



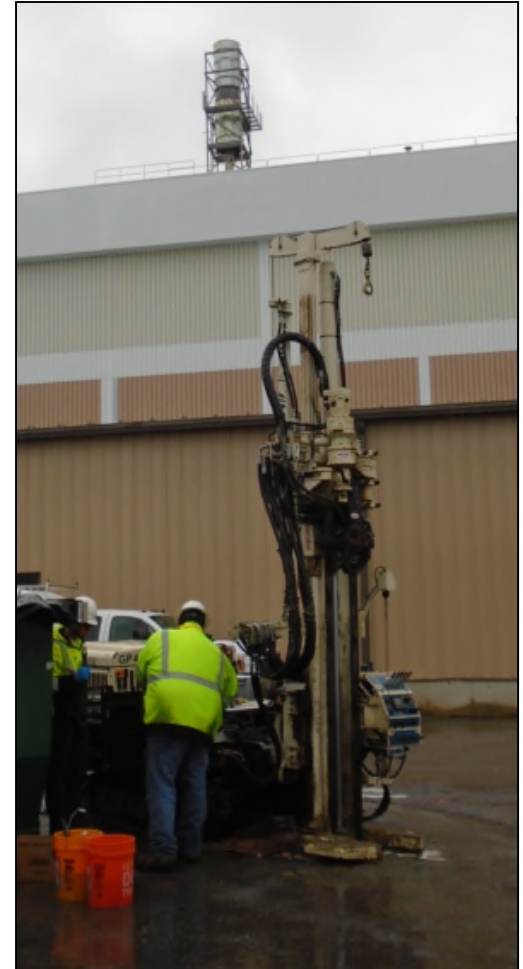
Saint-Gobain Performance Plastics (SGPP) Site Investigation

NHDES Update – November 5, 2019

Jeffrey Marts, P.G.

Project Manager / Hydrogeologist

Hazardous Waste Remediation Bureau



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?

