

Corrective Action Plan
Long Falls Paperboard
161 Wellington Road
Brattleboro, Vermont 05301



EPA RFA 19093
Vermont DEC Site #2018-4828

February 2, 2021

Prepared For:
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LEE #18-122



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1.0 EXECUTIVE SUMMARY

LE Environmental LLC of Waterbury, Vermont (LEE) prepared this Corrective Action Plan (CAP) for Long Falls Paperboard, 161 Wellington Road, Brattleboro, Vermont (Site, Brattleboro Town Parcel ID# 00080026.000, Vermont Department of Environmental Conservation (DEC) Site #2018-4828). The property consists of a 39.52-acre parcel with an active paperboard manufacturing facility, at the north end of Wellington Road in Brattleboro, Vermont (see Appendix A). Long Falls Paperboard began operating on the Site in late 2018, and continues to operate as of the date of this CAP.

Historically, the Site has been used for paper manufacturing since 1960. Contaminated environmental media are present at the Site, including wastewater holding basin sludge, shallow and deep soils. A Phase I Environmental Site Assessment (ESA), a Phase II ESA, and a Corrective Action Investigation were completed in the last 24 months.

The corrective action strategy recommended in the Evaluation of Corrective Action Alternatives (ECAA), approved by the DEC on December 14, 2020 includes several aspects:

1. The active cleanup is focused on decommissioning the out of service wastewater holding basin and disposing of its contents (sludge and soil liner). The sludge contains detectable Poly and perfluoroalkyl substances (PFAs), polychlorinated biphenyl products (PCBs), dioxin, and metals.
2. Shallow soils near the railway spur and railway line are impacted with polycyclic aromatic hydrocarbons (PAHs) at levels above residential soil standards, and below industrial (non-residential) soil standards. An activity and use limitation should be included in the Certificate of Completion, restricting use of the Site to non-residential uses.
3. Soils in the vicinity of removed underground storage tanks (USTs) are impacted with #6 fuel oil. The fuel oil contamination appears to be stable and there are no identified sensitive receptors. An engineering control (pavement) is already in place. The Certificate of Completion should address the engineering control via periodic inspections, and should include an activity and use limitation restricting excavation in this part of the Site without prior DEC approval.

The current estimate for the cleanup work described in this CAP is \$480,500. The work will be funded using an EPA Brownfields Cleanup Grant and matching funds.



1.1 INTRODUCTION

LE Environmental LLC of Waterbury, Vermont (LEE) prepared this Corrective Action Plan (CAP) for Long Falls Paperboard, 161 Wellington Road, Brattleboro, Vermont (Site, Brattleboro Town Parcel ID# 00080026.000, Vermont Department of Environmental Conservation (DEC) Site #2018-4828). The property consists of a 39.52-acre parcel with an active paperboard manufacturing facility, at the north end of Wellington Road in Brattleboro, Vermont (see Appendix A). Long Falls Paperboard began operating on the Site in late 2018, and continues to operate as of the date of this CAP.

Contaminated environmental media are present at the Site, including wastewater holding basin sludge, shallow and deep soils. A Phase I Environmental Site Assessment (ESA)¹, a Phase II ESA², and a Corrective Action Investigation³ were completed in the last 24 months. The Phase II ESA responded to Recognized Environmental Conditions (RECs) identified in the Phase I ESA report, and included soil, groundwater and sludge sampling and testing. The Corrective Action Investigation included holding basin sludge and soil sampling and testing, and groundwater sampling and testing. A review of relevant background information on vanadium in soil concentrations was conducted, including soils data from various Vermont locations, as well as national data. These data are presented in Section 1.0.

The corrective action strategy recommended in the Evaluation of Corrective Action Alternatives (ECAA)⁴, approved by the DEC on December 14, 2020⁵ included several aspects:

1. The active cleanup is focused on decommissioning the out of service wastewater holding basin and disposing of its contents (sludge and soil liner). The sludge contains detectable Poly and perfluoroalkyl substances (PFAs), polychlorinated biphenyl products (PCBs), dioxin, and metals.
2. Shallow soils near the railway spur and railway line are impacted with polycyclic aromatic hydrocarbons (PAHs) at levels above residential soil standards, and below industrial (non-residential) soil standards. An activity and use limitation should be included in the Certificate of Completion, restricting use of the Site to non-residential uses.
3. Soils in the vicinity of removed underground storage tanks (USTs) are impacted with #6 fuel oil. The fuel oil contamination appears to be stable and there are no identified sensitive receptors. An engineering control (pavement) is already in place. The Certificate of Completion should address

¹ LE Environmental, December 12, 2018.

² Stone Environmental, October 2019.

³ LE Environmental, August 14, 2020.

⁴ LE Environmental, November 18, 2020.

⁵ Appendix B.



the engineering control via periodic inspections, and should include an activity and use limitation restricting excavation in this part of the Site without prior DEC approval.

Several other RECs identified in the Phase I ESA were evaluated during the Phase II ESA and the Corrective Action Investigation, and were determined to not pose risk to human health or the environment. These therefore are not in need of consideration for corrective action and are described in Section 2.0.

2.0 SITE HISTORY AND UPDATED CONCEPTUAL SITE MODEL

Twelve RECs identified in the Phase I ESA were evaluated during the Phase II ESA and the Corrective Action Investigation. The following excerpt is from the Phase I ESA Report:

The property was undeveloped and in agricultural use until 1960. The first building (main plant) was constructed in 1960-61. Additions to the building were made in 1967, 1973, 1974, 1978, 1982, 1988, and 1996. The 1893, 1935 and 1954 USGS maps show no development on the property. The only adjoining development was the railway line. A 1951 air photo shows the property was cleared and undeveloped at that time, except for indications of excavation activity along the north end of the property. Adjoining properties appear to be in agricultural use. Excavation appears at the WSWMD landfill site. The 1958 property survey shows the property undeveloped except for an overhead electric line. Historically, the town land records indicate that the property was owned by a succession of individuals through 1958, and then BDCC acquired the property for development as a paper mill. The property was sold by BDCC in 1960, and was owned by a number of corporate entities until late 2018 when BDCC re-acquired the property.

The outcome of the Phase II ESA was that most of the RECs identified in the Phase I ESA did not have significant subsurface contamination associated with them. The Corrective Action Investigation followed up on recommendations of the Phase II ESA, and the following conclusions were made.

1. Soil testing indicates no contamination above residential screening levels in the sandy soils surrounding the holding basin lagoon. This suggests that overtopping in the past was not a frequent or significant occurrence.
2. Holding basin sludge testing indicates the presence of dioxin, PCBs, metals and PFAs. The reported PFA concentrations in the sludge are 1-2 orders of magnitude less than the DEC's residential soil standard; however, their presence at any concentration in waste sludge will influence the available disposal options. Metals are present at concentrations above I-Rule residential soil standards. Samples showing elevated concentrations of metals, including lead, cadmium and mercury, were evaluated using Toxicity Characteristic Leaching Procedure (TCLP) methods, and the results indicate



the sludge is non-hazardous for metals concentrations. PCBs above 1 ppm were detected. Dioxin was detected in the sludge at concentrations above I-Rule residential soil standards.

3. Groundwater PFAs concentrations are uniformly below state standards.
4. Results of the background vanadium soil review indicate that vanadium concentrations in Site soils are not abnormally elevated with respect to other locations, and are toward the low end of reported concentration ranges at other Vermont locations.⁶

The sources of the releases at the Site and their current status are summarized in the following table.

REC identified in Phase I	Phase II / CA Investigation Results	Recommendation
1. Historic #6 Fuel Oil Release	#6 fuel oil remains, but no impact to sensitive receptors	No further action. Address via engineering & institutional control.
2. Potential contamination from historic gas and diesel USTs	No evidence of a gasoline release except possibly naphthalene and MTBE in production wells, and no evidence of a diesel fuel release that impacts groundwater.	No further action. Production wells are for process water and are not used for potable water.
3. On-Site Paper Manufacturing	Historically detected chlorinated solvents in groundwater have dissipated. PFAs are present in some soil and groundwater samples at levels below standards. Vanadium present in soil above standards. Dioxins were present but below standards except in the wastewater holding basin. PCBs were present in the holding basin.	-Remove sludge and contaminated soil from the holding basin. -Vanadium appears naturally occurring based on an evaluation of available data. No further action. -PFA concentrations in groundwater confirmed to be below current groundwater standards. No further action, abandon monitoring wells.
4. Sumps and Floor Drains	Historically detected solvents have dissipated. No other releases.	No further action.
5. Equipment yard	Evaluated, no releases noted.	No further action.
6. Abandoned drum	Evaluated, no releases noted.	No further action.
7. Filled area north end of property	Evaluated, no releases noted.	No further action.
8. WSWMD Landfill impact to groundwater	Not investigated due to groundwater reclassification to non-potable.	No further action.
9. Active septic system north of plant	Evaluated, no releases noted.	No further action.
10. Abandoned septic system east of plant	Evaluated, no releases noted.	No further action.
11. Adjoining active railway line	Railway related contamination is above residential soil standards and below non-residential standards.	No further action. Address contamination via non-residential use restriction in COC.
12. Adjoining historic printing press	Evaluated, no releases noted.	No further action.

⁶ See Corrective Action Investigation Report, Long Falls Paperboard, Section 13, August 14, 2020.



The following conceptual model was updated with the data generated during the Corrective Action Investigation.

Site Users

Site users primarily include paper company workers, who are indoors for most of the time. Outdoor activities include parking, grounds maintenance, and operation of the water and wastewater plants. Most of the utilized part of the Site is paved or covered by the building. Soil testing results do not suggest that contact risk is present.

Potential Contaminant Sources

The following discussion of contaminant fate and transport was summarized from the 2019 Phase II ESA report and updated to incorporate data from this investigation.⁷

No. 6 Fuel Oil Release and Former Diesel & Gasoline USTs

Petroleum was detected in the soil samples at low levels near the former USTs locations. Free product detected in one well may be unchanged since 1994. No petroleum volatile organic compounds (VOCs) or semi-volatile VOCs (SVOCs) were found in groundwater beneath the former underground storage tanks (USTs). Naphthalene was detected in samples collected from both the 'Deep' and 'Shallow' production wells above the Vermont Groundwater Enforcement Standard (VGES) of 0.5 µg/L. Additional SVOCs were detected in each of these samples but well below the respective VGES. MTBE was also detected in each of these samples below the VGES of 11 µg/L. These data indicate that petroleum products may have migrated and/or were hydraulically influenced due to pumping to the production well area and in the absence of a continuing source, are and/or would be expected to decline over time.

General Use of the Property for Paperboard Manufacturing and Potential Releases from Basement Sumps and/or Underground Piping

PFAs were detected in soil and groundwater at concentrations below current standards. PFAs have been used historically in paper coatings, among other uses, and have been detected in the facility wastewater treatment liquid effluent in December 2018 as well as the sludge samples. Some PFAs can adsorb to material with high organic content, but in general, they tend to move with groundwater.

⁷ Stone Environmental, 2019.



Vanadium is a naturally occurring mineral and background concentrations due to bedrock chemistry may be elevated. Vanadium was detected in all soil samples at concentrations above the Vermont Soil Standard (VSS) resident standard, but, except for sample collected from the wastewater treatment plant holding basin, were below the VSS non-resident standard. Vanadium was also detected in five of the eleven groundwater samples, up to 11 ug/L; there is no VGES for vanadium in groundwater. There is no known use for vanadium at the Site.

Total lead, manganese, and arsenic were each detected in more than one groundwater sample at concentrations above the VGES. The most likely source of these metals is turbidity in the groundwater samples.

Dioxins were detected in subsurface soils at concentrations well below 2,3,7,8-TCDD TEQ VSS standard. Dioxin was present in holding basin sludge but not in groundwater.

Impacts from the Adjacent Railway Line

PAHs were detected in shallow soil along the railway line at concentrations below the DEC non-residential shallow soil standard. No herbicides were detected in soils along the railway line. PAHs have a high affinity for soils and are not expected to migrate beyond shallow soils in this area.

Wastewater Holding Basin

The wastewater holding basin is a clay-lined containment vessel that was formerly used to store overflow process water until treatment could take place. A shallow sample and its duplicate were collected from the center of the holding basin during the Phase II ESA (IP-06-0.5 and IP-06-0.5-FD). Four additional sludge samples were collected for disposal characterization testing during this Corrective Action Investigation. A summary of updated sampling findings is included in Section 12.

Structural Information

The property hosts an approximately 200,000 square foot paperboard manufacturing plant. The plant obtains pulp and recycled paper from outside sources and produces 7-ply hard stock finished product. The property also includes the following other structures:

- A wastewater treatment plant for process water: The wastewater treatment plant includes four aerated treatment lagoons and a clarifier. The lagoons



are approximately 160 feet wide each and are oriented parallel to the Connecticut River.

- A water filtration plant for process water: The sand filter house is a single-story cement block building approximately 20 feet wide and 40 feet long. It was built in 1996 to treat process water from the river. It houses a disinfection unit (sodium hypochlorite) stored in a vertical aboveground storage tank, and six large steel tanks containing sand for filtration.
- An agricultural field that has been leased to area farmers in the past.
- The property is on the DEC's Underground Storage Tank (UST) registry and has two active 25,000-gallon #6 fuel oil USTs. The plant's primary heating source is compressed natural gas and fuel oil is a backup source of heat for the plant. Five USTs were also documented as being removed in 1988 and 1990.

Wetlands and Surface Water Bodies

No surface water bodies or wetlands are present on Site. The 2019 Phase II ESA report indicates that impact to the Connecticut River from identified contaminant sources is not taking place.

Public and Private Water Supplies

The Site and surrounding area are served by a municipal water supply system. There are two on-Site water wells for paper production that have low levels of MTBE and naphthalene in them. The water is not for potable purposes and does not impact Site users.

Utilities

Public utility corridors in the vicinity of the Site include buried water, sewer, and storm drain lines. The 2019 Phase II ESA report findings do not suggest that public utility corridors are at risk from the contamination.

Exposure Pathways

Based on the findings of this corrective action investigation, it does not appear that there are complete exposure pathways that would result in significant human exposure to petroleum or non-petroleum contamination, except within the holding basin where sludge is exposed at the ground surface. Site users or others do not normally access the holding basin.



3.0 PUBLIC NOTICE

The following is a table summarizing the property and adjoining property owners.⁸ The adjoining property owner’s map in Appendix A depicts the locations of these properties.

Property Address	Tax Map ID	Property Owner	Owner’s Address	Contact information
153 Wellington Road	0080041.000	Green Mt. Power Corp.	2152 Post Road Rutland, VT 05701	(802) 649-2877 JohnGreenan@greenmountainpower.com
22 Browne Court	00080035.000	BDCC	76 Cotton Mill Hill Brattleboro, VT 05301	(802) 257-7731 info@brattleborodevelopment.com
89, 109, 111 Glen Orne Drive	0080006.000	L&S Associates	PO Box 821 Brattleboro, VT 05302	(800) 628-1173 email not found
327 Old Ferry Road	00080022.1	Windham Solid Waste Management District	327 Old Ferry Road Brattleboro, VT 05302	(802) 257-0272 admin@windhamsolidwaste.org
Old Ferry Road	00080025.000	Martin Johansen Sr.	21 Homestretch Drive Hinsdale, NH 03451	Not found
Wellington Road	00080042.000	Boston & Maine Railroad	Iron Horse Park High Street North Billerica, MA 01862-1676	(978) 663-1218 email not found

4.0 PERFORMANCE STANDARDS

A. Corrective Action Objective

The Corrective Action Objectives outlined in I-Rule Section 35-603 include, in order of priority:

1. Treatment of environmental media;
2. Removal and disposal of environmental media;
3. Engineering and other controls to contain hazardous materials and mitigate impacts; and
4. Use of institutional controls to mitigate exposure.

The identified areas of environmental concern (holding basin, soils proximal to the railway, and soils with #6 fuel oil contamination) were evaluated with reference to these Corrective Action Objectives. The following conclusions were made.

⁸ Information from Town of Brattleboro Tax Maps.



- Three remedial options for the holding basin sludge were considered and ranked to arrive at a remedial recommendation, using the ten evaluation criteria presented in Section 35.604 (D) (1-10) of the DEC's 2019 Investigation and Remediation of Contaminated Properties Rule. Based on the evaluation of cleanup alternatives, Alternative 3: Off-Site Sludge and Soil Disposal and Re-grading, is recommended. This alternative is technically and economically feasible, and results in no need for an environmental easement for residual sludge. This recommendation is most closely aligned with I-Rule Corrective Action Objective 2.
- Soils proximal to the railway are contaminated with PAHs at concentrations above the residential soil standards, and below the industrial (non-residential) soil standards. In light of the Site's ongoing use for non-residential purposes (paper manufacturing), the relevant non-residential soil standard is not exceeded, and no further assessment or cleanup is required. An activity and use limitation should be included in the Site's Certificate of Completion restricting future use of the Site to non-residential uses. This recommendation most closely aligns with I-Rule Corrective Action Objective #4.
- Soils in proximity to the removed #6 fuel oil USTs are petroleum contaminated. The Phase II ESA confirmed the findings of earlier (1990's) studies that the fuel oil is immobile and that there are no sensitive receptors or environmental impacts except to soil. Previous remedial cost estimates have indicated that cleaning up the fuel oil contamination (either by in-situ treatment or by removal) would approach or be in excess of \$1mm. Therefore, in light of the lack of impact to sensitive receptors, an engineering control (pavement) and an institutional control (restriction on excavation) would be sufficient to protect the environment and human health from this contamination. This recommendation most closely aligns with I-Rule Corrective Action Objectives #3 and #4.

B. Environmental Media Standards

Environmental media standards applicable to this Site include soil quality standards and groundwater standards. The Phase II ESA determined that groundwater quality was not impacted above applicable standards. Re-sampling for PFAs was recommended due to detection of PFAs, and re-sampling was performed during the Corrective Action investigation, which confirmed the original findings. The relevant standards are outlined in Table 4-1.

The holding basin sludge is 1-2' thick and there is a thin 4-6" thick silty clay liner beneath the sludge. Both the sludge and liner will be removed during excavation. Soils beneath the holding basin will be tested following the sludge and soil liner removal to verify that sufficient excavation has taken place. Contaminants of concern in the sludge that will be tested for in residual soils included PFAs, dioxin, PCBs, and metals.



Table 4-1 Contaminant Concentrations in Excess of Regulatory Standards

Compound	Media	Locations	Concentrations	2019 I-Rule Standard (mg/kg)
PFAs	Soil	Holding basin ⁹	The soils below the holding basin have not been tested. The sludge contains PFAs at concentrations less than the residential VSS, dioxin TCDD TE above the residential VSS, PCBs, lead, cadmium and mercury above the residential VSS	1.22 (residential) 14.36 (non-residential)
Dioxin				2.25 x 10 ⁻⁶ (residential) 1.37 x 10 ⁻⁵ (non-residential)
PCBs				0.114 (res) 0.68 (industrial)
Lead				400 (residential) 800 (non-residential)
Cadmium				6.9 (residential) 87 (non-residential)
Mercury				3.1 (residential and non residential)
PAHs		Railway vicinity	0.122-0.590 mg/kg (slightly exceeds urban background)	0.58 (urban background) 0.07 (residential) 1.54 (non-residential)
#6 fuel oil	UST vicinity	Free Phase Present at MW-16	Detection >0.01' thick is reportable per I Rule 35-102 (4).	

C, D, E. Compliance Point Map, Explanation and Justification

The area of proposed active remediation will be the holding basin lagoon. A map showing the proposed excavation area is included in Appendix A. Compliance point testing will be performed, consisting of sampling and testing of soil samples from beneath the holding basin lagoon. The assumed area of sludge coverage based on visual observations is 6,520 square feet below the 295' elevation contour as shown on the map in Appendix A (approximately 130' long and 50' wide). The compliance sampling will be performed on two sampling schedules:

- For dioxin and metals, four confirmation soil samples will be collected at approximately 25' intervals across the bottom of the excavated area. The proposed cleanup levels are the I-Rule non-residential soil standards.
- For PCBs, because two of six sludge samples were reported to have PCB concentrations above 1 ppm, the sludge is considered to be PCB remediation waste and a cleanup plan will be required under 40 CFR Part 761.61. Due to the relatively low PCB concentrations and the nature of the cleanup (one source), a Self Implementing Cleanup Plan (SICP) will be developed in accord with 40 CFR Part 761.61(a). The SICP will be developed in accord with EPA's Facility Approval Streamlining Tool (FAST). The SICP will focus on cleanup of the sludge and attainment of an appropriate cleanup level in the underlying soils. LEE recommends that the I-Rule non-residential soil standard of 0.68 mg/kg total PCBs be designated as the site-specific cleanup

⁹ Soils beneath the holding basin were not tested during the Phase II ESA or the Corrective Action investigation and will be tested following waste removal.



level for this Site. This cleanup level is less than TSCA's 1 mg/kg threshold for consideration, and is appropriate in light of the Site's non-residential use.

The goal of the work is to remove contaminated media to the extent necessary to leave this portion of the Site in usable condition for future use with a minimum of restrictions on future use.

F. Estimated Removal Rate and Duration

The quantity of sludge and associated soil waste removal is estimated to be approximately 500 cubic yards based on visual observations of the extent of the waste (horizontal and vertical during soil borings) and engineering CAD calculations based on a site survey. A conservative assumption of the weight of waste is 750 tons. The sludge is visually distinct compared to the soils in the berm and beneath the liner, and visual observation will be the primary means used to gauge the extent of removal. It is expected that the removal of the sludge and liner will take 3-5 days to complete depending on the availability of trucks and roll-off containers.

G. Substantial Completion Standards

Performance standards for demonstrating substantial completion of the work will be removal of waste sludge under manifest, successful completion of confirmation sampling, completion of re-grading, and application of seed and mulch to the Site.

H. Estimate Duration of Active Remediation

Site preparation, excavation, waste removal and transport, confirmation sampling and testing, and re-grading of the Site is anticipated to take one-two months to complete.

5.0 PERMITS

Approval of this CAP by the DEC will be required prior to construction. Approval (or completion of the 30 day waiting period) of a SICP by USEPA Region 1 will also be required. The Town of Brattleboro has indicated that no local permitting will be required for this cleanup.¹⁰

¹⁰ Brian Bannon, Town of Brattleboro, personal communication with Alan Huizenga of Green Mt. Engineering on 12/1/20.



6.0 REMEDIAL CONSTRUCTION PLAN

A. Plans and Specifications

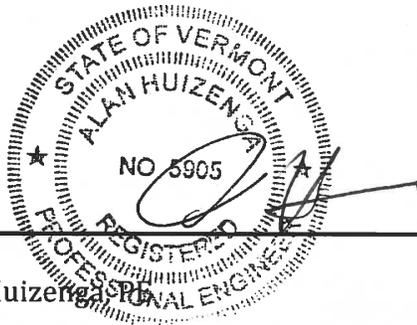
The Holding Basin Lagoon Remedial Plan and Cross Section in Appendix A shows the current and proposed ground contours and a cross-sectional view of the current and proposed configuration, which will be the basis for the cleanup. Prior to construction, BDCC will competitively bid the cleanup work in accord with EPA rules and Brownfields Cooperative Agreement conditions for competitive procurement. Final plans and specifications will be developed with the contractor bid package.

B. Pilot Testing Results

No additional pilot testing was performed.

C. Vermont Licensed Professional Engineer's Signature of Review

I have reviewed this Corrective Action Plan for Long Falls Paperboard, Brattleboro, Vermont, State of Vermont Department of Environmental Conservation Sites Management Section #2018-4828, prepared by LE Environmental LLC on February 2, 2021.



Alan Huizenga, P.E.

7.0 WASTE MANAGEMENT PLAN

An estimated 500 cubic yards (estimated 750 tons) of waste sludge and liner will be excavated, loaded into rolloff containers, and transported to a licensed waste disposal facility. The disposal facility identity is not known yet, because the cleanup work must be competitively bid to comply with EPA Brownfields Cleanup Grant procurement requirements. These are the only waste materials forecast to be generated during the cleanup.



8.0 IMPLEMENTATION SCHEDULE

Competitive procurement for a cleanup contractor can begin upon approval of this CAP by DEC. The following tasks will be required.

1. An amendment to the existing Site-Specific Quality Assurance Project Plan addendum will need to be prepared and approved by USEPA and DEC, to authorize any additional waste characterization sampling and testing that may be required. The specific requirements will not be known until the contractor and a specific disposal facility have been identified. The SSQAPP amendment will also include required confirmation sampling and testing to be performed post-excavation. There is a required 30-day approval period.
2. The SICP will be submitted to USEPA Region 1 TSCA once the identity of the waste disposal facility is known. There is a statutory 30-day review and approval period.
3. EPA regulations and BDCC's cooperative agreement require that the cleanup work be competitively procured. This will require that formal bid documents, including front end documents, construction and disposal specifications, and plans be made available to qualified contractors. Bid periods normally run 3-4 weeks.
4. Designation of apparent low bidder, selection, qualification requirements, and contracting will follow. This process normally takes 2-4 weeks to complete.
5. Mobilization and construction will take place when weather conditions allow. LEE estimates that the mobilization and construction will take less than 4 weeks to complete.
6. Confirmation sampling below the excavation will take place after waste removal and before final Site grading. Normal laboratory turnaround times are 2 weeks from sample submittal.
7. Brownfields Construction Completion Reporting will take place following receipt of confirmation testing results showing adequate removal has taken place.
8. The COC process is currently taking approximately 90 days to complete at the DEC.

Table 8-1 illustrates the projected schedule for completion of the cleanup work.



Table 8-1 Projected Cleanup Schedule-Long Falls Paperboard									
Task	Month								
	Dec 20	Jan 21	Feb 21	Mar 21	Apr 21	May 21	June 21	July 21	Aug 21
CAP Submittal	█								
CAP Approval		█	█						
SSQAPP Approval		█	█	█					
SICP Approval		█	█	█					
Bid Package Preparation		█	█						
Contractor Bid Period			█						
Selection and Contracting				█					
Mobilization				█					
Construction					█				
Confirmation Sampling					█	█			
Completion Reporting						█			
COC Process						█	█	█	█

9.0 CORRECTIVE ACTION OPERATION AND MAINTENANCE PLAN

Upon successful completion of confirmation testing showing adequate removal of contamination, there will be no need for further O&M at the holding basin location. At the #6 fuel oil easement area, annual inspections will be conducted to verify that the pavement remain intact. There are no treatment systems or other active remedial systems to maintain. The inspections will be conducted annually in the spring and will focus on the integrity of the pavement (no large cracks or potholes in pavement). The property owner or their representative will perform the inspections. The institutional control inspection checklist will be submitted annually to DEC.¹¹

10.0 INSTITUTIONAL CONTROL PLAN

Pursuant to §35-901(b) of the I-Rule, an institutional control plan is required for this property. Residual contamination in soil (PAHs near the railway and #6 fuel oil near the USTs) will require perpetual engineering controls (pavement) to remain intact. Future excavations on the Site would require notification to the DEC, and an

¹¹ Checklist currently available at https://dec.vermont.gov/sites/dec/files/wmp/Sites/LUR.annual.inspection.checklist.frm_.pdf



approved Soil Management Plan or Corrective Action Plan would need to be approved by the DEC prior to earthwork disturbance.

The institutional control plan for the Site will be established via Land Use Restrictions within the Certificate of Completion pursuant to I-Rule §35-904. Once corrective action is completed, and the Corrective Action Construction Completion Report is issued, the COC will be recorded in the Town of Brattleboro land records.

11.0 LONG TERM MONITORING PLAN

No long term monitoring is anticipated.

12.0 REDEVELOPMENT AND REUSE PLAN

Continuing use of the property for industrial use is anticipated.

13.0 QUALITY ASSURANCE AND QUALITY CONTROL PLAN

The SSQAPP Addendum amendment described in Section 8.1 will fully describe the QAQC measures to be used during cleanup sampling and testing.

14.0 COST ESTIMATE

The current estimate for the cleanup work described in this CAP is \$480,500. This estimate was generated using common contractor charges for mobilization, erosion control, waste excavation, transport and disposal costs estimates, and an allowance for oversight of the capping process. Transportation and disposal costs were obtained from US Ecology, a licensed hazardous waste TSD contractor. LEE confirmed with US Ecology during preparation of this CAP that the pricing remains valid. It includes an 11% Energy-Insurance-Security Recovery Fee that the waste vendor applies to subtotal charges.

15.0 UPDATED MAPS

The Holding Basin Lagoon Remedial Plan and Cross Section is in Appendix A.

16.0 CONTAMINATION CONCENTRATION SUMMARIES

Executive summaries and contamination concentration summaries from the Phase II ESA and the Corrective Action Investigation are included in Appendix C.



17.0 CROSS SECTIONS

A cross-section view of the proposed site restoration is included on the Holding Basin Lagoon Remedial Plan and Cross Section in Appendix A.

18.0 CONTRACTOR LIST

Due to the presumed hazardous sludge and soil present on the Site a contractor with Hazardous Sites Training according to OSHA, 29 CFR 1910.120 must perform the excavation and soil disposal work. The disposal facility must be licensed to accept the excavated soils. The work will be competitively bid, as described in Section 8.



APPENDIX A

MAPS

Site Location Map

Adjoining Property Owners Map

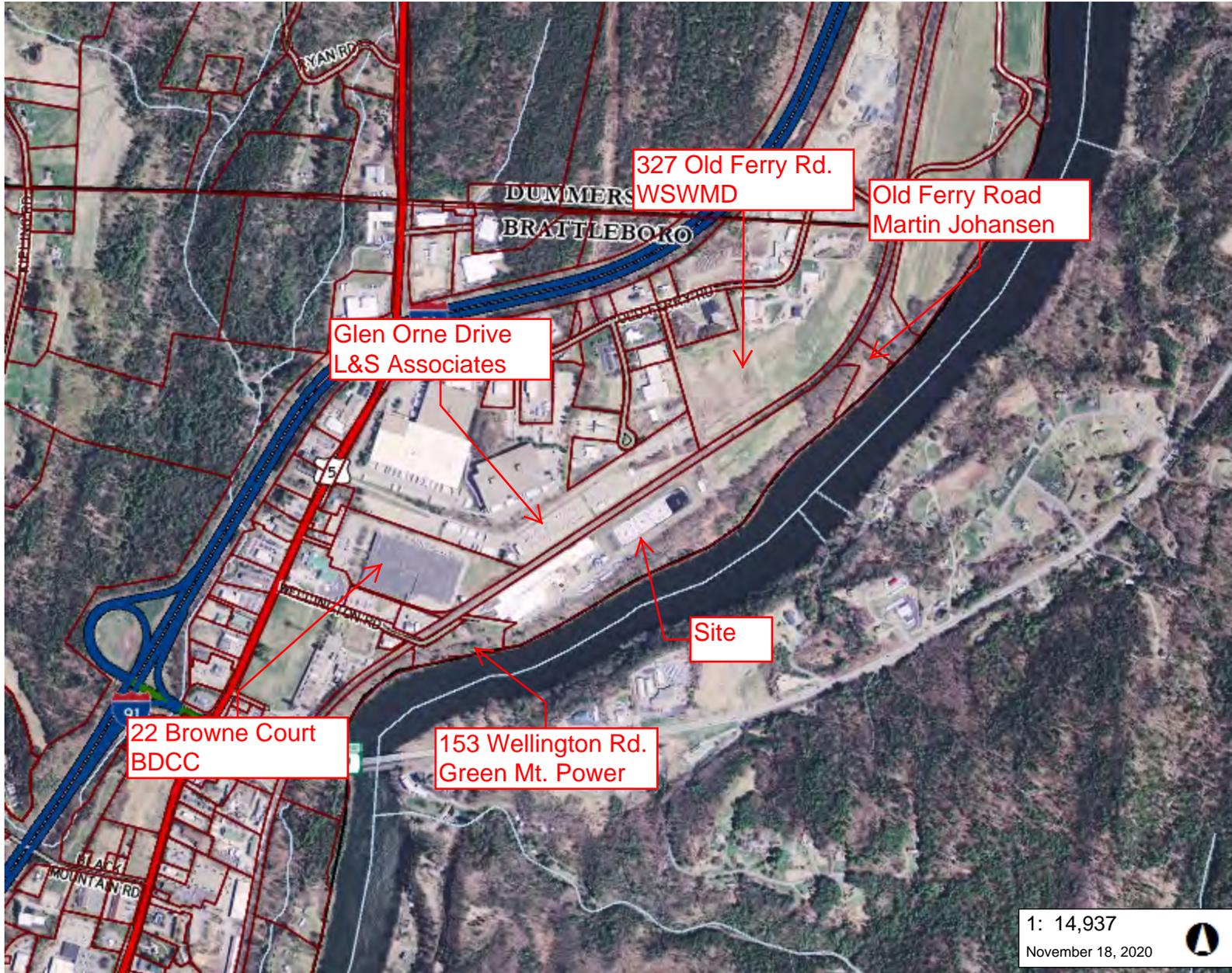
Holding Basin Lagoon Remedial Plan and Cross Section



Long Falls Paperboard
161 Wellington Road, Brattleboro, Vermont


LE-Environmental
LE #: 18-122
Date: March 16, 2020
Source: USGS Store

2018 USGS Map



LEGEND

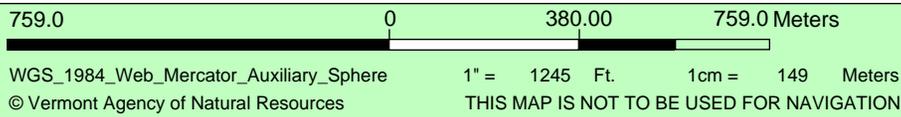
- Parcels (standardized)
- Roads**
 - Interstate
 - US Highway; 1
 - State Highway
 - Town Highway (Class 1)
 - Town Highway (Class 2,3)
 - Town Highway (Class 4)
 - State Forest Trail
 - National Forest Trail
 - Legal Trail
 - Private Road/Driveway
 - Proposed Roads
- Stream/River**
 - Stream
 - Intermittent Stream
- Town Boundary

Long Falls
Paperboard
Adjoining Property
Owners Map

1: 14,937
November 18, 2020

NOTES

Map created using ANR's Natural Resources Atlas



DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

ALTERNATIVE #3: GRADE ACCESS WINDOW INTO THE HOLDING BASIN AS SHOWN TO GAIN ACCESS AND REMOVE 13,040 CF OF SLUDGE. ASSUMED SLUDGE EXTENDS TO 295' CONTOUR AND AVERAGE OF 2' DEPTH. REMOVE MATERIALS FROM SITE AND REGRADE THE AREA TO BE UTILIZED BY THE PAPER MILL AS PROCESS STORAGE SPACE.

WASTEWATER TREATMENT LAGOON

ALTERNATIVE 3 PROPOSED GRADING

ASSUMED AREA OF SLUDGE
6520 SF X 2' = 13,040 CF (481 CY) OF SLUDGE
TO BE REMOVED FROM THE SITE

PROCESS WASTE PIPE

HOLDING BASIN

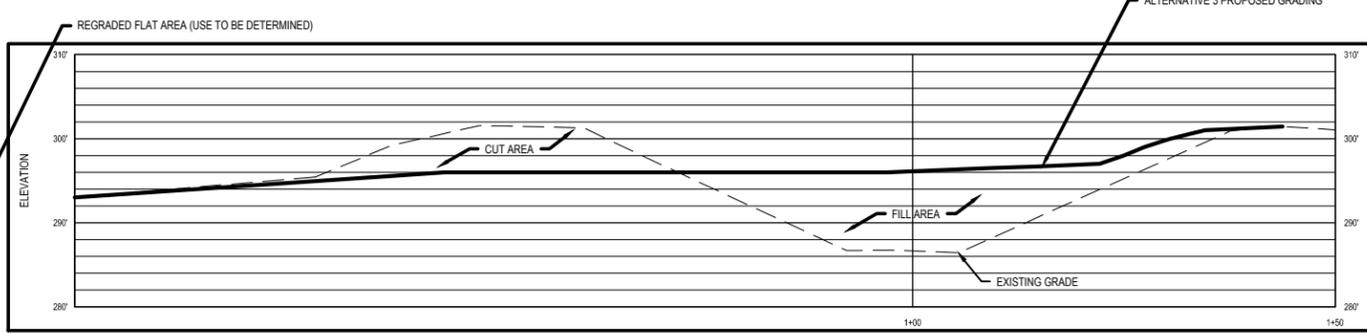
TEMPORARY STOCK PILE AREA

GATE

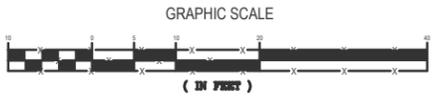
ALTERNATIVE 3 SITE PLAN
SCALE: 1"=10'

- 802' --- INDEX CONTOUR
- 802' --- MINOR CONTOUR
- ||||| RAILROAD TRACKS
- ==== PAVED ROAD/DRIVE
- GRVEL ROAD/DRIVE
- WATER
- - - DRAIN
- UNDERGROUND ELECTRIC
- GAS
- HYDRANT
- MONITOR WELL

Holding Basin Lagoon Remedial Plan and Cross Section



ALTERNATIVE 3- SITE SECTION
H: 1"=10'
V: 1"=10'



REV.	DATE	DESCRIPTION	BY

143 SOUTH BRENDELLE ROAD
WILKESVILLE, OHIO 44094
PHONE: (800) 862-5500
FAX: (800) 862-7598

GREEN MOUNTAIN ENGINEERING
CIVIL WATER WASTEWATER

ALTERNATIVE 3	LONG FALL PAPER MILL LAGOON	LE ENVIRONMENTAL
DESIGNED: AH	PILOT DATE: 9/21/20	SCALE: 1" = 20'
DRAWN: JJB	DATE: SEP. 2020	PROJECT NO. 25-005.18
CHECKED: AH	DATE: SEP. 2020	DRAWING NO. 3

FILES USE PROJECT FILE 25005.18 LE ENVIRONMENTAL\25005.18\25005.18\FALL PAPER MILL LAGOON\25005.18.DWG



Corrective Action Plan
Long Falls Paperboard, Brattleboro, Vermont

APPENDIX B

ECAA Approval Letter

From: Donovan, Shawn Shawn.Donovan@vermont.gov
Subject: RE: Long Falls Paperboard ECAA Report; SMS Site #2018-4828; EPA RFA 19093
Date: December 14, 2020 at 12:48 PM
To: Alan Liptak alan@leenv.net
Cc: Ferrari, Joe ferrari.joe@epa.gov, Bobbi Kilburn bkilburn@brattleborodevelopment.com, Adam Grinold agrinold@brattleborodevelopment.com, Gabriela Constantin gabriela.constantin@longfallspaperboard.com, Donovan, Shawn Shawn.Donovan@vermont.gov



Alan – Based on your response to comments memorandum I have no further comments on the ECAA report.

