,040,000</u>	<u>305,498</u>	<u>269,024</u>	<u>36,474</u>

The generator project's total contracts budget is \$2,759,410 and consists of:

- a. \$2,400,000 for construction, plus
- b. \$359,410 for design. In the online application, the design contract is split between pre-award costs \$317,465 and post-award costs \$41,945 (shown above).

The proposed State share of the contracts is \$2,345,489.

- a. For construction, the State share is \$2,040,000 and is budgeted as a post-award cost only.
- b. For the design contract, the State share is budgeted as \$305,498, with \$269,024 pre-award and \$36,474 post-award.

The 15% cash match for the total contracts is \$413,912, and budgeted in the online application as:

- a. \$48,441 pre-award match on the design contract, plus
- b. \$365,471 post-award consisting of:
  - i. \$360,000 construction contract match, plus
  - ii. \$5,471 design contract match.

**Contract Description**

The contracted professional services are for:

- a. Design to integrate the controls with the existing generators, and
- b. Construction to enable the installation of new generator controls and startup.
- c. Contractors will be competitively selected and in accordance with the Commonwealth of Virginia and HRSD procurement guidelines, whichever is more stringent.
- d. The Preliminary Engineering Report (PER) for the Army Base Treatment Plant Generator Controls project was previously completed and is not part of this grant application, though it can be provided upon request. The PER evaluated alternatives for viability and recommended acceptable equipment vendors.

**3. Maintenance, Personnel, Fringe, Indirect, and Other: \$0**

- a. HRSD is not requesting funding for these budget categories.
- b. No maintenance costs are requested in this grant application. The equipment will come with a warranty of at least one year. Ongoing maintenance will be managed in-house at an estimated annual cost of \$2,179.

**Timeline and Milestones**

This project application consists of three key phases, equipment delivery, design, and construction.

1. Equipment: \$3,680,000. The procurement and delivery of equipment is estimated to take 17 months. Pre-award equipment procurement will be initiated to establish a contract for the equipment which includes milestone payments (e.g. down payment, shop drawings, delivery, startup, etc.). The equipment contract will require HRSD Commission approval (anticipated January 2025).
2. Design: \$359,410. The purpose of the design contract is to create locality approved, bid-ready comprehensive plans and specifications for the construction phase. The design contract will be initiated upon notice of the equipment procurement and is estimated to take up to 9 months.
3. Construction: \$2,400,000. After the design documents are approved and the equipment is delivered, construction is needed to install the new equipment and ancillary electrical components. The construction contract will be awarded with an anticipated duration of 12 months.

Activity milestones and timeline:

Activity	Timeframe	Projected Dates
HRSD Commission additional appropriation	Pre-award	Jan 2025
Equipment contract	Pre-award	Jan 2025
Design task order	Pre-award	Feb 2025
Fully executed grant agreement	1 month	April 2025
Equipment delivery	17 months	Jan 2025 – May 2026
Design documents	9 months	Feb 2025 – Nov 2025
Construction and equipment installation	12 months	Apr 2026 – Apr 2027
Construction and equipment testing and acceptance	1 month	Apr 2027
Employee training on new equipment	1 week	May 2027
Financial and Progress Reports	<i>In accordance with award agreement</i>	
Grant Closeout	3 months	May 2027 – Aug 2027
<b>Total time</b>	<b>31 months</b>	

**Amount of funds available**

HRSD has the financial resources to complete this ABTP Generator Controls Replacement project while awaiting reimbursement from Virginia Department of Conservation and Recreation. A letter from Steve de Mik, HRSD Deputy General Manager and Chief Financial Officer, is included in the documents section of the application and confirms HRSD's financial competence.

HRSD has incorporated the Army Base Treatment Plant Generator Controls Replacement into the capital improvement plan (CIP). The current estimated cost is \$6,439,410. HRSD's Commission appropriated \$4,009,258 for this project on January 23, 2024 (Attachment 4). Additional appropriation is anticipated in late January 2025.

HRSD has no taxing authority and meets its obligations by charging user fees. Grant funds are used to help offset costs that would otherwise be passed to our customers, the residents and businesses in eastern Virginia.

**Attachments:**

1. HDR ABTP Generator Controls Replacement letter with projected costs
2. Email from Virginia DCR regarding pre-award expenses
3. U.S. Census Bureau, Income and Poverty, Census Tract 9.02 Norfolk City
4. HRSD Commission Authorization, January 23, 2024





October 31, 2024

Ms. Shirley Luu Smith  
Project Manager  
HRSD  
1434 Air Rail Avenue  
Virginia Beach, VA 23455

Re: Army Base Treatment Plant Generator Controls Replacement

Dear Ms. Smith,

The projected costs for the referenced project are as follows:

- Design = \$359,410
- Equipment Procurement = \$3,680,000
- Construction = \$2,000,000
- Contract Administration/Construction Inspection (CA/CI) = \$400,000
- Total = \$6,439,410

Please let us know if you have any questions or need additional information.

Sincerely,  
HDR Engineering, Inc.

A handwritten signature in black ink, appearing to read 'W. S. M'Coy'.

William S. M'Coy, P.E.  
*Project Manager*

## CID519999\_HRSD\_CFPF-3\_Budget Narrative - Attachment 2

**From:** [Farinholt, Stacey \(DCR\)](#)  
**To:** [Radspinner, Ryan](#)  
**Cc:** [Condon, Tina](#)  
**Subject:** [EXTERNAL] Re: CFPF Pre-Award Expense Question  
**Date:** Monday, September 30, 2024 2:25:38 PM  
**Attachments:** [Outlook-id2hf2pt.png](#)

---

Ryan,

I spoke to Angela about this a few minutes ago.

In your application, you'd want to very clearly state that you would be ordering the piece of equipment in advance so that you can execute the project within the period of performance and explain how the long lead time would prevent you from doing so otherwise.

Additionally, there is that requirement that the project commence within 9 months of signing the contract, and that can be extended to 12 months if we are notified by the 9 month mark. So keep that in mind and calculate whether even ordering the equipment in advance will be enough to get you there.

And "pre-award" wise, it *is* just what you have paid so far (down payment) rather than the total cost of the piece ordered.

**Stacey Farinholt, CFM PLA**  
**Floodplain Program Planner**  
Virginia Department of Conservation and Recreation  
804-317-4209 | [stacey.farinholt@dcv.virginia.gov](mailto:stacey.farinholt@dcv.virginia.gov)



---

**From:** Radspinner, Ryan <[rradspinner@hrsd.com](mailto:rradspinner@hrsd.com)>  
**Sent:** Friday, September 27, 2024 1:31 PM  
**To:** Farinholt, Stacey (DCR) <[Stacey.Farinholt@dcv.virginia.gov](mailto:Stacey.Farinholt@dcv.virginia.gov)>  
**Cc:** Condon, Tina <[ccondon@hrsd.com](mailto:ccondon@hrsd.com)>  
**Subject:** CFPF Pre-Award Expense Question

Hi Stacey,

One of the projects HRSD is considering for a CFPF application requires early equipment procurement due to excessive lead times (9-12 months).

We are planning to procure (order & contract) this equipment in the next month or two and but don't anticipate actual construction to occur until September 2025.

The equipment (generator controls) represents the majority of the total project cost, approximately 75%. Maybe \$3M of a \$4M total.

My understanding is that the equipment would require a down payment, followed by progress payments as shop drawings are developed, and final payments upon satisfactory performance.

We understand that CFPF may be able to approve 15% of pre-award expenses. Would CFPF consider the entire equipment cost as a pre-award expense? Or just the payments that had been made prior to award (i.e. the down payment)?

Please reach out if I haven't explained the scenario effectively.

**Ryan Radspinner, P.E.**

HRSD Business Process Engineer

Office: 757.460.4232 | Mobile: 757.374.0260

1434 Air Rail Avenue | Virginia Beach, VA 23455

PO Box 5915 | Virginia Beach, VA 23471-0911

[rradspinner@hrsd.com](mailto:rradspinner@hrsd.com) | [www.hrsd.com](http://www.hrsd.com)

CID519999\_HRSD\_CFPF-3\_Budget Narrative - Attachment 3

CID519999\_HRSD\_CFPF-3\_BudgetNarrative - Attachment 2 Low Income

[An official website of the United States government](#)
[Here's how you know](#)

[https://data.census.gov/profile/Census\\_Tract\\_9.02;\\_Norfolk\\_city;\\_Virginia?g=1400000US51710000902#income-and-poverty](https://data.census.gov/profile/Census_Tract_9.02;_Norfolk_city;_Virginia?g=1400000US51710000902#income-and-poverty)

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[Health](#)
[Families and Living Arrangements](#)
[Race and Ethnicity](#)

# Income and Poverty

## Income and Earnings

**\$41,681** ± \$18,958

Median Household Income in Census Tract 9.02; Norfolk city; Virginia

**\$62,382** ± \$3,738

Median Household Income in Norfolk city, Virginia

*S1901 | 2022 American Community Survey 5-Year Estimates*

## Poverty

**15.7%** ± 8.7%

Poverty, All people in Census Tract 9.02; Norfolk city; Virginia

**17.4%** ± 2.3%

Poverty, All people in Norfolk city, Virginia

*S1701 | 2022 American Community Survey 5-Year Estimates*



COMMISSION MEETING MINUTES  
January 23, 2024

4. **Army Base Treatment Plant Generator Control Replacement  
Initial Appropriation – Non-Regulatory and Task Order (>\$200,000)**

**Actions:**

- a. **Appropriate total project funding in the amount of \$4,009,258.**
- b. **Approve a task order with HDR, Inc. in the amount of \$257,865.**

**Moved:** Vishnu Lakdawala  
**Seconded:** Frederick Elofson

**Ayes:** 8  
**Nays:** 0

**CIP Project:** AB012100

**Regulatory Requirement:** None

**Project Description:** This project will design and fabricate new generator controls by retrofitting the existing generator controls that have reached the end of their useful life. The redundant programmable logic controller (PLC) has failed, and replacement parts are no longer supported. The project will include a new digital master control (DMC) panel or generator control panel (GCP) for monitoring, control, and protection. The existing switchgear doors and instruments will also be replaced. In addition, control wire modifications are necessary to interface the new equipment. The project will include installing, testing, and commissioning the new switchgear system.

**Project Justification:** The two, 4.16-kV 2000-kW, standby diesel Cummins generators support the Army Base Treatment Plant's (ABTP) process loads in the event of a utility power loss. The standby generators are critical to maintaining public health, preventing process disruption, employee safety, and maintaining regulatory compliance.

**Task Order Description:** This task order will provide design and preconstruction phase services for the replacement of the obsolete ABTP generator controls.

**Analysis of Cost:** The cost for this task order is based on the number of hours anticipated to complete this effort and the hourly rates agreed upon in the General Engineering Services annual services contract. The task order amount is reasonable for the level of effort and complexity anticipated.