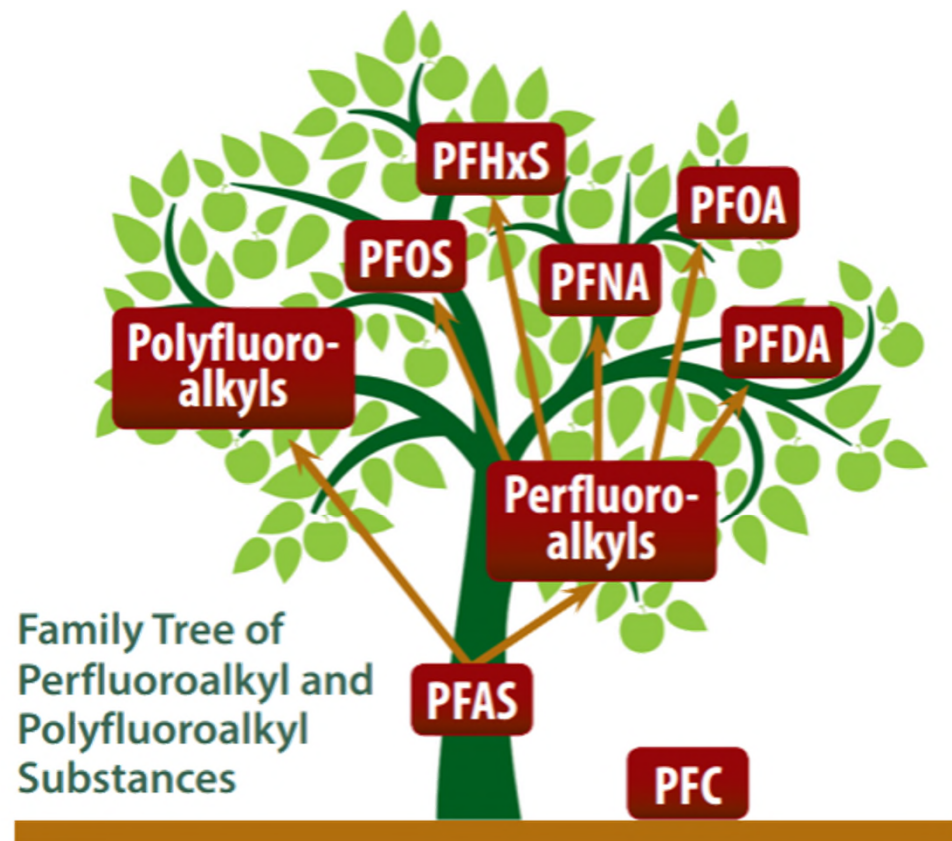


Figure 1

- 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

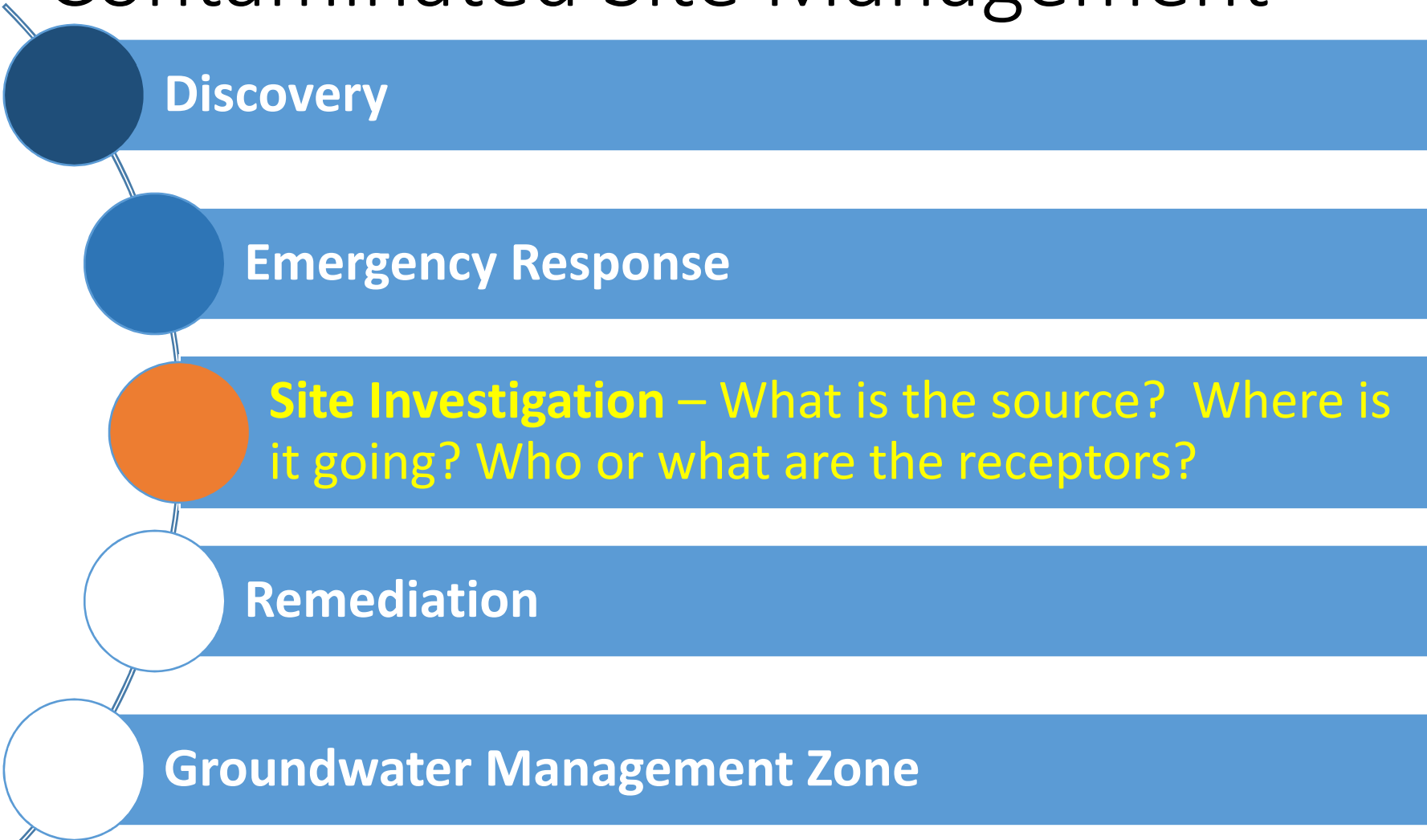
Commercial Products

- 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?

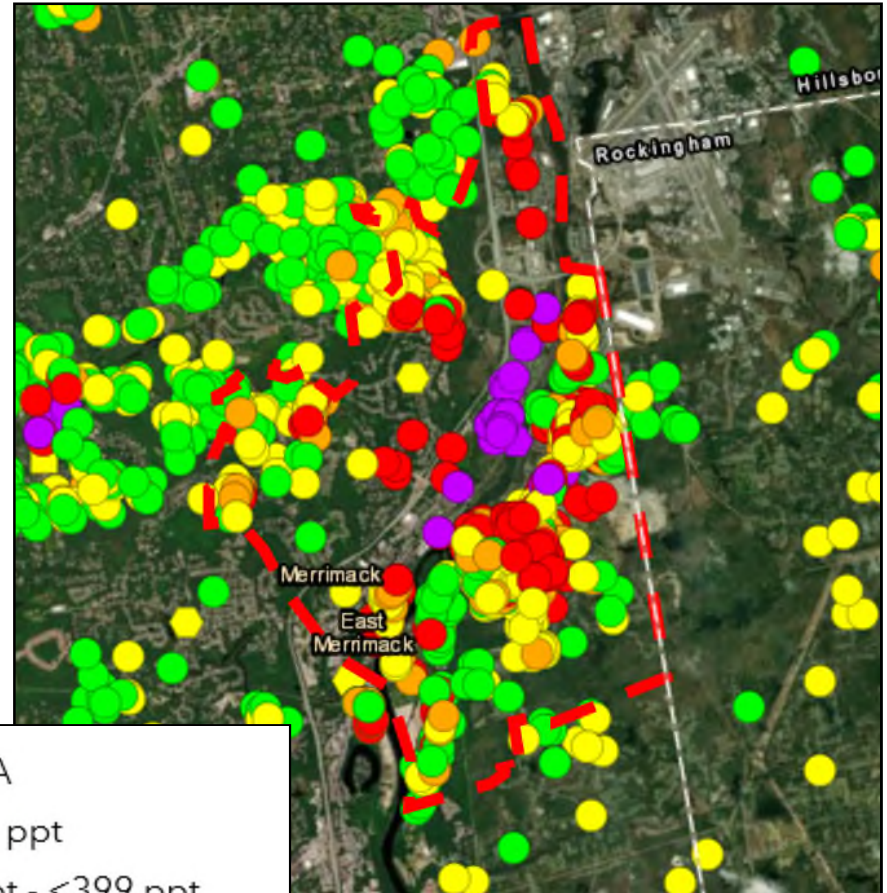
Remediation

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



PFOS_PFOA

- 400+ ppt
- 70 ppt - <399 ppt
- 45 ppt - <70 ppt
- 10 ppt - <45 ppt
- <10 ppt



Site Investigations:

