

**Somersworth Landfill**  
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The Somersworth Sanitary Landfill site is located in the central portion of Somersworth, approximately one mile to the southwest of the City proper. The 26-acre former waste disposal area is situated entirely on land owned by the City of Somersworth. The landfill is adjacent to, and within approximately 400 feet of, Peter's Marsh Brook, a secondary tributary of the Salmon Falls River, which serves as a water supply to Somersworth and Berwick, Maine.

The City has owned and managed the operation of the site since the 1930s. The landfill accepted municipal and industrial refuse for on-site disposal between the mid-1930s and 1981. Wastes deposited in the landfill included municipal trash, industrial wastes, and chemical wastes. Groundwater quality studies initiated at the site in 1980 indicated that the groundwater beneath the site was being contaminated by VOCs leaching from the landfill.

The site was placed on the National Priorities List in September 1983. During the course of the Remedial Investigation, it was found that organic contamination of groundwater and surface water existed in the area.

The Potentially Responsible Parties (PRPs) signed an Administrative Order to conduct the Feasibility Study (FS) under EPA and NHDES supervision. The FS was completed in December 1993. EPA signed the Record of Decision (ROD) in June 1994. The major components of the preferred alternative described in the ROD are: (1) the installation of a permeable, "chemical treatment wall (CTW)"; (2) the extraction of bedrock groundwater with discharge to an infiltration gallery up-gradient of the treatment wall; (3) the installation of a permeable cover while the CTW is functioning; and (4) the evaluation of the need for an additional cover at the time of final closure.

A pilot-scale CTW was constructed in 1996 utilizing a steel caisson to facilitate the removal of soils and placement of the wall materials. Constructability issues that became apparent as a result of the pilot study supported further evaluation of construction methods. A second pilot wall was constructed in November 1999 utilizing bio-slurry trenching technology. Construction methods and performance evaluations were considered and modifications made, as appropriate, to the full-scale installation. In September 2000, construction of the full-scale CTW was completed.

The infiltration gallery, where extracted bedrock groundwater is discharge up-gradient of the treatment wall, was built concurrent with the permeable cover, which was completed during the spring and summer of 2001. Performance monitoring of the treatment wall and associated remedial systems will be considered in the design of a final cover, if a final cover is determined necessary.

As a result of discussions regarding existing, and potential future, reuse of the site, the administrative record was reviewed and consequently found landfill gas monitoring to be

a relevant and appropriate regulatory requirement and a prudent measure to ensure the protection of human health.

Upon installation of perimeter landfill gas monitoring probes, methane levels were found to be in excess of the standard in multiple probes, indicating the potential for off-site migration of gas into nearby homes and businesses. Subsequently, NHDES required the installation of a landfill gas management system (GMS) to mitigate the off-site migration of landfill gases. The GMS was designed and constructed in 2003 and has since successfully captured and vented landfill gases to the atmosphere.

The first Five Year Review report for the site was completed in September 2005 by EPA. The review confirmed that clean up measures implemented at the site continued to protect human health and the environment.

EPA also finalized a Preliminary Close-Out Report (PCOR) in September 2005, which documents completion of all physical, remedial construction activities at the site. EPA and NHDES conducted a pre-final inspection in June 2004, and no outstanding construction items were identified.

The Second Five Year Review, completed on September 23, 2010, concluded that the remedy is protective in the short-term, however, in order to be protective in the long-term, several follow-up actions were identified, including: (1) incorporate previous measures taken to a) control landfill gas, b) address potential future risk posed to recreational users, c) regulatory changes to cleanup standards, and d) land use restrictions into the remedy via a decision document; (2) collect additional overburden groundwater data to confirm that there is no threat of vapor intrusion to residents living near well B-12R; (3) conduct groundwater sampling for inorganics to confirm that concentrations are consistent with background levels; and (4) ensure that the depth of cover materials overlying waste in the City reclaimed area are adequate to prevent exposure risk to recreational users of the site.

EPA finalized a decision document (Explanation of Significant Differences) to incorporate the aforementioned remedy components into the Site Administrative Record in May 2013.

Additional groundwater data and historical information gathered has confirmed that residents living near well B-12R are not being exposed to volatile organic vapors from the contaminated groundwater. Sampling also confirmed that concentrations of inorganics in groundwater are consistent with background levels. Further soil boring investigations performed on the eastern area of the site, formerly reclaimed by the City for recreational use, confirmed that two out of twenty seven sample locations had less than one foot of clean soil cover; consequently, to ensure public safety, additional clean soil was added to these areas during summer 2013.

In 2013, EPA prepared a focused feasibility study to evaluate potential issues and engineering solutions associated with the installation of a solar powered co-generation facility on the landfill. The study concluded that the site is well suited for this purpose

and could be engineered to accommodate the existing remedial components. The Town continues to evaluate this reuse option.

An activity and use restriction (AUR) was prepared by the City in 2014 to ensure that future activities at the site will not pose an unacceptable risk to users. The AUR will allow for the continued use of the landfill and surrounding area for passive recreation, given that new information does not identify an unacceptable risk associated with this use. In addition, the AUR will allow for non-recreational use (e.g., solar powered co-generation), as approved by EPA and NHDES. The AUR was finalized and recorded with the Strafford County Register of Deeds on August 4, 2015.

The agencies approved a temporary shut-down and evaluation of the bedrock groundwater extraction system (hydraulic containment of contamination located in fractured bedrock south of the Site) in 2014. In addition, 2014 groundwater data collected from a section of the CTW identified incomplete mineralization of contaminants after passing through the wall and has prompted the need for further analysis and investigations of this portion of the wall. Consequently, EPA performed an Optimization Review (OR) of the remedy in 2016, intending to evaluate remedial goals; review available site data and the conceptual site model; review remedy performance, protectiveness, cost-effectiveness and closure strategy. Recommendations generated from the OR are intended to help the site team identify opportunities for improvements in these areas.

In summary, the OR findings and recommendations suggested that continued study of the CTW would likely result in additional costs without commensurate benefits and that implementing more aggressive bedrock groundwater remedial measures should continue to be evaluated. The OR suggested proceeding with relatively low cost improvements to the CTW near CTW-20 and then continuing to monitor CTW performance over time. Additionally, the OR recommended continued evaluation of the migration of contamination through bedrock under the CTW and the resulting impacts to the northwest of the CTW. The OR also recommended that the bedrock groundwater extraction system remain shut down for the interim. If concentrations at certain wells continue to increase or remain stable, the OR recommends proceeding to identify contaminant flow paths and incorporating either groundwater extraction from bedrock or enhancing reductive dechlorination.

In fall 2018 the PRPs sampled site monitoring wells for per- and polyfluoroalkyl substances, an emerging group of compounds historically used in nonstick coatings, textiles, paper products, firefighting foams, and many other products. Sampling results have confirmed the presence of PFAS within the Groundwater Management Zone (GMZ) at the Site. Combined concentrations of PFOA and PFOS, the two regulated compounds within a larger family of compounds, range from non-detect to 258 ng/L (parts-per-trillion). A second and expanded round of sampling is planned for spring 2019 that is intended to confirm that PFAS concentrations in groundwater do not exceed applicable standards at or beyond the GMZ. Public water is provided to all properties bordering the GMZ and no water supply wells (private or public) exist within 1000 feet of the GMZ.