**Funding Description:** The project will be funded by revenue bonds.



COMMISSION MEETING MINUTES  
January 23, 2024

<b><u>Schedule:</u></b>	Design	February 2024
	Bid	August 2024
	Construction	November 2024
	Project Completion	October 2026

**Public Comment:** None

CID519999\_HRSD\_CFPF-3\_HistoricFloodData

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

#### Supporting Information – Projects – Historic Flooding Data and Hydrologic Studies

*Provide information on the flood risk of the project area, including whether the project is in a mapped floodplain, what flood zone it is in, and when it was last mapped. If the property or area around it has been flooded before, share information on the dates of past flood events and the amount of damage sustained.*

The Army Base Treatment Plant is located at 401 Lagoon Road, in Flood Zones AE and X. The FEMA National Flood Hazard Layer FIRMette map was last revalidated February 18, 2017 (attached).

No significant flood events have occurred at the project location; however, neighborhoods within the project service area have been impacted by flood events. Properties impacted by flood are listed in the document CID519999\_HRSD\_CFPF-3\_RepetitiveLoss attached to this application.



# National Flood Hazard Layer FIRMMette



76°19'57"W 36°55'32"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap Imagery Source: USGS National Map 2023

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/4/2024 at 12:30 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



CID519999\_HRSD\_CFPF-3\_NoAdverseImpact&CFM

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

Supporting Information – Projects – No Adverse Impact

*Include studies, data, reports that demonstrate the proposed project minimizes flood vulnerabilities and does not create flooding or increased flooding (adverse impact) to other properties.*

The proposed project is for the design, purchase, and installation of replacement generator controls at the Army Base Treatment Plant with the goal to minimize flood vulnerabilities in the event of a power outage.

This project will not create flooding or increase flooding to other properties. In fact, the project will prevent potential adverse impact to properties by providing an alternative power source to maintain critical operations at the wastewater treatment plant. Effective treatment operations will reduce the risk of sewage overflow that could occur during a flood event with power outage.

Attachment: Endorsement from the Certified Flood Manager (CFM)



October 29, 2024

Re: Hampton Roads Sanitation District (HRSD)  
Army Base Generator Controls Replacement

To Whom It May Concern,

HRSD is proposing the referenced project to update electrical control equipment inside their existing Generator Building at their Army Base Treatment Plant. The existing building resides in both AE 8 and X (shaded) zones at approximate coordinates 36°55'14.58"N, 76°19'33.17"W. It does not appear that the existing Generator Building is located within a regulatory floodway.

Our understanding is that all permanent work will be performed within the existing building and only trailer-mounted generators and transformers will be temporarily staged outside the building during the construction period.

Because the permanent work will be within an existing building, the project is not expected to increase flooding or cause adverse impact to other properties on a permanent basis. It is our understanding that due to the nature of the work being within an existing building, the project is theoretically in compliance with local floodplain regulations.

Sincerely,

Erin Rooney, PE, CFM  
Mid-Atlantic Coastal Lead  
HDR Engineering, Inc.

William S. M'Coy, PE  
Project Manager  
HDR Engineering, Inc.

Justin Shafer, CFM  
Coastal Resilience Manager  
City of Norfolk

CID519999\_HRSD\_CFPF-3\_PledgeCFO

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

Supporting Documentation – Ability to Provide Share of Costs and Signed Pledge Agreement

*Include supporting documents demonstrating the local government's ability to provide its share of the project costs. This must include an estimate of the total project cost, a description of the source of the funds being used, evidence of the local government's ability to pay for the project in full or quarterly prior to reimbursement, and a signed pledge agreement from each contributing organization.*

The total estimated cost for the Army Base Treatment Plant Generator Control Replacement project is \$6,439,410. HRSD's CFPF grant application is requesting State funding in the amount of \$5,473,498, plus HRSD's 15% cash match contribution of \$965,912. HRSD will cover all costs that exceed the grant award.

If a grant is not awarded for this project, HRSD requests that VDCR consider this project for a Resilient Virginia Revolving Fund long-term loan.

A letter from the HRSD Deputy General Manager and Chief Financial Officer is attached and assures that HRSD has the resources and readiness to provide project costs while awaiting reimbursement. The project will be funded through HRSD CIP budget and any grant or loan funds awarded.

HRSD has AA+ S&P and Fitch ratings and is committed to meeting its obligations and financial integrity. HRSD's Annual Comprehensive Financial Report is available at <https://www.hrsd.com/finance#annfinrpt>.

There are no financial contributions for this project from organizations other than HRSD. However, the City of Norfolk and the Virginia Port Authority provided letters of support. These letters are included in the "other attachments" section of the application.

Attachment: Pledge letter from Deputy General Manager and CFO



January 17, 2025

Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, VA 23219

Re: Grant Application for the Virginia Community Flood Preparedness Fund Round 5

Dear Sir/Madam:

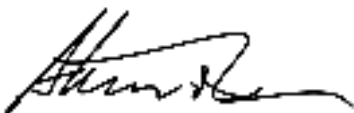
Hampton Roads Sanitation District (HRSD) is applying for the Community Flood Preparedness Fund (CFPF) for the Army Base Treatment Plant Generator Controls Replacement project. HRSD fully supports the project, and it has been approved in the FY 2025 Capital Improvement Plan by the HRSD Board of Commissioners (Commission), our governing body.

The total project estimate for the equipment, design, construction, and installation of generator controls is \$6,439,410. This grant proposal seeks funding in the amount of \$5,473,498 and HRSD commits to a 15% match of \$965,912 for a low-income geographic project. The project estimate includes pre-award expenses of \$821,024, which we ask VDCR to apply toward the match. Any costs above the total project estimate will be paid by HRSD. If a CFPF grant is not awarded for this application, we request VDCR to authorize a Resilient Virginia Revolving Fund (RVRF) long-term loan for the full amount, \$6,439,410.

HRSD has the liquidity to finance the project and will ask the Commission to appropriate the full project funding at the next general meeting on January 28, 2025.

Thank you for this opportunity to apply for this critical project funding.

Sincerely,



Steve de Mik  
Deputy General Manager and Chief Financial Officer

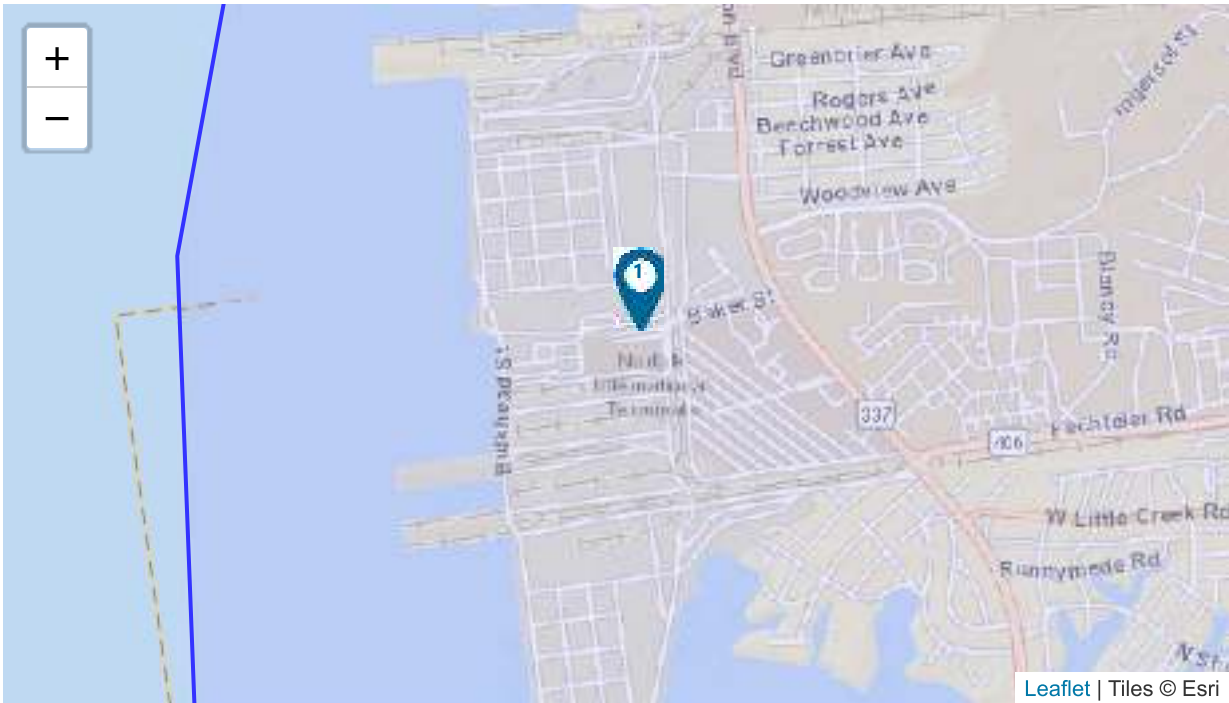


Benefit-Cost Calculator

V.6.0 (Build 20241018.1218 | Release Notes)

Benefit-Cost Analysis

Project Name: Army Base Treatment Plant Generator Control Replacement



Map Marker	Mitigation Title	Property Type	Hazard	Discount Rate (%)	Benefits (B)	Costs (C)	BCR (B/C)
1	Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505		DFA - Infrastructure Failure	3.1	\$ 47,388,404	\$ 6,471,526	7.32
TOTAL (SELECTED)					\$ 47,388,404	\$ 6,471,526	7.32
TOTAL					\$ 47,388,404	\$ 6,471,526	7.32

Property Configuration

Property Title:	Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505
Property Location:	23505, Norfolk City, Virginia
Property Coordinates:	36.922218989078985, -76.32204800672925
Hazard Type:	Infrastructure Failure
Mitigation Action Type:	Generator
Property Type:	Utilities
Analysis Method Type:	Professional Expected Damages

Cost Estimation

Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Discount Rate (%):	3.1%	Use Default:Yes
Project Useful Life (years):	20	
Project Cost:	\$6,439,410	
Number of Maintenance Years:	20	Use Default:Yes
Annual Maintenance Cost:	\$2,179	

Comments

- Project Useful Life:**

HRSD Asset Management Plan uses generator book value useful life of 24 years. ITAC generator control system has a useful life of 20 years. FEMA book value for generator useful life is 19 years.
- Mitigation Project Cost:**

Includes equipment, design, construction, and construction administration/construction inspection. Pre-design costs are not included as they are not part of the project application.
- Annual Maintenance Cost:**

Includes maintenance on the generator and generator controls. See CMMS Excel file ABTP\_GeneratorMaintenance\_Cost.xlsx for backup

Damage Analysis Parameters - Damage Frequency Assessment  
Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Year of Analysis was Conducted:	2024
Year Property was Built:	2018
Analysis Duration:	10    Use Default:Yes
Damages Before Mitigation:	Use Default:Yes

Comments

- 

Year Built:

Generators and generator building were activated this year.

Utilities Properties  
Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Type of Service:	Wastewater
Number of Customers Served:	95,830
Value of Unit of Service (\$/person/day):	\$71    Use Default:Yes
Total Value of Service Per Day (\$/day):	\$6,803,930

Comments

- 

Type of Service:

<https://www.hrsd.com/about-us>

- 

Number of Customers Served:

Traffic Analysis Zone (TAZ) boundaries from the Hampton Roads Transportation Planning Organization (HRTPO) and their associated 2009 population and employment estimates for the year 2030 were overlayed on the ABTP service area to estimate the ABTP population served as 95,830.

