| Phase (check one) | Type (check one) |
| --- | --- |
| □Initial Site Investigation<br>□Corrective Action Feasibility Investigation<br>☑Corrective Action Plan<br>□Corrective Action Summary Report<br>□Operations & Monitoring Report | □Work Scope<br>□Technical Report<br>□PCF Reimbursement Request<br>□General Correspondence |

# Corrective Action Plan for Remediation of Soil and Groundwater Contamination

## PVDC Property (Former Fellows Gear Shaper)
## Site # 97-2235
## 100 River Street
## Springfield, Vermont

**Prepared for:**
Vermont Department of Environmental Conservation
Waste Management Division
103 South Main Street, West Office Building
Waterbury, VT 05671-0404
Contact: Patricia Coppolino


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October 20, 2009

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October 20, 2009

Ms. Patricia Coppolino
Vermont Department of Environmental Protection
Waste Management Division
103 South Main Street, West Office Building
Waterbury, VT 05671-0404

Re: Corrective Action Plan for Remediation of Concrete, Soil, and Groundwater Contamination at the PVDC Property, Springfield, Vermont (SMS #97-2235)
JCO #3-2202-30

Dear Ms. Coppolino,

Please find attached the Corrective Action Plan for the referenced Site. Remedial actions are necessary at this Site due to the presence of polychlorinated biphenyls, chlorinated volatile organic compounds, and petroleum hydrocarbons in the soil and/or groundwater at concentrations that exceed applicable industrial and residential standards and may represent a risk to human health during or following planned redevelopment activities.

Should you have any questions or require additional information, please do not hesitate to contact us at 229-4600. We look forward to your response.

Sincerely,

THE JOHNSON COMPANY, INC.

By: Rhonda Kay
Rhonda Kay
Project Manager

Alan Peterson, US EPA
Joelle Greenland, SWCRPC
John Meekin, One Hundred River Street, LLC
Bob Flint, PVDC
Rick Genderson, One Hundred River Street, LLC

Attachment K:\3-2202-30\CAP\102009 PVDC CAP Final.doc

# Corrective Action Plan

for

PVDC Building

100 River Street, Springfield, Vermont

Prepared by: ______________________________ Date: 10/20/2009
Joel Behrsing, Vermont P.E. #6070

and by: ______________________________ Date: 10/20/09
Rhonda Kay

## EXECUTIVE SUMMARY

A Corrective Action Plan (CAP) was prepared by the Johnson Company for the PVDC Building/Former Fellows Gear Shaper Facility located at 100 River Street in Springfield, Vermont (the Site). The Site consists of an approximately 140,000 square foot building and several small outbuildings on an approximately 6-acre parcel adjacent to the Black River. Remedial actions are necessary at the Site due to the presence of polychlorinated biphenyls (PCBs), chlorinated volatile organic compounds (CVOCs), and petroleum hydrocarbons in building materials, soil, and/or groundwater at the Site. Specifically, the CAP addresses the following areas of concern: 1) the concrete slab and walls of the main building and two outbuildings, in which PCBs have been detected; 2) outdoor transformer pads and adjacent soils, in which PCBs have been detected; 3) an underground vault containing PCB-contaminated water; 4) a cutting oil recycling tank containing PCB-contaminated water and sludge; 5) soils and groundwater in the vicinity of the Chip Shed, which have been impacted by PCBs and petroleum hydrocarbons; 6) an underground storage tank located adjacent to the boiler house, which has been used for the storage of #2 fuel oil; 7) waste-containing drums located throughout the building; and 8) a chlorinated solvent plume in groundwater, which may be discharging to the Black River and/or impacting indoor air quality.

These areas of concern have been characterized through a series of site investigations, beginning in 1998 and continuing to the present. A compilation of all data collected in these investigations was used in a Corrective Action Feasibility Investigation (CAFI) in which one to three remedial alternatives were assessed for each item of concern for its effectiveness, cost, and implementability at the Site. As a result of the CAFI process, the following actions are proposed to address the areas of concern:

1. Risk-based management of the PCB-impacted portions of the building that will minimize risk to future users.
2. A transformer pad and adjacent soils will be removed from the northwestern corner of the building. Remaining transformer pads will be left intact.
3. The contents of the underground vault will be removed and disposed of at a treatment facility.
4. An environmental contractor will remove and dispose of the contents of the cutting oil recycling tank. The tank will be cleaned and left in place.
5. The Chip Shed and a portion of the boiler house will be demolished. Some of the demolished concrete will be used as fill in the adjacent soil excavation.
6. Soils with PCB concentrations above 3 parts per million will be removed from the vicinity of the Chip Shed and disposed of in a lined landfill.
7. The fuel oil underground storage tank will be emptied, cleaned, and removed from the Site.
8. An environmental contractor will inventory and remove all drums from within the building.
9. A sub-slab depressurization system will be installed to mitigate vapor intrusion of trichloroethene in the northeastern area of the building.
10. Four monitoring wells and one water supply well will be sampled for VOCs on a semi-annual basis for two years, after which monitoring will continue on an annual basis.

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# 1.0 INTRODUCTION

This Corrective Action Plan (CAP) was prepared by The Johnson Company, Inc. for the Precision Valley Development Corporation (PVDC; the building is also known as Former Fellows Gear Shaper) Property located at 100 River Street in Springfield, Vermont (the Site; see Figures 1-1 and 1-2). Remedial actions are necessary at the Site due to the presence of polychlorinated biphenyls (PCBs), petroleum and chlorinated volatile organic compounds (VOCs), and polynuclear aromatic hydrocarbons (PAHs), in building materials, soil, and/or groundwater at levels that may present a risk to human health during or following redevelopment of the Site.

The Site consists of an approximately 6-acre parcel bounded by the Black River to the northeast, Pearl Street to the southwest, Vermont Machine Tool to the northwest, and former Parks & Woolson machine tool factory to the southeast. The property grades downwards from Pearl Street to the Black River; this surface topography is reflected by the groundwater table (Figure 1-3). The majority of the Site is covered by a single building (hereafter referred to as the main building). Small parking areas are located to the north and south of the main building. In addition, several outbuildings are present between the southeastern end of the building and the property line, including a Chip Shed, boiler house, a pump house operated by the Town of Springfield Public Works Department, and multi-storey former cafeteria/garage.

This CAP includes a discussion of the necessity of corrective action; a brief summary of previous investigations and their findings; and a presentation of potential remedial options, assessed according to their expected cost, effectiveness, and feasibility. Recommended remedial techniques will be discussed in greater detail.

The objective of the corrective action is to reduce to an acceptable level the risk to human health caused by contamination at the Site. The goals of the remediation are:

1. To reduce to an acceptable level the human health risk presented by PCBs in concrete floors, soil, groundwater, and contained liquids throughout the Site;

2. To ensure that human exposure to Site groundwater remains controlled in a manner that does not pose a risk to human health;
3. To prevent impacts to groundwater or air quality by contaminated soils on the Site; and
4. To mitigate potential impacts to indoor air from contaminated groundwater.

Existing contamination on the site may present risk to sensitive human and ecological receptors via the following pathways:

- dermal contact with, ingestion and/or inhalation of soil or organic particles impacted by PCBs, petroleum hydrocarbons, or chlorinated solvents before, during or after Site redevelopment activities;
- dermal contact with and/or ingestion of petroleum hydrocarbons and PCBs in water contained in the transformer room vault;
- dermal contact with and/or ingestion of groundwater containing petroleum hydrocarbons and chlorinated solvents by workers during Site redevelopment activities;
- dermal contact with and/or ingestion of groundwater containing chlorinated solvents that have the potential to migrate to the private water supply wells located on-Site, which currently provide water for the boiler and the restrooms on the north end of the building;
- inhalation of chlorinated solvents present in subslab soil vapor that may enter the building through compromised sections of the concrete floor;
- the Black River, which abuts the eastern side of the Site and may be affected by petroleum hydrocarbons, and PCBs in surface water runoff after rainfall or snowmelt events, or by petroleum hydrocarbons and chlorinated solvents in groundwater discharging to the River.

One operating industrial building, owned by Vermont Machine Tool, is located on the property abutting the Site to the northwest. Buildings located on the former Parks and Woolson property to the south are currently unoccupied or used for storage. Residences are located to the south of Pearl Street, opposite the southern end of the main building. The residences are topographically higher than the Site and are upgradient with respect to groundwater flow. Land across Pearl Street at the northern end of the main building is owned by PVDC and is used as a paved parking lot. The Vermont Machine Tool and Parks and Woolson properties are cross gradient with respect to groundwater flow. These properties are not expected to be significantly impacted by the cleanup of contaminated media at the Site.

The main building formerly housed a machine manufacturing company, and now houses a mixture of industrial, office and multi-use tenants. There are two boiler houses outside the main building: one on the southwest side of the main building that sheltered an out-of-service boiler, and a larger one near the Chip Shed of the Site that housed a boiler until the end of 2008. A separate building, located along the southern property boundary, was formerly used as a cafeteria and garage and is now used for storage. The Town of Springfield owns and operates a sewage pump station in a building in the southeastern corner of the Site. A list of interested, threatened, or impacted third parties, including contact names, locations, addresses and phone numbers is provided in Appendix B.

## 2.0 SUMMARY OF WORK COMPLETED AT SITE

Between 1997 and the present, several environmental investigations have been conducted at the Site in order to evaluate the extent of potential contamination at the Site. The results of these assessments were generally expanded upon or summarized in subsequent reports, and therefore only the following reports have been selected for summary in this document:

- *Phase I Environmental Site Assessment* by Dufresne-Henry, Inc. (February, 1999); *Memorandum;*
- *Removal Program Preliminary Assessment / Site Investigation Report* by Roy F. Weston, Inc. (March 2000);
- *Completion of Work Report* by Loureiro Engineering Associates, Inc. (May 2001);
- *Draft Phase II Environmental Site Assessment* by Marin Environmental, Inc. (October, 2001);
- *Phase III Environmental Site Assessment Report* by Griffin International, Inc. (May, 2002);
- *Additional Phase III Site Assessment,* by The Johnson Company, Inc. (March 2006); and
- *Corrective Action Plan*, by URS Corporation (October 2008).

A summary is also provided of the additional PCB investigation conducted by The Johnson Company between September and December of 2008.

## 2.0 SUMMARIES OF PREVIOUS REPORTS

### 2.1.1 *Dufresne-Henry Phase I Investigation*

The Dufresne-Henry Phase I ESA (1999) is the earliest environmental investigation report obtained by the Johnson Company. In addition to describing Phase I activities, the report summarizes work completed by Dufresne-Henry prior to the Phase I ESA.

#### *2.1.1.1 Dufresne-Henry Removal of USTs, Monitoring Well Installation and Sampling*

In 1997, in advance of the Phase I investigation, Dufresne-Henry supervised the removal of four fuel oil USTs, with two tanks having capacities of 12,000 gallons, and the remaining two tanks having capacities of 9,000 gallons (Figure 1-2). Soil and water samples collected during the removal revealed elevated concentrations of total petroleum hydrocarbons (TPH), ethylbenzene, and xylenes. No soil was removed, and a 10,000 gallon fuel oil UST was installed in the same location. In April 1998, four monitoring wells (MW-1 to MW-4) were installed and sampled for VOCs. Although the original data tables were not available for review, it appears from the summary data tables provided in the 1998 report that wells MW-1 through 3 were sampled for benzene, whereas MW-4 was sampled for a limited list of petroleum and chlorinated VOCs. All wells were re-sampled in August 1998 for the limited volatile organic compound (VOC) list used for MW-4. Compounds detected included PCE, TCE, 1,1,1-trichloroethane, cis-1,2-dichloroethene (cis-DCE), 1,1-dichloroethane, vinyl chloride, benzene, and 1,4-dichlorobenzene. In August 1998, TCE was reported above the VGES in MW-3, and vinyl chloride was detected above the VGES in MW-3 and MW-4. Groundwater sampling results are provided in Table 2-1.

#### *2.1.1.2 Dufresne-Henry Phase I Observations*

The Dufresne-Henry Phase I ESA noted the presence of 48 abandoned transformers at the Site, all described as testing positive for PCBs. Historical Site plans reviewed by Dufresne-Henry indicated the presence of a number of USTs. A variety of hazardous materials were observed in use by tenants at the Site, including fuel oil, kerosene, solvents, glues, PVC dyes, solvent-based dyes, lubricating oil, cutting oil, welding gases, and fuel oil additives. Some spillage was observed and was described as minor. Floor staining was observed in the vicinity of a parts washer on the lowest level of the building. Some portions of the Site were not accessible to Dufresne-Henry, including the area on the lower level occupied by a chemical manufacturer.

#### *2.1.1.3 Dufresne-Henry 2000 Groundwater Sampling*

Monitoring wells MW-1 through 4 were sampled again in 2000. In this round, the concentration of PCE in MW-1 remained the same as in 1998 (below VGES); all VOCs were below detection limits in MW-3; and chlorinated VOC concentrations in MW-4 decreased from 1998 levels to below VGES limits, with the exception of vinyl chloride.

### *2.1.2 Weston Preliminary Assessment/Site Investigation Report*

The United States Environmental Protection Agency (US EPA) and Roy F. Weston (Weston) Superfund Technical Assessment and Response Team performed a Preliminary Assessment/Site Investigation in October and November 1999. During the limited investigation, the EPA and Weston collected 19 soil samples near the transformers located outside of the buildings. An inventory of the transformers was performed, identifying 26 transformers inside the building and 22 located outdoors. The memo describes the transformers as "unsound" and documents oil staining around a number of transformers.

PCBs identified as Aroclor 1260 were identified in all soil samples, with concentrations ranging from 61 to 30,000 micrograms per kilogram (ug/kg). Sampling results are presented on Figures 2-4 and 2-5.

### *2.1.3 Loureiro Completion of Work Report*

In 2001, Loueriro Engineering Associates (Loueriro) supervised the removal of PCB-containing transformers and related switch gear from the Site. Following removal of the transformers, the concrete floor of transformer room T1 (attached to the boiler house) was washed and covered with three coats of epoxy paint. In addition, a soil sample for PCB analysis was collected from a location adjacent to a transformer pad. The report does not provide specific information on the location of this sample.

### 2.1.4 Marin Draft Phase II Environmental Site Assessment

In 2001, Marin Environmental (Marin) completed a Phase II Environmental Site Assessment, including soil borings, monitoring well installation, and soil and groundwater contamination, as summarized below.

#### *2.1.4.1 Marin Soil Borings and Monitoring Well Installations*

To further characterize Site contamination and hydrogeology, Marin completed 22 soil borings in August of 2001 as part of a Phase II ESA. Half (11) of the borings were completed as monitoring wells (MW-5, MW-6, MW-7, MW-10, MW-11, MW-12, MW-14, MW-15, MW-16, MW-18, and SB-4). Visual and olfactory evidence of soil contamination by VOCs was noted during installation of the soil borings. Samples were collected from several borings and analyzed for VOCs and SVOCs (Tables 2-5 and 2-6).

Trichloroethene (TCE) and several petroleum VOCs were detected in a shallow soil sample (SB-2, 0 – 4 feet below ground surface, fbgs) collected outside the loading dock of Machine Shop #4 (referred to in this CAP as Part E). TCE, cis-DCE, and naphthalene were detected in a deeper (4-8 fbgs) sample from MW-6, which is located at the southern end of the offices and next to the Black River. TCE was not detected in SB-4, located at the southern edge of the loading dock for Machine Shop #4/Part E, roughly in-between SB-2 and MW-6, leading Marin to conclude that the two TCE detections were the result of separate releases. Multiple petroleum VOCs were present above industrial Region 9 Preliminary Remediation Goals (PRGs) in the sample from MW-7 (12 – 16 fbgs), which is located at the edge of the Black River near the pump house at the southeastern corner of the Site. The soil samples from two depths in MW-15, which is located upgradient (west) of MW-7 contained lower petroleum VOC concentrations, all below PRGs. Field logs of additional borings in this area (SB-15A and SB-15B) indicate odors (unspecified type) in shallow soils. Seventeen PAHs, four of which were at levels exceeding EPA Region 9 industrial PRGs, were detected in a soil sample from MW-6, located at the southern edge of the offices.

#### *2.1.4.2 Marin Groundwater Sampling*

Groundwater samples were collected by Marin and analyzed for VOCs, SVOCs, and metals. Analytical results are provided in (Tables 2-1, 2-2, and 2-4). VOCs were detected in groundwater across the Site, with the highest concentrations located in the southeastern portion of the Site. However, TCE and its breakdown products that had been present in previous samples from MW-4 were not detected in 2001. Naphthalene, a petroleum VOC was present above the VGES in MW-7, adjacent to the gasoline UST in the southeastern corner of the site. Although chlorinated solvents were detected in groundwater in several monitoring wells, concentrations were below the VGES with the exception of vinyl chloride in MW-6. Eight PAHs were detected in MW-6 at levels below VGES. PAHs were not detected in any of the other nine wells sampled. Lead was detected above the VGES in four Site wells. *Note: No metal exceeding VGES was detected in subsequent sampling events at the Site; therefore, metals contamination in groundwater will not be addressed in this CAP.*

*2.1.4.3 Marin Shallow Soil Sampling for PCBs*

In addition, Marin collected four shallow soil samples SS-1 to SS-4, from locations adjacent to electrical transformer pads. A mixture identified as Aroclor 1260 was detected in all samples, at concentrations at or below the EPA Region 9 industrial Preliminary Remediation Goal (PRG) (Table 2-7).

*2.1.5 Griffin Phase III Environmental Site Assessment*

In May 2002, Griffin International (Griffin) completed a Phase III Environmental Assessment (EA) Report for the Site (Griffin, 2002). Activities completed by Griffin during the Phase III EA include monitoring well installations; groundwater sampling for VOCs, metals, and PAHs; and soil sampling for VOCs and PCBs.

*2.1.5.1 Griffin Monitoring Well Installation*

Five monitoring wells (GMW-1D, 2D, 3, 4, 5) were installed on the Site by Griffin in 2002. Well GMW-2D was installed in bedrock; the remaining wells were installed in unconsolidated deposits. Soil samples were collected from the bottom of the boring for each of the indoor wells (GMW-3, GMW-4, and GMW-5). Results are provided in Table 2-5. TCE was detected in the sample from the base of GMW-3 at a concentration of 24.4 ug/kg (below the PRG). No other VOCs were detected in the soil samples. Fuel oil odors were noted in GMW-1D, located at the southeast corner of the property near the gasoline UST. No evidence of contamination was noted in GMW-2D, installed in bedrock east of Machine Shop #2/Part D.

*2.1.5.2 Griffin Groundwater Sampling*

In the spring of 2002, Griffin sampled 17 Site monitoring wells for VOCs, 4 for PAHs, and 3 for metals. Results are provided in Tables 2-1, 2-2, and 2-4. Light non-aqueous phase liquid (LNAPL; also known as floating free product) was found in MW-15. Lower levels of petroleum hydrocarbons were detected in MW-3, MW-6, MW-7, and GMW-4. Chlorinated solvents were detected in eight wells; the vinyl chloride VGES was exceeded in MW-6 and MW-12.

*2.1.5.3 Griffin Oil Recycling Tank Sampling*

Water was sampled from the open-topped holding tank located in Machine Shop No. 2/Part D, believed to contain cutting oil for recycling. A coating of reddish oil was noted on the sampling bailer, but no VOCs were detected in the sample.

*2.1.5.4 Griffin Soil Sampling for PCBs*

Griffin collected seven samples (SS-G1 through SS-G7) from shallow soils near former electric transformer locations (Table 2-7). PCBs were present in all of the soil samples. According to Griffin, the laboratory had difficulty classifying the mixture, which appeared to be a "hybrid" of Aroclor 1260 and Aroclor 1254. The results were reported as Aroclor 1254, with a maximum concentration of 3,400 ug/kg (3.4 parts per million, ppm).

*2.1.6 <u>The Johnson Company 2006 Additional Phase III Site Assessment</u>*

The Johnson Company completed an additional Phase III Site Assessment in 2006. Components of the assessment included the sampling of sub-slab soils in the transformer rooms for PCBs, removal of underground storage tanks, excavation of test pits to assess petroleum impacts to soils near the Chip Shed, and groundwater sampling.

*2.1.6.1 The Johnson Company 2006 PCB Assessment*

Soil samples were collected from eight locations below the slab of the former T1 transformer room within the boiler house and from six locations below the slab of the T2 operational transfer room, located in the northern portion of the main building. Samples from T1 were screened in the field using an immunoassay analysis, and one sample from each location was submitted for laboratory analysis. All samples from T2 were submitted for laboratory analysis. No PCBs were detected in any of the soil samples submitted to the laboratory. It was therefore concluded that PCBs were not a concern in soils below the transformer rooms.

An underground concrete vault containing approximately 1,100 gallons of water (8 feet long, 4.4 feet wide, with water 4 feet deep) was discovered in T2. The report documented the presence of two small ports on the tank, with no piping attached. The water inside the tank was not reported to be used in the building for any purpose. A water sample collected from the vault was found to contain 1.1 micrograms per liter (ug/L) of total PCBs, which slightly exceeds drinking water standards of 0.5 ug/L, as well as 1.9 mg/L of total petroleum hydrocarbons. The PCB sampling results are summarized in Table 2-3. The extent of any connection between the vault and groundwater is not known.

#### *2.1.6.2 The Johnson Company 2006 UST Removal*

Five underground storage tanks were removed from the Site in 2006:

1. A 1,250-gallon fuel oil tank, located on the western side of the building;
2. A 1,250-gallon gasoline tank, located near the southeast corner of the property;
3. A 290-gallon turpentine tank, located on the eastern side of the building, adjacent to MW-5;
4. A 950-gallon alcohol tank, located adjacent to the turpentine tank; and
5. A 617-gallon kerosene tank, located adjacent to the turpentine tank.

A second gasoline UST was not located and was believed to have been removed at an earlier date. Previous Site plans had indicated that the second gasoline UST was located adjacent to the removed gasoline UST. The gasoline and fuel oil USTs were reported to be in good condition, while the turpentine, alcohol, and kerosene tanks had deteriorated significantly. Soils from all excavations were screened with a photoionization detector (PID) for VOCs. Elevated readings were not observed, with the exception of a small volume of soils near the fill pipe of the gasoline UST, which were removed.

#### *2.1.6.3 The Johnson Company 2006 Test Pits*

In order to delineate the extent of soil contamination in the vicinity of MW-15, seven test pits were excavated to depths just above the water table, which is approximately 5 feet below ground surface in this area. Samples were collected from these test pits and screened for petroleum hydrocarbons using PetroFLAG® field analysis. Using the results of the PetroFLAG® screening, it was estimated that approximately 120 cubic yards of soil have been impacted by petroleum hydrocarbons.

*2.1.6.4 The Johnson Company Groundwater Sampling*

Nine monitoring wells on the Site were located and determined to be suitable for groundwater sampling. Samples from the nine wells were collected and submitted for VOC analysis, and samples from five wells were analyzed for the 13 priority pollutant metals. In addition, the boiler supply well and the restroom supply well were sampled for VOCs. The VGES for TCE was equaled or exceeded in three wells (MW-6, MW14, and GMW-4). The VGES in MW-6 were also exceeded for cis-DCE and vinyl chloride. Dissolved oxygen concentrations during sampling were reported to be low, and it was concluded that dichloroethene and vinyl chloride were a result of anaerobic TCE reduction.

*2.1.7 URS Corporation Supplemental Investigation*

URS Corporation completed a PCB sampling program in 2008 to assist in preparation of a Corrective Action Plan. The samples collected include:

- Sixteen concrete samples from the T1 electrical room, located in the boiler house (summarized in Table 2-8 and shown on Figure 2-5 - six samples from the floor, and ten from the walls). Results from this sampling were generally below 50 ppm, except in the western corner near the doorway, where concentrations were as high as 89 ppm;
- Fifteen wipe samples from the floor of the T2 electrical room, located in the northern portion of the building, as summarized in Table 2-8 and shown on Figure 2-1). All wipe sampling results were below the wipe sampling criterion of 10 ug/100 square centimeters (ug/100 $cm^2$) except one (T2-Wipe-05, located in the center of the southern end of the room), which contained 63.5 ug/100 $cm^2$ of PCBs;
- Three soil samples collected below asphalt immediately east of the Chip Shed (the precise locations of these samples are unknown). Aroclor 1254 was reported in two of these samples at 4.2 mg/kg and 10.1 mg/kg, both above the Region 9 PRG; and

- A groundwater sample collected from MW-15, as shown on Table 2.3. The PCB concentration in this sample was 57.4 ug/L, significantly above the VGES of 0.5 ug/L.

### 2.1.8 Johnson Company Additional PCB Investigation

The Johnson Company performed a supplemental investigation between August and December of 2008 in order to further characterize PCB contamination on the Site for the purpose of developing a Corrective Action Plan. Because a report describing the August 2008 investigation has not been prepared, detailed information about sample collection procedures is provided in Appendix A. The 2008 effort included initial sampling in August for PCBs in the historical Machine Shops #2 (upper and lower level, Parts F and D, respectively) and #4 (Part E), the Chip Shed, soils around the Chip Shed, sediment in a dry well near the Chip Shed, transformer pads, water and sludge inside the cutting oil recycling tank, and groundwater downgradient of the Chip Shed. Following receipt of the analytical results, the investigation was expanded to encompass the entire main building (at various sample spacing) in October.

In an attempt to determine the potential effectiveness of a surficial removal cleanup technique, a shot blast test (detailed in Appendix A) was performed in November 2008, along with sampling at more dense spacing in areas of potential concern at other parts of the building. The first shot blast test was conducted over a 10 by 10 ft area in Part B where the highest PCB concentrations had been reported. Following removal of each overlying lift of concrete, samples were collected from each 25 square foot ($ft^2$) quadrant of the test area. The results of the shot blast test indicated that the removal technique was unlikely to reduce PCB concentrations to below 1 ppm in the area if a lift of 0.25 inch was removed. A follow-up shot blast test was conducted in December 2008 at four locations where concentrations were more representative of those present throughout the building (1.1 to 6.3 ppm), to a depth of 0.5 inch, with sampling at depths of 0.0625, 0.125, 0.25, and 0.5 inch. These results also indicated that the removal technique would be unlikely to remove PCBs to the 1 ppm unrestricted use level. The building was divided into parts where the proposed development would be similar, as shown on Figures 2-1 and 2-2.

Several hundred concrete samples were collected from the interior of the main building, the Chip Shed, the Boiler House, and three external transformer pads (results are summarized in Table 2-8 and on Figures 2-1 through and 2-5). The concentration ranges in each area or building and the proposed future use of each area are summarized in Text Table 1, below.

**Text Table 1 PCB Concentration Ranges and Proposed Use by Area**

| Area | Proposed Use | PCB Concentration Range |
|---|---|---|
| Part A (upper level, western side of main building) | To be demolished | 0.51 to 5.4 ppm |
| Part B (upper level, northwestern side of main building) | Industrial | 0.65 to 41 ppm |
| Part C (upper level, northeastern corner) | Commercial | 1.5 to 38 ppm |
| Part D (lower level of former Machine Shop #2) | Parking | Non-detectable to 19 ppm |
| Part E (lower level, former Machine Shop #4 and surrounding hallways, transformer room T2) | Undetermined, may remain vacant or be commercial/industrial. T2 transformer room will continue in same use. | Non-detectable to 21 ppm |
| Part F (upper level of former Machine Shop #2) | Parking | 1 to 33 ppm |
| Part G (upper level, former great hall loading and storage area) | Hallway | 1.6 to 8.2 ppm |
| Part H (upper level, center of building) | Commercial | 1.4 to 20 ppm |
| Part Hall (upper level, hallways connecting other parts) | Hallway | 0.36 to 48 ppm |
| Part I (upper level, storage rooms near northern loading dock) | Storage | 2.1 to 2.8 ppm |
| Part J (upper level, northern side) | Commercial or industrial | 0.91 to 12 ppm |
| Part K (upper level, northern side) | Existing dry transformer electrical room | Not sampled |
| Part LMN (upper level, small rooms on east side) | Commercial | 0.86 to 11 ppm |
| Part NLD (upper level, northern loading dock) | Industrial | Non-detectable to 2.9 ppm |
| Part O (upper level, wooden floor storage area) | To be demolished | 4.3 to 6 ppm |
| Part Office (Upper and lower levels, office areas) | Health clinic | Non-detectable to 0.83 ppm |
| Part P (lower level, below grade loading area) | To be demolished | 0.45 to 4.1 ppm |
| | | |
| *Boiler House:*<br>BH-1 (former boiler room)<br>BH-2 (workshop and T1 transformer room-*sampled by URS*) | <br>To remain<br>To be demolished | <br>Non detectable<br>Workshop: 1.4 ppm<br>T1: Non-detectable to 88.8 ppm |
| | | |
| *Chip Shed:*<br>CS-Bay 1<br>CS-Bay 2<br>CS-Bay 3<br>CS-Bay 4 | To be demolished | <br>Non-detectable to 21 ppm<br>Non-detectable to 53 ppm<br>Non-detectable to 96 ppm<br>Non-detectable to 4.7 ppm |
| | | |

| Text Table 1 PCB Concentration Ranges and Proposed Use by Area | | |
|---|---|---|
| **Area** | **Proposed Use** | **PCB Concentration Range** |
| Chip Shed dry well sediment | To be closed | 0.57 ppm |
| Chip Shed soil borings | Parking | Non-detectable to 33 ppm |
| | | |
| *Cutting oil recycling tank:*<br>Sludge<br>Water | To be cleaned | <br>23 ppm<br>25 ug/L |

### 2.1.9 Johnson Company Soil Vapor and Indoor Air VOC Sampling

A Johnson and Ettinger model was run using the existing groundwater data at the Site, and the results indicated that there was a possibility of an unacceptable risk (greater than 1 in 100,000 incremental cancer risk) to building occupants as a result of vapor intrusion of vinyl chloride. To further evaluate the potential risk of vapor intrusion, a subslab and indoor air sampling program was designed by The Johnson Company in cooperation with the Vermont DEC site manager. On June 2, 2009, The Johnson Company installed permanent soil vapor probes in three locations (SV-1 through 3) inside the building, as shown on Figure 2-7 Probes were constructed by coring a hole through the concrete slab, using a hand auger to remove soil to the desired depth (1.25 to 1.45 feet), inserting a piece of 0.5 foot long stainless steel screen connected to a length of stainless steel tubing, backfilling the annular space with sand to a depth above the screen, and installing a bentonite plug to within 0.25 foot of the top of the concrete. A brass and steel road box was set in concrete to protect the quick-connect fitting at the end of the steel tubing. During installation, a PID was used to monitor air quality for VOCs. At SV-1 (located farthest north inside the northern office area), the PID measured a reading of 40 parts per million by volume (ppmv) in the borehole after the concrete core was removed. At SV-3, soils removed from the borehole exhibited a PID reading of 9 ppmv and a strong odor reminiscent of cleaning products. When the PID was placed a short distance away from the removed soils, the reading returned to background levels. The odor remained strong throughout construction of the soil vapor probe, despite the exterior door that was opened for ventilation. Upon returning the next day, no strong odor was detected in the stairwell, but an odor similar to that noted during soil removal was noted throughout the hallway in the southern office area.

During the afternoon of June 2, 2009, the indoor air and outdoor air sampling canisters were sited, flow controllers were attached to allow collection of a sample over a 24-hour period, and the canisters were opened to begin sample collection. The indoor air sample was collected from a location inside the northern office area.

On June 3, 2009, the ambient air sampling canisters were closed, and all of the soil vapor sampling probes were integrity-tested using a helium tracer and a portable helium gas detection meter. Helium concentrations in the samplers ranged from 0 to 25 ppm (in one of multiple samples), and were considered acceptable. The summa canisters were attached to the soil vapor probes using quick-connect fittings and grab samples were collected by opening the valves while connected to the steel tubing. All canisters were closed and shipped using chain of custody protocol to Air Toxics, Ltd. for analysis of trichloroethene (TCE), cis-1,2-dichloroethene (cis-DCE), and vinyl chloride using EPA Method TO-15 with selected ion monitoring (SIM).

The analytical results are summarized Table 2-9. Vermont has screening levels for indoor air quality, but does not have standards for sub-slab soil vapor. Soil vapor concentrations were compared to the screening levels from the "EPA 2002 Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)", to the New Hampshire Commercial Vapor Intrusion Screening Levels, and to a target gas concentration derived by assuming an attenuation factor of 0.1 is achieved by the concrete slab to produce an indoor air concentration equal to the Regional Screening Level for each compound of concern. The concentrations of TCE in all sub-slab samples exceeded at least one of the screening levels, although the concentrations in SV-1 (5.1 $\mu g/m^3$) and SV-2 (8.0 $\mu g/m^3$) were significantly lower than in SV-3 (1,300 $\mu g/m^3$). Vinyl chloride was not detected in any of the samples. Cis-DCE was detected in two sub-slab samples, but there is no standard available for comparison.

The location of the SV-3 sample is near the western side of the southern office area. To the south of this location the offices were recently occupied by a chemical manufacturer (MatrixChem, Inc.). The Johnson Company has not accessed the MatrixChem rooms, nor has any access been obtained during previous Phase I ESAs conducted at the Site. MatrixChem is a conditionally exempt hazardous waste generator, and some publicly available information suggests that they produce propellant components for explosives (www.fbodaily.com/archive/2006/05-May/04-May-2006/FBO-01039056.htm). However, their equipment cleaning and waste disposal practices are currently unknown.