Shawn Donovan
VTDEC Sites Management Section
802-522-5683

From: Alan Liptak <alan@leenv.net>
Sent: Tuesday, November 24, 2020 11:06 AM
To: Donovan, Shawn <Shawn.Donovan@vermont.gov>
Cc: Ferrari, Joe <ferrari.joe@epa.gov>; Bobbi Kilburn <bkilburn@brattleborodevelopment.com>; Adam Grinold <agrinold@brattleborodevelopment.com>
Subject: Re: Long Falls Paperboard ECAA Report; SMS Site #2018-4828; EPA RFA 19093

EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.

Good morning Shawn,

Please see attached revised ECAA report, and response letter to your comments. Thank you, and please call or reply if there are any questions.

Alan Liptak, CPG, PG, EP
Senior Geologist

21 North Main Street #1
Waterbury, Vermont 05676
o-(802) 917-2001
c-(802) 917-4228
alan@leenv.net
www.leenv.net

On Nov 4, 2020, at 3:17 PM, Donovan, Shawn <Shawn.Donovan@vermont.gov> wrote:

All –
I completed review of the ECAA report and have included my comments in the attached PDF file.

Alan, I think it makes sense for you and I to have a follow up conversation, I am available as soon as Friday if that works for you.

Shawn Donovan
VTDEC Sites Management Section
802-522-5683

From: Alan Liptak <alan@leenv.net>
Sent: Monday, September 28, 2020 3:25 PM
To: Donovan, Shawn <Shawn.Donovan@vermont.gov>; Ferrari, Joe <ferrari.joe@epa.gov>
Cc: Bobbi Kilburn <bkilburn@brattleborodevelopment.com>; Adam Grinold <agrinold@brattleborodevelopment.com>
Subject: Long Falls Paperboard ECAA Report; SMS Site #2018-4828; EPA RFA 19093

EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.

Good afternoon Shawn and Joe,

Attached is the Evaluation of Corrective Action Alternatives report for Long Falls Paperboard in Brattleboro, Vermont. Brattleboro Development Credit Corporation requested that this report be submitted. Would you please look this over and let us know if there are any questions? With your concurrence LEE will prepare the Corrective Action Plan for submittal. Thanks.

Alan Liptak, CPG, PG, EP
Senior Geologist

21 North Main Street #1
Waterbury, Vermont 05676
o-(802) 917-2001
c-(802) 917-4228
alan@leenv.net
www.leenv.net

<VTDEC_Review_LFP BDCC ECAA.pdf>



APPENDIX C

Phase II ESA and Corrective Action Investigation Executive Summaries and Contaminant Concentration Summaries

Phase II Environmental Site Assessment
Report: Long Falls Paperboard, 161
Wellington Road, Brattleboro, Vermont
(SMS #20184828)



PROJECT NO.

15-015

REVIEWED BY:

DTV

PREPARED FOR:

Shawn Donovan / Site Manager
Vermont Department of
Environmental Conservation,
Brownfields Program
1 National Life Drive, Davis 1
Montpelier / Vermont / 05620-3704

SUBMITTED BY:

David Abrahamson / Project
Manager
Stone Environmental, Inc.
535 Stone Cutters Way
Montpelier / VT 05602
dabrahamson@stone-env.com
802.778.0428

Executive Summary

This Phase II Environmental Site Assessment (ESA) Report has been prepared by Stone Environmental, Inc. (Stone) on behalf of the Vermont Department of Environmental Conservation (VT DEC), the Town of Brattleboro, Vermont, and the Windham Regional Commission (WRC) for the Brattleboro Development Credit Corporation (BDCC). This Phase II ESA has been prepared in accordance with the VT DEC Investigation and Remediation of Contaminated Properties Rule (IRule) dated July 6, 2019 and the approved Site-Specific Quality Assurance Project Plan (SSQAPP) dated July 13, 2019 as amended on August 13, 2019.

According to a Phase I ESA completed by Ramboll US Environ Corporation (2015 Ramboll), the Site has been in continuous use as a paper mill since it was originally developed in 1960 by Case Brothers which operated at the Site until 1967 at which time it was acquired by Boise Cascade. The facility was operated by Boise Cascade until 1989 when the name was changed to Specialty Paper Board, Inc, which ultimately was renamed as FiberMark, Inc. in 1998. FiberMark filed for bankruptcy in 2004 and reemerged under new ownership of Silver Point Capital in 2006 before subsequently being acquired by America Securities in 2008. The FiberMark business was sold to Neenah in 2015 and operated as Neenah until purchase by BDCC in December 2018. Upon purchase by BDCC, Long Falls Paperboard took over facility operations.

A number of environmental assessments have been performed at the Site, beginning as far back as 1989 and up to the Phase I ESA performed in December 2018 by LE Environmental (LEE). LEE's Phase I ESA identified twelve Recognized Environmental Conditions. This Phase II ESA was performed to address these RECs as well as potential impacts from the wastewater treatment plant lagoons.

Based on the results of the Phase II ESA, Stone has made the following conclusions:

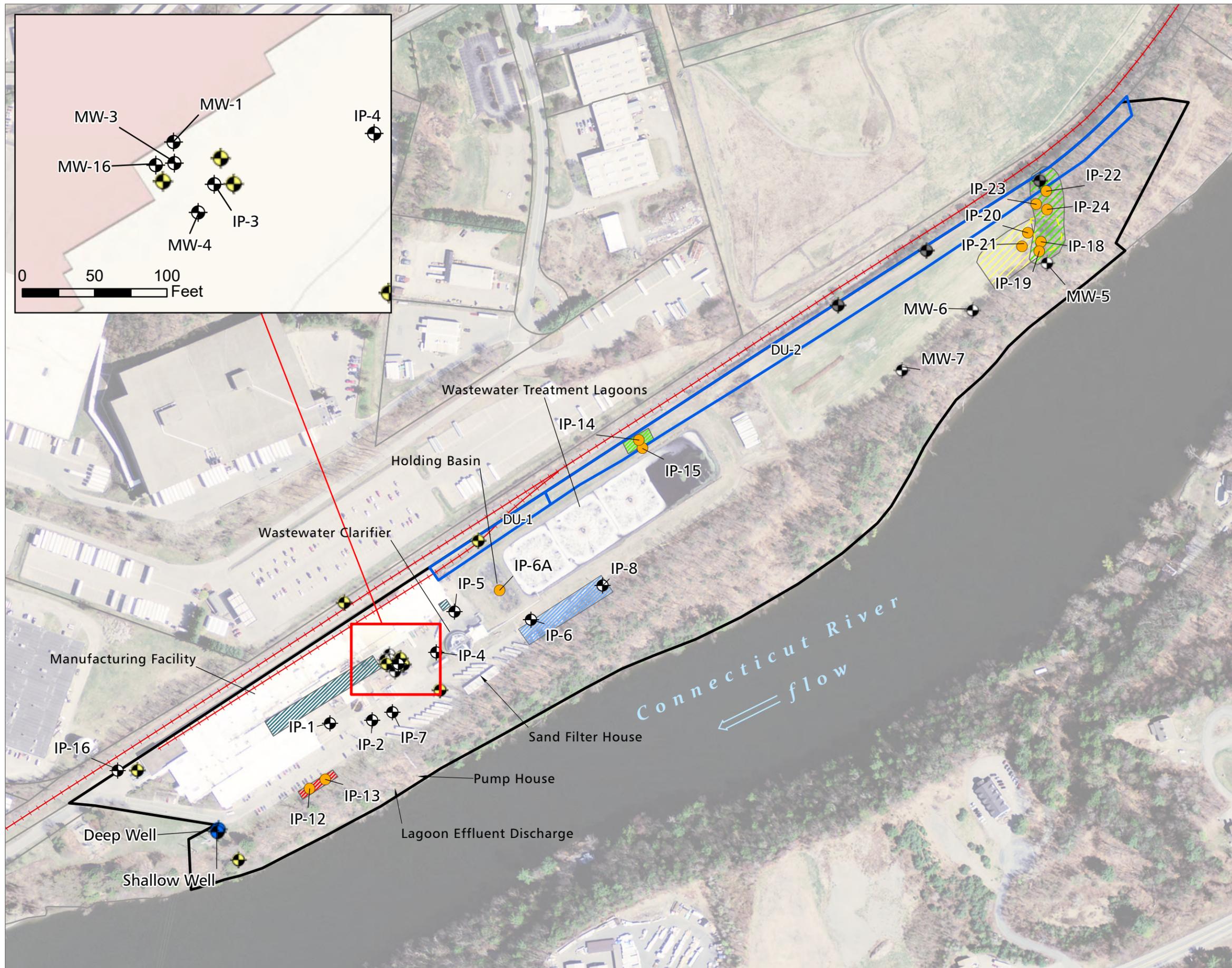
1. No. 6 fuel oil from the pre-1990 release is still present in the subsurface, but not at concentrations high enough to impact sensitive receptors, e.g. downgradient groundwater or soil.
2. With the exception of methyl-tert-butyl ether (MTBE) detections in the facility production wells, there was no evidence of a gasoline release from former USTs, and no evidence of diesel fuel releases that are significantly impacting groundwater.
3. Historically detected chlorinated volatile organic compounds (cVOCs) in groundwater have naturally attenuated over time and there appears to be no on or off-site continuing source.
4. Per- and polyfluoroalkyl substances (PFAS) are present in some on-site soils and in groundwater, but at concentrations below current Vermont Soil Standard (VSS) and Vermont Groundwater Enforcement Standard (VGES) standards.
5. Vanadium is present in on-site surface and subsurface soils at concentrations exceeding the VSS Resident standard, but with the exception of the shallow soil sample collected from the wastewater treatment system lagoon holding basin, below VSS Non-Resident Standard.
6. Total lead, manganese and arsenic are present in on-Site groundwater at concentrations exceeding the VGES. Concentrations of these metals in groundwater may be elevated due to sample turbidity.

-
7. Poly-cyclic aromatic hydrocarbons (PAHs) are present along the railway (DU-2) and railway spur to the Site (DU-1), as measured by the calculated B(a)P-TEQ 95% UCL, at concentrations that exceed the VSS Resident standard, but that are below the VSS Non-Resident standard.
 8. Dioxins, polychlorinated biphenyls (PCBs) and metals are present in the wastewater treatment system lagoon holding basin at concentrations that exceed the VSS Non-Resident standards. The vertical and horizontal extent of these exceedances are unknown.

An Evaluation of Corrective Action Alternatives (ECAA) should be prepared to assess remedial alternatives to prevent unacceptable exposure of contaminants to Site users. An ECAA will require the following additional assessment tasks:

1. Sampling of on-site groundwater for dissolved lead, manganese and arsenic in select on-Site groundwater monitoring wells.
2. Continued assessment, i.e. groundwater monitoring, of PFAS in groundwater.
3. Additional soil assessment to determine the vertical and horizontal extent of dioxin, PCB, and metals contamination related to the holding basin.
4. Assessment of soils to support soil management during construction activities associated with the proposed installation of a biomass heat plant, including potential underground biomass storage, and other Site improvements, as appropriate.

Upon completion of an ECAA and its approval by the VTDEC, a Corrective Action Plan (CAP) can be prepared.



- LEGEND**
- Sample Locations**
 - Groundwater (black circle with crosshair)
 - Soil Boring (yellow circle)
 - Prior Existing Well**
 - Former Groundwater Monitoring Well (yellow circle with black crosshair)
 - Windham SWMD Vapor Well (black circle with crosshair)
 - Production Well (blue circle with crosshair)
 - ISM Decision Unit** (blue outline)
 - Site Features**
 - Outdoor Equipment Area (blue hatched)
 - Former "Active Fill Area" Observed During Phase II Investigation (green hatched)
 - Former "Active Fill Area" as Reported from 1989 Investigation (yellow hatched)
 - Active Leaching Bed (green diagonal lines)
 - Former Leaching Bed (red diagonal lines)
 - Basement Area (blue diagonal lines)
 - Rail Line (red dashed line)
 - Target Property Boundary (black solid line)
 - All Parcels (white outline)

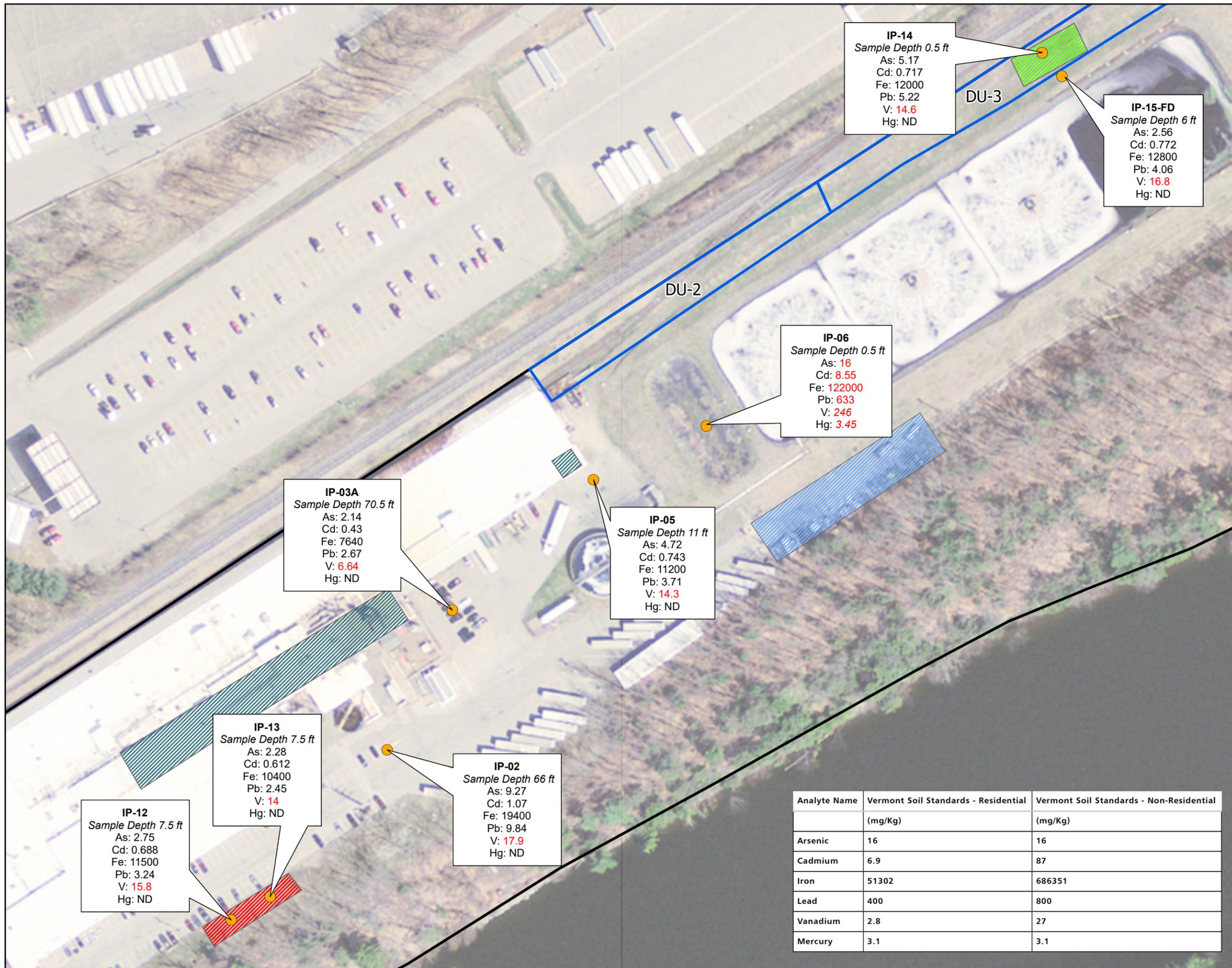
Source: Imagery - Esri World Imagery; Site Features and Well Locations - Stone Environmental; Parcels and Rail Lines - VCGI
 Path: O:\PROJ-19\EAR\19-015 Long Falls Paper Phase II ESA\GIS\MapDocuments\PresentationsAndReports\19-015 Long Falls Paper Phase II ESA\19-015 Long Falls Paper Phase II ESA.aprx Site Map Exported: 10/11/2019 2:01 PM

Figure 3 Site Map

Long Falls Paperboard
 Phase II Environmental Site Assessment

Prepared For
 Vermont Department of Environmental
 Conservation

STONE ENVIRONMENTAL



LEGEND

- Soil Boring
- ▨ Active Leaching Bed
- ▨ Former Leaching Bed
- ▨ Outdoor Equipment Area
- ▨ Basement Area
- ▭ ISM Decision Unit
- ▭ Target Property Boundary

All results in mg/Kg
 ND = Non-Detect
 Detections over Residential Enforcement Standards in **RED**
 Detections over Non-Residential Enforcement Standards in ***Italicized RED***
 As = Arsenic
 Cd = Cadmium
 Fe = Iron
 Pb = Lead
 V = Vanadium
 Hg = Mercury

Source: Imagery - Esri World Imagery; Sample Locations/Results and Site Features - Stone Environmental
 Path: O:\PROJ-19\EAR\19-015 Long Falls Paper Phase II ESA\GIS\MapDocuments\PresentationAndReports\19-015 Long Falls Paper Phase II ESA\19-015 Long Falls Paper Phase II ESA.aprx Fig 4 Soil Metals
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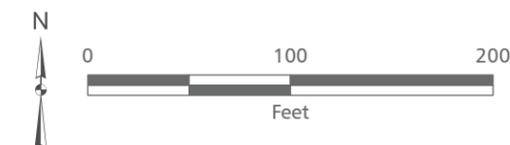
Figure 4 Soil Metals Results

Long Falls Paperboard Phase II Environmental Site Assessment

Prepared For
 Vermont Department of Environmental Conservation



Analyte Name	Vermont Soil Standards - Residential (mg/Kg)	Vermont Soil Standards - Non-Residential (mg/Kg)
Arsenic	16	16
Cadmium	6.9	87
Iron	51302	686351
Lead	400	800
Vanadium	2.8	27
Mercury	3.1	3.1



LEGEND

- Soil Boring
- ISM Decision Unit
- ▨ Outdoor Equipment Area
- ▨ Active Leaching Bed
- ▨ Former Leaching Bed
- ▨ Basement Area

ND = Non-Detect
 PCB Results (mg/Kg) in **RED**
 TCDD TEQ Results (pg/g) in **BLUE**
 Exceedance of Vermont Non-Residential Standard indicated in ***Bold Italics***

Source: Imagery - Esri World Imagery; Sample Locations and Site Features - Stone Environmental

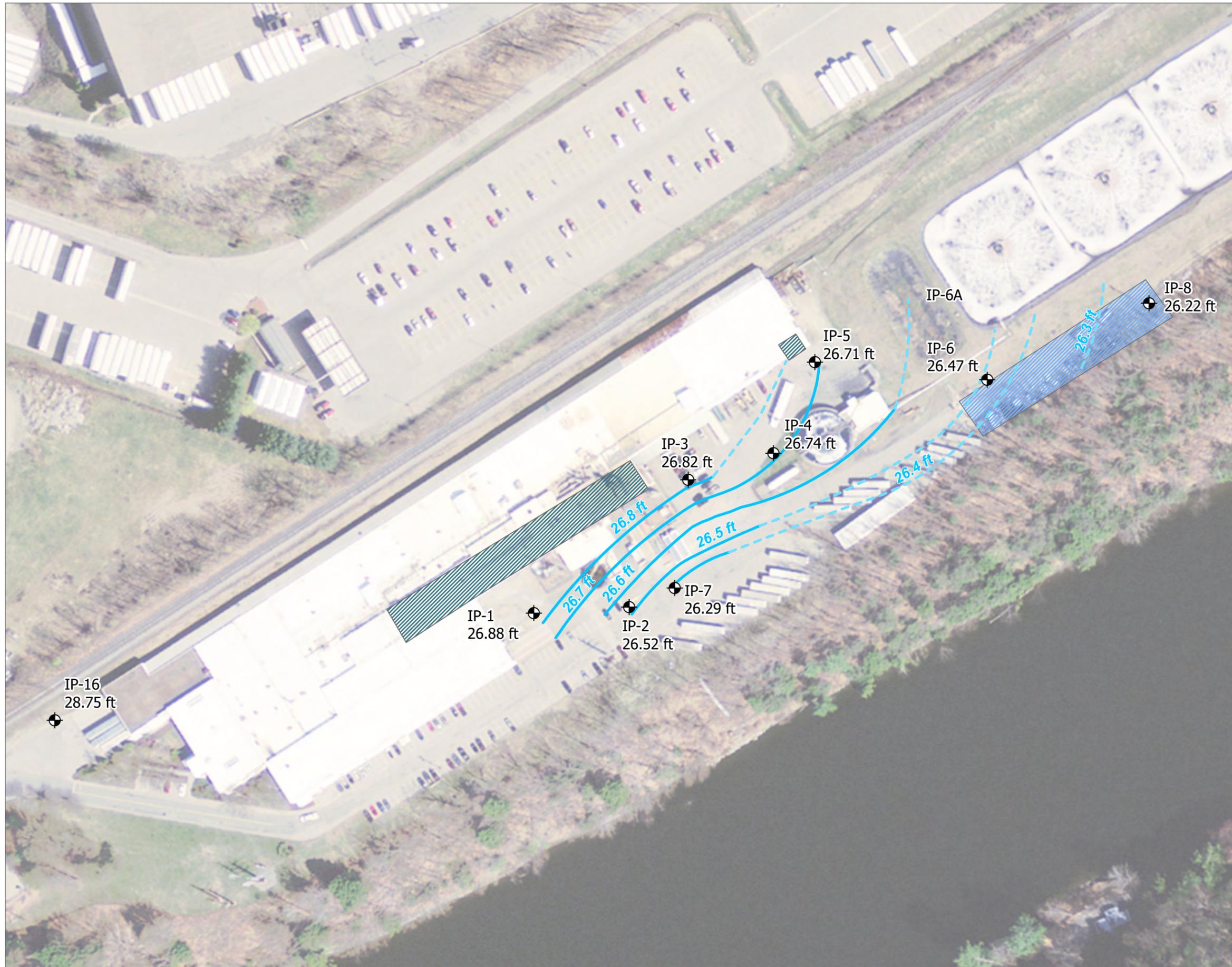
Path: O:\PROJ-19\EAR\19-015 Long Falls Paper Phase II ESA\GIS\MapDocuments\PpresentationsAndReports\19-015 Long Falls Paper Phase II ESA\19-015 Long Falls Paper Phase II ESA.aprx Figure 5 Soil PCBs Exported: 10/10/2019

Figure 5 Soil PCB & 2,3,7,8 - TCDD TEQ Results

Long Falls Paperboard Phase II Environmental Site Assessment

Prepared For Vermont Department of Environmental Conservation

Analyte Name	Vermont Soil Standards - Residential	Vermont Soil Standards - Non-Residential
Total PCB's	0.114 (mg/Kg)	0.68 (mg/Kg)
TCDD TEQ	2.25 (pg/g)	13.71 (pg/g)



LEGEND

- Groundwater Sample Location
- Groundwater Depth Contour
- Estimated Groundwater Depth Contour
- Site Features**
- Outdoor Equipment Area
- Basement Area

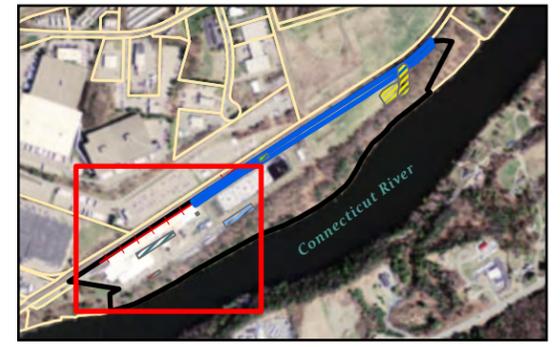
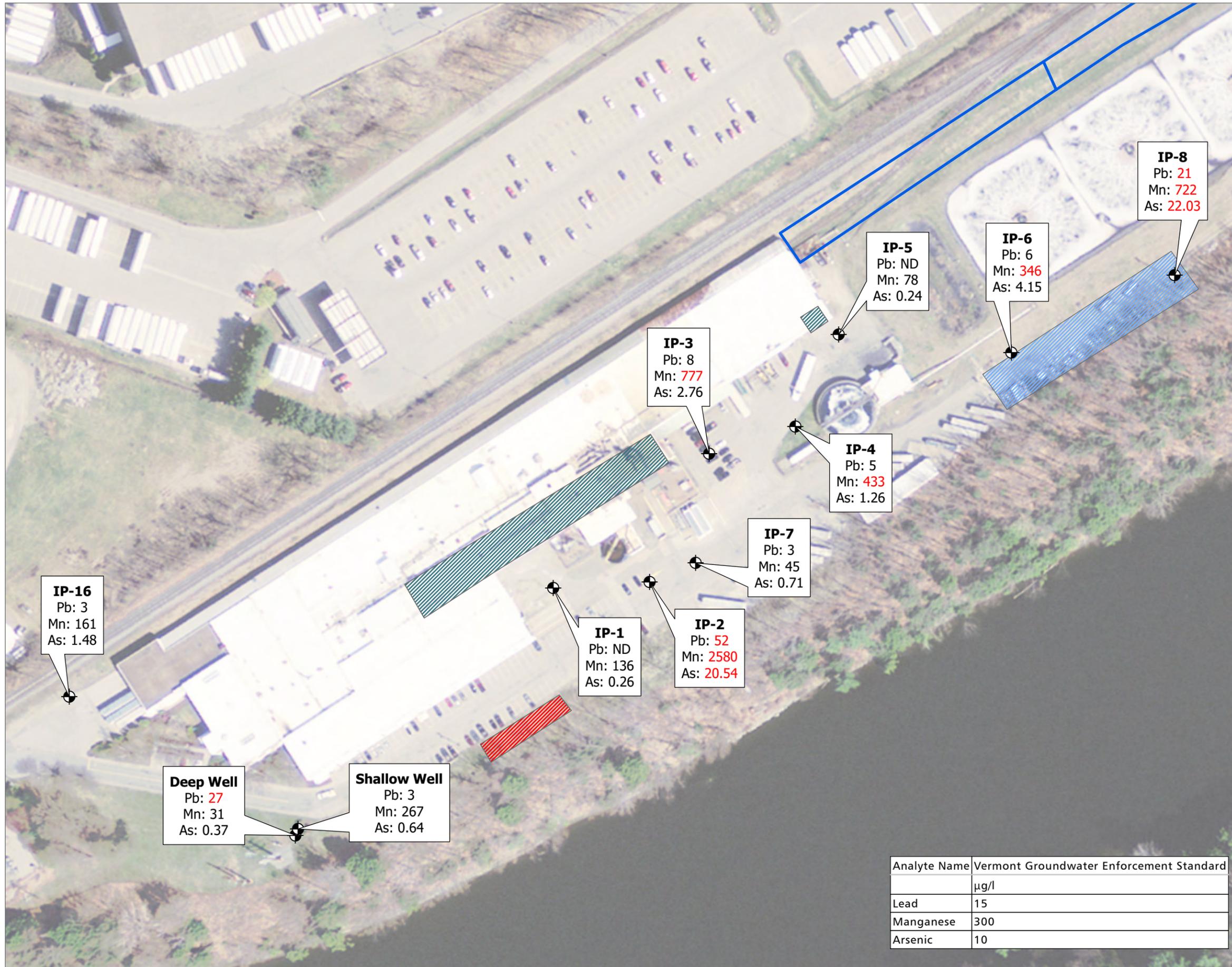
Source: Imagery - Esri World Imagery; Sample Locations and Groundwater Depths - Stone Environmental

Path: O:\PROJ-19\EAR\19-015 Long Falls Paper Phase II ESA\GIS\MapDocuments\PpresentationsAndReports\19-015 Long Falls Paper Phase II ESA\19-015 Long Falls Paper Phase II ESA.aprx Fig 6 GW Contour Map Exported:

Figure 6 Groundwater Surface Contours

Long Falls Paperboard Phase II Environmental Site Assessment

Prepared For Vermont Department of Environmental Conservation



LEGEND

- Groundwater Monitoring Well
- ISM Decision Unit
- Site Features**
- Outdoor Equipment Area
- Active Leaching Bed
- Former Leaching Bed
- Basement Area

All results in µg/l
 ND = Non-Detect
 Detections over Vermont Groundwater Enforcement Standard in **RED**
 Pb = Lead
 Mn = Manganese
 As = Arsenic

Source: Imagery - Esri World Imagery; Site Features and Sample Locations/ Results - Stone Environmental
 Path: O:\PROJ-19\EAR\19-015 Long Falls Paper Phase II
 ESA\GIS\MapDocuments\PpresentationsAndReports\19-015 Long Falls Paper Phase II ESA\19-015 Long Falls Paper Phase II ESA.aprx Figure 7 Groundwater Metals Exported: 10/10/2019 4:07 PM by wrich

Figure 7 Groundwater Metals Results

Long Falls Paperboard Phase II Environmental Site Assessment

Prepared For Vermont Department of Environmental Conservation



Analyte Name	Vermont Groundwater Enforcement Standard
	µg/l
Lead	15
Manganese	300
Arsenic	10

Table C-1
Soil METALS Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-02-66	IP-3A-70.5	IP-05-11.0	IP-06-0.5	IP-06-0.5-FD						
Sample Date	CAS#	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	8/21/2019	Q	8/22/2019	Q	8/14/2019	Q	8/15/2019	Q	8/15/2019	Q
Aluminum, Total	7429-90-5	72507	941748	77000	1100000	7250		2790		5560		14200		13200	
Antimony, Total	7440-36-0	26	319	31	470	1.09	J	0.548	J	4.27	U	13.8		4.64	J
Arsenic, Total	7440-38-2	16	16	0.68	3	9.27		2.14		4.72		16		6.81	
Barium, Total	7440-39-3	11247	127382	15000	220000	26.9		23.3		20.2		156		143	
Beryllium, Total	7440-41-7	35	289	160	2300	0.174	J	0.046	J	0.154	J	0.284	J	0.152	J
Cadmium, Total	7440-43-9	6.9	87	NE	NE	1.07		0.43	J	0.743	J	8.55		3.66	
Calcium, Total	7440-70-2	NE	NE	NE	NE	872		530		1280		1810		675	
Chromium, Total	7440-47-3	NE	NE	NE	NE	15.4		5.83		12		311		140	
Cobalt, Total	7440-48-4	22	291	23	350	10.3		5.44		5.66		5.76		2.82	
Copper, Total	7440-50-8	10407	139231	3100	47000	19.5		8.66		9.35		413		360	
Iron, Total	7439-89-6	51302	686351	55000	820000	19400		7640		11200		122000		47100	
Lead, Total	7439-92-1	400	800	400	800	9.84		2.67	J	3.71	J	633		555	
Magnesium, Total	7439-95-4	NE	NE	NE	NE	3750		1640		2550		1620		1080	
Manganese, Total	7439-96-5	1118	11350	1800	NE	268		361		258		171		70.2	
Nickel, Total	7440-02-0	940	9707	1500	22000	22		12.5		12.3		157		83.5	
Potassium, Total	9/7/7440	NE	NE	NE	NE	823		379		648		336	J	265	J
Selenium, Total	7782-49-2	366	4900	390	5800	1.66	U	1.83	U	1.71	U	1.08	J	0.621	J
Silver, Total	7440-22-4	237	2483	390	5800	0.829	U	0.914	U	0.854	U	0.811	J	0.71	J
Sodium, Total	7440-23-5	NE	NE	NE	NE	79.5	J	17	J	122	J	35.6	J	19.9	J
Thallium, Total	7440-28-0	NE	NE	0.78	12	0.261/1.66	U	0.288/1.83	U	0.269/1.71	U	0.426/2.70	U	0.399/2.54	U
Vanadium, Total	7440-62-2	2.8	27	390	5800	17.9		6.64		14.3		246		243	
Zinc, Total	7440-66-6	21986	294150	23000	350000	43.9		15.9		25.4		112		50.7	
Mercury, Total	7439-97-6	3.1	3.1	11	46	0.066	U	0.075	U	0.069	U	3.45		3.04	
Cyanide, Total	57-12-5	NE	NE	23	150	0.96	U	1.1	U	1.1	U	10		6.7	

Table C-1
Soil METALS Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-12-7.5	IP-13-7.5	IP-14-0.5	IP-15-6.0	IP-15-6.0-FD	
Sample Date	CAS#	(mg/kg)	(mg/kg)	(mg/kg)	7/22/2019	7/23/2019	7/23/2019	7/23/2019	7/23/2019	
					Q	Q	Q	Q	Q	
Aluminum, Total	7429-90-5	72507	941748	77000	1100000	6340	5410	5400	7100	8380
Antimony, Total	7440-36-0	26	319	31	470	4.47 U	0.393 J	0.412 J	0.402 J	0.445 J
Arsenic, Total	7440-38-2	16	16	0.68	3	2.75	2.28	5.17	2.53	2.56
Barium, Total	7440-39-3	11247	127382	15000	220000	18.1	24.2	23.9	16.8	23
Beryllium, Total	7440-41-7	35	289	160	2300	0.224 J	0.247 J	0.19 J	0.228 J	0.263 J
Cadmium, Total	7440-43-9	6.9	87	NE	NE	0.688 J	0.612 J	0.717 J	0.7 J	0.772 J
Calcium, Total	7440-70-2	NE	NE	NE	NE	728	876	330	880	871
Chromium, Total	7440-47-3	NE	NE	NE	NE	12.2	9.79	8.43	10.3	11
Cobalt, Total	7440-48-4	22	291	23	350	7.08	5.86	7.27	6.46	7.41
Copper, Total	7440-50-8	10407	139231	3100	47000	12.8	11.8	20.9	15.7	18
Iron, Total	7439-89-6	51302	686351	55000	820000	11500	10400	12000	11500	12800
Lead, Total	7439-92-1	400	800	400	800	3.24 J	2.45 J	5.22	3.6 J	4.06 J
Magnesium, Total	7439-95-4	NE	NE	NE	NE	2810	2670	2360	2880	3140
Manganese, Total	7439-96-5	1118	11350	1800	NE	300	203	211	287	338
Nickel, Total	7440-02-0	940	9707	1500	22000	12.9	11.6	14.4	12.7	14.4
Potassium, Total	9/7/7440	NE	NE	NE	NE	898	812	746	867	870
Selenium, Total	7782-49-2	366	4900	390	5800	0.572 J	0.567 J	0.799 J	0.682 J	0.636 J
Silver, Total	7440-22-4	237	2483	390	5800	0.894 U	0.914 U	0.824 U	0.875 U	0.908 U
Sodium, Total	7440-23-5	NE	NE	NE	NE	46.7 J	41.8 J	19.4 J	32.8 J	39 J
Thallium, Total	7440-28-0	NE	NE	0.78	12	0.282/1.79 U	0.288/1.83 U	0.260/1.65 U	0.276/1.75 U	0.286/1.82 U
Vanadium, Total	7440-62-2	2.8	27	390	5800	15.8	14	14.6	15.3	16.8
Zinc, Total	7440-66-6	21986	294150	23000	350000	24.2	23	32.6	26	38.2
Mercury, Total	7439-97-6	3.1	3.1	11	46	0.073 U	0.075 U	0.069 U	0.072 U	0.077 U
Cyanide, Total	57-12-5	NE	NE	23	150	1.1 U	1.1 U	1 U	1.1 U	1.2 U

Key:

VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2019.

EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019

VSSs and RSLs in gray color font are for reference only; regulatory standards for comparison are in regular font.

mg/kg - milligrams per kilogram (parts per million)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

value/value- if the reported quantitation limit exceeds the applicable regulatory criteria then the method detection/reported quantitation limit are presented.