Professional Expected Damages Before Mitigation  
Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Recurrence Interval (years)	WASTEWATER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL
	Impact (days)	Category 1 (\$)	Category 2 (\$)	Category 3 (\$)	Number of Volunteers	Number of Days	Damages (\$)
5	1	0	0	0	0	0	6,803,930
48	4	0	0	0	0	0	27,215,720
181	7	0	0	0	0	0	47,627,510

Annualized Damages Before Mitigation

Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Annualized Recurrence Interval (years)	Damages and Losses (\$)	Annualized Damages and Losses (\$)
5	6,803,930	2,438,075
48	27,215,720	551,151
181	47,627,510	263,131
Sum Damages and Losses (\$)		Sum Annualized Damages and Losses (\$)
	81,647,160	3,252,357

Professional Expected Damages After Mitigation

Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

WASTEWATER		OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL
Recurrence Interval (years)	Impact (days)	Category 1 (\$)	Category 2 (\$)	Category 3 (\$)	Number of Volunteers	Number of Days	Damages (\$)
181	1	0	0	0	0	0	6,803,930

Annualized Damages After Mitigation

Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Annualized Recurrence Interval (years)	Damages and Losses (\$)	Annualized Damages and Losses (\$)
181	6,803,930	37,590
Sum Damages and Losses (\$)		Sum Annualized Damages and Losses (\$)
	6,803,930	37,590

Benefits-Costs Summary

Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Discount Rate (%):	3.1%    Use Default:Yes
Total Standard Mitigation Benefits:	\$47,388,404
Total Social Benefits:	\$0
Total Mitigation Project Benefits:	\$47,388,404
Total Mitigation Project Cost:	\$6,471,526
Benefit Cost Ratio - Standard:	7.32
Benefit Cost Ratio - Standard + Social:	7.32



CID519999\_HRSD\_CFPF-3\_RepetitiveLoss

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

Supporting Information – Projects – Repetitive Loss

*Provide a list of repetitive loss and/or severe repetitive loss properties. Do not provide the addresses for the properties but include an exact number of repetitive loss and/or severe repetitive loss structures within the project area.*

There are 373 repetitive loss and/or severe repetitive loss properties in the project service area, as identified in the table below.

FIPS		Census Tract		Repetitive Loss Structures	Severe Repetitive Loss Structures
51	710	Census Tract 4	51710000400	198	18
51	710	Census Tract 12	51710001200	52	5
51	710	Census Tract 22	51710002200	41	0
51	710	Census Tract 11	51710001100	14	1
51	710	Census Tract 1	51710000100	8	1
51	710	Census Tract 66.06	51710006606	7	0
51	710	Census Tract 15	51710001500	4	0
51	710	Census Tract 8	51710000800	3	0
51	710	Census Tract 14	51710001400	3	0
51	710	Census Tract 3	51710000300	3	1
51	710	Census Tract 17	51710001700	2	0
51	710	Census Tract 66.03	51710006603	2	0
51	710	Census Tract 66.04	51710006604	2	0
51	710	Census Tract 7	51710000700	2	0
51	710	Census Tract 56.01	51710005601	2	0
51	710	Census Tract 5	51710000500	1	0
51	710	Census Tract 6	51710000600	1	0
51	710	Census Tract 9.02	51710000902	1	0
51	710	Census Tract 2.02	51710000202	1	0
Total				347	26

## CID519999\_HRSD\_CFPF-3\_Deliverables

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

### Supporting Information – Projects – Approach, Milestones, and Deliverables

*Outline a plan of action laying out the scope and detail of how the proposed work will be accomplished with a timeline identifying expected completion dates. Determine milestones for the project that will be used to track progress. Explain what deliverables can be expected at each milestone, and what the final project deliverables will be. Identify other project partners.*

Full details of the plan of action are provided in the Scope of Work document “CID519999\_HRSD\_CFPF-3\_SOW.”

**Scope:** Procure and install generator controls to ensure reliable backup power and in the event of utility power outage at the wastewater treatment plant. The generator controls are critical to reduce risk to the public, safeguard staff, and maintain regulatory compliance by providing ride-through capability during inclement weather or other disruptions.

**How it will be accomplished:** After receiving appropriations from the HRSD Commission, the HRSD Design and Construction team will work with contract specialists to procure the generator control equipment, design, construction and installation. All procurement will be conducted in compliance with the Commonwealth of Virginia, and with sufficient details to meet the needs of the project scope.

The Design and Construction Project Manager will oversee the progress of the deliverables and review with the team prior to requesting reimbursement from VDCR. Contract specialists and financial analysts will ensure accurate invoices and reimbursement requests are filed timely.

### Timeline, Milestones, Deliverable:

Activity	Task Timeframe*	Projected Dates*
HRSD Commission appropriation	Pre-award	Jan 2025
Equipment contract	Pre-award	Jan 2025
Design task order	Pre-award	Feb 2025
Fully executed grant agreement	1 month	April 2025
Equipment delivery	17 months	Jan 2025 – May 2026
Design documents	9 months	Feb 2025 – Nov 2025
Construction and equipment installation	12 months	Apr 2026 – Apr 2027
Construction and equipment testing and acceptance	1 month	Apr 2027
Employee training on new equipment	1 week	May 2027
Financial and Progress Reports	In accordance with award agreement	
Grant Closeout	3 months	May 2027 – Aug 2027
<b>Total time</b>	<b>31 months</b>	

\*Note: The task timeframes and projected dates may run concurrently.

**Project partners:** There are no project partners for the grant application; however, HRSD has obtained letters of support from the City of Norfolk and the Virginia Port Authority for the project; and will enter procurement contracts for the project equipment, design, and construction. The letters of support are uploaded to the documents section of the application.

CID519999\_HRSD\_CFPF-3\_MMMPlan

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

#### Supporting Information – Projects – Maintenance, Management, and Monitoring Plan

*For ongoing projects or projects that will require future maintenance, such as infrastructure, flood warning and response systems, signs, websites, or flood risk applications, a maintenance, management, and monitoring plan for the projects must be provided.*

The Army Base Treatment Plant Generator Controls Replacement is an equipment and construction installation project. Future maintenance, management, and monitoring will follow Section 2 of the HRSD Interceptor Systems Preventive Maintenance Manual, attached. A sample generator maintenance task order is also attached. Any additional maintenance, management, and monitoring needs will be determined by the equipment installation and will be added to the plan as needed.

#### Attachments:

1. HRSD Interceptor Systems Preventive Maintenance Manual, Section 2. Generators (14 pages)
2. Sample generator maintenance task order (3 pages)

# Interceptor Systems Preventive Maintenance Manual



**Second Edition, 1998**

*Updated June 2023*

*-Generally-*

**The greater amount of preventive maintenance performed reduces the amount of corrective maintenance that will be required.**

# **Interceptor Systems Preventive Maintenance Manual**

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Interceptor Systems Preventive Maintenance Manual

HRSD

June, 2023

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## **2. DIESEL GENERATORS**

Typical inspection forms for diesel generators are included as Forms 2-1 (Automotive for both North Shore and South Shore) through 2-2 (North Shore and South Shore Interceptors).. Electrical Division inspections are performed using Form 2-3. A frequency of inspection schedule for diesel generators is included as Form 2-4. A list of diesel generators for both North Shore and South Shore is maintained in HRSD's Computerized Maintenance Management System (CMMS).

### **2.1. GENERAL**

During each station check, the following visual checks shall be performed on diesel generators:

- Engine lube oil level
- Above ground and belly tanks
- Batteries for water or electrolyte
- Belts and hoses
- Leaks
- Ensure that day tank pump and battery charger are functioning properly
- Check preheater for proper operation

In addition, a visual check will be performed on the following:

#### **Coolant level**

Check diesel generator log when station is serviced. Compare the last recorded running time with the actual time indicated on the clock (at the diesel panel). Report any discrepancies of running time to the appropriate Supervisor.

The engine shall be tested once every month for approximately two (2) hours using the TEST button. After this test, record the appropriate information in the diesel log. During the two hour test the station will likely experience multiple pump cycles which will put the generator under enough load to verify it is working properly.

### **2.2. Inspection Procedures (Monthly)**

#### **2.2.1. Pretest**

Prior to the test run, the following shall be checked:

- Lube oil level.
- Coolant level.
- Belt condition and proper tension.
- Batteries for water or electrolyte.

- Fuel level, both storage and day tanks shall be checked and volume recorded. Day tanks shall be checked to ensure that fuel level is FULL. ALL fuel storage tanks shall be dipped with WATER PASTE.
- Notify Operations Coordinator

### **2.2.2. Test**

To test diesel generator under load:

1. At generator control panel, verify that the switch is in the AUTO position.
2. Next, start unit using TEST button.
3. While running, the generator should be observed closely, including the following:
  - a. Proper fuel level in day tank.
  - b. Temperature and lube oil pressure.
  - c. Cycles and voltage within acceptable range - cycles should indicate 60, voltage ranges to be posted at each unit.
  - d. Battery charger.
  - e. Cooling louvers operating properly.
  - f. Ensure that air filter restriction indicator (Donaldson Gage) does not indicate "red" in viewer.
  - g. In addition, ensure that each piece of equipment will operate properly.
4. When test is completed, generator should automatically shut off after approximately two (2) hours. This shut-down function should be verified with the Operations Coordinator and EDS.

### **2.2.3. Following Test**

Following the test run, all fuel tanks shall be checked. Storage tanks shall be inventoried using the DIP CHART and the appropriate supervisor advised as to results. Day tank shall be checked and verified that fuel level is FULL. All fuel storage tanks shall be dipped with WATER PASTE.

NOTE: Ensure that DIP CHART is located in Pump Station mailbox.

## **2.3. Generator Failure**

In the event the generator fails due to over crank, over speed, etc., the unit must be reset as specified in the operator's manual in the station.

In the event the generator fails due to low oil pressure or high temperature, the problem should be investigated and corrected before further attempts to run unit.

A Corrective or Condition based WO should be created in CMMS to document the conditions encountered and the actions taken.

## **2.4. Generator System Annual Maintenance**

### **2.4.1. Interceptor Systems**

The following preventive maintenance functions shall be performed by the Interceptor Operations Division:

1. Close inspection of entire unit for leaks, drips, or other obvious defects or problems.
2. Inspect all belts and hoses for proper tension and condition, including remote engine-driven radiators.
3. Check cooling system for proper level of coolant protection, and engine preheat indicator for proper temperature (not to exceed 140 F). **CAUTION SHOULD BE EXERCISED WHEN CHECKING COOLANT.**
4. After engine has been test run, wait 15 minutes and reinspect unit for leaks, drips, or other obvious defects or problems.
5. Clean off and touch up unit with spray paint as needed (refer to paint code Section 1.3.5).

### **2.4.2. Automotive Division**

Mechanical preventive maintenance should be completed in accordance with Form 2-1. The Automotive Division in conjunction with the Electrical Division will perform an Annual Load Bank Test.

### **2.4.3. Electrical Division**

Electrical preventive maintenance on diesel generators will be performed by the Electrical Division. This includes inspection and testing of batteries and generator unit according to schedule.