The Johnson Company was notified on August 27, 2009 that MatrixChem had vacated their leased portion of the building, and requested that the floor be cleaned. On September 3, 2009, The Johnson Company placed two ambient air samplers (AS-2 and AS-3) equipped with flow controllers to allow collection of a sample over a 24-hour duration inside the building (in the former MatrixChem room and near the SV-3 sampling point) and one (AS-1) outside the building. The sampling was completed on September 4, 2009 when the canisters were closed and shipped using chain of custody protocol to Air Toxics, Ltd. for analysis of TCE, cis-DCE, and vinyl chloride using EPA Method TO-15 with selected ion monitoring (SIM).

The analytical results are summarized in Table 3-2. None of the sampled compounds were detected in the outdoor ambient air sample. TCE and cis-DCE were detected at relatively low concentrations in the indoor air sample located adjacent to the SV-3 soil vapor probe (AS-3); the TCE concentration was below the residential RSL but above the Vermont Department of Health screening value, and there is no screening criterion for cis-DCE. In the AS-2 sample, located in the former MatrixChem room, 1.8 ug/$m^3$ (micrograms per cubic meter) of TCE was reported, which is the Vermont screening level. Although a portion of this room overhangs the Black River, it is suspected that TCE and its breakdown products are present in soil vapor immediately below the building slab and also confined by the retaining wall at the river, and that the pressure gradient is allowing some vapors to escape into the air in the building. Since this sampling was conducted when the building is unoccupied and not during heating season, it is suspected that sampling in the winter when the building is being heated and windows are closed for long periods would yield higher concentrations in indoor air. Since current plans for this portion of the building include accommodating a medical clinic, which will serve some clients with depressed immune systems, use of the residential RSL is appropriate for this portion of the building.

# 3.0 CORRECTIVE ACTION FEASIBILITY INVESTIGATION

## 3.1 CONCRETE SLAB

PCBs are present in the concrete slab throughout the main building and have been characterized through numerous sampling events. The future usage of buildings impacted by PCBs is regulated by the Toxic Substances Control Act (TSCA). Under 40 CFR §761.61(a), TSCA allows redevelopment of PCB contaminated sites with the restrictions shown in Text Table 2, although other types of cleanup that sufficiently address risks to the Site users are allowed under 40 CFR §761.61(c) if approved by TSCA. All correspondence to TSCA regarding regulated PCB issues is also submitted to the VT DEC and is available for public review at the VT DEC office.

**Text Table 2 Building Use Restrictions for PCBs in Porous Media, including Concrete**

| Concentration | Allowed Use and Restrictions |
|---|---|
| Less than 1 part per million (ppm, mg/kg) | No Restriction |
| Between 1 and 10 ppm | High Occupancy Use allowed with<br>Appropriate cap (a uniform layer of concrete, asphalt, etc); and<br>Deed Restriction. |
| Greater than 10 ppm | High Occupancy Use not allowed |
| Less than 25 ppm | Low Occupancy Use allowed with:<br>Engineering control to restrict mobilization and contact; and<br>Deed Restriction. |
| Between 25 and 50 ppm | Low Occupancy Use allowed if:<br>Site is secured with a fence;<br>Site is marked as being contaminated with PCBs; and<br>Deed Restriction. |
| Between 25 and 100 ppm | Low Occupancy Use allowed with:<br>Appropriate concrete or asphalt cap; and<br>Deed Restriction. |
| Greater than 100 ppm | Redevelopment not allowed |

#### *3.1.1 Main Building*

Because of the main building's large size, variability in PCB concentrations, range of intended usages (high occupancy vs. low-occupancy), and the demonstrated impracticability of removing PCBs to concentrations below 1 ppm by mechanical means, cleanup of this area will be performed by a risk-based approach pursuant to 40 CFR §761.61(c). A variety of solutions will be applied throughout the building, reflecting the different future usages of the building as well as the levels of PCB contamination in concrete (Figures 2-1 and 2-2).

##### *3.1.1.1 Parts A (Western Side), O, and P (Upper and Lower Levels near Central Loading Dock)*

Current redevelopment plans call for the demolition of Part A of the building, comprising approximately 20,000 square feet. PCB concentrations measured in the concrete floors of Part A are relatively low, with a maximum concentration of 5.4 ppm. The slab and exterior walls of Part A will be removed and hauled to a landfill for disposal. This portion of the main building cleanup can be considered self-implementing and notification will be provided to TSCA as part of an additional § 761.61(c) application. Since this area is enclosed by structures that will remain in place, few walls require removal. It has been assumed that the bricks on these exterior walls have not been impacted by PCBs, as they have not been subjected to the foot traffic believed to have spread PCBs across the floors of the building. Therefore, demolition and disposal of the brick walls have not been included in this CAP. An asbestos inspection has been completed, and the demolition must be completed in accordance with the results.

A small portion of the building, adjacent to Part F on the upper level (Part O) and adjacent to the loading dock on the lower level (Part P) will be removed. Part O has a wooden floor that is in very poor condition and in which PCBs were detected at concentrations of 4.3 and 6 ppm. Two samples were collected from the concrete floor in Part P for PCB analysis; total PCB concentrations were 0.45 ppm and 4.1 ppm. The floors of both of these areas will be removed and disposed of as solid waste. It should be noted that Part P (the lower floor) is below grade; therefore, it may be suitable as a repository for demolished building materials from other portions of the Site, if PCB concentrations are below 4 ppm. If Part P will be used as a demolition debris disposal area, the floor will not be demolished. This portion of the main building cleanup will be included in the application to TSCA. The walls will also be disposed of as solid waste, unless they are sampled and shown to not contain PCBs above 1 ppm, in which case they may be recycled.

The cost for demolition and disposal of Parts A, O, and P is estimated at $159,000, based on filling Part P with crushed concrete from Part A.

*3.1.1.2 Northwestern Portion of Building, Upper Level (Parts B, NLD, I, K)*

An application for alternative cleanup was submitted to TSCA for review on January 28, 2009. The response action plan addresses the northwestern portion of the upper level of the building, including parts B, NLD, I, and K (Figure 2-2). Cleanup actions include installation of vapor barrier and concrete cap in certain areas, and a coating of epoxy paint and tile in other areas. A deed restriction will also be applied to the property, and confirmatory sampling will be required. The cost for this remedial action is estimated at $162,160.

*3.1.1.3 Northeastern Portion of Building, Upper Level (Parts C, G, H, J, LMN, and Hall)*

The remainder of the upper level of the building (Parts C, G, H, J, LMN, and the Hall) will be redeveloped for non-industrial usage. In the majority of concrete samples collected from these areas, PCB concentrations exceeded the TSCA high-occupancy cleanup level of 1 ppm. An application will be submitted to TSCA for a risk-based cleanup in these portions of the building. The application will propose that the walls, ceilings, and floors be pressure washed, with the wash water contained, sampled and properly disposed based on the analytical results. The walls and floors would then be covered with a coating of epoxy paint and painted floors would be covered with tile. Pre-occupancy and long term inspections or monitoring may be required. The cost for this remedial action is estimated at $255,000.

*3.1.1.4 Parking Garage, Both Levels of Southeastern Portion of Building (Parts D and F)*

Both levels of the southeastern portion of the building (Parts D and F) will be converted into a parking garage. PCB concentrations in some samples collected from this portion of the building exceeded the TSCA low-occupancy cleanup level of 25 ppm. A durable cap will prevent the potential for direct contact with contaminated concrete, and will also ensure that PCB-contaminated dust is not mobilized as the concrete surface wears. The following two options for remedial action have been considered for the parking garages: 1) installation of a tar and chip surface; and 2) paving with a 1.5 to 2 inch layer of asphalt. Both of the following alternatives would require approval from TSCA before implementation.

*3.1.1.4.1 Parking Garage, both Levels: Option 1: Install a tar and chip surface*

Description

This option would entail applying a layer of oil-based tar to the concrete, followed by a layer of rock chips while the tar is still hot. All of the loose chips will be removed within 2 weeks of installation, leaving a continuous surface of chips.

Effectiveness

This measure would adequately protect the concrete surface from wear. Following post-installation sampling, it is not anticipated that long-term sampling would be required. Annual inspection of the surface and maintenance of worn areas would ensure that the coating remains protective.

Implementability

Tar and chip is a popular road and driveway surfacing choice in Maine and some parts of New England, but local contractors may be difficult to find. The roller for a tar and chip surface can be smaller and more lightweight than an asphalt roller. Maintenance may involve adding gravel to worn spots on an annual basis and spraying on fresh tar and chips less frequently.

Cost

The cost to install a tar and chip surface on both garage floors is estimated at a total of $145,741.

*3.1.1.4.2 Parking Garage, both Levels: Option 2: Install a 1.5 to 2 inch layer of asphalt*

Description

This option would entail applying a 1.5 to 2 inch layer of conventional asphalt over the concrete.

Effectiveness

This measure would adequately protect the concrete surface from wear. Following post-installation sampling, it is not anticipated that long-term sampling would be required. Annual inspection of the surface and maintenance of worn areas would ensure that the coating remains protective.

Implementability

Multiple paving contractors in the local area are likely to have the equipment to apply asphalt. The roller for the machine would be heavy, but the structure can reportedly withstand the required loading. Maintenance may involve using an asphalt patch on worn areas and sealing cracks.

Cost

The cost to install a tar and chip surface on both garage floors is estimated at a total of $164,991.

*3.1.1.5 Northeastern Portion of Building, Lower Level (Part E)*

Development plans have not been finalized for the northeastern portion of the lower level of the building. PCB concentrations from concrete in this area are generally below the low-occupancy cleanup level of 25 ppm with concentrations as high as 21 ppm reported in this area. It is assumed in this CAP that, in order to allow the greatest flexibility in redevelopment of the building, Part E will be included in a future risk-based cleanup application to be submitted to TSCA, but a letter will be submitted to TSCA if the alternative to not reuse this portion of the building is chosen instead. As with much of the upper level, the application will propose that the walls, ceilings, and floors be pressure washed and wash water will be allowed to evaporate. Residual dust will be swept with a damp mop and disposed of as solid waste. In the T2 transformer room where pressure washing is not possible, alternative washing methods will be used to remove oil and grit from the floor before it is covered. The walls and floors would then be covered with a coating of epoxy paint; the painted floors would then be covered with a suitably durable floor covering. Pre-occupancy sampling and long-term monitoring or sampling may be required. The cost for this remedial action is estimated at $216,000.

### 3.1.2 *Chip Shed and Boiler House (including T1)*

Under current Site development plans, the Chip Shed and the western portion of the boiler house, including the former T1 transformer room, will be demolished. A pre-demolition inspection of the roofing materials of both structures is required, but is not included in this CAP.

The floors and walls of both levels of the Chip Shed were sampled for PCBs by The Johnson Company in 2008. Results of the sampling (Figure 2-3) indicate that the wooden floors on the second level of the building contain PCBs at concentrations greater than 50 ppm. PCB concentrations in the concrete floors and walls were all below 25 ppm. The wooden floors will be removed from the building for disposal as hazardous waste regulated under TSCA. Portions of the Site that already contain PCBs may accept fill material, provided the concentrations in fill material are lower than concentrations of the soils that remain in-place. The Chip Shed concrete with low concentrations of PCBs may be suitable for use as fill material. Other Chip Shed concrete must be disposed of as solid waste at a landfill.

The concrete floor and southeastern wall of the T1 transformer room were both found to contain PCBs at concentrations above 50 ppm; therefore, these materials will be disposed of as hazardous waste regulated under TSCA. The remaining building materials will be disposed of in a municipal solid waste landfill (Figure 2-5) or as fill material in locations where PCBs have been previously detected, except those portions of the brick walls that contain PCB concentrations below 1 ppm, which may be recycled. The cost for demolition and disposal of the Chip Shed and western Boiler House (including the T1 transformer room) is estimated at $53,000.

## 3.2 FORMER TRANSFORMER LOCATIONS

Three transformer pads are located along the southwestern edge of the building, adjacent to Pearl Street (Figure 2-4). Weston (2000) collected samples from TP-1 (near the northwest corner of the building) and the adjacent soils, and one sample from soils adjacent to TP-3 (near the small boiler room in the southwest of the Site). During the additional PCB investigation performed by The Johnson Company in 2008, samples were collected from concrete at TP-1 and TP-2, and from soils adjacent to TP-2 (which is still active).

Results indicate that portions of TP-1 and the adjacent soils contain PCBs at levels exceeding industrial PRGs. No PCBs were detected in the soil samples collected adjacent to TP-2. No PCBs were detected in the samples collected from TP-3. PCBs were detected in the soil sample adjacent to TP-3, but at a concentration below the PRG. The TP-1 transformer pad and surrounding soils over a total area of 900 square feet will be excavated and disposed of as solid waste. The cost for this remedial action is estimated at $12,000.

## 3.3 VAULT IN T2 TRANSFORMER ROOM

A vault located in the operational T2 transformer room is estimated to contain approximately 1,100 gallons of water from an unknown source. The water in the vault was sampled in 2006 and found to contain PCBs and petroleum hydrocarbons. Two PCB mixtures, Aroclor 1254 and Aroclor 1260, were identified above laboratory reporting limits, at 0.5 ug/L and 0.6 ug/L, respectively. In addition, 1.9 mg/L total petroleum hydrocarbons (TPH) were detected and characterized as 3-In-One Lubricating Oil, (formulated with mineral oil, which is also used in transformers) based on the chromatogram.

Because the concentration of total PCBs in the water is less than 3 ug/L, TSCA regulations permit its disposal to a municipal treatment works (40 CFR §761.79(b)(1)(ii)); however, the State manager overseeing the sewage residuals, including the compost made at Springfield, has stated that the water should not be disposed of at the Springfield plant. Therefore, the water will be pumped out of the vault and transported to a separate treatment facility for disposal as non-TSCA-regulated waste. After the contents of the vault are evacuated, the vault will remain in place and be monitored annually to determine if water is accumulating. The water source is currently unknown, but should be eliminated, if possible. Filling the tank with soil or concrete is not recommended because this may allow water to accumulate inside the transformer room, resulting in a significant safety hazard. The water in the vault will be evacuated in the near-term. Risk-based cleanup actions in the T2 transformer room will minimize the transport of PCB-contaminated runoff into the vault in the future, and no actions are recommended to continue pumping the water from the vault over the long-term. An oil-sorbing sock will be placed in the vault to collect any PCB-contaminated oils that migrate into the vault in order to mitigate migration of PCBs to groundwater or the Black River. The cost for this remedial action is estimated at $6,000.

## 3.4 CUTTING OIL RECYCLING TANK

A two-compartment, open-top tank is located within the building, along the southeast wall of the lower floor. The eastern compartment of the tank and the valve pit beneath the tank are estimated by The Johnson Company to contain approximately 3,200 gallons of oily water. The bottom and walls of the western compartment of the tank are coated with a sludge of about 0.5 inch in thickness. No VOCs were detected in a 2002 sample of the liquid contents, and results of the PCB analysis in 2008 showed 25 ug/L of PCBs in the tank water. In addition, the sludge from the western compartment contained 23 ppm of PCBs.

Because the water in the tank contains PCBs at a concentration greater than 3 ug/L, TSCA requires that the tank contents be disposed of in an approved incinerator or by an approved alternative disposal technology. The contents of the tank will be removed and placed into drums by a hazardous waste contractor. The drums will be transported to a TSCA-permitted incinerator for disposal. The interior of the tank and valve pit below the tank will be cleaned, and wash water will be disposed of along with the original tank contents. The cost for this remedial action is estimated at $33,000.

## 3.5 SOILS AND GROUNDWATER IN VICINITY OF CHIP SHED

The results of the test pit investigation conducted in January 2006 indicated that approximately 120 cubic yards of soil located immediately northeast of the Chip Shed had been impacted by light mineral oil. The extent of petroleum contamination was delineated using the results of PetroFLAG® analysis performed in the field. Analytical results of soil samples collected from the test pits are presented in Tables 2-5 and 2-6. Benzo(a)pyrene was the only compound detected at a level exceeding the applicable industrial PRG.

Surficial soil samples collected in between the Chip Shed and the boiler house showed PCBs at concentrations up to 30 ppm, above TSCA cleanup standards, as well as industrial PRGs. In addition, soil sampling conducted in 2008 indicated that soils to the northeast of the

Chip Shed contain PCBs at levels exceeding industrial PRGs. The area of soils impacted by PCBs to the northeast of the Chip Shed corresponds well with the area of petroleum impact identified in 2006. Based on the soil boring sampling, the PCB impacted soils extend to a depth of approximately 6 feet below ground surface (bgs), where they meet bedrock or a hard till layer (refusal for the Geoprobe drill rig). If all soils containing PCB concentrations above the industrial PRG of 0.76 ppm were to be removed to their full depth, the excavation would cover approximately 1,350 square feet to a depth of approximately 6 feet bgs, as well as an area of approximately 2,200 square feet to a depth of 1 foot bgs, resulting in a total volume of approximately 331 cubic yards. However, geological profiles of this area showing the inferred PCB distribution (see Figures A-9 and A-10 in Appendix A) indicate that the areas of greatest PCB impacts are approximately 2,200 square feet of soils between 0 and 1 foot bgs, and approximately 500 square feet between 1 and 6 feet bgs.

The following four options for remedial action have been considered for the Chip Shed soils: 1) installation of a cap; 2) fencing the area; 3) excavation of impacted soils above industrial PRGs; or 4) excavation of the most PCB-impacted soils. The necessary treatment area, as identified by the sampling discussed above, is shown in Figure 2-6. This treatment area encompasses all sampling locations having detectable PCBs at any depth. Any of the following alternatives would require approval from TSCA before implementation.

### *3.5.1 Chip Shed Soils/Groundwater: Option 1 – Install a Cap on Impacted Soils*

Description

Under TSCA regulations, soils containing PCBs at concentrations of less than 100 ppm may be left in place on-Site in a low-occupancy area. When PCB concentrations exceed 25 ppm, but are less than 100 ppm, a cap can be installed over the impacted soils. According to the requirements of 40 CFR §761.61(a)(7), the cap must comprise either ten inches of compacted soil, six inches of concrete, or six inches of asphalt. A deed restriction would be used to ensure that the cap was maintained in perpetuity.

Effectiveness

A cap would effectively limit direct human contact with impacted soils, eliminating the inhalation and ingestion exposure pathways. However, impacted soils would continue to contribute to groundwater contamination in the area downgradient of the Chip Shed. If this alternative were implemented, further actions would be necessary to reduce impacts to Site groundwater.

Implementability

Because the surficial area of impacted soils is not large, a cap could be readily installed at the Site. The area of impacted soils is generally paved, so it would be necessary only install additional lifts of concrete or layer of asphalt and provide a mechanism for ensuring its maintenance.

Cost

The cost to install a cap over PCB-impacted soils at the Chip Shed is estimated at $30,000.

### 3.5.2 *Chip Shed Soils/Groundwater: Option 2 – Install a Fence Around Impacted Soils*

Description

Under TSCA regulations, soils containing PCBs at concentrations of less than 100 ppm may be left in place on-Site in a low-occupancy area. When PCB concentrations exceed 25 ppm, but are less than 50 ppm, a fence can be placed around the impacted soils. A deed restriction would be used to ensure that the fence was maintained in perpetuity.

Effectiveness

A fence would reduce human exposure to impacted soils. However, the potential for PCB-impacted soils to be mobilized as dust would remain unless the unpaved areas remaining after Chip Shed demolition were covered with concrete or asphalt. In addition, impacted soils would continue to contribute to groundwater contamination in the area downgradient of the Chip

Shed. If this alternative were implemented, further actions would be necessary to reduce impacts to Site groundwater.

Implementability

Because the area of impacted soils is not large, a fence could be readily installed around this portion of the Site. However, Site redevelopment could be negatively impacted due to the unusable fenced-in area.

Cost

It is estimated that the cost to pave and install a fence around PCB-impacted soils in the vicinity of the Chip Shed is approximately $31,000.

### *3.5.3 Chip Shed Soils/Groundwater: Option 3 – Excavate All Impacted Soils above Industrial Standards*

Description

Under this option, 1 foot of soil and asphalt would be removed from the entire treatment area, as described above and shown in Figure 2-6. In the area containing the most elevated PCB concentrations, soils would be removed from the ground surface to the top of the groundwater and till layer, at a depth of approximately 5 to 6 feet. Because the area of PCB impact is somewhat greater than the area of petroleum impacts, all petroleum-impacted soils would also be removed by excavation. To remove all soils containing PCB concentrations above the VT DEC industrial criterion of 0.76 ppm, an area of approximately 2,200 square feet would be excavated to a depth of 1 foot, within which a smaller area of approximately 1,350 square feet would be excavated to the top of the water table and till layer at a depth of approximately 5 to 6 feet. Because no soil samples collected from this area contain PCBs at a concentration greater than 50 ppm, excavated soils would be removed from the Site and disposed of in a municipal solid waste landfill. No hazardous waste manifesting requirements would apply to this disposal option.

Effectiveness

Excavation is expected to be the most effective means of removing PCBs and petroleum contamination from soils on the Site. Furthermore, it would eliminate future potential impacts to ground water. Potential impacts to groundwater can be monitored by sampling downgradient monitoring wells.

Implementability

Excavation is an implementable option for this Site. The soils impacted by PCBs and petroleum hydrocarbons do not extend under any building not scheduled for demolition, nor do they extend to a depth unattainable with excavating equipment. Because excavation and demolition activities will be ongoing in this portion of the Site, the additional excavation of soils would not present a difficulty to Site redevelopment.

The excavation of impacted soils in the vicinity of the Chip Shed could be conducted concurrently with similar Site activities, resulting in cost savings. For example, excavation equipment is expected to be on-Site in order to remove the fuel oil UST located adjacent to the boiler house, and demolition of the boiler house and Chip Shed will require the off-Site shipment of PCB-containing building materials.

Cost

The cost to excavate the most PCB-impacted soils from the vicinity of the Chip Shed and monitor impacts to groundwater is estimated at $88,000.

*Chip Shed Soils/Groundwater: Option 4 – Excavate the Most Impacted Soils*

Description

Under this option, 1 foot of soil and asphalt would be removed from the entire treatment area using a cleanup goal of 0.72 ppm between 0 and 1 foot bgs, and a cleanup goal of 3 ppm between 1 and 6 feet bgs. In the area containing the most elevated PCB concentrations, soils would be removed from the ground surface to the top of the groundwater and till layer, at a depth of approximately 5 to 6 feet. Because the area of PCB impact is somewhat greater than the area of petroleum impacts, all petroleum-impacted soils would also be removed by excavation. An area of approximately 2,200 square feet would be excavated to a depth of 1 foot, within which a smaller area of approximately 500 square feet would be excavated to the top of the water table and till layer at a depth of approximately 5 to 6 feet. Because no soil samples collected from this area contain PCBs at a concentration greater than 50 ppm, excavated soils would be removed from the Site and disposed of in a municipal solid waste landfill. No hazardous waste manifesting requirements would apply to this disposal option.

Effectiveness

Excavation of all soils exceeding the industrial soil cleanup level to a depth of 1 foot bgs would minimize potential contact risk to future site users, especially because the area will be paved for use as a parking lot. Removal of soils with PCB concentrations over 3 ppm between 1 and 6 feet bgs will significantly reduce the source of PCB impacts to groundwater. Potential impacts to groundwater can be monitored by sampling downgradient monitoring wells.

Implementability

Excavation is an implementable option for this Site. The soils impacted by PCBs and petroleum hydrocarbons do not extend under any building not scheduled for demolition, nor do they extend to a depth unattainable with excavating equipment. Because excavation and demolition activities will be ongoing in this portion of the Site, the additional excavation of soils would not present a difficulty to Site redevelopment.

The excavation of impacted soils in the vicinity of the Chip Shed could be conducted concurrently with similar Site activities, resulting in cost savings. For example, excavation equipment is expected to be on-Site in order to remove the fuel oil UST located adjacent to the boiler house, and demolition of the boiler house and Chip Shed will require the off-Site shipment of PCB-containing building materials.

Cost

The cost to excavate the most PCB-impacted soils from the vicinity of the Chip Shed and monitor impacts to groundwater is estimated at $36,000.

### 3.6 UNDERGROUND STORAGE TANK

Fuel oil for the boiler is currently held in an underground storage tank located to the southeast of the boiler house (Figure 1-2). Because current Site development plans specify the removal of the boiler and a portion of the boiler house, the underground storage tank will be removed. Closure samples will be taken from the walls and base of the excavation to determine if soils have been impacted by the UST. Because the UST is relatively new and has been in use until recently, recent impacts to nearby soils are not anticipated, and monitoring wells downgradient of the UST location have shown that petroleum impacts to groundwater from the former USTs are not significant. The cost for this remedial action is estimated at $22,000.

### 3.7 WASTE DRUMS IN BUILDING

Approximately 200 gallons of hazardous or potentially hazardous materials are estimated to be contained in drums located throughout the site. The drums will be moved to a central location to be inventoried prior to disposal. Failure to remove these items may present a risk due to spills or leaks as the containers age. In general, the drums are presently in good condition and may be moved. It is unlikely that the products stored in the drums can be reused, and will therefore be disposed of by a certified hazardous waste handler. Because the contents of the drums have not been characterized, the disposal costs cannot be accurately determined. For the purpose of this CAFI, the costs for removal has been estimated at $13,000 based on costs at similar sites.

### 3.8 CHLORINATED SOLVENTS IN SITE-WIDE GROUNDWATER

Groundwater on the Site has been impacted by chlorinated solvents: namely, tetrachloroethene (PCE), trichloroethene (TCE), and several of their degradation products

PCE has been detected in several Site wells (MW-1, MW-2, MW-15, and MW-16) at concentrations below VGES. These four wells are located near the southeast corner of the property, at locations that are likely cross-gradient from the building itself. The low PCE concentrations observed and cross-gradient location of the impacted wells suggest that PCE may be migrating on to the Site in low concentrations.

Groundwater impacts from TCE are more widespread, with detections in four monitoring wells along the eastern edge of the property, from the northeast corner (MW-14 and GMW-4) to the southeast corner (MW-3 and MW-6). In addition, TCE has been detected at concentrations below drinking water standards in both supply wells located on the Site, but it is not clear that these concentrations are stable or declining from previous sampling. Still, reported TCE concentrations (max. 37 ug/L) are not indicative of a significant NAPL source area. Low-level detections of TCE in shallow Site soils (at SB-2, MW-6, and GMW-3) are suggestive of small releases of TCE occurring within or near the building. The Phase I investigation performed by Dufresne-Henry (1999) described floor stains in the vicinity of a solvent-based parts washer on the lower level of the building. In addition, a site description provided by Weston (1999) notes that several spills of oil and cutting solution occurred in the 1980s.

The TCE and PCE breakdown products cis-DCE and vinyl chloride have been detected in Site monitoring wells at greater concentrations than their likely parent compounds. A groundwater sample collected from MW-6 in 2006 contained vinyl chloride at 140 ug/L (70 times the VGES) and cis-DCE at 330 ug/L (approximately 5 times the VGES). The potential for vapor intrusion of chlorinated solvents is assessed in Section 3.8.3. Of the chlorinated solvents found at the Site, vinyl chloride is believed to present the greatest risk due to its relatively high toxicity, high volatility, and its detection adjacent to and under the building. Compounds such as cis-DCE and TCE, which would present a lower risk than vinyl chloride, were not considered in the vapor intrusion assessment following review of the vinyl chloride calculations.

Separate response action alternatives are considered for chlorinated solvents in groundwater, in supply wells, and in indoor air. Monitored natural attenuation and soil vapor extraction are considered below as alternatives for the chlorinated solvents in groundwater. Active treatment of chlorinated solvents at the Site would be rendered difficult by the presence of contamination under the building, the presence of numerous buried utilities, and the lack of a well-defined contaminant source area.

### *3.8.1 Chlorinated Solvents in Shallow Groundwater*

#### *3.8.1.1 Chlorinated Solvents in Groundwater: Option 1 Monitored Natural Attenuation*

Description

Natural attenuation relies on abiotic degradation, biodegradation by indigenous microorganisms, and hydrodynamic dispersion to stabilize and ultimately decrease contaminant concentrations in groundwater. To be most effective, geochemical conditions must be favorable to degrading microorganisms. For reduction of chlorinated solvents, favorable conditions include low dissolved oxygen and a highly negative oxidation-reduction potential (ORP). In addition, a capable microbial consortium must be present on the Site.

Natural attenuation must be coupled with regular groundwater monitoring in order to ensure that concentrations remain stable or decline with time. Institutional controls would be necessary to limit exposure to impacted groundwater while natural attenuation progresses.

Effectiveness

Historical groundwater analytical data is insufficient to determine if chlorinated solvent concentrations in groundwater are increasing, decreasing, or stable. Concentrations in some wells have been observed to decrease (e.g. vinyl chloride in MW-12) while others are increasing (vinyl chloride in MW-6). It is not immediately clear whether the observed concentration changes are reflective of long-term trends at the Site, the result of seasonal variation, or differences in sampling technique.

The presence of degradation products such as dichloroethenes and vinyl chloride suggests, however, that microbially-assisted reductive dechlorination is taking place. Nonetheless, more routine groundwater sampling would be necessary to assess the effectiveness of natural attenuation in Site groundwater.

Implementability

By definition, monitored natural attenuation is a relatively non-intrusive method of groundwater treatment. However, access would need to be maintained to all existing Site monitoring wells, some of which are located within the building. The need to maintain accessibility to indoor wells could limit the potential redevelopment of these spaces.

Cost

It is estimated that a 10 year natural attenuation monitoring program would cost a total of approximately $18,000.

*3.8.1.2 Chlorinated Solvents in Groundwater: Option 2 Soil Vapor Extraction*

Description

A soil vapor extraction (SVE) system uses a series of extraction wells to create a vacuum in the vadose zone. When subjected to negative pressure, VOCs located in the vadose zone will volatilize more rapidly than under ambient conditions, and a portion of organic compounds sorbed to soil organic matter will be released. Withdrawn vapors are collected in a manifold system and treated above-ground.

Effectiveness

In order to be effective, an SVE system must treat the contaminant source area. A specific source area for chlorinated solvents at the Site has not been identified and may not exist. Further investigation would be necessary to determine a well-defined treatment area for the SVE system. If a concentrated source area were located, vertical delineation would be needed to verify that contaminant mass remains generally in the unsaturated zone. Dense contaminants such as TCE will likely have migrated into the saturated zone, so an SVE system would need to be accompanied by dewatering in order to effectively treat the contaminant source.

Implementability

If a concentrated source area exists, it is likely to be located underneath the building; in this case, a treatment system comprising several extraction wells and an associated manifold would need to be installed within the building. The presence of such a system may limit the potential use of the building during its period of operation. Although the installation of wells inside a building is generally difficult, past work completed at the Site suggests that at least a portion of the lower level is accessible to drilling equipment.

Cost

Total estimated costs to install and operate an SVE system for five years in the area of chlorinated solvent impacts to groundwater are $96,000.

### 3.8.2 *Chlorinated Solvents in Supply Wells*

Samples collected from the two bedrock supply wells located on the Site have shown low levels of TCE; cis-DCE; 1,1-dichloroethane; and 1,1-dichloroethene. The source of the dichloroethenes is likely to be TCE degradation, while 1,1-DCA is likely to be present from degradation of 1,1,1-TCA, which has been detected at low concentrations at the Site. Although both TCE and 1,1,1-TCA have been detected in unconsolidated deposits monitoring wells, it is not known if on-Site contamination is responsible for the presence of solvents in the supply wells. Previous investigations have described the bedrock below the Site to be competent. No VOCs have been detected in the single bedrock monitoring well installed on the Site.

Samples have been collected from both of the supply wells on four occasions, and in no instance was a compound detected at a level above Vermont drinking water standards. Still, water from the bathroom supply well should be sampled on an annual basis to ensure that conditions remain protective of human health. The well that has supplied water to the boiler should be abandoned per the Vermont Water Supply Rules, since it is unlikely that there will be a non-potable future use for this supply now that the boiler has been removed. Cleanup of groundwater at the depth of the supply wells is not considered technically feasible. The sampling of the bathroom supply well can be combined with the shallow groundwater remedial actions, and the costs are included in sampling for both options described in Sections 3.8.1.1 and 3.8.1.2. The cost to decommission the boiler supply well, which will include removing the pump and all wiring and completely filling the well with grout material, is estimated at $1,300.

### 3.8.3 *Vapor Intrusion of Chlorinated Solvents*

Vapor intrusion of chlorinated solvents may be a concern at the Site, due to the shallow depth to groundwater, presence of sandy soils below the foundation, and elevated concentrations of chlorinated solvents near or under the building. To obtain an estimate of the risk due to vapor intrusion, the EPA (2004) implementation of the Johnson and Ettinger (1991) vapor intrusion screening model was applied to the Site. The intent of the screening-level modeling is not to quantitatively determine indoor air concentrations and associated risks to building occupants, but rather to determine if further evaluation of a vapor intrusion pathway is warranted.