Table C-2
Soil VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-02-66	IP-3A-70.5	IP-05-11.0	IP-06-0.5	IP-06-0.5-FD	IP-07-66.5							
Sample Date	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/21/2019	Q	8/22/2019	Q	8/14/2019	Q	8/15/2019	Q	8/15/2019	Q	8/21/2019	Q
1,1,1,2-Tetrachloroethane	630-20-6	1.3	8	2	8.8	0.00037	U	0.00037	U	0.00041	U	0.0015	U	0.0016	U	0.0004	U
1,1,1-Trichloroethane	71-55-6	NE	NE	8100	36000	0.00037	U	0.00037	U	0.00041	U	0.0015	U	0.0016	U	0.0004	U
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	0.6	2.7	0.00037	U	0.00037	U	0.00041	U	0.0015	U	0.0016	U	0.0004	U
1,1,2-Trichloroethane	79-00-5	NE	NE	1.1	5	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
1,1-Dichloroethane	75-34-3	2.1	13	3.6	16	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
1,1-Dichloroethene	75-35-4	NE	NE	230	1000	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
1,1-Dichloropropene	563-58-6	NE	NE	NE	NE	0.00037	U	0.00037	U	0.00041	U	0.0015	U	0.0016	U	0.0004	U
1,2,3-Trichlorobenzene	87-61-6	NE	NE	63	930	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
1,2,3-Trichloropropane	96-18-4	0.00311	0.07	0.0051	0.11	0.0015	U	0.0015	U	0.0016	U	0.00038/0.006	U	0.00041/0.0064	U	0.0016	U
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
1,2,4-Trimethylbenzene	95-63-6	144	177	300	1800	0.0015	U	0.0015	U	0.0016	U	0.0016	U	0.0013	J	0.0064	U
1,2-Dibromo-3-chloropropane	96-12-8	0.01	0.06	0.0053	0.064	0.0022	U	0.0022	U	0.0025	U	0.0091	U	0.0096	U	0.0024	U
1,2-Dibromoethane	106-93-4	0.02	0.14	0.036	0.16	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
1,2-Dichloroethane	107-06-2	0.29	1.7	0.46	2	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
1,2-Dichloroethene, Total	540-59-0	NE	NE	NE	NE	0.00075	U	0.00075	U	0.00048	J	0.0019	J	0.0032	J	0.00081	U
1,2-Dichloropropane	78-87-5	1.5	9.1	2.5	11	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
1,3,5-Trimethylbenzene	108-67-8	144	177	270	1500	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
1,3-Dichloropropane	142-28-9	NE	NE	1600	23000	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
1,3-Dichloropropene, Total	542-75-6	NE	NE	1.8	8.2	0.00037	U	0.00037	U	0.00041	U	0.0016	U	0.0016	U	0.0004	U
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
1,4-Dichlorobutane	110-56-5	NE	NE	NE	NE	0.0075	U	0.0075	U	0.0082	U	0.03	U	0.032	U	0.0081	U
2,2-Dichloropropane	594-20-7	NE	NE	NE	NE	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
2-Butanone	78-93-3	16952	26991	27000	190000	0.0075	U	0.0075	U	0.0082	U	0.03	U	0.032	U	0.0081	U
2-Hexanone	591-78-6	NE	NE	200	1300	0.0075	U	0.0075	U	0.0082	U	0.03	U	0.032	U	0.0081	U
4-Methyl-2-pentanone	108-10-1	NE	NE	33000	140000	0.0075	U	0.0075	U	0.0082	U	0.03	U	0.032	U	0.0081	U
Acetone	67-64-1	40609	100028	61000	670000	0.0038	J	0.0036	J	0.0082	U	0.21	U	0.14	U	0.0081	U
Acrylonitrile	107-13-1	NE	NE	0.25	1.1	0.003	U	0.003	U	0.0033	U	0.012	U	0.013	U	0.0032	U
Benzene	71-43-2	0.7	4.2	1.2	5.1	0.00037	U	0.00037	U	0.00041	U	0.0015	U	0.0016	U	0.0004	U
Bromobenzene	108-86-1	NE	NE	290	1800	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
Bromochloromethane	74-97-5	193	597	150	630	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
Bromodichloromethane	75-27-4	NE	NE	0.29	1.3	0.00037	U	0.00037	U	0.00041	U	0.0015	U	0.0016	U	0.0004	U
Bromoform	75-25-2	NE	NE	19	86	0.003	U	0.003	U	0.0033	U	0.012	U	0.013	U	0.0032	U

Table C-2
Soil VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	Sample Date	CAS#	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-02-66		IP-3A-70.5		IP-05-11.0		IP-06-0.5		IP-06-0.5-FD		IP-07-66.5	
			(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/21/2019	Q	8/22/2019	Q	8/14/2019	Q	8/15/2019	Q	8/15/2019	Q	8/21/2019	Q
Bromomethane	74-83-9		NE	NE	6.8	30	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
Carbon disulfide	75-15-0		608	662	770	3500	0.0075	U	0.0075	U	0.0082	U	0.03	U	0.032	U	0.0081	U
Carbon tetrachloride	56-23-5		0.37	2.2	0.65	2.9	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
Chlorobenzene	108-90-7		414	726	280	1300	0.00037	U	0.00037	U	0.00041	U	0.0015	U	0.0016	U	0.0004	U
Chloroethane	75-00-3		NE	NE	14000	57000	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
Chloroform	67-66-3		NE	NE	0.32	1.4	0.00046	J	0.00049	J	0.00041	J	0.0013	J	0.004	J	0.00026	J
Chloromethane	74-87-3		NE	NE	110	460	0.003	U	0.003	U	0.0033	U	0.012	U	0.013	U	0.0032	U
cis-1,2-Dichloroethene	156-59-2		140	1814	160	2300	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
cis-1,3-Dichloropropene	10061-01-5		NE	NE	NE	NE	0.00037	U	0.00037	U	0.00041	U	0.0015	U	0.0016	U	0.0004	U
Dibromochloromethane	124-48-1		NE	NE	8.3	39	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
Dibromomethane	74-95-3		NE	NE	24	99	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
Dichlorodifluoromethane	75-71-8		NE	NE	87	370	0.0075	U	0.0075	U	0.0082	U	0.03	U	0.032	U	0.0081	U
Ethyl ether	60-29-7		NE	NE	16000	230000	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
Ethyl methacrylate	97-63-2		NE	NE	1800	7600	0.0075	U	0.0075	U	0.0082	U	0.03	U	0.032	U	0.0081	U
Ethylbenzene	100-41-4		3.7	22	5.8	25	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
Hexachlorobutadiene	87-68-3		NE	NE	1.2	5.3	0.003	U	0.003	U	0.0033	U	0.012	U	0.013	U	0.0032	U
Isopropylbenzene	98-82-8		256	264	1900	9900	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
Methyl tert butyl ether	1634-04-4		649	4464	47	210	0.00015	J	0.00015	J	0.00016	J	0.006	U	0.0064	U	0.0016	U
Methylene chloride	75-09-2		NE	NE	57	1000	0.0037	U	0.0037	U	0.0041	U	0.012	U	0.016	U	0.004	U
Naphthalene	91-20-3		2.7	16	3.8	17	0.003	U	0.003	U	0.0033	U	0.012	U	0.013	U	0.0032	U
n-Butylbenzene	104-51-8		3504	51100	3900	58000	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
n-Propylbenzene	103-65-1		253	261	3800	24000	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
o-Chlorotoluene	95-49-8		NE	NE	1600	23000	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
o-Xylene	95-47-6		NE	NE	650	2800	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
p/m-Xylene	179601-23-1		NE	NE	NE	NE	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
p-Chlorotoluene	106-43-4		NE	NE	1600	23000	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
p-Isopropyltoluene	99-87-6		NE	NE	NE	NE	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
sec-Butylbenzene	135-98-8		7009	102200	7800	120000	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
Styrene	100-42-5		NE	NE	6000	35000	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
tert-Butylbenzene	98-06-6		7009	102200	7800	120000	0.0015	U	0.0015	U	0.0016	U	0.006	U	0.0064	U	0.0016	U
Tetrachloroethene	127-18-4		2.4	14	24	100	0.00037	U	0.00029	J	0.00041	U	0.0015	U	0.0016	U	0.0004	U
Tetrahydrofuran	109-99-9		NE	NE	18000	94000	0.003	U	0.0015	J	0.0033	U	0.012	U	0.013	U	0.0032	U
Toluene	108-88-3		706	798	4900	47000	0.00075	U	0.00075	U	0.00045	J	0.003	U	0.0032	U	0.00081	U
Total Trimethylbenzene	25551-13-7		144	177	NE	NE	0.0015	U	0.0015	U	0.0016	U	0.0016	U	0.0013	J	0.0064	U
Total Xylene	1330-20-7		252	257	580	2500	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
trans-1,2-Dichloroethene	156-60-5		1402	18137	1600	23000	0.0011	U	0.0011	U	0.00048	J	0.0018	J	0.0032	J	0.0012	U
trans-1,3-Dichloropropene	10061-02-6		NE	NE	NE	NE	0.00075	U	0.00075	U	0.00082	U	0.003	U	0.0032	U	0.00081	U
trans-1,4-Dichloro-2-butene	110-57-6		NE	NE	0.0074	0.032	0.0037	U	0.0037	U	0.0041	U	0.0043/0.015	U	0.0045/0.016	U	0.004	U
Trichloroethene	79-01-6		0.68	6.5	0.94	6	0.00037	U	0.00037	U	0.00041	U	0.0015	U	0.0016	U	0.0004	U
Trichlorofluoromethane	75-69-4		NE	NE	23000	350000	0.003	U	0.003	U	0.0033	U	0.012	U	0.013	U	0.0032	U
Vinyl acetate	108-05-4		NE	NE	910	3800	0.0075	U	0.0075	U	0.0082	U	0.03	U	0.032	U	0.0081	U
Vinyl chloride	75-01-4		0.1	0.59	0.059	1.7	0.00075	U	0.00075	U	0.00082	U	0.0037	U	0.0032	U	0.00081	U
Xylenes, Total	1330-20-7		252	257	580	2500	0.00075	U	0.00075	U	0.0016	U	0.003	U	0.0064	U	0.00081	U

Table C-2
Soil VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	Sample Date	CAS#	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-07-71		IP-12-7.5		IP-13-7.5		IP-14-0.5		IP-15-8.0		IP-15-8.0-FD	
			(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/21/2019	Q	7/22/2019	Q	7/23/2019	Q	7/23/2019	Q	7/23/2019	Q	7/23/2019	Q
1,1,1,2-Tetrachloroethane	630-20-6		1.3	8	2	8.8	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U
1,1,1-Trichloroethane	71-55-6		NE	NE	8100	36000	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U
1,1,2,2-Tetrachloroethane	79-34-5		NE	NE	0.6	2.7	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U
1,1,2-Trichloroethane	79-00-5		NE	NE	1.1	5	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
1,1-Dichloroethane	75-34-3		2.1	13	3.6	16	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
1,1-Dichloroethene	75-35-4		NE	NE	230	1000	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
1,1-Dichloropropene	563-58-6		NE	NE	NE	NE	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U
1,2,3-Trichlorobenzene	87-61-6		NE	NE	63	930	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
1,2,3-Trichloropropane	96-18-4		0.00311	0.07	0.0051	0.11	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
1,2,4-Trichlorobenzene	120-82-1		NE	NE	24	110	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
1,2,4-Trimethylbenzene	95-63-6		144	177	300	1800	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
1,2-Dibromo-3-chloropropane	96-12-8		0.01	0.06	0.0053	0.064	0.0023	U	0.0023	U	0.0032	U	0.0026	U	0.0026	U	0.0026	U
1,2-Dibromoethane	106-93-4		0.02	0.14	0.036	0.16	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
1,2-Dichlorobenzene	95-50-1		NE	NE	1800	9300	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
1,2-Dichloroethane	107-06-2		0.29	1.7	0.46	2	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
1,2-Dichloroethene, Total	540-59-0		NE	NE	NE	NE	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
1,2-Dichloropropane	78-87-5		1.5	9.1	2.5	11	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
1,3,5-Trimethylbenzene	108-67-8		144	177	270	1500	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
1,3-Dichlorobenzene	541-73-1		NE	NE	NE	NE	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
1,3-Dichloropropane	142-28-9		NE	NE	1600	23000	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
1,3-Dichloropropene, Total	542-75-6		NE	NE	1.8	8.2	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U
1,4-Dichlorobenzene	106-46-7		NE	NE	2.6	11	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
1,4-Dichlorobutane	110-56-5		NE	NE	NE	NE	0.0076	U	0.0076	U	0.011	U	0.0087	U	0.0086	U	0.0088	U
2,2-Dichloropropane	594-20-7		NE	NE	NE	NE	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
2-Butanone	78-93-3		16952	26991	27000	190000	0.0076	U	0.0076	U	0.011	U	0.0087	U	0.0086	U	0.0088	U
2-Hexanone	591-78-6		NE	NE	200	1300	0.0076	U	0.0076	U	0.011	U	0.0087	U	0.0086	U	0.0088	U
4-Methyl-2-pentanone	108-10-1		NE	NE	33000	140000	0.0076	U	0.0076	U	0.011	U	0.0087	U	0.0086	U	0.0088	U
Acetone	67-64-1		40609	100028	61000	670000	0.0076	U	0.0076	J	0.011	J	0.0069	J	0.014	J	0.0088	U
Acrylonitrile	107-13-1		NE	NE	0.25	1.1	0.003	U	0.0031	U	0.0043	U	0.0035	U	0.0034	U	0.0035	U
Benzene	71-43-2		0.7	4.2	1.2	5.1	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U
Bromobenzene	108-86-1		NE	NE	290	1800	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
Bromochloromethane	74-97-5		193	597	150	630	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
Bromodichloromethane	75-27-4		NE	NE	0.29	1.3	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U
Bromoform	75-25-2		NE	NE	19	86	0.003	U	0.0031	U	0.0043	U	0.0035	U	0.0034	U	0.0035	U
Bromomethane	74-83-9		NE	NE	6.8	30	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
Carbon disulfide	75-15-0		608	662	770	3500	0.0076	U	0.0076	U	0.011	U	0.0087	U	0.0086	U	0.0088	U
Carbon tetrachloride	56-23-5		0.37	2.2	0.65	2.9	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
Chlorobenzene	108-90-7		414	726	280	1300	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U
Chloroethane	75-00-3		NE	NE	14000	57000	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
Chloroform	67-66-3		NE	NE	0.32	1.4	0.00088	J	0.0011	U	0.0016	U	0.0013	U	0.0013	U	0.0013	U
Chloromethane	74-87-3		NE	NE	110	460	0.003	U	0.0031	U	0.0043	U	0.0035	U	0.0034	U	0.0035	U
cis-1,2-Dichloroethene	156-59-2		140	1814	160	2300	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
cis-1,3-Dichloropropene	10061-01-5		NE	NE	NE	NE	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U

Table C-2
Soil VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	Sample Date	CAS#	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-07-71		IP-12-7.5		IP-13-7.5		IP-14-0.5		IP-15-8.0		IP-15-8.0-FD	
			(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/21/2019	Q	7/22/2019	Q	7/23/2019	Q	7/23/2019	Q	7/23/2019	Q	7/23/2019	Q
Dibromochloromethane	124-48-1		NE	NE	8.3	39	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
Dibromomethane	74-95-3		NE	NE	24	99	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
Dichlorodifluoromethane	75-71-8		NE	NE	87	370	0.0076	U	0.0076	U	0.011	U	0.0087	U	0.0086	U	0.0088	U
Ethyl ether	60-29-7		NE	NE	16000	230000	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
Ethyl methacrylate	97-63-2		NE	NE	1800	7600	0.0076	U	0.0076	U	0.011	U	0.0087	U	0.0086	U	0.0088	U
Ethylbenzene	100-41-4		3.7	22	5.8	25	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
Hexachlorobutadiene	87-68-3		NE	NE	1.2	5.3	0.003	U	0.0031	U	0.0043	U	0.0035	U	0.0034	U	0.0035	U
Isopropylbenzene	98-82-8		256	264	1900	9900	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
Methyl tert butyl ether	1634-04-4		649	4464	47	210	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
Methylene chloride	75-09-2		NE	NE	57	1000	0.0038	U	0.0038	U	0.0054	U	0.0043	U	0.0043	U	0.0044	U
Naphthalene	91-20-3		2.7	16	3.8	17	0.003	U	0.0031	U	0.0043	U	0.0035	U	0.0034	U	0.0035	U
n-Butylbenzene	104-51-8		3504	51100	3900	58000	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
n-Propylbenzene	103-65-1		253	261	3800	24000	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
o-Chlorotoluene	95-49-8		NE	NE	1600	23000	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
o-Xylene	95-47-6		NE	NE	650	2800	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
p/m-Xylene	179601-23-1		NE	NE	NE	NE	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
p-Chlorotoluene	106-43-4		NE	NE	1600	23000	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
p-Isopropyltoluene	99-87-6		NE	NE	NE	NE	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
sec-Butylbenzene	135-98-8		7009	102200	7800	120000	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
Styrene	100-42-5		NE	NE	6000	35000	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
tert-Butylbenzene	98-06-6		7009	102200	7800	120000	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
Tetrachloroethene	127-18-4		2.4	14	24	100	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U
Tetrahydrofuran	109-99-9		NE	NE	18000	94000	0.003	U	0.0031	U	0.0043	U	0.0035	U	0.0034	U	0.0035	U
Toluene	108-88-3		706	798	4900	47000	0.00076	U	0.00076	U	0.00059	J	0.00087	U	0.0005	J	0.00056	J
Total Trimethylbenzene	25551-13-7		144	177	NE	NE	0.0015	U	0.0015	U	0.0022	U	0.0017	U	0.0017	U	0.0018	U
Total Xylene	1330-20-7		252	257	580	2500	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
trans-1,2-Dichloroethene	156-60-5		1402	18137	1600	23000	0.0011	U	0.0011	U	0.0016	U	0.0013	U	0.0013	U	0.0013	U
trans-1,3-Dichloropropene	10061-02-6		NE	NE	NE	NE	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
trans-1,4-Dichloro-2-butene	110-57-6		NE	NE	0.0074	0.032	0.0038	U	0.0038	U	0.0054	U	0.0043	U	0.0043	U	0.0044	U
Trichloroethene	79-01-6		0.68	6.5	0.94	6	0.00038	U	0.00038	U	0.00054	U	0.00043	U	0.00043	U	0.00044	U
Trichlorofluoromethane	75-69-4		NE	NE	23000	350000	0.003	U	0.0031	U	0.0043	U	0.0035	U	0.0034	U	0.0035	U
Vinyl acetate	108-05-4		NE	NE	910	3800	0.0076	U	0.0076	U	0.011	U	0.0087	U	0.0086	U	0.0088	U
Vinyl chloride	75-01-4		0.1	0.59	0.059	1.7	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U
Xylenes, Total	1330-20-7		252	257	580	2500	0.00076	U	0.00076	U	0.0011	U	0.00087	U	0.00086	U	0.00088	U

Key:
VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2019.
EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019
VSSs and RSLs in gray color font are for reference only; regulatory standards for comparison are in regular font.
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the enforcement standard(s)
Total Trimethyl benzenes - Cumulative sum of all TMB isomers
NE - screening level not established
Q - Qualifier
U - Analyte was not detected and is reported as less than the reported quantitation limit.
J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated value/value- if the reported quantitation limit exceeds the applicable regulatory criteria then the method detection/reported quantitation limit are presented.

Table C-3
Soil SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID		VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	DU-1-A	DU-1-B	DU-1-C	DU-2-A	DU-2-B	DU-2-C
Sample Date	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/21/2019	8/21/2019	8/21/2019	8/22/2019	8/22/2019	8/22/2019
						Q	Q	Q	Q	Q	Q
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	NS	NS	NS	NS	NS	NS
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	NS	NS	NS	NS	NS	NS
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	NS	NS	NS	NS	NS	NS
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	NS	NS	NS	NS	NS	NS
1-Methylnaphthalene	90-12-0	NE	NE	18	73	0.55 U	0.6 U	0.57 U	0.53 U	0.52 U	0.51 U
2,4,5-Trichlorophenol	95-95-4	NE	NE	6300	82000	NS	NS	NS	NS	NS	NS
2,4,6-Trichlorophenol	88-06-2	NE	NE	49	210	NS	NS	NS	NS	NS	NS
2,4-Dichlorophenol	120-83-2	NE	NE	190	2500	NS	NS	NS	NS	NS	NS
2,4-Dimethylphenol	105-67-9	NE	NE	1300	16000	NS	NS	NS	NS	NS	NS
2,4-Dinitrophenol	51-28-5	NE	NE	130	1600	NS	NS	NS	NS	NS	NS
2,4-Dinitrotoluene	121-14-2	NE	NE	1.7	7.4	NS	NS	NS	NS	NS	NS
2,6-Dinitrotoluene	606-20-2	NE	NE	0.36	1.5	NS	NS	NS	NS	NS	NS
2-Chloronaphthalene	91-58-7	NE	NE	4800	60000	0.55 U	0.6 U	0.57 U	0.53 U	0.52 U	0.51 U
2-Chlorophenol	95-57-8	NE	NE	390	5800	NS	NS	NS	NS	NS	NS
2-Methylnaphthalene	91-57-6	NE	NE	240	3000	0.66 U	0.72 U	0.68 U	0.64 U	0.62 U	0.61 U
2-Methylphenol	95-48-7	NE	NE	3200	41000	NS	NS	NS	NS	NS	NS
2-Nitroaniline	88-74-4	NE	NE	630	8000	NS	NS	NS	NS	NS	NS
2-Nitrophenol	88-75-5	NE	NE	NE	NE	NS	NS	NS	NS	NS	NS
3,3'-Dichlorobenzidine	91-94-1	NE	NE	1.2	5.1	NS	NS	NS	NS	NS	NS
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	NE	NE	NE	NE	NS	NS	NS	NS	NS	NS
3-Nitroaniline	99-09-2	NE	NE	NE	NE	NS	NS	NS	NS	NS	NS
4,6-Dinitro-o-cresol	534-52-1	NE	NE	5.1	66	NS	NS	NS	NS	NS	NS
4-Bromophenyl phenyl ether	101-55-3	NE	NE	NE	NE	NS	NS	NS	NS	NS	NS
4-Chloroaniline	106-47-8	NE	NE	2.7	11	NS	NS	NS	NS	NS	NS
4-Chlorophenyl phenyl ether	7005-72-3	NE	NE	NE	NE	NS	NS	NS	NS	NS	NS
4-Nitroaniline	100-01-6	NE	NE	27	110	NS	NS	NS	NS	NS	NS
4-Nitrophenol	100-02-7	NE	NE	NE	NE	NS	NS	NS	NS	NS	NS
Acenaphthene	83-32-9	NE	NE	3600	45000	0.44 U	0.48 U	0.46 U	0.42 U	0.42 U	0.41 U
Acenaphthylene	208-96-8	NE	NE	NE	NE	0.44 U	0.1 J	0.46 U	0.42 U	0.42 U	0.41 U
Aniline	62-53-3	NE	NE	95	400	NS	NS	NS	NS	NS	NS
Anthracene	120-12-7	NE	NE	18000	230000	0.33 U	0.13 J	0.54	0.32 U	0.31 U	0.31 U
Azobenzene	103-33-3	NE	NE	5.6	26	NS	NS	NS	NS	NS	NS
B(a)P-TEQ	50-32-8	0.07	1.54	0.11	2.1	0.126 J	0.590 J	0.351 J	0.122 J	0.106 U	0.101 U

Table C-3
Soil SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	CAS#	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	DU-1-A		DU-1-B		DU-1-C		DU-2-A		DU-2-B		DU-2-C	
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/21/2019	Q	8/21/2019	Q	8/21/2019	Q	8/22/2019	Q	8/22/2019	Q	8/22/2019	Q
Benzidine	92-87-5	NE	NE	0.00053	0.01	NS		NS		NS		NS		NS		NS	
Benzo(a)anthracene	56-55-3	NE	NE	1.1	21	0.079 J		0.45		0.29 J		0.088 J		0.31 U		0.31 U	
Benzo(a)pyrene	50-32-8	0.07	1.54	0.11	2.1	0.13/0.44 U		0.31 J		0.18 J		0.13/0.42 U		0.13/0.42 U		0.12/0.41 U	
Benzo(b)fluoranthene	205-99-2	NE	NE	1.1	21	0.17 J		1.2		0.86		0.13 J		0.31 U		0.31 U	
Benzo(ghi)perylene	191-24-2	NE	NE	NE	NE	0.44 U		0.29 J		0.17 J		0.42 U		0.42 U		0.41 U	
Benzo(k)fluoranthene	207-08-9	NE	NE	11	210	0.33 U		0.3 J		0.25 J		0.32 U		0.31 U		0.31 U	
Benzoic Acid	65-85-0	NE	NE	250000	3300000	NS		NS		NS		NS		NS		NS	
Benzyl Alcohol	100-51-6	NE	NE	6300	82000	NS		NS		NS		NS		NS		NS	
Biphenyl	92-52-4	NE	NE	47	200	NS		NS		NS		NS		NS		NS	
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	190	2500	NS		NS		NS		NS		NS		NS	
Bis(2-chloroethyl)ether	111-44-4	NE	NE	0.23	1	NS		NS		NS		NS		NS		NS	
Bis(2-chloroisopropyl)ether	108-60-1	2804	36274	3100	47000	NS		NS		NS		NS		NS		NS	
Bis(2-ethylhexyl)phthalate	117-81-7	20	120	39	160	NS		NS		NS		NS		NS		NS	
Butyl benzyl phthalate	85-68-7	NE	NE	290	1200	NS		NS		NS		NS		NS		NS	
Carbazole	86-74-8	NE	NE	NE	NE	NS		NS		NS		NS		NS		NS	
Chrysene	218-01-9	NE	NE	110	2100	0.11 J		0.87		0.92		0.094 J		0.31 U		0.31 U	
Dibenzo(a,h)anthracene	53-70-3	NE	NE	0.11	2.1	0.064/0.33 U		0.079 J		0.066/0.34 U		0.061/0.32 U		0.060/0.31 U		0.059/0.31 U	
Dibenzofuran	132-64-9	NE	NE	73	1000	NS		NS		NS		NS		NS		NS	
Diethyl phthalate	84-66-2	NE	NE	51000	660000	NS		NS		NS		NS		NS		NS	
Dimethyl phthalate	131-11-3	NE	NE	NE	NE	NS		NS		NS		NS		NS		NS	
Di-n-butylphthalate	84-74-2	NE	NE	6300	82000	NS		NS		NS		NS		NS		NS	
Di-n-octylphthalate	117-84-0	NE	NE	630	8200	NS		NS		NS		NS		NS		NS	
Fluoranthene	206-44-0	2301	26371	2400	30000	0.22 J		1.4		3		0.14 J		0.089 J		0.31 U	
Fluorene	86-73-7	2301	26371	2400	30000	0.55 U		0.6 U		0.57 U		0.53 U		0.52 U		0.51 U	
Hexachlorobenzene	118-74-1	0.13	0.69	0.21	0.96	NS		NS		NS		NS		NS		NS	
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	NS		NS		NS		NS		NS		NS	
Hexachlorocyclopentadiene	77-47-4	NE	NE	1.8	7.5	NS		NS		NS		NS		NS		NS	
Hexachloroethane	67-72-1	NE	NE	1.8	8	NS		NS		NS		NS		NS		NS	
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	1.1	21	0.44 U		0.32 J		0.2 J		0.42 U		0.42 U		0.41 U	
Isophorone	78-59-1	NE	NE	570	2400	NS		NS		NS		NS		NS		NS	
Naphthalene	91-20-3	2.7	16	3.8	17	0.55 U		0.6 U		0.57 U		0.53 U		0.52 U		0.51 U	
NDPA/DPA	86-30-6	NE	NE	110	470	NS		NS		NS		NS		NS		NS	
Nitrobenzene	98-95-3	NE	NE	5.1	22	NS		NS		NS		NS		NS		NS	
n-Nitrosodimethylamine	62-75-9	NE	NE	0.002	0.034	NS		NS		NS		NS		NS		NS	
n-Nitrosodi-n-propylamine	621-64-7	NE	NE	0.078	0.33	NS		NS		NS		NS		NS		NS	
p-Chloro-m-cresol	59-50-7	NE	NE	6300	82000	NS		NS		NS		NS		NS		NS	
Pentachlorophenol	87-86-5	0.48	2.9	1	4	NS		NS		NS		NS		NS		NS	
Phenanthrene	85-01-8	NE	NE	NE	NE	0.33 U		0.21 J		0.55		0.32 U		0.31 U		0.31 U	
Phenol	108-95-2	NE	NE	19000	250000	NS		NS		NS		NS		NS		NS	
Pyrene	129-00-0	NE	NE	1800	23000	0.2 J		1.4		2.2		0.13 J		0.078 J		0.31 U	
Pyridine	110-86-1	NE	NE	78	1200	NS		NS		NS		NS		NS		NS	

Table C-3
Soil SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID		VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-02-66		IP-3A-70.5		IP-05-11.0		IP-06-0.5		IP-06-0.5-FD		IP-07-66.5	
Sample Date	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/21/2019	Q	8/22/2019	Q	8/14/2019	Q	8/15/2019	Q	8/15/2019	Q	8/21/2019	Q
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
1-Methylnaphthalene	90-12-0	NE	NE	18	73	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
2,4,5-Trichlorophenol	95-95-4	NE	NE	6300	82000	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
2,4,6-Trichlorophenol	88-06-2	NE	NE	49	210	0.1	U	0.12	U	0.11	U	0.17	U	0.45	U	0.1	U
2,4-Dichlorophenol	120-83-2	NE	NE	190	2500	0.16	U	0.18	U	0.16	U	0.25	U	0.67	U	0.16	U
2,4-Dimethylphenol	105-67-9	NE	NE	1300	16000	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
2,4-Dinitrophenol	51-28-5	NE	NE	130	1600	0.84	U	0.94	U	0.85	U	1.4	U	3.6	U	0.83	U
2,4-Dinitrotoluene	121-14-2	NE	NE	1.7	7.4	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
2,6-Dinitrotoluene	606-20-2	NE	NE	0.36	1.5	0.17	U	0.2	U	0.18	U	0.28	U	0.13/0.75	U	0.17	U
2-Chloronaphthalene	91-58-7	NE	NE	4800	60000	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
2-Chlorophenol	95-57-8	NE	NE	390	5800	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
2-Methylnaphthalene	91-57-6	NE	NE	240	3000	0.21	U	0.24	U	0.21	U	0.34	U	0.9	U	0.21	U
2-Methylphenol	95-48-7	NE	NE	3200	41000	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
2-Nitroaniline	88-74-4	NE	NE	630	8000	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
2-Nitrophenol	88-75-5	NE	NE	NE	NE	0.38	U	0.42	U	0.38	U	0.61	U	1.6	U	0.37	U
3,3'-Dichlorobenzidine	91-94-1	NE	NE	1.2	5.1	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	NE	NE	NE	NE	0.25	U	0.28	U	0.26	U	0.4	U	1.1	U	0.25	U
3-Nitroaniline	99-09-2	NE	NE	NE	NE	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
4,6-Dinitro-o-cresol	534-52-1	NE	NE	5.1	66	0.45	U	0.51	U	0.46	U	0.73	U	1.9	U	0.45	U
4-Bromophenyl phenyl ether	101-55-3	NE	NE	NE	NE	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
4-Chloroaniline	106-47-8	NE	NE	2.7	11	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
4-Chlorophenyl phenyl ether	7005-72-3	NE	NE	NE	NE	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
4-Nitroaniline	100-01-6	NE	NE	27	110	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
4-Nitrophenol	100-02-7	NE	NE	NE	NE	0.24	U	0.28	U	0.25	U	0.39	U	1	U	0.24	U
Acenaphthene	83-32-9	NE	NE	3600	45000	0.14	U	0.16	U	0.14	U	0.22	U	0.6	U	0.14	U
Acenaphthylene	208-96-8	NE	NE	NE	NE	0.14	U	0.16	U	0.14	U	0.22	U	0.6	U	0.14	U
Aniline	62-53-3	NE	NE	95	400	0.21	U	0.24	U	0.21	U	0.34	U	0.9	U	0.21	U
Anthracene	120-12-7	NE	NE	18000	230000	0.1	U	0.12	U	0.11	U	0.17	U	0.45	U	0.1	U
Azobenzene	103-33-3	NE	NE	5.6	26	0.17	U	0.2	U	0.18	U	0.28	U	0.75	U	0.17	U
B(a)P-TEQ	50-32-8	0.07	1.54	0.11	2.1	0.035	U	0.040	U	0.035	U	0.066	J	0.149	U	0.035	U
Benzidine	92-87-5	NE	NE	0.00053	0.01	0.19/0.57	U	0.21/0.65	U	0.19/0.58	U	0.30/0.93	U	0.81/2.5	U	0.19/0.57	U
Benzo(a)anthracene	56-55-3	NE	NE	1.1	21	0.1	U	0.12	U	0.11	U	0.045	J	0.45	U	0.1	U
Benzo(a)pyrene	50-32-8	0.07	1.54	0.11	2.1	0.042/0.14	U	0.048/0.16	U	0.043/0.14	U	0.069/0.22	U	0.18/0.60	U	0.042/0.14	U
Benzo(b)fluoranthene	205-99-2	NE	NE	1.1	21	0.1	U	0.12	U	0.11	U	0.064	J	0.45	U	0.1	U

Table C-3
Soil SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID		VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-02-66		IP-3A-70.5		IP-05-11.0		IP-06-0.5		IP-06-0.5-FD		IP-07-66.5	
Sample Date	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/21/2019	Q	8/22/2019	Q	8/14/2019	Q	8/15/2019	Q	8/15/2019	Q	8/21/2019	Q
Benzo(ghi)perylene	191-24-2	NE	NE	NE	NE	0.14 U		0.16 U		0.14 U		0.062 J		0.6 U		0.14 U	
Benzo(k)fluoranthene	207-08-9	NE	NE	11	210	0.1 U		0.12 U		0.11 U		0.17 U		0.45 U		0.1 U	
Benzoic Acid	65-85-0	NE	NE	250000	3300000	0.56 U		0.64 U		0.58 U		0.36 J		2.4 U		0.56 U	
Benzyl Alcohol	100-51-6	NE	NE	6300	82000	0.17 U		0.2 U		0.18 U		0.16 J		0.24 J		0.17 U	
Biphenyl	92-52-4	NE	NE	47	200	0.4 U		0.45 U		0.4 U		0.64 U		1.7 U		0.39 U	
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	190	2500	0.19 U		0.21 U		0.19 U		0.3 U		0.81 U		0.19 U	
Bis(2-chloroethyl)ether	111-44-4	NE	NE	0.23	1	0.16 U		0.18 U		0.16 U		0.038/0.25 U		0.10/0.67 U		0.16 U	
Bis(2-chloroisopropyl)ether	108-60-1	2804	36274	3100	47000	0.21 U		0.24 U		0.21 U		0.34 U		0.9 U		0.21 U	
Bis(2-ethylhexyl)phthalate	117-81-7	20	120	39	160	0.17 U		0.2 U		0.18 U		0.63		1.5		0.17 U	
Butyl benzyl phthalate	85-68-7	NE	NE	290	1200	0.17 U		0.2 U		0.18 U		0.28 U		0.75 U		0.17 U	
Carbazole	86-74-8	NE	NE	NE	NE	0.17 U		0.2 U		0.18 U		0.28 U		0.75 U		0.17 U	
Chrysene	218-01-9	NE	NE	110	2100	0.1 U		0.12 U		0.11 U		0.055 J		0.45 U		0.1 U	
Dibenzo(a,h)anthracene	53-70-3	NE	NE	0.11	2.1	0.1 U		0.023/0.12 U		0.020/0.11 U		0.032/0.17 U		0.086/0.45 U		0.1 U	
Dibenzofuran	132-64-9	NE	NE	73	1000	0.17 U		0.2 U		0.18 U		0.28 U		0.75 U		0.17 U	
Diethyl phthalate	84-66-2	NE	NE	51000	660000	0.17 U		0.2 U		0.18 U		0.28 U		0.75 U		0.17 U	
Dimethyl phthalate	131-11-3	NE	NE	NE	NE	0.17 U		0.2 U		0.18 U		0.12 J		0.57 J		0.17 U	
Di-n-butylphthalate	84-74-2	NE	NE	6300	82000	0.17 U		0.2 U		0.18 U		0.28 U		0.75 U		0.17 U	
Di-n-octylphthalate	117-84-0	NE	NE	630	8200	0.17 U		0.2 U		0.18 U		0.28 U		0.75 U		0.17 U	
Fluoranthene	206-44-0	2301	26371	2400	30000	0.1 U		0.12 U		0.11 U		0.075 J		0.45 U		0.1 U	
Fluorene	86-73-7	2301	26371	2400	30000	0.17 U		0.2 U		0.18 U		0.28 U		0.75 U		0.17 U	
Hexachlorobenzene	118-74-1	0.13	0.69	0.21	0.96	0.1 U		0.12 U		0.11 U		0.032/0.17 U		0.084/0.45 U		0.1 U	
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	0.17 U		0.2 U		0.18 U		0.28 U		0.75 U		0.17 U	
Hexachlorocyclopentadiene	77-47-4	NE	NE	1.8	7.5	0.5 U		0.56 U		0.51 U		0.8 U		0.68/2.1 U		0.49 U	
Hexachloroethane	67-72-1	NE	NE	1.8	8	0.14 U		0.16 U		0.14 U		0.22 U		0.6 U		0.14 U	
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	1.1	21	0.14 U		0.16 U		0.14 U		0.039 J		0.6 U		0.14 U	
Isophorone	78-59-1	NE	NE	570	2400	0.16 U		0.18 U		0.16 U		0.25 U		0.67 U		0.16 U	
Naphthalene	91-20-3	2.7	16	3.8	17	0.17 U		0.2 U		0.18 U		0.28 U		0.75 U		0.17 U	
NDPA/DPA	86-30-6	NE	NE	110	470	0.14 U		0.16 U		0.14 U		0.22 U		0.6 U		0.14 U	
Nitrobenzene	98-95-3	NE	NE	5.1	22	0.16 U		0.18 U		0.16 U		0.25 U		0.67 U		0.16 U	
n-Nitrosodimethylamine	62-75-9	NE	NE	0.002	0.034	0.033/0.35 U		0.038/0.39 U		0.034/0.35 U		0.054/0.56 U		0.14/1.5 U		0.033/0.34 U	
n-Nitrosodi-n-propylamine	621-64-7	NE	NE	0.078	0.33	0.027/0.17 U		0.030/0.20 U		0.027/0.18 U		0.044/0.28 U		0.12/0.75 U		0.027/0.17 U	
p-Chloro-m-cresol	59-50-7	NE	NE	6300	82000	0.17 U		0.2 U		0.18 U		0.28 U		0.75 U		0.17 U	
Pentachlorophenol	87-86-5	0.48	2.9	1	4	0.14 U		0.16 U		0.14 U		0.22 U		0.16/0.60 U		0.14 U	
Phenanthrene	85-01-8	NE	NE	NE	NE	0.1 U		0.12 U		0.11 U		0.17 U		0.45 U		0.1 U	
Phenol	108-95-2	NE	NE	19000	250000	0.17 U		0.2 U		0.18 U		0.12 J		0.32 J		0.17 U	
Pyrene	129-00-0	NE	NE	1800	23000	0.1 U		0.12 U		0.11 U		0.11 J		0.13 J		0.1 U	
Pyridine	110-86-1	NE	NE	78	1200	0.19 U		0.21 U		0.19 U		0.3 U		0.81 U		0.19 U	