## **2.5. Diesel Fuel Storage Tanks**

### **2.5.1. Diesel fuel storage tanks utilized by the Interceptor Systems are of three types:**

Above Ground Tank  
Sub Base (Belly) Tanks  
Underground Tank (tank having 10 percent or more of its volume underground)

- Above ground fuel storage tanks are usually standard steel 275-gallon domestic type oil storage tanks, provided with a top vent and fill cap.
- Base mounted belly fuel storage tanks are steel storage tanks of various capacities located under the generator unit between the floor mount beams.
- Underground fuel storage tanks are double-wall fiberglass tanks of various capacities. These tanks are provided with automatic leak detector systems for the tank walls and the secondary containment collar.
- All fuel storage tanks should be checked with a dip stick and WATER PASTE per schedule and/or as needed. It should be noted that it may not be feasible to utilize a dip stick on underground tanks if they are more than 75 percent full.

## **2.6. Fuel Storage Tanks – Testing and Inspection**

### **2.6.1. Underground Storage Tanks (USTs)**

The automatic leak detection system for all underground storage tanks (UST's) should be checked by the Interceptor Technician during each station check to determine if leakage has occurred. Emergency procedures for leaks should be posted next to the leak detection system.

The leak detection system on all UST's should be inspected and tested in accordance with manufacturer's recommendations

### **2.6.2. Above-ground Storage Tanks**

All above-ground storage tanks should be visually inspected for areas of discoloration, cracks, soft spots, bulges, wet spots, scaling and leaks.

Form 2-1. Emergency Generator Preventative Maintenance Check Sheet



## PREVENTIVE MAINTENANCE CHECK SHEET EMERGENCY GENERATORS

Technician:	Pump Station:	Date:
Time Started:	Time Shut-Down:	Total Run Time:

ITEM:	Repairs Needed		NOTE and RECORD:
	YES	NO	
Crankcase Oil Level			Engine Hours - Start
Oil Leaks			Engine Hours - Stop
Coolant Leaks			Engine Oil Pressure
Coolant Level			Coolant Temp.
Condition of Hoses			RPM
Condition of Belts			Frequency
Block Heater			Voltage Phase 1
Day Tank Operation			Voltage Phase 2
Fuel Transfer Pump (s)			Voltage Phase 3
Radiator Cleanliness			Exhaust Opacity
Radiator Louvers Operational			Crank Time to Start
Test Coolant for Proper pH			Battery #1 / Volts
Battery Condition			Battery #1 / CCA
Battery Charger Condition			Battery #2 / Volts
Engine Vibration Isolator Condition			Battery #2 / CCA
Generator Bearing Lubrication			Check for Emergency Contact List
Generator Inspection:			
Air Filter & Induction System Condition			
Transfer Switch Operation			
Station Alarms Operation			
Gauges Functioning			
Unusual Noises			

**PARTS USED - DESCRIPTION / PART #**


**DESCRIBE ALL ACTIONS TAKEN:**


*Form 2-2. Typical Generator Monthly Inspection Report*  
**GENERATOR MONTHLY INSPECTION REPORT**

PUMP STATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

**PRE-TEST**

1. Coolant Level
2. Lube Oil Level
3. Batter Water
4. Belts
5. Hoses
6. Leaks
7. Fuel On Hand - Belly, Above and/or UST
8. Fuel On Hand - Day Tank

**TEST**

9. Generator ON
10. Generator OFF
11. Run Time
12. Temperature
13. Oil Pressure
14. Louvers

**POST-TEST**

15. Lube Oil Level
16. Fuel On Hand - Belly, Above and/or UST
17. Leaks
18. Fuel on Hand - Day Tank

REMARKS:

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

**Electrical Division**

**Preventive Maintenance Check Sheet – Emergency Generators**

**Preventive Maintenance Action Descriptions**

All Preventive Maintenance activities are performed Annually as described below.

1. Inspect generator for cleanliness and condition of components.
2. Lubricate the generator if applicable.
3. Inspect generator controls and breakers for cleanliness and condition of components.
4. Test generator system.

**Preventive Maintenance Procedures**

1. Clean and Inspect Generator
  - a. Check and clean ventilation screens and openings as necessary.
  - b. Inspect condition of cooling fan blades.
  - c. Inspect condition of gaskets.
  - d. Clean interior of equipment with vacuum cleaner.
  - e. Clean and inspect wiring connections.
  - f. Measure and record cold megger readings if feasible
2. Lubricate the Generator
  - a. Grease bearings or inspect oil levels if applicable.
3. Clean and Inspect Generator Controls and Breakers
  - a. Inspect the interior of the associated housings for the following:
    - i. Presence of foreign matter.
    - ii. Discolored or scorched components.
    - iii. Cracked or frayed insulation.
    - iv. Loose connections.
    - v. Breaks, burns or evidence of carbonizing on arc chutes.
    - vi. Evidence of overheating in wiring.

- vii. Sharp projections, pitting, misalignment and evidence of overheating contact surfaces.
    - viii. Condition of gaskets.
    - ix. Binding and sticking of operating parts in controls and switches.
    - x. Defective indicator light bulbs.
  - b. Inspect the preheat system for operation. Repair or renew as required.
- 4. Test the Generator System
  - a. Remove lock-out/tag-out controllers and energize generator circuit.
  - b. Observe the generator system for unusual noise and vibration.
  - c. Measure and record voltage, frequency, amperage and elapsed time.
  - d. De-energize the generator circuit. Ensure motor is locked-out/tagged-out.
  - e. Remove lock-out/tag-out controls and place generator back in emergency mode.
  - f. Perform Generator Load Bank Test Annually.



**Form 2-4. Emergency Generator Inspection Schedule**

**Interceptor Systems Preventive Maintenance**

**Inspection Schedule**

<b>Item</b>	<b>Daily*</b>	<b>Weekly</b>	<b>Monthly</b>	<b>Quarterly</b>	<b>Semi-Annually</b>	<b>Annually</b>
Batteries - check water or electrolyte	I				A	
Belts & hoses - inspection	I				A	
Cooling system leaks - check	I				A	
Coolant level - check		I			A	
Clean unit & touch up paint						I
Check day tank & battery charger	I				A	
Check automatic leak detection - underground tanks	I					
Engine lube oil - check	I				A	
Fuel - On Hand (DIP)			I			
Generator 2-hour test			I			
Inspect engine preheat indicator	I				A	
Inspect unit for leaks, drips & other defects	I				A	
Test leak detection monitor (button)	I					
Inspect & test leak detection system (sensor) underground tanks				I		
Visual inspection of above ground tanks	I			I		
Load Bank Test						A/E

\* During each station check by Interceptor Technician.

I – Interceptors

A – Automotive

E – Electrical

NOTE – all Electrical Division PM activities are performed annually in accordance with Form 2-3.

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**Work Order Card for Work Order Number 2362231****AB-PL, Y, Emergency Generator, TK01851**

Status:Open

Class:EIS

Equipment ID#: 161662

EQ Desc: Generator - 02, Plant Emergency Generator Set

Work Center: Army Base Plant

**Equipment Details:**

Equipment	Description		
Manufacturer:	Cummins Inc.	WO Additional Information:	Work Order Totals:
Model #	DQKAB	Work Order EID: AB-PL-B-0611-02	Parts: \$0.00
Serial #	L1001744 30	WO Sub-class:	Labor:
Account Code:		Completed By:	Tools: \$0.00
Valve Open %		Warranty Exp:	Misc: \$0.00
Valve Open Date:		Facility Area Generator Building	WO Total:
		Level First Floor	

Scheduled Start Date: Jul 1, 2024

Completed on:

Reported by: Hobor, Jamie

Assigned To: Krumm, Glenn

Job Type:

Priority: Routine

PM Schedule: PM08420

**Work Details and Comments:**

Created By	Created Date	Comment
Activity: 5	Task: TK01851 - EL - Emergency Generator	
Trade: EIS	Est Hours: 1	
<p>E&amp;I staff to assist contractor with this PM</p> <p>MAINTENANCE ACTION DESCRIPTION:</p> <ol style="list-style-type: none"> <li>Clean and inspect generator.</li> <li>Lubricate the generator.</li> <li>Inspect generator controls and breakers.</li> <li>Test generator system.</li> <li>Record Hour Meter Readings</li> </ol> <p>SAFETY PRECAUTIONS:</p> <ol style="list-style-type: none"> <li>Observe standard safety precautions.</li> <li>Coordinate servicing if unit is in operation.</li> <li>De-energize and lock-out/tag-out electrical circuit.</li> </ol> <p>TOOLS, PARTS, MATERIALS, TEST EQUIPMENT:</p> <ol style="list-style-type: none"> <li>Safety locks/tags</li> <li>Hand tools</li> <li>Ammeter</li> <li>Multimeter</li> <li>Megaohmmeter</li> </ol> <p>PROCEDURE:</p> <p>Preliminary:</p> <p>-----</p> <p>a) De-energize and lock-out/tag-out electrical circuit.</p>		

WARNING: Avoid prolonged use exposure to cleaning solvents.

1. Clean and inspect generator.

- a) Open generator control head.
- b) Open or remove generator main breaker panel door/cover.
- c) Clean exterior of generator.
- d) Clean ventilation screens and openings.
- e) Inspect generator for loose foundation bolts and fittings.
- f) Inspect condition of cooling fan blades.
- g) Inspect condition of gaskets.
- h) Clean interior of equipment with vacuum cleaner.
- i) Inspect wiring connections.
- j) Close generator control head.
- k) Close or reinstall generator main breaker panel door/cover.

CAUTIONS: DO NOT megger diodes or solid state components with a 500 volt megger.

l) Inspect the following items on the Williamsburg Plant generator.

- 1) Inspect slip rings and/or commutators for uneven wear, arcing and proper operating conditions.
- 2) Inspect brushes for uneven wear, arcing and proper operating conditions.
- 3) Inspect brush riggings for proper alignment.
- 4) Insure correct spring tension on brushes.
- 5) Clean and tighten all brush and brush rigging connections.

m) Repair generator as required.

2. Lubricate the generator shaft bearings.

- a) If bearings are grease lubricated and have grease fittings, lubricate the bearings with the appropriate amount and type of grease.
- b) If bearings are oil lubricated and have oil reservoirs, inspect the oil level. If the oil level is low, add the appropriate type and grade (viscosity) of oil.

3. Inspect generator controls and breakers.

NOTE 1: The brown discoloration found on silver and silver-plated contacts and slip rings is harmless. Silver and silver-plated contacts should not be dressed unless sharp projections extend beyond contact surfaces.

a) Inspect for the following:

- 1) Sharp projections, pitting, misalignment and evidence of over-heating of contact surfaces.
- 2) Condition of gaskets.
- 3) Binding and sticking of operating parts in controls and switches.
- 4) Defective indicator light bulbs.
- 5) Repair or renew controls and breakers as required.

- b) Inspect the diesel engine preheat system for proper operation. Repair or renew as required.
- c) Test daytank. Repair as required.

#### 4. Test the generator system.

- a) Remove lock-out/tag-out controls and energize generator circuit.
- b) Start the generator in AUTO mode.
- c) Observe the generator system for unusual noise and vibration.
- d) Operate generator until proper operating temperature has been achieved.

