TOWN OF MERRIMACK, NH
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October 28, 2019

Thomas G. Kinisky
President and CEO
Saint-Gobain Performance Plastics Corporation
31500 Solon Road
Solon, OH 44139

Dear Mr. Kinisky:

Thank you for the letter dated October 15, 2019, responding to the Town of Merrimack's (Town) concerns regarding the lack of actions taken by Saint Gobain to prevent contamination of groundwater. As stated in the letter, it has been three and a half years (3 ½) since Saint Gobain first notified NHDES of the PFOA issue. We are sending this letter to provide additional clarification that may help you understand the points made in the September 30, 2019 letter which Saint Gobain received on October 7, 2019.

Item 1 – Saint Gobain believes that the Town does not understand the laboratory analytical results presented in the reports prepared by Saint Gobain's consultants.

In the letter, Saint Gobain provided a discussion of analyzing compounds at parts per trillion (ppt) levels. While the Town understands that these analyses require "significant rigor and understanding of how measurements are made…in order" for "proper contextual interpretations," NHDES has implemented drinking water standards (MCL) to protect sensitive populations over a lifetime of exposure to PFAS.[i] The MCL concentrations range between 11 to 18 ppt. In addition, the MCL's have been adopted as Ambient Groundwater Quality Standards (AGQS) which should be used to require remedial action at contaminated sites. With implementation of these MCL's and AGQS, NHDES is no longer entertaining the discussion of analytical inaccuracies or rigor as NHDES has been sampling and accepting results for both drinking water and non-drinking water media for more than 3 years. NHDES has accepted all of Saint Gobain's reports and validated results.

Item 2 – The Town Council asserts that Saint Gobain has increased its use of PFOA at the plant.

The Town Council made no such claim.

Item 3 – Only selected data points were presented to the Town. Therefore, it was not possible for the Town Council to have the proper understanding of the site characteristics.

All the data presented in the letter was obtained from Saint Gobain issued reports. The results as presented are concerning especially since the results are several orders of magnitude above the AGQS. Whether present in groundwater, surface water, or stormwater runoff from the site, the basic issue is that at no time does the site comply with any of the new standards. If there are any other reports that contain data results which Saint Gobain believes will provide further illumination on the site characteristics, please provide the Town with copies or links to these reports.

When reviewing the most recent report which provides results from the July 2019 sampling event. The results indicate the following:

- A total of 41 samples were collected at 26 monitoring wells. Seven of the 26 wells were sampled at multiple depths and two duplicate samples were collected.
- **All of the wells sampled have results above the AGQS for PFOA.**
- Two of the 41 samples ranged between 12 – 99 ppt.
- Eleven of the samples ranged between 100 ppt to 999 ppt,
- Twenty-three samples ranged between 1,000 ppt to 9,999 ppt,
- Two samples were 15,000 ppt. One sample was 33,000 ppt.
- Three samples were collected from MW4. Two of the three samples were above the AGQS for PFOA. One sample MW4B-75 was 2.9 ppt and below the AGQS for PFOA. It should be noted that the MW4S result revealed a PFOA concentration of 33,000 ppt. The previous result for MW4S was 69,500 ppt.

The review of this data reveals the following:

- **One-hundred percent (100%) of the wells sampled are contaminated with PFOA above the AGQS.**
- Ninety-eight percent (98%) of the samples collected are above the AGQS for PFOA.
- Twenty-seven percent (27%) of the samples collected are one order of magnitude above the AGQS for PFOA.
- Fifty-six percent (56%) of the samples are two orders of magnitude above the AGQS for PFOA.
- Seven percent (7%) of the samples are three orders of magnitude above the AGQS for PFOA.

This data when reviewed as a whole confirms that the site is significantly contaminated. Should the remediation approach be natural attenuation remember the use of monitored natural attenuation as a remediation strategy involves allowing natural biological, chemical, and physical processes to treat groundwater contaminants, and conducting ongoing monitoring to verify that these processes are effective. Because of the stability of PFAS this approach is significantly flawed. Per National Toxicology Program Director Linda Birnbaum, Ph.D., " the carbon fluorine bond is one of the strongest ever created by man, and it's rarely seen in nature …The chemical composition of PFAS imparts high stability for consumer product design, but also makes PFAS extremely problematic in the environment, because they don't easily degrade. In

fact, PFAS remain in the environment for so long that scientists are unable to estimate an environmental half-life."[ii] Hopefully, in this case "dilution is not the solution."

