



**FOR IMMEDIATE RELEASE:**

## **Fairfax County's Disinfection Improvements Project at the Noman M. Cole, Jr. Pollution Control Plant Earns Envision Gold for Sustainability**

**WASHINGTON, D.C. – October 7, 2019** – The Institute for Sustainable Infrastructure (ISI) announced today that the Disinfection Improvements Project at the Noman M. Cole, Jr. Pollution Control Plant (NMCPCP) owned and operated by Fairfax County's Department of Public Works and Environmental Services (DPWES) has earned an Envision Gold award for sustainability. To earn an Envision rating, a project must deliver a heightened range of environmental, social, and economic benefits to the host and affected communities which need to be validated through a rigorous third-party review process against the Envision sustainable infrastructure framework and rating system.

### **Project Background and Context**

The NMCPCP is a 67 million gallon per day (mgd) wastewater treatment plant in Fairfax County, Virginia. The Plant had an aging sodium hypochlorite disinfection system that was in need of rehabilitation or replacement. Through a detailed evaluation of alternatives, ultraviolet (UV) disinfection was selected as the chosen solution for the NMCPCP.

The project includes a UV facility, an auxiliary chemical storage and feed facility, separate disinfection for water reuse/plant water purposes, reuse water pump station, plant water pump station, filter backwash storage and pumping, a new outfall pipe and associated electrical improvements. Under the innovative leadership of Fairfax County's DPWES, the Disinfection Improvements Project is the first public works project in the county to use virtual reality to enhance design and construction processes. It is also the first in the county to use the Construction-Management-At-Risk (CMAR) alternative project delivery method; a method in which a commitment is made by the Construction Manager to deliver a project within a Guaranteed Maximum Price, allows for a more qualification-based approach for selecting contractors and equipment manufacturers and helps streamline the construction process. The collaborative approach to project delivery has enabled the project team to be proactive in finding innovative solutions to the various project issues and concerns as they have emerged.

Fairfax County DPWES continues to work in close collaboration with their design engineer, Hazen and Sawyer, and their CMAR, Ulliman Schutte Construction, for the delivery of this award-winning sustainable project which is currently 49% complete.

“We are honored that this is the second Envision award achieved by Fairfax County DPWES. Wastewater utilities projects, although might not be visible to the communities they serve, actively create more livable and resilient communities.” said Guiying Xiao, Project Manager of DPWES. “We have always been driven by the principles of sustainability throughout our project planning and implementation and we are fortunate to provide environmental, social, and economic benefits to the community. Working alongside community partners who value sustainability and support efforts like this have increased the positive impact on our local waterways.”

“Ulliman Schutte has been a privileged partner with Fairfax County on various Design-Bid-Build improvement projects at NMCPCP since 2010. Being a member of the CMAR team in partnership with Hazen and Fairfax County has been an incredible experience. Through strong collaboration during preconstruction and the transition into construction, the team managed to add value to the project by incorporating innovative ideas to an already sustainability focused design,” said Joshua Pavlus, Ulliman Schutte’s Project Manager.

“Since 2013, we have been thrilled to partner with Fairfax County on this important project to continue their process of infrastructure renewal and assist the County in maintaining their stellar performance at the NMCPCP. Adding this Envision Gold rating to the project, represents a great achievement for the whole project team as we progress through construction and soon into actual operation. The overall commitment to sustainability by the whole team is impressive and this award is acknowledgement of what the wastewater industry does every day – protects our environment and health” said Matt Van Horne, Hazen’s Project Manager for this project.

“This project demonstrates both innovation and leadership in sustainability,” said Melissa Peneycad, ISI’s Managing Director. “I am pleased to present the Envision Gold award for sustainable infrastructure to Fairfax County and its project partners for the Disinfection Improvements Project.”

The Envision sustainable infrastructure framework assesses project sustainability across five categories: Quality of Life, Leadership, Resource Allocation, Natural World, and Climate and Resilience. These key areas contribute to positive social, economic, and environmental impacts on a community during the planning, design, and construction of infrastructure projects.

Key factors contributing to the Disinfection Improvements Project earning an Envision Gold award include:

**Public and Worker Health and Safety a Top Priority**

At the outset of the project the team undertook a detailed evaluation of disinfection alternatives. One of the primary criteria used to evaluate alternatives was the worker and public health and safety implications associated with the technologies considered. The UV system selected for the

Plant exceeds safety regulatory requirements for both plant workers and the general public. For example, the UV disinfection system was designed to deliver the required doses across all current and projected future flow rates for the life of the project, ensuring reliable disinfection of wastewater discharged to Pohick Creek. Furthermore, the project incorporates numerous innovative safety features to ensure worker safety when performing operations and maintenance tasks near the UV channels, including: horizontal roll-up covers over each UV channel to mitigate the fall risks associated with open channels during maintenance activities; a minimum 3-foot clearance around all equipment to allow staff better and safer access between equipment; a controls approach for the channel covers that ensures local operation is only possible while in visible range of the channels; and flashing lights in the disinfection room are activated when the covers for the UV channels are moving to alert staff and avoid accidents.