Although a properly designed heating/ventilation air conditioning (HVAC) system may be able to provide sufficient air exchanges to reduce the concentrations of TCE to acceptable levels, extensive air sampling would be required to show that the system is functioning adequately. As such, sub-slab depressurization (SSD) system is the recommended alternative for reducing indoor air contaminant concentrations.

SSD systems consist of a series of venting pipes between the sub-slab soil and outdoor air. In an active SSD system, a fan is used to draw air through the venting pipes, thus decreasing the pressure in the sub-slab zone and initiating a downward pressure gradient from indoor air to the sub-slab zone, effectively limiting migration of sub-slab vapors into indoor air. SSD systems provide effective mitigation of vapor intrusion, especially in coarse, high permeability soils. During soil vapor probe installation, the soils immediately under the slab were characterized as sandy, gravelly fill. The installation of a SSD system is considered to be feasible at the Site. Heavy equipment is not necessary to install the extraction points, and the system could be installed so as to be minimally disruptive to future occupants of the Facility.

In previous sampling, one surficial sample (SB-2 0-4 feet) located southeast of the loading dock, outside of the approximate middle of the Part P wall, contained an elevated concentration of TCE (730 micrograms per kilogram, ug/kg). Because the source of the TCE is unknown and because the TCE concentration would not likely exceed the TCLP limits based on the 1/20$^{th}$ rule, the soil would not be characterized as hazardous waste. Although it is not clear that this TCE in shallow soil is related to the soil vapor issues at the office area, the concentration is above industrial standards and its removal is required. Although the total area of impact is unknown, it is estimated to be relatively small based on the lack of detections in surrounding soil samples. As such, an area of 36 square feet (6 feet by 6 feet) will be excavated to a depth of 4 feet (resulting in a total of 5.3 cubic yards of soil weighing approximately 8 tons).

The soils will be disposed of at a lined landfill as solid waste and the excavation will be backfilled with clean soil.

Estimated costs to install and operate an SSD system for 25 years in the southeastern office area and remove the surficial soils impacted by TCE is $54,000.

# 4.0 SELECTED CORRECTIVE ACTIONS

## 4.1 DESCRIPTION OF CORRECTIVE ACTIONS

This section provides details of the recommended corrective action techniques. For groundwater, the cleanup criteria will be the Vermont Groundwater Enforcement Standards. For all soils, the cleanup criteria will be the EPA Region 9 Preliminary Remediation Goals for Industrial Soils. For concrete, the cleanup criteria will be the TSCA regulations for porous materials with the exception of soils at the Chip Shed. The Vermont DEC Site Manager has stated that demolished concrete from the Site may be disposed of on-site in areas that meet the following condition: PCBs are already present in soil or concrete at levels at or above those in the potential fill materials. Based on this requirement, there are two areas on the Site that may accept PCB-impacted fill: one where highly contaminated soil will be removed from the east side of the Chip Shed; and another at the lower level of Part G, which is below the surrounding grade. It has been assumed that a maximum concentration of 3 ppm in the demolished concrete will be acceptable for use in these fill areas; therefore, the cleanup criterion for the deep soils (below 1 foot deep) in this area only will be 3 ppm.

All materials disposed of as hazardous waste should include the code VX66 on the hazardous waste manifest to be exempt from Vermont tax.

The proposed redevelopment for the Site currently includes keeping the full footprint of the main building (including the office areas) the same with a few exceptions. Part A, which formerly housed a loading area and small manufacturing rooms, will be completely demolished to accommodate drainage for the Site, but the house that is adjacent to Part A on Pearl Street will remain intact. The former machine shops in the southeastern section of the building (Part D on the upper floor and Part F on the lower floor) will be renovated as parking garages. The lower area adjacent to the Part F basement room (Part P) will be filled to ground level and the wooden floor of the room above it will be demolished. The Chip Shed will be demolished, along with the southern two-thirds of the boiler house. The boiler has been removed from the boiler house, so the associated UST is no longer in service and will be removed. The driveway will be extended through the former Chip Shed, boiler house, and UST areas to access the basement parking garage, but the grade will not be lowered. The majority of the upper floor of the northern portion of the former manufacturing space will be renovated to host light industrial manufacturing, a pharmacy, and possibly a restaurant. The former machine shop in the basement (Part E) will not be immediately redeveloped, and interim measures will be used to keep the space as a low occupancy area, only used to provide access to the transformer room and the hydropower works on the northern end of the building. Additional information regarding redevelopment plans is provided in the following sections.

It should be noted that there are multiple items in this correction plan that will require long-term monitoring and/or maintenance. A funding mechanism will be implemented to ensure that sufficient resources are available to comply with these future requirements.

#### 4.1.1 *Concrete Floors in Main Building*

##### *4.1.1.1 Parts A, O, and P*

An application will be submitted to the TSCA PCB Regional Coordinator for a risk-based cleanup in Parts A, O, and P. Current development plans call for the demolition of parts A, O, and P of the building (Figures 2-1 and 2-2). Because most of the wall area of Part A is shared with portions of the building that will remain (including the hall; parts F,G, and H; and the house), only two exterior walls will be removed from this area. The total area in Part A is approximately 20,000 square feet, and the slab is assumed to be 1 foot thick, resulting in 867 cubic yards of waste concrete, or 1,300 tons. In addition, the slab of Part A will be removed along with 4 inches of underlying soil, which amounts to 247 cubic yards, or 370 tons. In Parts O and P, exterior brick walls will be removed along with the lower-level floor slab and the upper-level wooden floor. The concrete slab will be cut with a wet saw around the perimeter of Part A. Demolition of the slab will be completed with an excavator under misting conditions to control dust releases. The excavator will break up the slab into pieces that are acceptable to the receiving landfill, approximately 4 by 4 feet or less. Soil beneath the slab will be removed by the excavator to a depth of 2 to 4 inches beneath the slab to remove all concrete dust and broken pieces.

Demolition will be performed by a HAZWOPER-trained contractor. If permitted by the VT DEC Solid Waste Program, crushed building materials containing PCBs below 3 ppm will be used as fill on-Site in the concrete below-grade structure of Part P. A total of 500 cubic yards of concrete with PCB concentrations below 3 ppm from Part A will be placed as fill in Part P. Concrete containing PCBs above 3 ppm but below 50 ppm will be placed in a staging pile on plastic sheeting or directly into a truck for disposal at a lined landfill, such as the Moretown Landfill or the Waste USA Landfill in Coventry.

The Johnson Company will supply the demolition and waste hauling contractor(s) with all of the analytical sampling results from the concrete sampling in these areas, and will be present to direct the demolition efforts. No sampling of the waste materials will be conducted during or following demolition, but the soil beneath the removed slab will be sampled using a using a grid size subject to approval by TSCA; the regulatory grid sample size is 25 square feet, but this small grid size is unlikely to be necessary based on the low PCB concentrations in the concrete and the large footprint of the area. It is assumed for cost estimating purposes that 18 soil samples and 2 duplicates will be analyzed for PCBs via EPA Method 8082 with Soxhlet extraction. The exposed soil will be top-dressed with a 4-inch lift of topsoil, seeded with grass and mulched. The Johnson Company will document the removal of Parts A, O, and P in a letter to the VT DEC and EPA Regional PCB coordinator within two weeks of completion.

#### *4.1.1.2 Part B*

A risk-based alternative cleanup application was submitted to the EPA for review on January 28, 2009, and the PCB Risk-Based Disposal Approval letter was issued by TSCA on March 31, 2009. The plan addressed the northwestern portion of the upper level of the building, referred to as Part B and the Northern Loading Dock, which includes Parts NLD, I, and K as indicated on Figure 2-2. A copy of the approval letter has been included in Appendix D. The letter describes all measures to be conducted in this cleanup. A deed restriction will be required for Part B warning potential users of the presence of PCBs and the requirement to maintain the floor and wall coverings.

*4.1.1.3 Parts C, G, H, J, LMN, and Hall*

An application will be submitted to the EPA PCB Regional Coordinator for a risk-based cleanup in Parts C, G, H, J, LMN, and Hall. These portions of the building, approximately 50,000 square feet in total (Figures 2-1 and 2-2), will be designated for non-industrial uses. Installation of a 4 inch lift of concrete, as described for Part B in the application letter to TSCA, is considered to provide an adequate barrier to the concrete slab in these portions of the building. As in Part B, the walls and ceilings will be cleaned with a pressure washer and the full height of the walls will be painted with two coats of epoxy paint.

Wipe sampling will be conducted in these areas on the same schedule as proposed above for Part B. Prior to occupancy of these areas, 3 air samples and 1 trip blank will be collected and analyzed for PCBs using EPA Method TO-10A or NIOSH Method 5503, and 15 wipe samples and 1 duplicate will be collected for analysis of PCBs using EPA Method 8082 with Soxhlet extraction. The same number of surface wipe samples would be collected from random locations and analyzed every two years for the first ten years of occupancy, and every five years thereafter for the life of the building (assumed to be 100 years for cost estimating purposes). A deed restriction will be required for Part B warning potential users of the presence of PCBs and the requirement to maintain the floor coverings.

*4.1.1.4 Parking Garage (Parts D and F)*

An application will be submitted to the EPA PCB Regional Coordinator for a risk-based cleanup in Parts D and F. Current development plans call for the conversion of Parts D and F of the main building into a parking garage. The lower floor (Part D) is approximately 12,000 square feet, and the upper floor (Part F) covers approximately 23,000 square feet. Because a parking garage is considered to be a low-occupancy space under TSCA, PCBs are permitted to be present in concrete to a maximum concentration of 25 ppm. Samples collected from Parts D and F generally showed PCB concentrations below this threshold; however, concentrations up to a maximum of 33 ppm were reported. Therefore, a cap will be placed over the entirety of Parts D and F in order to prevent both direct exposure to the PCB impacted concrete, and abrasion of the concrete due to vehicular traffic. Since these areas will be accessible by an asphalt roller and asphalt application technology will be more locally available, a thin (1.5 to 2 inch) coating of asphalt will be placed on the floor. The walls and ceiling of the garage will be pressure washed to remove residual PCB-containing dust and the water will be allowed to evaporate from the floor. Residual dust will be swept up with a damp mop and disposed of as solid waste. Four wipe samples will be collected from the parking garage following installation of the asphalt. The cover will be inspected annually by building employees; asphalt patches will be reapplied as necessary for the life of the building. A deed restriction (Section 4.4) will be used to ensure that the presence of PCBs is re-assessed in the future before any high-occupancy usage is permitted.

*4.1.1.5 Part E, including T2*

An application will be submitted to the EPA PCB Regional Coordinator for a risk-based cleanup in Part E, which includes the operational transformer room T2. The total square footage of Part E is approximately 50,000 square feet. At this time, there is not a potential tenant for this portion of the building, but this CAP makes provisions to reuse the space for commercial or light industrial purposes. If the protective measures described below are not installed, the building owner will provide notice to the VT DEC and TSCA indicating that this portion of the building has been changed to a low occupancy space with access restrictions and engineering controls to minimize the spread of contamination from Part E to clean parts of the Site, including appropriate signage and a boot cleaning area at each exit. Some access will be required because the transformer room in the basement is in operation. As such, an interim measure will be implemented to protect site users who must access the basement for limited periods of time for maintenance purposes. As in Part B, the walls and floors of these areas of the building will be cleaned with a pressure washer. A walkway that will provide the shortest access to the transformer room will be laid out and painted with two coats of epoxy paint, and a sign will be posted at each potential entrance instructing visitors to walk only on painted areas and providing notification that the basement is designated as a low occupancy area, in which occupancy is limited to less than 6.7 hours per week for any individual not wearing dermal and respiratory protection. Although not part of this corrective action plan, the TSCA coordinator has stated that all PCB-containing light ballasts must be removed from the ceiling to avoid future releases as these ballasts age. These interim measures will be maintained until a reuse for the basement has been selected. If no reuse has been implemented after a period of 15 years, TSCA will be notified that the interim measures will be continued. A deed restriction will be required for Part

B warning potential users of the presence of PCBs and the requirement to maintain the floor paint and notify TSCA of any planned changes to the use.

Reuse of the building must be preceded by review and approval by TSCA of planned protective measures, and may include additional wipe, bulk, or air sampling for PCBs.

It is anticipated that pressure washing will not be appropriate or safe in the T2 transformer room; instead, the floor in T2 will be washed and scrubbed using a stiff-bristle brush in accessible areas, and all water will be collected and managed appropriately.

#### *4.1.2 Concrete in Chip Shed*

An application for Risk-Based PCB Response Action Approval in reference to the Chip Shed and Boiler House demolition and Chip Shed soil removal was submitted to TSCA for review on July 20, 2009, and an addendum to the application was submitted on September 9, 2009. Copies of both letters are provided in Appendix 4. The Chip Shed will be demolished by a HAZWOPER-trained demolition contractor, under the supervision of The Johnson Company. The wooden floors of the upper level of the building contain PCBs at concentrations greater than 50 ppm; therefore, these materials will be removed from the Site and disposed of according to TSCA regulations. All walls and floors will be pre-marked by The Johnson Company to indicate PCB content, as determined by the sampling conducted in 2008. Following removal of the floors, the concrete walls and slab will be demolished and separated into two piles according to PCB content. Floors and walls containing PCBs greater than 50 ppm must be demolished into pieces smaller than 6 inches under misting conditions with collection of all water that does not evaporate. Wall demolition and breaking will be performed by a contractor prior to removal of the floors. Concrete containing PCBs above 3 ppm but below 50 ppm will be placed in a staging pile or directly into a truck for disposal at a lined landfill, such as the Moretown Landfill or the Waste USA Landfill in Coventry. Concrete containing PCBs below 3 ppm may be used as fill on-Site, subject to VT DEC approval, or may be disposed of in a lined landfill. Steel roofing and I-beams present in the Chip Shed will be disposed of at a smelter, such as Earth Waste Systems or similar, if wipe samples indicate the presence of PCBs at concentrations above 10 ug/100 $cm^2$; if not, the materials may be recycled.

The Johnson Company will supply the demolition and waste hauling contractor(s) with all of the analytical sampling results from the Chip Shed concrete sampling, and will be present to direct the demolition efforts. No sampling of the waste materials will be conducted during or following demolition. The Johnson Company will ensure that proper bills of lading or hazardous waste manifests, as appropriate, for the concrete are completed for transport and disposal. Best construction management practices will be employed to ensure that dust is not released and that contaminated materials do not contact clean areas. No public access will be allowed to this portion of the Site during demolition and loading. If workers must leave the Site during loading, the area will be blocked by traffic cones and warning tape. All roll-off containers will be securely covered once filled and/or when workers leave the Site. Filled roll-off containers will remain on Site no longer than 30 days. The Johnson Company will document the removal of the Chip Shed in a letter to the VT DEC and EPA Regional PCB coordinator within two weeks of completion.

#### *4.1.3 Concrete and Bricks in Boiler House*

An application for Risk-Based PCB Response Action Approval in reference to the Chip Shed and Boiler House demolition and Chip Shed soil removal was submitted to TSCA for review on July 20, 2009, and an addendum to the application was submitted on September 9, 2009. Copies of both letters are provided in Appendix 4. The southwestern portion of the boiler house, including the former T1 transformer room, will be demolished. Demolition will be performed by a HAZWOPER-trained demolition contractor, under the supervision of The Johnson Company. The division between building materials with PCB concentrations greater than and less than 50 ppm will be marked by The Johnson Company and the concrete will be cut with a wet saw. Demolition of each section will be conducted separately to avoid mixing of waste streams. Portions of the building materials from the T1 electrical room (part of the slab and the southeastern wall, Figure 2-5) contain PCBs at levels above 50 ppm and will need to be disposed of according to TSCA regulations at the CWM Chemical Services, LLC hazardous waste landfill in Model City, New York. Materials with concentrations above 50 ppm will be broken up into pieces 6 inches in diameter or less under misting conditions to control dust. If demolition of the greater than 50 ppm concrete occurs before demolition of the below 50 ppm concrete, the lower concentration concrete will be covered until the other demolition is complete. The remaining building materials with PCB concentrations below 50 ppm will be disposed of in a RCRA-permitted landfill (in Moretown, Vermont or Coventry, Vermont), or will be used as fill on-Site subject to the conditions described in Section 4.1. The Johnson Company will ensure that proper bills of lading or hazardous waste manifests, as appropriate, for the concrete are completed for transport and disposal. Best construction management practices will be employed to ensure that dust is not released and that contaminated materials do not contact clean areas. No public access will be allowed to this portion of the Site during demolition and loading. If workers must leave the Site during loading, the area will be blocked by traffic cones and warning tape. All roll-off containers will be securely covered once filled and/or when workers leave the Site. Filled roll-off containers will remain on Site no longer than 30 days. All building materials will be transported in covered trucks or containers. Bricks from the exterior walls of the maintenance area of the boiler house are not likely to be not contaminated with PCBs and have not been considered part of this CAP.

#### *4.1.4 Former Transformer Locations*

Transformer pad TP-1 and its adjacent soils will be excavated and disposed of off-Site in a municipal solid waste landfill. Because the volume of this excavation is small and excavating equipment will be on-Site for work near the Chip Shed, this alternative is preferred to the installation of a cap or fence. The volume of the pad and impacted soils is estimated to be approximately 900 cubic yards (Figure 3-1). Because soils adjacent to TP-1 have been impacted by PCBs, one foot of soil will be removed from an area of approximately 900 square feet surrounding TP-1 (Figure 3-1). The pad is currently overgrown with weeds and very weathered. As such, no cutting is expected to be required. The Johnson Company will pre-mark the excavation area and obtain Dig-Safe clearance. The Johnson Company will ensure that proper bills of lading for the concrete are completed for transport and disposal. Best construction management practices will be employed to ensure that dust is not released and that contaminated materials do not contact clean areas. No public access will be allowed to this portion of the Site during excavation and loading. If workers must leave the Site during loading, the area will be blocked by traffic cones and warning tape. All roll-off containers will be securely covered once filled and/or when workers leave the Site. Filled roll-off containers will remain on Site no longer than 30 days. All building materials will be transported in covered trucks or containers to the solid waste landfill at Moretown, Vermont or Coventry, Vermont for disposal as solid waste as permitted by 40 CFR §761.61(a)(5)(v)(A)(1). The excavation will be top-dressed with top soil and planted with grass seed. The Johnson Company will document the removal of transformer pad TP-1 and surrounding soil in a letter to the VT DEC and EPA Regional PCB coordinator within two weeks of completion.

#### *4.1.5 Vault in Transformer Room*

The water contained in the T2 transformer room vault contains PCBs at a concentration below 3 ug/L; therefore, TSCA regulations permit its disposal to a municipal treatment works (40 CFR §761.79(b)(1)(ii)). The Springfield Public Works Department will be notified prior to discharging any wastes to the sewer. Following approval by the Public Works Department, The Johnson Company will remove all fluid from the vault using a submersible pump and hose discharging to a sewer drain within the building.

Because the vault appears to be acting as a floor drain for the transformer room and its complete decommissioning may result in a serious safety hazard, it will be left in place after its contents are removed. The vault will be monitored annually; if water accumulates again in the vault, it will be removed again and discharged to the municipal sewer. The Johnson Company will document the disposal of the water in a letter to the VT DEC and EPA Regional PCB coordinator within two weeks of completion. Because the floor of the transformer room will be covered and the remaining out-of-service transformers will be removed, the concentration of PCBs in any future water that accumulates in the tank is expected to be less than that measured when the tank was sampled in 2006. Since petroleum hydrocarbons were also detected in the vault water, the PCBs appear to have been transported in contaminated oil; therefore, a hydrophobic sorbent sock that sorbs only oil will be placed in the vault. The sorbent material will be checked and changed, if it appears spent, for two years and four years after the vault has been emptied.

#### *4.1.6 Cutting Oil Recycling Tank*

Precision Industrial Maintenance (PIM) will be contracted to remove all fluid and sludge from the tank and adjacent sump. The interior of the tank and sump will be cleaned by PIM; a wipe test will be used to confirm that all gross contamination has been removed from the interior and exterior of the tank and sump. The Johnson Company will supervise all work performed on the cutting oil recycling tank. Because there are currently no development plans for this portion of the building, the cleaned tank will be left in place until its removal becomes necessary. The Johnson Company will document the contained liquids and cleaning residuals in a letter to the VT DEC and EPA Regional PCB coordinator within two weeks of completion.

#### *4.1.7 Soils and Groundwater in Vicinity of Chip Shed*

Of the three alternatives examined in the CAFI, excavation and off-Site disposal provides the only means of reducing groundwater impacts from the PCB and petroleum contamination near the Chip Shed. An application for Risk-Based PCB Response Action Approval in reference to the Chip Shed and Boiler House demolition and Chip Shed soil removal was submitted to TSCA for review on July 20, 2009, and an addendum to the application was submitted on September 9, 2009. Copies of both letters are provided in Appendix 4. Soils and asphalt to a depth of 1 foot will be removed from an area of approximately 2,200 square feet where PCBs were detected in soil samples collected from any depth at concentration greater than the EPA Region 9 PRG of 0.74 mg/kg. Additional soil removal will be conducted from a sub-region of the above-defined area, which comprises approximately 500 square feet (Figure 2-6). Within this sub-region, soils will be removed from the ground surface to the top of till, at an approximate depth of 6 feet. This will result in a removal of most of the contaminant mass, including the majority of PCB detections in soil above 3 ppm. An estimated 174 cubic yards of soil will be removed from the excavation. Because previous testing of the soils has shown no concentrations of PCBs above 50 mg/kg, all soils will be disposed of at the Moretown, Vermont or Coventry, Vermont landfill, as permitted by 40 CFR §761.61(a)(5)(v)(A)(1). No additional sampling of the soils will be performed during or following excavation.

The entire excavation area will be filled with a combination of clean borrow and crushed building materials. No building material containing PCBs above 3 ppm be used as fill. The areas not allowed to receive PCB-contaminated fill will be backfilled with clean granular soils. The Johnson Company will document the removal of the Chip Shed soils in a letter to the VT DEC and EPA TSCA coordinator within two weeks of completion.

#### *4.1.8 Underground Storage Tank*

The 15,000 gallon fuel oil UST located next to the boiler house will not be used following demolition of a portion of the boiler house. Therefore, it will be closed in accordance with the VT DEC UST program guidance.

Closure of the UST will include the following tasks: notification of the Vermont UST Program five days prior to closure; pre-marking and notification of Dig-Safe 48 hours prior to closure; removal of liquid contents from UST and transport by a licensed waste hauler for usage or disposal at a licensed facility; UST inerting and removal or closure in place, if removal is not feasible due to Site safety concerns; UST cleaning, carcass and piping disposal, and backfill. It will also include collection, transport, and appropriate off-site disposal of contaminated sludge and solids present in the UST, as well as tank cleaning residuals. A hazardous waste subcontractor from PIM will perform the UST closure. A site assessment will be performed at closure in accordance with Vermont regulations and will include the following elements: field screening of surrounding soils with a photoionization detector (PID); collection of soil samples for laboratory analysis; evaluation of soil stratigraphy, estimated depth to bedrock and seasonal high groundwater; identification of potential receptors (including water supplies, cellars, and surface water); and preparation and submittal of a UST Closure Report within 72 hours of completion of field activities. A full report of the closure and site assessment will be prepared following receipt of the analytical results from the laboratory. Soil screening samples will be collected from the walls and floor of the excavation during the tank closure. The Johnson Company will collect a minimum of two screening samples from beneath the UST, if removed, or from the downgradient side beneath the bottom of the UST, if closed in place, as well as one sample from each wall of the excavation at an elevation below the top of the UST. Samples will be screened for volatile organic compounds (VOCs) using the heated headspace method with a 10.6 eV PID. Based on the field screening results, four soil samples from each excavation will be analyzed for VOCs via EPA Method 8260B and total petroleum hydrocarbons (TPH) via modified EPA Method 8100 (fingerprint).

#### 4.1.9 *Waste Drums in Building*

All drums containing hazardous or unidentified materials will be moved to a central area of the building for identification, processing, and proper disposal by PIM. PIM will be responsible for characterizing the contents using field screening techniques and shipping them to an appropriate disposal facility. The building owner will be required to sign and keep a copy of all waste manifests.

#### 4.1.10 *Monitored Natural Attenuation of Chlorinated Solvents in Site-Wide Groundwater (Shallow and Deep)*

Chlorinated solvents have been detected in several Site monitoring wells, during multiple groundwater monitoring events (Table 2-1). Based on the distribution of historical chlorinated solvent detections, some of these compounds may be discharging to the Black River, but it is unlikely that their impacts could be measured due to their low concentrations and a high amount of dilution from the river water. Observed concentrations of PCE, TCE, cis-DCE, and vinyl chloride in groundwater are all less than 1% of their respective solubilities and not necessarily indicative of the presence of NAPL on the Site. Because of the lack of an identified source area (if any) of these compounds, and its potential location (if any) underneath the building, source-area treatment with soil vapor extraction or an alternate technology would be difficult and may not improve conditions appreciably in downgradient wells. The presence of breakdown products of PCE and TCE (at concentrations greater than their parent compounds) suggests that reductive dechlorination is actively occurring on the Site.

Long-term groundwater monitoring will be necessary to ensure that conditions remain protective of human health and the environment and that concentrations remain stable or decline over time. Semi-annual (two events per year) monitoring will be performed for two years on a group of three competent wells (MW-6, MW-12, and MW-14), located along the downgradient edge of the property (along the river). Samples will be analyzed for chlorinated VOCs using EPA Method 8260B (chlorinated range only). The semi-annual monitoring will serve to characterize seasonal variations in groundwater concentrations that may be important for interpreting collected data and for scheduling future sampling events under predicted worst-case conditions. If, after a period of two years, seasonal variations are well-characterized (or determined to be insignificant), future monitoring will continue on an annual basis until the concentrations are shown to be stable or declining (expected to be a maximum of 10 years).

Although no VOCs have been detected in either supply well at a level exceeding drinking water MCLs, the restroom supply well will be sampled on the same schedule as the shallow groundwater (above) to ensure that concentrations remain protective. Samples will be collected from a restroom cold water tap after allowing the water to run for ten minutes at a steady rate. The collected sample will be submitted for analysis of chlorinated VOCs by EPA Method 524.2. Because the boiler has been removed, it is unlikely that there is a future use for the boiler supply well. Therefore, the boiler supply well will be decommissioned in accordance with the Vermont Water Supply Rule. The well pump and all associated wiring will be removed from the well, and grout material will be placed to completely fill the well and casing by a licensed well driller. The Johnson Company will notify the Vermont Water Supply Division of the well closure.

##### *4.1.10.1 Vapor Intrusion of Chlorinated Solvents*

Because indoor air sampling has indicated the presence of unacceptable levels of TCE in indoor air in the southern portion the building, a sub-slab depressurization (SSD) system will be designed for the office areas along the southeastern wall of the building.

Because the soils underneath and adjacent to the foundation have been identified primarily as sandy and gravelly fill, it is anticipated that two to four vapor extraction points will provide adequate capture of sub-slab vapors in this portion of the building. Following analysis of indoor air samples and prior to design of the SSD system, a vapor intrusion mitigation contractor, Turner Building Science, will conduct a survey of the foundation and collect measurements on the heating and ventilation system and indoor/outdoor pressure differentials. A suction test will then be performed to assess the radius of influence of an extraction point. Turner Building Science will design an appropriate vapor intrusion mitigation system, which will require review and approval by the VT DEC Site manager. Following design approval, Turner Building Science will install the appropriate number of suction points as determined by the suction test. The system will be installed with a self-monitoring data logger that can be checked by building maintenance staff on a monthly basis to ensure that the design volumes of air are being continuously removed from the subslab. The VT DEC manager has stated that the use of this system, in combination annual air monitoring for the early part of implementation will preclude the need for sustained air monitoring if a record of the data logger results is maintained and shows that the system is functioning as designed. It is assumed that the system will operate for 25 years, with post-installation sampling conducted annually for the first two years of operation, which will include collection of 2 indoor air samples, 1 outdoor sample, and 1 trip blank for analysis of low level chlorinated VOCs by EPA Method TO-15.

In addition, TCE-impacted soils over a 36 square foot area surrounding the former SB-4 sampling point to the southwest of the loading dock will be excavated to a total depth of 4 feet (resulting in 5.3 cubic yards of soil weighing 8 tons). The origin of the TCE is not known. Using the $1/20^{th}$ rule, the total TCE concentration in soils of 730 ug/kg would not exceed the 500 ug/L TCLP limit, and the soil would not be characterized as hazardous waste. The Johnson Company will premark the Site in advance of the soil excavation and obtain DigSafe clearance. The excavation will be performed by a HAZWOPER certified subcontractor using best construction practices to control dust. The soil will be loaded directly into containers or a dump truck and covered. The Johnson Company will collect two soil samples from the excavation, one from the bottom and one from one sidewall, for analysis of chlorinated VOCs via EPA Method 8260B. Soil will be transported in covered containers or trucks to a lined landfill at Moretown, Vermont or Coventry, Vermont for disposal as solid waste. Results of soil sampling and a letter report documenting the soil removal will be submitted to the VT DEC.

### 4.2 SCHEDULES FOR IMPLEMENTATION OF CORRECTIVE ACTIONS

Following revisions (if necessary) and approval of this CAP, Vermont Waste Management Division policy is to provide public notice and allow two weeks for a public comment period. If public interest is high, an additional period (estimated at two weeks) may be necessary to schedule and conduct an information meeting. Preparation of responses to public comments and revisions to the CAP may take an additional week. In total, this process is anticipated to take close to one month.