WARNING: Observe extreme caution when working around operating equipment.

- e) Observe commutator/slip rings, rigging and brushes for proper operations where applicable. Note any chattering and/or arcing (WBTP only).
- f) Use a fine abrasive stone to clean the commutator/rings of debris (see NOTE 1).
- g) Inspect meters for proper operation.
- h) Measure and record voltage, frequency, amperage and elapsed time.
- i) Stop the generator.
- j) De-energize and lock-out/tag-out the generator electrical circuit.
- k) Correct all defects found during inspection and tests. Notify Work Center Supervisor of any defects not corrected.
- l) Remove lock-out/tag-out controls and place generator back in NORMAL mode.

#### 5. Record Hour Meter Readings

- a) Select Meter tab of the work order and enter current hour meter reading.

#### Activity Parts:

Date	Part	Desc.	Qty.	Cost Ea.	Cost
------	------	-------	------	----------	------

#### Activity Labor:

Date	Emp. Code	Name	Hours	Rate	Cost
------	-----------	------	-------	------	------

#### Activity Tools:

Date	Tool	Hours	Qty.	Rate	Cost
------	------	-------	------	------	------

#### Additional Costs:

Date	Desc.	Cost Type	Qty.	Cost Ea.	Cost
------	-------	-----------	------	----------	------

Activity Total Cost:

CID519999\_HRSD\_CFPF-3\_Authorization

Applicant: Hampton Roads Sanitation District (HRSD)

Project Name: Army Base Treatment Plant Generator Controls Replacement

Supporting Documentation – Authorization to Request Funding

*Authorization to request funding from the Fund from governing body or chief executive of the local government.*

HRSD is an independent political subdivision of the Commonwealth of Virginia. A board of eight commissioners (the Commission), appointed by the Governor of Virginia, governs HRSD. The HRSD Commission is established under the Code of Virginia Authorities:

<https://law.lis.virginia.gov/authorities/hampton-roads-sanitation-district-commission/>. The Commission appoints a General Manager, who appoints the senior staff.

Two attachments are provided for the authorization to request funding:

1. A signed letter from Steve de Mik, HRSD Chief Financial Officer and Deputy General Manager, authorizing the application and request for funding from the Virginia Department of Conservation and Recreation, Community Flood Preparedness Fund.
2. A copy of the Hampton Roads Sanitation District Commission Meeting Minutes dated January 23, 2024, where the HRSD Commissioners approved the initial appropriation of funding for the Army Base Treatment Plant Generator Control Replacement. Additional appropriation will be sought from Commission in January 2025.

Attachments (2)



January 17, 2025

Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, VA 23219

Re: Grant Application for the Virginia Community Flood Preparedness Fund Round 5

Dear Sir/Madam:

Hampton Roads Sanitation District (HRSD) is applying for the Community Flood Preparedness Fund (CFPF) for the Army Base Treatment Plant Generator Controls Replacement project. HRSD fully supports the project, and it has been approved in the FY 2025 Capital Improvement Plan by the HRSD Board of Commissioners (Commission), our governing body.

The total project estimate for the equipment, design, construction, and installation of generator controls is \$6,439,410. This grant proposal seeks funding in the amount of \$5,473,498 and HRSD commits to a 15% match of \$965,912 for a low-income geographic project. The project estimate includes pre-award expenses of \$821,024, which we ask VDCR to apply toward the match. Any costs above the total project estimate will be paid by HRSD. If a CFPF grant is not awarded for this application, we request VDCR to authorize a Resilient Virginia Revolving Fund (RVRF) long-term loan for the full amount, \$6,439,410.

HRSD has the liquidity to finance the project and will ask the Commission to appropriate the full project funding at the next general meeting on January 28, 2025.

Thank you for this opportunity to apply for this critical project funding.

Sincerely,

A handwritten signature in black ink, appearing to read 'Steve de Mik', is written over a light blue horizontal line.

Steve de Mik  
Deputy General Manager and Chief Financial Officer



COMMISSION MEETING MINUTES  
January 23, 2024

4. **Army Base Treatment Plant Generator Control Replacement  
Initial Appropriation – Non-Regulatory and Task Order (>\$200,000)**

**Actions:**

- a. **Appropriate total project funding in the amount of \$4,009,258.**
- b. **Approve a task order with HDR, Inc. in the amount of \$257,865.**

**Moved:** Vishnu Lakdawala  
**Seconded:** Frederick Elofson

**Ayes:** 8  
**Nays:** 0

**CIP Project:** AB012100

**Regulatory Requirement:** None

**Project Description:** This project will design and fabricate new generator controls by retrofitting the existing generator controls that have reached the end of their useful life. The redundant programmable logic controller (PLC) has failed, and replacement parts are no longer supported. The project will include a new digital master control (DMC) panel or generator control panel (GCP) for monitoring, control, and protection. The existing switchgear doors and instruments will also be replaced. In addition, control wire modifications are necessary to interface the new equipment. The project will include installing, testing, and commissioning the new switchgear system.

**Project Justification:** The two, 4.16-kV 2000-kW, standby diesel Cummins generators support the Army Base Treatment Plant's (ABTP) process loads in the event of a utility power loss. The standby generators are critical to maintaining public health, preventing process disruption, employee safety, and maintaining regulatory compliance.

**Task Order Description:** This task order will provide design and preconstruction phase services for the replacement of the obsolete ABTP generator controls.

**Analysis of Cost:** The cost for this task order is based on the number of hours anticipated to complete this effort and the hourly rates agreed upon in the General Engineering Services annual services contract. The task order amount is reasonable for the level of effort and complexity anticipated.

**Funding Description:** The project will be funded by revenue bonds.





COMMISSION MEETING MINUTES  
January 23, 2024

<b><u>Schedule:</u></b>	Design	February 2024
	Bid	August 2024
	Construction	November 2024
	Project Completion	October 2026

**Public Comment:** None

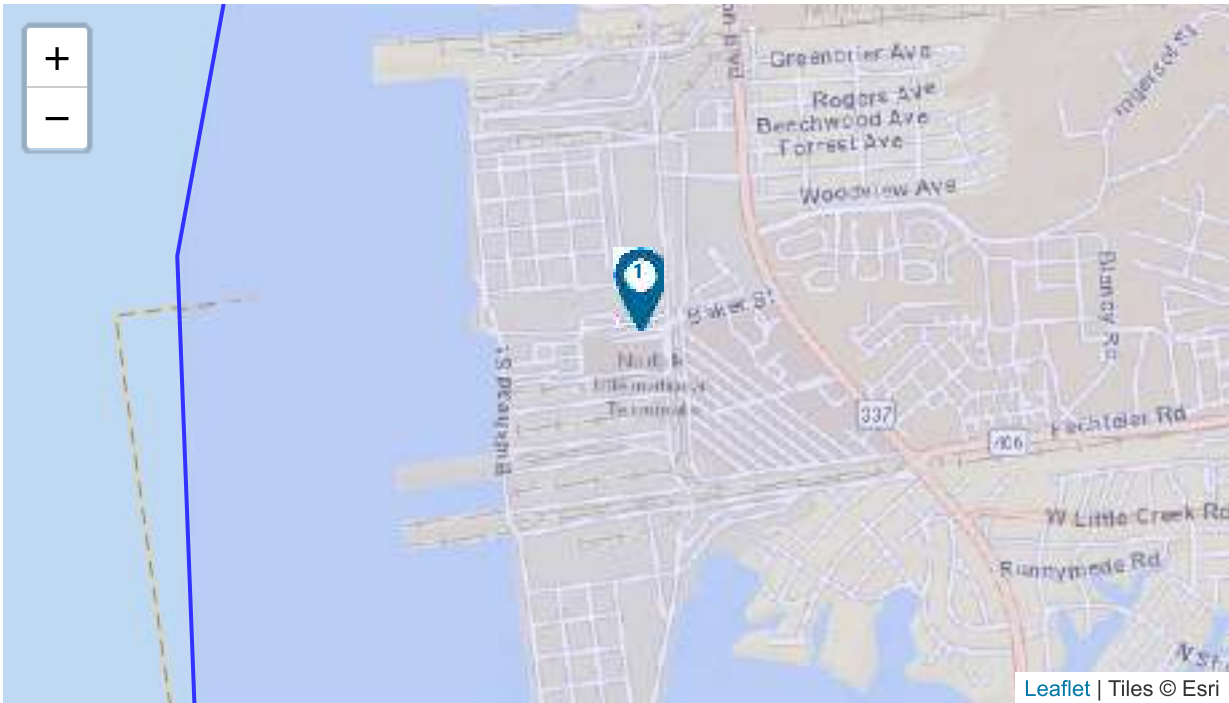


Benefit-Cost Calculator

V.6.0 (Build 20241018.1218 | Release Notes)

Benefit-Cost Analysis

Project Name: Army Base Treatment Plant Generator Control Replacement



Map Marker	Mitigation Title	Property Type	Hazard	Discount Rate (%)	Benefits (B)	Costs (C)	BCR (B/C)
1	Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505		DFA - Infrastructure Failure	3.1	\$ 47,388,404	\$ 6,471,526	7.32
TOTAL (SELECTED)					\$ 47,388,404	\$ 6,471,526	7.32
TOTAL					\$ 47,388,404	\$ 6,471,526	7.32

Property Configuration

Property Title:	Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505
Property Location:	23505, Norfolk City, Virginia
Property Coordinates:	36.922218989078985, -76.32204800672925
Hazard Type:	Infrastructure Failure
Mitigation Action Type:	Generator
Property Type:	Utilities
Analysis Method Type:	Professional Expected Damages

Cost Estimation

Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Discount Rate (%):	3.1%	Use Default:Yes
Project Useful Life (years):	20	
Project Cost:	\$6,439,410	
Number of Maintenance Years:	20	Use Default:Yes
Annual Maintenance Cost:	\$2,179	

Comments

- Project Useful Life:**

HRSD Asset Management Plan uses generator book value useful life of 24 years. ITAC generator control system has a useful life of 20 years. FEMA book value for generator useful life is 19 years.
- Mitigation Project Cost:**

Includes equipment, design, construction, and construction administration/construction inspection. Pre-design costs are not included as they are not part of the project application.
- Annual Maintenance Cost:**

Includes maintenance on the generator and generator controls. See CMMS Excel file ABTP\_GeneratorMaintenance\_Cost.xlsx for backup

Damage Analysis Parameters - Damage Frequency Assessment  
Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Year of Analysis was Conducted:	2024
Year Property was Built:	2018
Analysis Duration:	10    Use Default:Yes
Damages Before Mitigation:	Use Default:Yes

Comments

- 

Year Built:

Generators and generator building were activated this year.

Utilities Properties  
Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Type of Service:	Wastewater
Number of Customers Served:	95,830
Value of Unit of Service (\$/person/day):	\$71    Use Default:Yes
Total Value of Service Per Day (\$/day):	\$6,803,930

Comments

- 

Type of Service:

<https://www.hrsd.com/about-us>

- 

Number of Customers Served:

Traffic Analysis Zone (TAZ) boundaries from the Hampton Roads Transportation Planning Organization (HRTPO) and their associated 2009 population and employment estimates for the year 2030 were overlayed on the ABTP service area to estimate the ABTP population served as 95,830.