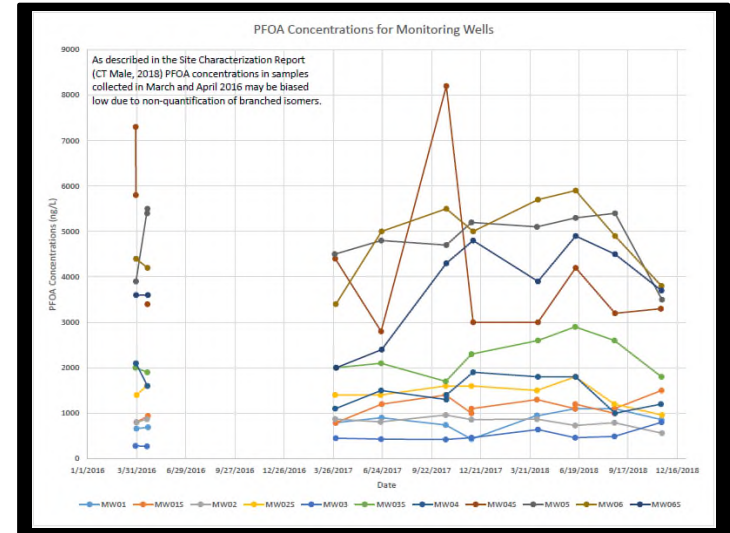
4 Dimensional Analysis

Map View



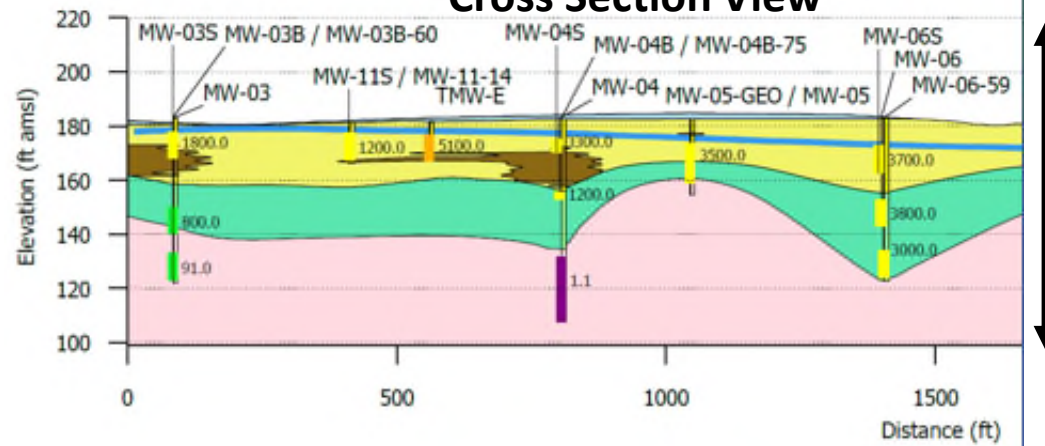
X (Width)

Time Series



T (Time)

Cross Section View



Z (Depth)

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

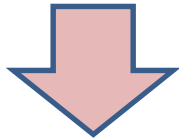
(Bottom Left) Golder Associates, Inc., 2019, *Site Investigation Report*, Image clipped from Figure 7-4

(Top Right) Golder Associates, Inc., 2019, 2018 *Annual Groundwater Monitoring Summary*, Image clipped from Attachment B: Trend Plots



How Site Investigations are Organized

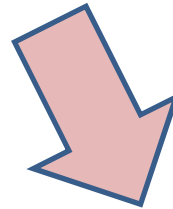
NHDES' role is to provide guidance and regulatory oversight.



The Responsible Party hires a consultant to conduct the investigation.



***Why is a
comprehensive
site investigation
necessary?***



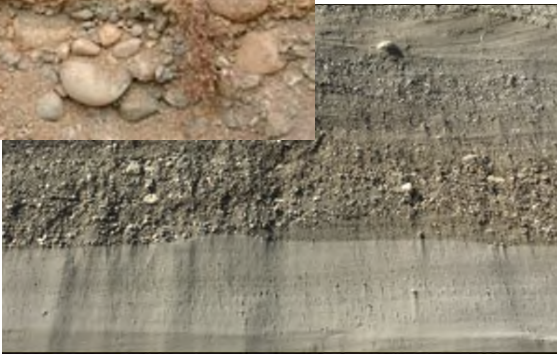
***At complex contaminated
sites there is no One-Size-
Fits all solution for
Remediation.***

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*

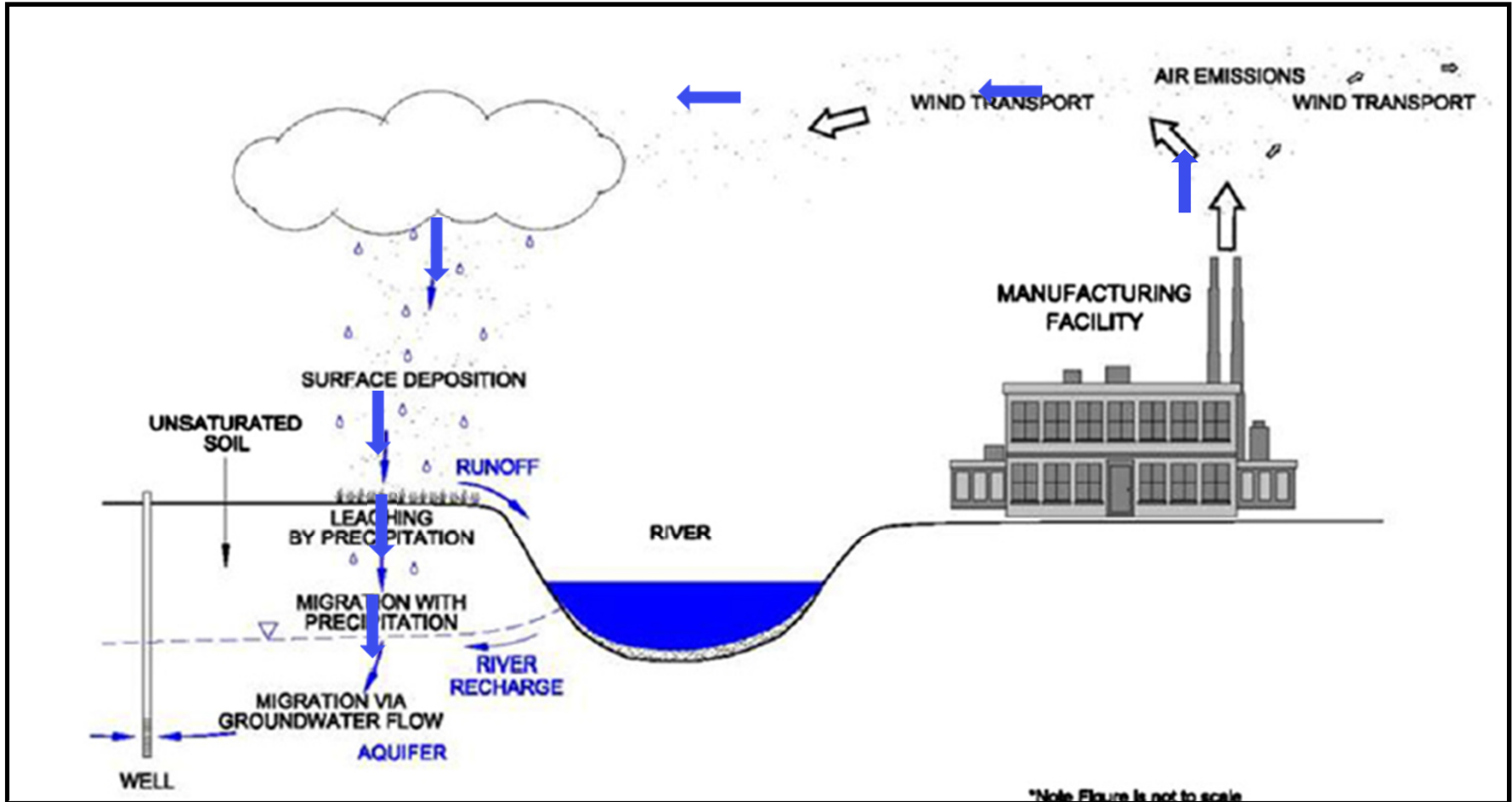
Site Investigation Activities

Near-Facility and Regional



Air Release

Conceptual Pathway to Groundwater Contamination



Davis et al., 2007, *Chemosphere*



Water Supply Well Sampling

>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*



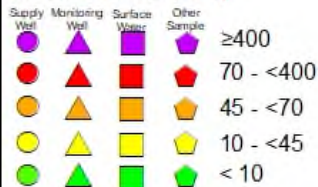
PFOA + PFOS – 70 ng/L AGQS
(Adopted May 2016)

