



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Robert R. Scott, Commissioner

EMAIL ONLY

August 28, 2018

Christopher S. Angier
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Saint-Gobain Performance Plastics
14 McCaffrey Street
Hoosick Falls, NY 12090

Subject: **Merrimack** – Saint-Gobain Performance Plastics, 701 Daniel Webster Highway
DES Site #199712055, Project #36430

Roof Drain Survey and Cleaning Activity Summary, Saint-Gobain Performance Plastics, prepared by Golder Associates, Inc., dated April 5, 2018

Stormwater and Surface Water Investigation Summary Report Addendum, Saint-Gobain Performance Plastics, prepared by Golder Associates, Inc., dated April 20, 2018

May 2018 Unvalidated Dry-Weather and Surface Water Data Submittal, Saint-Gobain Performance Plastics, prepared by Golder Associates, Inc., dated June 29, 2018

June 2018 Unvalidated Wet-Weather Sampling Event Data Submittal, Saint-Gobain Performance Plastics, prepared by Golder Associates, Inc., dated July 13, 2018

Dear Mr. Angier:

The New Hampshire Department of Environmental Services (NHDES) has reviewed the above-referenced submittals prepared on behalf of Saint-Gobain Performance Plastics (Saint-Gobain) by Golder Associates, Inc. (Golder) for Saint-Gobain's facility located at 701 Daniel Webster Highway in Merrimack (Facility). The submittals pertain to the ongoing stormwater and surface water investigations, as well as the roof drain survey and cleanout. The May 2018 and June 2018 data submittals document the laboratory results from surface water and stormwater quality monitoring to evaluate the release of per- and polyfluoroalkyl substances (PFAS) from the Facility. This sampling was conducted in accordance with the Work Plan for 2018 Stormwater and Surface Water Investigation¹ (Work Plan) and NHDES' comment letter dated April 13, 2018.

Given the significance of the findings provided in the data transmittals, NHDES has prepared this comment letter on these interim deliverables prior to receipt of the final summary report,

¹ Work Plan for 2018 Stormwater and Surface Water Investigation, prepared by Golder Associates, Inc., dated March 30, 2018.

which will be submitted following completion of the 2018 sampling activities. A summary of key findings from the sampling events, as well as NHDES' comments on recommendations for additional actions, are provided in the sections below.

May 2018 Unvalidated Dry-Weather and Surface Water Data Submittal

The May 2018 Unvalidated Dry-Weather and Surface Water Data Submittal presents the results of water quality analyses for samples collected from stormwater and surface water sampling locations under dry flow conditions (e.g., after three days without measurable rainfall). Under dry conditions, water discharging from Outfall 001 is thought to originate from groundwater infiltration into the stormwater system. Samples were collected from three stormwater locations (including Outfall 001), thirteen Merrimack River locations, nine Dumpling Brook locations, and two locations in Unnamed Brook A ("Unnamed Brook A" is the name given to a small tributary to the Merrimack River by Golder for this study; the brook is located on the north side of the power lines, north of the Facility). All samples were analyzed for a short list of PFAS and general chemistry parameters (e.g. iron, chloride, nitrate, etc.). The samples from the stormwater system, Unnamed Brook A, and a subset of the Merrimack River samples were analyzed for a list of expanded metals. Three samples from the Merrimack River and the sample collected from Outfall 001 were also analyzed for an expanded PFAS analyte list.

Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) were detected in all of the samples. PFOA and PFOS concentrations were highest in the stormwater system samples, at concentrations up to 2,100 nanograms per liter (ng/L) and 160 ng/L, respectively. The Unnamed Brook A samples contained PFOA at concentrations up to 1,600 ng/L. PFOA levels generally increased in the downstream direction in Dumpling Brook, ranging from 210 ng/L at the upstream location (SW-DB-109) to 630 ng/L near the confluence with the Merrimack River (SW-DB-101). The Merrimack River samples contained PFOA that ranged from 2.5 to 54 ng/L, with the highest level of PFOA detected in the sample collected near the stormwater Outfall 001 (at location SW-MERR-201W-NS). The maximum PFOS levels observed in Dumpling Brook, Unnamed Brook A, and the Merrimack River were 31 ng/L, 30 ng/L, and 7.2 ng/L, respectively.

