STATEMENT OF BASIS

FOR

U.S. EPA UNDERGROUND INJECTION CONTROL (UIC) PROGRAM
DRAFT CLASS V AREA PERMIT NUMBER VAS5B170028617

FOR

Hampton Roads Sanitation District
1434 Air Rail Avenue
Virginia Beach, Virginia 23455

FOR

A proposed project consisting of ten (10) Class V aquifer recharge injection wells used for the recharge of the Potomac Aquifer System (PAS) with wastewater which has undergone advanced treatment to meet Safe Drinking Water Act (SDWA) primary maximum contaminant levels (PMCLs). The project is located at:

Hampton Roads Sanitation District
James River SWIFT
111 City Farm Road
Newport News, Virginia 23602

On November 5, 2020, Hampton Roads Sanitation District (“HRSD” or the “Permittee”) submitted to the U.S. Environmental Protection Agency (EPA) a UIC area permit application for approval to construct and operate ten aquifer recharge injection wells. EPA has reviewed the permit application, determined it to be complete, and found it to meet all technical requirements of the UIC Program. The Permittee’s initial permit application and amendments thereto1 are collectively referred to in this Statement of Basis as the “Permit Application”.

Ten (10) aquifer recharge injection wells are proposed for construction and operation at the James River Wastewater Treatment Plant. In addition to the ten aquifer recharge injection wells subject to UIC regulations, the project includes significant upgrades to the treatment plant to include Advanced Wastewater Treatment (AWT). The project is known collectively as HRSD James River SWIFT (JR SWIFT). The ten aquifer recharge injection wells (hereinafter, “JR SWIFT injection wells”) are designed to inject up to 16 million gallons per day (MGD) of highly treated water from the James River Wastewater Treatment Plant into the Potomac Aquifer System (PAS). Treated wastewater will meet all PMCLs prior to injection and will provide ground water recharge to the PAS. The PAS is experiencing depleted water levels due to ground

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water overdraft and the JR SWIFT injection wells are intended to aid in replenishing this Underground Source of Drinking Water (USDW). The JR SWIFT injection wells will target the Upper and Middle portions of the PAS for recharge at depths ranging from approximately 400 to 1125 feet below ground surface. Aquifer recharge also has the potential to alleviate problems associated with saltwater intrusion and land subsidence that have resulted from aquifer depletion. This draft permit is for the first of five similar HRSD full-scale managed aquifer recharge facilities anticipated as part of full-scale SWIFT implementation.

In 2018, EPA authorized HRSD to construct and operate as a pilot project a demonstration scale 1 million gallon per day (1MGD) AWT and aquifer recharge facility at the SWIFT Research Center located at the Nansemond Treatment Plant in Suffolk, Virginia. As of December 2021, the SWIFT Research Center recharged 530 million gallons of water to the PAS. The HRSD pilot project was approved by EPA under the rule authorization provision of the SDWA and UIC regulations and has demonstrated that aquifer recharge of wastewater which has undergone AWT can be conducted in a manner sufficiently protective of USDWs.

Pursuant to the federal SDWA, 42 U.S.C. §§ 300f et. seq., and its implementing regulations, 40 C.F.R. Parts 144-147, the EPA has developed a federal UIC Program and, through the issuance of permits, is responsible for regulating the construction, operation, monitoring and closure of Injection Wells that inject treated wastewater as part of a managed aquifer recharge program. The draft permit specifies conditions for aquifer recharge injection well construction, operation, monitoring, reporting, and plugging and abandonment, which will eliminate the potential for endangerment of USDWs from any injection well related activity. The Permittee’s UIC project and the draft permit conditions specific to the project are described below:

**Area of Review**: Pursuant to the applicable regulations, 40 C.F.R. §§ 144.3 and 146.6(b), the “Area of Review” (AOR) is an area surrounding the project or a well which the applicant must research to determine whether any wells penetrate the recharge zone or low permeability confining layers and may provide conduits for fluid migration into USDWs outside the intended injection zone. If the applicant finds any such wells in the AOR, it must develop a program for corrective action to address those impacts. The AOR for this project is one-quarter (1/4) mile fixed width from the outermost JR SWIFT injection well boundary. See Attachment A of the permit application page 2 and 3.