PFOA 12 ng/L AGQS
(Effective September 30, 2019)

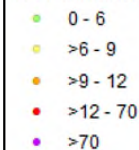
“Pre-GMZ”
Boundary
14.6 Square
Miles

Consent
Decree Outer
Boundary 64.1
Square Miles

PFOA + PFOS (PPT)



Groundwater Sample PFOA Results
PFOA Concentration (ng/L)



0 0.75 1.5 3 Miles

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



Soil Testing

~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 = number of samples)



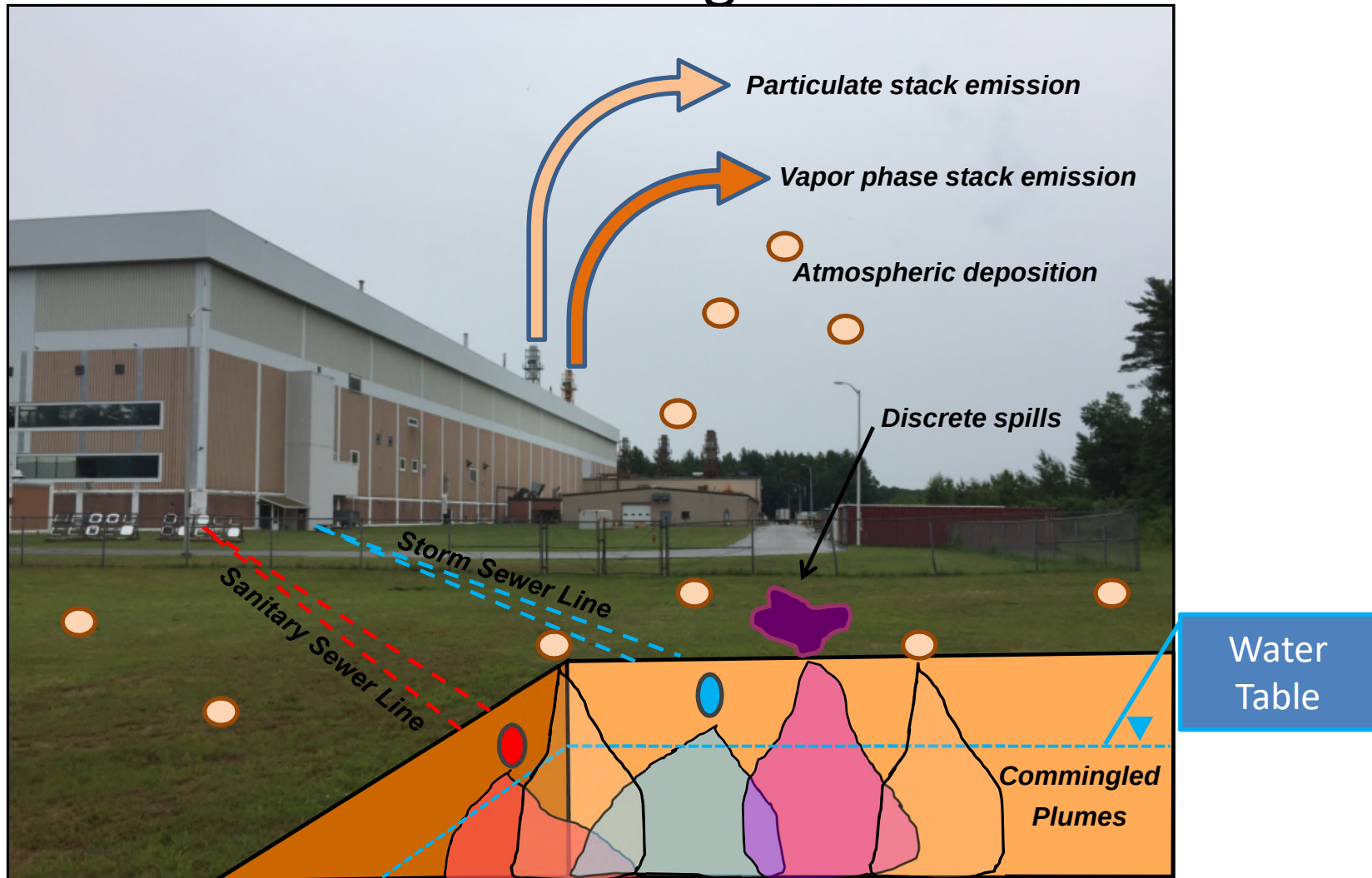
***All results are below
the current (2016)
NHDES Direct Contact
Screening Value for
PFOA of 500 ug/kg
(parts per billion)***