For the samples submitted for analysis of the short list of PFAS, up to 15 PFAS were detected in one or more samples, with total PFAS concentrations as high as 4,137.9 ng/L. Other PFAS detected included shorter-chain perfluoroalkyl acids (PFAAs), as well as n-ethyl perfluorooctane sulfonamide acetic acid (NEtFOSAA), which is a precursor to PFOA and PFOS².

Several additional PFAS were detected in the four samples analyzed for the expanded PFAS target list:

- All four samples contained detectable levels of 6:2 fluorotelomer sulfonic acid (6:2 FTS, which is a precursor to PFAAs), with the highest concentration in the sample from Outfall 001 at 86 ng/L.
- Perfluorooctanesulfonamide (a precursor to PFOA and PFOS²) was detected at a concentration less than the reporting limit at an estimated concentration of 1.6 ng/L in one of the Merrimack River samples (SW-MERR-201W-NS).

² Interstate Technology Regulatory Council, March 2018, *Naming Conventions and Physical and Chemical Properties of Per- and Polyfluoroalkyl Substances (PFAS)*.

- Perfluoro-2-propoxypropanoic acid (HFPO-DA/"GenX") and perfluoropentane sulfonate were detected in the sample from Outfall 001 at concentrations of 1.5 and 7.0 (estimated) ng/L, respectively. NHDES notes that this detection represents the first detection of GenX in a water sample collected from around the Facility; the sample collected from the outfall by NHDES in July 2017 for GenX analysis was non-detect, with a reporting limit of 2 ng/L.

June 2018 Unvalidated Wet-Weather Sampling Event Data Submittal

The June 2018 Unvalidated Wet-Weather Sampling Event Data Submittal presents the results of water quality analyses for samples collected from stormwater and surface water locations under wet conditions (e.g., rainfall that is greater than 0.25 inches that occurs at least three days after the last rainfall event). The sampling locations and laboratory analyses were similar to the May Dry-Weather sampling event described in the previous section. PFOA, PFOS, and 13 other PFAS were detected in all of the samples, though the results varied somewhat relative to the May Dry-Weather sampling event.

The maximum PFOA and PFOS concentrations (7,600 and 1,100 ng/L, respectively) detected in the June Wet-Weather sampling event were in a stormwater system sample collected from manhole SGPP-MH-5, which is located northeast of the facility and captures stormwater from the rooftops of the buildings and the areas east and north of the buildings. Total PFOA and PFOS at Outfall 001 were similar for the May Dry-Weather and June Wet-Weather sample rounds, though greater levels were detected in the Merrimack River near the outfall during the wet weather sampling event, at a concentration of 255 ng/L. PFOA and PFOS were slightly greater (650 and 48 ng/L, respectively) in Dumpling Brook near the confluence of the Merrimack River in the June 2018 samples. During the June sampling round, levels of PFOA in Unnamed Brook A were less than those for the May Dry-Weather sampling round, with a maximum concentration of 1,200 ng/L.

For the samples submitted for analysis of the short list of PFAS, up to 15 PFAS were detected in one or more samples, with total PFAS concentrations as high as 18,565.7 ng/L at manhole SGPP-MH-5 (by comparison, total short list PFAS in a sample collected from Outfall 001, which is located downstream of SGPP-MH-5, was 4,257 ng/L). In addition, a total of seven PFAS were detected in the samples analyzed for the expanded PFAS target list that included: perfluoroheptanesulfonate, perfluorohexadecanoic acid, N-Ethyl perfluorooctanesulfonamido ethanol (EtFOSE³), and the five expanded-list PFAS detected in the May Dry-Weather round. The greatest concentration of any of the expanded list analytes was 6:2 FTS, detected at a level of 120 ng/L in a sample collected in the Merrimack River near Outfall 001 (SW-MERR-W-IC). GenX was detected in all five samples at concentrations ranging from 0.54 to 2.3 ng/L, though this compound was also detected in the method blank.