In setting the AOR for this project, EPA considered the chemistry of injected and formation fluids, hydrogeology, population and groundwater use and dependence, and historical practices in the area. HRSD has documented that there are no wells in the AOR which penetrate the PAS or the upper confining layer. HRSD identified three wells in the AOR installed into the surficial aquifer. These wells are classified as non-potable, irrigation wells by the Virginia Department of Health. No corrective action is required at this time as EPA’s evaluation did not identify migration pathways that would allow fluid migration outside the intended injection zones within the AOR.

**Underground Sources of Drinking Water**: The JR SWIFT project area lies within the Atlantic Coastal Plain Physiographic Province, which is characterized by an eastward thickening wedge of marine and non-marine sediments. These sediments are a series of interbedded, unconsolidated, and semi-consolidated layers of sand, silt, gravel, and shell and clay deposits. Some of these layers are permeable and able to transmit water (aquifers), some are less
permeable with restricted fluid movement (aquitards\(^2\)), and some have low permeability (confining zones).

The PAS contains multiple aquifers, aquitards, and confining zones and is the target recharge aquifer for the JR SWIFT injection wells. The JR SWIFT injection wells target three discrete, more permeable and more transmissive sand/silt and gravel layers interspersed with confining layers. The confining layers assure that injected fluid remains within the intended injection zones. The PAS is an USDW. A USDW is defined at 40 CFR § 144.3 as an aquifer or its portion which, among other things, contains a sufficient quantity of ground water to supply a public water system and which also contains fewer than 10,000 mg/L (milligrams per liter) Total Dissolved Solids, and which is also not an exempted aquifer. The JR SWIFT injection wells will recharge the Upper Potomac Aquifer (UPA) and the Middle Potomac Aquifer (MPA) portions of the PAS, which also are USDWs. The lowermost USDW, the Lower Potomac Aquifer (LPA), occurs at the interface with crystalline basement bedrock at a depth of more than 1,200 feet below surface elevation. The LPA has marginal water quality due to elevated TDS concentrations and thus has low utility as a drinking water supply. There are no water supply wells in the Area of Review drawing from the LPA. The construction of the JR SWIFT injection wells will meet all UIC permit conditions, including installing surface casing to a depth of approximately 400 feet and cementing it back to the surface.

**Injection fluid:** UIC Program regulations at 40 C.F.R. §§ 144.12 and 144.82 prohibit any injection well activity which allows the movement of fluid containing any contaminants into a USDW if that contaminant may cause a violation of a drinking water standard or may otherwise adversely impact the health of persons. Injection into or recharge of the UPA or MPA is prohibited unless the JR SWIFT Recharge Water\(^3\) (injection fluid) meets SDWA PMCLs prior to injection. PMCLs establish the maximum permissible level for contaminants in water which is delivered to any user of a public water system for human consumption, and that reflect the level that protects human health and accounts for best available technology and detection methods.

As of the date of public notice of this draft permit, EPA has not promulgated SDWA regulations specifically addressing potable reuse. However, EPA has made determinations regarding limits and monitoring requirements other than PMCLs on a case-by-case basis in accordance with the non-endangerment standard under UIC regulations set forth in 40 C.F.R. § 144.12 (applicable to all UIC wells) and 40 C.F.R § 144.82 (specific to Class V UIC wells). Under the draft permit, compliance with the limits and monitoring requirements specified in Attachment 1 (“Permit Limits”) must be measured in the JR SWIFT Recharge Water prior to injection. After injection and as it moves through the aquifer, JR SWIFT Recharge Water will undergo passive soil aquifer treatment as it moves through the aquifer. Upon later recovery or withdrawal of groundwater that may contain JR SWIFT Recharge Water for drinking water purposes, such recovered water

\(^2\) An aquitard is a semi permeable (low porosity) geologic layer that impedes vertical fluid movement of groundwater and acts a confining layer to an aquifer.