After approval of the CAP, the proposed schedule for completion of the corrective action plan is provided in Table 5-1. For all PCB-related issues in this CAP, a notification must be submitted to the EPA's PCB coordinator which details the proposed alternative cleanup methods. The EPA requires 30 to 60 days to approve the letter, but may also request additional information or revisions to the planned work during this time. As such, this letter should be submitted a minimum of three months before remedial activities are scheduled to begin.

| Text Table 3 Proposed Schedule | | |
|---|---|---|
| **Task** | **Responsible Party** | **Duration (Note: Dates provided are estimated and may require postponement)** |
| Schedule Meeting with EPA Regional PCB Coordinator to discuss alternative cleanup application | The Johnson Company | April 2009: 4 months in advance of removal activities |
| Submit 30-day self-implementing cleanup plan to EPA Regional PCB Coordinator | The Johnson Company | October 2009: 2 months in advance of removal activities |
| **Implement Risk-Based Cleanup of Concrete in Main Building (Excluding Parts B, NLK, I, K- See Appendix D for Schedule)** | | |
| Submit application to EPA Regional PCB Coordinated for risk-based cleanup of main building parts B, NLD, I, and K. | The Johnson Company | January to March 2009. |
| Submit application to EPA Regional PCB Coordinator for risk-based cleanup of remaining portions of main building. | The Johnson Company | April 2009: 4 months in advance of removal activities. |
| Pressure washing | Hazardous waste contractor | April 2009: 1 week |
| Installation of concrete | Contractor | April 2009 and October 2009: 1 month each |
| Pre-occupancy sampling | The Johnson Company | 2 days |
| Sample Analysis | Contract laboratory | 2 weeks |
| Total estimated time to complete cleanup of main building concrete | | 8 months (estimated completion: November 2009) |
| **Removal of Outdoor Transformer Pad and Adjacent Soils** | | |
| Provide subcontractor with analytical results | The Johnson Company | December 2009: 2 weeks in advance of removal activities |
| Pre-mark excavation area and contact Dig-Safe | The Johnson Company | 48 hours in advance of removal activities |
| Removal of transformer pad | Excavation contractor | 2 days |
| Dispose of excavated soils and concrete | Excavation contractor | 1 day |
| Provide report documenting removal to VT DEC and EPA Regional PCB Coordinator | The Johnson Company | 1 week |
| Total estimated time to complete transformer pad removal | | 4 weeks (estimated completion: January 2010) |

| Text Table 3 Proposed Schedule | | |
|---|---|---|
| **Task** | **Responsible Party** | **Duration (Note: Dates provided are estimated and may require postponement)** |
| **Cleanup of Underground Vault in Transformer Room** | | |
| Notify Springfield Public Works Department of Discharge to Sewer | The Johnson Company | December 2009: 1 week in advance of removal activities |
| Discharge water in vault to municipal sewer | The Johnson Company | 1 day |
| Provide report documenting removal to VT DEC and EPA Regional PCB Coordinator | The Johnson Company | 1 week |
| Total estimated time to complete underground vault cleanup | | 2 weeks (estimated completion: December 2009) |
| **Cleanup of Cutting Oil Recycling Tank** | | |
| Provide subcontractor with analytical results | The Johnson Company | December 2009: 1 week in advance of cleanup activities |
| Remove fluid and sludge from tank and sump | Hazardous waste contractor | 1 day |
| Clean surfaces of tank and sump | Hazardous waste contractor | 1 day |
| Verification wipe sampling | The Johnson Company | 1 day |
| Analysis of verification wipe samples | Contract laboratory | 2 weeks |
| Provide report documenting cleanup to VT DEC and EPA Regional PCB Coordinator | The Johnson Company | 1 week |
| Total estimated time to complete cutting oil tank cleanup | | 5 weeks (estimated completion: January 2010) |
| **Demolition of Chip Shed and Boiler House** | | |
| Provide subcontractor with analytical results | The Johnson Company | October 2009: 1 week in advance of cleanup activities |
| Pre-mark concrete floors and walls and brick walls with PCBs > 50 ppm and < 3 ppm | The Johnson Company | 1 day |
| Remove wooden flooring and concrete with PCBs > 50 ppm, cut concrete into pieces < 6" stockpile for disposal as hazardous waste | Excavation / demolition contractor | 3 days |
| Transport wooden floor and concrete with PCBs > 50 ppm to facility for disposal | Hazardous waste contractor | 1 day |
| Demolish remainder of buildings | Excavation / demolition contractor | 3 days |
| Transport concrete not used as fill to lined landfill | Excavation contractor / hauling contractor | 2 days |
| Install replacement MW-15 monitoring well | The Johnson Company | 1 day |
| Provide report documenting removal to VT DEC and EPA Regional PCB Coordinator | The Johnson Company | 2 weeks |
| Total estimated time to complete Chip Shed/boiler house demolition | | 5 weeks (Estimated completion: November 2009) |

| Text Table 3 Proposed Schedule | | |
|---|---|---|
| **Task** | **Responsible Party** | **Duration (Note: Dates provided are estimated and may require postponement)** |
| **Close Boiler Supply Well** | | |
| Remove pump and wiring, fill well with grout mixture | The Johnson Company | May, 2010: 1 day |
| Provide notification to Vermont Water Supply division of well closure | The Johnson Company | 1 week |
| Total estimated time to complete boiler supply well closure | | 1 week (Estimated completion: May, 2010) |
| **Remove Fuel Oil UST** | | |
| Notify VT UST program | Hazardous waste contractor | October 2009: 1 week in advance of closure |
| Pre-mark Site and notify Dig-Safe | The Johnson Company | 48 hours prior to closure |
| Remove liquids from UST, transport and dispose, remove or close tank in-place, remove piping | Hazardous waste contractor | 1 day |
| Collect soil samples | The Johnson Company | 1 day |
| Report initial findings to VT UST program | The Johnson Company | Within 72 hours of closure |
| Laboratory analysis | Contract laboratory | 2 weeks |
| Report analytical results to VT DEC | The Johnson Company | 2 weeks |
| Total estimated time to complete UST closure | | 6 weeks (Estimated completion: November 2009) |
| **Remove Soils from Chip Shed Area** | | |
| Provide subcontractor with analytical results | The Johnson Company | October 2009: 1 week in advance of cleanup activities |
| Removal of soils | Excavation contractor | 3 days |
| Dispose of excavated soils and concrete | Hauling contractor | 2 days |
| Provide report documenting removal to VT DEC and EPA Regional PCB Coordinator | The Johnson Company | 2 weeks |
| Total estimated time to complete Chip Shed soils removal | | 4 weeks (estimated completion: November 2009) |
| **Remove Waste Drums from Building** | | |
| Characterization and removal of drums | Hazardous waste contractor | 1 week |
| Total estimated time to complete waste drum removal | | 1 week (estimated completion: January 2010) |
| **Design and Construct Vapor Intrusion Mitigation System** | | |
| Conduct indoor air sampling | The Johnson Company | 2 days |
| Analyze air samples | Contract laboratory | 2 weeks |
| Provide report documenting indoor air quality results to VT DEC | The Johnson Company | 2 weeks |
| Pressure testing | Turner Building Science | 2 days |
| SSD system design | Turner Building Science | 1 month |
| SSD system design approval | VT DEC | 2 weeks |
| SSD system installation | Contractor | 1 week |

| Text Table 3 Proposed Schedule | | |
|---|---|---|
| **Task** | **Responsible Party** | **Duration (Note: Dates provided are estimated and may require postponement)** |
| Conduct follow-up indoor air sampling | The Johnson Company | 2 days |
| Analyze air samples | Contract laboratory | 2 weeks |
| Total estimated time to complete vapor intrusion mitigation | | 4 months (estimated completion: May 2010) |

| Text Table 4 Long-Term Monitoring Schedule | | | | |
|---|---|---|---|---|
| **Sample Location(s)** | **Sample Quantity** | **Sample Type** | **Analysis** | **Sampling Frequency** |
| *Monitored Natural Attenuation* | | | | |
| Monitoring wells MW-6, MW-12, and MW-14 | 3 + duplicate | Groundwater | VOCs (8260B) | Twice per year for 2 years, annually for 8 years |
| Restroom supply well | 1 | Groundwater | VOCs (524.2) | Twice per year for 2 years, annually for 8 years |
| *Vapor Intrusion Mitigation System* | | | | |
| Southeastern office area | 2 indoor, 1 outdoor, 1 trip blank | Air | VOCs (TO-15) | Annually for first 2 years of operation |
| *PCBs in Main Building* | | | | |
| Upper Level Parts B, NLD, I, K | 5 | Wipe | PCBs (8082 with Soxhlet extraction) | 1 per two years for first ten years, 1 per five years thereafter, for the lifetime of the building. |
| | 1 | Indoor air | PCBs (TO-10A or 5503) | |
| Upper Level Parts C,G,H,J,LMN, and Hall | 10 | Wipe | PCBs (8082) | 1 per two years for first ten years, 1 per five years thereafter, for the lifetime of the building. |
| | 2 | Indoor air | PCBS (TO-10A or 5503) | |
| Parking garage (Parts D & F) | 4 | Visual inspection | Inspect for deficiencies | Annually |
| Lower Level Part E | 5 | Wipe | PCBs (8082) | 1 per two years for first ten years, 1 per five years thereafter, for the lifetime of the building. |
| | 1 | Indoor air | PCBs (TO-10A or 5503) | |
| *Wells Downgradient of Chip Shed* | | | | |
| Monitoring wells GMW-1D and MW-16 | 2 + duplicate | Groundwater | PCBs (8082 with Soxhlet extraction) | 5 and 10 years after PCB-impacted soil removal |

## 4.3 COST ESTIMATE

A preliminary cost estimate is provided as Appendix C. The cost of implementing the remedial actions specified in this CAP is expected to be $1.2 million dollars. Modifications to this estimate may be required due to different than expected soil removal volumes, disposal fees, and unexpected site and/or weather conditions.

## 4.4 DEED RESTRICTIONS

Text Table 5 summarizes the areas of the PVDC property that will be included in a deed restriction. Areas of the building covered by a deed restriction are indicated in Figures 4-1 and 4-2.

**Text Table 5 Deed Restriction Items**

| Area | Item | Condition |
|---|---|---|
| Site-Wide Groundwater | Inform future owners of the presence of volatile organic compounds in groundwater at the Site. Prohibit the installation of new wells for drinking or non-potable uses. Require annual monitoring of existing supply wells on-Site. | Required. |
| Indoor air | Inform future owners of the operation and maintenance requirements for the subslab depressurization system (SSD). | Required. |
| Main Building | Inform future owners of the presence of PCBs in concrete within the main building. Require annual inspection of all caps and coverings. Require sampling of indoor air and surfaces as prescribed in Text Table 4. | Required |
| Main Building Parts D & F | Parts D and F of the main building may not be used as high-occupancy areas unless further remediation of PCBs in concrete is performed. | Required |
| Chip Shed Area and Part P | Notify future owners of the presence of PCB-containing concrete used as fill material. Prohibit excavation and disposal unless approved by TSCA and VT DEC. | Required if fill is placed in these areas. |
| Chip Shed Area | Notify future owners of the presence of PCB-containing soil at depths below 6 feet. | Required. |

## 5.0 REFERENCES

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# TABLES

# Table 2-1
## Historical Groundwater Analytical Data - VOCs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | | Sample Location | MW-1 | | | | | | | | | | MW-2 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 4/8/1998 | | 8/18/1998 | | 8/10/2000 | | 4/27/2001 | | 4/11/2002 | | 4/8/1998 | | 8/18/1998 | | 8/10/2000 | | 4/27/2001 | | 4/11/2002 | | 1/10/2006 | |
| **Compound** | **VGES (µg/L)** | Analytical Method | EPA 8021B | | EPA 8260 | | EPA 8260 | | EPA 8260 | | EPA 8021B | | EPA 8021B | | EPA 8260 | | EPA 8260 | | EPA 8260 | | EPA 8021B | | EPA 8260 | |
| Benzene | 5.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 |
| Toluene | 1000.0 | µg/L (ppb) | | NA | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | | NA | U | 1 | U | 1 |
| Ethylbenzene | 700.0 | µg/L (ppb) | | NA | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | | NA | U | 1 | U | 1 |
| Xylenes | 10000.0 | µg/L (ppb) | | NA | | NA | | NA | | NA | U | 2 | | NA | | NA | | NA | | NA | U | 2 | U | 2 |
| 1,3,5-Trimethylbenzene | 350 | µg/L (ppb) | | NA | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | | NA | U | 1 | U | 1 |
| 1,2,4-Trimethylbenzene | 350 | µg/L (ppb) | | NA | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | | NA | U | 1 | U | 1 |
| Naphthalene | 20.0 | µg/L (ppb) | | NA | | NA | | NA | | NA | U | 2 | | NA | | NA | | NA | | NA | U | 2 | U | 5 |
| Methyl-t-Butyl Ether | 40.0 | µg/L (ppb) | | NA | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | | NA | U | 1 | U | 5 |
| n-Butylbenzene | - | µg/L (ppb) | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | U | 1 |
| sec-Butylbenzene | - | µg/L (ppb) | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | U | 1 |
| Isopropylbenzene | - | µg/L (ppb) | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | U | 1 |
| n-Propylbenzene | - | µg/L (ppb) | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | U | 1 |
| Acetone | 700 | µg/L (ppb) | | NA | U | 10 | U | 10 | U | 10 | | NA | | NA | U | 10 | U | 10 | U | 10 | | NA | U | 10 |
| 2-Butanone (MEK) | 4200.0 | µg/L (ppb) | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | U | 10 |
| Tetrachloroethene (PCE) | 5.0 | µg/L (ppb) | | NA | | 3 | | 3 | | 3 | | 2.4 | | NA | U | 2 | U | 2 | U | 2 | | 1.1 | U | 2 |
| Trichloroethene (TCE) | 5.0 | µg/L (ppb) | | NA | U | 2 | U | 2 | U | 2 | U | 1 | | NA | U | 2 | U | 2 | U | 2 | U | 1 | U | 2 |
| cis-1,2-Dichloroethene | 70.0 | µg/L (ppb) | | NA | U | 2 | U | 2 | U | 2 | U | 1 | | NA | | 2 | | 5 | | 3 | | 2.2 | | 3 |
| trans-1,2-Dichloroethene | 100.0 | µg/L (ppb) | | NA | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | | NA | U | 1 | U | 2 |
| 1,1-Dichloroethene | 7.0 | µg/L (ppb) | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | U | 1 |
| 1,1-Dichloroethane | 70.0 | µg/L (ppb) | | NA | U | 2 | U | 2 | U | 2 | U | 1 | | NA | U | 2 | U | 2 | U | 2 | U | 1 | U | 2 |
| 1,1,1-Trichloroethane | 200.0 | µg/L (ppb) | | NA | U | 2 | U | 2 | U | 2 | U | 1 | | NA | U | 2 | U | 2 | U | 2 | U | 1 | U | 2 |
| Vinyl Chloride | 2.0 | µg/L (ppb) | | NA | U | 2 | U | 2 | U | 2 | U | 2 | | NA | U | 2 | | 3 | | 3 | U | 2 | U | 2 |
| 1,4-Dichlorobenzene | 75.0 | µg/L (ppb) | | NA | U | 1 | U | 1 | U | 1 | U | 1 | | NA | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 |
| Chloroethane | - | µg/L (ppb) | | NA | | NA | | NA | | NA | U | 5 | | NA | | NA | | NA | | NA | U | 5 | U | 5 |
| Chloroform | - | µg/L (ppb) | | NA | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | | NA | U | 1 | U | 2 |

Notes:

All analytical data as reported by JCO (2006).

Concentrations in excess of VGES are highlighted by black boxes with white text

NA=Data not analyzed or data unavailable

# Table 2-1
## Historical Groundwater Analytical Data - VOCs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | | Sample Location | MW-3 | | | | | | MW-4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 4/8/1998 | 8/18/1998 | 8/10/2000 | 4/27/2001 | 4/11/2002 | 1/10/2006 | 4/8/1998 | 8/18/1998 | 8/10/2000 | 4/27/2001 | 4/11/2002 |
| **Compound** | **VGES (µg/L)** | Analytical Method | EPA 8021B | EPA 8260 | EPA 8260 | EPA 8260 | EPA 8021B | EPA 8260 | EPA 8021B | EPA 8260 | EPA 8260 | EPA 8260 | EPA 8021B |
| Benzene | 5.0 | µg/L (ppb) | U 1 | 2 | 2 | U 1 | 1.2 | U 1 | U 1 | U 1 | U 1 | U 1 | U 1 |
| Toluene | 1000.0 | µg/L (ppb) | NA | NA | NA | NA | U 1 | U 1 | NA | NA | NA | NA | U 1 |
| Ethylbenzene | 700.0 | µg/L (ppb) | NA | NA | NA | NA | U 1 | U 1 | NA | NA | NA | NA | U 1 |
| Xylenes | 10000.0 | µg/L (ppb) | NA | NA | NA | NA | U 2 | U 2 | NA | NA | NA | NA | U 2 |
| 1,3,5-Trimethylbenzene | 350 | µg/L (ppb) | NA | NA | NA | NA | U 1 | U 1 | NA | NA | NA | NA | U 1 |
| 1,2,4-Trimethylbenzene | 350 | µg/L (ppb) | NA | NA | NA | NA | U 1 | U 1 | NA | NA | NA | NA | U 1 |
| Naphthalene | 20.0 | µg/L (ppb) | NA | NA | NA | NA | U 2 | U 5 | NA | NA | NA | NA | U 2 |
| Methyl-t-Butyl Ether | 40.0 | µg/L (ppb) | NA | NA | NA | NA | U 2 | U 5 | NA | NA | NA | NA | U 2 |
| n-Butylbenzene | - | µg/L (ppb) | NA | NA | NA | NA | NA | U 1 | NA | NA | NA | NA | NA |
| sec-Butylbenzene | - | µg/L (ppb) | NA | NA | NA | NA | NA | U 1 | NA | NA | NA | NA | NA |
| Isopropylbenzene | - | µg/L (ppb) | NA | NA | NA | NA | NA | U 1 | NA | NA | NA | NA | NA |
| n-Propylbenzene | - | µg/L (ppb) | NA | NA | NA | NA | NA | U 1 | NA | NA | NA | NA | NA |
| Acetone | 700 | µg/L (ppb) | NA | U 10 | U 10 | U 10 | NA | U 10 | U 10 | 70 | U 10 | U 10 | NA |
| 2-Butanone (MEK) | 4200.0 | µg/L (ppb) | NA | NA | NA | NA | NA | U 10 | NA | NA | NA | NA | NA |
| Tetrachloroethene (PCE) | 5.0 | µg/L (ppb) | NA | U 2 | U 2 | U 2 | U 1 | U 2 | U 2 | U 2 | U 2 | U 2 | U 1 |
| Trichloroethene (TCE) | 5.0 | µg/L (ppb) | NA | 6 | U 2 | U 2 | 1.3 | U 2 | 22 | 3 | U 2 | U 1 | U 1 |
| cis-1,2-Dichloroethene | 70.0 | µg/L (ppb) | NA | 5 | U 2 | U 2 | 1.2 | 4 | U 2 | 33 | 5 | U 2 | U 1 |
| trans-1,2-Dichloroethene | 100.0 | µg/L (ppb) | NA | NA | NA | NA | U 1 | 2 | NA | NA | NA | NA | U 1 |
| 1,1-Dichloroethene | 7.0 | µg/L (ppb) | NA | NA | NA | NA | NA | U 1 | NA | NA | NA | NA | NA |
| 1,1-Dichloroethane | 70.0 | µg/L (ppb) | NA | U 2 | U 2 | U 2 | U 1 | U 2 | U 2 | 10 | U 2 | U 2 | U 1 |
| 1,1,1-Trichloroethane | 200.0 | µg/L (ppb) | NA | U 2 | U 2 | U 2 | U 1 | U 2 | U 2 | U 2 | U 2 | U 2 | U 1 |
| Vinyl Chloride | 2.0 | µg/L (ppb) | NA | 3 | U 2 | 4 | U 2 | 9 | U 2 | 4 | 3 | U 2 | U 2 |
| 1,4-Dichlorobenzene | 75.0 | µg/L (ppb) | NA | U 2 | U 2 | 1 | U 1 | 4 | U 1 | U 1 | U 1 | U 1 | U 1 |
| Chloroethane | - | µg/L (ppb) | NA | NA | NA | NA | U 5 | U 5 | NA | NA | NA | NA | U 5 |
| Chloroform | - | µg/L (ppb) | NA | NA | NA | NA | U 1 | U 2 | NA | NA | NA | NA | U 1 |

Notes:

All analytical data as reported by JCO (2006).

Concentrations in excess of VGES are highlighted by black boxe:

NA=Data not analyzed or data unavailable

# Table 2-1
## Historical Groundwater Analytical Data - VOCs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | | Sample Location | MW-5 | | MW-6 | | | MW-7 | | MW-10 | | MW-11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 9/5/2001 | 4/11/2002 | 9/5/2001 | 4/11/2002 | 1/10/2006 | 9/6/2001 | 4/11/2002 | 9/6/2001 | 4/11/2002 | 9/6/2001 | 4/11/2002 |
| **Compound** | **VGES (µg/L)** | Analytical Method | EPA 8260 | EPA 8021B | EPA 8260 | EPA 8021B | EPA 8260 | EPA 8260 | EPA 8021B | EPA 8260 | EPA 8021B | EPA 8260 | EPA 8021B |
| Benzene | 5.0 | µg/L (ppb) | U 1 | U 1 | U 1 | U 1 | U 2 | 190 | U 2 | U 1 | U 1 | U 1 | U 1 |
| Toluene | 1000.0 | µg/L (ppb) | U 1 | U 1 | U 1 | U 1 | U 2 | U 20 | 9.1 | U 1 | U 1 | U 1 | U 1 |
| Ethylbenzene | 700.0 | µg/L (ppb) | U 1 | U 1 | U 1 | U 1 | U 2 | 870 | 71.1 | U 1 | U 1 | U 1 | U 1 |
| Xylenes | 10000.0 | µg/L (ppb) | U 1 | U 2 | U 2 | U 2 | U 4 | 3960 | 306 | U 2 | U 2 | U 2 | U 2 |
| 1,3,5-Trimethylbenzene | 350 | µg/L (ppb) | U 1 | U 1 | U 1 | U 1 | U 2 | 420 | 23 | U 1 | U 1 | U 1 | U 1 |
| 1,2,4-Trimethylbenzene | 350 | µg/L (ppb) | U 1 | U 1 | U 1 | U 1 | U 2 | 1400 | 87.6 | U 1 | U 1 | U 1 | U 1 |
| Naphthalene | 20.0 | µg/L (ppb) | U 1 | U 2 | 41 | U 2 | U 10 | 170 | 11.1 | U 1 | U 2 | U 1 | U 2 |
| Methyl-t-Butyl Ether | 40.0 | µg/L (ppb) | U 1 | U 2 | U 1 | U 2 | U 5 | U 20 | U 4 | U 1 | U 2 | U 1 | U 2 |
| n-Butylbenzene | - | µg/L (ppb) | U 1 | NA | 1.6 | NA | U 2 | 84 | NA | U 1 | NA | U 1 | NA |
| sec-Butylbenzene | - | µg/L (ppb) | U 1 | NA | 2 | NA | U 2 | 25 | NA | U 1 | NA | U 1 | NA |
| Isopropylbenzene | - | µg/L (ppb) | U 1 | NA | 1.4 | NA | U 2 | 110 | NA | U 1 | NA | U 1 | NA |
| n-Propylbenzene | - | µg/L (ppb) | U 1 | NA | 1.7 | NA | U 2 | 310 | NA | U 1 | NA | U 1 | NA |
| Acetone | 700 | µg/L (ppb) | U 20 | NA | U 20 | NA | U 20 | U 400 | NA | U 20 | NA | U 20 | NA |
| 2-Butanone (MEK) | 4200.0 | µg/L (ppb) | U 10 | NA | U 10 | NA | U 20 | U 200 | NA | U 10 | NA | U 10 | NA |
| Tetrachloroethene (PCE) | 5.0 | µg/L (ppb) | U 1 | U 1 | U 1 | NA | U 2 | U 20 | U 2 | U 1 | U 1 | U 1 | U 1 |
| Trichloroethene (TCE) | 5.0 | µg/L (ppb) | U 1 | U 1 | U 1 | U 1 | 5 | U 20 | U 2 | U 1 | U 1 | U 1 | U 1 |
| cis-1,2-Dichloroethene | 70.0 | µg/L (ppb) | U 1 | U 1 | 15 | 12.4 | 330 | U 20 | U 2 | U 1 | U 1 | U 1 | U 1 |
| trans-1,2-Dichloroethene | 100.0 | µg/L (ppb) | U 1 | U 1 | 1.9 | 1.7 | 13 | U 20 | U 2 | U 1 | U 1 | U 1 | U 1 |
| 1,1-Dichloroethene | 7.0 | µg/L (ppb) | NA | NA | NA | NA | U 2 | NA | NA | NA | NA | NA | NA |
| 1,1-Dichloroethane | 70.0 | µg/L (ppb) | U 1 | U 1 | 2.7 | 2.1 | 25 | U 20 | U 2 | U 1 | U 1 | U 1 | U 1 |
| 1,1,1-Trichloroethane | 200.0 | µg/L (ppb) | U 1 | U 1 | 5.1 | 1.1 | 22 | U 20 | U 2 | U 1 | U 1 | U 1 | U 1 |
| Vinyl Chloride | 2.0 | µg/L (ppb) | U 1 | U 2 | 11 | 33.1 | 140 | U 20 | U 4 | U 1 | U 2 | U 1 | U 2 |
| 1,4-Dichlorobenzene | 75.0 | µg/L (ppb) | U 1 | U 1 | 1.7 | U 1 | 14 | U 20 | U 2 | U 1 | U 1 | U 1 | U 1 |
| Chloroethane | - | µg/L (ppb) | U 2 | U 5 | 3.1 | U 5 | 60 | U 40 | U 10 | U 2 | U 5 | U 2 | U 5 |
| Chloroform | - | µg/L (ppb) | U 1 | U 1 | U 1 | U 1 | U 2 | U 20 | U 2 | U 1 | U 1 | U 1 | U 1 |

Notes:

All analytical data as reported by JCO (2006).

Concentrations in excess of VGES are highlighted by black boxe

NA=Data not analyzed or data unavailable

# Table 2-1
## Historical Groundwater Analytical Data - VOCs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | | Sample Location | MW-12 | | | | | | MW-14 | | | | | | MW-15 | | MW-16 | | | | | | MW-18 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 9/6/2001 | | 4/11/2002 | | 1/10/2006 | | 9/6/2001 | | 4/11/2002 | | 1/10/2006 | | 9/5/2001 | | 9/5/2001 | | 4/11/2002 | | 1/11/2006 | | 9/5/2001 | | 4/11/2002 | |
| **Compound** | **VGES (µg/L)** | Analytical Method | EPA 8260 | | EPA 8021B | | EPA 8260 | | EPA 8260 | | EPA 8021B | | EPA 8260 | | EPA 8260 | | EPA 8260 | | EPA 8021B | | EPA 8260 | | EPA 8260 | | EPA 8021B | |
| Benzene | 5.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 |
| Toluene | 1000.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 |
| Ethylbenzene | 700.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 |
| Xylenes | 10000.0 | µg/L (ppb) | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 |
| 1,3,5-Trimethylbenzene | 350 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 |
| 1,2,4-Trimethylbenzene | 350 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | | 1.2 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 |
| Naphthalene | 20.0 | µg/L (ppb) | U | 1 | U | 2 | U | 5 | U | 1 | U | 2 | U | 5 | U | 1 | U | 1 | U | 2 | U | 5 | U | 1 | U | 2 |
| Methyl-t-Butyl Ether | 40.0 | µg/L (ppb) | U | 1 | U | 2 | U | 5 | U | 1 | U | 2 | U | 5 | U | 1 | U | 1 | U | 2 | U | 5 | U | 1 | U | 2 |
| n-Butylbenzene | - | µg/L (ppb) | U | 1 | | NA | U | 1 | U | 1 | | NA | U | 1 | U | 1 | U | 1 | | NA | U | 1 | U | 1 | | NA |
| sec-Butylbenzene | - | µg/L (ppb) | U | 1 | | NA | U | 1 | U | 1 | | NA | U | 1 | U | 1 | U | 1 | | NA | U | 1 | U | 1 | | NA |
| Isopropylbenzene | - | µg/L (ppb) | U | 1 | | NA | U | 1 | U | 1 | | NA | U | 1 | U | 1 | U | 1 | | NA | U | 1 | U | 1 | | NA |
| n-Propylbenzene | - | µg/L (ppb) | U | 1 | | NA | U | 1 | U | 1 | | NA | U | 1 | U | 1 | U | 1 | | NA | U | 1 | U | 1 | | NA |
| Acetone | 700 | µg/L (ppb) | U | 20 | | NA | U | 10 | U | 20 | | NA | U | 10 | | 27 | U | 20 | | NA | U | 10 | U | 20 | | NA |
| 2-Butanone (MEK) | 4200.0 | µg/L (ppb) | U | 10 | | NA | U | 10 | U | 10 | | NA | U | 10 | | 10 | U | 10 | | NA | U | 10 | U | 10 | | NA |
| Tetrachloroethene (PCE) | 5.0 | µg/L (ppb) | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 | | 2 | | 1.4 | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 |
| Trichloroethene (TCE) | 5.0 | µg/L (ppb) | | 12 | U | 1 | U | 2 | | 30 | | 25.6 | | 37 | U | 1 | | 1.2 | U | 1 | U | 2 | U | 1 | U | 1 |
| cis-1,2-Dichloroethene | 70.0 | µg/L (ppb) | | 21 | | 2.7 | | 5 | | 4.1 | | 3 | | 8 | | 3.6 | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 |
| trans-1,2-Dichloroethene | 100.0 | µg/L (ppb) | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 |
| 1,1-Dichloroethene | 7.0 | µg/L (ppb) | | NA | | NA | U | 1 | | NA | | NA | U | 1 | | NA | | NA | | NA | U | 1 | | NA | | NA |
| 1,1-Dichloroethane | 70.0 | µg/L (ppb) | | 1.1 | | 1.8 | U | 2 | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 |
| 1,1,1-Trichloroethane | 200.0 | µg/L (ppb) | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 |
| Vinyl Chloride | 2.0 | µg/L (ppb) | | 8.8 | | 33.6 | | 12 | U | 1 | U | 2 | U | 2 | U | 1 | U | 1 | U | 2 | U | 2 | U | 1 | U | 2 |
| 1,4-Dichlorobenzene | 75.0 | µg/L (ppb) | U | 1 | U | 2 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 |
| Chloroethane | - | µg/L (ppb) | U | 2 | U | 5 | U | 5 | U | 2 | U | 5 | U | 5 | U | 2 | U | 2 | U | 5 | U | 5 | U | 2 | U | 5 |
| Chloroform | - | µg/L (ppb) | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 | U | 2 | U | 1 | U | 1 | U | 1 | U | 2 | | 1.7 | | 1.2 |

Notes:

All analytical data as reported by JCO (2006).

Concentrations in excess of VGES are highlighted by black boxe

NA=Data not analyzed or data unavailable

# Table 2-1
## Historical Groundwater Analytical Data - VOCs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | | Sample Location | GMW-3 | | | | GMW-3 Dup | | GMW-4 | | | | GMW-5 | | | | SB-4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 4/11/2002 | | 1/10/2006 | | 1/10/2006 | | 4/11/2002 | | 1/10/2006 | | 4/11/2002 | | 1/10/2006 | | 9/6/2001 | | 4/11/2002 | |
| **Compound** | **VGES (µg/L)** | Analytical Method | EPA 8021B | | EPA 8260 | | EPA 8260 | | EPA 8021B | | EPA 8260 | | EPA 8021B | | EPA 8260 | | EPA 8260 | | EPA 8021B | |
| Benzene | 5.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 5 | U | 1 |
| Toluene | 1000.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | | 1 | U | 5 | U | 1 |
| Ethylbenzene | 700.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 5 | U | 1 |
| Xylenes | 10000.0 | µg/L (ppb) | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 10 | U | 2 |
| 1,3,5-Trimethylbenzene | 350 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 5 | U | 1 |
| 1,2,4-Trimethylbenzene | 350 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 5 | U | 1 |
| Naphthalene | 20.0 | µg/L (ppb) | U | 2 | U | 5 | U | 5 | U | 2 | U | 5 | U | 2 | U | 5 | U | 7 | U | 2 |
| Methyl-t-Butyl Ether | 40.0 | µg/L (ppb) | U | 2 | U | 5 | U | 5 | | 7.6 | U | 5 | U | 2 | U | 5 | U | 5 | U | 2 |
| n-Butylbenzene | - | µg/L (ppb) | | NA | U | 1 | U | 1 | | NA | U | 1 | | NA | U | 1 | U | 5 | | NA |
| sec-Butylbenzene | - | µg/L (ppb) | | NA | U | 1 | U | 1 | | NA | U | 1 | | NA | U | 1 | U | 5 | | NA |
| Isopropylbenzene | - | µg/L (ppb) | | NA | U | 1 | U | 1 | | NA | U | 1 | | NA | U | 1 | U | 5 | | NA |
| n-Propylbenzene | - | µg/L (ppb) | | NA | U | 1 | U | 1 | | NA | U | 1 | | NA | U | 1 | U | 5 | | NA |
| Acetone | 700 | µg/L (ppb) | | NA | U | 10 | U | 10 | | NA | U | 10 | | NA | U | 2 | U | 100 | | NA |
| 2-Butanone (MEK) | 4200.0 | µg/L (ppb) | | NA | U | 10 | U | 10 | | NA | U | 10 | | | U | 10 | U | 50 | | NA |
| Tetrachloroethene (PCE) | 5.0 | µg/L (ppb) | U | 1 | U | 2 | U | 2 | U | 1 | U | 2 | U | 1 | U | 2 | U | 5 | U | 1 |
| Trichloroethene (TCE) | 5.0 | µg/L (ppb) | U | 1 | U | 2 | U | 2 | | 1.1 | | 8 | U | 1 | U | 2 | U | 5 | U | 1 |
| cis-1,2-Dichloroethene | 70.0 | µg/L (ppb) | U | 1 | U | 2 | U | 2 | | 4.3 | | 15 | U | 1 | U | 2 | U | 5 | U | 1 |
| trans-1,2-Dichloroethene | 100.0 | µg/L (ppb) | U | 1 | U | 2 | U | 2 | U | 1 | U | 2 | U | 1 | U | 2 | U | 5 | U | 1 |
| 1,1-Dichloroethene | 7.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | | NA | | NA |
| 1,1-Dichloroethane | 70.0 | µg/L (ppb) | U | 1 | U | 2 | U | 2 | U | 1 | U | 2 | U | 1 | U | 2 | U | 5 | U | 1 |
| 1,1,1-Trichloroethane | 200.0 | µg/L (ppb) | U | 1 | U | 2 | U | 2 | U | 1 | U | 2 | U | 1 | U | 2 | U | 5 | U | 1 |
| Vinyl Chloride | 2.0 | µg/L (ppb) | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 5 | U | 2 |
| 1,4-Dichlorobenzene | 75.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 5 | U | 1 |
| Chloroethane | - | µg/L (ppb) | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 10 | U | 5 |
| Chloroform | - | µg/L (ppb) | U | 1 | U | 2 | U | 2 | U | 1 | U | 2 | U | 1 | U | 2 | U | 5 | U | 1 |

Notes:

All analytical data as reported by JCO (2006).