Professional Expected Damages Before Mitigation  
Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Recurrence Interval (years)	WASTEWATER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL
	Impact (days)	Category 1 (\$)	Category 2 (\$)	Category 3 (\$)	Number of Volunteers	Number of Days	Damages (\$)
5	1	0	0	0	0	0	6,803,930
48	4	0	0	0	0	0	27,215,720
181	7	0	0	0	0	0	47,627,510

Annualized Damages Before Mitigation

Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Annualized Recurrence Interval (years)	Damages and Losses (\$)	Annualized Damages and Losses (\$)
5	6,803,930	2,438,075
48	27,215,720	551,151
181	47,627,510	263,131
Sum Damages and Losses (\$)		Sum Annualized Damages and Losses (\$)
	81,647,160	3,252,357

Professional Expected Damages After Mitigation

Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

WASTEWATER		OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL
Recurrence Interval (years)	Impact (days)	Category 1 (\$)	Category 2 (\$)	Category 3 (\$)	Number of Volunteers	Number of Days	Damages (\$)
181	1	0	0	0	0	0	6,803,930

Annualized Damages After Mitigation

Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Annualized Recurrence Interval (years)	Damages and Losses (\$)	Annualized Damages and Losses (\$)
181	6,803,930	37,590
Sum Damages and Losses (\$)		Sum Annualized Damages and Losses (\$)
	6,803,930	37,590

Benefits-Costs Summary

Generator @ 401 Lagoon Rd, Norfolk, Virginia, 23505

Discount Rate (%):	3.1%    Use Default:Yes
Total Standard Mitigation Benefits:	\$47,388,404
Total Social Benefits:	\$0
Total Mitigation Project Benefits:	\$47,388,404
Total Mitigation Project Cost:	\$6,471,526
Benefit Cost Ratio - Standard:	7.32
Benefit Cost Ratio - Standard + Social:	7.32

CID519999\_HRSD\_CFPF-3\_CompPlan

Applicant: Hampton Roads Sanitation District (HRSD)

Project Name: Army Base Treatment Plant Generator Controls Replacement

Supporting Documentation – Comprehensive Plan

*A link to or a copy of the current comprehensive plan.*

The proposed HRSD project is in the City of Norfolk's comprehensive plan and in HRSD's Capital Improvement Program.

Following is a link to Norfolk's adopted Comprehensive Plan, *planNorfolk2030*: [plaNorfolk2030 | City of Norfolk, Virginia - Official Website](https://www.norfolk.gov/1376/plaNorfolk2030) (or <https://www.norfolk.gov/1376/plaNorfolk2030>).

The Norfolk 2050 plan is underway and can be viewed here: [NFK2050 | City of Norfolk, Virginia - Official Website](https://www.norfolk.gov/NFK2050) (or <https://www.norfolk.gov/NFK2050>).

The HRSD Capital Improvement Program can view here: [Capital Improvement Program | HRSD](https://www.hrsd.com/capitalimprovementprogram.shtml) (or <https://www.hrsd.com/capitalimprovementprogram.shtml>).

CID519999\_HRSD\_CFPF-3\_FloodplainOrdinance

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

Supporting Documentation – Floodplain Ordinance

*A link to or a copy of the current floodplain ordinance*

HRSD is a political subdivision of the Commonwealth; it is not a municipality and does not have ordinances. However, since the Army Base Treatment Plant is in the City of Norfolk and this project has the City's support, below are relevant links to:

1. City of Norfolk Zoning Ordinances:

Flood Plain standards (section 3.9.7):

[https://www.norfolkva.gov/norfolkzoningordinance/#Norfolk-ZO/3\\_9\\_Overlay\\_Districts\\_and\\_Designations.htm](https://www.norfolkva.gov/norfolkzoningordinance/#Norfolk-ZO/3_9_Overlay_Districts_and_Designations.htm)

[Norfolk's Zoning Ordinance & Map | City of Norfolk, Virginia - Official Website](https://www.norfolk.gov/3910/Zoning-Ordinance-Rewrite), url:

<https://www.norfolk.gov/3910/Zoning-Ordinance-Rewrite>.

2. City of Norfolk 2030 Comprehensive Plan .pdf: [Link to Local Comprehensive Plan](#)

CID519999\_HRSD\_CFPF-3\_HazMitPlan

Applicant: Hampton Roads Sanitation District (HRSD)

Project Name: Army Base Treatment Plant Generator Controls Replacement

Supporting Documentation – Hazard Mitigation Plan

*A link to or a copy of the current hazard mitigation plan.*

Below are links to the Hampton Roads Planning District Commission (HRPDC) Hazard Mitigation Plan (HMP)

[2022 Hampton Roads Hazard Mitigation Plan | Hampton Roads, VA](https://www.hrpdcva.gov/400/2022-Hampton-Roads-Hazard-Mitigation-Pla) or  
<https://www.hrpdcva.gov/400/2022-Hampton-Roads-Hazard-Mitigation-Pla>

HRSD's Hazard Mitigation Plan was approved by Virginia Department of Emergency Management (VDEM) and the Federal Emergency Management Agency (FEMA). The approval letter is attached. The Plan is included in the DCR approved HRSD Resilience Plan.

Attachment: Letter from FEMA dated February 29, 2024



One Independence Mall  
615 Chestnut Street, 6<sup>th</sup> floor  
Philadelphia, PA 19106-4404



**FEMA**

February 29, 2024

John Sadler  
Regional Emergency Management  
Administrator  
Hampton Roads Sanitation District  
723 Woodlake Drive  
Chesapeake, Virginia 23320

Community:	Hampton Roads Sanitation District, Virginia
PDC:	Hampton Roads
Plan Adoption Date:	02/07/2024
Plan Approval Date:	06/08/2022
Plan Expiration Date:	06/07/2027

Dear Administrator Sadler:

I am pleased to tell you that FEMA has approved your Hazard Mitigation Plan (HMP). The plan meets the requirements of Title 44, Chapter 1, Section 201.6, of the Code of Federal Regulations ([44 CFR 201.6](#)). It addresses the required elements: planning process, risk assessment and hazard identification, mitigation strategy, maintenance and implementation, and adoption.

Your HMP also met the requirements to address all dam risks, based on the Fiscal Year 2024 Rehabilitation of High Hazard Potential Dams (HHPD) Notice of Funding Opportunity.

Participating communities are now eligible for FEMA non-emergency assistance and mitigation grants from the following programs:

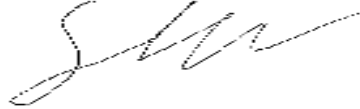
- [Hazard Mitigation Grant Program \(HMGP\)](#)
- [Building Resilient Infrastructure and Communities \(BRIC\)](#)
- [Flood Mitigation Assistance \(FMA\)](#)
- [HHPD Grant Program](#)

Funding from these programs can be used for qualified mitigation planning and projects that reduce disaster losses and protect life and property from future disasters. Approved HMPs can also earn points under the [Community Rating System](#).

Within 5 years, your community must revise its plan and obtain approval to remain eligible for mitigation grant funding. You should review the plan annually to keep it relevant to the mitigation goals in your community. Please consider the enclosed recommendations to further strengthen your plan during its next update.

I commend you and the planning team for your hard work and continued commitment to building a safer, more resilient community. For questions about your plan or mitigation grant funding, please contact Katie Vugdalic, State Hazard Mitigation Officer, at (804) 461-0242.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sarah Wolfe', with a stylized, flowing script.

Sarah Wolfe, Branch Chief  
Floodplain Management and Insurance Branch  
FEMA Region 3

Enclosure

cc: Katie Vugdalic, State Hazard Mitigation Officer, VDEM  
Stacy McKinley, Hazard Mitigation Planner, VDEM  
Alexander Krupp, Deputy State Hazard Mitigation Officer, VDEM  
Chris Bruce, All Hazards Planner, Region 5, VDEM  
Ryan Radspinner, Engineer, HRSD  
Anas Malkawi, Chief of Asset Management, HRSD  
Tina Condon, Grand Analyst, HRSD

CID519999\_HRSD\_CFPF-3\_HistoricFloodData2

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

#### Supporting Documentation – Historic Flooding Data and Hydrologic Studies

*Provide information on the flood risk of the project area, including whether the project is in a mapped floodplain, what flood zone it is in, and when it was last mapped. If the property or area around it has been flooded before, share information on the dates of past flood events and the amount of damage sustained.*

The Army Base Treatment Plant (ABTP) is located at 401 Lagoon Road, in Flood Zones AE and X.

No significant flood events have occurred at the project site. However, neighborhoods within the project service area have been impacted by flood events. Properties reported as affected by flood are listed in the document *CID519999\_HRSD\_CFPF-3\_RepetitiveLoss.pdf* attached in the Project Section of this application.

The FEMA National Flood Hazard Layer FIRMette map was last revalidated February 18, 2017. The FIRMette map is attached to *CID519999\_HRSD\_CFPF-3\_FIRMette.pdf* in the Supporting Documentation section of this application. See also Attachment 1 on the document *CID519999\_HRSD\_CFPF-3\_MapProjectArea*.

Attachment: Norfolk FIRM Comparison (2014-2017)







CID519999\_HRSD\_CFPF-3\_MaintenancePlan

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

#### Supporting Documentation – Maintenance Plan

The HRSD Maintenance Plan for the Army Base Treatment Plant Generator Controls Replacement project is in a separate attachment, *CID519999\_HRSD\_CFPF-3\_MMMPlan.pdf*, which is uploaded to the application sections Scope of Work Supporting Information – Projects, and in the Supporting Documentation section under “Maintenance and management plan for the project,” as *CID519999\_HRSD\_CFPF-3\_MMPlan.pdf*.

CID519999\_HRSD\_CFPF-3\_MapProjectArea

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

Supporting Documentation – Detailed Map of the Project Area

Attached are two maps for the Generator Controls Replacement project.

1. The first map is a detailed aerial view of the Army Base Treatment Plant (ABTP) and identifies the location of the Generator Control Building. The map includes the flood hazard risk for the project location.
2. The second map outlines the project service area in Norfolk by Census Group. This area is connected to the ABTP and impacted by this project. The map also identifies the location of the treatment plant (left side of the map), the mains and pump stations.