Table C-3
Soil SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID		VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-07-71		IP-12-7.5		IP-13-7.5		IP-14-0.5		IP-15-7.0		IP-15-7.0-FD	
Sample Date	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/21/2019	Q	7/22/2019	Q	7/23/2019	Q	7/23/2019	Q	7/23/2019	Q	7/23/2019	Q
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
1-Methylnaphthalene	90-12-0	NE	NE	18	73	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
2,4,5-Trichlorophenol	95-95-4	NE	NE	6300	82000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
2,4,6-Trichlorophenol	88-06-2	NE	NE	49	210	0.12	U	0.11	U								
2,4-Dichlorophenol	120-83-2	NE	NE	190	2500	0.18	U	0.17	U	0.17	U	0.16	U	0.17	U	0.16	U
2,4-Dimethylphenol	105-67-9	NE	NE	1300	16000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
2,4-Dinitrophenol	51-28-5	NE	NE	130	1600	0.96	U	0.9	U	0.92	U	0.87	U	0.9	U	0.88	U
2,4-Dinitrotoluene	121-14-2	NE	NE	1.7	7.4	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
2,6-Dinitrotoluene	606-20-2	NE	NE	0.36	1.5	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
2-Chloronaphthalene	91-58-7	NE	NE	4800	60000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
2-Chlorophenol	95-57-8	NE	NE	390	5800	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
2-Methylnaphthalene	91-57-6	NE	NE	240	3000	0.24	U	0.22	U	0.23	U	0.22	U	0.23	U	0.22	U
2-Methylphenol	95-48-7	NE	NE	3200	41000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
2-Nitroaniline	88-74-4	NE	NE	630	8000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
2-Nitrophenol	88-75-5	NE	NE	NE	NE	0.43	U	0.4	U	0.41	U	0.39	U	0.41	U	0.39	U
3,3'-Dichlorobenzidine	91-94-1	NE	NE	1.2	5.1	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	NE	NE	NE	NE	0.29	U	0.27	U	0.28	U	0.26	U	0.27	U	0.26	U
3-Nitroaniline	99-09-2	NE	NE	NE	NE	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
4,6-Dinitro-o-cresol	534-52-1	NE	NE	5.1	66	0.52	U	0.49	U	0.5	U	0.47	U	0.49	U	0.48	U
4-Bromophenyl phenyl ether	101-55-3	NE	NE	NE	NE	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
4-Chloroaniline	106-47-8	NE	NE	2.7	11	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
4-Chlorophenyl phenyl ether	7005-72-3	NE	NE	NE	NE	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
4-Nitroaniline	100-01-6	NE	NE	27	110	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
4-Nitrophenol	100-02-7	NE	NE	NE	NE	0.28	U	0.26	U	0.27	U	0.25	U	0.26	U	0.26	U
Acenaphthene	83-32-9	NE	NE	3600	45000	0.16	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U
Acenaphthylene	208-96-8	NE	NE	NE	NE	0.16	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U
Aniline	62-53-3	NE	NE	95	400	0.24	U	0.22	U	0.23	U	0.22	U	0.23	U	0.22	U
Anthracene	120-12-7	NE	NE	18000	230000	0.12	U	0.11	U								
Azobenzene	103-33-3	NE	NE	5.6	26	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
B(a)P-TEQ	50-32-8	0.07	1.54	0.11	2.1	0.040	U	0.038	U	0.039	U	0.036	U	0.038	U	0.036	U
Benzidine	92-87-5	NE	NE	0.00053	0.01	0.22/0.66	U	0.20/0.62	U	0.21/0.63	U	0.20/0.60	U	0.20/0.62	U	0.20/0.60	U
Benzo(a)anthracene	56-55-3	NE	NE	1.1	21	0.12	U	0.11	U								
Benzo(a)pyrene	50-32-8	0.07	1.54	0.11	2.1	0.049/0.160	U	0.046/0.15	U	0.047/0.15	U	0.044/0.14	U	0.046/0.15	U	0.044/0.15	U

Table C-3
Soil SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	CAS#	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-07-71		IP-12-7.5		IP-13-7.5		IP-14-0.5		IP-15-7.0		IP-15-7.0-FD	
						8/21/2019	Q	7/22/2019	Q	7/23/2019	Q	7/23/2019	Q	7/23/2019	Q	7/23/2019	Q
Sample Date		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)												
Benzo(b)fluoranthene	205-99-2	NE	NE	1.1	21	0.12	U	0.11	U								
Benzo(ghi)perylene	191-24-2	NE	NE	NE	NE	0.16	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U
Benzo(k)fluoranthene	207-08-9	NE	NE	11	210	0.12	U	0.11	U								
Benzoic Acid	65-85-0	NE	NE	250000	3300000	0.65	U	0.61	U	0.62	U	0.59	U	0.61	U	0.59	U
Benzyl Alcohol	100-51-6	NE	NE	6300	82000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Biphenyl	92-52-4	NE	NE	47	200	0.45	U	0.43	U	0.44	U	0.41	U	0.43	U	0.42	U
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	190	2500	0.22	U	0.2	U	0.21	U	0.2	U	0.2	U	0.2	U
Bis(2-chloroethyl)ether	111-44-4	NE	NE	0.23	1	0.18	U	0.17	U	0.17	U	0.16	U	0.17	U	0.16	U
Bis(2-chloroisopropyl)ether	108-60-1	2804	36274	3100	47000	0.24	U	0.22	U	0.23	U	0.22	U	0.23	U	0.22	U
Bis(2-ethylhexyl)phthalate	117-81-7	20	120	39	160	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Butyl benzyl phthalate	85-68-7	NE	NE	290	1200	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Carbazole	86-74-8	NE	NE	NE	NE	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Chrysene	218-01-9	NE	NE	110	2100	0.12	U	0.11	U								
Dibenzo(a,h)anthracene	53-70-3	NE	NE	0.11	2.1	0.023/0.120	U	0.022/0.11	U	0.022/0.11	U	0.021/0.11	U	0.022/0.11	U	0.021/0.11	U
Dibenzofuran	132-64-9	NE	NE	73	1000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Diethyl phthalate	84-66-2	NE	NE	51000	660000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Dimethyl phthalate	131-11-3	NE	NE	NE	NE	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Di-n-butylphthalate	84-74-2	NE	NE	6300	82000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Di-n-octylphthalate	117-84-0	NE	NE	630	8200	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Fluoranthene	206-44-0	2301	26371	2400	30000	0.12	U	0.11	U								
Fluorene	86-73-7	2301	26371	2400	30000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Hexachlorobenzene	118-74-1	0.13	0.69	0.21	0.96	0.12	U	0.11	U								
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Hexachlorocyclopentadiene	77-47-4	NE	NE	1.8	7.5	0.57	U	0.53	U	0.55	U	0.52	U	0.54	U	0.52	U
Hexachloroethane	67-72-1	NE	NE	1.8	8	0.16	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	1.1	21	0.16	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U
Isophorone	78-59-1	NE	NE	570	2400	0.18	U	0.17	U	0.17	U	0.16	U	0.17	U	0.16	U
Naphthalene	91-20-3	2.7	16	3.8	17	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
NDPA/DPA	86-30-6	NE	NE	110	470	0.16	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U
Nitrobenzene	98-95-3	NE	NE	5.1	22	0.18	U	0.17	U	0.17	U	0.16	U	0.17	U	0.16	U
n-Nitrosodimethylamine	62-75-9	NE	NE	0.002	0.034	0.038/0.40	U	0.036/0.37	U	0.037/0.38	U	0.035/0.36	U	0.036/0.38	U	0.035/0.36	U
n-Nitrosodi-n-propylamine	621-64-7	NE	NE	0.078	0.33	0.031/0.20	U	0.029/0.19	U	0.030/0.19	U	0.028/0.18	U	0.029/0.19	U	0.028/0.18	U
p-Chloro-m-cresol	59-50-7	NE	NE	6300	82000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Pentachlorophenol	87-86-5	0.48	2.9	1	4	0.16	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U
Phenanthrene	85-01-8	NE	NE	NE	NE	0.12	U	0.11	U								
Phenol	108-95-2	NE	NE	19000	250000	0.2	U	0.19	U	0.19	U	0.18	U	0.19	U	0.18	U
Pyrene	129-00-0	NE	NE	1800	23000	0.12	U	0.11	U								
Pyridine	110-86-1	NE	NE	78	1200	0.22	U	0.2	U	0.21	U	0.2	U	0.2	U	0.2	U

Key:
VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2019.
EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019
VSSs and RSLs in gray color font are for reference only; regulatory standards for comparison are in regular font.
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the enforcement standard(s)
NE - screening level not established
NS - Sample not analyzed for target compound
Q - Qualifier
U - Analyte was not detected and is reported as less than the reported quantitation limit.
J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated
value/value- if the reported quantitation limit exceeds the applicable regulatory criteria then the method detection/reported quantitation limit are presented.

Table C-4
Soil PFAS Sample Analytical Results

Sample ID	CAS#	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-05-11.0		IP-06-0.5		IP-06-0.5-FD		IP-12-11.0		IP-13-13.0	
						8/14/2019	Q	8/15/2019	Q	8/15/2019	Q	7/22/2019	Q	7/23/2019	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)										
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NE	NE	NE	NE	0.001	U	0.000728	J	0.000655	J	0.0011	U	0.00096	U
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	NONE	NE	NE	NE	NE	0.001	U	0.00148	U	0.00155	U	0.0011	U	0.00096	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NE	NE	NE	NE	0.001	U	0.00148	U	0.00155	U	0.0011	U	0.00096	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NE	NE	NE	NE	0.001	U	0.132		0.0941		0.0011	U	0.00096	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NE	NE	NE	NE	0.001	U	0.00656		0.00536		0.0011	U	0.00096	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NE	NE	1300	16000	0.001	U	0.00148	U	0.00155	U	0.0011	U	0.00096	U
Perfluorobutanoic Acid (PFBA)	375-22-4	NE	NE	NE	NE	0.001	U	0.000684	J	0.00064	J	0.0011	U	0.00096	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NE	NE	NE	NE	0.001	U	0.00148	U	0.00155	U	0.0011	U	0.00096	U
Perfluorodecanoic Acid (PFDA)	335-76-2	NE	NE	NE	NE	0.001	U	0.0923		0.0813		0.0011	U	0.00096	U
Perfluorododecanoic Acid (PFDoA)	307-55-1	NE	NE	NE	NE	0.001	U	0.0301		0.027		0.0011	U	0.00096	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NE	NE	NE	NE	0.001	U	0.00038	J	0.000288	J	0.0011	U	0.00096	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9	1.22	14.36	NE	NE	0.001	U	0.00768		0.00635		0.00026	J	0.00096	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	1.22	14.36	NE	NE	0.001	U	0.000277	J	0.000222	J	0.0011	U	0.00096	U
Perfluorohexanoic Acid (PFHxA)	307-24-4	NE	NE	NE	NE	0.001	U	0.00343		0.00276		0.000279	J	0.00096	U
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	NE	NE	NE	NE	0.001	U	0.00148	U	0.00155	U	0.0011	U	0.00096	U
Perfluorononanoic Acid (PFNA)	375-95-1	1.22	14.36	NE	NE	0.001	U	0.0282		0.0245		0.0011	U	0.00096	U
Perfluorooctanesulfonamide (FOSA)	754-91-6	NE	NE	NE	NE	0.001	U	0.0138		0.0124		0.011	U	0.00096	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	1.22	14.36	NE	NE	0.000148	J	0.048		0.0389		0.0011	U	0.00096	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.22	14.36	NE	NE	0.00013	J	0.0807		0.0719		0.000271	J	0.00004	J
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	NE	NE	NE	NE	0.001	U	0.00148	U	0.00155	U	0.0011	U	0.00096	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NE	NE	NE	NE	0.001	U	0.00172		0.00155		0.00007	J	0.00096	U
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NE	NE	NE	NE	0.001	U	0.00915		0.00914		0.0011	U	0.00096	U
Perfluorotridecanoic Acid (PFTDA)	72629-94-8	NE	NE	NE	NE	0.001	U	0.00224		0.00226		0.0011	U	0.00096	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NE	NE	NE	NE	0.001	U	0.0123		0.0102		0.0011	U	0.00096	U
Sum of PFHpA, PFHxA, PFNA, PFOS & PFOA		1.22	14.36	NE	NE	0.000278	J	0.164857		0.141872		0.000531	J	0.00004	J

Key:
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EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019
VSSs and RSLs in gray color font are for reference only; regulatory standards for comparison are in regular font.
mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the enforcement standard(s)
Total Regulated PFAS - Cumulative sum of PFOA, PFOS, PFHxS, PFHpA, and PFNA
NE - screening level not established
Q - Qualifier
U - Analyte was not detected and is reported as less than the reported quantitation limit.
J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-5
Soil POLYCHLORINATED BIPHENYLS Sample Analytical Results

Sample ID		VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-05-11.0		IP-06-0.5		IP-06-0.5-FD		IP-12-7.5		IP-13-10.5	
Sample Date	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/14/2019	Q	8/15/2019	Q	8/15/2019	Q	7/22/2019	Q	7/23/2019	Q
Aroclor 1016	12674-11-2			4.1	27	0.0346	U	0.164	U	0.153	U	0.0375	U	0.033	U
Aroclor 1221	11104-28-2			0.2	0.83	0.0346	U	0.164	U	0.153	U	0.0375	U	0.033	U
Aroclor 1232	11141-16-5			0.17	0.72	0.0346	U	0.164	U	0.153	U	0.0375	U	0.033	U
Aroclor 1242	53469-21-9			0.23	0.95	0.0346	U	0.164	U	0.153	U	0.0375	U	0.033	U
Aroclor 1248	12672-29-6	NE	NE	0.23	0.95	0.0346	U	0.164	U	0.153	U	0.0375	U	0.033	U
Aroclor 1254	11097-69-1			0.24	0.97	0.0346	U	2.66		1.68		0.0375	U	0.033	U
Aroclor 1260	11096-82-5			0.24	0.99	0.0346	U	0.865		1.04		0.0375	U	0.033	U
Aroclor 1262	37324-23-5			NE	NE	0.0346	U	0.164	U	0.153	U	0.0375	U	0.033	U
Aroclor 1268	11100-14-4			NE	NE	0.0346	U	0.164	U	0.153	U	0.0375	U	0.033	U
PCBs, Total	1336-36-3	0.114	0.68	NE	NE	0.0346	U	3.53		2.72		0.0375	U	0.033	U

Key:

VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2019.

EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019

VSSs and RSLs in gray color font are for reference only; regulatory standards for comparison are in regular font.

mg/kg - milligrams per kilogram (parts per million)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

Table C-6
Soil HERBICIDE Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	DU-1-A	DU-1-B	DU-1-C	DU-2-A	DU-2-B	DU-2-C							
Sample Date	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/21/2019	Q	8/21/2019	Q	8/21/2019	Q	8/22/2019	Q	8/22/2019	Q	8/22/2019	Q
2,4,5-T	93-76-5	NE	NE	630	8200	0.198	U	0.198	U	0.198	U	0.178	U	0.178	U	0.178	U
2,4,5-TP (Silvex)	93-72-1	NE	NE	510	6600	0.198	U	0.198	U	0.198	U	0.178	U	0.178	U	0.178	U
2,4-D	94-75-7	NE	NE	700	9600	0.198	U	0.198	U	0.198	U	0.178	U	0.178	U	0.178	U
2,4-DB	94-82-6	NE	NE	1900	25000	0.198	U	0.198	U	0.198	U	0.178	U	0.178	U	0.178	U
Dalapon	75-99-0	NE	NE	1900	25000	0.0395	U	0.0395	U	0.0396	U	0.0357	U	0.0356	U	0.0356	U
Dicamba	1918-00-9	NE	NE	1900	25000	0.0395	U	0.0395	U	0.0396	U	0.0357	U	0.0356	U	0.0356	U
Dichloroprop	120-36-5	NE	NE	NE	NE	0.0395	U	0.0395	U	0.0396	U	0.0357	U	0.0356	U	0.0356	U
MCPA	94-74-6	NE	NE	32	410	3.95	U	3.95	U	3.96	U	3.57	U	3.56	U	3.56	U
MCPP	93-65-2	NE	NE	63	820	3.95	U	3.95	U	3.96	U	3.57	U	3.56	U	3.56	U

Key:

VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2015

EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2011

VSSs and RSLs in gray color font are for reference only; regulatory standards for comparison are in regular font

mg/kg - milligrams per kilogram (parts per million)

Bold results indicate detections of the analyte

Shaded results indicate an exceedance of the enforcement standard(s)

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit

Table C-7
Soil Dioxins & Furans Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-05-11.0	IP-06-0.5	IP-06-0.5-FD	IP-12-11.0	IP-13-10.5	
Sample Date	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	8/14/2019	8/15/2019	8/15/2019	7/22/2019	7/23/2019
						Q	Q	Q	Q	Q
1,2,3,4,6,7,8-HpCDD	35822-46-9					0.0000266 U	0.00014800	0.000173	0.0000028 U	0.00000226 U
1,2,3,4,6,7,8-HpCDF	67562-39-4					0.0000266 U	0.00004600	0.0000362	0.0000028 U	0.00000226 U
1,2,3,4,7,8,9-HpCDF	55673-89-7					0.0000266 U	0.00001200	0.0000083	0.0000028 U	0.00000226 U
1,2,3,4,7,8-HxCDD	39227-28-6					0.0000266 U	0.00000225 J	0.00000383 U	0.0000028 U	0.00000226 U
1,2,3,4,7,8-HxCDF	70648-26-9					0.0000266 U	0.00001550	0.00000951	0.0000028 U	0.00000226 U
1,2,3,6,7,8-HxCDD	57653-85-7					0.0000266 U	0.00000813	0.00000953	0.0000028 U	0.00000226 U
1,2,3,6,7,8-HxCDF	57117-44-9					0.0000266 U	0.00000740	0.00000423	0.0000028 U	0.00000226 U
1,2,3,7,8,9-HxCDD	19408-74-3	2,3,7,8-TCDD	2,3,7,8-TCDD TEQ	2,3,7,8-TCDD TEQ	2,3,7,8-TCDD TEQ	0.0000266 U	0.00000449	0.00000492	0.0000028 U	0.00000226 U
1,2,3,7,8,9-HxCDF	72918-21-9	TEQ 0.00000225	0.0000137	0.0000048	0.000022	0.0000266 U	0.00000397 J	0.00000185 J	0.0000028 U	0.00000226 U
1,2,3,7,8-PeCDD	40321-76-4					0.0000266 U	0.00000408 U	0.00000383 U	0.0000028 U	0.00000226 U
1,2,3,7,8-PeCDF	57117-41-6					0.0000266 U	0.00000806	0.00000372 J	0.0000028 U	0.00000226 U
2,3,4,6,7,8-HxCDF	60851-34-5					0.0000266 U	0.00000614	0.00000362 J	0.0000028 U	0.00000226 U
2,3,4,7,8-PeCDF	57117-31-4					0.0000266 U	0.00000954	0.00000404	0.0000028 U	0.00000226 U
2,3,7,8-TCDD	1746-01-6					0.00000532 U	0.00000031	0.00000303	0.00000056 U	0.000000451 U
2,3,7,8-TCDF	51207-31-9					0.00000532 U	0.00004220	0.0000368	0.00000056 U	0.000000451 U
OCDD	3268-87-9					0.00000703	0.00180000	0.00246	0.00000518 J	0.00000451 U
OCDF	39001-02-0					0.00000532 U	0.00013800	0.000139	0.00000056 U	0.00000451 U
2,3,7,8-TCDD - TEQ	NA	0.00000225	0.0000137	0.0000048	0.000022	0.000000199	0.00001471	0.00000114	0.00000021	0.000000167 U
Total HpCDD	37871-00-4					0.0000266 U	0.00034800	0.000348	0.0000028 U	0.00000226 U
Total HpCDF	38998-75-3					0.0000266 U	0.00010500	0.0000876	0.0000028 U	0.00000226 U
Total HxCDD	34465-46-8					0.0000266 U	0.00007090	0.0000838	0.0000028 U	0.00000226 U
Total HxCDF	55684-94-1					0.0000266 U	0.00006820	0.0000362	0.0000028 U	0.00000226 U
Total PCDD	NA					0.00000703	0.00410000	0.00291	0.00000518 J	0.000000451 U
Total PCDF	NA					0.00000532 U	0.00057300	0.00042	0.00000056 U	0.000000451 U
Total PeCDD	36088-22-9					0.0000266 U	0.00000408 U	0.00000383 U	0.0000028 U	0.00000226 U
Total PeCDF	30402-15-4					0.0000266 U	0.00006900	0.0000324	0.0000028 U	0.00000226 U
Total TCDD	41903-57-5					0.00000532 U	0.00001470	0.0000137	0.00000056 U	0.000000451 U
Total TCDF	55722-27-5					0.00000532 U	0.00019300	0.000125	0.00000056 U	0.000000451 U

Key:
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mg/kg - milligrams per kilogram (parts per million)
Bold results indicate detections of the analyte
Shaded results indicate an exceedence of the enforcement standard(s)
TEQ - Toxic Equivalence Quotient
NE - screening level not established
Q - Qualifier
U - Analyte was not detected and is reported as less than the reported quantitation limit.
J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-8
Groundwater METALS Sample Analytical Results

Sample ID	CAS#	VGES	IP-01		IP-02		IP-03		IP-04		IP-05		IP-05-FD	
			8/29/2019	Q	8/29/2019	Q	8/29/2019	Q	8/30/2019	Q	8/29/2019	Q	8/29/2019	Q
		(µg/l)												
Aluminum, Total	7429-90-5	NE	96 J		20400			3420		831		144		93 J
Barium, Total	7440-39-3	2000	79		270			84		99		15		13
Beryllium, Total	7440-41-7	4	1/5 U		1/5 U			1/5 U		1/5 U		1/5 U		1/5 U
Cadmium, Total	7440-43-9	5	1/5 U		1 J			1/5 U		1/5 U		1/5 U		1/5 U
Calcium, Total	7440-70-2	NE	32700		44900			18900		37500		9680		9210
Chromium, Total	7440-47-3	100	10 U		49			12		3 J		10 U		10 U
Cobalt, Total	7440-48-4	NE	20 U		43			7 J		3 J		20 U		20 U
Copper, Total	7440-50-8	1300	2 J		106			13		6 J		3 J		10 U
Iron, Total	7439-89-6	NE	207		51800			9500		2350		351		261
Lead, Total	7439-92-1	15	10 U		52			8 J		5 J		10 U		10 U
Magnesium, Total	7439-95-4	NE	6660		19400			5960		6040		2770		2660
Manganese, Total	7439-96-5	300	136		2580			777		433		78		65
Nickel, Total	7440-02-0	100	2 J		76			21 J		7 J		3 J		3 J
Potassium, Total	9/7/7440	NE	2800		7130			2720		3020		1080 J		1180 J
Selenium, Total	7782-49-2	50	10 U		10 U			10 U		10 U		10 U		10 U
Silver, Total	7440-22-4	NE	7 U		7 U			7 U		7 U		7 U		7 U
Sodium, Total	7440-23-5	NE	223000		106000			7550		245000		16600		17100
Vanadium, Total	7440-62-2	NE	10 U		51			8 J		2 J		10 U		10 U
Zinc, Total	7440-66-6	NE	11 J		190			31 J		16 J		13 J		13 J
Antimony, Total	7440-36-0	NE	4 U		4 U			4 U		4 U		4 U		4 U
Arsenic, Total	7440-38-2	10	0.26 J		20.54			2.76		1.26		0.24 J		0.5 U
Thallium, Total	7440-28-0	2	1 U		0.54 J			1 U		1 U		1 U		1 U
Mercury, Total	7439-97-6	2	0.2 U		0.2 U			0.2 U		0.2 U		0.2 U		0.2 U
Cyanide, Total	57-12-5	200	4 J		5 U			5 U		4 J		5 U		5 U

Table C-8
Groundwater METALS Sample Analytical Results

Sample ID Sample Date	CAS#	VGES (µg/l)	IP-06		IP-07		IP-08		IP-16		DEEP WELL		SHALLOW WELL	
			8/30/2019	Q	8/29/2019	Q	8/30/2019	Q	8/29/2019	Q	7/23/2019	Q	7/23/2019	Q
Aluminum, Total	7429-90-5	NE	1470		277		3300		453		100	U	100	U
Barium, Total	7440-39-3	2000	106		56		99		120		64		49	
Beryllium, Total	7440-41-7	4	1/5	U	1/5	U	1/5	U	1/5	U	1/5	U	1/5	U
Cadmium, Total	7440-43-9	5	1/5	U	1/5	U	1/5	U	1/5	U	1/5	U	1/5	U
Calcium, Total	7440-70-2	NE	54500		44900		38100		88900		52300		56700	
Chromium, Total	7440-47-3	100	3	J	10	U	8	J	10	U	10	U	10	U
Cobalt, Total	7440-48-4	NE	6	J	20	U	18	J	20	U	20	U	20	U
Copper, Total	7440-50-8	1300	10		2	J	31		3	J	88		20	
Iron, Total	7439-89-6	NE	4390		1000		13100		1170		15	J	65	
Lead, Total	7439-92-1	15	6	J	3	J	21		3	J	27		3	J
Magnesium, Total	7439-95-4	NE	14000		12300		11800		26200		17100		17100	
Manganese, Total	7439-96-5	300	346		45		722		161		31		267	
Nickel, Total	7440-02-0	100	12	J	3	J	23	J	3	J	5	J	25	U
Potassium, Total	9/7/7440	NE	5130		2530		5070		3990		3790		4490	
Selenium, Total	7782-49-2	50	10	U	10	U	10	U	10	U	10	U	10	U
Silver, Total	7440-22-4	NE	7	U	7	U	7	U	7	U	7	U	7	U
Sodium, Total	7440-23-5	NE	115000		111000		86800		209000		99700		40400	
Vanadium, Total	7440-62-2	NE	3	J	10	U	11		10	U	10	U	10	U
Zinc, Total	7440-66-6	NE	25	J	14	J	58		14	J	187		30	J
Antimony, Total	7440-36-0	NE	4	U	0.45	J	4	U	4	U	0.47	J	0.89	J
Arsenic, Total	7440-38-2	10	4.15		0.71		22.03		1.48		0.37	J	0.64	
Thallium, Total	7440-28-0	2	1	U	1	U	1	U	1	U	0.5	U	0.19	J
Mercury, Total	7439-97-6	2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cyanide, Total	57-12-5	200	5	U	5	U	5	U	5	U	0.005	U	0.005	U

Key:
 VGES - Vermont Groundwater Enforcement Standard (7/6/2019)
 µg/L - micrograms per liter (parts per billion)
Bold results indicate detections of the analyte
 Shaded results indicate an exceedence of the enforcement standard(s)
 NE - screening level not established
 Q - Qualifier
 U - Analyte was not detected and is reported as less than the reported quantitation limit.
 J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated
 value/value- if the reported quantitation limit exceeds the applicable regulatory criteria then the method detection/reported quantitation limit are presented.

Table C-9
Groundwater VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	CAS#	VGES	IP-01		IP-02		IP-03		IP-04		IP-05		IP-05-FD	
			8/29/2019	Q	8/29/2019	Q	8/29/2019	Q	8/30/2019	Q	8/29/2019	Q	8/29/2019	Q
		(µg/l)												
1,1,1,2-Tetrachloroethane	630-20-6		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1,1-Trichloroethane	71-55-6	200	0.5 U											
1,1,2,2-Tetrachloroethane	79-34-5	NE	0.5 U											
1,1,2-Trichloroethane	79-00-5	5	0.75 U											
1,1-Dichloroethane	75-34-3	70	0.75 U											
1,1-Dichloroethene	75-35-4	7	0.5 U											
1,1-Dichloropropene	563-58-6	NE	2.5 U											
1,2,3-Trichlorobenzene	87-61-6	0.9	0.23/2.5 U											
1,2,3-Trichloropropane	96-18-4	0.02	0.18/5 U											
1,2,4-Trichlorobenzene	120-82-1	70	2.5 U											
1,2,4-Trimethylbenzene	95-63-6	23	2.5 U											
1,2-Dibromo-3-chloropropane	96-12-8	0.2	0.35/2.5 U											
1,2-Dibromoethane	106-93-4	0.05	0.19/2 U											
1,2-Dichlorobenzene	95-50-1	600	2.5 U											
1,2-Dichloroethane	107-06-2	5	0.5 U											
1,2-Dichloroethene, Total	540-59-0	NE	0.5 U											
1,2-Dichloropropane	78-87-5	5	1.8 U											
1,3,5-Trimethylbenzene	108-67-8	23	2.5 U											
1,3-Dichlorobenzene	541-73-1	600	2.5 U											
1,3-Dichloropropane	142-28-9	NE	2.5 U											
1,3-Dichloropropene, Total	542-75-6	NE	0.5 U											
1,4-Dichlorobenzene	106-46-7	75	2.5 U											
1,4-Dichlorobutane	110-56-5	NE	5 U		5 U		5 U		5 U		5 U		5 U	
2,2-Dichloropropane	594-20-7	NE	2.5 U											
2-Butanone	78-93-3	511	5 U		5 U		5 U		5 U		5 U		5 U	
2-Hexanone	591-78-6	NE	5 U		5 U		5 U		5 U		5 U		5 U	
4-Methyl-2-pentanone	108-10-1	NE	5 U		5 U		5 U		5 U		5 U		5 U	
Acetone	67-64-1	950	2.4 J		1.8 J		5 U		5 U		5 U		5 U	
Acrylonitrile	107-13-1	NE	5 U		5 U		5 U		5 U		5 U		5 U	
Benzene	71-43-2	5	0.5 U											
Bromobenzene	108-86-1	NE	2.5 U											
Bromochloromethane	74-97-5	8	2.5 U											
Bromodichloromethane	75-27-4	NE	0.5 U											
Bromoform	75-25-2	NE	2 U		2 U		2 U		2 U		2 U		2 U	
Bromomethane	74-83-9	5	1 U		1 U		1 U		1 U		1 U		1 U	
Carbon disulfide	75-15-0	NE	5 U		5 U		5 U		5 U		5 U		5 U	

Table C-9
Groundwater VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	VGES	IP-01	IP-02	IP-03	IP-04	IP-05	IP-05-FD				
Sample Date	CAS#	8/29/2019	Q	8/29/2019	Q	8/29/2019	Q	8/29/2019	Q	8/29/2019	Q
Carbon tetrachloride	56-23-5	5	0.5 U								
Chlorobenzene	108-90-7	100	0.5 U								
Chloroethane	75-00-3	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U		
Chloroform	67-66-3	NE	0.22 J	0.31 J	0.48 J	2	0.75 U	0.75 U	0.75 U		
Chloromethane	74-87-3	NE	2.5 U								
cis-1,2-Dichloroethene	156-59-2	70	0.5 U								
cis-1,3-Dichloropropene	10061-01-5	NE	0.5 U								
Dibromochloromethane	124-48-1	NE	0.5 U								
Dibromomethane	74-95-3	NE	5 U	5 U	5 U	5 U	5 U	5 U	5 U		
Dichlorodifluoromethane	75-71-8	NE	5 U	5 U	5 U	5 U	5 U	5 U	5 U		
Ethyl ether	60-29-7	NE	2.5 U								
Ethyl methacrylate	97-63-2	NE	5 U	5 U	5 U	5 U	5 U	5 U	5 U		
Ethylbenzene	100-41-4	700	0.5 U								
Hexachlorobutadiene	87-68-3	NE	0.5 U								
Isopropylbenzene	98-82-8	NE	0.5 U								
Methyl tert butyl ether	1634-04-4	11	1 U	1 U	1 U	1 U	1 U	1 U	1 U		
Methylene chloride	75-09-2	5	3 U	3 U	3 U	3 U	3 U	3 U	3 U		
Naphthalene	91-20-3	0.5	0.22/2.5 U								
n-Butylbenzene	104-51-8	NE	0.5 U								
n-Propylbenzene	103-65-1	NE	0.5 U								
o-Chlorotoluene	95-49-8	100	2.5 U								
o-Xylene	95-47-6	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U		
p/m-Xylene	179601-23-1	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U		
p-Chlorotoluene	106-43-4	100	2.5 U								
p-Isopropyltoluene	99-87-6	NE	0.5 U								
sec-Butylbenzene	135-98-8	NE	0.5 U								
Styrene	100-42-5	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U		
tert-Butylbenzene	98-06-6	NE	2.5 U								
Tetrachloroethene	127-18-4	5	0.5 U	0.5 U	1.5	0.19 J	0.5 U	0.5 U	0.5 U		
Tetrahydrofuran	109-99-9	NE	5 U	5 U	5 U	5 U	5 U	5 U	5 U		
Toluene	108-88-3	1000	0.75 U								
Total Xylene	1330-20-7	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U		
trans-1,2-Dichloroethene	156-60-5	100	0.75 U								
trans-1,3-Dichloropropene	10061-02-6	NE	0.5 U								
trans-1,4-Dichloro-2-butene	110-57-6	NE	2.5 U								
Trichloroethene	79-01-6	5	0.5 U								
Trichlorofluoromethane	75-69-4	NE	2.5 U								
Vinyl acetate	108-05-4	NE	5 U	5 U	5 U	5 U	5 U	5 U	5 U		
Vinyl chloride	75-01-4	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U		
Total Trimethyl benzenes	NA	23	2.5 U								
Xylenes, Total	1330-20-7	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U		