\(^3\) The draft permit defines “JR SWIFT Recharge Water” as Potomac Aquifer System (PAS) recharge water which has undergone advanced wastewater treatment at the JamesRiver Wastewater Treatment Plant to meet Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) and Safe Drinking Water Act Health Advisory for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS), among other requirements, as determined after treatment and prior to injection.
may ultimately undergo further treatment and monitoring before reaching a public drinking water consumer. The Virginia Department of Health (VDH) has primacy for implementing the National Primary Drinking Water Regulations at 40 C.F.R. Part 141 (NPDWRs) in Virginia. Although EPA is not the lead agency who regulates the recovered water for drinking water purposes, EPA has oversight authority over VDH regarding such activities.

Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). JR SWIFT Recharge Water must meet the drinking water health advisory (81 Federal Register 33250 (May 25, 2016)) for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) prior to injection. PFOA and PFOS are persistent in the environment and resistant to typical environmental degradation processes. As a result, they are widely distributed across all trophic levels and are found in soil, air, and groundwater at sites across the United States. The toxicity, mobility, and bioaccumulation potential of PFOA and PFOS result in potential adverse effects on the environment and human health. During the term of this permit, should EPA issue an updated health advisory or PMCL for PFOA/PFOS, EPA will modify the permit, as appropriate, to reflect the new level pursuant to paragraph I.D. of the permit. Monitoring of additional per- and polyfluoroalkyl substance (PFAS) compounds are also required in the draft permit, specifically perfluorobutanoic acid (PFBA), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS) and perfluorononanoic acid (PFNA).

Total Organic Carbon and Total Nitrogen. JR SWIFT Recharge Water must also meet the Total Organic Carbon and Total Nitrogen limitations specified in Attachment 1 to the draft permit. EPA added Total Nitrogen limits as an additional protection to ensure injected water meets the nitrate PMCL.

EPA added Total Organic Carbon (TOC) limits to the draft permit to reflect the requirement in the Occoquan Policy in place in Northern Virginia to limit Chemical Oxygen Demand (COD) in indirect reuse projects to 10 mg/L. 9VAC25-410-20. The Occoquan Service Authority worked with HRSD to calculate an observed COD to TOC ratio. This ratio was used to calculate a limit of 4.0 mg/L for TOC which would be acceptable to meet the local policy. This policy ensures the protection of the Occoquan Reservoir for indirect potable reuse and was incorporated into the permit to support this type of protective measure for the PAS.

EPA also has added a TOC limit as a precautionary measure, as TOC is a concern based on the interaction between TOC and chlorine and the creation of disinfection by-products (DBPs). DBPs must be monitored in the JR SWIFT Recharge Water monthly and have PMCLs required to be met under the draft permit. HRSD is not using chlorine as a disinfectant in the during AWT; it is only using chlorine to control biofouling. HRSD proposed monitoring limits for TOC in its Permit Application and EPA determined that they were acceptable, so included them in the draft permit.

Epichlorohydrin and acrylamide. Epichlorohydrin and acrylamide may be components of products utilized in HRSD’s wastewater treatment process. There is no approved EPA analytical method to document the concentrations of these compounds, and therefore the treatment technique is applicable. HRSD will be required to certify that the dosages for epichlorohydrin
and acrylamide are below the thresholds established in the drinking water regulations. The established thresholds are: Acrylamide = 0.05% dosed at 1 mg/L (or equivalent) and Epichlorohydrin = 0.01% dosed at 20 mg/L.

If any JR SWIFT Recharge Water sampling results exceed Permit Limits, HRSD is required to notify the EPA within twenty-four (24) hours, submit a written report within five (5) days, and propose to EPA in writing the potential cause for the exceedance and submit an appropriate plan for mitigation within fourteen (14) days. Implementing these recharge water quality limitations at the well head compliance point prior to injection minimizes the potential for USDW endangerment prohibited by 40 C.F.R. §§ 144.12 and 144.82.