Attachments (2)



## Army Base Treatment Plant Generator Control Replacement

-  HRSD Property Boundary
-  HRSD Treatment Plant
-  HRSD Force Main
-  HRSD Gravity Main
-  1% Annual Chance Flood Hazard (AE)
-  0.2% Annual Chance Flood Hazard (X)

Generator Control Building

Army Base

WTP

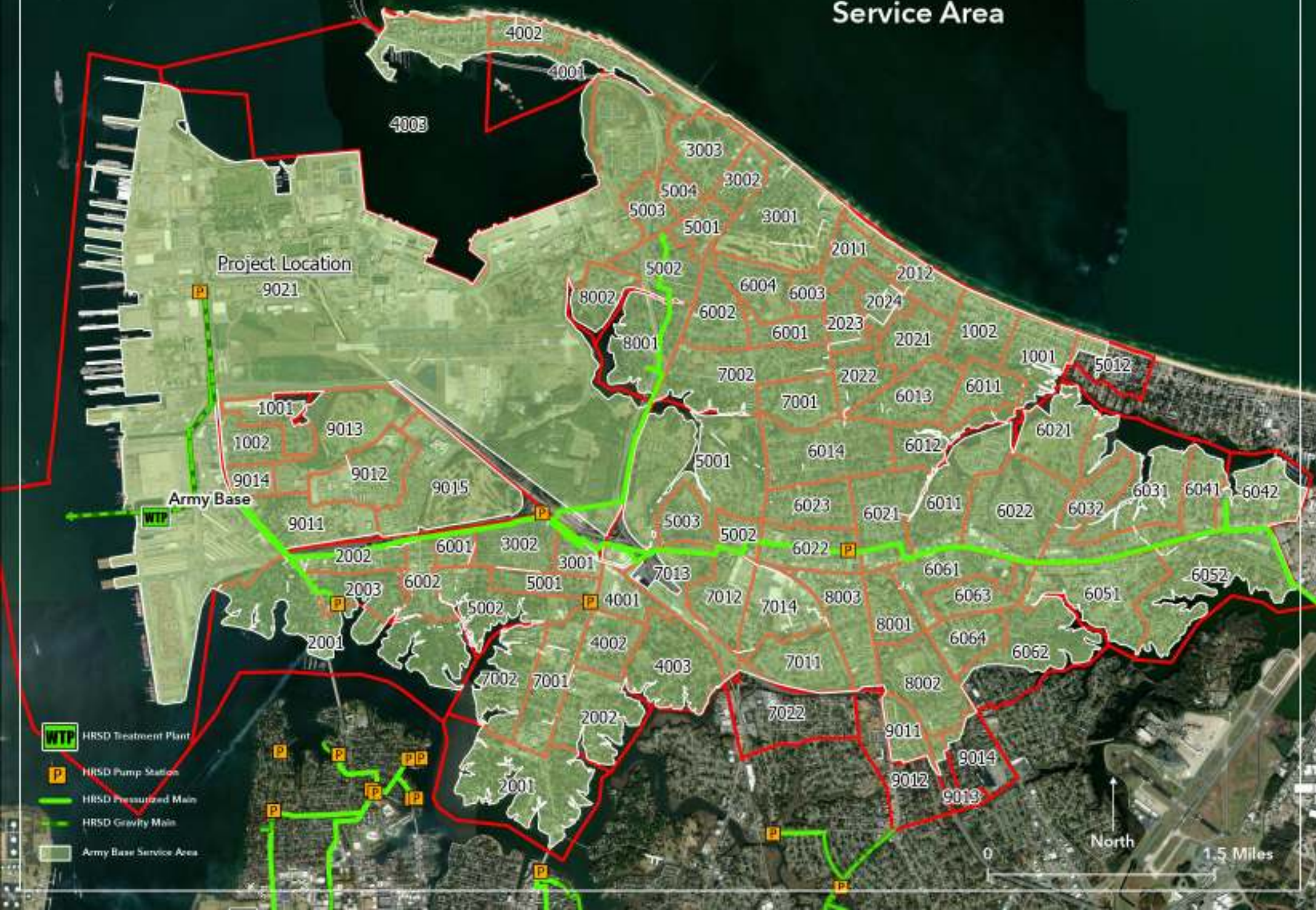
North

300 Feet





## Army Base Treatment Plant Generator Control Replacement Service Area



CID519999\_HRSD\_CFPF-3\_MapSVI

Applicant: Hampton Roads Sanitation District (HRSD)

Project Name: Army Base Treatment Plant Generator Control Replacement

Supporting Documentation – Social Vulnerability Map

*Social vulnerability index score(s) for the project area.*

Attached are two maps from the DCR VFRIS – Virginia Flood Risk Information System – displaying the Social Vulnerability Index (SVI) for the HRSD Army Base Treatment Plant (ABTP) Generator Controls project.

1. The first map contains the SVI score with block group data for the ABTP address, 401 Lagoon Road, Norfolk, VA 23505. The SVI Class is High Social Vulnerability.
2. The second map shows the SVI color mapping for the broader ABTP project service area (outlined). While the service area has pockets of each SVI score, the majority falls within the High Social Vulnerability index.

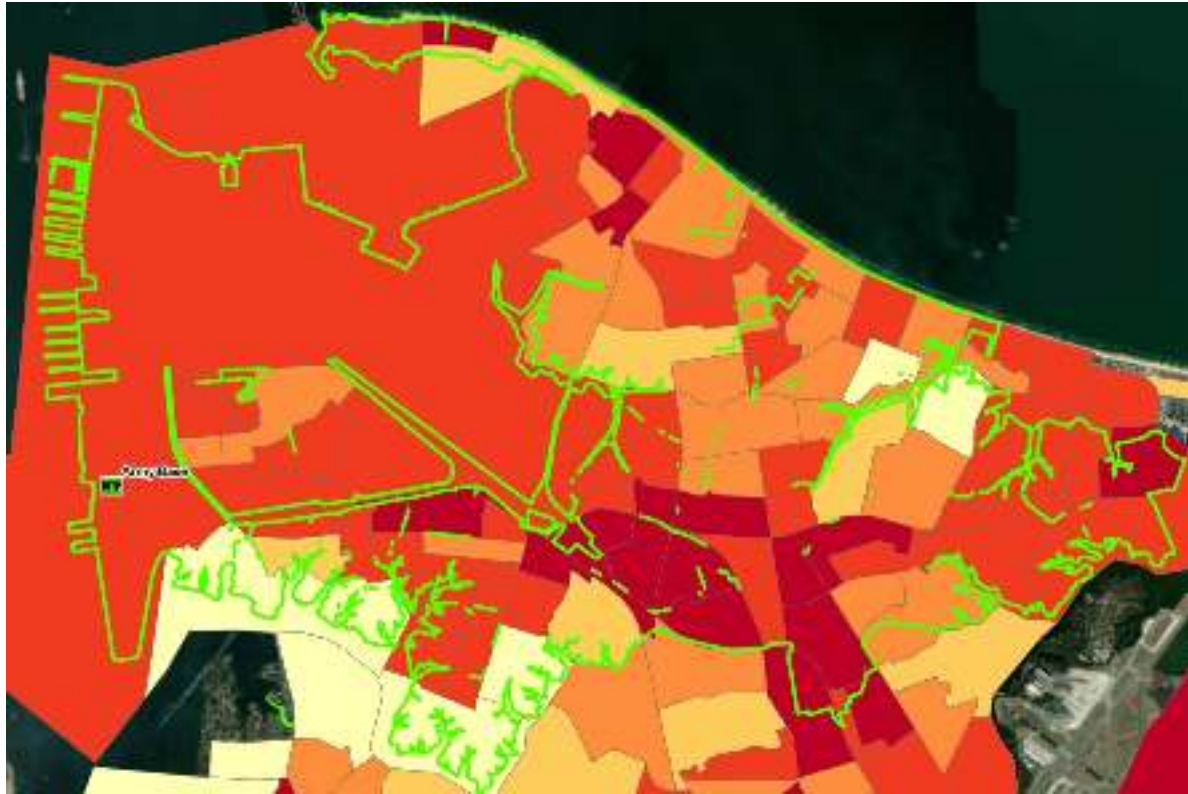
Attachments (2)



## VA SVI BlockGroups 2020: Block Group 1

MTCC	G5030
NAMEISAD	Black Group 1
STATEFP	51
SVLClass	High Social Vulnerability
SVI_Index_CPPE	1.23
THEME1	0.68

⊕ Zoom to



☑ HRSD Treatment Plant



☑ Army Base Service Area



☑ Census Block SVI

SVI\_THEMES

-  Very Low
-  Low
-  Moderate
-  High
-  Very High

CID519999\_HRSD\_CFPF-3\_MMPlan2

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

#### Supporting Documentation – Maintenance and Management Plan

*Maintenance and management plan for project.*

The Army Base Treatment Plant Generator Controls Replacement is an equipment, design, and construction installation project. Future maintenance and management will follow Section 2 of the HRSD Interceptor Systems Preventive Maintenance Manual, attached. A sample generator maintenance task order is also attached. Any additional maintenance and management needs will be determined by the equipment installation and will be added to the plan as needed.

This information is also provided in the Project section of the application, under the Maintenance, Management, and Monitoring Plan.

#### Attachments:

1. HRSD Interceptor Systems Preventive Maintenance Manual, Section 2. Generators (14 pages)
2. Sample generator maintenance task order (3 pages)

CID519999\_HRSD\_CFPF-3\_PledgeCFO

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

Supporting Documentation – Ability to Provide Share of Costs and Signed Pledge Agreement

*Include supporting documents demonstrating the local government's ability to provide its share of the project costs. This must include an estimate of the total project cost, a description of the source of the funds being used, evidence of the local government's ability to pay for the project in full or quarterly prior to reimbursement, and a signed pledge agreement from each contributing organization.*

The total estimated cost for the Army Base Treatment Plant Generator Control Replacement project is \$6,439,410. HRSD's CFPF grant application is requesting State funding in the amount of \$5,473,498, plus HRSD's 15% cash match contribution of \$965,912. HRSD will cover all costs that exceed the grant award.

If a grant is not awarded for this project, HRSD requests that VDCR consider this project for a Resilient Virginia Revolving Fund long-term loan.

A letter from the HRSD Deputy General Manager and Chief Financial Officer is attached and assures that HRSD has the resources and readiness to provide project costs while awaiting reimbursement. The project will be funded through HRSD CIP budget and any grant or loan funds awarded.

HRSD has AA+ S&P and Fitch ratings and is committed to meeting its obligations and financial integrity. HRSD's Annual Comprehensive Financial Report is available at <https://www.hrsd.com/finance#annfinrpt>.

There are no financial contributions for this project from organizations other than HRSD. However, the City of Norfolk and the Virginia Port Authority provided letters of support. These letters are included in the "other attachments" section of the application.

Attachment: Pledge letter from Deputy General Manager and CFO



January 17, 2025

Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, VA 23219

Re: Grant Application for the Virginia Community Flood Preparedness Fund Round 5

Dear Sir/Madam:

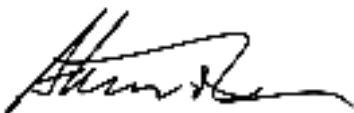
Hampton Roads Sanitation District (HRSD) is applying for the Community Flood Preparedness Fund (CFPF) for the Army Base Treatment Plant Generator Controls Replacement project. HRSD fully supports the project, and it has been approved in the FY 2025 Capital Improvement Plan by the HRSD Board of Commissioners (Commission), our governing body.

The total project estimate for the equipment, design, construction, and installation of generator controls is \$6,439,410. This grant proposal seeks funding in the amount of \$5,473,498 and HRSD commits to a 15% match of \$965,912 for a low-income geographic project. The project estimate includes pre-award expenses of \$821,024, which we ask VDCR to apply toward the match. Any costs above the total project estimate will be paid by HRSD. If a CFPF grant is not awarded for this application, we request VDCR to authorize a Resilient Virginia Revolving Fund (RVRF) long-term loan for the full amount, \$6,439,410.