³ NHDES notes that this compound was listed in the data tables with an abbreviation of NEtPFOSAE. NHDES recommends following the abbreviation conventions adopted by the Interstate Technology Regulatory Council (ITRC) as outlined in their Fact Sheet *Naming Conventions and Physical and Chemical Properties of Per- and Polyfluoroalkyl Substances (PFAS)*: https://pfas-1.itrcweb.org/wp-content/uploads/2018/03/pfas_fact_sheet_naming_conventions_3_16_18.pdf.

NHDES Comments

Based on our review of the above-referenced submittals, NHDES provides the following comments:

1. NHDES' understanding based on discussions with NH Fish and Game is that Dumpling Brook is considered a "high-quality wild brook trout stream" due to the cold summer water temperatures and observed trout density (measured by Fish and Game in 2014). On 23 July 2018, NHDES observed fish in Dumpling Brook near the confluence with the Merrimack River and observed evidence of recreational activity near Dumpling Brook and on the bank of the Merrimack River between Dumpling Brook and stormwater Outfall 001. As such, a person catching and consuming fish from this area is considered to be a potential receptor in accordance with Env-Or 600. To evaluate whether elevated PFAS levels detected in samples from stormwater Outfall 001, Dumpling Brook, Unnamed Brook A, and portions of the Merrimack River result in elevated levels of PFAS in fish tissue, NHDES requests a work plan to assess PFAS levels in fish tissue for legally harvestable (or at a minimum consumable size) fish samples collected in Dumpling Brook and the Merrimack River (caught between Dumpling Brook and Outfall 001). Based on NHDES guidance on fish tissue sampling⁴, sampling is recommended to be completed from June to September so that representative fish populations are tested; however, brook trout may be present year-round. As such, Saint-Gobain should plan on completing this sampling task as soon as possible, but no later than June 2019. *Please provide NHDES with a work plan for a fish tissue sampling for PFAS analysis within 60 days.*
2. PFAS were detected at significantly greater concentrations in some samples collected during the June Wet-Weather sampling event in comparison to those collected during the May Dry-Weather sampling event (e.g., in stormwater generated at the Facility in manhole MH-5). These results indicate that stormwater generated at the Facility contains PFAS and that the mass flux of PFAS in stormwater also increases the concentrations of PFAS in the mixing zone of the receiving water body (e.g., PFOA in the Merrimack River at SW-MERR-201W-IC was 220 ng/L in wet conditions compared to 2.5 ng/L in dry conditions).
3. On July 23, 2018, NHDES observed conditions at stormwater Outfall 001 during a rain event. NHDES noted that the stormwater from the outfall had a slight white/gray coloration. This coloration did not appear to be the result of silt entrained in the water. In subsequent discussions with Golder personnel, Golder reported that during the June Wet-Weather sampling event, significant pollen was present on the water, and it was difficult to make observations about the coloration of the water discharging from the outfall. Visual observations of water color and clarity (in addition to field turbidity measurements) should be made during upcoming sampling events.

