

State of the Art Site Characterization Helps Speed Redevelopment in Vermont's Precision Valley

Although our current economy is largely built upon the bucolic landscapes that surround our cities and towns, the industrial revolution left its mark on Vermont. Vermonters have manufactured everything from rifles to sewing machines. Due to the topography of our state, mills sprang up in valleys along our rivers to use the free hydro power they provided. Often, these mills were located near the hearts of our downtowns and nearby residential neighborhoods. In Springfield, Vermont – commonly known as the “Precision Valley” – machine production was king through the latter half of the 20th century. Quite literally, the Jones and Lamson, Bryant Grinder, Lovejoy Tool, Parks Woolson, and Fellows Gear Shaper companies made the machines that made the machines of war and the tools that fueled the postwar economic expansion throughout the latter half of the 19th and 20th centuries. The old mills that these companies occupied reside along the Black River and through the downtown area of Springfield. Today, the relics of these mills often provide a painful reminder to the community that good jobs that once were plentiful have left, leaving behind the burden of a myriad of environmental issues and dilapidated buildings.

In spite of the changing economy, the independent and entrepreneurial spirit of Vermont has resulted in a proliferation of diverse and lively small businesses which have kept Vermont's unemployment rate well below the national average during hard times. To thrive, this diverse economy – based on small business – needs fewer roadblocks to development. Fortunately, organizations such as the Springfield Regional Development Corporation (SRDC) and the Southern Windsor County Regional Planning Commission (SWCRPC) see the former machine tool buildings as assets in growing new jobs in the precision valley and are using the Federal Brownfield Program to remove roadblocks to economic growth. Redevelopment projects which seek to replace the economy of the 19th century with that of the 21st century

are currently underway on several of the former machine manufacturing facilities, including the former Fellows Gear Shaper Facility which will become, in part, the Springfield Health Center.

In 2010, Stone teamed with SRDC, SWCRPC, and specialty subcontractors to initiate assessment and redevelopment planning at the former Bryant Grinder facility. The site consists of a 16.2 acre parcel containing one large former manufacturing building, two warehouses and four sheds, which were constructed in stages between 1909 and 1977 and are currently vacant. Bryant Grinder operated as a machine manufacturer from 1909 through 2002 during which it received, used, and produced various hazardous materials, including cutting oils, cooling fluids, petroleum and chlorinated solvents, paints, #6 fuel oil, and various metals. Additionally, as the building was built in stages in response to production growth spurts, hazardous building materials, including lead based paint and asbestos, were used in its construction. Prior environmental assessments of the site and nearby properties suggested that past use of these materials has resulted in unreported releases of hazardous materials to the environment.



The Membrane Interface Probe (MIP) provides real-time data to assess source zones and plume cores.

With the liability protections afforded through the All Appropriate Inquiry provision of CERCLA and the VT DEC's Brownfield Response and Environmental Liability Limitation Act

(BRELLA) program, SRDC purchased the property in 2010 following the completion of a Phase I ESA by Stone. SRDC intends to rehabilitate the building for sale or lease in keeping with its mission to bring jobs back to Springfield. During the Phase I ESA, several recognized environmental conditions (RECs) were identified by Stone and a Phase II ESA was recommended to determine whether these RECs constituted a release of hazardous materials to the environment.

The Phase II ESA was performed under a Hazardous Assessment Grant provided to the SWCRPC by the



Stone field staff performing dynamic soil gas investigation.

United States Environmental Protection Agency (US EPA) to generate environmental data to assist in redevelopment of the Property. Stone designed the Phase II ESA to occur in two stages to enable near term redevelopment of a portion of the property in light of funding limitations. The overall objectives of the Phase II ESA were to assess certain key RECs identified in Stone's Phase I ESA and to evaluate the risk of future occupants being exposed to contamination within the proposed redevelopment area. Specifically, the Phase II ESA sought to:

- Identify where volatile organic compounds (VOCs) were potentially released to the environment in the vicinity of the main building and evaluate the risk of intrusion of VOC vapors into the building;
- Characterize groundwater quality at the Site;
- Assess whether polychlorinated biphenyls (PCBs) are present in Site building materials;
- Determine whether past potential use of PCB-laden cutting fluids and storage of machine cutting waste (a.k.a. "chips") within the western ally resulted in a release to the environment;
- Establish whether asbestos-containing building materials (ACM) and/or lead based paint (LBP) are present within the main building; and
- Inventory and characterize the contents of over 270 containers within the building to determine appropriate disposal options and associated costs.

The Phase II ESA utilized Stone's high-resolution site characterization (HRSC) techniques to assess the

presence of contaminants in the environment, the impacted media, the magnitude and extent of the releases, and potential impact to receptors. In doing so, Stone performed the following investigation elements:

- A comprehensive sub-slab soil gas investigation coupled with Stone's MobiLab onsite volatile organic compound (VOC) laboratory to provide near real-time analytical results to field staff to guide delineation efforts.
- Vertical profiling along the downgradient property boundary using Stone's Membrane Interface Probe (MIP) to identify zones of contaminant migration from the Site. Stone followed this effort with the installation of traditional groundwater monitoring wells installed by Platform Environmental Drilling and Remediation within contaminant zones to provide concentration data for comparison against previous results and regulatory criteria.
- Hazardous Materials assessment including:
 - A targeted assessment for PCBs in concrete and building caulks.
 - Assessment and inventory for asbestos containing materials.
 - Assessment and inventory for lead based paint.
 - Inventory and characterization of unknown containers present within the site building.

The Phase II ESA identified chlorinated and petroleum VOCs in soil gas and groundwater and PCBs, asbestos, and lead-based paint within materials of the main building at concentrations that require abatement/mitigation prior to redevelopment of the Property for commercial use. In 2013, Stone returned to the Site to perform remaining assessment activities including PCB assessment of remaining areas and TCE source area delineation and to initiate pilot testing for a Vapor Intrusion mitigation system. Using the HRSC techniques for this Phase II ESA, the Stone Team is in a position to assess remedial options to support redevelopment decisions for the property owner at a time when, if traditional techniques were used, uncertainties would have been far too great to begin thinking of remedial design



STONE ENVIRONMENTAL INC

535 Stone Cutters Way
Montpelier, Vermont
05602 USA

Phone / 802.229.4541
Fax / 802.229.5417
Web Site / www.stone-env.com