

**Interim Measures
Corrective Action Plan
For
Public Water System (PWS)
Extensions
Corrective Action Area II
Operable Unit A
Bennington**

June 7, 2019

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1.0 Introduction/ Executive Summary

1.1 Purpose

This Corrective Action Plan (CAP) authorizes an interim measure corrective action for the selected drinking water remedy in Corrective Action Area II-Operable Unit A (CAAI OU A). The selected remedy within CAA II OU A is the extension of public water systems (PWS) to residences and businesses, as shown on the map in [Figure 1](#), which includes homes/businesses on Squaw Hill Road, Michaels Drive, Transport Drive, Willow Road, portions of Harwood Hill Road (including two residences on Settlers Road), and on roads within the Apple Hill Subdivision. Within CAA II OU A, 166 homes or businesses are eligible to be connected to municipal water. The use of an interim measures CAP is authorized by the Investigation and Remediation of Contaminated Properties Rule (IROCPR) § 35-506(b)(1)(B).

This interim measure CAP (identified as the CAP for the remainder of the document) is necessary to meet requirements related to corrective action plans in the following documents:

- The State of Vermont Consent Order (Consent Order) with Saint-Gobain Performance Plastics (Saint-Gobain), which the State Superior Court ordered and entered as final judgement on May 28, 2019, and
- The Vermont Agency of Natural Resources (ANR) Rule, “Investigation and Remediation of Contaminated Properties Rule (IROCPR), effective July 27, 2017.”

Approval of the CAP allows for water line extensions to begin this construction season. Other CAP(s) for the remainder of CAA II will be prepared separately. More details about the corrective action work items and schedule are provided in [Appendix A of the Consent Order](#).

1.2 Summary of Site Investigation Work

Site investigative work was conducted by multiple parties, including consultants on behalf of Saint-Gobain, the ANR, the U.S. Environmental Protection Agency (EPA), and scientists from several colleges and universities. Investigative work included surficial and bedrock mapping; borehole geophysics; measurements of groundwater elevation; and the collection of drinking water samples, groundwater samples from monitoring wells and springs, surface water samples, sludge samples, and soil

samples. This investigative work included the development of a Conceptual Site Model (CSM) provided by Saint-Gobain, which, among other things, identified potential sources and pathways for per- and polyfluoroalkyl substances (PFAS) found in groundwater. The CSM incorporated the data collected from the site investigative work to evaluate the complete PFAS transport pathway from source to sensitive receptor, that is, primarily people drinking the water, which required multiple numerical models to assess fate and transport through air, the unsaturated zone, and groundwater. A more detailed summary of the site investigation work and CSM can be found in [Appendix D1 of the Consent Order](#).

1.3 *Remedial Objectives*

The major remedial objective of the CAP is to provide a long-term remedy that protects human health by eliminating the drinking water pathway for people living in locations where drinking water has been found to contain the combined concentrations of perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), perfluorohexane sulfonate (PFHxS), perfluoroheptanoic acid (PFHpA), and perfluorononanoic acid (PFNA) at or above the Vermont Groundwater Enforcement Standard, which is currently 20 parts per trillion (ppt).

1.4 *Remedial Alternatives Considered to Protect Human Health (Eliminate Drinking Water Pathway)*

Barr Engineering, on behalf of Saint-Gobain, prepared an evaluation of corrective action alternatives for eliminating drinking water pathways and addressing groundwater. This document is [Appendix C1 of the Consent Order](#).

For remedies to protect human health, that is, eliminate the drinking water pathway, they evaluated three options:

- Long-term Operations of Point-of-Entry Treatment Systems (POETs)
- Extension of existing community PWS distribution mains
- Drinking water replacement wells

Their evaluation of these options was performed using the criteria specified in 40 C.F.R. § 300.430(e)(9)(iii), which is also consistent with the requirements within Subsection 35-503 (Evaluation of Corrective Action Alternatives) in the IROCPR:

- Overall protectiveness to human health and the environment;
- Compliance with legal requirements;
- Short-term effectiveness;
- Long-term effectiveness and permanence;
- Reducing toxicity, mobility, and volume;
- Implementability;
- Cost;
- Environmental impacts and sustainability; and
- Community acceptance.