⁴ https://www.des.nh.gov/organization/divisions/water/wmb/biomonitoring/fish_assess.htm

4. Analytical results from wipe samples from portions of the Facility building rooftops, as well as “stack tar” from one of the air emission stacks, indicate the presence of PFAS⁵. As noted in the Work Plan, these materials (stack tar and residual PFAS on the rooftops from air emissions) are likely potential sources of the PFAS detected in stormwater, although not necessarily the only sources. In light of these data, every effort should be made to conduct the Wet-Weather Flow Source Evaluation Sampling, as described in the Work Plan, as soon as possible. NHDES expects that the sampling will be completed as soon as possible, regardless of whether the storm events occur outside of normal working hours. NHDES also notes that the Work Plan proposed to complete this sampling as part of two phases. NHDES recommends that the sampling be completed as one phase, and highly encourages any modifications to the proposed sampling approach that would expedite the sample collection while still meeting the objectives of the Work Plan (e.g., automatic sampling devices).

In addition, consistent with recommendations made in our April 13, 2018 comment letter (see Comment #5), sampling of residual solid material present in the stormwater system is warranted at this time and should be included in the source evaluation sampling program. Samples should be submitted for laboratory analysis of the expanded list of PFAS and GenX/dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA), as well as evaluated for leaching potential.

These data are imperative to understanding the source of the PFAS in stormwater so that solutions can be put in place to address this ongoing release of PFAS. Additional follow-up investigation activities are likely to be needed and may involve camera surveys to verify that debris was completely removed during the clean-out activities described in the subject reports.

5. NHDES examined conditions at Unnamed Brook A near the confluence of the Merrimack River and did not observe evidence of recreational activity; however, in light of the PFAS levels detected during the wet and dry weather sampling rounds, NHDES notes that at least one more round of dry and wet weather sampling is warranted from this brook as part of the current scope of work.
6. The Work Plan indicates that the sediment sampling in the vicinity of Dumpling Brook and the Merrimack River would be completed during the spring or summer dry-weather sampling event. Since this sampling was not included in the May sampling event, NHDES expects that the sampling will be completed as part of the upcoming summer sampling event.
7. The Roof Drain Survey and Cleaning Activity Summary documented several types of accumulated material in various portions of the roof drain system that include, but may not be limited to: a) “calcified” material; b) gritty rust-colored material (Photo 1); c) light-colored (or high reflectance) nodular material (Photo 3); and d) fine-grained gray material coating the bottom of the pipe (Photo 4). NHDES requested waste

⁵ Initial Site Characterization Summary Report, Saint-Gobain Performance Plastics, prepared by C.T. Male Associates, Inc., dated May 14, 2018.

characterization and profile information, as well as disposal documentation for materials generated during the survey and cleaning activities. Waste disposal manifests were provided in Attachment E of the Addendum; however, these manifests do not adequately characterize the nature of the waste material in terms of physical character and chemical profile (e.g., determine if the wastes contain PFAS). NHDES requests analytical and descriptive data used to support the “non-hazardous, non D.O.T regulated material” designation on the manifests, as well as characterization of the waste with respect to PFAS content. *Please provide these data within two weeks, if available.* If no such data exist, NHDES requests an assessment as to the potential sources / nature of the observed material in the roof drain system to be included in the source evaluation sampling described above.