Item 4 – The dip pan results were not appropriate to review because instrumentation error was encountered.

The Barr Engineering (Barr) report, "Results of the April 26-27, 30 and May 1-2, 2018 PFAS Emissions and RTAP Tests Performed on the MA, MS and QX Towers at Saint-Gobain Performance Plastics" provided results from the dips pans analyzed at the QX Tower. The results from the QX Tower identified concentrations of 25,600 ppt and 21,100 ppt for PFOA. The same samples reported 160,000 ppt and 128,000 ppt for PFNA, respectively. The PFOA results were estimated because the blank spike for PFOA was 143% and outside the labs recovery limit of 74 – 130%. It should also be noted that the blank did not contain any PFOA and the surrogate recovery for PFOA was within the lab's recovery limit.

The Town in the review of the data consulted with several labs including one which analyzes PFAS samples for the NHDES. Per the discussions with these laboratories, analytical results from physical samples such as trip blanks, equipment blanks, field blanks, method blanks, instrument blanks, storage blanks, matrix spikes, laboratory control samples and field duplicates can help inform the data user of the quality of the data derived from environmental samples. Some data not well supported by associated quality control results such as the blank spikes identified in the previous paragraph may still be usable. If a decision can be made based on the data, then re-sampling and re-analysis may not be necessary. In this case, the lab and Barr Engineering reviewed the data and determined that the blank spike may have been caused by an interference. The results for PFOA may be positively biased (20,000 ppt instead of 25,600 ppt) but the result when using a conservative approach is still valid. Therefore, the result was included in the Barr report as stated below on page 6:

"Barr has also added the qualifier "b" in the treatment of analytical results that **may be** positively biased due to method blank criteria".

The statement "positively biased" does not invalidate the results or imply that PFOA was not detected. Barr did in the review of data render some data unusable (or invalid) as also stated in their report on page 6:

"Based on these quality assurance failures the XAD samples for HFPO-DA were qualified (**) as unusable and should not be incorporated into any analysis."

In addition, it should be also noted, that there was no quality issues identified with the PFNA results. The PFNA results were an order of magnitude higher than the PFOA results, 160,000 ppt and 128,000 ppt. Please remember that the **AGQS for PFNA is 11 ppt**. Attachment 1 contains a copy of the Supplemental Narrative and analytical results from the Barr report.

There is no approved method for the analysis of PFAS in non-drinking water samples. Therefore, each lab has developed and implemented proprietary methods. The statement, "it is

not appropriate to look at a data point which encountered method errors as accurate and representative of the situation" would be valid when analyzing samples via an EPA or other approved method. An independently approved method incorporates quality control criteria which have been validated through multi laboratory trials so that acceptable method performance can be determined. A proprietary method does not contain the same objectivity.

Item 5 – Town Council has asserted that Saint Gobain manufactures PFOA or PFTE.

The Town of Merrimack has never asserted that Saint Gobain manufactures PFOA or PTFE.

Item 6 – The data does not show increasing levels in the Merrimack River.

The Town Council did not state that Merrimack River PFOA concentrations are increasing. The Town Council indicated that the contamination at the site and the stormwater discharges are impacting the river. **The concentrations of PFOA identified at Outfall 001 which discharges into the Merrimack River ranged from 7,900 ppt to 9,400 ppt.** Golder collected these stormwater samples on September 10, 2018. The Merrimack River is a drinking water source and even the potential contamination of this river should be averted.

Item 7 – Saint Gobain Meeting with the Town on August 29th.

Town met with Saint Gobain to review the operations of the wastewater treatment system which was installed to treat the process wastewater at the Saint Gobain facilty. NHDES and Saint Gobain did not answer any specific questions regarding the site investigation at the meeting. Saint Gobain and NHDES stated that further investigations would be conducted. Saint Gobain further stated during the meeting that at this point they **would not be implementing any remedial actions to clean-up ground water.**

On September 11th, the Town's Pretreatment Manager, Phillip Appert, contacted Will Kempskie, Saint Gobain EHS Manager, to schedule a meeting to review the operations at the plant. The goal was to tour the plant as soon as possible to obtain a better understanding of the dip pan operation to help with the evaluation of the data. Mr Kempskie responded on September 20th with a proposed date of October 8th or 9th.