Table C-9
Groundwater VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	CAS#	VGES	IP-06		IP-07		IP-08		IP-16		DEEP WELL		SHALLOW WELL	
			8/30/2019	Q	8/29/2019	Q	8/30/2019	Q	8/29/2019	Q	7/23/2019	Q	7/23/2019	Q
		(µg/l)												
1,1,1,2-Tetrachloroethane	630-20-6		0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.5 U
1,1,1-Trichloroethane	71-55-6	200	0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.5 U
1,1,1,2-Tetrachloroethane	79-34-5	NE	0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.5 U
1,1,2-Trichloroethane	79-00-5	5	0.75 U		0.75 U			0.75 U		0.75 U		0.75 U		0.75 U
1,1-Dichloroethane	75-34-3	70	0.75 U		0.75 U			0.75 U		0.75 U		0.75 U		0.75 U
1,1-Dichloroethene	75-35-4	7	0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.5 U
1,1-Dichloropropene	563-58-6	NE	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
1,2,3-Trichlorobenzene	87-61-6	0.9	0.23/2.5 U		0.23/2.5 U			0.23/2.5 U		0.23/2.5 U		0.23/2.5 U		0.23/2.5 U
1,2,3-Trichloropropane	96-18-4	0.02	0.18/5 U		0.18/5 U			0.18/5 U		0.18/0.5 U		0.18/5 U		0.18/5 U
1,2,4-Trichlorobenzene	120-82-1	70	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
1,2,4-Trimethylbenzene	95-63-6	23	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
1,2-Dibromo-3-chloropropane	96-12-8	0.2	0.35/2.5 U		0.35/2.5 U			0.35/2.5 U		0.35/2.5 U		0.35/2.5 U		0.35/2.5 U
1,2-Dibromoethane	106-93-4	0.05	0.19/2 U		0.19/2 U			0.19/2 U		0.19/2 U		0.19/2 U		0.19/2 U
1,2-Dichlorobenzene	95-50-1	600	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
1,2-Dichloroethane	107-06-2	5	0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.21 J
1,2-Dichloroethene, Total	540-59-0	NE	0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.5 U
1,2-Dichloropropane	78-87-5	5	1.8 U		1.8 U			1.8 U		1.8 U		1.8 U		1.8 U
1,3,5-Trimethylbenzene	108-67-8	23	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
1,3-Dichlorobenzene	541-73-1	600	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
1,3-Dichloropropane	142-28-9	NE	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
1,3-Dichloropropene, Total	542-75-6	NE	0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.5 U
1,4-Dichlorobenzene	106-46-7	75	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
1,4-Dichlorobutane	110-56-5	NE	5 U		5 U			5 U		5 U		5 U		5 U
2,2-Dichloropropane	594-20-7	NE	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
2-Butanone	78-93-3	511	5 U		5 U			5 U		5 U		5 U		5 U
2-Hexanone	591-78-6	NE	5 U		5 U			1.1 J		5 U		5 U		5 U
4-Methyl-2-pentanone	108-10-1	NE	5 U		5 U			5 U		5 U		5 U		5 U
Acetone	67-64-1	950	5 U		1.6 J			5 U		5 U		5 U		5 U
Acrylonitrile	107-13-1	NE	5 U		5 U			5 U		5 U		5 U		5 U
Benzene	71-43-2	5	0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.5 U
Bromobenzene	108-86-1	NE	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
Bromochloromethane	74-97-5	8	2.5 U		2.5 U			2.5 U		2.5 U		2.5 U		2.5 U
Bromodichloromethane	75-27-4	NE	0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.5 U
Bromoform	75-25-2	NE	2 U		2 U			2 U		2 U		2 U		2 U
Bromomethane	74-83-9	5	1 U		1 U			1 U		0.33 J		1 U		1 U
Carbon disulfide	75-15-0	NE	5 U		5 U			5 U		5 U		5 U		5 U
Carbon tetrachloride	56-23-5	5	0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.5 U
Chlorobenzene	108-90-7	100	0.5 U		0.5 U			0.5 U		0.5 U		0.5 U		0.5 U

Table C-9
Groundwater VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	CAS#	VGES	IP-06		IP-07		IP-08		IP-16		DEEP WELL		SHALLOW WELL	
			8/30/2019	Q	8/29/2019	Q	8/30/2019	Q	8/29/2019	Q	7/23/2019	Q	7/23/2019	Q
Sample Date		(µg/l)												
Chloroethane	75-00-3	NE	1 U		1 U		1 U		1 U		1 U		1 U	
Chloroform	67-66-3	NE	0.75 U		0.39 J		0.75 U		0.35 J		0.75 U		0.48 J	
Chloromethane	74-87-3	NE	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U	
cis-1,2-Dichloroethene	156-59-2	70	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
cis-1,3-Dichloropropene	10061-01-5	NE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Dibromochloromethane	124-48-1	NE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Dibromomethane	74-95-3	NE	5 U		5 U		5 U		5 U		5 U		5 U	
Dichlorodifluoromethane	75-71-8	NE	5 U		5 U		5 U		5 U		5 U		5 U	
Ethyl ether	60-29-7	NE	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U	
Ethyl methacrylate	97-63-2	NE	5 U		5 U		5 U		5 U		5 U		5 U	
Ethylbenzene	100-41-4	700	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Hexachlorobutadiene	87-68-3	NE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Isopropylbenzene	98-82-8	NE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Methyl tert butyl ether	1634-04-4	11	1 U		1 U		1 U		1 U		2		9.9	
Methylene chloride	75-09-2	5	3 U		3 U		3 U		3 U		3 U		3 U	
Naphthalene	91-20-3	0.5	0.22/2.5 U		0.22/2.5 U		0.22/2.5 U		0.22/2.5 U		1.1 J		1.8 J	
n-Butylbenzene	104-51-8	NE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
n-Propylbenzene	103-65-1	NE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
o-Chlorotoluene	95-49-8	100	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U	
o-Xylene	95-47-6	10000	1 U		1 U		1 U		1 U		1 U		1 U	
p/m-Xylene	179601-23-1	NE	1 U		1 U		1 U		1 U		1 U		1 U	
p-Chlorotoluene	106-43-4	100	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U	
p-Isopropyltoluene	99-87-6	NE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
sec-Butylbenzene	135-98-8	NE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Styrene	100-42-5	100	1 U		1 U		1 U		1 U		1 U		1 U	
tert-Butylbenzene	98-06-6	NE	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U	
Tetrachloroethene	127-18-4	5	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Tetrahydrofuran	109-99-9	NE	5 U		5 U		5 U		5 U		5 U		5 U	
Toluene	108-88-3	1000	0.75 U		0.75 U		0.75 U		0.75 U		0.75 U		0.75 U	
Total Xylene	1330-20-7	10000	1 U		1 U		1 U		1 U		1 U		1 U	
trans-1,2-Dichloroethene	156-60-5	100	0.75 U		0.75 U		0.75 U		0.75 U		0.75 U		0.75 U	
trans-1,3-Dichloropropene	10061-02-6	NE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
trans-1,4-Dichloro-2-butene	110-57-6	NE	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U	
Trichloroethene	79-01-6	5	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Trichlorofluoromethane	75-69-4	NE	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U	
Vinyl acetate	108-05-4	NE	5 U		5 U		5 U		5 U		5 U		5 U	
Total Trimethyl benzenes	NA	23	2.5 U		2.5 U		2.5 U		2.5 U		2.5 U		2.5 U	
Vinyl chloride	75-01-4	2	1 U		1 U		1 U		1 U		1 U		1 U	
Xylenes, Total	1330-20-7	10000	1 U		1 U		1 U		1 U		1 U		1 U	

Key:

VGES - Vermont Groundwater Enforcement Standard (7/6/2019)

µg/L - micrograms per liter (parts per billion)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

Total Trimethyl benzenes - Cumulative sum of all TMB isomers

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

value/value- if the reported quantitation limit exceeds the applicable regulatory criteria then the method detection/reported quantitation limit are presented.

Table C-10
Groundwater SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	VGES	IP-01	IP-02	IP-03	IP-04	IP-05	IP-05-FD
Sample Date	CAS#	8/29/2019	8/29/2019	8/29/2019	8/30/2019	8/29/2019	8/29/2019
	(µg/l)	Q	Q	Q	Q	Q	Q
1,2,4-Trichlorobenzene	120-82-1	70	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	95-50-1	600	2 U	2 U	2 U	2 U	2 U
1,3-Dichlorobenzene	541-73-1	600	2 U	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	106-46-7	75	2 U	2 U	2 U	2 U	2 U
2,4,5-Trichlorophenol	95-95-4	NE	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	88-06-2	NE	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	120-83-2	NE	5 U	5 U	5 U	5 U	5 U
2,4-Dimethylphenol	105-67-9	NE	5 U	5 U	5 U	5 U	5 U
2,4-Dinitrophenol	51-28-5	NE	20 U				
2,4-Dinitrotoluene	121-14-2	NE	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	606-20-2	NE	5 U	5 U	5 U	5 U	5 U
2-Chlorophenol	95-57-8	NE	2 U	2 U	2 U	2 U	2 U
2-Methylphenol	95-48-7	NE	5 U	5 U	5 U	5 U	5 U
2-Nitroaniline	88-74-4	NE	5 U	5 U	5 U	5 U	5 U
2-Nitrophenol	88-75-5	NE	10 U				
3,3'-Dichlorobenzidine	91-94-1	NE	5 U	5 U	5 U	5 U	5 U
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	NE	5 U	5 U	5 U	5 U	5 U
3-Nitroaniline	99-09-2	NE	5 U	5 U	5 U	5 U	5 U
4,6-Dinitro-o-cresol	534-52-1	NE	10 U				
4-Bromophenyl phenyl ether	101-55-3	NE	2 U	2 U	2 U	2 U	2 U
4-Chloroaniline	106-47-8	NE	5 U	5 U	5 U	5 U	5 U
4-Chlorophenyl phenyl ether	7005-72-3	NE	2 U	2 U	2 U	2 U	2 U
4-Nitroaniline	100-01-6	NE	5 U	5 U	5 U	5 U	5 U
4-Nitrophenol	100-02-7	NE	10 U				
Aniline	62-53-3	NE	2 U	2 U	2 U	2 U	2 U
Azobenzene	103-33-3	NE	2 U	2 U	2 U	2 U	2 U
Benzidine	92-87-5	NE	20 U				
Benzoic Acid	65-85-0	NE	50 U				
Benzyl Alcohol	100-51-6	NE	2 U	2 U	2 U	2 U	2 U
Biphenyl	92-52-4	NE	2 U	2 U	2 U	2 U	2 U
Bis(2-chloroethoxy)methane	111-91-1	NE	5 U	5 U	5 U	5 U	5 U
Bis(2-chloroethyl)ether	111-44-4	NE	2 U	2 U	2 U	2 U	2 U
Bis(2-chloroisopropyl)ether	108-60-1	46	2 U	2 U	2 U	2 U	2 U
Bis(2-ethylhexyl)phthalate	117-81-7	6	3 U	3 U	3 U	3 U	3 U

Table C-10
Groundwater SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	VGES	IP-01	IP-02	IP-03	IP-04	IP-05	IP-05-FD
Sample Date	CAS#	8/29/2019	8/29/2019	8/29/2019	8/30/2019	8/29/2019	8/29/2019
	(µg/l)	Q	Q	Q	Q	Q	Q
Butyl benzyl phthalate	85-68-7	NE	5 U	5 U	5 U	5 U	5 U
Carbazole	86-74-8	NE	2 U	2 U	2 U	2 U	2 U
Dibenzofuran	132-64-9	NE	2 U	2 U	2 U	2 U	2 U
Diethyl phthalate	84-66-2	NE	5 U	5 U	5 U	5 U	5 U
Dimethyl phthalate	131-11-3	NE	5 U	5 U	5 U	5 U	5 U
Di-n-butylphthalate	84-74-2	NE	5 U	5 U	5 U	5 U	5 U
Di-n-octylphthalate	117-84-0	NE	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	NE	20 U				
Isophorone	78-59-1	NE	5 U	5 U	5 U	5 U	5 U
NDPA/DPA	86-30-6	NE	2 U	2 U	2 U	2 U	2 U
Nitrobenzene	98-95-3	NE	2 U	2 U	2 U	2 U	2 U
n-Nitrosodimethylamine	62-75-9	NE	2 U	2 U	2 U	2 U	2 U
n-Nitrosodi-n-propylamine	621-64-7	NE	5 U	5 U	5 U	5 U	5 U
p-Chloro-m-cresol	59-50-7	NE	2 U	2 U	2 U	2 U	2 U
Phenol	108-95-2	NE	5 U	5 U	5 U	5 U	5 U
Pyridine	110-86-1	NE	3.5 U				
1-Methylnaphthalene	90-12-0	NE	0.1 U				
2-Chloronaphthalene	91-58-7	NE	0.2 U				
2-Methylnaphthalene	91-57-6	NE	0.1 U				
Acenaphthene	83-32-9	NE	0.1 U				
Acenaphthylene	208-96-8	NE	0.1 U				
Anthracene	120-12-7	343	0.1 U				
Benzo(a)anthracene	56-55-3	NE	0.1 U				
Benzo(a)pyrene	50-32-8	0.2	0.1 U				
Benzo(b)fluoranthene	205-99-2	NE	0.1 U				
Benzo(ghi)perylene	191-24-2	NE	0.1 U				
Benzo(k)fluoranthene	207-08-9	NE	0.1 U				
Chrysene	218-01-9	NE	0.1 U				
Dibenzo(a,h)anthracene	53-70-3	NE	0.1 U				
Fluoranthene	206-44-0	46	0.1 U				
Fluorene	86-73-7	46	0.1 U				
Hexachlorobenzene	118-74-1	1	0.8 U				
Hexachlorobutadiene	87-68-3	NE	0.5 U				
Hexachloroethane	67-72-1	NE	0.8 U				
Indeno(1,2,3-cd)pyrene	193-39-5	NE	0.1 U				
Naphthalene	91-20-3	0.5	0.1 U				
Pentachlorophenol	87-86-5	1	0.8 U				
Phenanthrene	85-01-8	NE	0.1 U				
Pyrene	129-00-0	NE	0.1 U				

Table C-10
Groundwater SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	CAS#	VGES	IP-06		IP-07		IP-08		IP-16		DEEP WELL		SHALLOW WELL	
			8/30/2019	Q	8/29/2019	Q	8/30/2019	Q	8/29/2019	Q	7/23/2019	Q	7/23/2019	Q
		(µg/l)												
1,2,4-Trichlorobenzene	120-82-1	70	5 U		5 U			5 U		5 U		5 U		5 U
1,2-Dichlorobenzene	95-50-1	600	2 U		2 U			2 U		2 U		2 U		2 U
1,3-Dichlorobenzene	541-73-1	600	2 U		2 U			2 U		2 U		2 U		2 U
1,4-Dichlorobenzene	106-46-7	75	2 U		2 U			2 U		2 U		2 U		2 U
2,4,5-Trichlorophenol	95-95-4	NE	5 U		5 U			5 U		5 U		5 U		5 U
2,4,6-Trichlorophenol	88-06-2	NE	5 U		5 U			5 U		5 U		5 U		5 U
2,4-Dichlorophenol	120-83-2	NE	5 U		5 U			5 U		5 U		5 U		5 U
2,4-Dimethylphenol	105-67-9	NE	5 U		5 U			5 U		5 U		5 U		5 U
2,4-Dinitrophenol	51-28-5	NE	20 U		20 U			20 U		20 U		20 U		20 U
2,4-Dinitrotoluene	121-14-2	NE	5 U		5 U			5 U		5 U		5 U		5 U
2,6-Dinitrotoluene	606-20-2	NE	5 U		5 U			5 U		5 U		5 U		5 U
2-Chlorophenol	95-57-8	NE	2 U		2 U			2 U		2 U		2 U		2 U
2-Methylphenol	95-48-7	NE	5 U		5 U			5 U		5 U		5 U		5 U
2-Nitroaniline	88-74-4	NE	5 U		5 U			5 U		5 U		5 U		5 U
2-Nitrophenol	88-75-5	NE	10 U		10 U			10 U		10 U		10 U		10 U
3,3'-Dichlorobenzidine	91-94-1	NE	5 U		5 U			5 U		5 U		5 U		5 U
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	NE	5 U		5 U			5 U		5 U		5 U		5 U
3-Nitroaniline	99-09-2	NE	5 U		5 U			5 U		5 U		5 U		5 U
4,6-Dinitro-o-cresol	534-52-1	NE	10 U		10 U			10 U		10 U		10 U		10 U
4-Bromophenyl phenyl ether	101-55-3	NE	2 U		2 U			2 U		2 U		2 U		2 U
4-Chloroaniline	106-47-8	NE	5 U		5 U			5 U		5 U		5 U		5 U
4-Chlorophenyl phenyl ether	7005-72-3	NE	2 U		2 U			2 U		2 U		2 U		2 U
4-Nitroaniline	100-01-6	NE	5 U		5 U			5 U		5 U		5 U		5 U
4-Nitrophenol	100-02-7	NE	10 U		10 U			10 U		10 U		10 U		10 U
Aniline	62-53-3	NE	2 U		2 U			2 U		2 U		2 U		2 U
Azobenzene	103-33-3	NE	2 U		2 U			2 U		2 U		2 U		2 U
Benzidine	92-87-5	NE	20 U		20 U			20 U		20 U		20 U		20 U
Benzoic Acid	65-85-0	NE	50 U		50 U			50 U		50 U		50 U		50 U
Benzyl Alcohol	100-51-6	NE	2 U		2 U			2 U		2 U		2 U		2 U
Biphenyl	92-52-4	NE	2 U		2 U			2 U		2 U		2 U		2 U
Bis(2-chloroethoxy)methane	111-91-1	NE	5 U		5 U			5 U		5 U		5 U		5 U
Bis(2-chloroethyl)ether	111-44-4	NE	2 U		2 U			2 U		2 U		2 U		2 U
Bis(2-chloroisopropyl)ether	108-60-1	46	2 U		2 U			2 U		2 U		2 U		2 U
Bis(2-ethylhexyl)phthalate	117-81-7	6	3 U		3 U			3 U		2.5 J		4.2		2.2 J
Butyl benzyl phthalate	85-68-7	NE	5 U		5 U			5 U		5 U		5 U		5 U
Carbazole	86-74-8	NE	2 U		2 U			2 U		2 U		2 U		2 U
Dibenzofuran	132-64-9	NE	2 U		2 U			2 U		2 U		2 U		2 U
Diethyl phthalate	84-66-2	NE	5 U		5 U			5 U		5 U		5 U		5 U
Dimethyl phthalate	131-11-3	NE	5 U		1.3 J			5 U		5 U		5 U		5 U
Di-n-butylphthalate	84-74-2	NE	5 U		5 U			5 U		5 U		5 U		5 U
Di-n-octylphthalate	117-84-0	NE	5 U		5 U			5 U		5 U		5 U		5 U
Hexachlorocyclopentadiene	77-47-4	NE	20 U		20 U			20 U		20 U		20 U		20 U

Table C-10
Groundwater SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	VGES	IP-06	IP-07	IP-08	IP-16	DEEP WELL	SHALLOW WELL
Sample Date	CAS#	8/30/2019	8/29/2019	8/30/2019	8/29/2019	7/23/2019	7/23/2019
	(µg/l)	Q	Q	Q	Q	Q	Q
Isophorone	78-59-1	NE	5 U	5 U	5 U	5 U	5 U
NDPA/DPA	86-30-6	NE	2 U	2 U	2 U	2 U	2 U
Nitrobenzene	98-95-3	NE	2 U	2 U	2 U	2 U	2 U
n-Nitrosodimethylamine	62-75-9	NE	2 U	2 U	2 U	2 U	2 U
n-Nitrosodi-n-propylamine	621-64-7	NE	5 U	5 U	5 U	5 U	5 U
p-Chloro-m-cresol	59-50-7	NE	2 U	2 U	2 U	2 U	2 U
Phenol	108-95-2	NE	5 U	5 U	5 U	5 U	5 U
Pyridine	110-86-1	NE	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
1-Methylnaphthalene	90-12-0	NE	0.1 U	0.1 U	0.1 U	0.09 J	0.1 U
2-Chloronaphthalene	91-58-7	NE	0.2 U	0.2 U	0.2 U	0.05 J	0.2 U
2-Methylnaphthalene	91-57-6	NE	0.1 U	0.1 U	0.1 U	0.06 J	0.1 U
Acenaphthene	83-32-9	NE	0.1 U	0.1 U	0.1 U	0.06 J	0.03 J
Acenaphthylene	208-96-8	NE	0.1 U	0.1 U	0.1 U	0.06 J	0.1 U
Anthracene	120-12-7	343	0.1 U	0.1 U	0.1 U	0.07 J	0.1 U
Benzo(a)anthracene	56-55-3	NE	0.1 U	0.1 U	0.1 U	0.07 J	0.1 U
Benzo(a)pyrene	50-32-8	0.2	0.1 U	0.1 U	0.1 U	0.07 J	0.1 U
Benzo(b)fluoranthene	205-99-2	NE	0.1 U	0.1 U	0.1 U	0.08 J	0.1 U
Benzo(ghi)perylene	191-24-2	NE	0.1 U	0.1 U	0.1 U	0.08 J	0.1 U
Benzo(k)fluoranthene	207-08-9	NE	0.1 U	0.1 U	0.1 U	0.08 J	0.1 U
Chrysene	218-01-9	NE	0.1 U	0.1 U	0.1 U	0.07 J	0.1 U
Dibenzo(a,h)anthracene	53-70-3	NE	0.1 U	0.1 U	0.1 U	0.08 J	0.1 U
Fluoranthene	206-44-0	46	0.1 U	0.1 U	0.1 U	0.08 J	0.1 U
Fluorene	86-73-7	46	0.1 U	0.1 U	0.1 U	0.07 J	0.1 U
Hexachlorobenzene	118-74-1	1	0.8 U	0.8 U	0.8 U	0.07 J	0.8 U
Hexachlorobutadiene	87-68-3	NE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexachloroethane	67-72-1	NE	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Indeno(1,2,3-cd)pyrene	193-39-5	NE	0.1 U	0.1 U	0.1 U	0.1 U	0.08 J
Naphthalene	91-20-3	0.5	0.1 U	0.1 U	0.1 U	0.06 J	0.27 U
Pentachlorophenol	87-86-5	1	0.8 U	0.8 U	0.8 U	0.57 J	0.8 U
Phenanthrene	85-01-8	NE	0.1 U	0.1 U	0.1 U	0.1	0.1 U
Pyrene	129-00-0	NE	0.1 U	0.1 U	0.1 U	0.08 J	0.1 U

Key:
 VGES - Vermont Groundwater Enforcement Standard (7/6/2019)
 µg/L - micrograms per liter (parts per billion)
Bold results indicate detections of the analyte
 Shaded results indicate an exceedence of the enforcement standard(s)
 Total Trimethyl benzenes - Cumulative sum of all TMB isomers
 NS - Sample not analyzed for target compound
 NE - screening level not established
 Q - Qualifier
 U - Analyte was not detected and is reported as less than the reported quantitation limit.
 J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-11
Groundwater PFAS Sample Analytical Results

Sample ID	VGES	IP-01	IP-02	IP-03	IP-04	IP-05	IP-05-FD					
Sample Date	CAS#	8/29/2019	Q	8/29/2019	Q	8/29/2019	Q	8/29/2019	Q	8/29/2019	Q	
		(ng/l)										
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	NONE	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NE	1.71 U	2.04 U	1.72 U	1.34 J	1.71 U	1.84 U				
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NE	0.469 J	0.812 J	0.471 J	0.692 J	0.246 J	1.84 U				
Perfluorobutanoic Acid (PFBA)	375-22-4	NE	2.85	1.99 J	1.55 J	7.09	0.549 J	0.522 J				
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Perfluorodecanoic Acid (PFDA)	335-76-2	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Perfluorododecanoic Acid (PFDoA)	307-55-1	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Perfluoroheptanoic Acid (PFHpA)	375-85-9	20	2.84	1.06 J	0.433 J	1.6 J	0.454 J	0.441 J				
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	20	0.74 J	0.6 J	1.72 U	1.83	1.71 U	1.84 U				
Perfluorohexanoic Acid (PFHxA)	307-24-4	NE	6.06	2.64	0.862 J	6.12	0.843 J	0.989 J				
Perfluoronanesulfonic Acid (PFNS)	68259-12-1	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Perfluoronanoic Acid (PFNA)	375-95-1	20	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Perfluorooctanesulfonamide (FOSA)	754-91-6	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	20	1.71 U	0.649 J	1.72 U	1.81 U	0.495 J	0.537 J				
Perfluorooctanoic Acid (PFOA)	335-67-1	20	6.83	2.28	5.25	3.25	1.42 J	1.41 J				
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	NE	1.71 U	2.04 U	1.72 U	0.627 J	1.71 U	1.84 U				
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NE	5.2	3.22	0.704 J	9.75	0.546 J	0.526 J				
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Perfluorotridecanoic Acid (PFTriDA)	72629-94-8	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NE	1.71 U	2.04 U	1.72 U	1.81 U	1.71 U	1.84 U				
Sum of PFHpA, PFHxA, PFNA, PFOS & PFOA		20	10.4 J	4.59 J	5.68 J	6.68 J	2.37 J	2.39 J				

Table C-11
Groundwater PFAS Sample Analytical Results

Sample ID	CAS#	VGES	IP-06		IP-07		IP-08		DEEP WELL		SHALLOW WELL		
			8/30/2019	Q	8/29/2019	Q	8/30/2019	Q	7/23/2019	Q	7/23/2019	Q	
		(ng/l)											
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NE	2.32		1.9	U	1.85	J	1.75	U		1.76	U
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	NONE	NE	1.71	U	1.9	U	2.01	U	1.75	U		1.76	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NE	22.9		1.9	U	11		1.75	U		1.76	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NE	1.71	U	1.9	U	2.01	U	1.75	U		1.34	J
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NE	1.71	U	1.9	U	2.01	U	1.75	U		1.31	J
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NE	0.631	J	0.757	J	0.646	J	1.75	U		1.76	U
Perfluorobutanoic Acid (PFBA)	375-22-4	NE	21.2		1.7	J	8.46		1.25	J		0.458	J
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NE	1.71	U	1.9	U	2.01	U	1.75	U		1.76	U
Perfluorodecanoic Acid (PFDA)	335-76-2	NE	1.71	U	1.9	U	0.434	J	0.81	J		0.556	J
Perfluorododecanoic Acid (PFDoA)	307-55-1	NE	1.71	U	1.9	U	2.01	U	1.75	U		0.366	J
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NE	1.71	U	1.9	U	2.01	U	1.75	U		1.76	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9	20	7.28		0.814	J	3.25		0.846	J		1.76	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	20	0.877	J	0.673	J	0.646	J	0.375	J		1.76	U
Perfluorohexanoic Acid (PFHxA)	307-24-4	NE	71.6		1.95		23		2.33			1.76	U
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	NE	1.71	U	1.9	U	2.01	U	1.75	U		1.76	U
Perfluorononanoic Acid (PFNA)	375-95-1	20	1.71	U	1.9	U	2.01	U	0.902	J		1.76	U
Perfluorooctanesulfonamide (FOSA)	754-91-6	NE	1.71	U	1.9	U	2.01	U	1.75	U		1.76	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	20	1.71	U	0.528	J	2.01	U	0.512	J		1.76	U
Perfluorooctanoic Acid (PFOA)	335-67-1	20	4.85		1.98		1.11	J	1.25	J		1.76	U
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	NE	0.358	J	1.9	U	2.01	U	1.75	U		1.76	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NE	93.7		1.9		22.3		2.69			0.433	J
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NE	1.71	U	1.9	U	2.01	U	1.75	U		1.76	U
Perfluorotridecanoic Acid (PFTriDA)	72629-94-8	NE	1.71	U	1.9	U	2.01	U	1.75	U		1.08	J
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NE	1.71	U	1.9	U	2.01	U	1.75	U		1.76	U
PFAS, Total (5)	Total Regulated PFAS	20	13	J	4	J	5.01	J	3.89	J		1.76	U
PFOA/PFOS, Total	NONE	NE	4.85		2.51	J	1.11	J	1.76	J		1.76	U

Key:
 VGES - Vermont Groundwater Enforcement Standard (7/6/2019)
 ng/L - nanograms per liter (parts per trillion)
Bold results indicate detections of the analyte
 Shaded results indicate an exceedence of the enforcement standard(s)
 Total Regulated PFAS - Cumulative sum of PFOA, PFOS, PFHxS, PFHpA, and PFNA
 NE - screening level not established
 Q - Qualifier
 U - Analyte was not detected and is reported as less than the reported quantitation limit.
 J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-12
Groundwater POLYCHLORINATED BIPHENYLS Sample Analytical Results

Sample ID Sample Date	CAS#	VGES (µg/l)	IP-05		IP-05-FD		IP-06	
			8/29/2019	Q	8/29/2019	Q	8/30/2019	Q
Aroclor 1016	12674-11-2	0.5	0.291	U	0.25	U	0.25	U
Aroclor 1221	11104-28-2	0.5	0.291	U	0.25	U	0.25	U
Aroclor 1232	11141-16-5	0.5	0.291	U	0.25	U	0.25	U
Aroclor 1242	53469-21-9	0.5	0.291	U	0.25	U	0.25	U
Aroclor 1248	12672-29-6	0.5	0.291	U	0.25	U	0.25	U
Aroclor 1254	11097-69-1	0.5	0.291	U	0.25	U	0.25	U
Aroclor 1260	11096-82-5	0.5	0.291	U	0.25	U	0.1	J
Aroclor 1262	37324-23-5	0.5	0.291	U	0.25	U	0.25	U
Aroclor 1268	11100-14-4	0.5	0.291	U	0.25	U	0.25	U
PCBs, Total	1336-36-3	0.5	0.291	U	0.25	U	0.1	J

Key:

VGES - Vermont Groundwater Enforcement Standard (7/6/2019)

µg/L - micrograms per liter (parts per billion)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-13
Groundwater SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	VGES	IP-01	IP-02	IP-03	IP-04	IP-05	IP-05-FD
Sample Date	CAS#	8/29/2019	8/29/2019	8/29/2019	8/30/2019	8/29/2019	8/29/2019
1,4-Dioxane	123-91-1	0.3	0.139 U	0.15 U	0.144 U	0.0542 J	0.15 U
Sample ID	VGES	IP-06	IP-07	IP-08	DEEP WELL	SHALLOW WELL	IP-16
Sample Date	CAS#	8/30/2019	8/29/2019	8/30/2019	8/29/2019	8/29/2019	8/29/2019
1,4-Dioxane	123-91-1	0.3	0.15 U	0.15 U	0.139 U	0.144 U	0.16

Key:
 VGES - Vermont Groundwater Enforcement Standard (7/6/2019)
 µg/L - micrograms per liter (parts per billion)
Bold results indicate detections of the analyte
 Shaded results indicate an exceedence of the enforcement standard(s)
 NS - Sample not analyzed for target compound
 NE - screening level not established
 Q - Qualifier
 U - Analyte was not detected and is reported as less than the reported quantitation limit.
 J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-14
Groundwater Dioxins/Furans Sample Analytical Results

Sample ID	VGES (7/6/2019)	IP-05	IP-05-FD	IP-06
Sample Date	CAS #	8/29/2019	8/29/2019	8/30/2019
	(µg/l)	Q	Q	Q
1,2,3,4,6,7,8-HpCDD	35822-46-9	NE 0.0000142 U	0.0000148 U	0.0000148 U
1,2,3,4,6,7,8-HpCDF	67562-39-4	NE 0.0000132 U	0.0000137 U	0.0000137 U
1,2,3,4,7,8,9-HpCDF	55673-89-7	NE 0.0000125 U	0.000013 U	0.000013 U
1,2,3,4,7,8-HxCDD	39227-28-6	NE 0.0000123 U	0.0000128 U	0.0000128 U
1,2,3,4,7,8-HxCDF	70648-26-9	NE 0.0000109 U	0.0000113 U	0.0000113 U
1,2,3,6,7,8-HxCDD	57653-85-7	NE 0.0000152 U	0.0000159 U	0.0000159 U
1,2,3,6,7,8-HxCDF	57117-44-9	NE 0.0000156 U	0.0000162 U	0.0000162 U
1,2,3,7,8,9-HxCDD	19408-74-3	NE 0.0000143 U	0.0000149 U	0.0000149 U
1,2,3,7,8,9-HxCDF	72918-21-9	NE 0.0000161 U	0.0000168 U	0.0000168 U
1,2,3,7,8-PeCDD	40321-76-4	NE 0.0000102 U	0.0000106 U	0.0000106 U
1,2,3,7,8-PeCDF	57117-41-6	NE 0.00000686 U	0.00000714 U	0.00000714 U
2,3,4,6,7,8-HxCDF	60851-34-5	NE 0.0000155 U	0.0000162 U	0.0000162 U
2,3,4,7,8-PeCDF	57117-31-4	NE 0.0000102 U	0.0000107 U	0.0000107 U
2,3,7,8-TCDD	1746-01-6	0.00003 0.00000204 U	0.00000212 U	0.00000212 U
2,3,7,8-TCDF	51207-31-9	NE 0.000003 U	0.00000312 U	0.00000312 U
OCDD	3268-87-9	NE 0.0000249 U	0.0000259 U	0.0000259 U
OCDF	39001-02-0	NE 0.0000318 U	0.0000331 U	0.0000331 U
Total HpCDD	37871-00-4	NE 0.0000142 U	0.0000148 U	0.0000148 U
Total HpCDF	38998-75-3	NE 0.0000132 U	0.0000137 U	0.0000137 U
Total HxCDD	34465-46-8	NE 0.0000123 U	0.0000128 U	0.0000128 U
Total HxCDF	55684-94-1	NE 0.0000109 U	0.0000113 U	0.0000113 U
Total PCDD	NA	NE 0.00000204 U	0.00000212 U	0.00000212 U
Total PCDF	NA	NE 0.000003 U	0.00000312 U	0.00000312 U
Total PeCDD	36088-22-9	NE 0.0000102 U	0.0000106 U	0.0000106 U
Total PeCDF	30402-15-4	NE 0.00000686 U	0.00000714 U	0.00000714 U
Total TCDD	41903-57-5	NE 0.00000204 U	0.00000212 U	0.00000212 U
Total TCDF	55722-27-5	NE 0.000003 U	0.00000312 U	0.00000312 U
Toxic Equivalency (TEQ)	NA	NE 0.000000029 U	0.000000031 U	0.000000031 U

Key:

VGES - Vermont Groundwater Enforcement Standard (7/6/2019)

µg/L - micrograms per liter (parts per billion)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

NS - Sample not analyzed for target compound

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported method detection limit.

J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-15
Sludge METALS Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-25	
Sample Date	CAS#				7/23/2019	Q
		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
Aluminum, Total	7429-90-5	72507	941748	77000	1100000	1860
Antimony, Total	7440-36-0	26	319	31	470	13.6 U
Arsenic, Total	7440-38-2	16	16	0.68	3	2.71 U
Barium, Total	7440-39-3	11247	127382	15000	220000	4.91
Beryllium, Total	7440-41-7	35	289	160	2300	1.36 U
Cadmium, Total	7440-43-9	6.9	87	NE	NE	2.71 U
Calcium, Total	7440-70-2	NE	NE	NE	NE	6520
Chromium, Total	7440-47-3	NE	NE	NE	NE	3.18
Cobalt, Total	7440-48-4	22	291	23	350	5.43 U
Copper, Total	7440-50-8	10407	139231	3100	47000	125
Iron, Total	7439-89-6	51302	686351	55000	820000	495
Lead, Total	7439-92-1	400	800	400	800	2.2 J
Magnesium, Total	7439-95-4	NE	NE	NE	NE	396
Manganese, Total	7439-96-5	1118	11350	1800	NE	15.5
Nickel, Total	7440-02-0	940	9707	1500	22000	1.44 J
Potassium, Total	9/7/7440	NE	NE	NE	NE	59.1 J
Selenium, Total	7782-49-2	366	4900	390	5800	0.977 J
Silver, Total	7440-22-4	237	2483	390	5800	2.71 U
Sodium, Total	7440-23-5	NE	NE	NE	NE	358 J
Thallium, Total	7440-28-0	NE	NE	0.78	12	0.85 / 5.43 U
Vanadium, Total	7440-62-2	2.8	27	390	5800	1.41 J
Zinc, Total	7440-66-6	21986	294150	23000	350000	12.9 J
Mercury, Total	7439-97-6	3.1	3.1	11	46	0.22 U
Cyanide, Total	57-12-5	NE	NE	23	150	3.2 U

Key:

VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2019.

EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019

VSSs and RSLs in gray color font are for reference only; regulatory standards for comparison are in regular font.

mg/kg - milligrams per kilogram (parts per million)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

value / value - if the reported quantitation limit exceeds the applicable regulatory standard, then the method detection limit / reporting limit are presented.