Concentrations in excess of VGES are highlighted by black boxe

NA=Data not analyzed or data unavailable

# Table 2-1
## Historical Groundwater Analytical Data - VOCs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | | Sample Location | Boiler Supply Well | | | | | | | | Restroom Supply Well | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 8/10/2000 | | 4/27/2001 | | 4/24/2002 | | 1/11/2006 | | 8/10/2000 | | 4/27/2001 | | 4/24/2002 | | 1/11/2006 | |
| **Compound** | **VGES (µg/L)** | Analytical Method | EPA 8260 | | EPA 8260 | | EPA 8021B | | EPA 8260 | | EPA 8260 | | EPA 8260 | | EPA 8260 | | EPA 8260 | |
| Benzene | 5.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 |
| Toluene | 1000.0 | µg/L (ppb) | | NA | | NA | U | 1 | U | 1 | | NA | | NA | U | 1 | U | 1 |
| Ethylbenzene | 700.0 | µg/L (ppb) | | NA | | NA | U | 1 | U | 1 | | NA | | NA | U | 1 | U | 1 |
| Xylenes | 10000.0 | µg/L (ppb) | | NA | | NA | U | 2 | U | 2 | | NA | | NA | U | 2 | U | 2 |
| 1,3,5-Trimethylbenzene | 350 | µg/L (ppb) | | NA | | NA | U | 1 | U | 1 | | NA | | NA | U | 1 | U | 1 |
| 1,2,4-Trimethylbenzene | 350 | µg/L (ppb) | | NA | | NA | U | 1 | U | 1 | | NA | | NA | U | 1 | U | 1 |
| Naphthalene | 20.0 | µg/L (ppb) | | NA | | NA | U | 2 | U | 5 | | NA | | NA | U | 2 | U | 5 |
| Methyl-t-Butyl Ether | 40.0 | µg/L (ppb) | | NA | | NA | U | 2 | U | 5 | | NA | | NA | U | 2 | U | 5 |
| n-Butylbenzene | - | µg/L (ppb) | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | U | 1 |
| sec-Butylbenzene | - | µg/L (ppb) | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | U | 1 |
| Isopropylbenzene | - | µg/L (ppb) | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | U | 1 |
| n-Propylbenzene | - | µg/L (ppb) | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | U | 1 |
| Acetone | 700 | µg/L (ppb) | | NA | | NA | | NA | U | 10 | | NA | | NA | | NA | | 10 |
| 2-Butanone (MEK) | 4200.0 | µg/L (ppb) | | NA | | NA | | NA | U | 10 | | NA | | NA | | | U | 10 |
| Tetrachloroethene (PCE) | 5.0 | µg/L (ppb) | U | 2 | U | 2 | U | 1 | U | 2 | U | 2 | U | 2 | U | 1 | U | 2 |
| Trichloroethene (TCE) | 5.0 | µg/L (ppb) | U | 2 | U | 2 | | 2.5 | U | 2 | U | 2 | U | 2 | | 1.6 | U | 2 |
| cis-1,2-Dichloroethene | 70.0 | µg/L (ppb) | | 5 | | 6 | | 3.6 | | 7 | U | 2 | U | 2 | U | 1 | | 7 |
| trans-1,2-Dichloroethene | 100.0 | µg/L (ppb) | | NA | | NA | U | 1 | U | 2 | | NA | | NA | U | 1 | U | 2 |
| 1,1-Dichloroethene | 7.0 | µg/L (ppb) | | NA | | NA | | NA | U | 1 | | NA | | NA | | NA | | 1 |
| 1,1-Dichloroethane | 70.0 | µg/L (ppb) | U | 2 | U | 2 | U | 1 | U | 2 | | 3 | | 3 | | 3.3 | U | 2 |
| 1,1,1-Trichloroethane | 200.0 | µg/L (ppb) | U | 2 | U | 2 | U | 1 | U | 2 | U | 2 | U | 2 | U | 1 | U | 2 |
| Vinyl Chloride | 2.0 | µg/L (ppb) | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 |
| 1,4-Dichlorobenzene | 75.0 | µg/L (ppb) | U | 1 | U | 1 | U | 1 | U | 1 | U | 2 | U | 2 | U | 1 | U | 1 |
| Chloroethane | - | µg/L (ppb) | | NA | | NA | U | 5 | U | 5 | | NA | | NA | U | 5 | U | 5 |
| Chloroform | - | µg/L (ppb) | | NA | | NA | U | 1 | U | 2 | | NA | | NA | U | 1 | U | 2 |

Notes:

All analytical data as reported by JCO (2006).

Concentrations in excess of VGES are highlighted by black boxes

NA=Data not analyzed or data unavailable

# Table 2-2
## Historical Groundwater Analytical Data - SVOCs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | | SB-4 | | MW-2 | | MW-3 | | MW-5 | | MW-6 | | MW-6 | | MW-7 | | MW-11 | | MW-12 | | MW-14 | | MW-15 | | MW-16 | | MW-18 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4/11/2002 | | 4/11/2002 | | 4/11/2002 | | 9/5/2001 | | 9/5/2001 | | 4/11/2002 | | 9/6/2001 | | 9/5/2001 | | 9/6/2001 | | 9/6/2001 | | 9/5/2001 | | 9/5/2001 | | 9/5/2001 | |
| **Compound** | **VGES (µg/L)** | **Griffin** | | **Griffin** | | **Griffin** | | **Marin** | | **Marin** | | **Griffin** | | **Marin** | | **Marin** | | **Marin** | | **Marin** | | **Marin** | | **Marin** | | **Marin** | |
| 1-Methylnaphthalene | - | U | 2.0 | U | 2.0 | U | 2.0 | U | 5.00 | TBQ | 5.00 | | 2.8 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 |
| Naphthalene | 20 | U | 2.0 | U | 2.0 | U | 2.0 | U | 5.00 | U | 5.00 | U | 2.0 | | 6.0 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 |
| Acenaphthene | - | U | 2.0 | U | 2.0 | U | 2.0 | U | 5.00 | | 8.7 | U | 2.0 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 |
| Fluorene | 280 | U | 2.0 | U | 2.0 | U | 2.0 | U | 5.00 | | 9.2 | U | 2.0 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 |
| Phenanthrene | - | U | 2.0 | U | 2.0 | U | 2.0 | U | 5.00 | | 16 | U | 2.0 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 |
| Anthracene | 2100 | U | 2.0 | U | 2.0 | U | 2.0 | U | 5.00 | | 6.3 | U | 2.0 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 |
| Fluoranthene | 280 | U | 2.0 | U | 2.0 | U | 2.0 | U | 5.00 | | 16 | U | 2.0 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 |
| Pyrene | - | U | 2.0 | U | 2.0 | U | 2.0 | U | 5.00 | | 14 | U | 2.0 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 |
| Benzo(a)anthracene | - | U | 2.0 | U | 2.0 | U | 2.0 | U | 5.00 | | 6.1 | U | 2.0 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 |
| Chrysene | - | U | 2.0 | U | 2.0 | U | 2.0 | U | 5.00 | | 5.9 | U | 2.0 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 | U | 5.00 |

Notes:
All analytical data as reported by JCO (2006).
TBQ = Trace below quantitation limit.
NA=not analyzed or data not available

# Table 2-3
## Historical Groundwater Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | | Tank-EL | | GMW-1D | | GMW-3 | | GMW-5 | | MW-2 | | MW-6 | | MW-11 | | MW-14 | | MW-15 | | MW-15 | | MW-16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PCB Mixture** | **VGES (µg/L)** | **1/26/2006** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **7/3/2008** | | **8/28/2008** | | **8/28/2008** | |
| Aroclor 1016 | - | U | 0.5 | U | 0.53 | U | 0.5 | U | 0.52 | U | 0.5 | U | 0.54 | U | 0.53 | U | 0.53 | U | 2.5 | U | 5.8 | U | 0.51 |
| Aroclor 1221 | - | U | 0.5 | U | 0.53 | U | 0.5 | U | 0.52 | U | 0.5 | U | 0.54 | U | 0.53 | U | 0.53 | U | 2.5 | U | 5.8 | U | 0.51 |
| Aroclor 1232 | - | U | 0.5 | U | 0.53 | U | 0.5 | U | 0.52 | U | 0.5 | U | 0.54 | U | 0.53 | U | 0.53 | U | 2.5 | U | 5.8 | U | 0.51 |
| Aroclor 1242 | - | U | 0.5 | U | 0.53 | U | 0.5 | U | 0.52 | U | 0.5 | U | 0.54 | U | 0.53 | U | 0.53 | U | 2.5 | U | 5.8 | U | 0.51 |
| Aroclor 1248 | - | U | 0.5 | U | 0.53 | U | 0.5 | U | 0.52 | U | 0.5 | U | 0.54 | U | 0.53 | U | 0.53 | U | 2.5 | U | 5.8 | U | 0.51 |
| Aroclor 1254 | - | | 0.5 | U | 0.53 | U | 0.5 | U | 0.52 | U | 0.5 | U | 0.54 | U | 0.53 | U | 0.53 | U | 59.4 | | * | U | 0.51 |
| Aroclor 1260 | - | | 0.6 | U | 0.53 | U | 0.5 | U | 0.52 | U | 0.5 | U | 0.54 | U | 0.53 | U | 0.53 | U | 2.5 | | * | U | 0.51 |
| Aroclor 1262 | - | | NA | U | 0.53 | U | 0.5 | U | 0.52 | U | 0.5 | U | 0.54 | U | 0.53 | U | 0.53 | N/A | N/A | U | 5.8 | U | 0.51 |
| Aroclor 1268 | - | | NA | U | 0.53 | U | 0.5 | U | 0.52 | U | 0.5 | U | 0.54 | U | 0.53 | U | 0.53 | U | 2.5 | U | 5.8 | U | 0.51 |
| Total PCBs | 0.5 | | | U | 0.53 | U | 0.5 | U | 0.52 | U | 0.5 | U | 0.54 | U | 0.53 | U | 0.53 | | 59.4 | | 48 | U | 0.51 |

Notes:

All analytical data as reported by JCO (2006).

All concentrations in parts per billion (µg/L)

Concentrations in excess of VGES are highlighted by black boxes with white text

* = Lab could not differentiate between Aroclor 1254 and 1260, total is shown.

# Table 2-4
## Historical Groundwater Analytical Data - Metals
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | | MW-7 | | MW-10 | | MW-10 Field Duplicate | | MW-11 | | MW-11 | | MW-12 | | MW-12 | | MW-12 | | MW-14 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 9/6/2001 | | 1/10/2006 | | 1/10/2006 | | 9/5/2001 | | 4/11/2002 | | 9/6/2001 | | 4/11/2002 | | 1/10/2006 | | 4/11/2002 | |
| **Compound** | **VGES (mg/L)** | Marin | | JCO | | JCO | | Marin | | Griffin | | Marin | | Griffin | | JCO | | Griffin | |
| Antimony | 0.006 | | NA | U | 0.001 | U | 0.001 | | NA | | NA | | NA | | NA | U | 0.001 | | NA |
| Arsenic | 0.010 | | NA | U | 0.001 | U | 0.001 | U | 0.001 | | 0.002 | U | 0.004 | | 0.004 | U | 0.001 | U | 0.002 |
| Beryllium | 0.004 | | NA | U | 0.001 | U | 0.001 | U | 0.001 | U | 0.002 | U | 0.001 | U | 0.002 | U | 0.001 | U | 0.002 |
| Cadmium | 0.005 | U | 0.00125 | U | 0.001 | U | 0.001 | U | 0.00125 | U | 0.003 | | 0.0034 | U | 0.003 | U | 0.001 | U | 0.003 |
| Chromium | 0.10 | | 0.076 | U | 0.001 | U | 0.001 | | 0.0095 | U | 0.01 | | 0.0475 | U | 0.01 | U | 0.001 | U | 0.01 |
| Copper | 1.3 | | 0.0205 | | 0.001 | | 0.001 | | 0.0151 | | 0.021 | | 0.165 | U | 0.01 | U | 0.001 | U | 0.01 |
| Lead | 0.015 | | 0.0227 | U | 0.001 | U | 0.001 | | 0.252 | | 0.005 | | 0.418 | U | 0.002 | | 0.002 | | 0.003 |
| Mercury | 0.002 | | NA | U | 0.0001 | U | 0.0001 | | NA | | NA | | NA | | NA | | 0.0002 | | NA |
| Nickel | 0.100 | | 0.0197 | | 0.001 | U | 0.001 | | 0.0088 | | 0.046 | | 0.0395 | U | 0.02 | | 0.001 | U | 0.02 |
| Selenium | 0.050 | | NA | U | 0.001 | U | 0.001 | | NA | | NA | | NA | | NA | U | 0.001 | | NA |
| Silver | 0.1[1] | | NA | U | 0.001 | U | 0.001 | | NA | | NA | | NA | | NA | U | 0.001 | | NA |
| Thallium | 0.002 | | NA | U | 0.001 | U | 0.001 | | NA | | NA | | NA | | NA | U | 0.001 | | NA |
| Zinc | 5[1] | | 0.0741 | U | 0.005 | U | 0.005 | | 0.0231 | | 0.039 | | 0.215 | U | 0.02 | | 0.006 | U | 0.02 |

Notes:
All analytical data as reported by JCO (2006).
Concentrations in excess of VGES are highlighted in yellow.

# Table 2-4
## Historical Groundwater Analytical Data - Metals
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | | MW-14 | | MW-15 | | MW-15 | | MW-16 | | MW-16 | | MW-18 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/10/2006 | | 9/5/2001 | | 1/11/2006 | | 9/5/2001 | | 1/11/2006 | | 9/5/2001 | |
| **Compound** | **VGES (mg/L)** | JCO | | Marin | | JCO | | Marin | | JCO | | Marin | |
| Antimony | 0.006 | U | 0.001 | | NA | U | 0.001 | | NA | U | 0.001 | U | NA |
| Arsenic | 0.010 | U | 0.001 | U | 0.004 | U | 0.001 | U | 0.004 | U | 0.001 | U | 0.004 |
| Beryllium | 0.004 | U | 0.001 | | 0.002 | U | 0.001 | | 0.0017 | U | 0.001 | U | 0.001 |
| Cadmium | 0.005 | U | 0.001 | | 0.0045 | U | 0.001 | | 0.0014 | U | 0.001 | U | 0.00125 |
| Chromium | 0.10 | U | 0.001 | | 0.0457 | | 0.001 | | 0.0081 | U | 0.001 | | 0.0076 |
| Copper | 1.3 | | 0.001 | | 0.0471 | | 0.002 | | 0.0077 | | 0.001 | | 0.0166 |
| Lead | 0.015 | U | 0.001 | | 0.0214 | | 0.001 | | 0.0147 | | 0.003 | | 0.0058 |
| Mercury | 0.002 | U | 0.0001 | | NA | U | 0.0001 | | NA | U | 0.0001 | | NA |
| Nickel | 0.100 | | 0.002 | | 0.0317 | | 0.003 | | 0.0056 | | 0.001 | | 0.0161 |
| Selenium | 0.050 | U | 0.001 | | NA | U | 0.001 | | NA | U | 0.001 | | NA |
| Silver | 0.1[1] | U | 0.001 | | NA | U | 0.001 | | NA | U | 0.001 | | NA |
| Thallium | 0.002 | U | 0.001 | | NA | U | 0.001 | | NA | U | 0.001 | | NA |
| Zinc | 5[1] | U | 0.005 | | 0.0876 | U | 0.005 | | 0.0212 | U | 0.005 | | 0.037 |

Notes:
All analytical data as reported by JCO (2006).
Concentrations in excess of VGES are highlighted in yellow.

**Table 2-5**
**Historical Soils Analytical Data - VOCs**
**PVDC Building**
**100 River Street**
**Springfield, Vermont**

| | Risk-Based Standards | Soil Borings | | | | | | | | | Tank Removals | | | | Chip Shed | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EPA Region 9 | SB-2 | SB-4 | MW-6 | MW-7 | MW-15 | MW-15 | GMW-3 | GMW-4 | GMW-5 | Gas1-Fill | Kero A | Oil-Bottom | Turp A | C2-Bottom | C6-East | C7-North |
| | PRGs | 0-4' | 4-8' | 4-8' | 12-16' | 6' | 7' | 6' | 12' | 12' | 7' | 4' | 6' | 3' | 6' | 3' | 4' |
| | Indust. | 8/28/2001 | 8/29/2001 | 8/29/2001 | 8/30/2001 | 8/28/2001 | 8/28/2001 | 3/26/2002 | 3/26/2002 | 3/26/2002 | 1/17/2006 | 1/16/2006 | 1/16/2006 | 1/16/2006 | 1/25/2006 | 1/25/2006 | 1/25/2006 |
| **Compound** | | Marin | Marin | Marin | Marin | Marin | Marin | Griffin | Griffin | Griffin | JCO | JCO | JCO | JCO | JCO | JCO | JCO |
| Dichlorodifluoromethane | 310,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 200 | U 200 | U 200 | U 300 | U 200 | U 200 | U 200 |
| Chloromethane | 160,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 200 | U 200 | U 200 | U 300 | U 200 | U 200 | U 200 |
| Vinyl Chloride | 750 | U 49.0 | U 85.0 | 210 | U 4,400 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | U 100 | U 100 | U 100 | U 200 | U 100 | U 100 | U 100 |
| Bromomethane | 13,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 200 | U 200 | U 200 | U 300 | U 200 | U 200 | U 200 |
| Chloroethane | 6,500 | U 98.0 | U 170.0 | 420 | U 8,800 | U 110.0 | U 192.0 | U 75.0 | U 100.0 | U 75.0 | U 200 | U 200 | U 200 | U 300 | U 200 | U 200 | U 200 |
| Trichlorofluoromethane | 2,000,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 200 | U 200 | U 200 | U 200 | U 200 | U 200 | U 200 |
| Diethyl ether | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Acetone | 54,000,000 | U 980 | U 1,700 | U 2,440 | U 88,000 | U 1,100 | U 1,920 | U 300 | U 400 | U 300 | U 2,000 | U 2,000 | U 2,000 | U 3,000 | U 2,000 | U 2,000 | U 2,000 |
| 1,1 Dichloroethene | 410,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Methylene Chloride | 21,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 100 | U 100 | U 100 | U 200 | U 100 | U 100 | U 100 |
| Carbon Disulfide | 720,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 100 | U 100 | U 100 | U 200 | U 100 | U 100 | U 100 |
| Methyl-t-Butyl Ether | 70,000 | U 49.0 | U 85.0 | U 122 | U 4,400 | U 55.0 | U 96.0 | U 30.0 | U 40.0 | U 30.0 | U 100 | U 100 | U 100 | U 200 | U 100 | U 100 | U 100 |
| trans-1,2-Dichloroethene[2] | 230,000 | U 49.0 | U 85.0 | 210 | U 4,400 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,1-Dichloroethane | 1,700,000 | U 49.0 | U 85.0 | 210 | U 4,400 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 2,2-Dichloropropane | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| cis-1,2-Dichloroethene[2] | 150,000 | U 49.0 | U 85.0 | 210 | U 4,400 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 2-Butanone (MEK) | 110,000,000 | U 490 | U 850 | U 1,220 | U 44,000 | U 550 | U 960 | U 300 | U 400 | U 300 | U 500 | U 500 | U 500 | U 800 | U 500 | U 500 | U 500 |
| Bromochloromethane | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Tetrahydrofuran | 21,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 500 | U 500 | U 500 | U 800 | U 500 | U 500 | U 500 |
| Chloroform | 470 | U 49.0 | U 85.0 | 210 | U 4,400 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,1,1-Trichloroethane | 1,200,000 | U 49.0 | U 85.0 | 210 | U 4,400 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Carbon Tetrachloride | 550 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,1-Dichloropropene | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Benzene | 1,400 | 49 | U 85.0 | U 122 | U 4,400 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,2-Dichloroethane | 600 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Trichloroethene | 110 | 730 | U 85.0 | 340 | U 4,400 | U 55.0 | U 96.0 | 24.4 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,2-Dichloropropane | 740 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Dibromomethane | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Bromodichloromethane | 1,800 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 4-Methyl-2-pentanone (MIBK) | 47,000,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 500 | U 500 | U 500 | U 800 | U 500 | U 500 | U 500 |
| cis-1,3-Dichloropropene | 1,800 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Toluene | 520,000 | 420 | U 85.0 | U 122 | 16,300 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | 70 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| trans-1,3-Dichloropropene | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |

Notes: All analytical data as reported by JCO (2006)
Concentrations in excess of VGES are highlighted by black boxes with white text.

# Table 2-5
## Historical Soils Analytical Data - VOCs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | Risk-Based Standards | Soil Borings | | | | | | | | | Tank Removals | | | | Chip Shed | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EPA Region 9 | SB-2 | SB-4 | MW-6 | MW-7 | MW-15 | MW-15 | GMW-3 | GMW-4 | GMW-5 | Gas1-Fill | Kero A | Oil-Bottom | Turp A | C2-Bottom | C6-East | C7-North |
| | PRGs | 0-4' | 4-8' | 4-8' | 12-16' | 6' | 7' | 6' | 12' | 12' | 7' | 4' | 6' | 3' | 6' | 3' | 4' |
| | Indust. | 8/28/2001 | 8/29/2001 | 8/29/2001 | 8/30/2001 | 8/28/2001 | 8/28/2001 | 3/26/2002 | 3/26/2002 | 3/26/2002 | 1/17/2006 | 1/16/2006 | 1/16/2006 | 1/16/2006 | 1/25/2006 | 1/25/2006 | 1/25/2006 |
| **Compound** | | Marin | Marin | Marin | Marin | Marin | Marin | Griffin | Griffin | Griffin | JCO | JCO | JCO | JCO | JCO | JCO | JCO |
| 1,1,2-Trichloroethane | 1,600 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 2-Hexanone (MBK) | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 500 | U 500 | U 500 | U 800 | U 500 | U 500 | U 500 |
| Tetrachloroethene | 1,300 | U 49.0 | U 85.0 | U 122 | U 4,400 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,3-Dichloropropane | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Dibromochloromethane | 2,600 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,2-Dibromoethane | 73 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Chlorobenzene | 530,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,1,1,2-Tetrachloroethane | 7,300 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Ethylbenzene | 400,000 | U 49.0 | U 85.0 | U 122 | 187,500 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Xylene (m,p) | 420,000 | 630 | U 170 | U 244 | 903,700 | U 110 | U 192 | U 30.0 | U 40.0 | U 30.0 | 220 | U 50 | U 50 | U 80 | 60 | U 50 | U 50 |
| Xylene (o) | 420,000 | | | | | | | | | | 140 | U 50 | U 50 | U 80 | 50 | U 50 | U 50 |
| Styrene | 1,700,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Bromoform | 220,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Isopropylbenzene[1] | | U 49.0 | U 85.0 | U 122 | 31,300 | U 55.0 | U 96.0 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Bromobenzene | 92,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,1,2,2-Tetrachloroethane | 930 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,2,3-Trichloropropane | 76 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| n-Propylbenzene | 240,000 | U 49.0 | U 85.0 | U 122 | 118,100 | 100 | 140 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | 60 | U 50 | U 50 |
| 2-Chlorotoluene | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 4-Chlorotoluene | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,3,5-Trimethylbenzene | 70,000 | U 49.0 | U 85.0 | U 122 | 167,000 | 940 | 1,000 | U 15.0 | U 20.0 | U 15.0 | 440 | U 50 | U 50 | U 80 | 470 | U 50 | U 50 |
| tert-Butylbenzene | 390,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,2,4-Trimethylbenzene | 170,000 | 67 | U 85.0 | U 122 | 552,100 | 340 | 360 | U 15.0 | U 20.0 | U 15.0 | 510 | U 50 | U 50 | U 80 | 1,100 | U 50 | U 50 |
| sec-Butylbenzene | 220,000 | U 49.0 | U 85.0 | U 122 | 11,600 | 150 | 180 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | 70 | U 50 | U 50 |
| 1,3-Dichlorobenzene | 600,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 4-isopropyltoluene | | U 49.0 | U 85.0 | U 122 | 7,700 | 260 | 260 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| p-Isopropyltoluene | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | 200 | U 50 | U 50 |
| 1,4-Dichlorobenzene | 7,900 | U 49.0 | U 85.0 | U 122 | 51,800 | 470 | 520 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,2-Dichlorobenzene | 600,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| n-Butylbenzene | 240,000 | U 49.0 | U 85.0 | U 122 | 51,800 | 470 | 520 | U 15.0 | U 20.0 | U 15.0 | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,2-Dibromo-3-Chloropropane | 2,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| 1,2,4-Trichlorobenzene | 220,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Hexachlorobutadiene | 22,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |
| Naphthalene | 190,000 | 290 | U 85.0 | 460 | 83,700 | 160 | 220 | U 75.0 | U 100.0 | U 75.0 | U 300 | U 300 | U 300 | U 500 | 400 | U 300 | U 300 |
| 1,2,3-Trichlorobenzene | | NA | NA | NA | NA | NA | NA | NA | NA | NA | U 50 | U 50 | U 50 | U 80 | U 50 | U 50 | U 50 |

Notes: All analytical data as reported by JCO (2006)
Concentrations in excess of VGES are highlighted by black boxes with white text
NA=Data not analyzed or data unavailable

Notes: All analytical data as reported by JCO (2006)
Concentrations in excess of VGES are highlighted by black boxes with white text.

# Table 2-6
## Historical Soils Analytical Data - SVOCs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | EPA Region 9 PRGs | SB-4 | | MW-6 | | MW-7 | | MW-15 | | C2-Bottom | | C6-East | | C7-North | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4-8' | | 4-8' | | 12-16' | | 6' | | 6' | | 3' | | 4' | |
| | | 8/29/2001 | | 8/29/2001 | | 8/30/2001 | | 8/28/2001 | | 1/25/2006 | | 1/25/2006 | | 1/25/2006 | |
| **Compound** | **Indust.** | Marin | | Marin | | Marin | | Marin | | JCO | | JCO | | JCO | |
| Phenol | 100,000,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 2-Chlorophenol | 240,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 2,4-Dichlorophenol | 1,800,000 | | NA | | NA | | NA | | NA | U | 200 | U | 100 | U | 100 |
| 2,4,5-Trichlorophenol | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 2,4,6-Trichlorophenol | 62,000,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Pentachlorophenol | 9,000 | | NA | | NA | | NA | | NA | U | 1000 | U | 1000 | U | 1000 |
| 2-Nitrophenol | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 4-Nitrophenol | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 2,4-Dinitrophenol | 1,200,000 | | NA | | NA | | NA | | NA | U | 1000 | U | 1000 | U | 1000 |
| 2-Methylphenol | 31,000,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 3/4-Methylphenol | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 2,4-Dimethylphenol | 12,000,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 4-Chloro-3-methylphenol | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 4,6-Dinitro-2-methylphenol | | | NA | | NA | | NA | | NA | U | 1000 | U | 1000 | U | 1000 |
| Benzoic Acid | 100,000,000 | | NA | | NA | | NA | | NA | U | 1000 | U | 1000 | U | 1000 |
| N-Nitrosodimethylamine | 34 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| N-Nitroso-di-n-propylamine | 250 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| N-nitrosodiphenylamine (1) | 350,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| bis (2-Chloroethyl) Ether | 550 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| bis (2-chloroisopropyl)ether | 7,400 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| bis (2-Chloroethoxy) methane | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 1,3-Dichlorobenzene | 63,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 1,4-Dichlorobenzene | 7,900 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 1,2-Dichlorobenzene | 370,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 1,2,4-Trichlorobenzene | 3,000,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 2-Chloronaphthalene | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 4-Chlorophenyl-phenylether | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 4-Bromophenyl-phenylether | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Hexachloroethane | 120,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Hexachlorobutadiene | 22,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Hexachlorocyclopentadiene | 3,700,000 | | NA | | NA | | NA | | NA | U | 1000 | U | 1000 | U | 1000 |
| Hexachlorobenzene | 1,100 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 4-Chloroaniline | 2,500,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 2-Nitroaniline | 18,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 3-Nitroaniline | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 4-Nitroaniline | | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |

Notes:
All analytical data as reported by JCO (2006).
Concentrations in excess of PRGs have black boxes with white text.
NA= Not analyzed or data not available.

# Table 2-6
## Historical Soils Analytical Data - SVOCs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | EPA Region 9 PRGs | SB-4 | | MW-6 | | MW-7 | | MW-15 | | C2-Bottom | | C6-East | | C7-North | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4-8' | | 4-8' | | 12-16' | | 6' | | 6' | | 3' | | 4' | |
| | | 8/29/2001 | | 8/29/2001 | | 8/30/2001 | | 8/28/2001 | | 1/25/2006 | | 1/25/2006 | | 1/25/2006 | |
| **Compound** | **Indust.** | Marin | | Marin | | Marin | | Marin | | JCO | | JCO | | JCO | |
| Benzyl Alcohol | 100,000,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Nitrobenzene | 100,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Isophorone | 1,800,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 2,4-Dinitrotoluene | 1,200,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| 2,6-Dinitrotoluene | 620,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Benzidine | 7.5 | | NA | | NA | | NA | | NA | U | 400 | U | 400 | U | 400 |
| 3,3'-Dichlorobenzidene | 3,800 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Pyridine | 620,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Azobenzene | 16,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Carbazole | 86,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Dimethylphthalate | 100,000,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Diethylphthalate | 100,000,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Di-n-butylphthalate | | | NA | | NA | | NA | | NA | U | 500 | U | 500 | U | 500 |
| Butylbenzylphthalate | 100,000,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| bis(2-Ethylhexyl)phthalate | 120,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Di-n-octylphthalate | 25000000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Dibenzofuran | 3,100,000 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Naphthalene | 190,000 | U | 202 | | 710 | | 10000 | U | 190 | | 800 | U | 200 | U | 200 |
| 1-Methylnaphthalene | | U | 202 | | 1400 | | 5000 | U | 190 | | NA | | NA | | NA |
| 2-Methylnaphthalene | | U | 202 | | 1200 | | 2200 | U | 190 | | 1200 | U | 200 | U | 200 |
| Acenaphthylene | | U | 202 | | 630 | U | 735 | U | 190 | U | 200 | U | 200 | U | 200 |
| Acenaphthene | 29,000 | U | 202 | | 1600 | U | 735 | U | 190 | U | 200 | U | 200 | U | 200 |
| Fluorene | 26,000 | U | 202 | | 2500 | U | 735 | U | 190 | U | 200 | U | 200 | U | 200 |
| Phenanthrene | | U | 202 | | 18000 | U | 735 | U | 190 | | 4000 | | 300 | | 400 |
| Anthracene | 100,000 | U | 202 | | 3600 | U | 735 | U | 190 | U | 200 | U | 200 | U | 200 |
| Fluoranthene | 22,000 | U | 202 | | 21000 | U | 735 | U | 190 | | 1900 | | 400 | | 900 |
| Pyrene | 29,000 | U | 202 | | 17000 | U | 735 | U | 190 | | 5300 | | 400 | | 700 |
| Benzo(a)anthracene | 2,100 | U | 202 | | **8400** | U | 735 | U | 190 | | 1700 | | 200 | | 400 |
| Chrysene | 610,000 | U | 202 | | 8600 | U | 735 | U | 190 | | 2400 | | 200 | | 300 |
| Benzo(b)fluoranthene | 2,100 | U | 202 | | **11000** | U | 735 | U | 190 | | 1900 | | 300 | | 300 |
| Benzo(k)fluoranthene | 21,000 | U | 202 | | 4500 | U | 735 | U | 190 | | 700 | U | 200 | U | 200 |
| Benzo(a)pyrene | 210 | U | 202 | | **9300** | U | 735 | U | 190 | | **1200** | | 200 | | **300** |
| Indeno(1,2,3-cd)pyrene | 2,100 | U | 202 | | **5300** | U | 735 | U | 190 | | 400 | U | 200 | U | 200 |
| Dibenz(a,h)anthracene | 210 | | NA | | NA | | NA | | NA | U | 200 | U | 200 | U | 200 |
| Benzo(g,h,i)perylene | | U | 202 | | 5300 | U | 735 | U | 190 | | 500 | U | 200 | U | 200 |

Notes:
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Concentrations in excess of PRGs have black boxes with white text.
NA= Not analyzed or data not available.

**Table 2-7**
**Historical Soils Analytical Data - PCBs**
**PVDC Building**
**100 River Street**
**Springfield, Vermont**

| | EPA Region 9 PRGs (µg/kg) | SS-01 | SS-02 | SS-03 | SS-04 | SS-09 | SS-10 | SS-11 | SS-12 | SS-13 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Compound** | **Industrial** | **8/29/1999** | **8/29/1999** | **8/29/1999** | **8/29/1999** | **8/29/1999** | **8/29/1999** | **8/29/1999** | **8/29/1999** | **8/29/1999** |
| Aroclor 1016 | 21,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1221 | 740 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1231 | 740 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1242 | 740 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1248 | 740 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1254 | 740 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1260 | 740 | 170 | 1900 | 30000 | 8000 | 37000 | 290 | 140 | 1000 | 640 |
| Aroclor 1268 | | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total PCBs | 740 | 170 | 1900 | 30000 | 8000 | 37000 | 290 | 140 | 1000 | 640 |

| | EPA Region 9 PRGs (µg/kg) | SS-14 | SS-15 | SS-16 | SS-17 | SS-18 | SS-19 | SS-1 | SS-1 Dup | SS-2 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Compound** | **Industrial** | **8/29/1999** | **8/29/1999** | **8/29/1999** | **8/29/1999** | **8/29/1999** | **8/29/1999** | **9/7/2001** | **9/7/2001** | **9/7/2001** |
| Aroclor 1016 | 21,000 | NA | NA | NA | NA | NA | NA | U 35 | U 32 | U 30 |
| Aroclor 1221 | 740 | NA | NA | NA | NA | NA | NA | U 35 | U 32 | U 30 |
| Aroclor 1231 | 740 | NA | NA | NA | NA | NA | NA | U 35 | U 32 | U 30 |
| Aroclor 1242 | 740 | NA | NA | NA | NA | NA | NA | U 35 | U 32 | U 30 |
| Aroclor 1248 | 740 | NA | NA | NA | NA | NA | NA | U 35 | U 32 | U 30 |
| Aroclor 1254 | 740 | NA | NA | NA | NA | NA | NA | U 35 | U 32 | U 30 |
| Aroclor 1260 | 740 | 1700 | 990 | 61 | 66 | 87 | 960 | 130 | U 32 | 220 |
| Aroclor 1268 | | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total PCBs | 740 | 1700 | 990 | 61 | 66 | 87 | 960 | 130 | U 32 | 220 |

Notes:
All analytical data as reported by JCO (2006).
Concentrations in excess of PRGs are highlighted by black boxes with white text.
NA=Not analyzed or data not available.