1.5 Description of Selected Corrective Action

As specified in the ANR decision document ([Appendix D1 of the Consent Order](#)), the preferred corrective action is to connect impacted water supply wells with concentrations of PFOA, PFOS, PFHxS, PFHpA, and PFNA at or above the Vermont Groundwater Enforcement Standard and other potentially at-risk wells to a public water system, where technically feasible and cost effective.

The Town of Bennington hired the engineering consulting firm MSK Engineering to perform this evaluation, working in close consultation with the relevant state programs to ensure any proposed extension of PWS (“Water Line Extension Work”) is designed to comply with all applicable health-based and environmental requirements. CAA II OU A is an area that the Secretary determined is technically feasible and cost effective to extend water lines ([Figure 1](#)).

The scope of work associated with the extension of the PWS includes installation of water service lines to the existing internal plumbing within the home or business and the restoration of property disturbance. The remedy does not include the following:

- water usage costs to the PWS; or
- the refurbishment or replacement of existing internal plumbing and other items as further set forth in the Consent Order.

The CAP only includes areas where waterlines have been permitted to be extended within the CAA II OU A. As stated on Section 1.1, other CAPs will address the remedies to protect human health for CAA II OU B, and CAA II OU C ([Figure 1](#)).

2.0 Performance Standards

The performance standard for the CAP is as follows:

Completion of the Water Line Extension Work, which requires the extension of municipal water service to all homes and businesses as required by the Consent Order within CAA II OU A.

Compliance with this performance standard shall be documented by submittal to ANR the required information specified in the PWS Construction Permit listed below, including record drawing, signed and stamped by a professional engineer, and a letter certifying conformance with all permit conditions from the professional engineering firm responsible for observation of construction.

Public Water System Construction Permit Project # C-3702-19.0
Water System: Bennington Water Department WSID # VT0005016
Permittee: Bennington Town
Project Name: Phase II Distribution main extensions to provide water service to properties with on-site wells contaminated with PFOA and PFOS.
Permit Issued: May 31, 2019

A copy of the PWS Construction permit Project C-3702-19.0 (Phase II Expansion of Bennington PWS) can be found in [Attachment A](#).

3.0 Remedial Construction Plan

Detailed engineering designs, including preliminary engineering reports, design drawings, and technical specifications for the Water Line Extension Work have been developed for this Project. The design is referenced in Section A.5 of Permit #C-3702-19.0 and include a Vermont licensed professional engineer signature of review for the PWS extensions as required in IROCP § 35-505 (4)(b). The Permit also provides a summary description of the proposed modifications, and extension to the PWS system. The design referenced in Permit #C-3702-19.0 can be found in Attachment B and at the offices of the Town of Bennington. The proposed Water Line Extension Work for Bennington is divided into three bid packages, as specified in the approved design.

4.0 Waste Management Plan

All excess excavation materials generated during this project must be managed in accordance with a plan approved by ANR. For purposes of waste management planning, all soils and groundwater within CAA II OU A will be assumed to contain PFOA, PFOS, PFHxS, PFHpA, and PFNA at levels that could cause groundwater to have combined levels at or above the Vermont Groundwater Enforcement Standard for PFOA, PFOS, PFHxS, PFHpA, and PFNA.

An approved waste management plan must be in place before construction of the waterlines can take place. Evaluation of final options is ongoing. Currently, up to approximately 20,000 cubic yards of excess soils may be generated from this project. Locations to place excess soils are limited to areas within CAA II OU A and CAA II OU C (areas where waterlines are to be installed), permitted disposal facilities that can receive PFOA, PFOS, PFHxS, PFHpA, and PFNA-containing soils, or other locations approved by ANR. Keeping these excess soils within CAA II OU A or CAA II OU C is considered acceptable for the following reasons:

- PFOA, PFOS, PFHxS, PFHpA, and PFNA levels in soils are not a direct contact concern. All of the soil samples collected to date beyond the footprint of the former Water Street building, were significantly below the Vermont Department of Health Advisory level of 300 ug/kg for PFOA, or part per billion (ppb), for human direct contact. Therefore, PFAS containing-soils within CAA II OU A are not a direct contact issue.
- Soils within CAA I OU A are presumed to contain PFOA and other PFAS at levels that can impact groundwater to levels above Vermont groundwater standards.
- PFOA, PFOS, PFHxS, PFHpA, and PFNA is already present in groundwater and the potential human exposure pathway will be eliminated by the corrective action measures for CAA I OU A and CAA OU C.