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

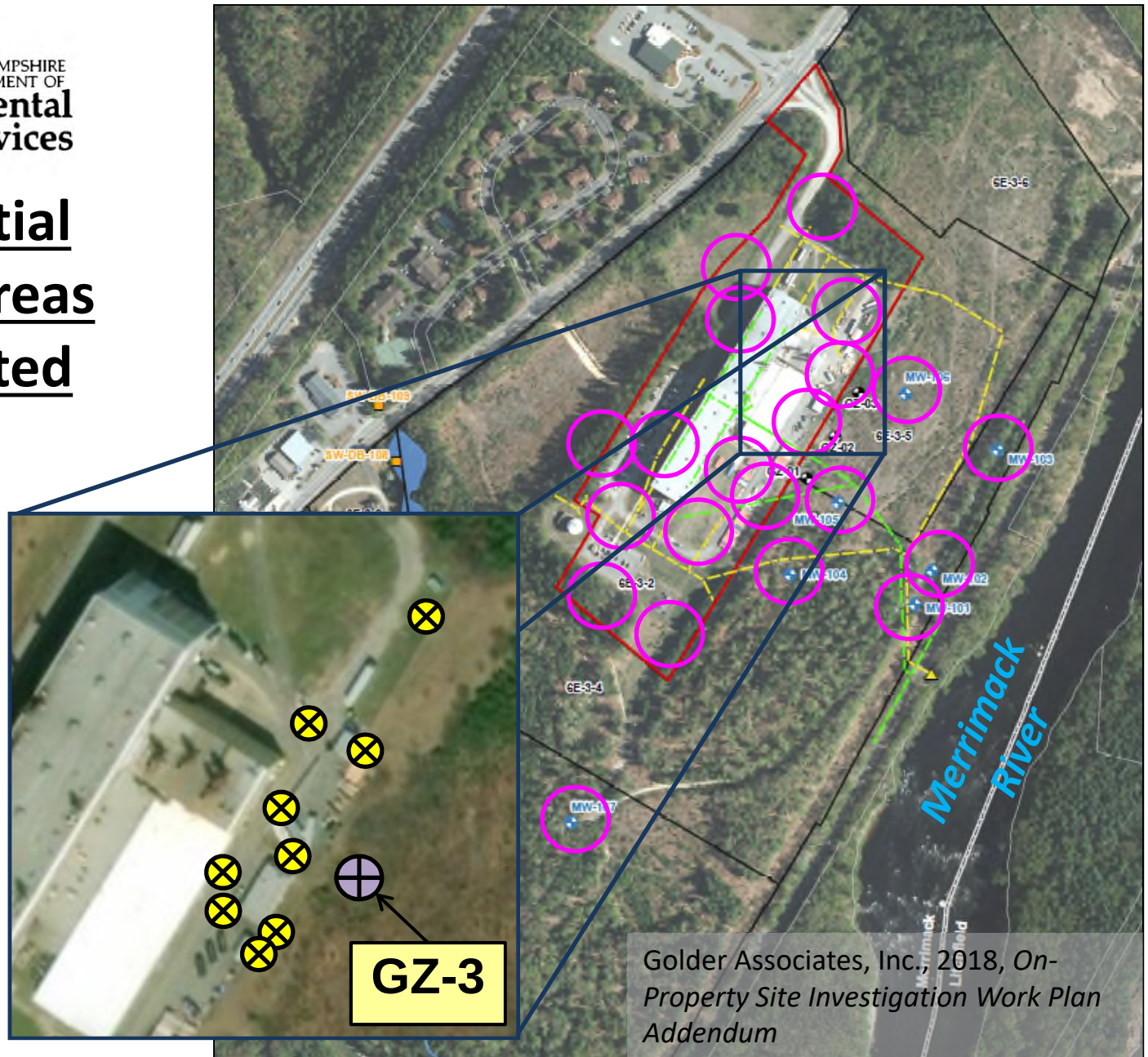
Potential Release Pathways Under Investigation



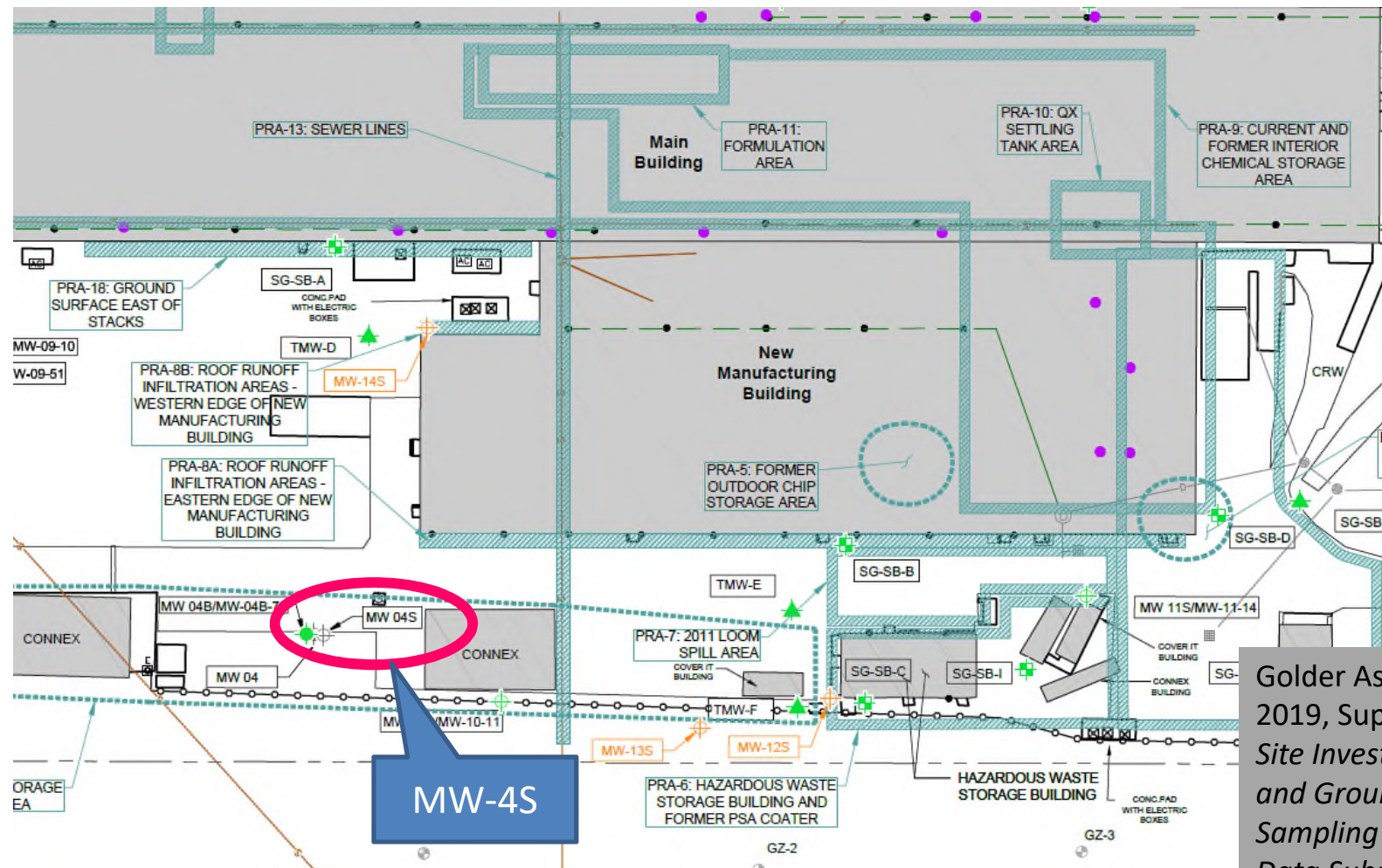
Schematic representation of potential PFAS release pathways and commingled plumes for illustration purposes only (not intended to reflect actual site conditions).