**Table 2-7**
**Historical Soils Analytical Data - PCBs**
**PVDC Building**
**100 River Street**
**Springfield, Vermont**

| | EPA Region 9 PRGs (µg/kg) | SS-3 | | SS-4 | | SS-G1 | | SS-G2 | | SS-G3 | | SS-G4 | | SS-G5 | | SS-G6 | | SS-G7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Compound** | **Industrial** | **9/7/2001** | | **9/7/2001** | | **3/20/2002** | | **3/20/2002** | | **3/20/2002** | | **3/20/2002** | | **3/20/2002** | | **3/20/2002** | | **3/20/2002** | |
| Aroclor 1016 | 21,000 | U | 29 | U | 120 | U | 90 | U | 120 | U | 80 | U | 85 | U | 75 | U | 60 | U | 45 |
| Aroclor 1221 | 740 | U | 29 | U | 120 | U | 90 | U | 120 | U | 80 | U | 85 | U | 75 | U | 60 | U | 45 |
| Aroclor 1231 | 740 | U | 29 | U | 120 | U | 90 | U | 120 | U | 80 | U | 85 | U | 75 | U | 60 | U | 45 |
| Aroclor 1242 | 740 | U | 29 | U | 120 | U | 90 | U | 120 | U | 80 | U | 85 | U | 75 | U | 60 | U | 45 |
| Aroclor 1248 | 740 | U | 29 | U | 120 | U | 90 | U | 120 | U | 80 | U | 85 | U | 75 | U | 60 | U | 45 |
| Aroclor 1254 | 740 | U | 29 | U | 120 | | 3400 | | 2530 | | 609 | | 162 | | 2250 | | 1060 | | 1550 |
| Aroclor 1260 | 740 | | 220 | U | 120 | U | 90 | U | 120 | U | 80 | U | 85 | U | 75 | U | 60 | U | 45 |
| Aroclor 1268 | | | NA | | NA | U | 90 | U | 120 | U | 80 | U | 85 | U | 75 | U | 60 | U | 45 |
| Total PCBs | 740 | | 220 | U | 120 | U | 90 | U | 120 | U | 80 | U | 85 | U | 75 | U | 60 | U | 45 |

| | EPA Region 9 PRGs (µg/kg) | T1-2 0-17" | | T1-3 0-3" | | T1-4 3-17" | | T1-5 0-3" | | T1-6 0-3" | | T1-7 32-46" | | T2-1 0-3" | | T2-2 0-3" | | T2-3 0-3" | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Compound** | **Industrial** | **1/9/2006** | | **1/9/2006** | | **1/9/2006** | | **1/9/2006** | | **1/9/2006** | | **1/9/2006** | | **1/12/2006** | | **1/12/2006** | | **1/12/2006** | |
| Aroclor 1016 | 21,000 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 |
| Aroclor 1221 | 740 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 |
| Aroclor 1231 | 740 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 |
| Aroclor 1242 | 740 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 |
| Aroclor 1248 | 740 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 |
| Aroclor 1254 | 740 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 |
| Aroclor 1260 | 740 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 |
| Aroclor 1268 | | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA |
| Total PCBs | 740 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 |

Notes:
All analytical data as reported by JCO (2006).
Concentrations in excess of PRGs are highlighted by black boxes with white text.
NA=Not analyzed or data not available.

**Table 2-7**
**Historical Soils Analytical Data - PCBs**
**PVDC Building**
**100 River Street**
**Springfield, Vermont**

| | EPA Region 9 PRGs (µg/kg) | T2-4 0-3" | | T2-5 0-3" | | T2-6 0-3" | |
|---|---|---|---|---|---|---|---|
| **Compound** | **Industrial** | **1/12/2006** | | **1/12/2006** | | **1/12/2006** | |
| Aroclor 1016 | 21,000 | U | 100 | U | 100 | U | 100 |
| Aroclor 1221 | 740 | U | 100 | U | 100 | U | 100 |
| Aroclor 1231 | 740 | U | 100 | U | 100 | U | 100 |
| Aroclor 1242 | 740 | U | 100 | U | 100 | U | 100 |
| Aroclor 1248 | 740 | U | 100 | U | 100 | U | 100 |
| Aroclor 1254 | 740 | U | 100 | U | 100 | U | 100 |
| Aroclor 1260 | 740 | U | 100 | U | 100 | U | 100 |
| Aroclor 1268 | | | NA | | NA | | NA |
| Total PCBs | 740 | U | 100 | U | 100 | U | 100 |

Notes:
All analytical data as reported by JCO (2006).
Concentrations in excess of PRGs are highlighted by black boxes with white text.
NA=Not analyzed or data not available.

# Table 2-7
## Historical Soils Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | **Chip Shed Dry Well (Concentration >0.22 bold)** | | **Chip Shed Soil Borings (Concentration >0.22 bold)** | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Dry Well** | | **B1** | | **B1** | | **B1** | | **B2** | | **B3** | | **B3** | | **B3** | | **B3** | | **B4** | |
| Depth: | **0-2"** | | **0-0.5'** | | **2'** | | **4'** | | **0-0.5'** | | **0-0.5'** | | **2'** | | **4'** | | **6'** | | **0-0.5'** | |
| **Compound** | **8/25/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | |
| PCB-1016 | U | 0.32 | U | 0.17 | U | 0.2 | U | 0.19 | U | 0.17 | U | 0.38 | U | 3.7 | U | 3.7 | U | 0.35 | U | 0.34 |
| PCB-1221 | U | 0.32 | U | 0.17 | U | 0.2 | U | 0.19 | U | 0.17 | U | 0.38 | U | 3.7 | U | 3.7 | U | 0.35 | U | 0.34 |
| PCB-1232 | U | 0.32 | U | 0.17 | U | 0.2 | U | 0.19 | U | 0.17 | U | 0.38 | U | 3.7 | U | 3.7 | U | 0.35 | U | 0.34 |
| PCB-1242 | U | 0.32 | U | 0.17 | U | 0.2 | U | 0.19 | U | 0.17 | U | 0.38 | U | 3.7 | U | 3.7 | U | 0.35 | U | 0.34 |
| PCB-1248 | U | 0.32 | U | 0.17 | U | 0.2 | U | 0.19 | U | 0.17 | U | 0.38 | U | 3.7 | U | 3.7 | U | 0.35 | U | 0.34 |
| PCB-1254 | | * | U | 0.17 | U | 0.2 | U | 0.19 | U | 0.17 | | * | | * | | * | | * | | * |
| PCB-1260 | | * | U | 0.17 | U | 0.2 | U | 0.19 | U | 0.17 | | * | | * | | * | | * | | * |
| PCB-1262 | U | 0.32 | U | 0.17 | U | 0.2 | U | 0.19 | U | 0.17 | U | 0.38 | U | 3.7 | U | 3.7 | U | 0.35 | U | 0.34 |
| PCB-1268 | U | 0.32 | U | 0.17 | U | 0.2 | U | 0.19 | U | 0.17 | U | 0.38 | U | 3.7 | U | 3.7 | U | 0.35 | U | 0.34 |
| Total PCBs | 0.57 | | 0 | | 0 | | 0 | | 0 | | **2.8** | | **12** | | **33** | | **1** | | **0.64** | |

| | **Chip Shed Soil Borings (Concentration >0.22 bold)** | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **B4** | | **B5** | | **B5** | | **B6** | | **B7** | | **Dup-1 (Dup of B7 (0-0.5))** | | **RPD** | | **B7** | | **B7** | | **B7** | |
| Depth: | **2'** | | **0-0.5'** | | **4'** | | **6'** | | **0-0.5'** | | **0-0.5'** | | ***RPD*** | | **2'** | | **4'** | | **6'** | |
| **Compound** | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | |
| PCB-1016 | Not analyzed | | U | 0.35 | U | 0.37 | U | 0.36 | U | 0.37 | U | 0.36 | | *0%* | U | 0.19 | U | 0.2 | U | 0.36 |
| PCB-1221 | Not analyzed | | U | 0.35 | U | 0.37 | U | 0.36 | U | 0.37 | U | 0.36 | | *0%* | U | 0.19 | U | 0.2 | U | 0.36 |
| PCB-1232 | Not analyzed | | U | 0.35 | U | 0.37 | U | 0.36 | U | 0.37 | U | 0.36 | | *0%* | U | 0.19 | U | 0.2 | U | 0.36 |
| PCB-1242 | Not analyzed | | U | 0.35 | U | 0.37 | U | 0.36 | U | 0.37 | U | 0.36 | | *0%* | U | 0.19 | U | 0.2 | U | 0.36 |
| PCB-1248 | Not analyzed | | U | 0.35 | U | 0.37 | U | 0.36 | U | 0.37 | U | 0.36 | | *0%* | U | 0.19 | U | 0.2 | U | 0.36 |
| PCB-1254 | Not analyzed | | | * | | * | | * | | * | | * | | | U | 0.19 | U | 0.2 | | * |
| PCB-1260 | Not analyzed | | | * | | * | | * | | * | | * | | | U | 0.19 | U | 0.2 | | * |
| PCB-1262 | Not analyzed | | U | 0.35 | U | 0.37 | U | 0.36 | U | 0.37 | U | 0.36 | | *0%* | U | 0.19 | U | 0.2 | U | 0.36 |
| PCB-1268 | Not analyzed | | U | 0.35 | U | 0.37 | U | 0.36 | U | 0.37 | U | 0.36 | | *0%* | U | 0.19 | U | 0.2 | U | 0.36 |
| Total PCBs | Not analyzed | | **0.77** | | **1.9** | | **0.67** | | **2** | | **4.2** | | 71% | | 0 | | 0 | | **0.76** | |

Notes:

All analytical data as reported by JCO (2006).

Concentrations in excess of PRGs are highlighted by black boxes with white text.

NA=Not analyzed or data not available.

# Table 2-7
## Historical Soils Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| | Chip Shed Soil Borings (Concentration >0.22 bold) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Dup-2 (Dup of B7(6'))** | | **RPD** | | **B8** | | **B8** | | **B8** | | **B9** | | **Dup-3 (Dup of B9)** | | **RPD** | | **B9** | | **B9** | |
| Depth: | **6'** | | | | **0-0.5'** | | **2'** | | **4'** | | **0-0.5'** | | **0-0.5'** | | | | **4'** | | **6'** | |
| **Compound** | **8/28/2008** | | | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | | | **8/28/2008** | | **8/28/2008** | |
| PCB-1016 | U | 0.35 | | *0%* | U | 3.5 | U | 0.2 | U | 0.2 | U | 0.34 | U | 0.37 | | 0% | U | 0.19 | U | 0.35 |
| PCB-1221 | U | 0.35 | | *0%* | U | 3.5 | U | 0.2 | U | 0.2 | U | 0.34 | U | 0.37 | | 0% | U | 0.19 | U | 0.35 |
| PCB-1232 | U | 0.35 | | *0%* | U | 3.5 | U | 0.2 | U | 0.2 | U | 0.34 | U | 0.37 | | 0% | U | 0.19 | U | 0.35 |
| PCB-1242 | U | 0.35 | | *0%* | U | 3.5 | U | 0.2 | U | 0.2 | U | 0.34 | U | 0.37 | | 0% | U | 0.19 | U | 0.35 |
| PCB-1248 | U | 0.35 | | *0%* | U | 3.5 | U | 0.2 | U | 0.2 | U | 0.34 | U | 0.37 | | 0% | U | 0.19 | U | 0.35 |
| PCB-1254 | | * | | | | * | U | 0.2 | U | 0.2 | | * | | * | | | U | 0.19 | | * |
| PCB-1260 | | * | | | | * | U | 0.2 | U | 0.2 | | * | | * | | | U | 0.19 | | * |
| PCB-1262 | U | 0.35 | | *0%* | U | 3.5 | U | 0.2 | U | 0.2 | U | 0.34 | U | 0.37 | | 0% | U | 0.19 | U | 0.35 |
| PCB-1268 | U | 0.35 | | *0%* | U | 3.5 | U | 0.2 | U | 0.2 | U | 0.34 | U | 0.37 | | 0% | U | 0.19 | U | 0.35 |
| Total PCBs | 0.77 | | *1%* | | **29** | | 0 | | 0 | | 1.3 | | 0.77 | | 51% | | 0 | | **1.5** | |

| | Chip Shed Soil Borings (Concentration >0.22 bold) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **B10** | | **B10** | | **B11** | | **B11** | | **B12** | | **B12** | | **B13** | | **B13** | | **B14** | | **B15** | |
| Depth: | **0-0.5'** | | **4'** | | **0-0.5'** | | **4'** | | **0-0.5'** | | **4'** | | **0-0.5'** | | **4'** | | **0-0.5'** | | **0-0.5'** | |
| **Compound** | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | |
| PCB-1016 | U | 0.17 | U | 0.18 | U | 0.36 | U | 0.18 | U | 0.18 | U | 0.19 | U | 0.17 | U | 0.19 | U | 0.18 | U | 0.18 |
| PCB-1221 | U | 0.17 | U | 0.18 | U | 0.36 | U | 0.18 | U | 0.18 | U | 0.19 | U | 0.17 | U | 0.19 | U | 0.18 | U | 0.18 |
| PCB-1232 | U | 0.17 | U | 0.18 | U | 0.36 | U | 0.18 | U | 0.18 | U | 0.19 | U | 0.17 | U | 0.19 | U | 0.18 | U | 0.18 |
| PCB-1242 | U | 0.17 | U | 0.18 | U | 0.36 | U | 0.18 | U | 0.18 | U | 0.19 | U | 0.17 | U | 0.19 | U | 0.18 | U | 0.18 |
| PCB-1248 | U | 0.17 | U | 0.18 | U | 0.36 | U | 0.18 | U | 0.18 | U | 0.19 | U | 0.17 | U | 0.19 | U | 0.18 | U | 0.18 |
| PCB-1254 | U | 0.17 | U | 0.18 | | * | U | 0.18 | U | 0.18 | U | 0.19 | U | 0.17 | U | 0.19 | U | 0.18 | U | 0.18 |
| PCB-1260 | U | 0.17 | U | 0.18 | | * | U | 0.18 | U | 0.18 | U | 0.19 | U | 0.17 | U | 0.19 | U | 0.18 | U | 0.18 |
| PCB-1262 | U | 0.17 | U | 0.18 | U | 0.36 | U | 0.18 | U | 0.18 | U | 0.19 | U | 0.17 | U | 0.19 | U | 0.18 | U | 0.18 |
| PCB-1268 | U | 0.17 | U | 0.18 | U | 0.36 | U | 0.18 | U | 0.18 | U | 0.19 | U | 0.17 | U | 0.19 | U | 0.18 | U | 0.18 |
| Total PCBs | 0 | | 0 | | **0.85** | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | |

Notes:
All analytical data as reported by JCO (2006).
Concentrations in excess of PRGs are highlighted by black boxes with white text.
NA=Not analyzed or data not available.

**Table 2-7**
**Historical Soils Analytical Data - PCBs**
**PVDC Building**
**100 River Street**
**Springfield, Vermont**

| | **Chip Shed Soil Borings (Concentration >0.22 bold)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Dup-4 (Dup of B15)** | | **RPD** | | **B15** | | **B15** | **Dup-5 (Dup of B15 (7.5'))** | | **RPD** | **B16** | | **B16** | | **B16** | |
| Depth: | **0-0.5'** | | | | **4'** | | **7.5'** | **7.5'** | | | **0-0.5'** | | **4'** | | **6'** | |
| **Compound** | **8/28/2008** | | | | **8/28/2008** | | **8/28/2008** | **8/28/2008** | | | **8/28/2008** | | **8/28/2008** | | **8/28/2008** | |
| PCB-1016 | U | 0.17 | | 0% | U | 0.2 | Not analyzed | U | 0.19 | 0% | U | 0.17 | U | 0.39 | U | 0.35 |
| PCB-1221 | U | 0.17 | | 0% | U | 0.2 | | U | 0.19 | 0% | U | 0.17 | U | 0.39 | U | 0.35 |
| PCB-1232 | U | 0.17 | | 0% | U | 0.2 | | U | 0.19 | 0% | U | 0.17 | U | 0.39 | U | 0.35 |
| PCB-1242 | U | 0.17 | | 0% | U | 0.2 | | U | 0.19 | 0% | U | 0.17 | U | 0.39 | U | 0.35 |
| PCB-1248 | U | 0.17 | | 0% | U | 0.2 | | U | 0.19 | 0% | U | 0.17 | U | 0.39 | U | 0.35 |
| PCB-1254 | U | 0.17 | | 0% | U | 0.2 | | U | 0.19 | 0% | U | 0.17 | | * | | * |
| PCB-1260 | U | 0.17 | | 0% | U | 0.2 | | U | 0.19 | 0% | U | 0.17 | | * | | * |
| PCB-1262 | U | 0.17 | | 0% | U | 0.2 | | U | 0.19 | 0% | U | 0.17 | U | 0.39 | U | 0.35 |
| PCB-1268 | U | 0.17 | | 0% | U | 0.2 | | U | 0.19 | 0% | U | 0.17 | U | 0.39 | U | 0.35 |
| Total PCBs | 0 | | 0% | | 0 | | | 0 | | 0% | 0 | | **1.3** | | **3** | |

| | Chip Shed Soil Borings (Concentration >0.22 bold) | | | | | | | | | | Cutting Oil Recycle Tank Sludge (Concentration >0.22 bold) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B16 | | B17 | | B17 | | B17 | | B17 | | RC TANK SL | |
| Depth: | 8' | | 0-0.5" | | 4' | | 6' | | 7.5' | | | |
| Compound | 8/28/2008 | | 8/28/2008 | | 8/28/2008 | | 8/28/2008 | | 8/28/2008 | | 8/25/2008 | |
| PCB-1016 | U | 0.35 | U | 0.19 | U | 0.37 | U | 0.4 | U | 0.19 | U | 6.6 |
| PCB-1221 | U | 0.35 | U | 0.19 | U | 0.37 | U | 0.4 | U | 0.19 | U | 6.6 |
| PCB-1232 | U | 0.35 | U | 0.19 | U | 0.37 | U | 0.4 | U | 0.19 | U | 6.6 |
| PCB-1242 | U | 0.35 | U | 0.19 | U | 0.37 | U | 0.4 | U | 0.19 | U | 6.6 |
| PCB-1248 | U | 0.35 | U | 0.19 | U | 0.37 | U | 0.4 | U | 0.19 | U | 6.6 |
| PCB-1254 | | * | U | 0.19 | | * | | * | U | 0.19 | | * |
| PCB-1260 | | * | U | 0.19 | | * | | * | | 0.21 | | * |
| PCB-1262 | U | 0.35 | U | 0.19 | U | 0.37 | U | 0.4 | U | 0.19 | U | 6.6 |
| PCB-1268 | U | 0.35 | U | 0.19 | U | 0.37 | U | 0.4 | U | 0.19 | U | 6.6 |
| Total PCBs | **3.7** | | 0 | | **2.4** | | **2.2** | | 0.2 | | 23 | |

Notes:
All analytical data as reported by JCO (2006).
Concentrations in excess of PRGs are highlighted by black boxes with white text.
NA=Not analyzed or data not available.

# Table 2-8
## Concrete Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***CONCRETE- mg/kg (ppm)*** | | | | | | | | | | | | | | | | | | | | | |
| ***Boiler Room*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics*** ) | | | | | | | | | | | | | | | | | | | | | |
| Boiler E | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.66 |
| Boiler-Mid | 0-0.5" | 8/25/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.4** |
| Boiler-W | 0-0.5" | 8/25/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 0.8 |
| ***T1 Electrical Room*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics*** ) | | | | | | | | | | | | | | | | | | | | | |
| T1-F-01 | 0-0.5" | 7/3/2008 | U | 1.00 | U | 1.00 | U | 1.00 | U | 1.00 | U | 1.00 | U | 1.00 | | 2.51 | | | U | 1.00 | **2.51** |
| T1-F-02 | 0-0.5" | 7/3/2008 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | | 0.1 | | | U | 0.10 | 0.1 |
| T1-F-03 | 0-0.5" | 7/3/2008 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | | 88.8 | | | U | 10 | ***88.8*** |
| T1-F-04 | 0-0.5" | 7/3/2008 | U | 2.00 | U | 2.00 | U | 2.00 | U | 2.00 | U | 2.00 | U | 2.00 | | 9.35 | | | U | 2.00 | **9.35** |
| T1-F-05 | 0-0.5" | 7/3/2008 | U | 0.50 | U | 0.50 | U | 0.50 | U | 0.50 | U | 0.50 | U | 0.50 | | 1.8 | | | U | 0.50 | **1.8** |
| T1-F-06 | 0-0.5" | 7/3/2008 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | | 1.08 | | | U | 0.10 | **1.08** |
| T1-W-01 | 0-0.5" | 7/3/2008 | U | 0.50 | U | 0.50 | U | 0.50 | U | 0.50 | U | 0.50 | U | 0.50 | | 1.11 | | | U | 0.50 | **1.11** |
| T1-W-02 | 0-0.5" | 7/3/2008 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | | 0.1 | | | U | 0.10 | 0.1 |
| T1-W-03 | 0-0.5" | 7/3/2008 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | | 0.131 | | | U | 0.10 | 0.131 |
| T1-W-04 | 0-0.5" | 7/3/2008 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | | 0.1 | | | U | 0.10 | 0.1 |
| T1-W-05 | 0-0.5" | 7/3/2008 | U | 2.00 | U | 2.00 | U | 2.00 | U | 2.00 | U | 2.00 | U | 2.00 | | 3.92 | | | U | 2.00 | **3.92** |
| T1-W-06 | 0-0.5" | 7/3/2008 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | | 54.9 | | | U | 10 | ***54.9*** |
| T1-W-07 | 0-0.5" | 7/3/2008 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | | 48.2 | | | U | 10 | ***48.2*** |
| T1-W-08 | 0-0.5" | 7/3/2008 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | | 0.1 | | | U | 0.10 | 0.1 |
| T1-W-09 | 0-0.5" | 7/3/2008 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | | 0.338 | U | 0.191 | | | U | 0.10 | 0.338 |
| T1-W-10 | 0-0.5" | 7/3/2008 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | | 0.10 | | 0.1 | | | U | 0.10 | 0.2 |
| ***Chip Shed Bay 1*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics*** ) | | | | | | | | | | | | | | | | | | | | | |
| CS-Bay1-F1 | 0-0.5" | 8/26/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 0.82 |
| CS-Bay1-F2 | 0-0.5" | 8/26/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **2.1** |
| CS-Bay1-UF1 | 0-0.5" | 8/26/2008 | U | 9.6 | U | 9.6 | U | 9.6 | U | 9.6 | U | 9.6 | | * | | * | U | 9.6 | U | 9.6 | **21** |
| CS-Bay1-W-B1 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| CS-Bay1-W-B2 | 0-0.5" | 8/26/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 0.47 |
| CS-Bay1-W-B3 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| CS-Bay1-W-B4 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.67 |
| CS-Bay1-W-B5 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | 0.16 | U | 0.33 | U | 0.33 | 0.16 |
| CS-Bay1-W-U1 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| CS-Bay1-W-U2 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| CS-Bay1-W-U3 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| CS-Bay1-W-U4 | 0-0.5" | 8/26/2008 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | 0 |
| CS-Bay1-W-U5 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| CS-Bay1-W-U6 | 0-0.5" | 8/26/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | 0 |
| ***Chip Shed Bay 2*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics*** ) | | | | | | | | | | | | | | | | | | | | | |
| CS-Bay2-F1 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.4** |
| CS-Bay2-F2 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1 |
| CS-Bay2-UF1 | 0-0.5" | 8/26/2008 | U | 9.9 | U | 9.9 | U | 9.9 | U | 9.9 | U | 9.9 | | * | | * | U | 9.9 | U | 9.9 | ***53*** |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

# Table 2-8
## Concrete Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***CONCRETE- mg/kg (ppm)*** | | | | | | | | | | | | | | | | | | | | | |
| CS-Bay2-W-B1 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.2** |
| CS-Bay2-W-B2 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.7** |
| CS-Bay2-W-B3 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.3** |
| CS-Bay2-W-B4 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2** |
| CS-Bay2-W-B5 | 0-0.5" | 8/26/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **2** |
| CS-Bay2-W-U1 | 0-0.5" | 8/25/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.1** |
| CS-Bay2-W-U2 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.9** |
| CS-Bay2-W-U3 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.85 |
| CS-Bay2-W-U4 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.3** |
| CS-Bay2-W-U5 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.3** |
| CS-Bay2-W-U6 | 0-0.5" | 8/26/2008 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | 0 |
| ***Chip Shed Bay 3*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics***) | | | | | | | | | | | | | | | | | | | | | |
| CS-Bay3-F1 | 0-0.5" | 8/26/2008 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | | * | | * | U | 1 | U | 1 | **2.2** |
| CS-Bay3-F2 | 0-0.5" | 8/26/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | 10 | U | 3.3 | U | 3.3 | U | 3.3 | **10** |
| CS-Bay3-UF1 | 0-0.5" | 8/26/2008 | U | 8.4 | U | 8.4 | U | 8.4 | U | 8.4 | U | 8.4 | | * | | * | U | 8.4 | U | 8.4 | ***96*** |
| CS-Bay3-W-B1 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | 2.4 | U | 0.33 | U | 0.33 | U | 0.33 | **2.4** |
| CS-Bay3-W-B2 | 0-0.5" | 8/26/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **24** |
| CS-Bay3-W-B3 | 0-0.5" | 8/26/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | 10 | U | 3.3 | U | 3.3 | U | 3.3 | **10** |
| CS-Bay3-W-B4 | 0-0.5" | 8/26/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | 11 | U | 3.3 | U | 3.3 | U | 3.3 | **11** |
| CS-Bay3-W-B5 | 0-0.5" | 8/26/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | 11 | U | 3.2 | U | 3.2 | U | 3.2 | **11** |
| CS-Bay3-W-U1 | 0-0.5" | 8/26/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | 0.34 | U | 0.32 | U | 0.32 | U | 0.32 | 0.34 |
| CS-Bay3-W-U2 | 0-0.5" | 8/26/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **8.5** |
| CS-Bay3-W-U3 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | 0.51 | U | 0.33 | U | 0.33 | U | 0.33 | 0.51 |
| CS-Bay3-W-U4 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | 1 | U | 0.33 | U | 0.33 | U | 0.33 | 1 |
| CS-Bay3-W-U5 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | 1.3 | U | 0.33 | U | 0.33 | U | 0.33 | **1.3** |
| CS-Bay3-W-U6 | 0-0.5" | 8/26/2008 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | 0 |
| ***Chip Shed Bay 4*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics***) | | | | | | | | | | | | | | | | | | | | | |
| CS-Bay4-F1 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.58 |
| CS-Bay4-F2 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.53 |
| CS-Bay4-Ramp | 0-0.5" | 8/26/2008 | U | 0.98 | U | 0.98 | U | 0.98 | U | 0.98 | U | 0.98 | | * | | * | U | 0.98 | U | 0.98 | **4.7** |
| CS-Bay4-UF1 | 0-0.5" | 8/26/2008 | U | 0.98 | U | 0.98 | U | 0.98 | U | 0.98 | U | 0.98 | | * | | * | U | 0.98 | U | 0.98 | **2** |
| CS-Bay4-W-B1 | 0-0.5" | 8/26/2008 | U | 0.18 | U | 0.18 | U | 0.18 | U | 0.18 | U | 0.18 | U | 0.18 | U | 0.18 | U | 0.18 | U | 0.18 | 0 |
| CS-Bay4-W-B2 | 0-0.5" | 8/26/2008 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | 0 |
| CS-Bay4-W-B3 | 0-0.5" | 8/26/2008 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | 0 |
| CS-Bay4-W-B4 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| CS-Bay4-W-B5 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| CS-Bay4-W-U1 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| CS-Bay4-W-U2 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| CS-Bay4-W-U3 | 0-0.5" | 8/26/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | 0 |
| CS-Bay4-W-U4 | 0-0.5" | 8/26/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | 0 |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

# Table 2-8
## Concrete Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***CONCRETE- mg/kg (ppm)*** | | | | | | | | | | | | | | | | | | | | | |
| CS-Bay4-W-U5 | **SAMPLE NOT TAKEN BECAUSE CEILING TOO LOW** | | | | | | | | | | | | | | | | | | | | |
| CS-Bay4-W-U6 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| ***Machine Shop 2- Upper Level*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics***) | | | | | | | | | | | | | | | | | | | | | |
| MR2U-1 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.3** |
| MR2U-2 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **4.9** |
| MR2U-3 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **5.4** |
| M2U-Dup1 (Dup of 3) | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **8.5** |
| RPD | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *45%* |
| MR2U-4 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.3** |
| MR2U-5 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.6** |
| MR2U-6 | 0-0.5" | 8/27/2008 | U | 0.98 | U | 0.98 | U | 0.98 | U | 0.98 | U | 0.98 | | * | | * | U | 0.98 | U | 0.98 | **8.2** |
| MR2U-7 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **7.1** |
| MR2U-8 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.7** |
| MR2U-9 | 0-0.5" | 8/27/2008 | U | 0.92 | U | 0.92 | U | 0.92 | U | 0.92 | U | 0.92 | | * | | * | U | 0.92 | U | 0.92 | **6** |
| MR2U-10 | 0-0.5" | 8/27/2008 | U | 0.94 | U | 0.94 | U | 0.94 | U | 0.94 | U | 0.94 | | * | | * | U | 0.94 | U | 0.94 | **4.3** |
| MR2U-11 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1** |
| MR2U-12 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.6** |
| MR2U-13 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.4** |
| MR2U-14 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.2** |
| MR2U-15 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **4.7** |
| MR2U-16 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***30*** |
| M2U-Dup3 (Dup of 16) | 0-0.5" | 8/27/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | ***31*** |
| RPD | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *3%* |
| MR2U-17 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **12** |
| MR2U-18 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **18** |
| MR2U-19 | 0-0.5" | 8/27/2008 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | | * | | * | U | 1.6 | U | 1.6 | **4** |
| MR2U-20 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **19** |
| MR2U-21 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **13** |
| MR2U-22 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***28*** |
| MR2U-23 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **20** |
| MR2U-W1 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.4** |
| MR2U-W2 | 0-0.5" | 8/27/2008 | U | 0.42 | U | 0.42 | U | 0.42 | U | 0.42 | U | 0.42 | | * | | * | U | 0.42 | U | 0.42 | **3.5** |
| MR2U-Dup5 (Dup of W2) | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.1** |
| RPD | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *16%* |
| MR2U-W3 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.1** |
| MR2U-W4 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.6** |
| MR2U-W5 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.6** |
| MR2U-Dup2 (Dup of W5) | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **2.7** |
| RPD | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *29%* |
| MR2U-W6 | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **3** |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

# Table 2-8
## Concrete Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***CONCRETE- mg/kg (ppm)*** | | | | | | | | | | | | | | | | | | | | | |
| MR2U-W7 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.4** |
| MR2U-W8 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.2** |
| MR2U-W9 | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **3.1** |
| MR2U-W10 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.3** |
| MR2U-Dup4 (Dup of W10) | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.8** |
| RPD | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *14%* |
| G-1 | 0-0.5" | 11/12/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | **15** |
| G-2 | 0-0.5" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***33*** |
| G-3 | 0-0.5" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **8.8** |
| G-4 | 0-0.5" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **6.2** |
| G-5 | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **6.1** |
| ***Upper Level not including Machine Shop 2*** (Concentration >1 ppm **bold**; >10 ppm ***bold italics*** ) | | | | | | | | | | | | | | | | | | | | | |
| UF-1 | 0-0.5" | 10/8/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **2.8** |
| UF-2 | 0-0.5" | 10/8/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.1** |
| UF-3 | 0-0.5" | 10/8/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.62 |
| UF-4 | 0-0.5" | 10/8/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.1** |
| UF-5 | 0-0.5" | 10/8/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| UF-6 | 0-0.5" | 10/8/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.9** |
| UF-7 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.8** |
| UF-8 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.1** |
| Dup-1 (Dup of UF-8) | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2** |
| RPD | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *5%* |
| UF-9 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.36 |
| UF-10 | 0-0.5" | 10/9/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 0.7 |
| UF-11 | 0-0.5" | 10/9/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 0.67 |
| UF-12 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.64 |
| UF-13 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.1** |
| UF-14 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.6** |
| UF-15 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.51 |
| UF-16 | 0-0.5" | 10/9/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **2** |
| Dup-2 (Dup of UF-16) | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.9** |
| RPD | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *5%* |
| UF-17 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.3** |
| UF-18 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.6 |
| UF-19 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.8** |
| UF-20 | 0-0.5" | 10/9/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **1.2** |
| UF-21 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.76 |
| UF-22 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.6** |
| UF-23 | 0-0.5" | 10/9/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **1.5** |
| UF-24 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.2** |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

