CHAPTER 2 TECHNICAL MEMORANDUM

TO: Stephen S. Ours, P.E.
Chief, Permitting Branch

FROM: John C. Nwoke
Engineer

SUBJECT: District of Columbia Water and Sewer Authority (DC Water)
Permits No. 7067 and 7068
Permit to Operate Packed-Bed Chemical Odor Scrubbers for the Grit and Screening Loading Stations -1 and -2

DATE: January 2, 2019

BACKGROUND INFORMATION

On August 26, 2015 the District of Columbia Water and Sewer Authority (DC Water) submitted an application to operate two (2) odor scrubbers at the Blue Plains WWTP. The scrubbers will be used to reduce odorous emissions from Grit and Screening Loading Stations (GSLS) 1 and 2. These scrubbers were permitted under Chapter 2 Permit-to-Construct No. 5766, which has since expired, hence this application was made so that DC Water will be in compliance with District air quality permitting requirements.

Some minor refurbishment construction activities for the chemical odor scrubbing systems are also the subject of this application.

DC Water has not requested that any aspects of the application be held confidential.

TECHNICAL INFORMATION

There have been no technical changes to the odor scrubbers, air flow rates, or recirculation pumps and rates, beyond the following system changes:

1. **Changes to Grit and Screenings Odor Control System:**

   - The chemical feed piping and chemical fill lines within the East and West Headworks will be replaced and reconfigured for improved safety and freeze protection;

   - To expand room for maintenance, the duty standby pumps configuration for each chemical pumping system will be removed and replaced with a single pump plus one shelf spare. Also, eight oversized chemical pumps of varying sizes will be removed and replaced with all sodium hypochlorite pumps of one size and all

sodium hydroxide pumps of one size.

2. **Other Changes in the Odor Control Systems:**

- Relining of all four chemical storage tanks;
- New pH and oxidation reduction potential (ORP) instrumentation; and
- New variable frequency drives (VFDs) for pump control
  - Sodium hypochlorite pump with VFD: 2 gallons per hour (gph) to 63.4 gph
  - Sodium hydroxide pump with VFD: 0.75 gph to 19.5 gph
- New controls integrated with the plant-wide process control system

REGULATORY REVIEW

Federal and District air pollution control and permitting requirements were reviewed and are applicable to the project as discussed below.

Federal Regulations

Prevention of Significant Deterioration (PSD)
The 1977 Clean Air Act Amendments establish the PSD permitting program to limit the degradation of air quality in areas that are currently in attainment of the NAAQS. Pursuant to 40 CFR 52.21, the PSD review is a federally- mandated program which applies to new major sources of regulated pollutants and major modifications to existing major sources. PSD is pollutant-specific and applies only to those pollutants for which a project is deemed major by comparison to major source thresholds or major modification thresholds (PSD significant emission rates) and the project area is designated as attainment or unclassified.

Based on the review of the applications, there are no criteria pollutant emissions associated with this project, hence the project is not subject to PSD provisions and no such requirements are included in the permits.

Non-attainment New Source Review (NNSR)
NNSR applies to new major source and major modifications located in nonattainment areas. The project is located in an area that has been designated moderate and marginal non-attainment or for the 1997 and 2008 8-hour ozone standards, respectively, and is currently a maintenance area for the $PM_{2.5}$ standards. The District of Columbia is located in the Northeast Ozone Transport Region, making the ozone issue a regional matter. Thus Nitrogen oxides (NO_x) and volatile organic compound (VOC) emissions which are potentially subject to NNSR (due to their precursor roles in the formation of ozone from photochemical reaction) are a regional concern.

Pursuant to Section 204 of 20 DCMR, projects with net emissions increases that exceed NNSR thresholds must: (1) analyze alternatives, (2) incorporate emission controls meeting the lowest

achievable emission rate (LAER), (3) obtain emission offsets, and (4) certify compliance of all sources located within the District of Columbia that are owned or operated by the project proponent or applicant.

Based on the review of the applications, there are no criteria pollutant emissions associated with this project, hence the project is not subject to NNSR provisions and no such requirements are included in the permits.