HRSD has the liquidity to finance the project and will ask the Commission to appropriate the full project funding at the next general meeting on January 28, 2025.

Thank you for this opportunity to apply for this critical project funding.

Sincerely,



Steve de Mik  
Deputy General Manager and Chief Financial Officer

CID519999\_HRSD\_CFPF-3\_MapFIRMette

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

Supporting Documentation – FIRMette Map

*FIRMette of the project area(s)*

Attached is the FEMA National Flood Hazard Layer FIRMette map of the Army Base Treatment Plant project location at 401 Lagoon Road, Norfolk, Virginia 23505.

Attachment (1)



# National Flood Hazard Layer FIRMMette



76°19'57"W 36°55'32"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap Imagery Source: USGS National Map 2023

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/4/2024 at 12:30 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

CID519999\_HRSD\_CFPF-3\_LOS

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

#### Letters of Support

*If applicant is not a town, city, or county, attach letters of support from affected communities.*

Attached are two letters of support for the Hampton Roads Sanitation District (HRSD) ABTP Generator Controls project. The first letter is from the City of Norfolk, Virginia, where the project is located, and the second is from the Virginia Port Authority, which operates within the project service area.

#### Attachments:

1. Letter of support from City of Norfolk, dated October 4, 2024
2. Letter of support from Virginia Port Authority, dated October 21, 2024

October 4, 2024

Commonwealth of Virginia  
Department of Conservation and Recreation  
600 East Main Street, 24th Floor  
Richmond, Virginia 23219-2094

Re: Grant Application of Hampton Roads Sanitation District (HRSD)  
Army Base Treatment Plant Generator Control Replacement  
Norfolk Utilities' Letter of Support

Ladies and Gentlemen,

The City of Norfolk Department of Utilities endorses Hampton Roads Sanitation District's project to replace the generator controls at the Army Base Wastewater Treatment Plant located adjacent to the Elizabeth River and serving multiple Norfolk neighborhoods.

It is our understanding that the existing generator controls have reached the end of their useful life, the redundant programmable logic controller has failed, and replacement parts are no longer supported. HRSD intends that the new controls will ensure that the standby generators support the treatment plant process loads in the event of utility power loss. The generators and controls are expected to provide resilient and effective sanitary sewer service critical to protecting public health and the waterways that define the landscape of our coastal region and contribute heavily to the local economy and quality of life.

HRSD's Army Base Treatment Plant serves approximately 95,000 Norfolk residents in addition to Naval Station Norfolk and the Port of Virginia's Norfolk International Terminals. These facilities must be operational all-day, every day to treat wastewater effectively and to avoid sanitary sewer overflows. This project represents a substantial investment for our region by ensuring resilient power supply supporting essential wastewater treatment for the City of Norfolk in addition to critical port and defense facilities.

The City of Norfolk Department of Utilities actively partners on many HRSD projects and understands both the need for, and benefit of, resilient wastewater services within a community where people live, work, and recreate. The solution developed for this project is an essential element of a critical community lifeline.

Sincerely,

*Robert Carteris*

Robert A. Carteris, Director



VIRGINIA PORT AUTHORITY  
501 World Trade Center, Norfolk, VA 23510  
757-440-7160

October 21, 2024

Virginia Department of Conservation and Recreation  
600 East Main Street, 24th Floor  
Richmond, Virginia 23219-2094

Re: Army Base Treatment Plant Generator Control Replacement

To whom it may concern:

The Virginia Port Authority endorses Hampton Roads Sanitation District's (HRSD) project to replace the generator controls at the Army Base Wastewater Treatment Plant (ABTP) located within our Norfolk International Terminal footprint adjacent to the Elizabeth River and serving multiple Norfolk neighborhoods.

The existing generator controls have reached the end of their useful life, the redundant programmable logic controller (PLC) has failed, and replacement parts are no longer supported. The new controls will ensure that the standby generators support the treatment plant process loads in the event of utility power loss. Together, the generators and controls provide resilient and effective sanitary sewer service critical to protecting public health and the waterways that define the landscape of our coastal region and contribute heavily to the local economy and quality of life.

HRSD's Army Base Treatment Plant serves the Virginia Port Authority's Norfolk International Terminals, Naval Station Norfolk and approximately 95,000 Norfolk residents. The treatment plant must be operational all-day, every day to treat wastewater effectively and to avoid sanitary sewer overflows. This project represents a substantial investment for our region by ensuring resilient power supply supporting essential wastewater treatment critical port and defense facilities in addition to the City of Norfolk.

The Virginia Port Authority understands both the need for and benefit of resilient wastewater services within a community where people live, work, and recreate. The solution developed for this project is an essential element of a critical community lifeline and we appreciate your favorable consideration of this application.

Sincerely,

Barbara Nelson  
Vice President, Transportation and Government Affairs

CID519999\_HRSD\_CFPF-3\_ResiliencePlanApproval

Applicant: Hampton Roads Sanitation District

Project Name: Army Base Treatment Plant Generator Controls Replacement

Other Attachments – Resilience Plan Approval Letter

Hampton Roads Sanitation District's Resilience Plan was approved by Virginia Department of Conservation and Recreation.

Attached is the approval letter dated August 30, 2024, from Angela Davis, Director, Division of Floodplain Management.





**COMMONWEALTH of VIRGINIA**  
DEPARTMENT OF CONSERVATION AND RECREATION

August 30, 2024

Ryan Radspinner, PE  
Business Process Engineer  
Hampton Roads Sanitation District  
PO Box 5915  
Virginia Beach, VA 23471-0915

RE: HRSD Resiliency Plan Submission – CFPF

Dear Mr. Radspinner,

Thank you for submitting the *Hampton Roads Sanitation District (HRSD) Resiliency Plan*. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete, meeting all applicable criteria outlined in the Community Flood Preparedness Fund Round 4 Grant Manual. This approval will remain in effect for a period of five years, ending on August 30, 2029.

As a political subdivision of the Commonwealth created by an Act of Assembly (1940), HRSD is considered a local government for the purposes of the Community Flood Preparedness Fund (§ 10.1-603.24). Hampton Roads Sanitation District is the owner and operator of critical infrastructure that collects, conveys and treats wastewater generated by almost two million people in twenty localities across Eastern Virginia. As the sole provider of these services, HRSD is a “community lifeline,” providing a most fundamental service that enables all other aspects of society to function.

The following elements were evaluated as part of this review:

**Element 1: It is project-based with projects focused on flood control and resilience.**

The *HRSD Resiliency Plan* draws flood control and resilience project possibilities primarily from the *Capital Improvement Plan*, informed by the document *Climate Change Planning Study: Utility-wide Flood Risk Results and Initial Mitigation Implementation Schedule*.

**Element 2: It incorporates nature-based infrastructure to the maximum extent possible.**

The *HRSD Resiliency Plan Executive Summary* aptly explains that while some proposed projects may be hybrid in nature, wastewater treatment on the community lifeline scale does not always lend itself to nature-based solutions. *Mitigation Concepts Summary Technical Memorandum* outlines that typical methods for this type of infrastructure would be dry-floodproofing, floodwalls with gates, and in some cases earthen levees, elevation or relocation.

HRSD's internal mitigation project ranking uses the "triple bottom line" scoring method described by the Envision framework of the Institute for Sustainable Infrastructure, which measures social and environmental benefits alongside economic prudence.

HRSD's commitment to nature-based stewardship is expressed through incorporation of sustainability measures where applicable, including managed meadows, solar roofs, rainwater cisterns. Particularly notable is the Sustainable Water Initiative for Tomorrow (SWIFT) program which puts treated water through additional rounds of advanced treatment to meet drinking water standards and injects it into the Potomac Aquifer to replenish groundwater resources and slow land subsidence. Eventually 90% of HRSD's discharge to local waters will be eliminated, reducing nutrient loads flowing to Chesapeake Bay.

**Element 3: It considers of all parts of a locality regardless of socioeconomics or race.**

The *HRSD Resiliency Plan* includes projects in a wide range of socioeconomic contexts and a spectrum of rural, suburban to urban conditions, as one would expect from their diverse, wide ranging service area. A map of EPA Environmental Justice index values across the service area also shows that treatment plants are not concentrated in low-income communities or communities of color.

Understanding the economic realities of their service base, HRSD strives to keep rates down through aggressive management of flood risk, as repair costs would be spread across all customers. As written in the Plan: "It is HRSD's responsibility to our customers to plan, design, construct, maintain, and operate our infrastructure to provide resilient service regardless of the socioeconomics of individual communities." This is critical as there is no other provider of this service in Eastern Virginia.

**Element 4: Identifies all flooding occurring within locality, not only within SFHAs, and provides repetitive / severe repetitive loss data.**

Firmettes are included for all proposed project locations as well as a contextual map of HRSD assets in relation to the greater SFHA.

**Element 5: If property acquisition and / or relocation guidelines are included, equitable relocation strategies are addressed.**

Not applicable.

**Element 6: Includes a strategy for debris management.**

The *HRSD Resiliency Plan* includes by reference the *2024 HRSD Hurricane Readiness and Recovery Plan*. This includes a specific list of debris clearance priorities and coordination points with other essential utilities to restore service and prevent environmental consequences to Tidewater and the Eastern Shore. An annual schedule for testing and maintenance of extensive fleet of debris removal equipment and training for all employees on protocols outlined in the *Damage Assessment Plan*.

**Element 7: Includes administrative procedures for substantial damage / substantial improvement of structures within the SFHA.**

HRSD is subject to the floodplain ordinance and substantial damage administrative procedures of the locality where each of its buildings are located.

**Element 8: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.**

The *HRSD Resiliency Plan* describes how HRSD coordinates with the needs of the localities it serves and takes part in the hazard mitigation planning for the Hampton Roads area, specifically as an active participant in the *HRPDC Hazard Mitigation Plan*.

In the process of implementing its own flood risk mitigation projects as outlined in *Climate Change Planning Study: Utility-wide Flood Risk Results and Initial Mitigation Implementation Schedule*, HRSD expects that working with local governments on regional solutions will often amplify their mitigation efforts. This type of coordination would be considered on an annual basis as science progresses and re-assessments of vulnerability are made.

**Element 9: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**

The *HRSD Resiliency Plan* includes by reference *Flood Risk in a Changing Climate* which examines the impacts of climate change on their facilities over the next 80 years using technical assessments produced by the *Climate Change Planning Study: Flood Water Level Evaluations for Treatment, Pumping and Administration Facilities*.

HRSD and their consultants performed extensive original H&H analyses, considering the degree to which flooding from all sources impacts their facilities. A range of storm scenarios and planning horizons inform resilience needs and strategy. Additional sources include FEMA maps and studies, USACE, NOAA, DCR and other state or federal research programs.

DCR looks forward to working with HRSD to build a more resilient Commonwealth. If you have questions or need additional assistance, please contact us at [cfpf@dcr.virginia.gov](mailto:cfpf@dcr.virginia.gov). Again, thank you for your interest in the Community Flood Preparedness Fund and your participation in this program.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Angela Davis', with a horizontal line extending to the right.

Angela Davis, Director  
Division of Floodplain Management

cc: Darryl M. Glover, DCR