# Table 2-8
## Concrete Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *CONCRETE- mg/kg (ppm)* | | | | | | | | | | | | | | | | | | | | | |
| UF-25 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 3.4 |
| UF-26 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.91 |
| Dup-5 (Dup of UF-26) | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.1 |
| RPD | | | | 0% | | 0% | | 0% | | 0% | | 0% | | | | | | 0% | | 0% | 19% |
| UF-27 | 0-0.5" | 10/9/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 12 |
| UF-28 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 6.2 |
| UF-29 | 0-0.5" | 10/9/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 19 |
| UF-30 | 0-0.5" | 10/9/2008 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | | * | | * | U | 3.4 | U | 3.4 | 38 |
| UF-31 | 0-0.5" | 10/9/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 3.4 |
| UF-32 | 0-0.5" | 10/9/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 48 |
| Dup-9 (Dup of UF-32) | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 46 |
| RPD | | | | 0% | | 0% | | 0% | | 0% | | 0% | | | | | | 0% | | 0% | 4% |
| UF-33 | 0-0.5" | 10/9/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 3.4 |
| UF-34 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.6 |
| UF-35 | 0-0.5" | 10/9/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | 16 |
| UF-36 | 0-0.5" | 10/9/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 2.7 |
| UF-37 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.4 |
| UF-38 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 5.9 |
| UF-39 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 6.8 |
| UF-40 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.8 |
| UF-41 | 0-0.5" | 10/9/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 5.1 |
| UF-42 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.3 |
| UF-43 | 0-0.5" | 10/9/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 20 |
| UF-44 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 5.5 |
| UF-45 | 0-0.5" | 10/10/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 3 |
| UF-46 | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 3.5 |
| Dup-4 (Dup of UF-46) | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.9 |
| RPD | | | | 0% | | 0% | | 0% | | 0% | | 0% | | | | | | 0% | | 0% | 59% |
| UF-47 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.2 |
| UF-48 | 0-0.5" | 10/10/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 20 |
| UF-49 | 0-0.5" | 10/10/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | 12 |
| Dup-6 (Dup of UF-48) | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 5.4 |
| RPD | | | | 0% | | 0% | | 0% | | 0% | | 0% | | | | | | 0% | | 0% | 76% |
| UF-50 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 3.9 |
| UF-51 | 0-0.5" | 10/10/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 3 |
| UF-52 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.4 |
| Dup-7 (Dup of UF-52) | 0-0.5" | 10/10/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 1.3 |
| RPD | | | | 0% | | 0% | | 0% | | 0% | | 0% | | | | | | 0% | | 0% | 7% |
| UF-53 | 0-0.5" | 10/10/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 41 |
| UF-54 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.7 |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

# Table 2-8
## Concrete Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***CONCRETE- mg/kg (ppm)*** | | | | | | | | | | | | | | | | | | | | | |
| UF-55 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.3** |
| UF-56 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.4** |
| UF-57 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.1** |
| UF-58 | 0-0.5" | 10/10/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***18*** |
| UF-59 | 0-0.5" | 10/10/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **1.7** |
| UF-60 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.8** |
| Dup-8 (Dup of UF-60) | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.4** |
| RPD | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *25%* |
| UF-61 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.89 |
| UF-62 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.1** |
| UF-63 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.83 |
| UF-64 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.7** |
| UF-65 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.99 |
| UF-66 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.68 |
| UF-67 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.65 |
| 1-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.5** |
| 2-UH | 0-0.5" | 11/12/2008 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | | * | | * | U | 1.6 | U | 1.6 | ***11*** |
| 3-UH | 0-0.5" | 11/12/2008 | U | 0.65 | U | 0.65 | U | 0.65 | U | 0.65 | U | 0.65 | | * | | * | U | 0.65 | U | 0.65 | **6.1** |
| 4-UH | 0-0.5" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **8.8** |
| 5-UH | 0-0.5" | 11/12/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **2.8** |
| 6-UH | 0-0.5" | 11/12/2008 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | | * | | * | U | 1.6 | U | 1.6 | ***11*** |
| 7-UH | 0-0.5" | 11/12/2008 | U | 0.66 | U | 0.66 | U | 0.66 | U | 0.66 | U | 0.66 | | * | | * | U | 0.66 | U | 0.66 | **7.2** |
| 8-UH | 0-0.5" | 11/12/2008 | U | 0.66 | U | 0.66 | U | 0.66 | U | 0.66 | U | 0.66 | | * | | * | U | 0.66 | U | 0.66 | **4.2** |
| 9-UH | 0-0.5" | 11/12/2008 | U | 0.66 | U | 0.66 | U | 0.66 | U | 0.66 | U | 0.66 | | * | | * | U | 0.66 | U | 0.66 | **8** |
| 10-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.8** |
| Dup1-UH (Dup of 10-UH) | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **5.8** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *42%* |
| 11-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.86 |
| 12-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.5** |
| 13-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.8** |
| 14-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.7** |
| 15-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.9** |
| 16-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.1** |
| Dup2-UH (Dup of 16-UH) | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.2** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *9%* |
| 17-UH | 0-0.5" | 11/12/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **1.4** |
| ***Shot Blast Test Area #1 in Cutting Room*** (Concentration >1 ppm **bold**; >10 ppm ***bold italics*** ) | | | | | | | | | | | | | | | | | | | | | |
| Test-Q1-0 | 0-0.5" | 11/12/2008 | U | 33 | U | 33 | U | 33 | U | 33 | U | 33 | | * | | * | U | 33 | U | 33 | ***67*** |
| Test-Q2-0 | 0-0.5" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***30*** |
| Test-Q3-0 | 0-0.5" | 11/12/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | ***42*** |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

# Table 2-8
# Concrete Analytical Data - PCBs
# PVDC Building
# 100 River Street
# Springfield, Vermont

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***CONCRETE- mg/kg (ppm)*** | | | | | | | | | | | | | | | | | | | | | |
| Test-Dup-0 (Dup of Q3-0) | 0-0.5" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***56*** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *29%* |
| Test-Q4-0 | 0-0.5" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***49*** |
| Test-Q1-1 | 0.06-0.56" | 11/12/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | ***58*** |
| Test-Q2-1 | 0.06-0.56" | 11/12/2008 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | | * | | * | U | 3.4 | U | 3.4 | ***22*** |
| Test-Q3-1 | 0.06-0.56" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***42*** |
| Test-Dup-1 (Dup of Q3-1) | 0.06-0.56" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***44*** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *5%* |
| Test-Q4-1 | 0.06-0.56" | 11/12/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | ***34*** |
| Test-Q1-2 | 0.13-0.63" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***35*** |
| Test-Q2-2 | 0.13-0.63" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***15*** |
| Test-Q3-2 | 0.13-0.63" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***28*** |
| Test-Q4-2 | 0.13-0.63" | 11/12/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | ***41*** |
| Test-Q1-3 | 0.25-0.75" | 11/12/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | ***55*** |
| Test-Q2-3 | 0.25-0.75" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***14*** |
| Test-Q3-3 | 0.25-0.75" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***14*** |
| Test-Q4-3 | 0.25-0.75" | 11/12/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | ***30*** |
| ***Shot Blast Test #2*** (Concentration >1 ppm **bold**; >10 ppm ***bold italics***) - UF-39, UF-42, UF-50, UF-57 | | | | | | | | | | | | | | | | | | | | | |
| ***UF-39*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics***) | | | | | | | | | | | | | | | | | | | | | |
| UF-39(0) | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **6.8** |
| UF-39(1/16) | 1/16-9/16" | 12/15/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **14** |
| UF-39(1/8) | 1/8-5/8" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **7.1** |
| UF-39(1/4) | 1/4-3/4" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.5** |
| Dup-1 (Dup of UF-39(1/4) | 1/4-3/4" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.4** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *3%* |
| UF-39(1/2) | 1/2-1" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.6** |
| UF-42(0) | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.3** |
| UF-42(1/16) | 1/16-9/16" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.5** |
| UF-42(1/8) | 1/8-5/8" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **5.3** |
| UF-42(1/4) | 1/4-3/4" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3** |
| UF-42(1/2) | 1/2-1" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.4** |
| UF-50(0) | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.9** |
| UF-50(1/16) | 1/16-9/16" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **5.2** |
| UF-50(1/8) | 1/8-5/8" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.2** |
| UF-50(1/4) | 1/4-3/4" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.2** |
| Dup-1 (Dup of UF-50(1/4) | 1/4-3/4" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.3** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *3%* |
| UF-50(1/2) | 1/2-1" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.1** |
| UF-57(0) | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.1** |
| UF-57(1/16) | 1/16-9/16" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.8** |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

# Table 2-8
## Concrete Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***CONCRETE- mg/kg (ppm)*** | | | | | | | | | | | | | | | | | | | | | |
| UF-57(1/8) | 1/8-5/8" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.4** |
| UF-57(1/4) | 1/4-3/4" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.95 |
| UF-57(1/2) | 1/2-1" | 12/15/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.94 |
| ***Machine Shop 2- Lower Level*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics***) | | | | | | | | | | | | | | | | | | | | | |
| MR2L-1 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.6** |
| MR2L-2 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **11** |
| MR2L-3 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.6** |
| MR2L-Dup1 (Dup of 3) | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.6** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *24%* |
| MR2L-4 | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **2.1** |
| MR2L-5 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **18** |
| MR2L-6 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.9** |
| MR2L-7 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.3** |
| MR2L-8 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **10** |
| MR2L-Dup2 (Dup of 8) | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **14** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *33%* |
| MR2L-9 | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **2.6** |
| MR2L-10 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.8** |
| MR2L-11 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.6** |
| MR2L-12 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.5** |
| MR2L-Dup3 (Dup of 12) | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.4** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *3%* |
| MR2L-13 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.2** |
| MR2L-14 | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 0.71 |
| MR2L-15 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | 4 | U | 0.33 | U | 0.33 | U | 0.33 | **4** |
| MR2L-Dup4 (Dup of 15) | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.4** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *50%* |
| MR2L-16 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **11** |
| MR2L-17 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.67 |
| MR2L-18 | 0-0.5" | 8/27/2008 | U | 0.19 | U | 0.19 | U | 0.19 | U | 0.19 | U | 0.19 | U | 0.19 | U | 0.19 | U | 0.19 | U | 0.19 | 0 |
| MR2L-19 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.77 |
| MR2L-Dup5 (Dup of 19) | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.94 |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *20%* |
| MR2L-20 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.37 |
| MR2L-21 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.94 |
| MR2L-22 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.9** |
| MR2L-23 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.8** |
| MR2L-24 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.9** |
| MR2L-25 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.9** |
| MR2L-Dup6 (Dup of 25) | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **2.2** |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

# Table 2-8
## Concrete Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *CONCRETE- mg/kg (ppm)* | | | | | | | | | | | | | | | | | | | | | |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *15%* |
| MR2L-26 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.1** |
| MR2L-27 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.3** |
| MR2L-28 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **11** |
| MR2L-29 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **6.6** |
| MR2L-30 | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **1.1** |
| MR2L-31 | 0-0.5" | 8/27/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | **7** |
| MR2L-Dup7 (Dup of 31) | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **13** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *60%* |
| MR2L-32 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.7** |
| MR2L-DUP8 (Dup of 32) | 0-0.5" | 8/27/2008 | U | 1.7 | U | 1.7 | U | 1.7 | U | 1.7 | U | 1.7 | | * | | * | U | 1.7 | U | 1.7 | **5.2** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *34%* |
| MR2L-33 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.9** |
| MR2L-34 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **12** |
| MR2L-35 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.8** |
| MR2L-36 | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **4.3** |
| MR2L-37 | 0-0.5" | 8/27/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | **16** |
| MR2L-38 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **14** |
| MR2L-39 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.6** |
| MR2L-Dup9 (Dup of 39) | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **2.3** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *36%* |
| MR2L-40 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **1.9** |
| MR2L-41 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.3** |
| MR2L-42 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **19** |
| MR2L-43 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **3.8** |
| MR2L-44 | 0-0.5" | 8/27/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | **10** |
| MR2L-45 | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **2.2** |
| MR2L-46 | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 0.53 |
| MR2L-47 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.4** |
| MR2L-48 | 0-0.5" | 8/27/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | **4** |
| MR2L-Dup10 (Dup of 48) | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.2** |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *5%* |
| MR2L-49 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | **4.1** |
| MR2L-50 | 0-0.5" | 8/27/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.45 |
| ***Machine Shop 4*** (Concentration >1 ppm **bold**; >10 ppm ***bold italics***) | | | | | | | | | | | | | | | | | | | | | |
| MR4-1 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.4 |
| MR4-2 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.5 |
| MR4-3 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.5 |
| MR4-4 | 0-0.5" | 8/28/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 2 |
| MR4-5 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 3.4 |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

**Table 2-8**
**Concrete Analytical Data - PCBs**
**PVDC Building**
**100 River Street**
**Springfield, Vermont**

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***CONCRETE- mg/kg (ppm)*** | | | | | | | | | | | | | | | | | | | | | |
| MR4-6 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.1 |
| MR4-7 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.9 |
| MR4-Dup1 (Dup of 7) | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 5.1 |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *55%* |
| MR4-8 | 0-0.5" | 8/28/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 2.1 |
| MR4-9 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 13 |
| MR4-Dup2 (Dup of 9) | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 14 |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *7%* |
| MR4-10 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.8 |
| MR4-11 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 7.2 |
| MR4-12 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.8 |
| MR4-13 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 21 |
| MR4-14 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.5 |
| MR4-15 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 14 |
| MR4-16 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 3.6 |
| MR4-Dup3 (Dup of 16) | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 4 |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *11%* |
| MR4-17 | 0-0.5" | 8/28/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | 9.2 |
| MR4-18 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 9 |
| MR4-19 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 17 |
| MR4-Dup4 (Dup of 19) | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 20 |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *16%* |
| MR4-20 | 0-0.5" | 8/28/2008 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | | * | | * | U | 1.6 | U | 1.6 | 5.3 |
| MR4-21 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 5.7 |
| MR4-22 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.8 |
| MR4-23 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 8.6 |
| MR4-24 | 0-0.5" | 8/28/2008 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | | * | | * | U | 1.6 | U | 1.6 | 5.7 |
| MR4-25 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | *13* |
| MR4-26 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.8 |
| MR4-27 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 3.4 |
| MR4-28 | 0-0.5" | 8/28/2008 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | U | 3.2 | | * | | * | U | 3.2 | U | 3.2 | 12 |
| MR4-29 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 11 |
| MR4-30 | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.4 |
| MR4-Dup5 (Dup of 30) | 0-0.5" | 8/28/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 2.1 |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *13%* |
| MR4-31 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 10 |
| MR4-32 | 0-0.5" | 8/28/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 2.8 |
| MR4-33 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 7.8 |
| MR4-34 | 0-0.5" | 8/28/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 18 |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

# Table 2-8
## Concrete Analytical Data - PCBs
## PVDC Building
## 100 River Street
## Springfield, Vermont

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***CONCRETE- mg/kg (ppm)*** | | | | | | | | | | | | | | | | | | | | | |
| ***Basement not including Machine Shop 4*** (Concentration >1 ppm **bold**; >10 ppm ***bold italics*** ) | | | | | | | | | | | | | | | | | | | | | |
| LF-1 | 0-0.5" | 10/10/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 4.6 |
| LF-2 | 0-0.5" | 10/10/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 5.1 |
| LF-3 | 0-0.5" | 10/10/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 3.3 |
| Dup-9 (Dup of LF-3) | 0-0.5" | 10/9/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 3 |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *10%* |
| LF-4 | 0-0.5" | 10/10/2008 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | U | 1.6 | | * | | * | U | 1.6 | U | 1.6 | 18 |
| LF-5 | 0-0.5" | 10/10/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 7.3 |
| LF-6 | 0-0.5" | 10/10/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 2.1 |
| LF-7 | 0-0.5" | 10/10/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 1.7 |
| LF-8 | 0-0.5" | 10/10/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 5.1 |
| LF-9 | 0-0.5" | 10/10/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 4.7 |
| LF-10 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.7 |
| Dup10 (Dup of LF-10) | 0-0.5" | 10/10/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 1.5 |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | | | | | *0%* | | *0%* | *13%* |
| LF-11 | 0-0.5" | 10/10/2008 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | U | 3.3 | | * | | * | U | 3.3 | U | 3.3 | 1.5 |
| LF-12 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 7.6 |
| LF-13 | 0-0.5" | 10/10/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | * | | * | U | 0.32 | U | 0.32 | 1.7 |
| LF-14 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.48 |
| LF-15 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 3.1 |
| LF-16 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.4 |
| LF-17 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 5.6 |
| LF-18 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 7.8 |
| LF-19 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.6 |
| LF-20 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1.2 |
| LF-21 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.78 |
| LF-22 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 1 |
| LF-23 | 0-0.5" | 10/10/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.38 |
| ***Office Areas (first and second floor)*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics*** ) | | | | | | | | | | | | | | | | | | | | | |
| 18-UH | 0-0.5" | 11/12/2008 | U | 0.35 | U | 0.35 | U | 0.35 | U | 0.35 | U | 0.35 | | * | | * | U | 0.35 | U | 0.35 | 0.83 |
| 19-UH | 0-0.5" | 11/12/2008 | U | 0.57 | U | 0.57 | U | 0.57 | U | 0.57 | U | 0.57 | U | 0.57 | U | 0.57 | U | 0.57 | U | 0.57 | 0 |
| Dup3-UH (Dup fo 19-UH) | 0-0.5" | 11/12/2008 | U | 0.61 | U | 0.61 | U | 0.61 | U | 0.61 | U | 0.61 | U | 0.61 | U | 0.61 | U | 0.61 | U | 0.61 | 0 |
| *RPD* | | | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | | *0%* | *0%* |
| 20-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| 21-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| 22-UH | 0-0.5" | 11/12/2008 | U | 0.42 | U | 0.42 | U | 0.42 | U | 0.42 | U | 0.42 | U | 0.42 | U | 0.42 | U | 0.42 | U | 0.42 | 0 |
| 23-UH | 0-0.5" | 11/12/2008 | U | 0.34 | U | 0.34 | U | 0.34 | U | 0.34 | U | 0.34 | U | 0.34 | U | 0.34 | U | 0.34 | U | 0.34 | 0 |
| 24-UH | 0-0.5" | 11/12/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | 0 |
| 25-UH | 0-0.5" | 11/12/2008 | U | 0.64 | U | 0.64 | U | 0.64 | U | 0.64 | U | 0.64 | U | 0.64 | U | 0.64 | U | 0.64 | U | 0.64 | 0 |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

**Table 2-8**
**Concrete Analytical Data - PCBs**
**PVDC Building**
**100 River Street**
**Springfield, Vermont**

| Location | Depth | Date | PCB-1016 | | PCB-1221 | | PCB-1232 | | PCB-1242 | | PCB-1248 | | PCB-1254 | | PCB-1260 | | PCB-1262 | | PCB-1268 | | Total PCBs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***CONCRETE- mg/kg (ppm)*** | | | | | | | | | | | | | | | | | | | | | |
| ***Transformer Areas*** (Concentration >1 ppm **bold**; >25 ppm ***bold italics***) | | | | | | | | | | | | | | | | | | | | | |
| TP1-1 | 0-0.5" | 8/26/2008 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | 0 |
| TP1-2 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| TP1-3 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| TP2-1 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| TP2-2 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| TP2-3 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| TP3-1 | 0-0.5" | 8/26/2008 | U | 0.2 | U | 0.2 | U | 0.2 | U | 0.2 | U | 0.2 | U | 0.2 | U | 0.2 | U | 0.2 | U | 0.2 | 0 |
| TP3-2 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| TRF-1 | 0-0.5" | 8/26/2008 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | U | 0.33 | | * | | * | U | 0.33 | U | 0.33 | 0.68 |
| TRF-2 | 0-0.5" | 8/26/2008 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | U | 0.32 | | 2.2 | U | 0.32 | U | 0.32 | **2.2** |
| TRW-1 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| TRW-2 | 0-0.5" | 8/26/2008 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | U | 0.16 | 0 |
| TRW-3 | 0-0.5" | 8/26/2008 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | U | 0.17 | 0 |

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

**Table 2-9**
**Indoor Air/Soil Vapor**
**PVDC Building**
**100 River Street**
**Springfield, Vermont**

## Indoor Air Sampling

| | Regional Screening Level (RSL) | | Vermont | IA-1 | AS-2 | AS-3 | OA-1 | AS-1 |
|---|---|---|---|---|---|---|---|---|
| | Residential Air | Industrial Air | HAAS | 6/3/2009 | 9/4/2009 | 9/4/2009 | 6/3/2009 | 9/4/2009 |
| **Compound** | ug/m$^3$ | | ug/m3 | ug/m$^3$ | ug/m$^3$ | ug/m$^3$ | ug/m$^3$ | ug/m$^3$ |
| Trichloroethene | 1.2 | 6.1 | 0.5 | ND < 0.18 | *1.8* | *0.56* | ND < 0.19 | ND < 0.18 |
| cis-1,2-Dichloroethene | None | None | None | ND < 0.14 | 1.0 | 0.26 | ND < 0.14 | ND < 0.13 |
| Vinyl Chloride | 0.16 | 2.8 | 0.11 | ND < 0.044 | ND < 0.19 | ND < 0.042 | ND < 0.045 | ND < 0.043 |

HAAS = Hazardous Ambient Air Standard; if no HAAS exists, a background level supplied by Vermont Department of Health is used
*ND* = Compound not detected; reporting limit provided.
*Grey cell* = Value exceeds Residential Regional Screening Level or Vermont HAAS

## Soil Vapor Sampling

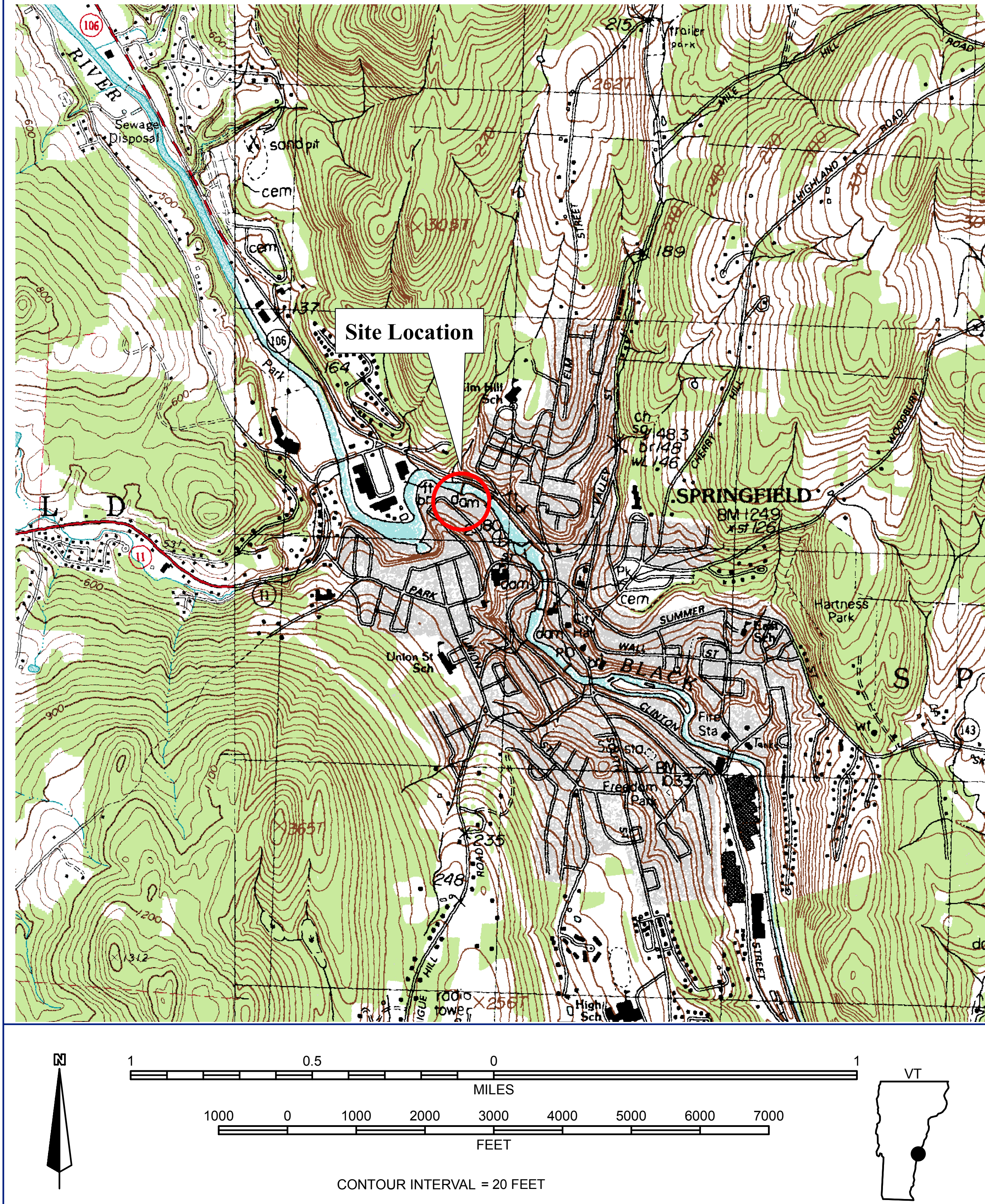
| | EPA 2005 Draft Guidance SL: $10^{-6}$ risk level | New Hampshire SL-Commerical | Target Shallow Gas | | SV-1 | SV-2 | SV-3 |
|---|---|---|---|---|---|---|---|
| | | | Residential | Industrial | 6/3/2009 | 6/3/2009 | 6/3/2009 |
| **Compound** | ug/m$^3$ | ug/m$^3$ | ug/m$^3$ | ug/m$^3$ | ug/m$^3$ | ug/m$^3$ | ug/m$^3$ |
| Trichloroethene | 0.22 | 1.1 | 12 | 61 | **5.1** | **8.0** | **1300** |
| cis-1,2-Dichloroethene | 350 | None | None | None | 0.20 | ND < 0.12 | 140 |
| Vinyl Chloride | 2.8 | 2.8 | 1.6 | 28 | ND < 0.036 | ND < 0.037 | ND < 0.37 |

Black cell = Value exceeds at least one screening level.
*ND* = Compound not detected; reporting limit provided.
*SL* = Screening Level

Notes:
U = Not detected below laboratory limit shown.
* = Lab could not differentiate, total PCB concentration shown.
T1 analytical data as reported by URS (2008).

# FIGURES

022409 Site Location- New.mxd




BASE MAP: USGS 7.5 Minute Topographic Quadrangle Chester, VT and Springfield, VT-NH

Figure 1-1 Site Location
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

| | |
|---|---|
| Drawn by: RTK | Date: 02/24/09 |
| Chk'd by: | Date: |
| Scale: 1:24,000 | Project: 3-2202-30 |

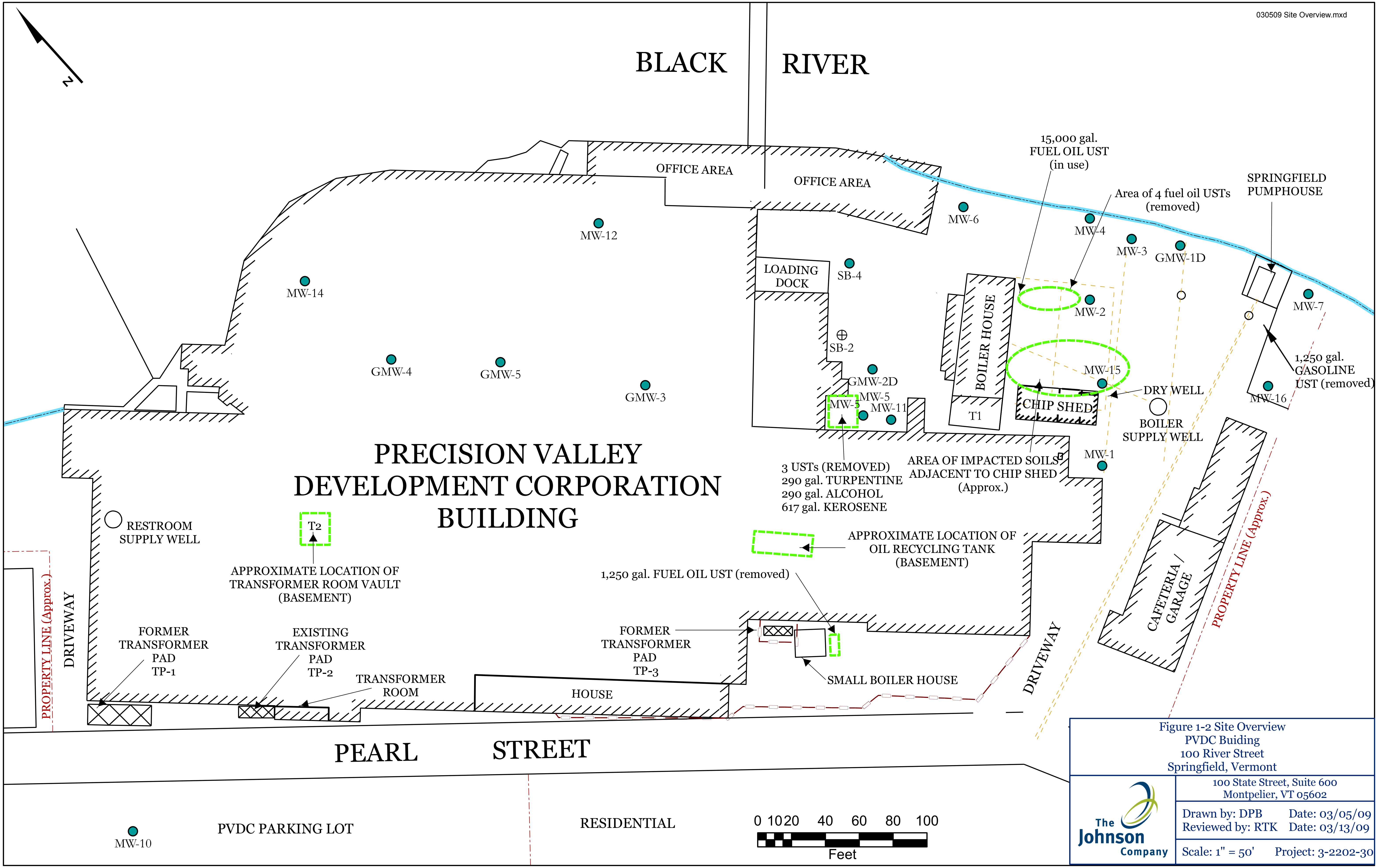



Figure 1-2 Site Overview
PVDC Buiding
100 River Street
Springfield, Vermont

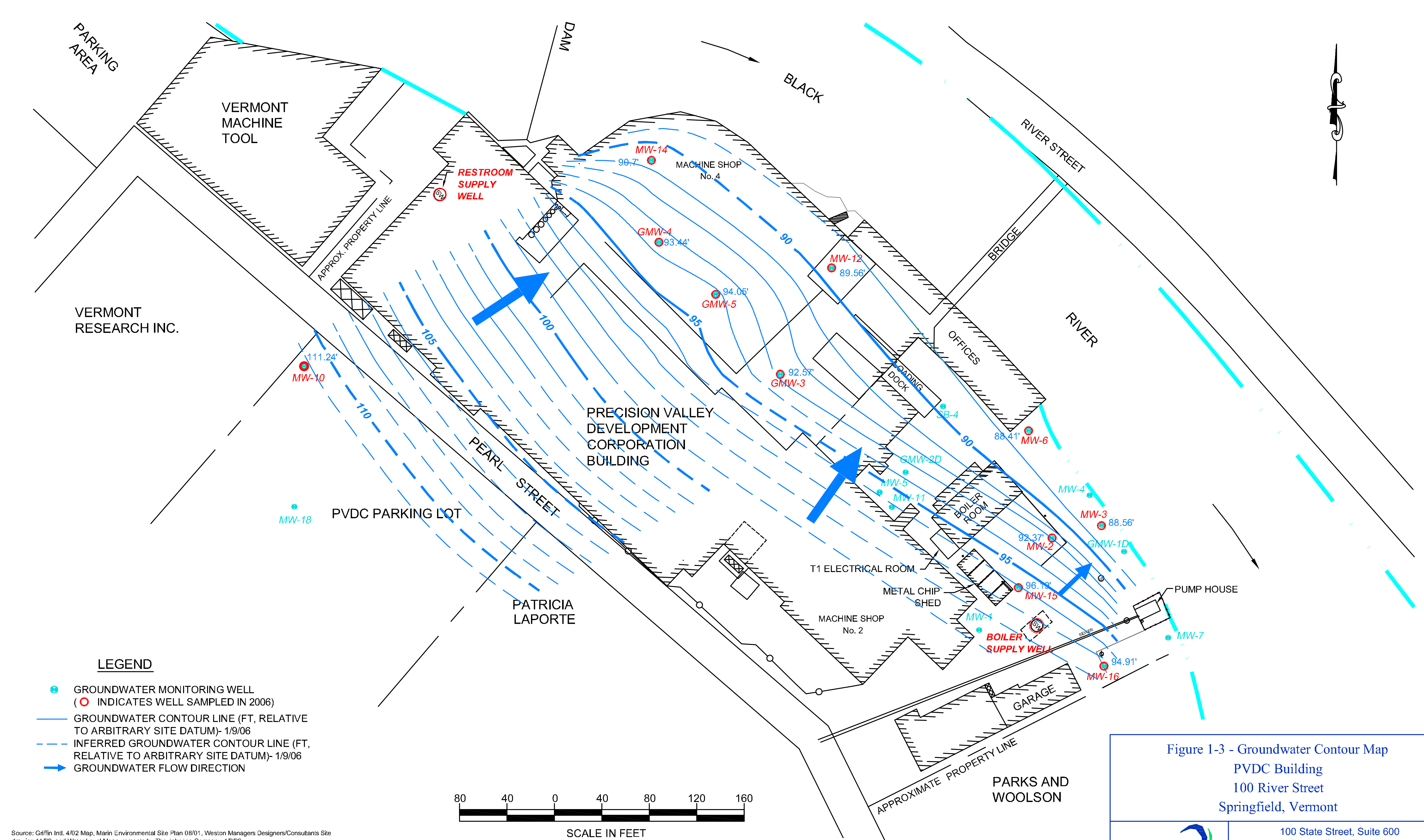
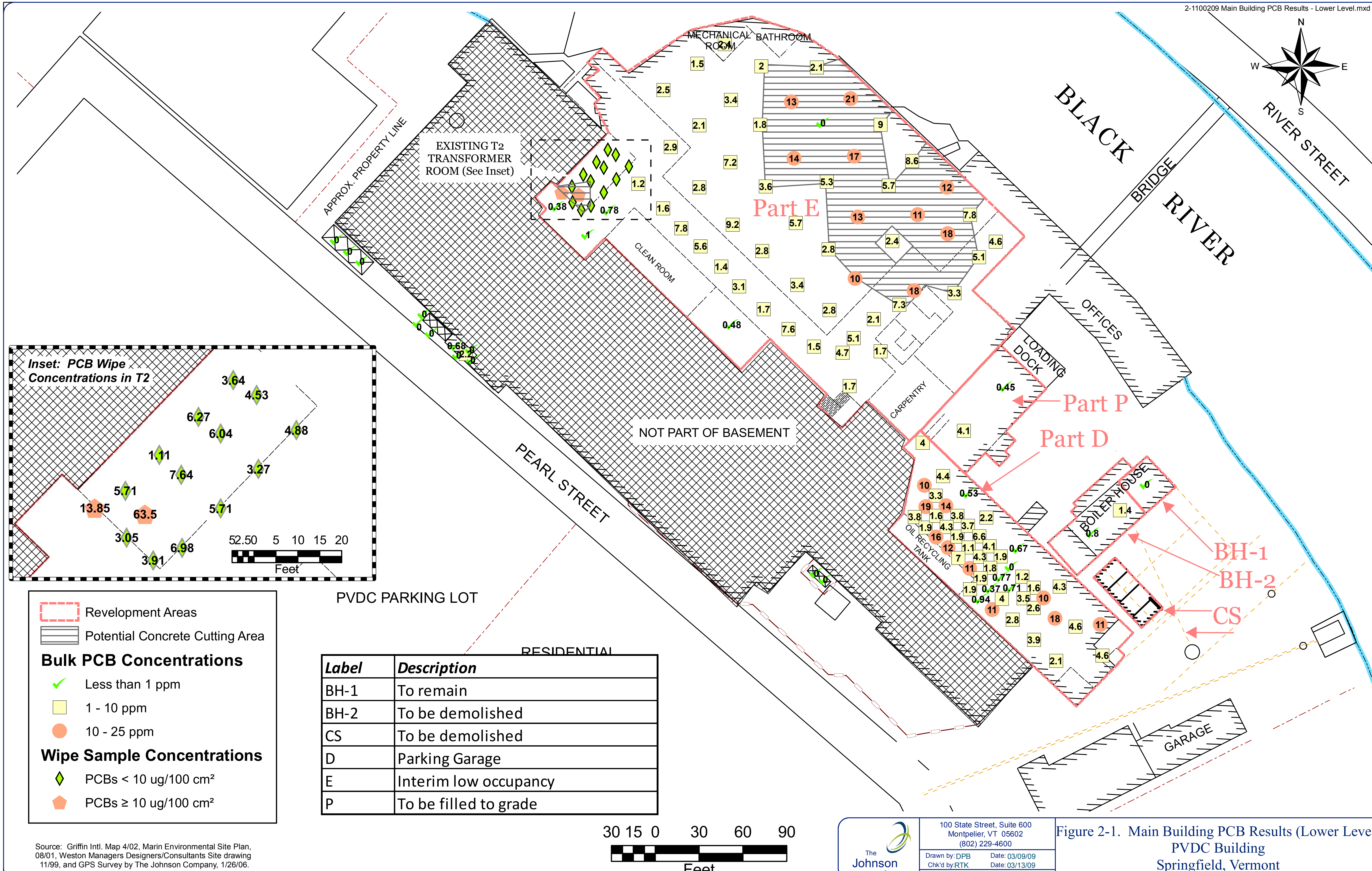