Item 8 – Union Leader Open Letter to the community

In the open letter to the community published in the Union Leader on October 21, 2019, Saint Gobain states that "the most recent results of sampling by NHDES confirmed that our raw materials were non-detect for the presence of PFOA." On October 8, 2019, NHDES sent a letter to the Town Council in response to Town Council's assertion that Saint Gobain continues to use PFOA in their coating operations. Page two (2) of the letter states:

"On October 10, 2018, NHDES conducted a public meeting at the James Mastricola Upper Elementary School in Merrimack to update the public on the status the southern NH PFOA investigation. At that Meeting, **NHDES stated that raw materials and the dip pan coatings from samples taken from Saint Gobain from 2016-2018 had measurable detection of PFOA and PFNA** (and additional PFAS compounds)…"

On October 25, 2019 NHDES responded to the Town's inquiry regarding the above statement. Per NHDES, in **2016, Weston Solutions Inc**. was hired by NHDES to conduct testing for perfluorinated carboxylic acid (PFCA) and perfluorinated sulfonic acid compounds (PFSA) compounds in several media at the Saint Gobain. During the sampling activities the MA Tower dip pans were sampled. PFOA, PFOS, PFHxS, and PFNA were reported below the method detection limit. The **detection limit** for these compounds **at the time the samples were collected** was:

1. **310,000 ppt** for PFOS, PFHxS and PFNA, and
2. **130,000 ppt** for PFOA.

In **2018 Barr Engineering Co**. collected samples from the dip pans as part of stack testing activities. The results identified PFOA and PFNA at the following concentrations in the dip pans:

1. PFOA
    a. 25,600 ppt and 21,100 ppt at the QX Tower.
    b. Below detection limit at the MA Tower
2. PFNA
    a. 160,000 ppt and 128,000 ppt at the QX Tower.
    b. Below detection limit at the MA Tower.
3. The **detection limit** PFOA and PFNA was **2,500 ppt**.

Per NHDES, "The dip pan samples collected during the 2018 stack test were sent to EPA ORD[iii]. No report on the results has been received by NHDES to date. EPA is analyzing the samples for PFOA, PFOS, PFHxS, and PFNA."

Per NHDES, "PFOA was non-detect (based on the detection levels at the time of the analysis) in samples taken by Weston for NHDES in 2016." The detection limits as stated above were 310,000 ppt for PFOS, PFNA, and PFHxS. The detection limit for PFOA was 130,000 ppt.

Closing Thoughts

The Town is disappointed that the letter from Saint Gobain and open letter to the community did not accurately represent the facts presented in the reports issued over the past 3 ½ years. The misrepresentation of the data collect in 2016 as "most recent results," without any qualification of the method detection limits is of particular concern.

Part of being a productive member of a community is ethically and honestly addressing issues that impact the health and safety of the community. We hope that Saint Gobain's vision moving forward acknowledges that community issues are extremely important to your future success. Part of the responsibility to the community and your commitment to being a good neighbor is to proactively address the PFAS contamination at your facility.

Sincerely,

Eileen Cabanel
Town Manager
Town of Merrimack, NH

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[i]

PFAS	Final Proposed MCL and AGQS
PFOA	12 ppt
PFOS	15 ppt
PFHxS	18 ppt
PFNA	11 pt

[ii] https://factor.niehs.nih.gov/2018/10/feature/1-feature-pfas/index.htm. NIEHS and National Toxicology Program (NTP) Director Linda Birnbaum, Ph.D., testified at a Sept. 26 hearing of the Senate Subcommittee on Federal Spending Oversight and Emergency Management. Subcommittee Chair Sen. Rand Paul, M.D., of Kentucky and Ranking Member Sen. Gary Peters, J.D., of Michigan opened the hearing, titled "The Federal Role in the Toxic PFAS Chemical Crisis."