**Advanced Wastewater Treatment:** An AWT process provides for the control of contaminants and pathogens to ensure the injection fluid will meet the regulatory limits prior to injection. The AWT utilizes a treatment process that has been demonstrated to effectively treat wastewater to meet PMCLs. The AWT process at JR SWIFT includes coagulant addition, flocculation, and sedimentation; ozone oxidation; biologically active carbon filtration; granular activated carbon adsorption; and ultraviolet disinfection. During the AWT process, HRSD must monitor and record the water quality/chemistry of the treated wastewater at the Critical Control Points throughout the AWT process as specified in Attachment 3 to the draft permit. When threshold values specified in Attachment 3 are exceeded at CCPs, the AWT operator will be alerted and will trigger certain actions. HRSD CCPs provide a multiple barrier approach for the control and prevention of contaminants in the wastewater that is treated prior to injection. A multiple barrier approach consists of CCPs that will be incorporated throughout the AWT process to ensure that the system is performing properly at each stage. The inclusion of CCPs in the draft permit provides an additional measure of protection to the USDW.

**Monitoring and Reporting Requirements:** The draft permit requires the continuous monitoring of the flow rate, injection pressure, and cumulative volume in each JR SWIFT injection well prior to injection. The draft permit also requires monitoring of the chemical nature and composition of the JR SWIFT Recharge Water for compliance with Permit Limits. For *cryptosporidium, giardia lamblia, legionella, male specific and somatic coliphage*, the draft permit requires quarterly monitoring. JR SWIFT will be designed and operated to achieve at least 12 log removal value (LRV) for viruses and 10 LRV for Cryptosporidium and Giardia through a combination of advanced treatment processes and soil aquifer treatment. Because there are no applicable federal standards for these parameters for indirect potable reuse, EPA chose these values which are considered conservative⁴.

The draft permit requires Critical Control Points (CCPs) to be monitored to verify that treatment goals are being met at each of the specified wastewater treatment stages. Additional monitoring

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will be to document compliance with the targeted LRV for the UV system.

*Cryptosporidium, giardia lamblia,* and male specific and somatic coliphages must be monitored in the JR SWIFT Recharge Water prior to injection, as specified in Attachment 1 of the draft permit. These parameters must also be monitored early in the advanced wastewater treatment process.

Pursuant to paragraph III.C.9 of the draft permit, if any water quality/chemistry sampling result(s) from the CCPs necessitate(s) a change in operations, the Permittee must notify EPA in writing on a quarterly basis, identifying the potential cause for the water quality sampling result(s) that prompted the change in operation and providing an appropriate plan for mitigation.

These log value credits are based on the current AWT design among other factors. In order to ensure changes to the AWT process do not alter the log value credits the permit requires EPA approval of any such changes. Pursuant to paragraph III.D.6 of the draft permit, the Permittee must provide immediate written notice to the Director regarding any planned physical alterations or additions to the permitted Facility. The Permittee may not implement such planned physical alterations or additions to the permitted Facility unless and until it obtains written approval from EPA.

Regarding the monitoring of male specific and somatic coliphage instead of viruses (enteric), EPA’s Health and Criteria Development Division in Office of Science and Technology published a paper titled “Review of Coliphages as Possible Indicators of Fecal Contamination for Ambient Water Quality” on April 17, 2015. The paper concluded, “For primary and secondary treatment, the removal efficiencies of FIB, F-specific coliphages, somatic coliphages, and enteric viruses are not substantially different. While some of the same limitations exist, coliphages are likely a better indicator of viruses in fecal contamination than the current FIB (i.e., enterococci and E. coli).” Considering this information and the fact that EPA has a method for quantification, EPA determined that male specific and somatic coliphages would be an adequate surrogate for viruses (enteric).

**Turbidity** does not have an PMCL but rather is controlled via a treatment technique by public water systems under the NPDWRs, such as filtration. The draft permit limits for turbidity are marginally more stringent than EPA’s Surface Water Treatment Rules and were proposed by HRSD. Including these limits ensures that proper pathogen removal occurs consistent with the design and operation of the drinking water filters.

The **total coliform (TC)** monitoring requirement at HRSD’s research facility (“SRC”) included compliance with a geomean of 3 CFU/100 mL for 20 daily samples, which is a state drinking water standard for groundwater sources. 12VAC5-590-380. VDH calculated that the requirement to meet TC < 2 CFU/100 mL 95% of the time within a given month was protective of the geomean of 3 CFU/100 mL for 20 daily samples and therefore application of both regulatory limits was not necessary. EPA agrees with this analysis.