25 Potential Release Areas Investigated

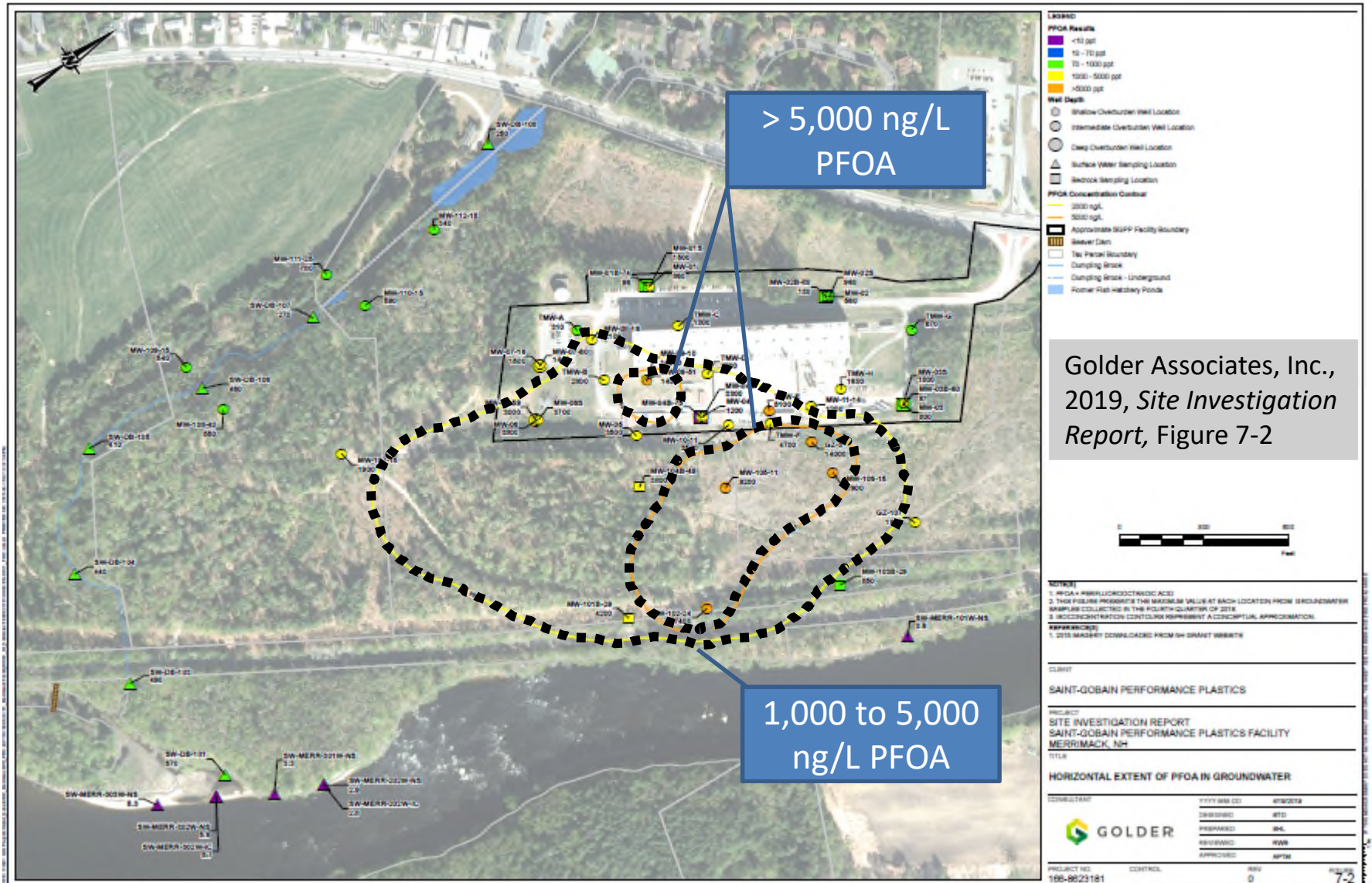


Potential Release Areas – MW-4S



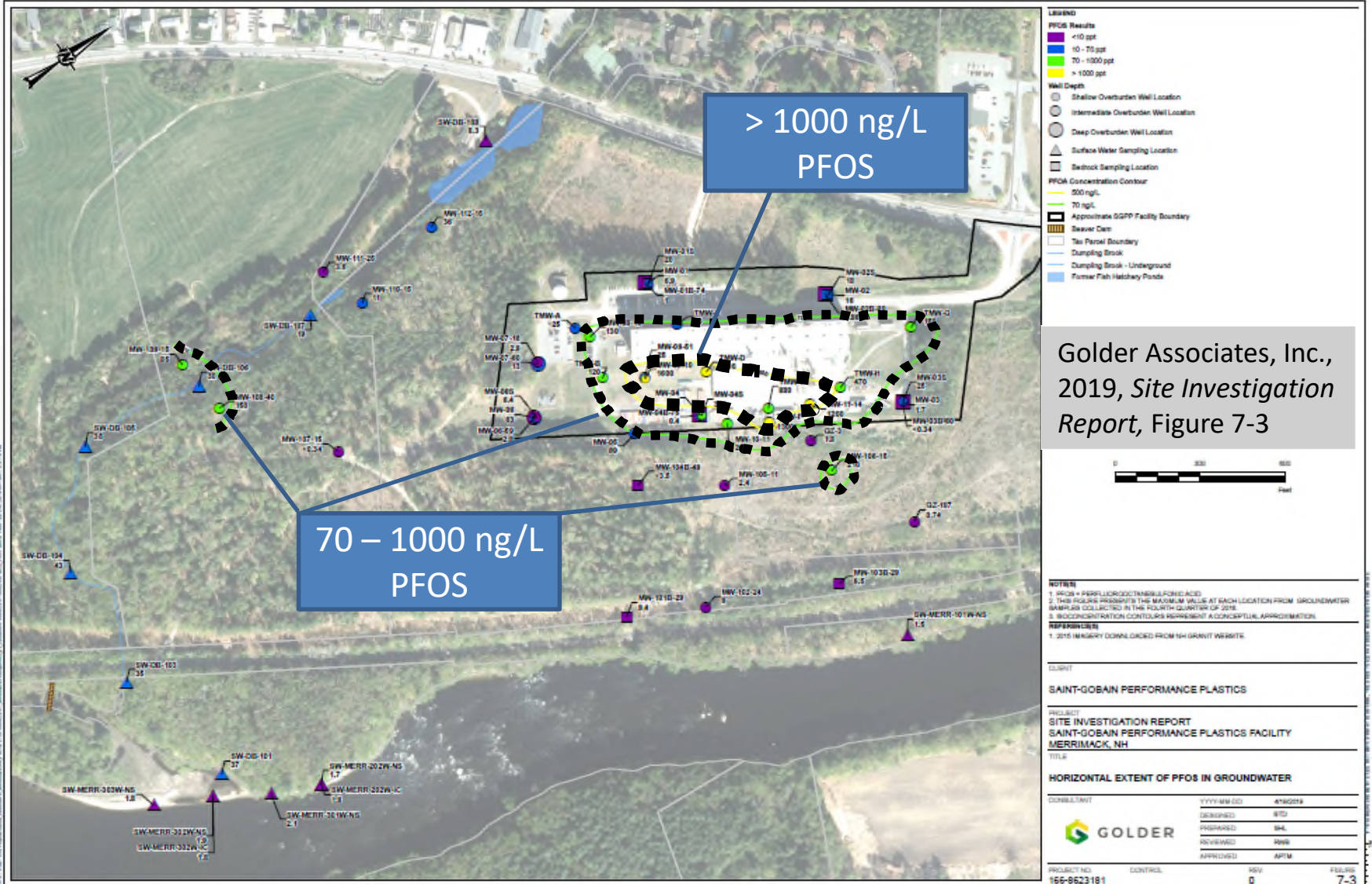
Golder Associates, Inc.,
2019, Supplemental
Site Investigation Soil
and Groundwater
Sampling Unvalidated
Data Submittal, Figure
8-1

Groundwater PFOA Contours