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-16
Sludge VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-25	
Sample Date	CAS#				7/23/2019	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	
1,1,1,2-Tetrachloroethane	630-20-6	1.3	8	2	8.8	0.0021 U
1,1,1-Trichloroethane	71-55-6	NE	NE	8100	36000	0.0021 U
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	0.6	2.7	0.0021 U
1,1,2-Trichloroethane	79-00-5	NE	NE	1.1	5	0.0042 U
1,1-Dichloroethane	75-34-3	2.1	13	3.6	16	0.0042 U
1,1-Dichloroethene	75-35-4	NE	NE	230	1000	0.0042 U
1,1-Dichloropropene	563-58-6	NE	NE	NE	NE	0.0021 U
1,2,3-Trichlorobenzene	87-61-6	NE	NE	63	930	0.0083 U
1,2,3-Trichloropropane	96-18-4	0.00311	0.07	0.0051	0.11	0.00053 / 0.0083 U
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	0.0083 U
1,2,4-Trimethylbenzene	95-63-6	144	177	300	1800	0.0083 U
1,2-Dibromo-3-chloropropane	96-12-8	0.01	0.06	0.0053	0.064	0.0042 / 0.012 U
1,2-Dibromoethane	106-93-4	0.02	0.14	0.036	0.16	0.0042 U
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	0.0083 U
1,2-Dichloroethane	107-06-2	0.29	1.7	0.46	2	0.0042 U
1,2-Dichloroethene, Total	540-59-0	NE	NE	NE	NE	0.0042 U
1,2-Dichloropropane	78-87-5	1.5	9.1	2.5	11	0.0042 U
1,3,5-Trimethylbenzene	108-67-8	144	177	270	1500	0.0083 U
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	0.0083 U
1,3-Dichloropropane	142-28-9	NE	NE	1600	23000	0.0083 U
1,3-Dichloropropene, Total	542-75-6	NE	NE	1.8	8.2	0.0021 U
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	0.0083 U
1,4-Dichlorobutane	110-56-5	NE	NE	NE	NE	0.0029 J
2,2-Dichloropropane	594-20-7	NE	NE	NE	NE	0.0083 U
2-Butanone	78-93-3	16952	26991	27000	190000	0.042 U
2-Hexanone	591-78-6	NE	NE	200	1300	0.042 U
4-Methyl-2-pentanone	108-10-1	NE	NE	33000	140000	0.042 U
Acetone	67-64-1	40609	100028	61000	670000	0.093
Acrylonitrile	107-13-1	NE	NE	0.25	1.1	0.017 U
Benzene	71-43-2	0.7	4.2	1.2	5.1	0.0021 U
Bromobenzene	108-86-1	NE	NE	290	1800	0.0083 U
Bromochloromethane	74-97-5	193	597	150	630	0.0083 U
Bromodichloromethane	75-27-4	NE	NE	0.29	1.3	0.0021 U
Bromoform	75-25-2	NE	NE	19	86	0.017 U
Bromomethane	74-83-9	NE	NE	6.8	30	0.0083 U
Carbon disulfide	75-15-0	608	662	770	3500	0.042 U
Carbon tetrachloride	56-23-5	0.37	2.2	0.65	2.9	0.0042 U
Chlorobenzene	108-90-7	414	726	280	1300	0.0021 U
Chloroethane	75-00-3	NE	NE	14000	57000	0.0083 U
Chloroform	67-66-3	NE	NE	0.32	1.4	0.0062 U
Chloromethane	74-87-3	NE	NE	110	460	0.017 U
cis-1,2-Dichloroethene	156-59-2	140	1814	160	2300	0.0042 U
cis-1,3-Dichloropropene	10061-01-5	NE	NE	NE	NE	0.0021 U

Table C-16
Sludge VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-25	
Sample Date	CAS#				7/23/2019	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	
Dibromochloromethane	124-48-1	NE	NE	8.3	39	0.0042 U
Dibromomethane	74-95-3	NE	NE	24	99	0.0083 U
Dichlorodifluoromethane	75-71-8	NE	NE	87	370	0.042 U
Ethyl ether	60-29-7	NE	NE	16000	230000	0.0083 U
Ethyl methacrylate	97-63-2	NE	NE	1800	7600	0.042 U
Ethylbenzene	100-41-4	3.7	22	5.8	25	0.0042 U
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	0.017 U
Isopropylbenzene	98-82-8	256	264	1900	9900	0.0042 U
Methyl tert butyl ether	1634-04-4	649	4464	47	210	0.0083 U
Methylene chloride	75-09-2	NE	NE	57	1000	0.021 U
Naphthalene	91-20-3	2.7	16	3.8	17	0.017 U
n-Butylbenzene	104-51-8	3504	51100	3900	58000	0.0042 U
n-Propylbenzene	103-65-1	253	261	3800	24000	0.0042 U
o-Chlorotoluene	95-49-8	NE	NE	1600	23000	0.0083 U
o-Xylene	95-47-6	NE	NE	650	2800	0.0042 U
p/m-Xylene	179601-23-1	NE	NE	NE	NE	0.0083 U
p-Chlorotoluene	106-43-4	NE	NE	1600	23000	0.0083 U
p-Isopropyltoluene	99-87-6	NE	NE	NE	NE	0.0042 U
sec-Butylbenzene	135-98-8	7009	102200	7800	120000	0.0042 U
Styrene	100-42-5	NE	NE	6000	35000	0.0042 U
tert-Butylbenzene	98-06-6	7009	102200	7800	120000	0.0083 U
Tetrachloroethene	127-18-4	2.4	14	24	100	0.0021 U
Tetrahydrofuran	109-99-9	NE	NE	18000	94000	0.017 U
Toluene	108-88-3	706	798	4900	47000	0.0042 U
Total Trimethylbenzene	25551-13-7	144	177	NE	NE	0.0083 U
Total Xylene	1330-20-7	252	257	580	2500	0.0042 U
trans-1,2-Dichloroethene	156-60-5	1402	18137	1600	23000	0.0062 U
trans-1,3-Dichloropropene	10061-02-6	NE	NE	NE	NE	0.0042 U
trans-1,4-Dichloro-2-butene	110-57-6	NE	NE	0.0074	0.032	0.0059 / 0.021 U
Trichloroethene	79-01-6	0.68	6.5	0.94	6	0.0021 U
Trichlorofluoromethane	75-69-4	NE	NE	23000	350000	0.017 U
Vinyl acetate	108-05-4	NE	NE	910	3800	0.042 U
Vinyl chloride	75-01-4	0.1	0.59	0.059	1.7	0.0042 U
Xylenes, Total	1330-20-7	252	257	580	2500	0.0042 U

Key:

VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2019.
EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019
VSSs and RSLs in gray color font are for reference only; regulatory standards for comparison are in regular font.

mg/kg - milligrams per kilogram (parts per million)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

value / value - if the reported quantitation limit exceeds the applicable regulatory standard, then the method detection limit / reporting limit are presented.

Total Trimethyl benzenes - Cumulative sum of all TMB isomers

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-17
Sludge SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-25	
Sample Date	CAS#				7/23/2019	Q
	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)		
1,2,4-Trichlorobenzene	120-82-1	NE	NE	24	110	1.7 U
1,2-Dichlorobenzene	95-50-1	NE	NE	1800	9300	1.7 U
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	1.7 U
1,4-Dichlorobenzene	106-46-7	NE	NE	2.6	11	1.7 U
1-Methylnaphthalene	90-12-0	NE	NE	18	73	1.7 U
2,4,5-Trichlorophenol	95-95-4	NE	NE	6300	82000	1.7 U
2,4,6-Trichlorophenol	88-06-2	NE	NE	49	210	1 U
2,4-Dichlorophenol	120-83-2	NE	NE	190	2500	1.5 U
2,4-Dimethylphenol	105-67-9	NE	NE	1300	16000	1.7 U
2,4-Dinitrophenol	51-28-5	NE	NE	130	1600	8 U
2,4-Dinitrotoluene	121-14-2	NE	NE	1.7	7.4	0.33 / 1.7 U
2,6-Dinitrotoluene	606-20-2	NE	NE	0.36	1.5	0.29 / 1.7 U
2-Chloronaphthalene	91-58-7	NE	NE	4800	60000	1.7 U
2-Chlorophenol	95-57-8	NE	NE	390	5800	1.7 U
2-Methylnaphthalene	91-57-6	NE	NE	240	3000	2 U
2-Methylphenol	95-48-7	NE	NE	3200	41000	1.7 U
2-Nitroaniline	88-74-4	NE	NE	630	8000	1.7 U
2-Nitrophenol	88-75-5	NE	NE	NE	NE	3.6 U
3,3'-Dichlorobenzidine	91-94-1	NE	NE	1.2	5.1	0.44 / 1.7 U
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	NE	NE	NE	NE	2.4 U
3-Nitroaniline	99-09-2	NE	NE	NE	NE	1.7 U
4,6-Dinitro-o-cresol	534-52-1	NE	NE	5.1	66	4.3 U
4-Bromophenyl phenyl ether	101-55-3	NE	NE	NE	NE	1.7 U
4-Chloroaniline	106-47-8	NE	NE	2.7	11	1.7 U
4-Chlorophenyl phenyl ether	7005-72-3	NE	NE	NE	NE	1.7 U
4-Nitroaniline	100-01-6	NE	NE	27	110	1.7 U
4-Nitrophenol	100-02-7	NE	NE	NE	NE	2.3 U
Acenaphthene	83-32-9	NE	NE	3600	45000	1.3 U
Acenaphthylene	208-96-8	NE	NE	NE	NE	1.3 U
Aniline	62-53-3	NE	NE	95	400	2 U
Anthracene	120-12-7	NE	NE	18000	230000	1 U
Azobenzene	103-33-3	NE	NE	5.6	26	1.7 U
B(a)P-TEQ	50-32-8	0.07	1.54	0.11	2.1	0.336435 U
Benzidine	92-87-5	NE	NE	0.00053	0.01	1.8 / 5.5 U
Benzo(a)anthracene	56-55-3	NE	NE	1.1	21	1 U
Benzo(a)pyrene	50-32-8	0.07	1.54	0.11	2.1	0.41 / 1.3 U
Benzo(b)fluoranthene	205-99-2	NE	NE	1.1	21	1 U
Benzo(ghi)perylene	191-24-2	NE	NE	NE	NE	1.3 U
Benzo(k)fluoranthene	207-08-9	NE	NE	11	210	1 U
Benzoic Acid	65-85-0	NE	NE	250000	3300000	5.4 U

Table C-17
Sludge SEMI VOLATILE ORGANIC COMPOUNDS Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-25	
Sample Date	CAS#				7/23/2019	Q
	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)		
Benzyl Alcohol	100-51-6	NE	NE	6300	82000	1.7 U
Biphenyl	92-52-4	NE	NE	47	200	3.8 U
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	190	2500	1.8 U
Bis(2-chloroethyl)ether	111-44-4	NE	NE	0.23	1	0.23 / 1.5 U
Bis(2-chloroisopropyl)ether	108-60-1	2804	36274	3100	47000	2 U
Bis(2-ethylhexyl)phthalate	117-81-7	20	120	39	160	1.7 U
Butyl benzyl phthalate	85-68-7	NE	NE	290	1200	1.7 U
Carbazole	86-74-8	NE	NE	NE	NE	1.7 U
Chrysene	218-01-9	NE	NE	110	2100	1 U
Dibenzo(a,h)anthracene	53-70-3	NE	NE	0.11	2.1	0.19 / 1 U
Dibenzofuran	132-64-9	NE	NE	73	1000	1.7 U
Diethyl phthalate	84-66-2	NE	NE	51000	660000	1.7 U
Dimethyl phthalate	131-11-3	NE	NE	NE	NE	1.7 U
Di-n-butylphthalate	84-74-2	NE	NE	6300	82000	1.7 U
Di-n-octylphthalate	117-84-0	NE	NE	630	8200	1.7 U
Fluoranthene	206-44-0	2301	26371	2400	30000	1 U
Fluorene	86-73-7	2301	26371	2400	30000	1.7 U
Hexachlorobenzene	118-74-1	0.13	0.69	0.21	0.96	0.19 / 1 U
Hexachlorobutadiene	87-68-3	NE	NE	1.2	5.3	0.24 / 1.7 U
Hexachlorocyclopentadiene	77-47-4	NE	NE	1.8	7.5	1.5 / 4.8 U
Hexachloroethane	67-72-1	NE	NE	1.8	8	1.3 U
Indeno(1,2,3-cd)pyrene	193-39-5	NE	NE	1.1	21	0.23 / 1.3 U
Isophorone	78-59-1	NE	NE	570	2400	1.5 U
Naphthalene	91-20-3	2.7	16	3.8	17	1.7 U
NDPA/DPA	86-30-6	NE	NE	110	470	1.3 U
Nitrobenzene	98-95-3	NE	NE	5.1	22	1.5 U
n-Nitrosodimethylamine	62-75-9	NE	NE	0.002	0.034	0.32 / 3.3 U
n-Nitrosodi-n-propylamine	621-64-7	NE	NE	0.078	0.33	0.26 / 1.7 U
p-Chloro-m-cresol	59-50-7	NE	NE	6300	82000	1.7 U
Pentachlorophenol	87-86-5	0.48	2.9	1	4	0.37 / 1.3 U
Phenanthrene	85-01-8	NE	NE	NE	NE	1 U
Phenol	108-95-2	NE	NE	19000	250000	1.7 U
Pyrene	129-00-0	NE	NE	1800	23000	1 U
Pyridine	110-86-1	NE	NE	78	1200	1.8 U

Key:

VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2019.

EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019

VSSs and RSLs on gray color font are for reference only; regulatory standards for comparison are in regular font.

mg/kg - milligrams per kilogram (parts per million)

Bold results indicate detections of the analyte

value / value - if the reported quantitation limit exceeds the applicable regulatory standard, then the method detection limit / reporting limit are presented.

Shaded results indicate an exceedance of the enforcement standard(s)

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

Table C-18
Sludge PFAS Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-25		
Sample Date	CAS#	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	7/23/2019	Q
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NE	NE	NE	NE	0.0031	U
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	NA	NE	NE	NE	NE	0.0031	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NE	NE	NE	NE	0.00202	J
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NE	NE	NE	NE	0.0031	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NE	NE	NE	NE	0.0031	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NE	NE	1300	16000	0.0031	U
Perfluorobutanoic Acid (PFBA)	375-22-4	NE	NE	NE	NE	0.0031	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NE	NE	NE	NE	0.0031	U
Perfluorodecanoic Acid (PFDA)	335-76-2	NE	NE	NE	NE	0.0031	U
Perfluorododecanoic Acid (PFDoA)	307-55-1	NE	NE	NE	NE	0.000229	J
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NE	NE	NE	NE	0.0031	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9	1.22	14.36	NE	NE	0.0031	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	1.22	14.36	NE	NE	0.0031	U
Perfluorohexanoic Acid (PFHxA)	307-24-4	NE	NE	NE	NE	0.000203	J
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	NE	NE	NE	NE	0.0031	U
Perfluorononanoic Acid (PFNA)	375-95-1	1.22	14.36	NE	NE	0.0031	U
Perfluorooctanesulfonamide (FOSA)	754-91-6	NE	NE	NE	NE	0.0031	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	1.22	14.36	NE	NE	0.0031	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.22	14.36	NE	NE	0.0031	U
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	NE	NE	NE	NE	0.0031	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NE	NE	NE	NE	0.0031	U
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NE	NE	NE	NE	0.0031	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NE	NE	NE	NE	0.0031	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NE	NE	NE	NE	0.0031	U
Sum of PFHpA, PFHxA, PFNA, PFOS & PFOA		1.22	14.36	NE	NE	0.0031	U

Key:

VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2019.
EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019
mg/kg - milligrams per kilogram (parts per million)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

Total Regulated PFAS - Cumulative sum of PFOA, PFOS, PFHxS, PFHpA, and PFNA

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-19
Sludge POLYCHLORINATED BIPHENYLS Sample Analytical Results

Sample ID		VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-25	
Sample Date	CAS#					7/23/2019	Q
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)		
Aroclor 1016	12674-11-2	NE	NE	4.1	27	0.338	U
Aroclor 1221	11104-28-2	NE	NE	0.2	0.83	0.338	U
Aroclor 1232	11141-16-5	NE	NE	0.17	0.72	0.338	U
Aroclor 1242	53469-21-9	NE	NE	0.23	0.95	0.338	U
Aroclor 1248	12672-29-6	NE	NE	0.23	0.95	0.338	U
Aroclor 1254	11097-69-1	NE	NE	0.24	0.97	0.338	U
Aroclor 1260	11096-82-5	NE	NE	0.24	0.99	0.338	U
Aroclor 1262	37324-23-5	NE	NE	NE	NE	0.338	U
Aroclor 1268	11100-14-4	NE	NE	NE	NE	0.338	U
PCBs, Total	1336-36-3	0.114	0.68	NE	NE	0.338	U

Key:

VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2019.

EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019

VSSs and RSLs on gray color font are for reference only; regulatory standards for comparison are in regular font.

mg/kg - milligrams per kilogram (parts per million)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

Table C-20
Sludge Dioxins & Furans Sample Analytical Results

Sample ID	VSS - Resident	VSS Non-Resident	EPA Residential RSL	EPA Industrial RSL	IP-25	
Sample Date CAS#					7/23/2019	Q
	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)		
1,2,3,4,6,7,8-HpCDD	35822-46-9				0.0000159	
1,2,3,4,6,7,8-HpCDF	67562-39-4				0.0000806	J
1,2,3,4,7,8,9-HpCDF	55673-89-7				0.0000711	J
1,2,3,4,7,8-HxCDD	39227-28-6				0.0000708	J
1,2,3,4,7,8-HxCDF	70648-26-9				0.0000115	
1,2,3,6,7,8-HxCDD	57653-85-7				0.0000813	J
1,2,3,6,7,8-HxCDF	57117-44-9				0.0000836	
1,2,3,7,8,9-HxCDD	19408-74-3	2,3,7,8-TCDD TEQ	2,3,7,8-TCDD TEQ	2,3,7,8-TCDD TEQ	0.0000725	J
1,2,3,7,8,9-HxCDF	72918-21-9	0.0000225	0.0000137	0.0000048	0.0000882	
1,2,3,7,8-PeCDD	40321-76-4				0.0000688	J
1,2,3,7,8-PeCDF	57117-41-6				0.000018	
2,3,4,6,7,8-HxCDF	60851-34-5				0.0000836	
2,3,4,7,8-PeCDF	57117-31-4				0.0000131	
2,3,7,8-TCDD	1746-01-6				0.0000164	
2,3,7,8-TCDF	51207-31-9				0.0000355	
OCDD	3268-87-9				0.0000844	
OCDF	39001-02-0				0.0000166	
2,3,7,8-TCDD TEQ	NA	0.0000225	0.0000137	0.0000048	0.000022988	
Total HpCDD	37871-00-4	NE	NE	NE	0.0000299	
Total HpCDF	38998-75-3	NE	NE	NE	0.0000875	
Total HxCDD	34465-46-8	NE	NE	NE	0.000082	U
Total HxCDF	55684-94-1	NE	NE	NE	0.0000283	
Total PCDD	NA	NE	NE	NE	0.000118	
Total PCDF	NA	NE	NE	NE	0.000147	
Total PeCDD	36088-22-9	NE	NE	NE	0.000082	U
Total PeCDF	30402-15-4	NE	NE	NE	0.0000306	
Total TCDD	41903-57-5	NE	NE	NE	0.0000338	
Total TCDF	55722-27-5	NE	NE	NE	0.0000623	

Key:

VSS - Vermont Soil Standards, Appendix A Soil Standards of Investigation and Remediation of Contaminated Properties Rule, July 6, 2019.

EPA RSL - United States Environmental Protection Agency Regional Screening Levels for residential and industrial properties, May 15, 2019

VSSs and RSLs on gray color font are for reference only; regulatory standards for comparison are in regular font.

mg/kg - milligrams per kilogram (parts per million)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

TEQ - Toxic Equivalence Quotient

NE - screening level not established

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Table C-21
Sludge SPLP PFAS / TOP Assay Analytical Results

Sample ID	Sample Date	CAS #	VGES (7/6/2019)	IP25 Pre-Treatment 8/30/2019	Q	IP25 Post-Treatment 8/30/2019	Q	Difference	
			(ng/l)						
Perfluorobutanesulfonic Acid (PFBS)		375-73-5	NE	1.81	U	1.67	U	ND	U
Perfluorobutanoic Acid (PFBA)		375-22-4	NE	20.5		16.5		-4.000	
Perfluorodecanesulfonic Acid (PFDS)		335-77-3	NE	1.81	U	1.67	U	ND	U
Perfluorodecanoic Acid (PFDA)		335-76-2	NE	0.79	J	1.67	U	-0.790	J
Perfluorododecanoic Acid (PFDoA)		307-55-1	NE	0.58	J	1.67	U	-0.580	
Perfluoroheptanesulfonic Acid (PFHpS)		375-92-8	NE	1.81	U	1.67	U	ND	U
Perfluoroheptanoic Acid (PFHpA)		375-85-9	20	1.05	J	4.5		3.450	
Perfluorohexanesulfonic Acid (PFHxS)		355-46-4	20	1.81	U	1.67	U	ND	U
Perfluorohexanoic Acid (PFHxA)		307-24-4	NE	5.34		8.76		3.420	
Perfluorononanesulfonic Acid (PFNS)		68259-12-1	NE	1.81	U	1.67	U	ND	U
Perfluorononanoic Acid (PFNA)		375-95-1	20	0.688	J	0.38	J	-0.308	J
Perfluorooctanesulfonic Acid (PFOS)		1763-23-1	20	1.81	U	0.857	J	0.857	J
Perfluorooctanoic Acid (PFOA)		335-67-1	20	3.05		2.61		-0.440	
Perfluoropentanesulfonic Acid (PFPeS)		2706-91-4	NE	1.81	U	1.67	U	ND	U
Perfluoropentanoic Acid (PFPeA)		2706-90-3	NE	0.717	J	9.83		9.113	
Perfluorotetradecanoic Acid (PFTA)		376-06-7	NE	1.81	U	1.67	U	ND	U
Perfluorotridecanoic Acid (PFTrDA)		72629-94-8	NE	1.81	U	1.67	U	ND	U
Perfluoroundecanoic Acid (PFUnA)		2058-94-8	NE	1.81	U	1.67	U	ND	U
Sum of PFHpA, PFHxA, PFNA, PFOS & PFOA		Total Regulated PFAS	20	4.788		8.347		3.559	

Key:

VGES - Vermont Groundwater Enforcement Standard (7/6/2019)

ng/L - nanograms per liter (parts per trillion)

Bold results indicate detections of the analyte

Shaded results indicate an exceedence of the enforcement standard(s)

Total Regulated PFAS - Cumulative sum of PFOA, PFOS, PFHxS, PFHpA, and PFNA

NE - screening level not established

SPLP - Synthetic Precipitation Leaching Procedure

TOP Assay - Total Oxidizable Precursor Assay

ND - Analyte was not detected above laboratory reporting in Pre-Treatment or Post-Treatment samples

Q - Qualifier

U - Analyte was not detected and is reported as less than the reported quantitation limit.

J - Analyte was detected between the method detection limit and the quantitation limit. Value provided is estimated

Brownfields Corrective Action Investigation Report
Long Falls Paperboard
161 Wellington Road
Brattleboro, Vermont 05301



EPA RFA 19093
Vermont DEC Site #2018-4828

August 14, 2020

Prepared For:
Brattleboro Development Credit Corporation
76 Cotton Mill Hill
Brattleboro VT 05301



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LEE #18-122



1.0 EXECUTIVE SUMMARY

LE Environmental LLC (LEE) completed a Brownfields Corrective Action Investigation at Long Falls Paperboard, 161 Wellington Road, Brattleboro, Vermont (Site). The ESA was conducted pursuant to LEE's approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated March 18, 2020.

The property is owned by the Brattleboro Development Credit Corporation (BDCC) and is operated by Long Falls Paperboard LLC. This project has been funded by the United States Environmental Protection Agency under assistance agreement 00A00502 to the Brattleboro Development Credit Corporation (BDCC). The contents of this document do not necessarily reflect the views and policies of the EPA, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

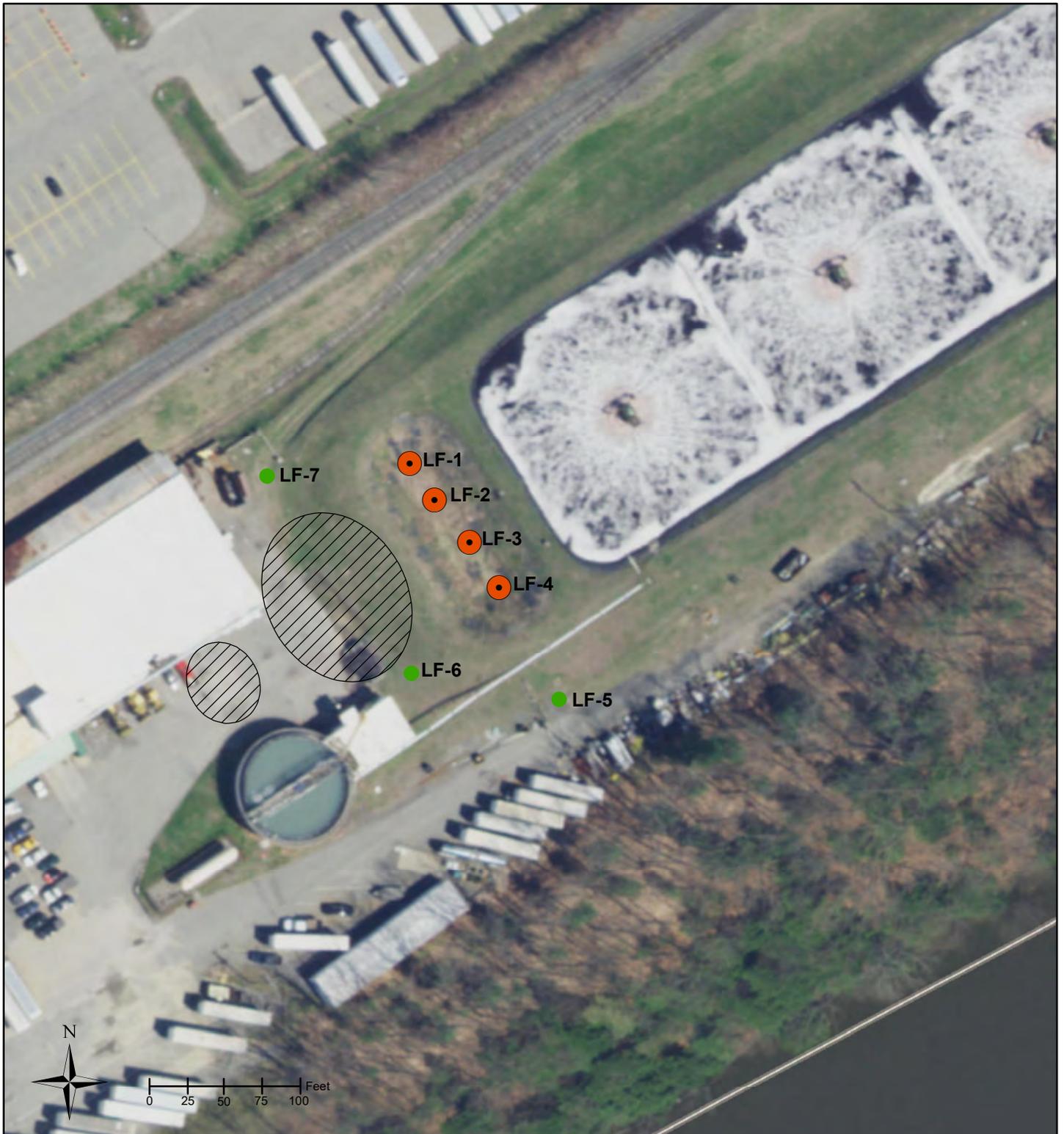
This Corrective Action Investigation included holding basin sludge and soil sampling and testing, and groundwater sampling and testing. A review of relevant background information on vanadium in soil concentrations was conducted.

The following conclusions were made.

1. Soil testing indicates no contamination above non-residential screening levels in the sandy soils surrounding the holding basin lagoon. This suggests that overtopping in the past was not a frequent or significant occurrence.
2. Holding basin sludge testing indicates the presence of dioxin and poly and perfluoroalkyl substances (PFAs), which will influence disposal options.
3. Groundwater PFAs concentrations are uniformly below state standards.
4. Results of the background vanadium soil review indicate that vanadium is not abnormally elevated in soils at the Site.

LEE makes the following recommendations in connection with the Site:

1. An Evaluation of Corrective Action Alternatives (ECAA) and a Corrective Action Plan (CAP) should be developed to address decommissioning the holding basin.
2. No further action is warranted with respect to on-Site soils or groundwater PFA concentrations. The groundwater monitoring wells installed during the Phase II ESA should be properly abandoned.
3. No further action is warranted with respect to vanadium concentrations in soil.
4. Active remedial measures do not appear to be warranted for other Recognized Environmental Conditions presented in Section 8.0 of this report (historic #6 fuel oil release, historic gasoline/diesel USTs, sumps, floor drains, equipment yard, drums, filled areas, adjacent Sites, septic systems or the rail line).




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Holding Basin Sampling Map
Long Falls Paperboard
 161 Wellington Road
 Brattleboro, Vermont

Legend

- Soil Boring/Soil Sample
- Sludge Sample
- Paper Sludge Piles

Drawing Date: 8/13/20
 LEE Project #: 18-122

**Brownfields Cleanup Site Investigation
Holding Basin Sludge Sample Results
Long Falls Paperboard
161 Wellington Road, Brattleboro, Vermont**



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Sample ID Sample Date Collected by/Laboratory PID (ppm)	IP-6A (mg/kg)	IP-06FD (mg/kg)	LF-1	LF-2	LF-3	LF-4	Duplicate LF-2	TCLP "Rule of 20"	EPA/DEC TCLP Threshold (mg/l) (2)	
	8/15/19		5/8/20							
	Stone/Alpha (1)		LEE/Con-Test Analytical							
	NT	NT	0.0	0.1	0.1	0.0	0.1			
Arsenic (Total, mg/kg, dry)	16	6.8	ND <5.1	ND<4.9	ND<5.4	ND<6.0	ND<5.0	100	---	
Arsenic (TCLP, mg/l)	NT	NT	ND<0.050	ND<0.050	ND<0.050	ND<0.050	ND<0.050	---	5.0	
Barium (Total, mg/kg, dry)	156	143	130	93	110	93	85	2000	---	
Barium (TCLP)	NT	NT	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	---	100.0	
Benzene	ND	ND	ND<0.11	ND<0.12	ND<0.12	ND<0.13	ND<0.10	10	0.5	
Cadmium (Total, mg/kg, dry)	8.55	3.66	ND<0.51	ND<0.49	ND<0.54	ND<0.60	ND<0.5	20	---	
Cadmium (TCLP)	NT	NT	ND<0.010	ND<0.010	ND<0.010	ND<0.010	ND<0.010	---	1.0	
Carbon tetrachloride	ND	ND	ND<0.11	ND<0.12	ND<0.12	ND<0.13	ND<0.10	10	0.5	
Chlordane	NT	NT	NT	NT	NT	NT	NT	1	0.03	
Chlorobenzene	ND	ND	ND<0.11	ND<0.12	ND<0.12	ND<0.13	ND<0.10	2000	100.0	
Chloroform	0.0013	0.004	ND<0.22	ND<0.23	ND<0.24	ND<0.26	ND<0.20	120	6.0	
Chromium (Total, mg/kg, dry)	311	140	45	42	44	29	47	100	---	
Chromium (TCLP)	NT	NT	ND<0.050	ND<0.050	ND<0.050	ND<0.050	ND<0.050	---	5.0	
o-Cresol (2-methylphenol)	ND	ND	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	4000	200.0	
m-Cresol (3-methylphenol)	ND	ND	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	4000	200.0	
p-Cresol (4-methylphenol)	ND	ND	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	4000	200.0	
Cresol (total)	NT	NT	NT	NT	NT	NT	NT	4000	200.0	
2,4-D	NT	NT	NT	NT	NT	NT	NT	200	10.0	
1,4-Dichlorobenzene	ND	ND	ND<0.11	ND<0.12	ND<0.12	ND<0.13	ND<0.10	150	7.5	
1,2-Dichloroethane	ND	ND	ND<0.11	ND<0.12	ND<0.12	ND<0.13	ND<0.10	10	0.5	
1,1-Dichloroethene	ND	ND	ND<0.11	ND<0.12	ND<0.12	ND<0.13	ND<0.10	14	0.7	
2,4-Dinitrotoluene	NT	NT	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	3	0.13	
Endrin	NT	NT	NT	NT	NT	NT	NT	0.4	0.02	
Heptachlor/Heptachlor Epoxide	NT	NT	NT	NT	NT	NT	NT	0	0.008	
Hexachlorobenzene	ND	ND	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	3	0.13	
Hexachlorobutadiene	ND	ND	ND<0.11	ND<0.12	ND<0.12	ND<0.13	ND<0.10	10	0.5	
Hexachloroethane	ND	ND	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	60	3.0	
Lead (Total, mg/kg, dry)	633	555	65	60	43	32	56	100	---	
Lead (TCLP)	NT	NT	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	---	5.0	
Lindane	NT	NT	NT	NT	NT	NT	NT	8	0.4	
Mercury (Total, mg/kg, dry)	3.45	3.04	0.22	0.47	0.18	0.12	0.45	4	---	
Mercury (TCLP)	NT	NT	ND<0.00010	ND<0.00010	ND<0.00010	ND<0.00010	ND<0.00010	---	0.2	
Methoxychlor	NT	NT	NT	NT	NT	NT	NT	200	10.0	
2-Butanone(MEK)	ND	ND	ND<2.2	ND<2.3	ND<2.4	ND<2.6	ND<2.0	4000	200.0	
Nitrobenzene	ND	ND	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	40	2.0	
Pentachlorophenol	ND	ND	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	2000	100.0	

NOTES:

- (1) Stone/Alpha Data from Phase II Environmental Site Assessment Report, Long Falls Paperboard, October 2019
- (2) TCLP Thresholds from EPA Hazardous Waste Characteristics, October 2009 and Vermont DEC Hazardous Waste Management Regulations, December 31, 2016
- (3) PFAs values per DEC 1-Rule, sum of PFOS, PFOA, PFHxS, PFHpA, PFNA (ug/kg)

**Brownfields Cleanup Site Investigation
Holding Basin Sludge Sample Results
Long Falls Paperboard
161 Wellington Road, Brattleboro, Vermont**



Page 2 of 2

Sample ID Sample Date Collected by/Laboratory PID (ppm)	IP-6A (mg/kg)	IP-06FD (mg/kg)	LF-1	LF-2	LF-3	LF-4	Duplicate LF-2	TCLP "Rule of 20"	EPA/DEC TCLP Threshold (mg/l) (2)	
	8/15/19		5/8/20							
	Stone/Alpha (1)		LEE/Con-Test Analytical							
	NT	NT	0.0	0.1	0.1	0.0	0.1			
Pyridine	ND	ND	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	100	5.0	
Selenium (Total, mg/kg, dry)	1.08	0.62	ND<5.1	ND<4.9	ND<5.4	ND<6.0	ND<5.0	20	---	
Selenium (TCLP)	NT	NT	ND<0.050	ND<0.050	ND<0.050	ND<0.050	ND<0.050	---	1.0	
Silver (Total, mg/kg, dry)	0.811	0.71	0.68	ND<0.49	0.54	0.80	ND<0.5	100	---	
Silver (TCLP)	NT	NT	ND<0.050	ND<0.050	ND<0.050	ND<0.050	ND<0.050	---	5.0	
Tetrachloroethene (PCE)	ND	ND	ND<0.11	ND<0.12	ND<0.12	ND<0.13	ND<0.10	14	0.7	
Toxaphene	NT	NT	NT	NT	NT	NT	NT	10	0.5	
Trichloroethene (TCE)	ND	ND	ND<0.11	ND<0.12	ND<0.12	ND<0.13	ND<0.10	10	0.5	
2,4,5-Trichlorophenol	NT	NT	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	8000	400.0	
2,4,6-Trichlorophenol	NT	NT	ND<1.0	ND<1.0	ND<2.2	ND<1.2	ND<1.0	40	2.0	
2,4,5-TP Silvex	NT	NT	NT	NT	NT	NT	NT	20	1.0	
Vinyl Chloride	ND	ND	ND<0.22	ND<0.23	ND<0.24	ND<0.26	ND<0.20	4	0.2	

Sample ID Sample Date Collected by/Laboratory PID (ppm)	IP-6A (mg/kg)	IP-06FD (mg/kg)	LF-1	LF-2	LF-3	LF-4	Duplicate LF-2	EPA/DEC HW Threshold (mg/kg) (2)	
	8/15/19		5/8/20						
	Stone/Alpha (1)		LEE/Con-Test Analytical						
	NT	NT	0.0	0.1	0.1	0.0	0.1		
Aroclor - 1016	ND	ND	ND<0.12	ND<0.12	ND<0.12	ND<0.14	ND<0.12	50 (total)	
Aroclor - 1221	ND	ND	ND<0.12	ND<0.12	ND<0.12	ND<0.14	ND<0.12		
Aroclor - 1232	ND	ND	ND<0.12	ND<0.12	ND<0.12	ND<0.14	ND<0.12		
Aroclor - 1242	ND	ND	ND<0.12	ND<0.12	ND<0.12	ND<0.14	ND<0.12		
Aroclor - 1248	ND	ND	ND<0.12	ND<0.12	ND<0.12	ND<0.14	ND<0.12		
Aroclor - 1254	2.66	1.68	0.38	0.47	0.38	0.38	0.67		
Aroclor - 1260	0.865	1.04	ND<0.12	0.20	0.18	0.19	0.56		
Aroclor - 1262	ND	ND	ND<0.12	ND<0.12	ND<0.12	ND<0.14	ND<0.12		
Aroclor - 1268	ND	ND	ND<0.12	ND<0.12	ND<0.12	ND<0.14	ND<0.12		
pH	NT	NT	5.1	4.6	4.6	4.3	4.7	<2 or ≥10	
Percent Solids	58	62	65.5	65.2	59.8	55.5	65.3	None	
Reactivity (CN/S)	NT	NT	ND	ND	ND	ND	ND	250 / 500	
Per- and polyfluoroalkyl substances (PFAS)(mg/kg)	0.165	0.142	0.097	0.110	0.096	0.152	0.096	None	
2,3,7,8-TCDD Toxicity Equivalency	1.14E-06	1.14E-06	1.24E-05	2.38E-05	1.60E-05	1.15E-05	1.64E-05	None	
TPH	NT	NT	2,900	3,100	4,300	5,200	3,300	50,000	
Ignitibility/Flashpoint	NT	NT	Absent	Absent	Absent	Absent	Absent	Present/Absent	

