351 Pine Street Phase I / II Environmental Site Assessments and Remedial Planning

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Services / Expertise
Phase I ESA ASTM E1527-13
Phase II ESA ASTM E1903-11
Brownfield Redevelopment
High Resolution Site Characterization
Coal Tar DNAPL
Petroleum LNAPL
Urban Soils
QAPP
Health & Safety Plan
RCRA Compliance

Markets
State Government
Commercial Property Owner

Project Location
Burlington, Vermont

Date Completed
2012 - Present

Project ID#
12-207 / 16-159

Project Manager
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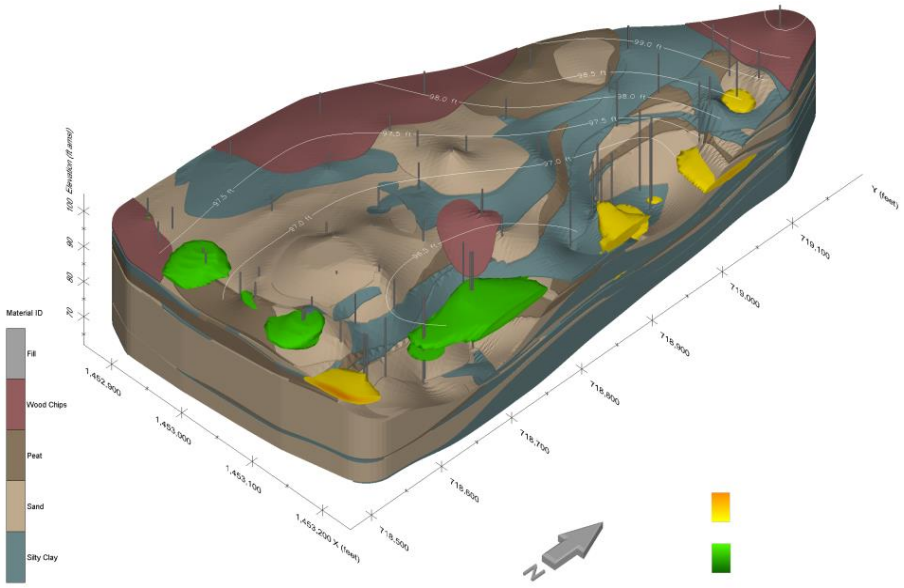

Three-dimensional visualization of the extent of coal tar (yellow) and petroleum (green) contamination at the 351 Pine Street Property. Subsurface geologic units are shown in brown, red, and blue, with the upper urban fill material removed for visual clarity.

STARTING in 2012, Stone Environmental, Inc. (Stone) performed a Phase I/II Environmental Site Assessment (ESA) of a former rail yard at 351 Pine Street in Burlington, Vermont, a Site slated for redevelopment as part of the City of Burlington's Railroad Enterprise Project and relocation of a portion of the Burlington Railyard. The Phase II ESA was performed with several funding sources, including private, a Brownfields Hazardous Assessment Grant, and VT DEC Petroleum Cleanup Funding. The fieldwork component of the project included:

- 50 Tar-Specific Green Optical Screening Tool (TarGOST®) profiles to evaluate the nature and extent of coal tar and fuel oil non aqueous phase liquids (NAPL) adjacent to the Pine Street Canal and within a former canal slip that extends onto the Site.
- Installation of eight groundwater monitoring well couplets to assess Site groundwater quality and hydraulic head distribution.
- Temporary installation of drive-point groundwater sample tooling at eight additional locations, with multiple vertical sample intervals for each location, to assess groundwater quality.
- 30 soil borings to assess soil quality and direct contact exposure risk to contaminants for current and future Site users.
- Waste profile determination for approximately 800 cubic yards of stockpiled soils; and
- Interpretation of the geological and analytical results, which were used to compile a detailed, 3-dimensional model of the Site.

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During the Phase II ESA, Stone identified isolated pockets of coal tar and petroleum NAPLs within the former canal slip and along the Site's southern property boundary, widespread surface soil contamination with polycyclic aromatic hydrocarbons (PAHs) and several metals, and remnants of a petroleum groundwater plume related to past Site use.

In 2015, Stone implemented an ongoing groundwater monitoring program to assess temporal trends in groundwater quality, distribution of petroleum and coal tar NAPLs, as well as hydraulic head. Stone completed an Evaluation of Corrective Action Alternatives (ECAA) and Corrective Action Plan (CAP) in 2018 that included the design of engineered barriers for reuse as a parking lot, design of a stormwater management system, and long-term hydraulic and groundwater monitoring. The parking lot and stormwater infrastructure was constructed under the supervision of Stone, between August 2019 and July 2021 and long-term monitoring is ongoing. Monitoring results indicate that construction activities have not resulted in the mobilization of coal tar or petroleum contaminants. We anticipate that Vermont Rail Systems will receive a Certificate of Completion in 2023 as an enrollee in Vermont's Brownfields Reuse and Environmental Liability Limitation Program (BRELLA).

Throughout the project, Stone participated in the VT DEC's Brownfield Economic Revitalization Alliance (BERA) pilot program for the Railroad Enterprise Project. This program is designed to tackle brownfield sites that are high profile and include complex contamination and legal issues by convening key stakeholders and regulatory decision-makers from very early on in the process. For this project, the BERA program convened the property owner, the City of Burlington, The Chittenden County Regional Planning Commission, the Vermont Agency of Transportation, US EPA, VT DEC Sites Management and Stormwater Sections, and Stone. Stone presented findings at BERA Team meetings and public meetings.

Stone's work has substantially increased the Project Team's understanding of the Site, and has provided the data necessary for progress towards corrective action planning and concept redevelopment plans.