### **Effective Collaboration and Teamwork Through Use of Innovative Project Delivery Method**

The CMAR project delivery method used on this project encourages collaboration and teamwork among the owner, engineer and contractor by working together on an ongoing basis throughout the duration of the project beginning in the early design stages through to the end of construction and project commissioning. The CMAR method helps to obtain input from the contractor during the design phases of the project, which leads to a more cost-effective, more constructible and often more sustainable project. As part of the CMAR process for this project, a value engineering study was completed to increase the value of the project design through improved functionality, capital and life-cycle cost avoidance while maintaining a high-quality project that meets the needs of stakeholders and the overall project objectives. As a result of this study, several design improvements that resulted in cost savings and sustainable benefits were incorporated on this project, including: reusing salvageable material from the project for other on site uses, re-purposing two existing buildings for future beneficial use by the county, and incorporating LED lighting.

### **Protection of the Availability of Freshwater Resources**

The project team conducted a thorough analysis of water requirements for the project and found many ways to reduce potable water use for plant operations, thereby protecting the availability of freshwater resources in the area. As a result, potable water use for this project will be limited to human contact uses such as emergency eyewash and shower stations, handwashing, and drinking water. Improvements to the disinfection and pumping of the plant water allows for increased reliability on this resource within the NMCPCP site. This plant water is used for all non-potable activities at the NMCPCP including spray water, toilets, yard hydrants, and hose bibs, thereby significantly reducing the use of potable water. In total, the project is capable of producing up to 8.7 mgd of treated plant water for use within the plant and 6.6 mgd of reuse water for offsite uses. Fairfax County has a strong reuse water program that provides high-quality water supply for local uses at the nearby waste-to-energy facility, a nearby golf course and a nearby park area. These uses offsets significant potable water consumption, thereby increasing the long-term availability of freshwater resources in the area like the Potomac River on which much of the County and the Washington Metropolitan region rely.

### **Reduction in Chemical Use at the Plant**

The nature of the UV disinfection process eliminates two major chemical uses at the NMCCP: sodium hypochlorite for disinfection and sodium bisulfite for dechlorination. This helps to protect multiple species in Pohick Creek. Eliminating these major chemical uses provides a number of other sustainable benefits to the NMCCP and the surrounding communities. A significant benefit is the reduction in greenhouse gas emissions resulting from reductions in the number of truck deliveries required to transport these liquid chemicals to the NMCCP. Fewer trucks also result in less local traffic congestion which is always a benefit in a developed urban area like Fairfax County. Also, reduced chemical storage and use at the site reduces the exposure of county staff to possible safety concerns resulting from these chemicals. Overall, the Disinfection Improvements Project will reduce the overall expenses for the county in the operation of the NMCCP.

### **Reduction in Carbon Footprint and Greenhouse Gas Emissions**

The project design included two major components that helped to reduce the carbon footprint and greenhouse gas emissions of the facility: elimination of sodium hypochlorite and sodium bisulfite, and modification of the hydraulic grade line of the facility. Transitioning to UV disinfection reduces the net embodied carbon associated with the production sodium hypochlorite and sodium bisulfite. Furthermore, modifying the hydraulic grade line of the facility allowed for the complete elimination of a pump station resulting in operational energy savings and reduced greenhouse gas emissions.

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Above: Site rendering of the Fairfax Disinfection Improvements Project (Envision Gold, 2019) at the Norman M. Cole, Jr. Pollution Control Plant in Fairfax County, VA.

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**PROJECT ORGANIZATION INFORMATION:**

**About Fairfax County's Department of Public Works and Environmental Services:** *The Fairfax County Department of Public Works and Environmental Services builds and maintains safe, reliable infrastructure that improves public health and provides a high quality of life for residents. The department's four business areas – Solid Waste Management, Capital Facilities (CAP), Wastewater Management (WWM), and Stormwater Management – work together to create and preserve sustainable communities. CAP / Wastewater Design and Construction Division works closely with WWM / Wastewater Treatment Division, and supports the planning, design, and construction of infrastructure improvement projects for wastewater facilities. [www.fairfaxcounty.gov](http://www.fairfaxcounty.gov)*

**About Hazen and Sawyer:** *Hazen and Sawyer develops practical solutions to water quantity and quality challenges around the globe. Since our founding, we've maintained a singular focus on water – working with communities to identify new sources, structure effective treatment, and deliver water back to the environment in a productive and mindful way. The integrated water resources management we provide improves the resiliency of watersheds and turns nutrient removal into nutrient recovery, waste into energy, discharge into reuse – often while reducing operating costs and providing a multitude of environmental and societal benefits. If you're trusted to protect public health or the environment, we can help.*

**About Ulliman Schutte Construction:** *Ulliman Schutte is a company of engineering and construction professionals. We specialize in the construction and renovation of water and wastewater treatment plants, pump stations, and associated utility work in the United States. By focusing on this unique and challenging industry, we have developed and fine-tuned our resources and systems to excel at delivering the best value to our clients. This value includes "Building a Better Environment" through our alignment of sustainability and economic considerations for every project. Our drive to exceed expectations has led to success in Design-Build and Construction Manager at-Risk delivery methods, and we continue to lead the industry in the advocacy and implementation of collaborative delivery.*

**About Envision®:** *Envision is the product of a joint collaboration between ISI, which was founded by three national engineering associations: American Society of Civil Engineers (ASCE), American Council of Engineering Companies (ACEC) and American Public Works Association (APWA), and the Zofnass Program for Sustainable Infrastructure at Harvard University Graduate School of Design. [www.sustainableinfrastructure.org](http://www.sustainableinfrastructure.org)*