[iii] EPA ORD - The Office of Research and Development (ORD) is the scientific research arm of EPA. Its leading-edge research informs Agency decisions and supports the emerging needs of EPA stakeholders, including the Agency's state, tribal, and community partners.

cc: Christopher T. Sununu, Governor of New Hampshire
Robert Scott, Commissioner, DES
Clark Freise, Assistant Commissioner, DES
Executive Councilor Debora Pignatelli
Senator Shannon Chandley
Minority Leader Richard Hinch
Representative Richard Barry
Representative Robert L'Heureux
Representative Nancy Murphy
Representative Jeanine Notter
Representative Rosemarie Rung
Representative Kathryn Stack
Representative Wendy Thomas
Gabriel Caridade, Plant Manager, Saint-Gobain
Christopher S. Angier, Senior Environmental Project Manager, Saint-Gobain

Supplemental Narrative

FH Filters were extracted in batches OP70083 and OP70083A. Filters were placed into a 50ml centrifuge tube. Methanol and Isotope Dilution standard were added. Samples were placed in an ultrasonic bath for 30 minutes. Samples were centrifuged, methanol was transferred to second centrifuge tube and concentrated to 1ml. Extracts were then analyzed for PFAS and GenX. An initial volume of 15ml was used for concentration calculations. There was insufficient sample volume for analysis of MS or DUP.

BH Filters were extracted in batches OP70084 and OP70084A. Filters were placed into a 50ml centrifuge tube. Methanol and Isotope Dilution standard were added. Samples were placed in an ultrasonic bath for 30 minutes. Samples were centrifuged, methanol was transferred to second centrifuge tube and concentrated to 1ml. Extracts were then analyzed for PFAS and GenX. An initial volume of 15ml was used for concentration calculations. There was insufficient sample volume for analysis of MS or DUP.

Methanol rinses were prepared in batches OP70054 and OP70054A. Because of the large volume of methanol received for each rinse, the samples had to be concentrated in glass TurboVap tubes. Tube walls were rinsed with methanol as samples were concentrated to 1ml; however, the low recoveries for the heavier analytes is believed to be due to adsorption onto the glass surface. The original BS was inadvertently not spiked with isotope dilution standard. A BS2 was prepared and analyzed later in the run. Isotope dilution standard recoveries were compared to control limits from water samples which may not be appropriate for this matrix. The initial volume of each methanol rinse sample was used for concentration calculations. There was insufficient sample volume for analysis of MS or DUP.

Impinger samples were extracted in batches OP70027, OP70027A (DI), OP70030, OP70030A (NaOH), and OP70031, OP70031A (Na-Borate) utilizing a WA-X SPE cartridge. Samples were concentrated to 1ml. The initial volume for each sample was used for concentration calculations. During the analysis of OP70030 the vials for the MB and fraction 40 were switched. The data was corrected in LIMS. There was insufficient sample volume for analysis of MS or DUP.

Water samples were extracted in batches OP70209 and OP70209A utilizing a WA-X SPE cartridge. Samples were concentrated to 1ml. The initial volume for each sample was used for concentration calculations. There was insufficient sample volume for analysis of MS or DUP.

Dispersion and Dip samples were prepared in batches OP70424 and OP70425. Initially the samples were diluted 10ml to 100ml with DI water to extract by WA-X SPE cartridge with the waters in OP70209 and OP70209A. SPE cartridges clogged immediately. Samples were then diluted 5ml to 250ml with DI water to extract by WA-X SPE cartridge. Once again, the SPE cartridges clogged. Samples were then diluted 1ml to 10ml with methylene chloride to see if they could be extracted that way. The samples reacted with the solvent. Some of them foamed and eventually solidified, other formed white globs suspended in the solvent. Finally, samples were diluted 1ml to 10 ml with methanol, vortexed and centrifuged. 500ul of extract was transferred to a vial and isotope dilution standards were added. 1ml initial volume to 10ml final volume were used for concentration calculations. The Isotope Dilution standards for PFAS in the dispersion and dip samples were spiked at 10ppb instead of 20ppb. The 28-day holding time listed in the laboratory SOP was not applied to these non-aqueous samples.