If TC exceeds 2 CFU/100 mL > 95% of samples (calculated by the 95th percentile) in one calendar month, HRSD must conduct an additional investigation (e.g., evaluating sample
collection and training protocols, possible sample line contamination, etc.). A TC exceedance is not considered a PMCL exceedance unless E. coli is present. The results of the investigation must be included in the next quarterly report.

HRSD proposed the limits for total coliform and E. Coli in its Permit Application. Total coliforms are a group of related bacteria that are (with few exceptions) not harmful to humans. A variety of bacteria, parasites, and viruses, known as pathogens, can potentially cause health problems if humans ingest them. EPA considers total coliforms a useful indicator of other pathogens for drinking water. Total coliforms are used to determine the adequacy of water treatment and the integrity of the distribution system. The draft permit requires HRSD to monitor for E. Coli five times per week and to meet a PMCL of non-detect as protection against potential fecal contamination. As a result, EPA has determined that these limits for total coliform and E. Coli are protective of public health and do not endanger an underground source of drinking water.

The NPDWRs require public water systems to control lead and copper through a treatment technique to control the corrosiveness of the water; controlling the corrosivity prevents leaching of lead or copper from the distribution system into tap water. This does not apply to this draft permit because the injected water is not entering a distribution system. However, in order to evaluate lead and copper levels in the SWIFT water, the draft permit requires the permittee to monitor for lead and copper.

Total dissolved solids (TDS) are subject to a non-mandatory secondary maximum contaminant level under National Secondary Drinking Water Regulations (NSDWRs) (40 C.F.R. Part 143, Subpart A) but not a PMCL. TDS will be monitored in the JR SWIFT Recharge Water monthly because it serves as an indicator of significant changes to untreated raw water chemistry and overall AWT effectiveness. No limit for TDS is required in this draft permit as the primary concern regarding TDS is aquifer compatibility. In other words, TDS in JR SWIFT Recharge Water should be similar to that in the aquifer. Aquifer compatibility prevents swelling, repulsion, and migration of clay mineral fragments. According to the “HRSD SRC Quarterly Report: Recharge Operations from October 1 – December 31, 2021” issued by HRSD on January 28, 2022, the Potomac Aquifer System range is 694-8,720 mg/L. The TDS of the Potomac Aquifer System is based on the averages within the upper, middle and lower Potomac Aquifer as determined during baseline monitoring. The Permit Application indicates that the expected range of TDS in JR SWIFT Recharge Water at JR SWIFT is 300-700 mg/L.

Heterotrophic plate count (HPC) is controlled through a treatment technique by public water systems under the NPDWRs. HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water. The purpose of monitoring HPC is to ensure water quality is maintained throughout the distribution system in a drinking water supply. The treated water will be entering an aquifer, not a distribution system, and therefore is not applicable to this permit.

Chlorine dioxide (as ClO₂) is subject to a maximum residual disinfectant level under the NPDWRs. JR SWIFT does not use ClO₂ for disinfection, and therefore the draft permit does not require ClO₂ to be monitored.
Attachment 2 of the draft permit requires monitoring for non-regulatory performance indicators and certain Virginia groundwater standards after treatment and prior to injection. The non-regulatory performance indicators were selected based on public health interest or their common occurrence in wastewater as discussed in a study submitted by the Permittee entitled “Final Report of an NWRI Independent Advisory Panel: Recommended DPR General Guidelines and Operational Requirements for New Mexico” published by the National Water Research Institute on January 22, 2016 and as identified in “Monitoring Strategies for Constituents of Emerging Concern (CECs) in Recycled Water, Recommendations of a Science Advisory Panel Convened by the State Water Resources Control Board” published by the Southern California Coastal Water Research Project in April 2018. Non-regulatory performance indicators are monitored quarterly. Finally, as Virginia Department of Health has indicated that it is critical to monitor the Virginia groundwater standards which are not covered by PMCL monitoring, HRSD is required to monitor such constituents/parameters on a monthly basis to address potential public health concerns. If the running annual average of threshold values in Attachment 2 to the draft permit are exceeded, HRSD is required to conduct an investigation as to the cause of the exceedance and report to EPA the results of the investigation. Monitoring and reporting of these Attachment 2 constituents will document the effectiveness of wastewater treatment and provide added assurances of USDW and public health protection.