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

Groundwater PFOS Contours



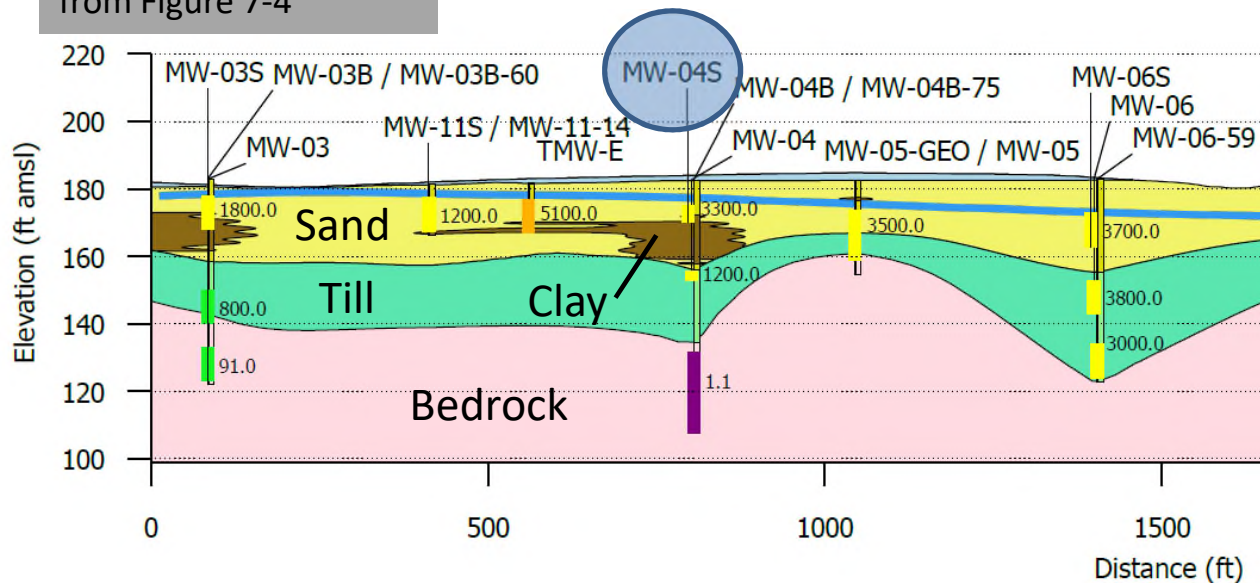
Golder Associates, Inc.,
2019, *Site Investigation
Report, Figure 7-3*



Monitoring Well MW-4S

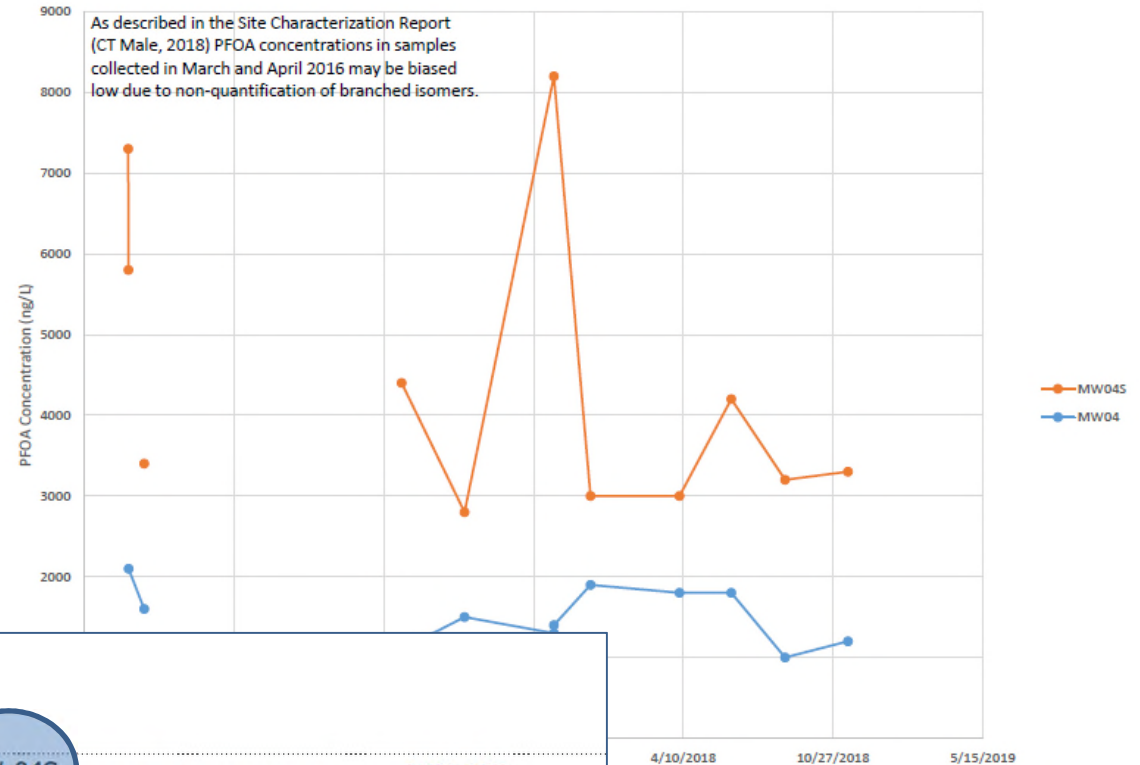
March 2019 PFOA MW-4S
Samples: 52,000 and
69,500 ng/L.