NOTES:

(1) Stone/Alpha Data from Phase II Environmental Site Assessment Report, Long Falls Paperboard, October 2019

(2) TCLP Thresholds from EPA Hazardous Waste Characteristics, October 2009 and Vermont DEC Hazardous Waste Management Regulations, December 31, 2016

**Brownfields Cleanup Site Investigation
Soil Data Summary
Long Falls Paperboard
161 Wellington Road, Brattleboro, Vermont**



Sample Identification	LF-5	LF-6	LF-7	EPA Industrial RSL	VSS Non-Residential
Sample Depth (ft. bg)	0-18"	0-18"	0-18"		
PID Reading (ppm)	0.1	0.0	0.0		
Sample Date	5/8/20				
VOCs, EPA Method 8260C (mg/kg)					
Acetone	ND<0.090	ND<0.087	ND<0.076	-	100,028
Acrylonitrile	ND<0.0054	ND<0.0052	ND<0.0045	1.1	-
tert-Amyl Methyl Ether (TAME)	ND<0.00090	ND<0.00087	ND<0.00076	-	-
Benzene	ND<0.0018	ND<0.0017	ND<0.0015	-	4.2
Bromobenzene	ND<0.0018	ND<0.0017	ND<0.0015	1,800	-
Bromochloromethane	ND<0.0018	ND<0.0017	ND<0.0015	-	597
Bromodichloromethane	ND<0.0018	ND<0.0017	ND<0.0015	1.3	-
Bromoform	ND<0.0018	ND<0.0017	ND<0.0015	86	-
Bromomethane	ND<0.0090	ND<0.0087	ND<0.0076	30	-
2-Butanone (MEK)	ND<0.036	ND<0.035	ND<0.030	-	26,991
tert-Butyl Alcohol (TBA)	ND<0.036	ND<0.035	ND<0.030	-	-
n-Butylbenzene	ND<0.0018	ND<0.0017	ND<0.0015	-	51,100
sec-Butylbenzene	ND<0.0018	ND<0.0017	ND<0.0015	-	102,200
tert-Butylbenzene	ND<0.0018	ND<0.0017	ND<0.0015	-	102,200
tert-Butyl Ethyl Ether (TBEE)	ND<0.00090	ND<0.00087	ND<0.00076	-	-
Carbon disulfide	ND<0.0054	ND<0.0052	ND<0.0045	-	662
Carbon tetrachloride	ND<0.0018	ND<0.0017	ND<0.0015	-	2.2
Chlorobenzene	ND<0.0018	ND<0.0017	ND<0.0015	-	726
Chlorodibromomethane (Dibromochloromethane)	ND<0.00090	ND<0.00087	ND<0.00076	39	-
Chloroethane (ethyl chloride)	ND<0.0018	ND<0.0017	ND<0.0015	57,000	-
Chloroform	ND<0.0036	ND<0.0035	ND<0.0030	1.4	-
Chloromethane	ND<0.0090	ND<0.0087	ND<0.0076	460	-
2-Chlorotoluene	ND<0.0018	ND<0.0017	ND<0.0015	23,000	-
4-Chlorotoluene	ND<0.0018	ND<0.0017	ND<0.0015	23,000	-
1,2-Dibromo-3-chloropropane (DBCP)	ND<0.0018	ND<0.0017	ND<0.0015	0.064	-
1,2-Dibromoethane (EDB)	ND<0.00090	ND<0.00087	ND<0.00076	-	0.14
Dibromomethane	ND<0.0018	ND<0.0017	ND<0.0015	99	-
1,2-Dichlorobenzene	ND<0.0018	ND<0.0017	ND<0.0015	9,300	-
1,3-Dichlorobenzene	ND<0.0018	ND<0.0017	ND<0.0015	-	-
1,4-Dichlorobenzene	ND<0.0018	ND<0.0017	ND<0.0015	11	-
trans-1,4-Dichloro-2-butene	ND<0.0036	ND<0.0035	ND<0.0030	0.032	-
Dichlorodifluoromethane (Freon 12)	ND<0.018	ND<0.017	ND<0.015	370	-
1,1-Dichloroethane	ND<0.0018	ND<0.0017	ND<0.0015	-	13
1,2-Dichloroethane	ND<0.0018	ND<0.0017	ND<0.0015	-	1.7
1,1-Dichloroethene	ND<0.0036	ND<0.0035	ND<0.0030	1,000	-
cis-1,2-Dichloroethene	ND<0.0018	ND<0.0017	ND<0.0015	-	1,814
trans-1,2-Dichloroethene	ND<0.0018	ND<0.0017	ND<0.0015	-	18,137
1,2-Dichloropropane	ND<0.0018	ND<0.0017	ND<0.0015	-	9.1
1,3-Dichloropropane	ND<0.00090	ND<0.00087	ND<0.00076	23,000	-
2,2-Dichloropropane	ND<0.0018	ND<0.0017	ND<0.0015	-	-

NOTES:

Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) from May 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Blank Cell=no published value (VSS) or published value not applicable (RSL)

**Brownfields Cleanup Site Investigation
Analytical Sensitivity and Project Criteria (Form K) Tables
Long Falls Paperboard
161 Wellington Road, Brattleboro, Vermont**



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Sample Identification	LF-5	LF-6	LF-7	EPA Industrial RSL	VSS Non-Residential
Sample Depth (ft. bg)	0-18"	0-18"	0-18"		
PID Reading (ppm)	0.1	0.0	0.0		
Sample Date	5/8/20				
VOCs, EPA Method 8260C (mg/kg)					
1,1-Dichloropropene	ND<0.0018	ND<0.0017	ND<0.0015	-	-
cis-1,3-Dichloropropene	ND<0.00090	ND<0.00087	ND<0.00076	8.2	-
trans-1,3-Dichloropropene	ND<0.00090	ND<0.00087	ND<0.00076	8.2	-
Diethyl Ether	ND<0.018	ND<0.0017	ND<0.0015	-	-
Diisopropyl Ether (DIPE)	ND<0.00090	ND<0.00087	ND<0.00076	9400	-
1,4-Dioxane	ND<0.090	ND<0.087	ND<0.076	17	-
Ethylbenzene	ND<0.0018	ND<0.0017	ND<0.0015	-	22
Hexachlorobutadiene	ND<0.0018	ND<0.0017	ND<0.0015	5.3	-
2-Hexanone (MBK)	ND<0.018	ND<0.017	ND<0.015	1,300	-
IsoPropylbenzene (cumene)	ND<0.0018	ND<0.0017	ND<0.0015	-	264
p-Isopropyltoluene (p-cymene)	ND<0.0018	ND<0.0017	ND<0.0015	-	-
Methyl Acetate	ND<0.0018	ND<0.0017	ND<0.0015	35,000	-
MTBE	ND<0.0036	ND<0.0035	ND<0.0030	-	4,464
Methyl Cyclohexane	ND<0.0018	ND<0.0017	ND<0.0015	-	-
Methylene chloride	ND<0.018	ND<0.017	ND<0.015	1,000	-
4-Methyl-2-pentanone(MIBK)	ND<0.018	ND<0.017	ND<0.015	140,000	-
Naphthalene	ND<0.0036	ND<0.0035	ND<0.0030	-	16
n-Propylbenzene	ND<0.0018	ND<0.0017	ND<0.0015	-	261
Styrene	ND<0.0018	ND<0.0017	ND<0.0015	35,000	-
1,1,1,2-Tetrachloroethane	ND<0.0018	ND<0.0017	ND<0.0015	8.8	-
1,1,2,2-Tetrachloroethane	ND<0.00090	ND<0.00087	ND<0.00076	2.7	-
Tetrachloroethene (PCE)	ND<0.0018	ND<0.0017	ND<0.0015	-	14
Tetrahydrofuran (THF)	ND<0.0090	ND<0.0087	ND<0.0076	-	-
Toluene	ND<0.0018	0.0025	ND<0.0015	-	798
1,2,3-Trichlorobenzene	ND<0.0018	ND<0.0017	ND<0.0015	930	-
1,2,4-Trichlorobenzene	ND<0.0018	ND<0.0017	ND<0.0015	110	-
1,3,5-Trichlorobenzene	ND<0.0018	ND<0.0017	ND<0.0015	-	-
1,1,1-Trichloroethane	ND<0.0018	ND<0.0017	ND<0.0015	36,000	-
1,1,2-Trichloroethane	ND<0.0018	ND<0.0017	ND<0.0015	5	-
Trichloroethene (TCE)	ND<0.0018	ND<0.0017	ND<0.0015	-	6.5
Trichlorofluoromethane (Freon 11)	ND<0.0090	ND<0.00087	ND<0.0076	350,000	-
1,2,3-Trichloropropane	ND<0.0018	ND<0.0017	ND<0.0015	-	0.07
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND<0.0090	ND<0.0087	ND<0.0076	-	0.07
1,2,4-trimethylbenzene	ND<0.0018	ND<0.0017	ND<0.0015	-	177*
1,3,5-trimethylbenzene	ND<0.0018	ND<0.0017	ND<0.0015	-	177*
Vinyl Chloride	ND<0.0090	ND<0.0087	ND<0.0076	-	0.59
mp-Xylene	ND<0.0036	ND<0.0035	ND<0.0030	-	257
o-Xylene	ND<0.0018	ND<0.0017	ND<0.0015	-	

NOTES:

Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) from May 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Blank Cell=no published value (VSS) or published value not applicable (RSL)

**Brownfields Cleanup Site Investigation
Analytical Sensitivity and Project Criteria (Form K) Tables
Long Falls Paperboard
161 Wellington Road, Brattleboro, Vermont**



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Sample Identification	LF-5	LF-6	LF-7	EPA Industrial RSL	VSS Non-Residential
Sample Depth (ft. bg)	0-18"	0-18"	0-18"		
PID Reading (ppm)	0.1	0.0	0.0		
Sample Date	5/8/20				
PAH EPA Method 8270D (mg/kg)					
Acenaphthene	ND<0.19	ND<0.19	ND<0.19	45,000	-
Acenaphthylene	ND<0.19	ND<0.19	ND<0.19	-	-
Anthracene	ND<0.19	ND<0.19	ND<0.19	230,000	-
Benzo(a)anthracene	ND<0.19	ND<0.19	ND<0.19	21	-
Benzo(a)pyrene	ND<0.19	ND<0.19	ND<0.19	-	1.54
Benzo(b)fluoranthene	ND<0.19	ND<0.19	ND<0.19	21	-
Benzo(g,h,i)perylene	ND<0.19	ND<0.19	ND<0.19	-	-
Benzo(k)fluoranthene	ND<0.19	ND<0.19	ND<0.19	210	-
Chrysene	ND<0.19	ND<0.19	ND<0.19	2,100	-
Dibenz(a,h)anthracene	ND<0.19	ND<0.19	ND<0.19	2.1	-
Fluoranthene	ND<0.19	ND<0.19	ND<0.19	-	26,371
Fluorene	ND<0.19	ND<0.19	ND<0.19	-	26,371
Indeno(1,2,3-cd)pyrene	ND<0.19	ND<0.19	ND<0.19	21	-
2-Methylnaphthalene	ND<0.19	ND<0.19	ND<0.19	3,000	-
Naphthalene	ND<0.19	ND<0.19	ND<0.19	-	16
Phenanthrene	ND<0.19	ND<0.19	ND<0.19	-	-
Pyrene	ND<0.19	ND<0.19	ND<0.19	23,000	-
PAH TEQ as B[a]P	0.22	0.22	0.22	-	0.58
POLYCHLORINATED DIOXIN AND FURAN (ng/kg, as TEQ)					
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-TCDD	0.56	1.54	1.33	-	13.7
TOTAL METALS, EPA Method 6020 (mg/kg, dry)					
Total Arsenic	5.8	5.9	6.5	-	16
Total Barium	29	32	27	-	127,382
Total Cadmium	ND<0.37	ND<0.38	ND<0.36	-	87
Total Chromium	13	15	13	-	360,223
Total Lead	7.8	6.1	5.1	-	800
Total Mercury	0.037	ND<0.027	ND<0.026	-	3.1
Total Selenium	ND<3.7	ND<3.8	ND<3.6	5,800	-
Total Silver	ND<0.37	ND<0.38	ND<0.36	-	2,483
PCBS, EPA Method 8082 (mg/kg, dry)					
Aroclor-1016	ND<0.091	ND<0.091	ND<0.087	27	-
Aroclor-1221	ND<0.091	ND<0.091	ND<0.087	0.83	-
Aroclor-1232	ND<0.091	ND<0.091	ND<0.087	0.72	-
Aroclor-1242	ND<0.091	ND<0.091	ND<0.087	0.95	-
Aroclor-1248	ND<0.091	ND<0.091	ND<0.087	0.95	-
Aroclor-1254	ND<0.091	ND<0.091	ND<0.087	0.97	-
Aroclor-1260	ND<0.091	ND<0.091	ND<0.087	0.99	-
Aroclor-1262	ND<0.091	ND<0.091	ND<0.087	-	-
Aroclor-1268	ND<0.091	ND<0.091	ND<0.087	-	-
Total PCBs	ND	ND	ND	-	0.68

NOTES:

Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule EPA Regional Screening Levels (RSLs) from May 2020 RSL Summary Table. RSLs not included when a VSS exists. Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.

**PAH Toxic Equivalency Calculations
Long Falls Paper Soils, Brattleboro, Vermont**



LF-5

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.095	0.1	0.0095
Chrysene	0.095	0.001	0.000095
Benzo(b)fluoranthene	0.095	0.1	0.0095
Benzo(k)fluoranthene	0.095	0.01	0.00095
Benzo(a)pyrene	0.095	1	0.095
Indeno(1,2,3-cd)pyrene	0.095	0.1	0.0095
Dibenz(a,h)anthracene	0.095	1	0.095
Total Benzo(a)pyrene Equivalent =			0.22

LF-6

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.095	0.1	0.0095
Chrysene	0.095	0.001	0.000095
Benzo(b)fluoranthene	0.095	0.1	0.0095
Benzo(k)fluoranthene	0.095	0.01	0.00095
Benzo(a)pyrene	0.095	1	0.095
Indeno(1,2,3-cd)pyrene	0.095	0.1	0.0095
Dibenz(a,h)anthracene	0.095	1	0.095
Total Benzo(a)pyrene Equivalent =			0.22

LF-7

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	0.095	0.1	0.0095
Chrysene	0.095	0.001	0.000095
Benzo(b)fluoranthene	0.095	0.1	0.0095
Benzo(k)fluoranthene	0.095	0.01	0.00095
Benzo(a)pyrene	0.095	1	0.095
Indeno(1,2,3-cd)pyrene	0.095	0.1	0.0095
Dibenz(a,h)anthracene	0.095	1	0.095
Total Benzo(a)pyrene Equivalent =			0.22

**Dioxin/Furan Toxic Equivalency Calculations
Long Falls Paperboard**



LF-1 (sludge)

Contaminant	Concentration (ng/kg)(1)	Data Qualifier (2)	Toxicity Equivalency Factor (3)	Toxicity Equivalents to 2,3,7,8-TCDD (ng/kg)
2,3,7,8-TCDD	2.60	K	1	2.6
1,2,3,7,8-PeCDD	0.743	BJ	1	0.743
1,2,3,4,7,8-HxCDD	0.865	JK	0.1	0.0865
1,2,3,6,7,8-HxCDD	7.60		0.1	0.76
1,2,3,7,8,9-HxCDD	2.90	J	0.1	0.29
1,2,3,4,6,7,8-HpCDD	193		0.01	1.93
OCDD	2800		0.0003	0.84
2,3,7,8-TCDF	37.3		0.1	3.73
1,2,3,7,8-PeCDF	1.05	BJK	0.03	0.0315
2,3,4,7,8-PeCDF	1.55	J	0.3	0.465
1,2,3,4,7,8-HxCDF	1.320	BJ	0.1	0.132
1,2,3,6,7,8-HxCDF	0.699	BJ	0.1	0.0699
1,2,3,7,8,9-HxCDF	1.755	ND	0.1	0.1755
2,3,4,6,7,8-HxCDF	1.020	BJ	0.1	0.102
1,2,3,4,6,7,8-HpCDF	34.0		0.01	0.34
1,2,3,4,7,8,9-HpCDF	1.35	JK	0.01	0.0135
OCDF	153		0.0003	0.0459
Total 2,3,7,8-TCDD Equivalent =				12.4

LF-2 (sludge)

Contaminant	Concentration (ng/kg)(1)	Data Qualifier (2)	Toxicity Equivalency Factor (3)	Toxicity Equivalents to 2,3,7,8-TCDD (ng/kg)
2,3,7,8-TCDD	4.17		1	4.17
1,2,3,7,8-PeCDD	1.78	BJK	1	1.78
1,2,3,4,7,8-HxCDD	10.2	K	0.1	1.02
1,2,3,6,7,8-HxCDD	12.8		0.1	1.28
1,2,3,7,8,9-HxCDD	7.66		0.1	0.766
1,2,3,4,6,7,8-HpCDD	340		0.01	3.4
OCDD	2930		0.0003	0.879
2,3,7,8-TCDF	73.0		0.1	7.3
1,2,3,7,8-PeCDF	2.68	J	0.03	0.0804
2,3,4,7,8-PeCDF	3.28	J	0.3	0.984
1,2,3,4,7,8-HxCDF	3.110	J	0.1	0.311
1,2,3,6,7,8-HxCDF	1.48	BJK	0.1	0.148
1,2,3,7,8,9-HxCDF	1.82	ND	0.1	0.182
2,3,4,6,7,8-HxCDF	2.33	J	0.1	0.233
1,2,3,4,6,7,8-HpCDF	111.0		0.01	1.11
1,2,3,4,7,8,9-HpCDF	2.67	J	0.01	0.0267
OCDF	325		0.0003	0.0975
Total 2,3,7,8-TCDD Equivalent =				23.8

(1) Concentrations reported as non-detect are entered as 50% of the reporting limit per Vermont Department of Environmental Conservation I-Rule 7/19, Section 35.401 (l).

(2) B-detected in blank <10% of concentration; J-estimated due to low conc; K-estimated due to ion abundance ratio

(3) Toxicity equivalency factors from Vermont Department of Environmental Conservation I-Rule 7/19, Appendix F.

**Dioxin/Furan Toxic Equivalency Calculations
Long Falls Paperboard**



LF-3 (sludge)

Contaminant	Concentration (ng/kg)(1)	Data Qualifier (2)	Toxicity Equivalency Factor (3)	Toxicity Equivalents to 2,3,7,8-TCDD (ng/kg)
2,3,7,8-TCDD	3.41		1	3.41
1,2,3,7,8-PeCDD	1.09	BJ	1	1.09
1,2,3,4,7,8-HxCDD	4.10	J	0.1	0.41
1,2,3,6,7,8-HxCDD	7.50		0.1	0.75
1,2,3,7,8,9-HxCDD	3.60	JK	0.1	0.36
1,2,3,4,6,7,8-HpCDD	167		0.01	1.67
OCDD	1870		0.0003	0.561
2,3,7,8-TCDF	59.6		0.1	5.96
1,2,3,7,8-PeCDF	1.92	BJ	0.03	0.0576
2,3,4,7,8-PeCDF	2.07	J	0.3	0.621
1,2,3,4,7,8-HxCDF	1.86	BJ	0.1	0.186
1,2,3,6,7,8-HxCDF	0.811	BJK	0.1	0.0811
1,2,3,7,8,9-HxCDF	0.713	BJ	0.1	0.0713
2,3,4,6,7,8-HxCDF	1.16	BJK	0.1	0.116
1,2,3,4,6,7,8-HpCDF	59.1		0.01	0.591
1,2,3,4,7,8,9-HpCDF	1.50	JK	0.01	0.015
OCDF	218		0.0003	0.0654
Total 2,3,7,8-TCDD Equivalent =				16.0

LF-4 (sludge)

Contaminant	Concentration (ng/kg)(1)	Data Qualifier (2)	Toxicity Equivalency Factor (3)	Toxicity Equivalents to 2,3,7,8-TCDD (ng/kg)
2,3,7,8-TCDD	2.08		1	2.08
1,2,3,7,8-PeCDD	0.988	BJ	1	0.988
1,2,3,4,7,8-HxCDD	1.89	J	0.1	0.189
1,2,3,6,7,8-HxCDD	7.08		0.1	0.708
1,2,3,7,8,9-HxCDD	3.69	JK	0.1	0.369
1,2,3,4,6,7,8-HpCDD	169		0.01	1.69
OCDD	1630		0.0003	0.489
2,3,7,8-TCDF	37.9		0.1	3.79
1,2,3,7,8-PeCDF	1.23	BJK	0.03	0.0369
2,3,4,7,8-PeCDF	1.66	J	0.3	0.498
1,2,3,4,7,8-HxCDF	1.36	BJK	0.1	0.136
1,2,3,6,7,8-HxCDF	0.729	BJK	0.1	0.0729
1,2,3,7,8,9-HxCDF	0.548	BJ	0.1	0.0548
2,3,4,6,7,8-HxCDF	1.20	BJ	0.1	0.12
1,2,3,4,6,7,8-HpCDF	25.4		0.01	0.254
1,2,3,4,7,8,9-HpCDF	1.30	JK	0.01	0.013
OCDF	98		0.0003	0.02949
Total 2,3,7,8-TCDD Equivalent =				11.5

(1) Concentrations reported as non-detect are entered as 50% of the reporting limit per Vermont Department of Environmental Conservation I-Rule 7/19, Section 35,401 (l).

(2) B-detected in blank <10% of concentration; J-estimated due to low conc; K-estimated due to ion abundance ratio

(3) Toxicity equivalency factors from Vermont Department of Environmental Conservation I-Rule 7/19, Appendix F.

**Dioxin/Furan Toxic Equivalency Calculations
Long Falls Paperboard**



LF-2 Duplicate (sludge)

Contaminant	Concentration (ng/kg)(1)	Data Qualifier (2)	Toxicity Equivalency Factor (3)	Toxicity Equivalents to 2,3,7,8-TCDD (ng/kg)
2,3,7,8-TCDD	3.50	K	1	3.5
1,2,3,7,8-PeCDD	0.927	BJK	1	0.927
1,2,3,4,7,8-HxCDD	0.928	J	0.1	0.0928
1,2,3,6,7,8-HxCDD	8.0		0.1	0.797
1,2,3,7,8,9-HxCDD	3.98		0.1	0.398
1,2,3,4,6,7,8-HpCDD	122		0.01	1.22
OCDD	1940		0.0003	0.582
2,3,7,8-TCDF	66.0		0.1	6.6
1,2,3,7,8-PeCDF	1.55	BJK	0.03	0.0465
2,3,4,7,8-PeCDF	2.7	J	0.3	0.81
1,2,3,4,7,8-HxCDF	1.73	BJK	0.1	0.173
1,2,3,6,7,8-HxCDF	0.959	BJK	0.1	0.0959
1,2,3,7,8,9-HxCDF	1.88	ND	0.1	0.1875
2,3,4,6,7,8-HxCDF	1.23	J	0.1	0.123
1,2,3,4,6,7,8-HpCDF	69.3		0.01	0.693
1,2,3,4,7,8,9-HpCDF	1.88	ND	0.01	0.01875
OCDF	300		0.0003	0.09
Total 2,3,7,8-TCDD Equivalent =				16.4

LF-5 (soil)

Contaminant	Concentration (ng/kg)(1)	Data Qualifier (2)	Toxicity Equivalency Factor (3)	Toxicity Equivalents to 2,3,7,8-TCDD (ng/kg)
2,3,7,8-TCDD	0.281	ND	1	0.2805
1,2,3,7,8-PeCDD	0.0525	ND	1	0.0525
1,2,3,4,7,8-HxCDD	0.062	ND	0.1	0.0062
1,2,3,6,7,8-HxCDD	0.0575	ND	0.1	0.00575
1,2,3,7,8,9-HxCDD	0.185	BJK	0.1	0.0185
1,2,3,4,6,7,8-HpCDD	5.30		0.01	0.053
OCDD	66.4		0.0003	0.01992
2,3,7,8-TCDF	0.076	ND	0.1	0.0076
1,2,3,7,8-PeCDF	0.180	BJK	0.03	0.0054
2,3,4,7,8-PeCDF	0.0605	ND	0.3	0.01815
1,2,3,4,7,8-HxCDF	0.162	BJ	0.1	0.0162
1,2,3,6,7,8-HxCDF	0.165	BJ	0.1	0.0165
1,2,3,7,8,9-HxCDF	0.082	ND	0.1	0.0082
2,3,4,6,7,8-HxCDF	0.326	BJ	0.1	0.0326
1,2,3,4,6,7,8-HpCDF	1.96	J	0.01	0.0196
1,2,3,4,7,8,9-HpCDF	0.136	BJK	0.01	0.00136
OCDF	5.77		0.0003	0.001731
Total 2,3,7,8-TCDD Equivalent =				0.564

(1) Concentrations reported as non-detect are entered as 50% of the reporting limit per Vermont Department of Environmental Conservation I-Rule 7/19, Section 35,401 (l).

(2) B-detected in blank <10% of concentration; J-estimated due to low conc; K-estimated due to ion abundance ratio

(3) Toxicity equivalency factors from Vermont Department of Environmental Conservation I-Rule 7/19, Appendix F.

**Dioxin/Furan Toxic Equivalency Calculations
Long Falls Paperboard**



LF-6 (soil)

Contaminant	Concentration (ng/kg)(1)	Data Qualifier (2)	Toxicity Equivalency Factor (3)	Toxicity Equivalents to 2,3,7,8-TCDD (ng/kg)
2,3,7,8-TCDD	0.263	ND	1	0.2625
1,2,3,7,8-PeCDD	0.1315	ND	1	0.1315
1,2,3,4,7,8-HxCDD	0.134	BJK	0.1	0.0134
1,2,3,6,7,8-HxCDD	0.405	BJK	0.1	0.0405
1,2,3,7,8,9-HxCDD	0.235	BJ	0.1	0.0235
1,2,3,4,6,7,8-HpCDD	12.7		0.01	0.127
OCDD	94.8		0.0003	0.02844
2,3,7,8-TCDF	0.2625	ND	0.1	0.02625
1,2,3,7,8-PeCDF	1.315	ND	0.03	0.03945
2,3,4,7,8-PeCDF	1.315	ND	0.3	0.3945
1,2,3,4,7,8-HxCDF	0.170	BJK	0.1	0.017
1,2,3,6,7,8-HxCDF	1.315	ND	0.1	0.1315
1,2,3,7,8,9-HxCDF	1.315		0.1	0.1315
2,3,4,6,7,8-HxCDF	1.315		0.1	0.1315
1,2,3,4,6,7,8-HpCDF	2.49	J	0.01	0.0249
1,2,3,4,7,8,9-HpCDF	1.315		0.01	0.01315
OCDF	9.89		0.0003	0.002967
Total 2,3,7,8-TCDD Equivalent =				1.54

LF-7 (soil)

Contaminant	Concentration (ng/kg)(1)	Data Qualifier (2)	Toxicity Equivalency Factor (3)	Toxicity Equivalents to 2,3,7,8-TCDD (ng/kg)
2,3,7,8-TCDD	0.272	ND	1	0.272
1,2,3,7,8-PeCDD	0.3480	BJ	1	0.348
1,2,3,4,7,8-HxCDD	0.254	BJK	0.1	0.0254
1,2,3,6,7,8-HxCDD	0.693	JK	0.1	0.0693
1,2,3,7,8,9-HxCDD	0.535	BJ	0.1	0.0535
1,2,3,4,6,7,8-HpCDD	12.2		0.01	0.122
OCDD	105		0.0003	0.0315
2,3,7,8-TCDF	0.272	ND	0.1	0.0272
1,2,3,7,8-PeCDF	1.360	ND	0.03	0.0408
2,3,4,7,8-PeCDF	0.351	JK	0.3	0.1053
1,2,3,4,7,8-HxCDF	0.325	BJ	0.1	0.0325
1,2,3,6,7,8-HxCDF	0.17	BJK	0.1	0.017
1,2,3,7,8,9-HxCDF	1.360	ND	0.1	0.136
2,3,4,6,7,8-HxCDF	0.198	BJ	0.1	0.0198
1,2,3,4,6,7,8-HpCDF	2.33	J	0.01	0.0233
1,2,3,4,7,8,9-HpCDF	0.163	BJK	0.01	0.00163
OCDF	6.87	K	0.0003	0.002061
Total 2,3,7,8-TCDD Equivalent =				1.33

(1) Concentrations reported as non-detect are entered as 50% of the reporting limit per Vermont Department of Environmental Conservation I-Rule 7/19, Section 35.401 (l).

(2) B-detected in blank <10% of concentration; J-estimated due to low conc; K-estimated due to ion abundance ratio

(3) Toxicity equivalency factors from Vermont Department of Environmental Conservation I-Rule 7/19, Appendix F.

Read the directions, in their entirety, on the 'Directions' Tab before use.

sample information

Site Number:	2018-4828
Site Name:	Long Falls Paperboard
Sample Number:	LF-5
Sample Depth:	0-18"
Sample Date:	5/8/20

1. Select chemicals from dropdown list

2. Input reported concentrations in mg/kg

3. View autocalculated ILCR and HQ associated with each individual chemical reported

Analyte	CASRN	RB-RSV _c (mg/kg)	RB-RSV _n (mg/kg)	Sample Concentration (mg/kg)	Calculated Sample ILCR (unitless)	Calculated Sample HQ (unitless)
2,3,7,8-TCDD TEQ ^a	1746-01-6 ^b	2.25E-06	4.91E-05	5.64E-07	2.50E-07	1.15E-02
BaP-TE	NA	7.28E-02	NA	NA	Analyte conc. < RL	No noncancer RB-RSV
Benzo(a)pyrene ^c	50-32-8	NA	1.72E+01	NA	Included in BaP-TE	Analyte conc. < RL
Total PCBs	1336-36-3	1.14E-01	1.13E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Acetochlor	34256-82-1	NA	1.22E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Acetone	67-64-1	NA	4.06E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Alachlor	15972-60-8	NA	6.08E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Aldrin	309-00-2	2.02E-02	2.10E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Aluminum	7429-90-5	NA	7.25E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Antimony	7440-36-0	NA	2.60E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Barium	7440-39-3	NA	1.12E+04	2.90E+01	No cancer RB-RSV	2.58E-03
Benomyl	17804-35-2	1.16E+02	7.90E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Benzene	71-43-2	6.98E-01	1.11E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Beryllium	7440-41-7	5.67E+02	3.45E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Bis(2-chloro-1-methyl ethyl)ether	108-60-1	NA	2.80E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Boron	7440-42-8	NA	1.47E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Bromate	15541-45-4	5.36E-01	2.93E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Bromochloromethane	74-97-5	NA	1.93E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Bromonitril	1688-84-5	2.69E+00	9.12E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Butylbenzene, n-	104-51-8	NA	3.50E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Butylbenzene, sec-	135-98-8	NA	7.01E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Butylbenzene, tert-	98-06-6	NA	7.01E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Cadmium (food)	7440-43-9	7.56E+02	6.86E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Carbaryl	63-25-2	3.17E+02	6.08E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Carbon Disulfide	75-15-0	NA	6.08E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Carbon tetrachloride	56-23-5	3.72E-01	1.30E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Chlorobenzene	108-90-7	NA	4.14E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Chromium (III) (insoluble salts)	16065-83-1	NA	4.02E+04	1.30E+01	No cancer RB-RSV	3.23E-04
Chromium (VI)	18540-29-9	9.06E-02	1.16E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Cobalt	7440-48-4	1.51E+02	2.19E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Copper	7440-50-8	NA	1.04E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Di (2-ethylhexyl) phthalate	117-81-7	1.98E+01	1.23E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Dibromochloropropane	96-12-8	6.00E-03	6.03E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Dibromoethane, 1,2-	106-93-4	2.27E-02	1.15E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Dichloroethane, 1,1-	75-34-3	2.10E+00	1.40E+04	NA	Analyte conc. < RL	Analyte conc. < RL
Dichloroethane, 1,2-	107-06-2	2.85E-01	4.95E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Dichloroethylene, cis 1,2-	156-59-2	NA	1.40E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Dichloroethylene, trans 1,2-	156-60-5	NA	1.40E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Dichloropropane, 1,2-	78-87-5	1.51E+00	2.63E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Dioxane, 1,4-	123-91-1	2.78E+00	1.05E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Ethylbenzene	100-41-4	3.68E+00	4.45E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Fluoranthene	206-44-0	NA	2.30E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Fluorene	86-73-7	NA	2.30E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Hexachlorobenzene	118-74-1	1.31E-01	5.61E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	4.60E+00	2.90E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Hydrogen cyanide	74-90-8	NA	4.91E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Iron	7439-89-6	NA	5.13E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Isopropylbenzene (cumene)	98-82-8	NA	2.56E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Manganese (non-diet)	7439-96-5	NA	1.12E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Mercury (elemental)	7439-97-6	NA	3.13E+00	3.70E-02	No cancer RB-RSV	1.18E-02
Methyl ethyl ketone	78-93-3	NA	1.70E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Methyl tert-butyl ether (MTBE)	1634-04-4	NA	6.49E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Molybdenum	7439-98-7	NA	3.66E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Naphthalene	91-20-3	2.72E+00	2.24E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Nickel	7440-02-0	5.22E+03	9.40E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	NA	3.70E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Pentachlorophenol	87-86-5	4.84E-01	2.37E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Pentaerythritol tetranitrate (PETN)	78-11-5	NA	1.22E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Perchlorate	14797-73-0	NA	5.13E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorheptanoic acid (PFHpA)	375-85-9	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorononanoic acid (PFNA)	375-95-1	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorooctanoic acid (PFOA)	335-67-1	3.96E+00	1.22E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Propoxur (Baygon)	114-26-1	7.88E+01	2.43E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Propyl benzene, n-	103-65-1	NA	2.53E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Selenium	7782-49-2	NA	3.66E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Silver	7440-22-4	NA	2.37E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Tetrachloroethane, 1,1,1,2-	630-20-6	1.32E+00	2.10E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Tetrachloroethylene	127-18-4	2.38E+00	1.13E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Thallium (soluble Thallium)	7440-28-0 ^d	NA	7.33E-01	NA	No cancer RB-RSV	Analyte conc. < RL
Toluene	108-88-3	NA	7.06E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trichloroethylene	79-01-6	6.81E-01	6.21E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Trichloropropane, 1,2,3-	96-18-4	3.11E-03	8.67E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Trimethylbenzene, 1,2,3-	526-73-8	NA	2.06E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trimethylbenzene, 1,2,4-	95-63-6	NA	1.66E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trimethylbenzene, 1,3,5-	108-67-8	NA	1.44E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trinitrotoluene, 2,4,6- (TNT)	118-96-7	1.15E+01	3.49E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Uranium (soluble salts)	NA	NA	4.40E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Vanadium	7440-62-2	NA	2.77E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Vinyl chloride	75-01-4	9.83E-02	8.51E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Xylenes	1330-20-7	NA	2.52E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Zinc	7440-66-6	NA	2.20E+04	NA	No cancer RB-RSV	Analyte conc. < RL

a. RB-RSV_c corresponds to a one-in-one million ILCR. See IRULE Appendix E, Table 1.
 b. RB-RSV_n corresponds to a HQ of 1 based on Hypothetical Young Child Resident scenario. See IRULE Appendix E, Table 1.

Notes:
 HI = Hazard Index (sum of Hazard Quotients)
 HQ = Hazard Quotient
 ILCR = Incremental Lifetime Cancer Risk
 NA = Not Available
 RB-RSV_c = Risk-Based Residential Soil Value based on cancer
 RB-RSV_n = Risk-Based Residential Soil Value based on noncancer endpoint
 * - CAS Number for 2,3,7,8-TCDD
 ** - CAS Number is for Metallic Thallium

c. The 2,3,7,8-TCDD TEQ row should include the sum of the concentrations of all dioxins, furans, and dioxin-like PCBs reported as 2,3,7,8-TCDD toxic equivalents.
 d. The BaP-TE row should include the sum of the concentrations for all carcinogenic PAHs (including benzo(a)pyrene) reported as Benzo(a)pyrene toxic equivalents. See direction 6 for designated urban background locations.
 e. Benzo(a)pyrene row should include only the concentration of benzo(a)pyrene in order to address its noncancer hazards.
 f. The Total PCBs row should include the sum of the concentrations for all PCBs except dioxin-like PCBs. Dioxin-like PCBs should be included in the 2,3,7,8-TCDD TE concentration entry.