XAD Resin samples were extracted in OP70203 and OP70203A. The following isotopes were added as pre-sampling surrogates: 13C3-PFPeA, 13C2-PFOA, and 13C4-PFOS. 13C2-PFDA was inadvertently not added to the pre-sampling surrogate mix. The XAD resins were spiked with isotope dilution standard prior to extracting. Methanol was added to each sample. Samples were extracted via shaker table for 18 hours and then sonicated for 30 minutes. Methanol was drawn off and XAD resin rinsed and concentrated to 1ml. After extraction, the XAD resins were stored in the 4oz HDPE jars that they were extracted in. This Isotope Dilution standards for PFAS and GenX in the XAD resins was spiked at 10ppb and 125ppb instead of 20ppb and 250ppb. There was insufficient sample volume for analysis of MS or DUP.

Initial analysis showed poor recovery for PFAS and GenX and caused major instrumentation issues. The XAD resins were spiked with an additional aliquot of isotope dilution mix, then extracted two additional times with ammonia methanol in an ultrasonic bath. Solvent was drawn off and the original extracts were combined with the additional extracts and concentrated to 4ml. Extracts were then run through a SDVB SPE for cleanup. Extracts were analyzed for PFAS and GenX. A value of "1" was used for concentration calculations.

Recoveries for PFAS were generally acceptable. There was an interference detected in the MB and samples for PFBA around 40 "ug/kg". Samples with similar levels were B flagged. Several samples were diluted due to high levels of PFAS including PFBA. Those hits were not due to the interference.

Recoveries and results for GenX and its' isotope in the XAD resins were poor. There was significant interference in the chromatograms at the retention time were GenX eluted. Peak shape was extremely poor. High result values were caused by the low isotope recoveries. On the instrument side, the XAD resin samples cause the CCVs to fail. Both analysis for GenX resulted in the analytical column needing to be replaced. Values are reported for informational purposes only.

FA54033

Barr Engineering Co. Chain of Custody

COC No. 1013

Request for Analytical Services

Report results to: tkuchinski@barr.com

Barr Engineering Company
5150 West 76th Street
Edina MN, 55439

Project Number:
23061003.01 TST 300

Lab: SGS

	Sample ID	Location	Test	Run	Fraction	Date Collected
139	347	QX	3	1	Supply Water (1 of 2)	4/30/2018
140	347	QX	3	1	Supply Water (2 of 2)	4/30/2018
141	348	QX	3	1	Sump Water (1 of 2)	4/30/2018
142	348	QX	3	1	Sump Water (2 of 2)	4/30/2018
143	335	QX	3	1	Dispersion Dip Pan 1 (1 of 2)	4/30/2018
144	335	QX	3	1	Dispersion Dip Pan 1 (2 of 2)	4/30/2018
145	336	QX	3	1	Dispersion Dip Pan 2-5 (1 of 2)	4/30/2018
146	336	QX	3	1	Dispersion Dip Pan 2-5 (2 of 2)	4/30/2018
147	349	QX	3	2	Sump Water (1 of 2)	4/30/2018
148	349	QX	3	2	Sump Water (2 of 2)	4/30/2018
149	339	QX	3	2	Dispersion Dip Pan 1 (1 of 2)	4/30/2018
150	339	QX	3	2	Dispersion Dip Pan 1 (2 of 2)	4/30/2018
151	350	QX	3	3	Sump Water (1 of 2)	5/1/2018
152	350	QX	3	3	Sump Water (2 of 2)	5/1/2018
153	343	QX	3	3	Dispersion Dip Pan 1 (1 of 2)	5/1/2018
154	343	QX	3	3	Dispersion Dip Pan 1 (2 of 2)	5/1/2018
155	344	QX	3	3	Dispersion Dip Pan 2-5 (1 of 2)	5/1/2018
156	344	QX	3	3	Dispersion Dip Pan 2-5 (2 of 2)	5/1/2018

Collectors Signature:

Date/Time: 5/2/18 11:00

	Relinquished by:	Received by:	Date/Time:
Shippers Signatures:			5/3/18 9:15
			5/3/18 10:26
	Fed Ex		5/3/18 1700
Lab Signature:			5-4-18 0915
Date/Time:			

5.1

5

FA54033: Chain of Custody
Page 8 of 9

Raw Data: Q48006.D

SGS North America Inc.

