Georgia-Pacific Toledo LLC
1400 SE Butler Bridge Road
Toledo, Oregon 97391

November 21, 2025

Mr. Ali Mirzakhalili
Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, OR 97232
*(Sent via email only)*

Re: Clean Air Oregon (CAO) HQ Meeting

Dear Mr. Mirzakhalili,

We would first like to thank you and your colleagues for your time and attention during our recent in-person meeting at DEQ HQ on October 28, 2025. We appreciated the time and opportunity to discuss our concerns with CAO and the use of water sampling and H2SSIM in lieu of air modeling utilizing fenceline $H_2S$ monitor data to develop $H_2S$ emission rates. As discussed during the meeting, GP Toledo wants to utilize the most appropriate data and methods to determine our emissions estimates following meaningful science and believes the fenceline $H_2S$ monitors to be that method.

Within this submittal, please find attached H2SSIM model outputs for each portion of the wastewater treatment plant (WWTP), as well as the fenceline monitor method. GP Toledo has also included and updated monitor location map showing where $H_2S$ monitors have been placed to gather additional data. Historical testing conducted at the mill provided the sulfide data used as inputs to the H2SSIM models as well as long term averages for flow, pH, DO, and temperature. Wind speed and ambient temperature were developed from historical AERMOD ready meteorological data specific to the Toledo mill. Long term averages were used due to the H2SSIM limitations in analyzing and predicting emissions. One limitation we have in our historical data is not having sulfide information for the influent to the primary clarifier and thus we did not attempt to model this with H2SSIM. Results for the H2SSIM models can be found in the attachment titled *H2SSIM Model Results.* The original model results as submitted to DEQ on August 22, 2024 are included in the first two pages as reference. The 2024 model treated the entire treatment plant as one unit with the major ponds as different zones. From the 2024 H2SSIM run to the current runs, where each major unit in the WWTP was its own model unit, estimated emissions only slightly increased as seen in Table 1 below.

**Table 1**

| Total H2S Emission Estimates (lbs/year) | |
|---|---|
| 2024 Model Run | 2516.2 |
| Current Model Run | 2430.1 |
| Air Model Method | 1752 |

When analyzing WWTP parameters along with MET data, the H2SSIM model is limited to the discrete instances that samples are taken and can only estimate emissions assuming conditions are constant. Due to this limitation and the difficulty in liquid sampling, GP Toledo, with the assistance from NCASI, determined a better method which utilized site fenceline H2S monitors situated around the treatment plant

that sampled, analyzed, and reported emissions every 10 minutes along with meteorological data. This method generated ~ 55,000 discrete data points which captured emissions during all four seasons, upsets, and normal operations. This data was then analyzed in a similar method to that described in NCASI Technical Bulletin No. 957, Spatial Ambient Air Sampling and Analysis Methods for Quantifying Reduced Sulfur Compounds and Methane Emissions from Kraft Mill Wastewater Treatment Plants. The attached document titled *GP Toledo – H2S Emissions Estimates – 2023* from NCASI to GP Toledo summarizes the approach used to determine $H_2S$ emission rates from the fenceline monitors.

While there are limitations to both methods, there are a few important items that the NCASI air modeling method captures more effectively. Variability of temperature, pH, flows, etc. are reflected in the large amount of concentration data gathered with the $H_2S$ monitors. The emission estimates already incorporate the impact of these process changes that would not be easily captured with infrequent water samples. Additionally, conservativeness is built into the air model method by establishing a virtual area 250 meters downwind with a width of 600 meters regardless of wind direction. This utilizes the measured concentration from the fenceline as though it were measured 250 meters away and determines an upstream emission rate that would be needed to achieve said measurement. This conservatively assumes that the emissions would be even higher than the measured value as the actual concentration at a distance of 250 m will be diluted. With this conservative approach, GP Toledo believes all $H_2S$ emissions from the entire treatment plant would be accounted for.

We would also like to highlight the improvements we have made over time and propose for utilization of the $H_2S$ fenceline monitors. After our in-person meeting, GP Toledo worked with our contractor to reposition our current monitors around the WWTP following EPA guidance. We completed the monitor placements on November 11, 2025 as indicated in the $H_2S$ Monitor Map attachment. With these current locations and overlaid with a historical windrose from AERMOD ready meteorological data, we will be able to gather additional $H_2S$ readings to further improve our emissions estimate using the air modeling method NCASI developed. Utilizing eight monitors would fill any perceived gaps in the initial data set as well as increase the number of data points for the model. Please also find attached and updated QA/QC manual for the maintenance and operation of the $H_2S$ monitors.

We look forward to continued collaboration with DEQ throughout the CAO process. Please contact Ann Vorderbrueggen at (541) 270-2916 or Ann.Vorderbrueggen@gapac.com or Logan Vaughan at (503) 240-1627 or logan.vaughan@gapac.com if you have any questions regarding this information.

Sincerely,

Ann Vorderbrueggen
Environmental Manager– Georgia-Pacific Toledo LLC

CC: Heather Kuoppamaki, DEQ (via email)
J.R. Giska, DEQ (via email)