The preferred alternative for soils removed during water line installation is to put these soils back into the water line trench. This will occur when soil geotechnical conditions are appropriate for this to happen. When this is not possible, the excess soils must remain within CAA II OU A or CAA II OU C. At this time, one location being considered is on Town Property near the Bennington landfill site on Houghton Lane, which is located within CAA II OU A. This location appears to have the capacity to receive all excess soils expected to be

generated from CAA II OU A. However, a soil management plan for this, or any location, has not yet been submitted to ANR for review and approval.

In addition, it is possible that the permittees and their contractors could identify in their waste management plan(s) other potential permanent and temporary locations to receive excess soils. However, such locations must be approved by ANR prior to moving soils to these locations.

Groundwater may be encountered during the installation of the water lines and it is possible that the excavated trenches for the water line will need to be de-watered. If de-watering is needed, the waste management plan must address how the water will be managed and will not make site conditions worse. Possible management options including re-charging the water in areas where the water was removed or storing the water in tanks for treatment (that is, remove PFOA, PFOS, PFHxS, PFHpA, and PFNA using carbon canisters) prior to discharge. Any management or discharge of groundwater must comply with the applicable requirements.

At this time, no “other” contamination (besides PFAS) is anticipated to be encountered. However, an environmental assessment is being performed by MSK’s environmental consultant to assess if there are locations where “other” contamination, such as petroleum contamination, may be present. If “other” contamination is identified or suspected as a result of the environmental assessment and subsequent investigation (if warranted) or during the construction of the Water Line Extension Work, then applicable rules and procedures, including the IROCPR and the VT DEC document “Guidance for Construction of Public Works Projects,” effective date March 2002, must be followed in addressing the “other” contamination present within a given reach of waterline work.

5.0 Implementation Schedule

Construction of the Bennington Water Line Extension Work in CAA II OU A is scheduled to begin in July 2019. The current goal is to have all the waterlines in CAA II OU A completed by the end of the 2020 construction season.

6.0 Corrective Action Maintenance Plan

The Town of Bennington water system is responsible to maintain their water system per their respective operating permits, and all other applicable requirements, to ensure that they are providing water to their users that meet the requirements of the Federal Safe Drinking Water Act and the Vermont Water Supply Rule. Once the construction of the water line extensions is completed, the water system is required to obtain an amended PWS permit to operate and provide an updated operation and maintenance manual to account for the expansion of their systems.

7.0 Institutional Controls

As specified in the Consent Order, the groundwater within CAA II, following the completion of the municipal water line extension work, will be reclassified as Class IV non-potable groundwater in accordance with the IROCPR and state groundwater protection rules.

8.0 Quality Assurance and Quality Control (QA/QC) Plan

The QA/QC requirements are included in the design plans and technical specifications for the project.

9.0 Proposed contractors and subcontractors

At this time, the contractors to construct the water line have not yet been selected. The Request for Proposals (RFPs) for the Water Line Extension Work in CAA II OU A were issued in May 2019. Contractor selection is scheduled to occur in late June 2019, with work to begin sometime in July 2019.

10.0 Corrective Action Completion Report

As indicated in Section 2 (Performance Standards), there is a condition in the PWS construction permit requiring stamped and signed record drawings and a letter certification by the licensed professional engineering firm responsible for observation of construction to be submitted to the Secretary for review and verification.

11.0 Public Notice

Attachment C contains the public notice that will be sent to individuals located within CAA II OU A using the mailing lists that the MSK Engineering used to notify property owners about their interest to be connected to a PWS. A copy of this CAP will be electronically posted for 30 days for public comment.

[Figure 1](#) Map showing Proposed Waterline Extension within Corrective Action Area II
[Attachment A](#) Public Water System Construction Permit Project C-3702-19.0
[Attachment B](#) Approved Design Plans for Water System Construction-Project C-3702-19.0
[Attachment C](#) Public Notice (see below)