8. Given the detections of other PFAS on the expanded analyte list in the samples described above, NHDES strongly recommends analysis of samples collected for the Wet-weather Flow Source Evaluation, as well as at least one sample collected from the downstream section of Unnamed Brook A and Dumpling Brook, for the expanded list of PFAS analytes and for HFPO-DA (GenX)/ADONA.
9. The Work Plan outlined stormwater conveyance system maintenance items to address dry weather flow due to groundwater infiltration that included, but was not limited to, spot-lining approximately 700 feet of stormwater line in the northern part of the Facility. In light of the confirmed presence of elevated PFAS levels in the dry weather flow, NHDES requests implementation of the proposed remedial measures outlined in the Work Plan as soon as possible. As requested in the NHDES letter dated March 14, 2018, your consultant should notify NHDES of the schedule at least three days prior to implementation of stormwater maintenance activities so that NHDES may observe the work. Documentation of the work completed should be provided to NHDES. NHDES expects that Saint-Gobain will appropriately manage any wastes that may be generated from any cleaning or removal of material in the system (e.g., “encrustation/deposits of a hardened, light colored material” between MH-7 and CB-9). Please provide waste disposal documentation, including waste characterization data (including PFAS analysis), to NHDES in the summary report to be provided following completion of the stormwater sampling activities.
10. The Work Plan proposed installation of weir and data logger in Dumpling Brook in the summer of 2018 to measure surface water flow. As of July 31, 2018, a weir had not been installed, and Golder indicated that installation of the weir as proposed is problematic. Alternatively, Golder indicated they would conduct velocity and depth measurements at two transects along Dumpling Brook to measure flow. In lieu of installation of a weir, NHDES recommends installation of a staff gauge (or fixed measuring point) and data logger in Dumpling Brook that can be used to develop a rating curve for the stream in conjunction with stream gauging activities. The staff gauge (or fixed measuring point) should be located so that the stage measurement is independent of flow in the Merrimack River (i.e. where surface water in Dumpling Brook will not backwater due to higher flows in the river). NHDES concurs with the proposal to measure stream flow at two (or more) transects. Transects should be selected at suitable reaches to evaluate changes in stream flow between sampling stations SW-DB-

109 and SW-DB-101. NHDES requests a written proposal (a summary email is sufficient) that includes proposed transect locations and the final flow determination work plan modifications. *Please provide this proposal within two weeks.*

11. NHDES notes that exfiltration from the stormwater system cannot be ruled out as a potential pathway for PFAS release to the subsurface. Although the stormwater system in the vicinity of SGPP-MH-5 is generally below the water table, there may be periods when the water table is below the level of the infrastructure. Precipitation events that occur when the water table is lower than the stormwater system could allow for exfiltration of stormwater with elevated PFAS concentrations (e.g., through the pathways where infiltration was observed). Exfiltration from the stormwater system will be evaluated during Site Investigation activities⁶.
12. NHDES notes that exfiltration from the sanitary sewer system cannot be ruled out, particularly where cracks were noted in the Vitrified Clay Pipe section between Sewer Manhole (SMH) 4 and SMH-8 in Attachment F-1 of the Stormwater and Surface Water Investigation Summary Report Addendum. Exfiltration from the sanitary sewer system will also be evaluated during the upcoming Site Investigation activities⁶.
13. In future data submittals, please address the following:
 - a. Please clarify whether the lab results reported in the Addendum are reported for sulfonate or sulfonic acid forms of PFAS. For example, the lab report lists 6:2 fluorotelomersulfonate, though the CAS Number for this analyte is for 6:2 fluorotelomer sulfonic acid. NHDES notes that water quality data presented in Table 7 of the Stormwater and Surface Water Investigation Summary Report, submitted by Golder on January 30, 2018, contained significant errors attributed to a laboratory error. A revised table of validated water quality data (Table B-1) was presented in the above referenced Stormwater and Surface Water Investigation Summary Report Addendum.
 - b. Please include a sample location plan with each data transmittal so that readers can more easily identify the locations from which the samples were collected without having to refer back to the work plan.
 - c. NHDES recommends the summary table present PFAS compounds listed by family, e.g., perfluoroalkyl carboxylic acids (PFCAs) and perfluoroalkyl sulfonic acids (PFSAs), and presented in order of chain length or number of carbon atoms. CAS numbers should be included on the table for each analyte.

⁶ On-Property Site Investigation Work Plan, Saint-Gobain Performance Plastics, prepared by Golder Associates, Inc., dated June 8, 2018 and the On-Property Site Investigation Work Plan Addendum, Flatley Property Investigation, Saint-Gobain Performance Plastics, prepared by Golder Associates, Inc., dated July 27, 2018.

Christopher S. Angier
DES #199712055
August 28, 2018
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NHDES appreciates your efforts to conduct this ongoing stormwater and surface water evaluation. Should you have questions regarding this letter, please contact me at NHDES' Waste Management Division.

Sincerely,



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