4. View autocalculated sample cumulative ILCR and HI

Sample Cumulative ILCR:	2.50E-07
Sample HI:	2.62E-02

Read the directions, in their entirety, on the 'Directions' Tab before use.

sample information

Site Number:	2018-4828
Site Name:	Long Falls Paperboard
Sample Number:	LF-6
Sample Depth:	0-18"
Sample Date:	5/8/20

1. Select chemicals from dropdown list

2. Input reported concentrations in mg/kg

3. View autocalculated ILCR and HQ associated with each individual chemical reported

Analyte	CASRN	RB-RSV _c (mg/kg)	RB-RSV _n (mg/kg)	Sample Concentration (mg/kg)	Calculated Sample ILCR (unitless)	Calculated Sample HQ (unitless)
2,3,7,8-TCDD TEQ ^a	1746-01-6 ^b	2.25E-06	4.91E-05	1.54E-06	6.83E-07	3.14E-02
BaP-TE	NA	7.28E-02	NA	NA	Analyte conc. < RL	No noncancer RB-RSV
Benzo(a)pyrene ^c	50-32-8	NA	1.72E+01	Included in BaP-TE	Analyte conc. < RL	Analyte conc. < RL
Total PCBs	1336-36-3	1.14E-01	1.13E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Acetochlor	34256-82-1	NA	1.22E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Acetone	67-64-1	NA	4.06E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Alachlor	15972-60-8	NA	6.08E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Aldrin	309-00-2	2.02E-02	2.10E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Aluminum	7429-90-5	NA	7.25E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Antimony	7440-36-0	NA	2.60E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Barium	7440-39-3	NA	1.12E+04	3.20E+01	No cancer RB-RSV	Analyte conc. < RL
Benomyl	17804-35-2	1.16E+02	7.90E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Benzene	71-43-2	6.98E-01	1.11E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Beryllium	7440-41-7	5.67E+02	3.45E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Bis(2-chloro-1-methyl ethyl)ether	108-60-1	NA	2.80E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Boron	7440-42-8	NA	1.47E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Bromate	15541-45-4	5.36E-01	2.93E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Bromochloromethane	74-97-5	NA	1.93E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Bromonitril	1688-84-5	2.69E+00	9.12E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Butylbenzene, n-	104-51-8	NA	3.50E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Butylbenzene, sec-	135-98-8	NA	7.01E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Butylbenzene, tert-	98-06-6	NA	7.01E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Cadmium (food)	7440-43-9	7.56E+02	6.86E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Carbaryl	63-25-2	3.17E+02	6.08E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Carbon Disulfide	75-15-0	NA	6.08E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Carbon tetrachloride	56-23-5	3.72E-01	1.30E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Chlorobenzene	108-90-7	NA	4.14E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Chromium (III) (insoluble salts)	16065-83-1	NA	4.02E+04	1.50E+01	No cancer RB-RSV	3.73E-04
Chromium (VI)	18540-29-9	9.06E-02	1.16E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Cobalt	7440-48-4	1.51E+02	2.19E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Copper	7440-50-8	NA	1.04E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Di (2-ethylhexyl) phthalate	117-81-7	1.98E+01	1.23E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Dibromochloropropane	96-12-8	6.00E-03	6.03E-00	NA	Analyte conc. < RL	Analyte conc. < RL
Dibromoethane, 1,2-	106-93-4	2.27E-02	1.15E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Dichloroethane, 1,1-	75-34-3	2.10E+00	1.40E+04	NA	Analyte conc. < RL	Analyte conc. < RL
Dichloroethane, 1,2-	107-06-2	2.85E-01	4.95E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Dichloroethylene, cis 1,2-	156-59-2	NA	1.40E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Dichloroethylene, trans 1,2-	156-60-5	NA	1.40E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Dichloropropane, 1,2-	78-87-5	1.51E+00	2.63E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Dioxane, 1,4-	123-91-1	2.78E+00	1.05E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Ethylbenzene	100-41-4	3.68E+00	4.45E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Fluoranthene	206-44-0	NA	2.30E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Fluorene	86-73-7	NA	2.30E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Hexachlorobenzene	118-74-1	1.31E-01	5.61E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	4.60E+00	2.90E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Hydrogen cyanide	74-90-8	NA	4.91E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Iron	7439-89-6	NA	5.13E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Isopropylbenzene (cumene)	98-82-9	NA	2.56E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Manganese (non-diet)	7439-96-5	NA	1.12E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Mercury (elemental)	7439-97-6	NA	3.13E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Methyl ethyl ketone	78-93-3	NA	1.70E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Methyl tert-butyl ether (MTBE)	1634-04-4	NA	6.49E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Molybdenum	7439-98-7	NA	3.66E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Naphthalene	91-20-3	2.72E+00	2.24E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Nickel	7440-02-0	5.22E+03	9.40E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	NA	3.70E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Pentachlorophenol	87-86-5	4.84E-01	2.37E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Pentaerythritol tetranitrate (PETN)	78-11-5	NA	1.22E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Perchlorate	14797-73-0	NA	5.13E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorheptanoic acid (PFHpA)	375-85-9	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorononanoic acid (PFNA)	375-95-1	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorooctanoic acid (PFOA)	335-67-1	3.96E+00	1.22E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Propoxur (Baygon)	114-26-1	7.88E+01	2.43E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Propyl benzene, n-	103-65-1	NA	2.53E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Selenium	7782-49-2	NA	3.66E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Silver	7440-22-4	NA	2.37E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Tetrachloroethane, 1,1,1,2-	630-20-6	1.32E+00	2.10E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Tetrachloroethylene	127-18-4	2.38E+00	1.13E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Thallium (soluble Thallium)	7440-28-0 ^d	NA	7.33E-01	NA	No cancer RB-RSV	Analyte conc. < RL
Toluene	108-88-3	NA	7.06E+02	2.50E-03	No cancer RB-RSV	3.54E-06
Trichloroethylene	79-01-6	6.81E-01	6.21E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Trichloropropane, 1,2,3-	96-18-4	3.11E-03	8.67E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Trimethylbenzene, 1,2,3-	526-73-8	NA	2.06E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trimethylbenzene, 1,2,4-	95-63-6	NA	1.66E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trimethylbenzene, 1,3,5-	108-67-8	NA	1.44E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trinitrotoluene, 2,4,6- (TNT)	118-96-7	1.15E+01	3.49E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Uranium (soluble salts)	NA	NA	4.40E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Vanadium	7440-62-2	NA	2.77E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Vinyl chloride	75-01-4	9.83E-02	8.51E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Xylenes	1330-20-7	NA	2.52E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Zinc	7440-66-6	NA	2.20E+04	NA	No cancer RB-RSV	Analyte conc. < RL

a. RB-RSV_c corresponds to a one-in-one million ILCR. See IRULE Appendix E, Table 1.
 b. RB-RSV_n corresponds to a HQ of 1 based on Hypothetical Young Child Resident scenario. See IRULE Appendix E, Table 1.

Notes:
 HI = Hazard Index (sum of Hazard Quotients)
 HQ = Hazard Quotient
 ILCR = Incremental Lifetime Cancer Risk
 NA = Not Available
 RB-RSV_c = Risk-Based Residential Soil Value based on cancer
 RB-RSV_n = Risk-Based Residential Soil Value based on noncancer endpoint
^a - CAS Number for 2,3,7,8-TCDD
^b - CAS Number is for Metallic Thallium

c. The 2,3,7,8-TCDD TEQ row should include the sum of the concentrations of all dioxins, furans, and dioxin-like PCBs reported as 2,3,7,8-TCDD toxic equivalents.
 d. The BaP-TE row should include the sum of the concentrations for all carcinogenic PAHs (including benzo(a)pyrene) reported as Benzo(a)pyrene toxic equivalents. See direction 6 for designated urban background locations.
 e. Benzo(a)pyrene row should include only the concentration of benzo(a)pyrene in order to address its noncancer hazards.
 f. The Total PCBs row should include the sum of the concentrations for all PCBs except dioxin-like PCBs. Dioxin-like PCBs should be included in the 2,3,7,8-TCDD TE concentration entry.

4. View autocalculated sample cumulative ILCR and HI

Sample Cumulative ILCR:	6.83E-07
Sample HI:	3.46E-02

Read the directions, in their entirety, on the 'Directions' Tab before use.

sample information

Site Number:	2018-4828
Site Name:	Long Falls Paperboard
Sample Number:	LF-7
Sample Depth:	0-18"
Sample Date:	5/8/20

1. Select chemicals from dropdown list

2. Input reported concentrations in mg/kg

3. View autocalculated ILCR and HQ associated with each individual chemical reported

Analyte	CASRN	RB-RSV _c (mg/kg)	RB-RSV _n (mg/kg)	Sample Concentration (mg/kg)	Calculated Sample ILCR (unitless)	Calculated Sample HQ (unitless)
2,3,7,8-TCDD TEQ ^a	1746-01-6 ^b	2.25E-06	4.91E-05	1.33E-06	5.89E-07	2.71E-02
BaP-TE	NA	7.28E-02	NA	NA	Analyte conc. < RL	No noncancer RB-RSV
Benzo(a)pyrene ^c	50-32-8	NA	1.72E+01	NA	Included in BaP-TE	Analyte conc. < RL
Total PCBs	1336-36-3	1.14E-01	1.13E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Acetochlor	34256-82-1	NA	1.22E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Acetone	67-64-1	NA	4.06E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Alachlor	15972-60-8	NA	6.08E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Aldrin	309-00-2	2.02E-02	2.10E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Aluminum	7429-90-5	NA	7.25E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Antimony	7440-36-0	NA	2.60E-01	NA	No cancer RB-RSV	Analyte conc. < RL
Barium	7440-39-3	NA	1.12E+04	2.70E+01	No cancer RB-RSV	2.40E-03
Benomyl	17804-35-2	1.16E+02	7.90E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Benzene	71-43-2	6.98E-01	1.11E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Beryllium	7440-41-7	5.67E+02	3.45E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Bis(2-chloro-1-methyl ethyl)ether	108-60-1	NA	2.80E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Boron	7440-42-8	NA	1.47E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Bromate	15541-45-4	5.36E-01	2.93E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Bromochloromethane	74-97-5	NA	1.93E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Bromonitril	1688-84-5	2.69E+00	9.12E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Butylbenzene, n-	104-51-8	NA	3.50E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Butylbenzene, sec-	135-98-8	NA	7.01E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Butylbenzene, tert-	98-06-6	NA	7.01E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Cadmium (food)	7440-43-9	7.56E+02	6.86E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Carbaryl	63-25-2	3.17E+02	6.08E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Carbon Disulfide	75-15-0	NA	6.08E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Carbon tetrachloride	56-23-5	3.72E-01	1.30E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Chlorobenzene	108-90-7	NA	4.14E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Chromium (III) (insoluble salts)	16065-83-1	NA	4.02E+04	1.30E+01	No cancer RB-RSV	3.23E-04
Chromium (VI)	18540-29-9	9.06E-02	1.16E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Cobalt	7440-48-4	1.51E+02	2.19E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Copper	7440-50-8	NA	1.04E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Di (2-ethylhexyl) phthalate	117-81-7	1.98E+01	1.23E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Dibromochloropropane	96-12-8	6.00E-03	6.63E-00	NA	Analyte conc. < RL	Analyte conc. < RL
Dibromoethane, 1,2-	106-93-4	2.27E-02	1.15E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Dichloroethane, 1,1-	75-34-3	2.10E+00	1.40E+04	NA	Analyte conc. < RL	Analyte conc. < RL
Dichloroethane, 1,2-	107-06-2	2.85E-01	4.95E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Dichloroethylene, cis 1,2-	156-59-2	NA	1.40E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Dichloroethylene, trans 1,2-	156-60-5	NA	1.40E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Dichloropropane, 1,2-	78-87-5	1.51E+00	2.63E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Dioxane, 1,4-	123-91-1	2.78E+00	1.05E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Ethylbenzene	100-41-4	3.68E+00	4.45E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Fluoranthene	206-44-0	NA	2.30E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Fluorene	86-73-7	NA	2.30E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Hexachlorobenzene	118-74-1	1.31E-01	5.61E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	4.60E+00	2.90E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Hydrogen cyanide	74-90-8	NA	4.91E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Iron	7439-89-6	NA	5.13E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Isopropylbenzene (cumene)	98-82-8	NA	2.56E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Manganese (non-diet)	7439-96-5	NA	1.12E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Mercury (elemental)	7439-97-6	NA	3.13E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Methyl ethyl ketone	78-93-3	NA	1.70E+04	NA	No cancer RB-RSV	Analyte conc. < RL
Methyl tert-butyl ether (MTBE)	1634-04-4	NA	6.49E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Molybdenum	7439-98-7	NA	3.66E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Naphthalene	91-20-3	2.72E+00	2.24E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Nickel	7440-02-0	5.22E+03	9.40E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	NA	3.70E+03	NA	No cancer RB-RSV	Analyte conc. < RL
Pentachlorophenol	87-86-5	4.84E-01	2.37E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Pentaerythritol tetranitrate (PETN)	78-11-5	NA	1.22E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Perchlorate	14797-73-0	NA	5.13E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorheptanoic acid (PFHpA)	375-85-9	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorononanoic acid (PFNA)	375-95-1	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	NA	1.22E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Perfluorooctanoic acid (PFOA)	335-67-1	3.96E+00	1.22E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Propoxur (Baygon)	114-26-1	7.88E+01	2.43E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Propyl benzene, n-	103-65-1	NA	2.53E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Selenium	7782-49-2	NA	3.66E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Silver	7440-22-4	NA	2.37E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Tetrachloroethane, 1,1,1,2-	630-20-6	1.32E+00	2.10E+03	NA	Analyte conc. < RL	Analyte conc. < RL
Tetrachloroethylene	127-18-4	2.38E+00	1.13E+02	NA	Analyte conc. < RL	Analyte conc. < RL
Thallium (soluble Thallium)	7440-28-0 ^d	NA	7.33E-01	NA	No cancer RB-RSV	Analyte conc. < RL
Toluene	108-88-3	NA	7.06E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trichloroethylene	79-01-6	6.81E-01	6.21E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Trichloropropane, 1,2,3-	96-18-4	3.11E-03	8.67E+00	NA	Analyte conc. < RL	Analyte conc. < RL
Trimethylbenzene, 1,2,3-	526-73-8	NA	2.06E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trimethylbenzene, 1,2,4-	95-63-6	NA	1.66E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trimethylbenzene, 1,3,5-	108-67-8	NA	1.44E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Trinitrotoluene, 2,4,6- (TNT)	118-96-7	1.15E+01	3.49E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Uranium (soluble salts)	NA	NA	4.40E+01	NA	No cancer RB-RSV	Analyte conc. < RL
Vanadium	7440-62-2	NA	2.77E+00	NA	No cancer RB-RSV	Analyte conc. < RL
Vinyl chloride	75-01-4	9.83E-02	8.51E+01	NA	Analyte conc. < RL	Analyte conc. < RL
Xylenes	1330-20-7	NA	2.52E+02	NA	No cancer RB-RSV	Analyte conc. < RL
Zinc	7440-66-6	NA	2.20E+04	NA	No cancer RB-RSV	Analyte conc. < RL

a. RB-RSV_c corresponds to a one-in-one million ILCR. See IRULE Appendix E, Table 1.
 b. RB-RSV_n corresponds to a HQ of 1 based on Hypothetical Young Child Resident scenario. See IRULE Appendix E, Table 1.

Notes:
 HI = Hazard Index (sum of Hazard Quotients)
 HQ = Hazard Quotient
 ILCR = Incremental Lifetime Cancer Risk
 NA = Not Available
 RB-RSV_c = Risk-Based Residential Soil Value based on cancer
 RB-RSV_n = Risk-Based Residential Soil Value based on noncancer endpoint
^c - CAS Number for 2,3,7,8-TCDD
^d - CAS Number is for Metallic Thallium

c. The 2,3,7,8-TCDD TEQ row should include the sum of the concentrations of all dioxins, furans, and dioxin-like PCBs reported as 2,3,7,8-TCDD toxic equivalents.
 d. The BaP-TE row should include the sum of the concentrations for all carcinogenic PAHs (including benzo(a)pyrene) reported as Benzo(a)pyrene toxic equivalents. See direction 6 for designated urban background locations.
 e. Benzo(a)pyrene row should include only the concentration of benzo(a)pyrene in order to address its noncancer hazards.
 f. The Total PCBs row should include the sum of the concentrations for all PCBs except dioxin-like PCBs. Dioxin-like PCBs should be included in the 2,3,7,8-TCDD TE concentration entry.

4. View autocalculated sample cumulative ILCR and HI

Sample Cumulative ILCR:	5.89E-07
Sample HI:	2.98E-02

PFAs Groundwater Data Summary
Long Falls Paperboard
161 Wellington Road, Brattleboro, Vermont



Page 1 of 4

IP-1 (top of casing elevation 95.93 ft)					
<i>Sample Date</i>	8/30/19	6/9/20			Vermont Groundwater Enforcement Standard
<i>Analytical Laboratory</i>	Alpha	Con-Test			
<i>Depth to Water (ft)</i>	69.05	69.04			
<i>Groundwater Elevation(ft)</i>	26.88	26.89			
PFAs EPA Method 537.1					
Perfluorobutanoic acid (PFBA)	2.9	2.4			-
Perfluorobutanesulfonic acid (PFBS)	0.47	ND<2.0			-
Perfluoropentanoic acid (PFPeA)	5.2	3.3			-
Perfluorohexanoic acid (PFHxA)	6.1	3.9			-
Perfluorohexanesulfonic acid (PFHxS)	0.74	ND<2.0			20
Perfluoroheptanoic acid (PFHpA)	2.8	ND<2.0			20
Perfluoroheptanesulfonic acid (PFHpS)	ND<1.7	ND<2.0			-
Perfluorooctanoic acid (PFOA)	6.8	8.0			20
Perfluorooctanesulfonic acid (PFOS)	ND<1.7	ND<2.0			20
Perfluorooctanesulfonamide (FOSA)	ND<1.7	ND<2.0			-
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND<1.7	ND<2.0			-
Perfluorononanoic acid (PFNA)	ND<1.7	ND<2.0			20
Perfluorodecanoic acid (PFDA)	ND<1.7	ND<2.0			-
Perfluorodecanesulfonic acid (PFDS)	ND<1.7	ND<2.0			-
N-EtFOSAA	ND<1.7	ND<2.0			-
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND<1.7	ND<2.0			-
Perfluoroundecanoic acid (PFUnA)	ND<1.7	ND<2.0			-
N-MeFOSAA	ND<1.7	ND<2.0			-
Perfluorododecanoic acid (PFDoA)	ND<1.7	ND<2.0			-
Perfluorotridecanoic acid (PFTrDA)	ND<1.7	ND<2.0			-
Perfluorotetradecanoic acid (PFTA)	ND<1.7	ND<2.0			-
Sum of PFOS, PFOA, PFHxS, PFHpA, PFNA	10.4	8.0			20

IP-2 (top of casing elevation 93.52 ft)					
<i>Sample Date</i>	8/30/19	6/9/20			Vermont Groundwater Enforcement Standard
<i>Analytical Laboratory</i>	Alpha	Con-Test			
<i>Depth to Water (ft)</i>	67.00	67.01			
<i>Groundwater Elevation(ft)</i>	26.52	26.51			
PFAs EPA Method 537.1					
Perfluorobutanoic acid (PFBA)	2.0	ND<2.0			-
Perfluorobutanesulfonic acid (PFBS)	0.81	ND<2.0			-
Perfluoropentanoic acid (PFPeA)	3.2	ND<2.0			-
Perfluorohexanoic acid (PFHxA)	2.6	ND<2.0			-
Perfluorohexanesulfonic acid (PFHxS)	0.60	ND<2.0			20
Perfluoroheptanoic acid (PFHpA)	1.1	ND<2.0			20
Perfluoroheptanesulfonic acid (PFHpS)	ND<2.0	ND<2.0			-
Perfluorooctanoic acid (PFOA)	2.3	2.6			20
Perfluorooctanesulfonic acid (PFOS)	0.65	ND<2.0			20
Perfluorooctanesulfonamide (FOSA)	ND<2.0	ND<2.0			-
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND<2.0	ND<2.0			-
Perfluorononanoic acid (PFNA)	ND<2.0	ND<2.0			20
Perfluorodecanoic acid (PFDA)	ND<2.0	ND<2.0			-
Perfluorodecanesulfonic acid (PFDS)	ND<2.0	ND<2.0			-
N-EtFOSAA	ND<2.0	ND<2.0			-
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND<2.0	ND<2.0			-
Perfluoroundecanoic acid (PFUnA)	ND<2.0	ND<2.0			-
N-MeFOSAA	ND<2.0	ND<2.0			-
Perfluorododecanoic acid (PFDoA)	ND<2.0	ND<2.0			-
Perfluorotridecanoic acid (PFTrDA)	ND<2.0	ND<2.0			-
Perfluorotetradecanoic acid (PFTA)	ND<2.0	ND<2.0			-
Sum of PFOS, PFOA, PFHxS, PFHpA, PFNA	4.6	2.6			20

NOTES:

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Vermont Groundwater Enforcement Standard from Table 1 of Chapter 12, Environmental Protection Rules, July 6, 2019.
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Reported concentrations at/or above VGES are shaded
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IP-3 (top of casing elevation 94.76 ft)					
<i>Sample Date</i>	8/30/19	6/9/20			Vermont Groundwater Enforcement Standard
<i>Analytical Laboratory</i>	Alpha	Con-Test			
<i>Depth to Water (ft)</i>	67.94	67.92			
<i>Groundwater Elevation(ft)</i>	26.82	26.84			
PFAs EPA Method 537.1					
Perfluorobutanoic acid (PFBA)	1.6	2.8			-
Perfluorobutanesulfonic acid (PFBS)	0.47	ND<2.0			-
Perfluoropentanoic acid (PFPeA)	0.70	2.1			-
Perfluorohexanoic acid (PFHxA)	ND<1.7	2.7			-
Perfluorohexanesulfonic acid (PFHxS)	ND<1.7	ND<2.0			20
Perfluoroheptanoic acid (PFHpA)	0.43	ND<2.0			20
Perfluoroheptanesulfonic acid (PFHpS)	ND<1.7	ND<2.0			-
Perfluorooctanoic acid (PFOA)	5.3	2.7			20
Perfluorooctanesulfonic acid (PFOS)	ND<1.7	ND<2.0			20
Perfluorooctanesulfonamide (FOSA)	ND<1.7	ND<2.0			-
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND<1.7	ND<2.0			-
Perfluorononanoic acid (PFNA)	ND<1.7	ND<2.0			20
Perfluorodecanoic acid (PFDA)	ND<1.7	ND<2.0			-
Perfluorodecanesulfonic acid (PFDS)	ND<1.7	ND<2.0			-
N-EtFOSAA	ND<1.7	ND<2.0			-
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND<1.7	ND<2.0			-
Perfluoroundecanoic acid (PFUnA)	ND<1.7	ND<2.0			-
N-MeFOSAA	ND<1.7	ND<2.0			-
Perfluorododecanoic acid (PFDoA)	ND<1.7	ND<2.0			-
Perfluorotridecanoic acid (PFTrDA)	ND<1.7	ND<2.0			-
Perfluorotetradecanoic acid (PFTA)	ND<1.7	ND<2.0			-
Sum of PFOS, PFOA, PFHxS, PFHpA, PFNA	5.7	2.7			20

IP-4 (top of casing elevation 95.86 ft)					
<i>Sample Date</i>	8/30/19	6/9/20			Vermont Groundwater Enforcement Standard
<i>Analytical Laboratory</i>	Alpha	Con-Test			
<i>Depth to Water (ft)</i>	69.12	69.12			
<i>Groundwater Elevation(ft)</i>	26.74	26.74			
PFAs EPA Method 537.1					
Perfluorobutanoic acid (PFBA)	7.1	4.4			-
Perfluorobutanesulfonic acid (PFBS)	0.69	ND<2.0			-
Perfluoropentanoic acid (PFPeA)	9.8	7.6			-
Perfluorohexanoic acid (PFHxA)	6.1	2.7			-
Perfluorohexanesulfonic acid (PFHxS)	1.8	ND<2.0			20
Perfluoroheptanoic acid (PFHpA)	1.6	ND<2.0			20
Perfluoroheptanesulfonic acid (PFHpS)	ND<1.8	ND<2.0			-
Perfluorooctanoic acid (PFOA)	3.3	2.8			20
Perfluorooctanesulfonic acid (PFOS)	ND<1.8	ND<2.0			20
Perfluorooctanesulfonamide (FOSA)	ND<1.8	ND<2.0			-
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.3	ND<2.0			-
Perfluorononanoic acid (PFNA)	ND<1.8	ND<2.0			20
Perfluorodecanoic acid (PFDA)	ND<1.8	ND<2.0			-
Perfluorodecanesulfonic acid (PFDS)	ND<1.8	ND<2.0			-
N-EtFOSAA	ND<1.8	ND<2.0			-
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND<1.8	ND<2.0			-
Perfluoroundecanoic acid (PFUnA)	ND<1.8	ND<2.0			-
N-MeFOSAA	ND<1.8	ND<2.0			-
Perfluorododecanoic acid (PFDoA)	ND<1.8	ND<2.0			-
Perfluorotridecanoic acid (PFTrDA)	ND<1.8	ND<2.0			-
Perfluorotetradecanoic acid (PFTA)	ND<1.8	ND<2.0			-
Sum of PFOS, PFOA, PFHxS, PFHpA, PFNA	6.7	2.8			20

NOTES:

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Reported concentrations at/ or above VGES are shaded

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IP-5 (top of casing elevation 95.54 ft)					
Sample Date	8/30/19	6/9/20			Vermont Groundwater Enforcement Standard
Analytical Laboratory	Alpha	NM			
Depth to Water (ft)	68.83	NM			
Groundwater Elevation(ft)	26.71	NM			
PFAs EPA Method 537.1					
Perfluorobutanoic acid (PFBA)	0.55	Not Sampled Inaccessible due to piled sludge			-
Perfluorobutanesulfonic acid (PFBS)	0.25				-
Perfluoropentanoic acid (PFPeA)	0.55				-
Perfluorohexanoic acid (PFHxA)	0.84				-
Perfluorohexanesulfonic acid (PFHxS)	ND<1.7				20
Perfluoroheptanoic acid (PFHpA)	0.45				20
Perfluoroheptanesulfonic acid (PFHpS)	ND<1.7				-
Perfluorooctanoic acid (PFOA)	1.4				20
Perfluorooctanesulfonic acid (PFOS)	0.50				20
Perfluorooctanesulfonamide (FOSA)	ND<1.7				-
6:2 Fluorotelomersulfonic acid (6:2FTSA)	ND<1.7				-
Perfluorononanoic acid (PFNA)	ND<1.7				20
Perfluorodecanoic acid (PFDA)	ND<1.7				-
Perfluorodecanesulfonic acid (PFDS)	ND<1.7				-
N-EtFOSAA	ND<1.7				-
8:2 Fluorotelomersulfonic acid (8:2FTSA)	ND<1.7				-
Perfluoroundecanoic acid (PFUnA)	ND<1.7				-
N-MeFOSAA	ND<1.7				-
Perfluorododecanoic acid (PFDoA)	ND<1.7				-
Perfluorotridecanoic acid (PFTrDA)	ND<1.7				-
Perfluorotetradecanoic acid (PFTA)	ND<1.7			-	
Sum of PFOS, PFOA, PFHxS, PFHpA, PFNA	2.4			20	

IP-6 (top of casing elevation 101.82ft)					
Sample Date	8/30/19	6/10/20			Vermont Groundwater Enforcement Standard
Analytical Laboratory	Alpha	Con-Test			
Depth to Water (ft)	75.35	75.27			
Groundwater Elevation(ft)	26.47	26.55			
PFAs EPA Method 537.1					
Perfluorobutanoic acid (PFBA)	21	18			-
Perfluorobutanesulfonic acid (PFBS)	0.63	ND<2.0			-
Perfluoropentanoic acid (PFPeA)	94	87			-
Perfluorohexanoic acid (PFHxA)	72	29			-
Perfluorohexanesulfonic acid (PFHxS)	0.88	ND<2.0			20
Perfluoroheptanoic acid (PFHpA)	7.3	4.0			20
Perfluoroheptanesulfonic acid (PFHpS)	ND<1.7	ND<2.0			-
Perfluorooctanoic acid (PFOA)	4.9	3.7			20
Perfluorooctanesulfonic acid (PFOS)	ND<1.7	ND<2.0			20
Perfluorooctanesulfonamide (FOSA)	ND<1.7	ND<2.0			-
6:2 Fluorotelomersulfonic acid (6:2FTSA)	23	ND<2.0			-
Perfluorononanoic acid (PFNA)	ND<1.7	ND<2.0			20
Perfluorodecanoic acid (PFDA)	ND<1.7	ND<2.0			-
Perfluorodecanesulfonic acid (PFDS)	ND<1.7	ND<2.0			-
N-EtFOSAA	ND<1.7	ND<2.0			-
8:2 Fluorotelomersulfonic acid (8:2FTSA)	2.3	ND<2.0			-
Perfluoroundecanoic acid (PFUnA)	ND<1.7	ND<2.0			-
N-MeFOSAA	ND<1.7	ND<2.0			-
Perfluorododecanoic acid (PFDoA)	ND<1.7	ND<2.0			-
Perfluorotridecanoic acid (PFTrDA)	ND<1.7	ND<2.0			-
Perfluorotetradecanoic acid (PFTA)	ND<1.7	ND<2.0			-
Sum of PFOS, PFOA, PFHxS, PFHpA, PFNA	13	7.7			20

NOTES:

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IP-7 (top of casing elevation 93.14 ft)					
<i>Sample Date</i>	8/30/19	6/9/20			Vermont Groundwater Enforcement Standard
<i>Analytical Laboratory</i>	Alpha	Con-Test			
<i>Depth to Water (ft)</i>	66.85	66.81			
<i>Groundwater Elevation(ft)</i>	26.29	26.33			
PFAs EPA Method 537.1					
Perfluorobutanoic acid (PFBA)	1.7	ND<2.0			-
Perfluorobutanesulfonic acid (PFBS)	0.76	ND<2.0			-
Perfluoropentanoic acid (PFPeA)	1.9	ND<2.0			-
Perfluorohexanoic acid (PFHxA)	2.0	ND<2.0			-
Perfluorohexanesulfonic acid (PFHxS)	0.67	ND<2.0			20
Perfluoroheptanoic acid (PFHpA)	0.81	ND<2.0			20
Perfluoroheptanesulfonic acid (PFHpS)	ND<1.9	ND<2.0			-
Perfluorooctanoic acid (PFOA)	2.0	2.2			20
Perfluorooctanesulfonic acid (PFOS)	0.53	ND<2.0			20
Perfluorooctanesulfonamide (FOSA)	ND<1.9	ND<2.0			-
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND<1.9	ND<2.0			-
Perfluorononanoic acid (PFNA)	ND<1.9	ND<2.0			20
Perfluorodecanoic acid (PFDA)	ND<1.9	ND<2.0			-
Perfluorodecanesulfonic acid (PFDS)	ND<1.9	ND<2.0			-
N-EtFOSAA	ND<1.9	ND<2.0			-
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND<1.9	ND<2.0			-
Perfluoroundecanoic acid (PFUnA)	ND<1.9	ND<2.0			-
N-MeFOSAA	ND<1.9	ND<2.0			-
Perfluorododecanoic acid (PFDoA)	ND<1.9	ND<2.0			-
Perfluorotridecanoic acid (PFTrDA)	ND<1.9	ND<2.0			-
Perfluorotetradecanoic acid (PFTA)	ND<1.9	ND<2.0			-
Sum of PFOS, PFOA, PFHxS, PFHpA, PFNA	4.0	2.2			20

IP-8 (top of casing elevation 100.72 ft)					
<i>Sample Date</i>	8/30/19	6/10/20			Vermont Groundwater Enforcement Standard
<i>Analytical Laboratory</i>	Alpha	Con-Test			
<i>Depth to Water (ft)</i>	74.50	74.40			
<i>Groundwater Elevation(ft)</i>	26.22	26.32			
PFAs EPA Method 537.1					
Perfluorobutanoic acid (PFBA)	8.5	4.3			-
Perfluorobutanesulfonic acid (PFBS)	0.65	ND<2.0			-
Perfluoropentanoic acid (PFPeA)	22	23			-
Perfluorohexanoic acid (PFHxA)	23	12			-
Perfluorohexanesulfonic acid (PFHxS)	0.65	ND<2.0			20
Perfluoroheptanoic acid (PFHpA)	3.3	ND<2.0			20
Perfluoroheptanesulfonic acid (PFHpS)	ND<2.0	ND<2.0			-
Perfluorooctanoic acid (PFOA)	1.1	ND<2.0			20
Perfluorooctanesulfonic acid (PFOS)	ND<2.0	ND<2.0			20
Perfluorooctanesulfonamide (FOSA)	ND<2.0	ND<2.0			-
6:2 Fluorotelomersulfonic acid (6:2FTS A)	11	ND<2.0			-
Perfluorononanoic acid (PFNA)	ND<2.0	ND<2.0			20
Perfluorodecanoic acid (PFDA)	0.43	ND<2.0			-
Perfluorodecanesulfonic acid (PFDS)	ND<2.0	ND<2.0			-
N-EtFOSAA	ND<2.0	ND<2.0			-
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.9	ND<2.0			-
Perfluoroundecanoic acid (PFUnA)	ND<2.0	ND<2.0			-
N-MeFOSAA	ND<2.0	ND<2.0			-
Perfluorododecanoic acid (PFDoA)	ND<2.0	ND<2.0			-
Perfluorotridecanoic acid (PFTrDA)	ND<2.0	ND<2.0			-
Perfluorotetradecanoic acid (PFTA)	ND<2.0	ND<2.0			-
Sum of PFOS, PFOA, PFHxS, PFHpA, PFNA	5.0	ND			20

NOTES:

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APPENDIX D

Cost Estimate

**Long Falls Paperboard Cost Estimate - Alternative 3
Excavate Sludge and Remove from Site, Regrade Site
Brattleboro, Vermont
November 2020**

Task Category	Description	No.		Per Unit Cost	Unit	Item Cost	Markup Factor	Total Item Cost	Subtotals
1.0 Construction Costs									
	Mobilization / Demobilization	Expense	1 @	\$5,000.00 /ls		\$5,000.00	1.00	\$5,000.00	
	Soil Erosion Control	Contractor	1 @	\$5,000.00 /ea		\$5,000.00	1.00	\$5,000.00	
	Common Excavation	Expense	5,574 @	\$8.98 /cy		\$50,054.52	1.00	\$50,054.52	
	Seed	Expense	54 @	\$14.00 /lb		\$756.00	1.00	\$756.00	
	Characterization Sampling	Expense	4 @	\$1,500.00 /ea		\$6,000.00	1.00	\$6,000.00	
	Sludge Disposal - Rolloff Delivery	Expense	17 @	\$1,000.00 /ea		\$17,000.00	1.00	\$17,000.00	
	Sludge Disposal-Rolloff Rental	Expense	17 @	\$30.00 /day		\$510.00	1.00	\$510.00	
	Sludge Disposal-Delivery to End Facility	Expense	17 @	\$6,750.00 /ea		\$114,750.00	1.00	\$114,750.00	
	Sludge Disposal-Rolloff Liners	Expense	17 @	\$75.00 /ea		\$1,275.00	1.00	\$1,275.00	
	Sludge Disposal Fee	Expense	750 @	\$210.00 /ton		\$157,500.00	1.00	\$157,500.00	
	ESIC Fee	Expense	0.11 @	\$291,035.00 /subtotal		\$32,013.85	1.00	\$32,013.85	\$389,859
2.0 Preparation, Oversight and Reporting									
	Coordination and Communications	Expense	8 @	\$100.00 /hr		\$800.00	1.00	\$800.00	
	SICP Preparation	Expense	1 @	\$2,500.00 /event		\$2,500.00	1.00	\$2,500.00	
	SSQAPP Amendment	Expense	1 @	\$1,000.00 /event		\$1,000.00	1.00	\$1,000.00	
	Bid Document Preparation	Expense	1 @	\$2,500.00 /event		\$2,500.00	1.00	\$2,500.00	
	Contractor Bid Process	Expense	1 @	\$2,500.00 /event		\$2,500.00	1.00	\$2,500.00	
	Selection and Contracting	Expense	3 @	\$800.00 /each		\$2,400.00	1.00	\$2,400.00	
	Construction Inspections	Expense	3 @	\$1,000.00 /each		\$3,000.00	1.00	\$3,000.00	
	Cleanup Documentation	Expense	4 @	\$100.00 /hr		\$400.00	1.00	\$400.00	
	Confirmation Sample Collection	Expense	1 @	\$1,000.00 /ea		\$1,000.00	1.00	\$1,000.00	
	Confirmation Analysis-Dioxin	Expense	4 @	\$650.00 /ea		\$2,600.00	1.10	\$2,860.00	
	Confirmation Analysis-Metals	Expense	4 @	\$113.00 /ea		\$452.00	1.10	\$497.20	
	Confirmation Analysis-PCBs	Expense	74 @	\$78.00 /ea		\$5,772.00	1.10	\$6,349.20	
	Brownfields Completion Reporting	Expense	1 @	\$2,150.00 /report		\$2,150.00	1.00	\$2,150.00	\$27,956

Assumes 500 cubic yards sludge disposal into 30 cubic yard rolloffs.

Total Cost For Project	\$417,816
15% Contingency	\$62,672
Total Cost For Project	\$480,488