Report of Analysis

Client Sample ID:	335-1		
Lab Sample ID:	FA54033-143	**Date Sampled:**	04/30/18
Matrix:	LIQ - Liquid, Non-aqueous	**Date Received:**	05/04/18
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Saint Gobain; NH		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q48006.D	1	06/19/18 22:07	NAF	06/09/18 08:00	OP70425	SQ1163
Run #2							

	Initial Volume	Final Volume
Run #1	1.0 ml	10.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	55.8	20	5.0	ug/l	
2706-90-3	Perfluoropentanoic acid	286	10	3.8	ug/l	
307-24-4	Perfluorohexanoic acid	19.8	10	2.5	ug/l	
375-85-9	Perfluoroheptanoic acid	56.8	10	2.5	ug/l	
335-67-1	Perfluorooctanoic acid [b]	25.6	10	2.5	ug/l	
375-95-1	Perfluorononanoic acid	160	10	2.5	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	2.5 U	10	2.5	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	2.5 U	10	2.5	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	3.8 U	10	3.8	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	112%		30-140%
	13C5-PFPeA	59%		40-140%
	13C5-PFHxA	108%		50-150%
	13C4-PFHpA	105%		50-150%
	13C8-PFOA	108%		50-150%
	13C9-PFNA	117%		50-150%
	13C3-PFBS	92%		50-150%
	13C3-PFHxS	93%		50-150%
	13C8-PFOS	69%		50-150%

(a) Sample not extractable by SPE, diluted for direct injection.
(b) Associated BS outside control limits high.
(c) Associated CCV outside of control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	336-1		
Lab Sample ID:	FA54033-145	**Date Sampled:**	04/30/18
Matrix:	LIQ - Liquid, Non-aqueous	**Date Received:**	05/04/18
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Saint Gobain; NH		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q48007.D	1	06/19/18 22:29	NAF	06/09/18 08:00	OP70425	SQ1163
Run #2							

	Initial Volume	Final Volume
Run #1	1.0 ml	10.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	5.0 U	20	5.0	ug/l	
2706-90-3	Perfluoropentanoic acid	3.8 U	10	3.8	ug/l	
307-24-4	Perfluorohexanoic acid	3.46	10	2.5	ug/l	JB
375-85-9	Perfluoroheptanoic acid	2.5 U	10	2.5	ug/l	
335-67-1	Perfluorooctanoic acid	2.5 U	10	2.5	ug/l	
375-95-1	Perfluorononanoic acid	2.5 U	10	2.5	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	2.5 U	10	2.5	ug/l	
355-46-4	Perfluorohexanesulfonic acid [b]	2.5 U	10	2.5	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	3.8 U	10	3.8	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	114%		30-140%
	13C5-PFPeA	99%		40-140%
	13C5-PFHxA	112%		50-150%
	13C4-PFHpA	114%		50-150%
	13C8-PFOA	118%		50-150%
	13C9-PFNA	126%		50-150%
	13C3-PFBS	95%		50-150%
	13C3-PFHxS	82%		50-150%
	13C8-PFOS	55%		50-150%

(a) Sample not extractable by SPE, diluted for direct injection.
(b) Associated CCV outside of control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	339-1		
Lab Sample ID:	FA54033-149	**Date Sampled:**	04/30/18
Matrix:	LIQ - Liquid, Non-aqueous	**Date Received:**	05/04/18
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Saint Gobain; NH		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q48008.D	1	06/19/18 22:52	NAF	06/09/18 08:00	OP70425	SQ1163
Run #2							

	Initial Volume	Final Volume
Run #1	1.0 ml	10.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	5.0 U	20	5.0	ug/l	
2706-90-3	Perfluoropentanoic acid	4.72	10	3.8	ug/l	J
307-24-4	Perfluorohexanoic acid	2.5 U	10	2.5	ug/l	
375-85-9	Perfluoroheptanoic acid	2.5 U	10	2.5	ug/l	
335-67-1	Perfluorooctanoic acid	2.5 U	10	2.5	ug/l	
375-95-1	Perfluorononanoic acid	2.70	10	2.5	ug/l	J
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	2.5 U	10	2.5	ug/l	
355-46-4	Perfluorohexanesulfonic acid [b]	2.5 U	10	2.5	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	3.8 U	10	3.8	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	112%		30-140%
	13C5-PFPeA	96%		40-140%
	13C5-PFHxA	109%		50-150%
	13C4-PFHpA	107%		50-150%
	13C8-PFOA	109%		50-150%
	13C9-PFNA	114%		50-150%
	13C3-PFBS	87%		50-150%
	13C3-PFHxS	88%		50-150%
	13C8-PFOS	68%		50-150%