All monitoring must be compiled on a monthly basis, submitted to EPA quarterly, and summarized in an Annual Report submitted to the EPA Director no later than January 31st of each year, summarizing the activity of the calendar year ending the previous December 31st.

**Monitoring Wells:** The draft permit requires the establishment of a monitoring well network as part of the JR SWIFT project. Monitoring wells will facilitate water quality sample collection and water level monitoring and will be located hydraulically downgradient of the JR SWIFT injection wells. Monitoring wells will be screened at depths appropriate to monitor the fluid from nearby injection wells. Water quality sampling will establish baseline groundwater quality (prior to effects resulting from injection) and will document the water quality impacts resulting from injection. The cumulative effects of operation of the JR SWIFT injection wells will be monitored by monitoring wells. Groundwater quality impacts may include changes resulting from the mixing of JR SWIFT Recharge water and native groundwater or the release of a constituent contained in the UPA or MPA aquifer material.

As indicated in Attachment 4 to the draft permit, these downgradient monitoring wells must monitor the aquifer on either a quarterly or annual basis for the parameters specified in Attachment 1 and Attachment 2 to the draft permit. Monitoring data from the monitoring wells will enable comparison of the injection fluid and the recharged aquifer quality. Furthermore, Attachment 4 to the draft permit requires HRSD to monitor for parameters and constituents which will aid in assessing aquifer characteristics and compatibility. Groundwater quality

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5 Chlorine and chloramines (disinfectants) are monitored in the injection fluid but are not monitored in the groundwater monitoring wells because, in aquifer, the concern regarding disinfectants is more appropriately monitored through monitoring of disinfection byproducts, such as bromate, chlorite, haloacetic acids, and total trihalomethanes.
monitoring results will be used by EPA to ensure that the injection wells are not endangering USDWs in violation of UIC Program regulations.

**Well Construction/Mechanical Integrity:** The injection wells and monitoring wells will have approximately 400 feet of surface casing (pipe) installed and cemented to prevent the boreholes from acting as a conduit allowing for surface sources of contamination to enter the subsurface and potentially impacting shallow groundwater. Once installed, the surface casing will be pressure tested and a cement bond log will be performed as an additional safeguard and to document the integrity of the surface casing and the proper placement of the grout. The injection casing will be installed inside the surface casing and will include multiple well screen intervals which facilitate the subsurface emplacement of injection fluid into the intended recharge zones. The UPA and MPA will be isolated, each from the other, utilizing a bentonite grout seal. A bentonite grout seal will also be placed in the bottom of the well bore. The well bore in the screened intervals will contain silica filter pack to allow for recharge.

**Injection and Confining Zones:** The draft permit restricts aquifer recharge injection to the UPA and MPA. The UPA occurs at a subsurface interval between 400 to 780 feet below ground surface. The MPA is found at depths of 1050 and 1200 feet below ground surface. The injection wells will be screened across these intervals to facilitate recharge. These injection intervals are separated from the shallow surface aquifer, other aquifers in the permitted area, and each other by the lower permeability, less transmissive confining zones. Injection fluids are prohibited from migrating from the UPA or MPA into any adjacent subsurface interval.

**Maximum Injection Pressure:** The maximum well head injection pressure as measured at the well head must not exceed 30 pounds per square inch (PSI). This pressure, in combination with the pressure (weight) exerted by the column of recharge fluid at each injection interval, is the maximum pressure necessary to recharge or “refill” the UPA and MPA. This recharge will begin the process of restoring the water levels in the PAS to previous conditions. Historically, prior to excessive pumping or overdraft of the PAS, water production wells penetrating the UPA or MPA would flow at the surface exhibiting artesian conditions. The maximum allowable induced well head injection pressure of 30 PSI approximates the pressure on the recharge zones under historical artesian conditions. Each JR SWIFT recharge well is engineered, designed, and constructed to recharge the UPA and MPA at a rate of up to 2 MGD through a distributed control system or manifold. To achieve these recharge rates, it is anticipated that well head injection pressure will be maintained at 10 PSI. Well head injection pressure in excess of 30 PSI indicates recharge well operating issues, such as well screen fouling or blockage. HRSD must continuously monitor well head pressure to determine the need to divert recharge water from the well and for corrective action such as well rehabilitation.

