Saint-Gobain Performance Plastics (SGPP) Site Investigation

NHDES Update – November 5, 2019

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Topics

• Overview of PFAS
• How Contaminated Sites are Managed in NH
• Brief Overview of Saint-Gobain 2016 – Present
• Site Investigation Work (Near-Facility – Regional)
• Remediation Completed/In Progress
• New AGQS and Upcoming Water Supply Well Investigation
Overview of PFAS
What are PFAS?

• PFAS are Per- and Poly-fluoroalkyl Substances

• Manmade chemicals used in industry and consumer products since the 1950s

• Many PFAS do not significantly degrade under natural conditions

Where are PFAS Used?

Industrial Uses
• AFFF
• Chemical production
• Metal plating
• Textiles, upholstery, apparel, carpets
• Paper and packaging
• Rubber and plastics
• Medical devices
• Insect baits
• Semiconductor manufacturing
• Photoimaging

Commercial Products
• Non-stick cookware
• Fast food containers
• Candy wrappers
• Microwave popcorn bags
• Personal care and cosmetic products
• Paints and varnishes
• Stain-resistant carpet and chemicals
• Water-resistant apparel
• Cleaning products
• Electronics
• Ski wax
How Contaminated Sites are Managed in NH
Contaminated Site Management

- Discovery
- Emergency Response
- Site Investigation – What is the source? Where is it going? Who or what are the receptors?
- Remediation
- Groundwater Management Zone
Site Investigations

Objectives:

• Determine the source, nature, location, and full extent of contamination.
• Identify receptors and potential receptors
• Identify need for further investigation and remediation
Site Investigations: 4 Dimensional Analysis

Map View

Time Series

Cross Section View

T (Time)

Z (Depth)

Y (Length)

X (Width)

(Top Left) Golder Associates, Inc., 2018, Work Plan for 2018 Stormwater and Surface Water Investigation, Image clipped from Figure 4

(Bottom Left) Golder Associates, Inc., 2019, Site Investigation Report, Image clipped from Figure 7-4

How Site Investigations are Organized

NHDES’ role is to provide guidance and regulatory oversight.

The Responsible Party hires a consultant to conduct the investigation.
Why is a comprehensive site investigation necessary?

At complex contaminated sites there is no One-Size-Fits all solution for Remediation.
Geology - Influences groundwater flow and contaminant transport

Sand
Fluvial / Ice Proximal Deposits

Silt / Clay
Glacial Lakebed Deposits

Fractured Rock

Glacial Till
Saint-Gobain PFAS Discovery
2016 to Present
Partial Timeline – 2016 to Present

• 2016 – PFAS discovered in water sample collected at Saint-Gobain Facility
  • Prompts investigation that included sampling private water supply wells
  • Onsite investigation work begins
  • USEPA Lifetime Health Advisory Issued / NH Adoption as AGQS (70 ng/L for PFOA and PFOS, combined)

• 2018 – Saint-Gobain and NHDES enter Consent Decree
  • Consent Decree provides for permanent alternate water inside Pre-GMZ
  • Senate Bill (SB) 309 requires NHDES to initiate rulemaking for new MCL/AGQS

• September 30, 2019 – Effective date for four new PFAS AGQS/MCL
  • PFOA – 12 ng/L (Parts per trillion – ppt)
  • PFOS – 15 ng/L
  • PFHxS – 18 ng/L
  • PFNA – 11 ng/L
Site Investigation Activities

Near-Facility and Regional
Air Release
Conceptual Pathway to Groundwater Contamination

Davis et al., 2007, Chemoshpere
>1,000 Groundwater Samples Analyzed for PFOA Within the Consent Decree Area

- 10% PFOA below detection limit
- 31% PFOA detected <= 12 ng/L
- 41% PFOA > 12 ng/L and <= 70 ng/L
- 18% PFOA > 70 ng/L

18% of samples exceeded the 2016 AGQS of 70 ng/L for PFOA+PFOS

59% of samples exceed the current (2019) AGQS of 12 ng/L for PFOA
PFOA + PFOS – 70 ng/L AGQS (Adopted May 2016)

Note – Color scales are different on the two maps to show AGQS exceedances at 70 ng/L (left) and at 12+ ng/L (right).