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



Attachment B

MW-04 and MW-04S



Golder Associates, Inc.,
2018, *2018 Annual
Groundwater
Monitoring Summary*,
Image clipped from
Attachment B

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 POU's - 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



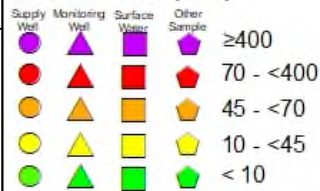
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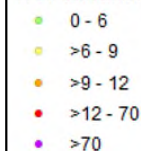
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Saint-Gobain's Consultant Submitted Work Plan and Work Plan Addendum 1

944 Properties for Initial Sampling:

- Work Plan dated September 30, 2019: **360 Properties**
- Addendum 1 dated November 1, 2019: **224 Properties**
- NHDES letter dated November 5, 2019 requests additional work: **360 Properties***

**Estimated number – many properties in this tally likely connected to public water currently.*

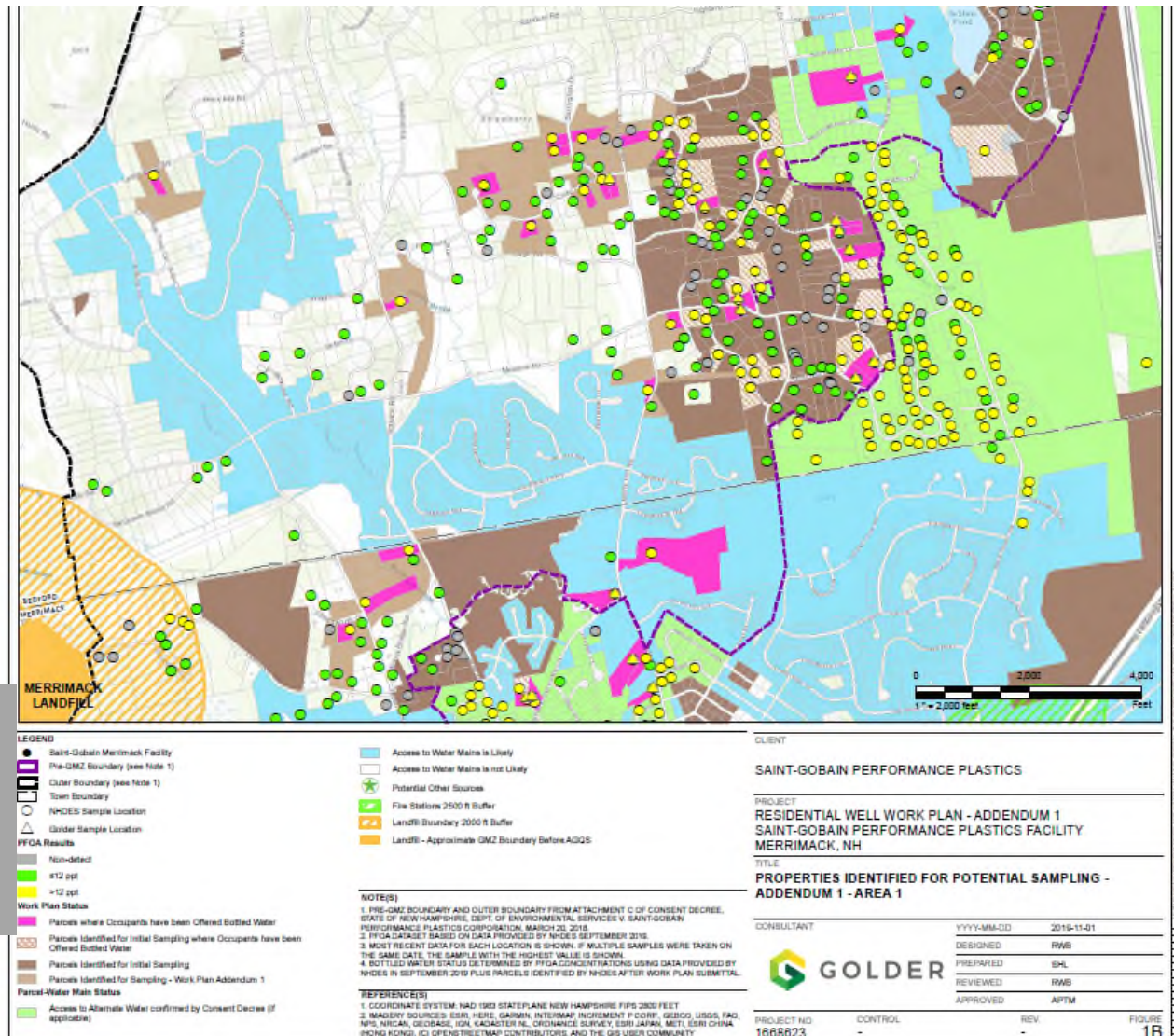


Saint-Gobain's Consultant Submitted Work Plan and Work Plan Addendum 1

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

Golder Associates, Inc.,
2019, *Work Plan for Sampling of Water Supply Wells and Provision of Alternate Water – Addendum 1*, Image clipped from Figure 1B



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