(a) Sample not extractable by SPE, diluted for direct injection.
(b) Associated CCV outside of control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	343-1		
Lab Sample ID:	FA54033-153	**Date Sampled:**	05/01/18
Matrix:	LIQ - Liquid, Non-aqueous	**Date Received:**	05/04/18
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Saint Gobain; NH		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q48009.D	1	06/19/18 23:15	NAF	06/09/18 08:00	OP70425	SQ1163
Run #2							

	Initial Volume	Final Volume
Run #1	1.0 ml	10.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	45.5	20	5.0	ug/l	
2706-90-3	Perfluoropentanoic acid	215	10	3.8	ug/l	
307-24-4	Perfluorohexanoic acid	15.4	10	2.5	ug/l	
375-85-9	Perfluoroheptanoic acid	44.0	10	2.5	ug/l	
335-67-1	Perfluorooctanoic acid [b]	21.1	10	2.5	ug/l	
375-95-1	Perfluorononanoic acid	128	10	2.5	ug/l	
PERFLUOROALKYLSULFONATES						
375-73-5	Perfluorobutanesulfonic acid	2.5 U	10	2.5	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	2.5 U	10	2.5	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	3.8 U	10	3.8	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	110%		30-140%
	13C5-PFPeA	64%		40-140%
	13C5-PFHxA	108%		50-150%
	13C4-PFHpA	105%		50-150%
	13C8-PFOA	105%		50-150%
	13C9-PFNA	116%		50-150%
	13C3-PFBS	87%		50-150%
	13C3-PFHxS	89%		50-150%
	13C8-PFOS	68%		50-150%

(a) Sample not extractable by SPE, diluted for direct injection.
(b) Associated BS outside control limits high.
(c) Associated CCV outside of control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Raw Data: Q47997.D

Method Blank Summary

Job Number: FA54033
Account: BARRMNE Barr Engineering Co
Project: Saint Gobain; NH

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP70425-MB	Q47997.D	1	06/19/18	NAF	06/09/18	OP70425	SQ1163

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA54033-106, FA54033-108, FA54033-110, FA54033-112, FA54033-114, FA54033-116, FA54033-143, FA54033-145, FA54033-149, FA54033-153, FA54033-155

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.50	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.38	ug/l	
307-24-4	Perfluorohexanoic acid	0.518	1.0	0.25	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/l	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/l	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.38	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	113%	30-140%
	13C5-PFPeA	97%	40-140%
	13C5-PFHxA	106%	50-150%
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	102%	50-150%
	13C9-PFNA	107%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	77%	50-150%

Raw Data: Q47996.D

Blank Spike Summary

Job Number: FA54033
Account: BARRMNE Barr Engineering Co
Project: Saint Gobain; NH

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP70425-BS	Q47996.D	1	06/19/18	NAF	06/09/18	OP70425	SQ1163

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA54033-106, FA54033-108, FA54033-110, FA54033-112, FA54033-114, FA54033-116, FA54033-143, FA54033-145, FA54033-149, FA54033-153, FA54033-155

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	10.8	108	70-130
2706-90-3	Perfluoropentanoic acid	10	12.9	129	70-130
307-24-4	Perfluorohexanoic acid	10	11.2	112	70-130
375-85-9	Perfluoroheptanoic acid	10	11.9	119	71-130
335-67-1	Perfluorooctanoic acid	10	14.3	143*	74-130
375-95-1	Perfluorononanoic acid	10	9.76	98	76-130
375-73-5	Perfluorobutanesulfonic acid	8.85	11.8	133*	73-130
355-46-4	Perfluorohexanesulfonic acid	9.1	14.6	160*	74-130
1763-23-1	Perfluorooctanesulfonic acid	9.25	14.3	155*	70-130

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	106%	30-140%
	13C5-PFPeA	92%	40-140%
	13C5-PFHxA	101%	50-150%
	13C4-PFHpA	100%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	99%	50-150%
	13C3-PFBS	90%	50-150%
	13C3-PFHxS	86%	50-150%
	13C8-PFOS	73%	50-150%

* = Outside of Control Limits.