“Pre-GMZ” Boundary 14.6 Square Miles

Consent Decree Outer Boundary 64.1 Square Miles
~493 Soil Samples Analyzed for PFAS

- Sensitive Receptors (n=132)
- Agricultural Properties (n=163)
- MVD 4 & 5 Investigation (n=12)
- Webster Green (n=7)
- Excess Soil (n=7)
- Testing at Facility
  - Initial Site Investigation (n=35)
  - Site Investigation (n=124)
  - Supplemental Site Investigation (n=13)

\( n = \text{number of samples} \)

All results are below the current (2016) NHDES Direct Contact Screening Value for PFOA of 500 ug/kg (parts per billion)
Site Investigation Activities

**Near-Facility**

- **Testing at Facility**
  - Initial Site Investigation (11 Monitoring Wells Installed)
    - Work Plan Submitted March 2016
    - Draft Report March 2017; Final Report May 2018
  - Stormwater and Surface Water Investigation (> 190 Stormwater Samples)
    - Report Submitted March 2019
  - Site Investigation (33 Monitoring Wells Installed, 42 Soil Borings)
    - Work Plan Submitted June 2018
    - Work Plan Addendum Submitted July 2018
    - Report Submitted April 2019
  - Supplemental Site Investigation (4 Monitoring Wells Installed)
    - Data Submittal October 2019
Potential Release Pathways Under Investigation

Schematic representation of potential PFAS release pathways and commingled plumes for illustration purposes only (not intended to reflect actual site conditions).
25 Potential Release Areas Investigated
Groundwater Contours & Flow Directions

Golder Associates, Inc., 2019, Site Investigation Report, Figure 5-8

Note: Blue Arrows showing inferred overburden groundwater flow directions added by NHDES for Presentation.
Potential Release Areas – MW-4S

Golder Associates, Inc., 2019, Supplemental Site Investigation Soil and Groundwater Sampling Unvalidated Data Submittal, Figure 8-1
Groundwater PFOA Contours

Golder Associates, Inc., 2019, Site Investigation Report, Figure 7-2

- > 5,000 ng/L PFOA
- 1,000 to 5,000 ng/L PFOA
Groundwater PFOS Contours

70 – 1000 ng/L PFOS

> 1000 ng/L PFOS

Golder Associates, Inc., 2019, Site Investigation Report, Figure 7-3
Monitoring Well MW-4S

March 2019 PFOA MW-4S Samples: 52,000 and 69,500 ng/L.

Golder Associates, Inc., 2019, Site Investigation Report, Image clipped from Figure 7-4
Site Investigation – Looking Ahead

- Complete Supplemental Site Investigation Work
- Fill in Soil Data Gaps
- Develop Remedial Alternatives at the Facility
Remedial Response Activities

• ~17 Miles of Water Line Installed
• 930 Properties Connected to Public Water
• Properties Connected to POUs - 44
• Wastewater Pretreatment System Installed
• MVD-4 & MVD-5 Treatment System
• Lining and Repair of the Stormwater System

(numbers provided by C.T. Male, Associates 11/5/19)
New AGQS and Upcoming Water Supply Well Investigation
PFOA + PFOS – 70 ng/L AGQS
(Adopted May 2016)

Note – Color scales are different on the two maps to show AGQS exceedances at 70 ng/L (left) and at 12+ ng/L (right).

Consent Decree Outer Boundary 64.1 Square Miles

“Pre-GMZ” Boundary 14.6 Square Miles
Saint-Gobain’s Consultant Submitted Work Plan and Work Plan Addendum 1

<table>
<thead>
<tr>
<th>944 Properties for Initial Sampling:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Work Plan dated September 30, 2019: <strong>360 Properties</strong></td>
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<tr>
<td>• Addendum 1 dated November 1, 2019: <strong>224 Properties</strong></td>
</tr>
<tr>
<td>• NHDES letter dated November 5, 2019 requests additional work: <strong>360 Properties</strong>*</td>
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</tbody>
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*Estimated number – many properties in this tally likely connected to public water currently.
Most wells selected for sampling based on:

- Proximity to 2x AGQS exceedance and within 2,000 feet of Pre-GMZ
- Addendum 1 – lots within 60 feet of property eligible for bottled water
Questions / Comments?

Sampling Plan/Alternate Water Questions:

Call Saint-Gobain 1-800-742-8498
or visit Golder Associates, Inc., Table in lobby tonight.

Written Comments on the Air Permit:

Catherine.Beahm@des.nh.gov

General Questions for NHDES:

Panel discussion after Site Investigation Presentation