40 CFR 60, New Source Performance Standards (NSPS)
NSPS apply to new, modified, or reconstructed stationary sources meeting criteria established in 40 CFR 60. There are no parts of the odor scrubber system that trigger any NSPS standards hence no such requirements are included in the permit conditions.

National Emission Standards for Hazardous Air Pollutants (NESHAPs)
NESHAPs are based on specific source categories and on whether or not the affected facility is a major or minor for the specific hazardous Air Pollutant (HAP). There are no HAP emissions associated with the odor scrubber system. The scrubber systems are intended to control hydrogen sulfide, which is not a HAP. The existing HAP emissions are below the 10 tons per year major source threshold for a single HAP, and below 25 tons per year for a combination of HAPS; thus the Blue Plains WWTP is minor for HAPS and not subject to NESHAPs for major sources. For the same reason, Subpart VVV of 40 CFR 63 (that pertains to that part of NESHAPs which deals with Publicly Owned Treatment Works) is not applicable to this project as this subpart pertains only to major source of HAPs. The permits do not have conditions that include NESHAPs requirements based on the above narrative.

Compliance Assurance Monitoring (CAM) Plan

Pursuant to 40 CFR 64 a CAM plan is required to be developed if a facility or emission unit meets the following conditions:

- Is located at a major source subject to Title V permit and is subject to an emission limitation or standard for an applicable regulated air pollutant;
- Uses a control device to achieve compliance with the emission limit, and
- Has potential precontrolled emissions that are equal to or greater than 100 percent of the major source classification threshold.

The uncontrolled emission rates for odor scrubber #1 and odor scrubber #2 are 15.7 tpy and 24.9 tpy of hydrogen sulfide, respectively. Therefore the uncontrolled emission rates for all of the proposed odor scrubbers are below the significant threshold (100 tpy for H_2S), hence a CAM plan development is not a requirement for this project. Therefore, no CAM requirements were placed in the permits.

District Regulations

20 DCMR Section 107 – Control Devices and Practices
Section 107 of Chapter 1 of 20 DCMR requires the owner or operator of a control device that needs to be shut down for maintenance to report to the Department at least forty-eight (48) hours prior to shut down. Permit Condition VI(d) requires that DC Water comply with the provision of 20 DCMR 107.2 in order to appropriately notify the Department of any scrubber shut down.

20 DCMR Section 204 –Permit Requirements for Sources Affecting Nonattainment Areas
As discussed above related to federal NNSR requirements, NNSR is not applicable to this project.

20 DCMR Section 205 – New Source Performance Standards
Section 205 provision adopts certain federal NSPS standards by reference (40 CFR 60). This provision is not applicable to the GSLS Odor Scrubbers as noted in the earlier discussion on federal regulations.

20 DCMR Section 209 – Minor New Source Review
Section 209 discusses minor new source review requirements, which became effective on January 1, 2014. The requirements are applicable to any source required to obtain a permit under 20 DCMR 200, to construct a new stationary source, modify an existing stationary source, or install or modify an air pollution control device on a stationary source for a project that results in an increase of the potential to emit equal or greater than 5 tpy of any criteria pollutant or aggregate of HAPs. Sources not meeting these applicability requirements must submit, with their permit application, sufficient documentation showing that the proposed source does not meet the applicability requirements. No emissions of criteria pollutants or HAPs are associated with this project hence the requirements of this section are not applicable.

20 DCMR Section 903 Odorous or Other Nuisance Air Pollutants
Section 903 of 20 DCMR prohibits the release of odorous air pollutants from any source into the atmosphere. These pollutants may not be released for a time period likely to be injurious to the public health or welfare, or which interferes with the reasonable enjoyment of life or causes damage to property. The odor scrubbers that are the subject of this permitting action are intended to assist the wastewater treatment plant facility in assuring compliance with this requirement.

RECOMMENDATIONS

The applications and draft permits are scheduled for posting in the D.C. Register and on the Department's website on January 11, 2019 and will be available for public comment through February 11, 2019.

The proposed project and attached permits comply with all applicable federal and District air pollution control laws and regulations. If no comments are received during the public review period, I recommend that the attached permits be issued. If comments are received, they will be reviewed and addressed appropriately before a final decision is made with respect to the permit application.

JCN