**Seismicity:** The Atlantic Coastal Plain has a history of low seismic activity. Seismic activity in Virginia is tracked by the Virginia Tech Seismological Observatory (VTSO). According to the VTSO website ([http://www.magma.geos.vt.edu/vtso/](http://www.magma.geos.vt.edu/vtso/)), Virginia has experienced 160 earthquakes since 1977, of which 16% were felt; none of those 160 identified earthquakes occurred in the Hampton Roads Sanitation District service area. The risk of induced seismic activity resulting from JR SWIFT injection wells is negligible. The risk is negligible based upon the lack of significant historical seismic activity in the project area, the absence of known or suspected open
faults, and the minimal added pressure build-up resulting from aquifer recharge and the restoration of groundwater to previous levels. Aquifer recharge will begin to restore groundwater levels in the PAS in the JR SWIFT project area, returning hydrostatic pressure in the aquifer system and reducing the potential for land subsidence, land disturbance, or seismicity.

**Plugging and Abandonment:** The facility has submitted a plugging and abandonment plan that will result in an environmentally protective well closure at the time of cessation of operations. The plan satisfies the Class V requirements of 40 C.F.R. § 146.10 and is incorporated as a permit condition. See Attachment 5. The draft permit requires HRSD to ensure that plugging and abandonment of the well will not allow the movement of fluids into or between USDWs. The Permittee has also made a demonstration of financial responsibility that indicates adequate resources will be maintained for well closure and will preclude the possibility of abandonment without proper closure.

**Expiration Date:** A final permit, when issued, will be in effect for ten years from the date of permit issuance. This proposed draft permit contains the same conditions as a final permit unless information is supplied to EPA which would warrant alternative conditions or actions on this permit.

**Public Notice and Comment:** The U. S. Environmental Protection Agency Region III (EPA) is issuing a proposed permit under the authority of the federal Underground Injection Control (UIC) regulations at 40 Code of Federal Regulations (C.F.R.) Parts 124, 144, 146, and 147 to Hampton Roads Sanitation District (HRSD).

**Description:** HRSD applied for a permit for ten (10) UIC Class V injection wells, to be used for the aquifer recharge of the Potomac Aquifer System. The injection wells are located at the James River Treatment Plant, 101 City Farm Road in Newport News, Virginia. The draft permit will allow HRSD to inject wastewater which has undergone advanced treatment to meet Safe Drinking Water Act drinking water standards into the Upper Potomac and Middle Potomac Aquifers at depths ranging from 400 feet to 1200 feet below ground surface. If the final permit is issued to HRSD, it will remain in effect for ten (10) years. A permit is required to meet the provisions of the EPA-administered UIC Program in Virginia.

**Tentative Public Hearing:** EPA has tentatively scheduled a virtual public hearing using Microsoft Teams on July 7, 2022. An in-person hearing will not take place. The call-in and log-in information for the virtual meeting is listed below:

- **Call-in Number:** (484) 352-3221  
  **Conference ID:** 818 913 195#

**MS Teams Link:** https://msteams.link/GW9K
There is no need to register in advance for the virtual hearing. Attendees may utilize MS Teams by calling via telephone, entering the URL into a web browser, or scanning the QR code. During the hearing, callers will receive instructions on how to join the queue to make a comment. The meeting organizer will call on people to deliver their oral comments. Participants who want to supply written or printed materials can do so using the information listed below.

Requests to hold this public hearing must be received via email or telephone to EPA by June 30, 2022. When requesting a public hearing, please state the nature of the issues you propose to raise. EPA expressly reserves the right to cancel this hearing unless a significant degree of public interest is evidenced by June 30, 2022.

EPA Requests Public Comments on the Permit Issuance
Public Comments on the permit issuance will be accepted until July 8, 2022

The administrative record for this permitting action is available for review. The draft permit, the statement of basis for the draft permit, and permit application materials have been posted on EPA’s website at https://www.epa.gov/va/epa-public-notices-virginia. Comments on the draft permit may be directed to:

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