Figure 1-3 - Groundwater Contour Map
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

| | |
|---|---|
| Drawn by: RTK | Date: 06/02/06 |
| Reviewed by: | Date: |
| Scale: 1" =80' | Project: 3-2202-30 |

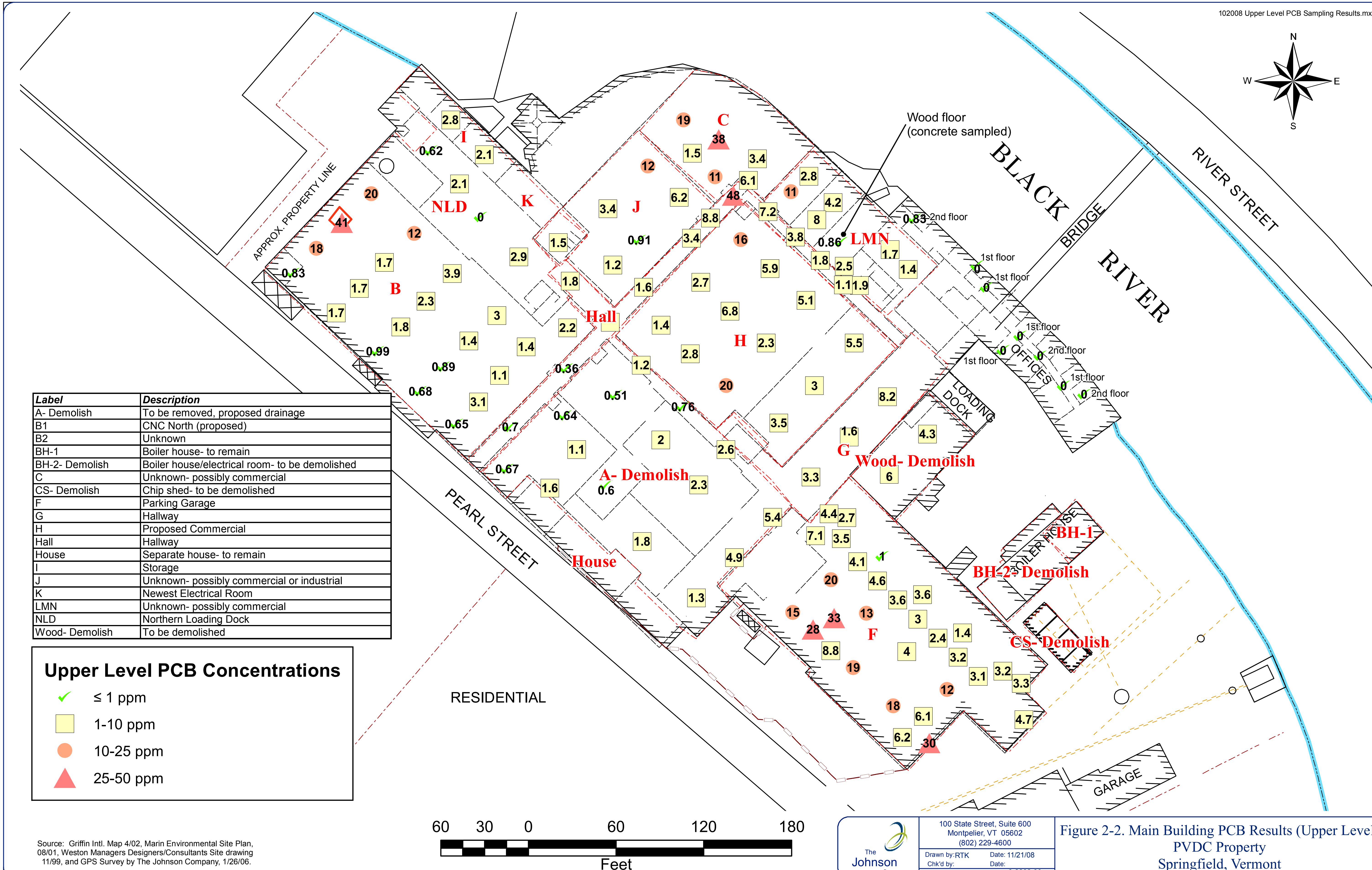



| Label | Description |
|---|---|
| BH-1 | To remain |
| BH-2 | To be demolished |
| CS | To be demolished |
| D | Parking Garage |
| E | Interim low occupancy |
| P | To be filled to grade |

Source: Griffin Intl. Map 4/02, Marin Environmental Site Plan, 08/01, Weston Managers Designers/Consultants Site drawing 11/99, and GPS Survey by The Johnson Company, 1/26/06.


The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600
Drawn by: DPB Date: 03/09/09
Chk'd by: RTK Date: 03/13/09
Scale: 1"=60' Project: 3-2202-30


Figure 2-1. Main Building PCB Results (Lower Level)
PVDC Building
Springfield, Vermont




| Label | Description |
|---|---|
| A- Demolish | To be removed, proposed drainage |
| B1 | CNC North (proposed) |
| B2 | Unknown |
| BH-1 | Boiler house- to remain |
| BH-2- Demolish | Boiler house/electrical room- to be demolished |
| C | Unknown- possibly commercial |
| CS- Demolish | Chip shed- to be demolished |
| F | Parking Garage |
| G | Hallway |
| H | Proposed Commercial |
| Hall | Hallway |
| House | Separate house- to remain |
| I | Storage |
| J | Unknown- possibly commercial or industrial |
| K | Newest Electrical Room |
| LMN | Unknown- possibly commercial |
| NLD | Northern Loading Dock |
| Wood- Demolish | To be demolished |

**Upper Level PCB Concentrations**

- ≤ 1 ppm
- 1-10 ppm
- 10-25 ppm
- 25-50 ppm

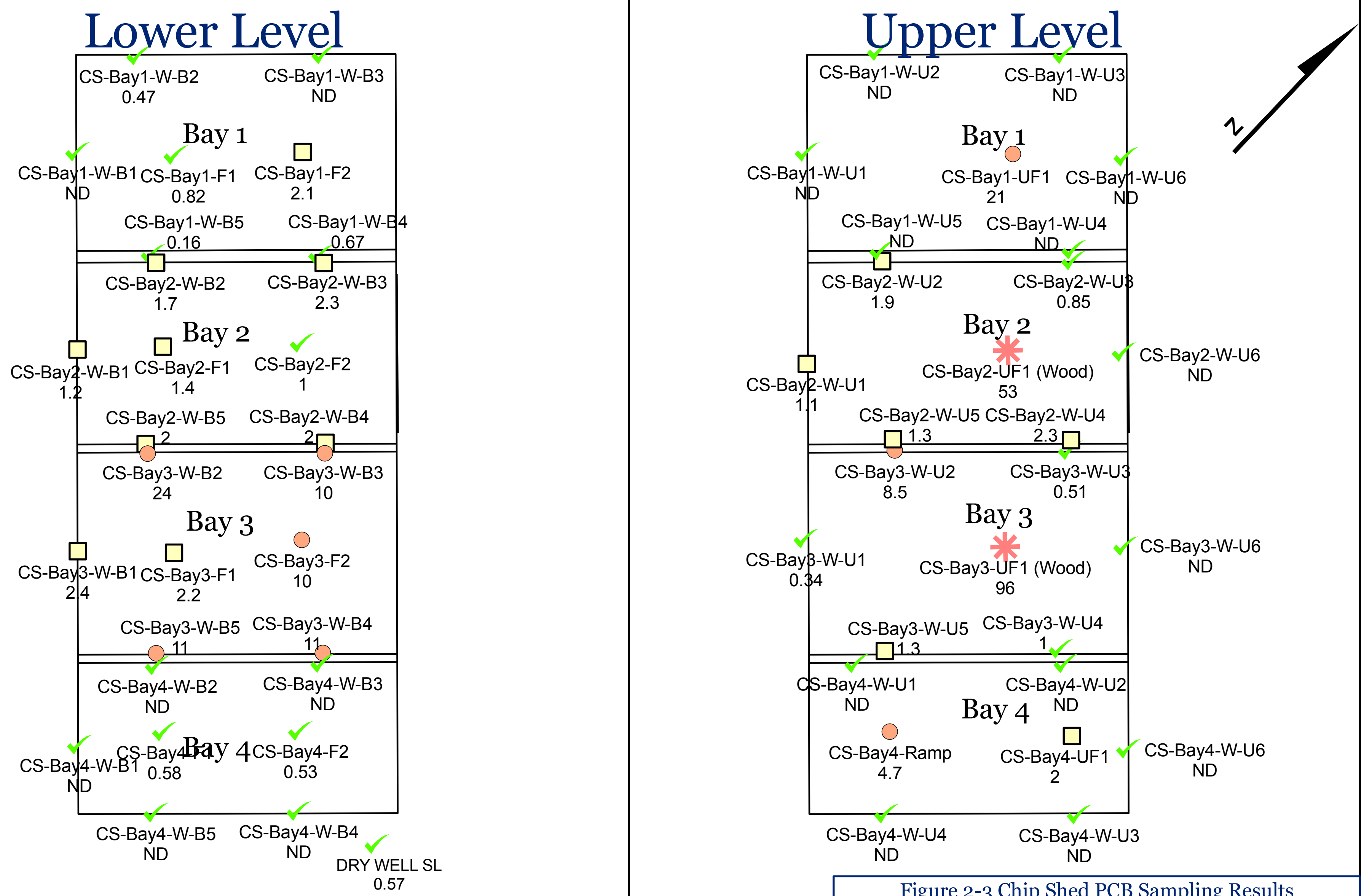
Source: Griffin Intl. Map 4/02, Marin Environmental Site Plan, 08/01, Weston Managers Designers/Consultants Site drawing 11/99, and GPS Survey by The Johnson Company, 1/26/06.

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: RTK | Date: 11/21/08
Chk'd by: | Date:
Scale: 1"=60' | Project: 3-2202-30

Figure 2-2. Main Building PCB Results (Upper Level)
PVDC Property
Springfield, Vermont




**Legend**

- Total PCBs < 1 ppm
- 1 ppm < Total PCBs ≤ 3 ppm
- 3 ppm < Total PCBs ≤ 50 ppm
- Total PCBs > 50 ppm

10 5 0 10 20 30

Feet

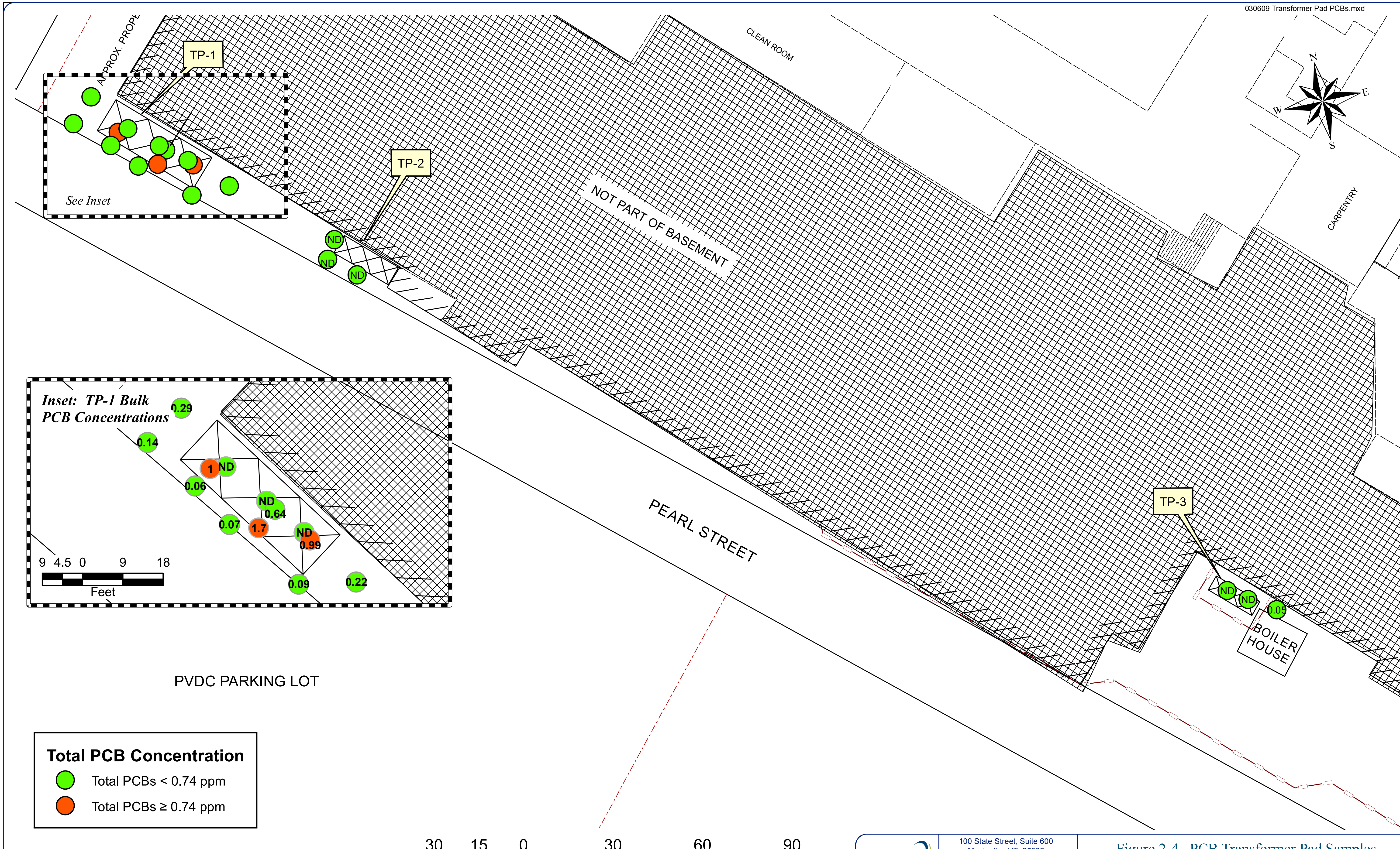
All locations are approximate.

Figure 2-3 Chip Shed PCB Sampling Results
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

| | |
|---|---|
| Drawn by: DPB | Date: 03/05/09 |
| Reviewed by: RTK | Date: 03/13/09 |
| Scale: 1" = 30' | Project: 3-2202-30 |




Source: Marin Environmental Site Plant, 08/08/01, Griffin Intl. 4/02 Map and Weston Managers Designers /Consultants Site drawing (11/30/99), and GPS Survey by The Johnson Company, 1/26/06.

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: DPB Date: 03/06/09
Chk'd by: RTK Date: 03/13/09
Scale: 1"=60' Project: 3-2202-30

Figure 2-4. PCB Transformer Pad Samples
PVDC Property
Springfield, Vermont

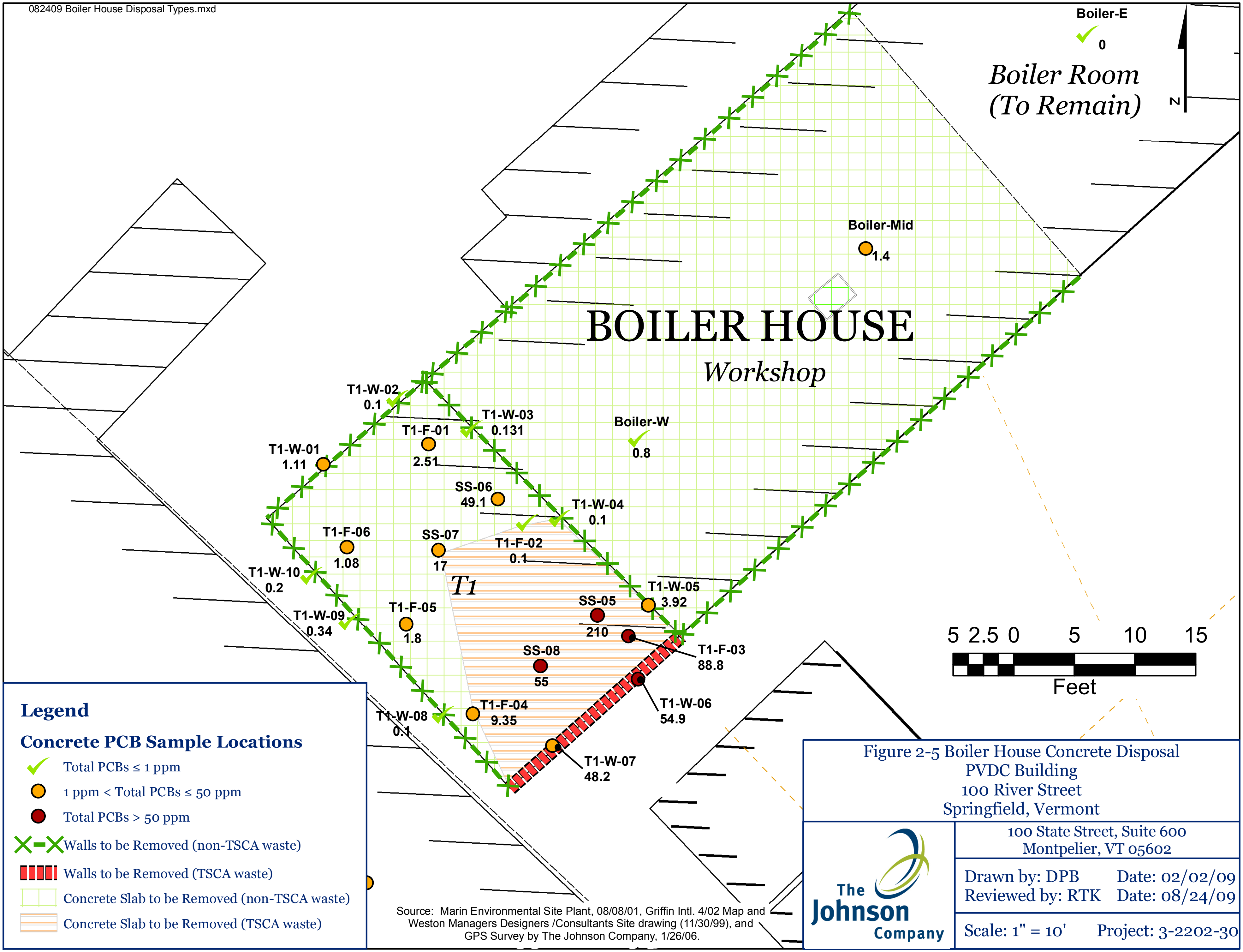
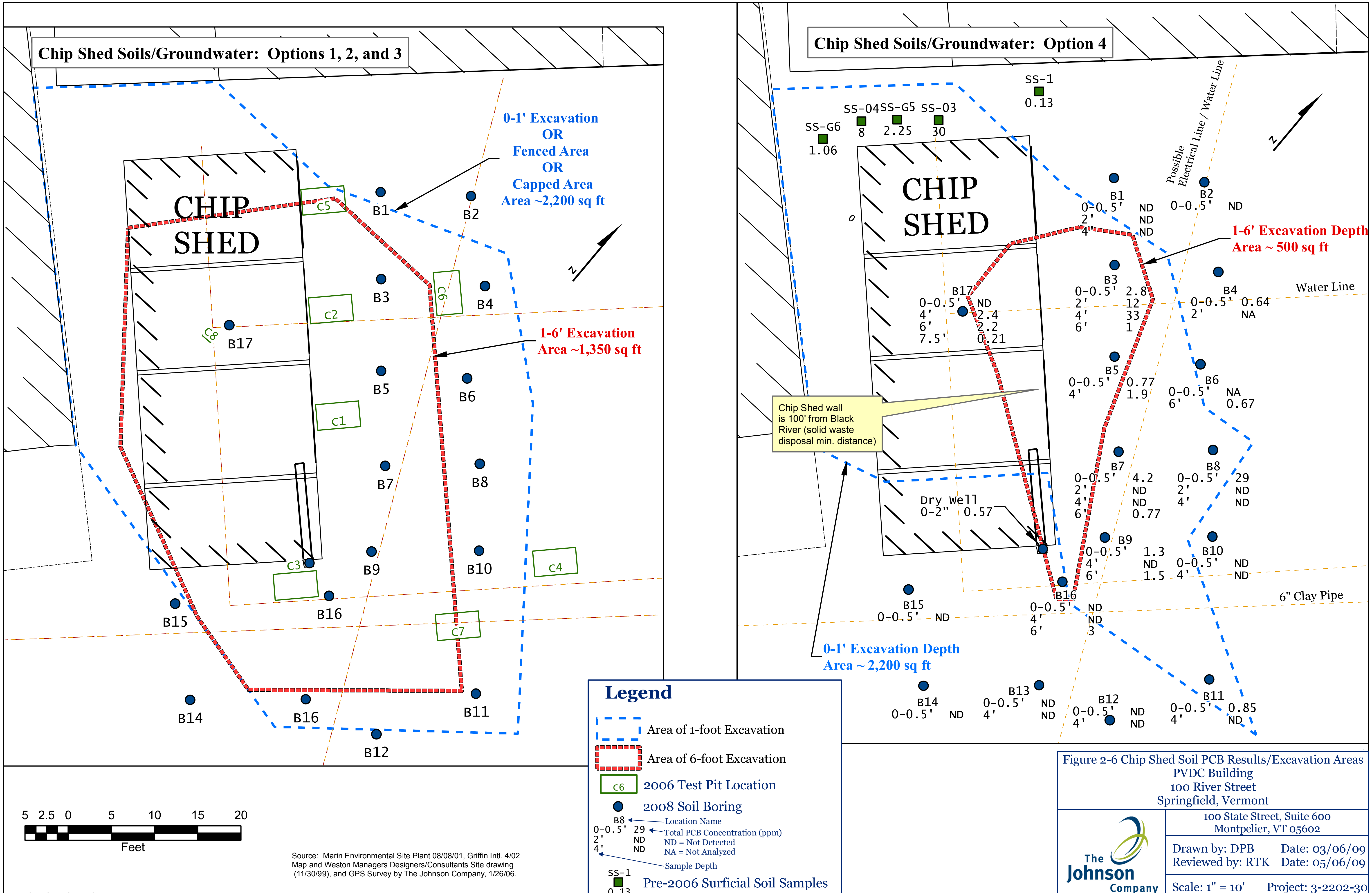



Figure 2-5 Boiler House Concrete Disposal
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 02/02/09
Reviewed by: RTK Date: 08/24/09
Scale: 1" = 10' Project: 3-2202-30



Chip Shed Soils/Groundwater: Options 1, 2, and 3
CHIP SHED
0-1' Excavation
OR
Fenced Area
OR
Capped Area
Area ~2,200 sq ft
1-6' Excavation
Area ~1,350 sq ft
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B14
B15
B16
B17
C1
C2
C3
C4
C5
C6
C7
C8
5 2.5 0 5 10 15 20
Feet
Source: Marin Environmental Site Plant 08/08/01, Griffin Intl. 4/02
Map and Weston Managers Designers/Consultants Site drawing
(11/30/99), and GPS Survey by The Johnson Company, 1/26/06.
05609 Chip Shed Soils PCBs.mxd
Chip Shed Soils/Groundwater: Option 4
CHIP SHED
SS-1
0.13
SS-G6
1.06
SS-04
8
SS-G5
2.25
SS-03
30
Possible Electrical Line / Water Line
Water Line
6" Clay Pipe
1-6' Excavation Depth
Area ~ 500 sq ft
0-1' Excavation Depth
Area ~ 2,200 sq ft
Chip Shed wall
is 100' from Black
River (solid waste
disposal min. distance)
Dry Well
0-2" 0.57
B1
0-0.5' ND
2' ND
4' ND
B2
0-0.5' ND
B3
0-0.5' 2.8
2' 12
4' 33
6' 1
B4
0-0.5' 0.64
2' NA
B17
0-0.5' ND
4' 2.4
6' 2.2
7.5' 0.21
B5
0-0.5' 0.77
4' 1.9
B6
0-0.5' NA
6' 0.67
B7
0-0.5' 4.2
2' ND
4' ND
6' 0.77
B8
0-0.5' 29
2' ND
4' ND
B9
0-0.5' 1.3
4' ND
6' 1.5
B10
0-0.5' ND
4' ND
B15
0-0.5' ND
B16
0-0.5' ND
4' ND
6' 3
B14
0-0.5' ND
B13
0-0.5' ND
4' ND
B12
0-0.5' ND
4' ND
B11
0-0.5' 0.85
4' ND
Legend
Area of 1-foot Excavation
Area of 6-foot Excavation
2006 Test Pit Location
2008 Soil Boring
B8 Location Name
0-0.5' 29 Total PCB Concentration (ppm)
2' ND ND = Not Detected
4' ND NA = Not Analyzed
Sample Depth
SS-1
0.13
Pre-2006 Surficial Soil Samples
Figure 2-6 Chip Shed Soil PCB Results/Excavation Areas
PVDC Building
100 River Street
Springfield, Vermont
The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
Drawn by: DPB Date: 03/06/09
Reviewed by: RTK Date: 05/06/09
Scale: 1" = 10' Project: 3-2202-30

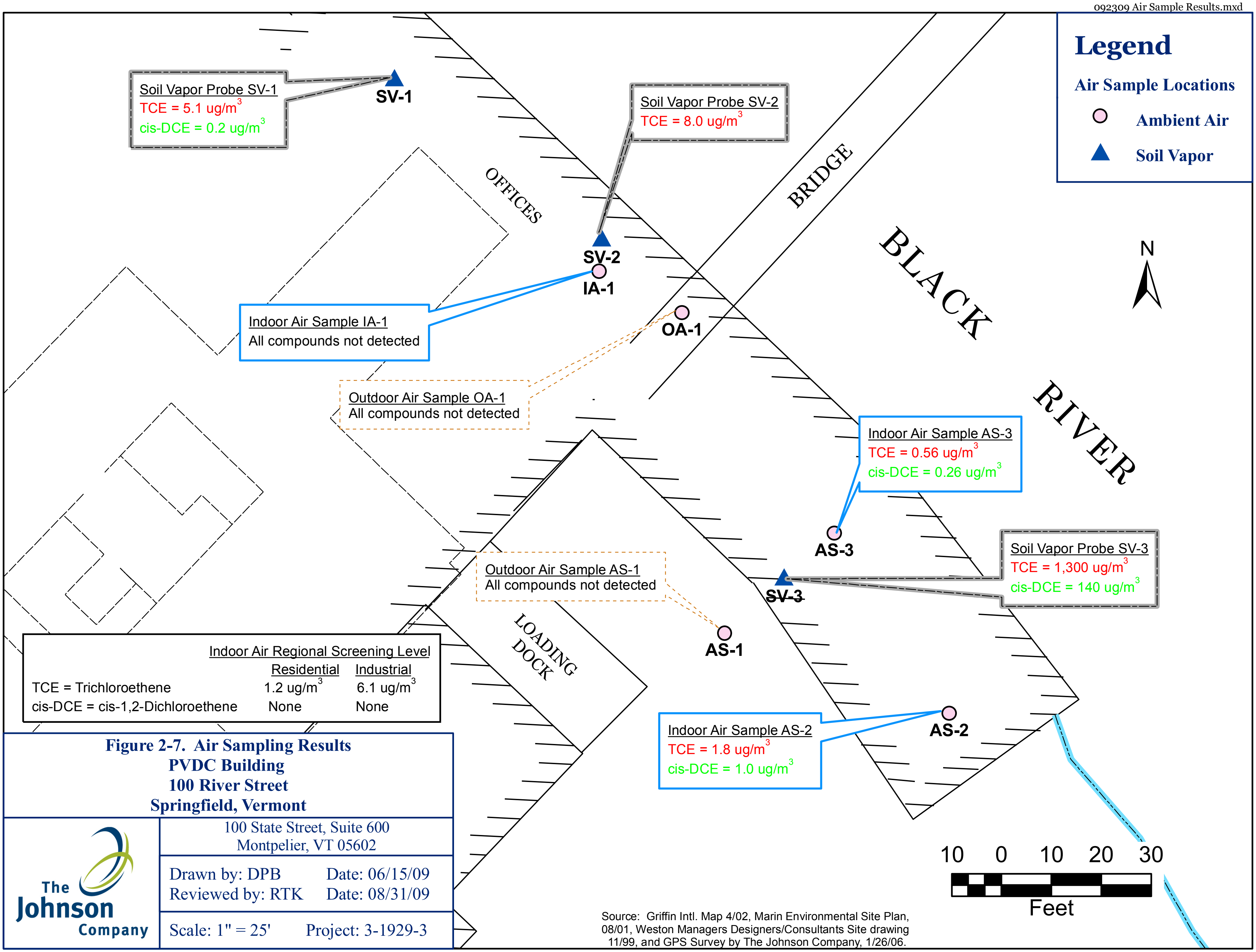
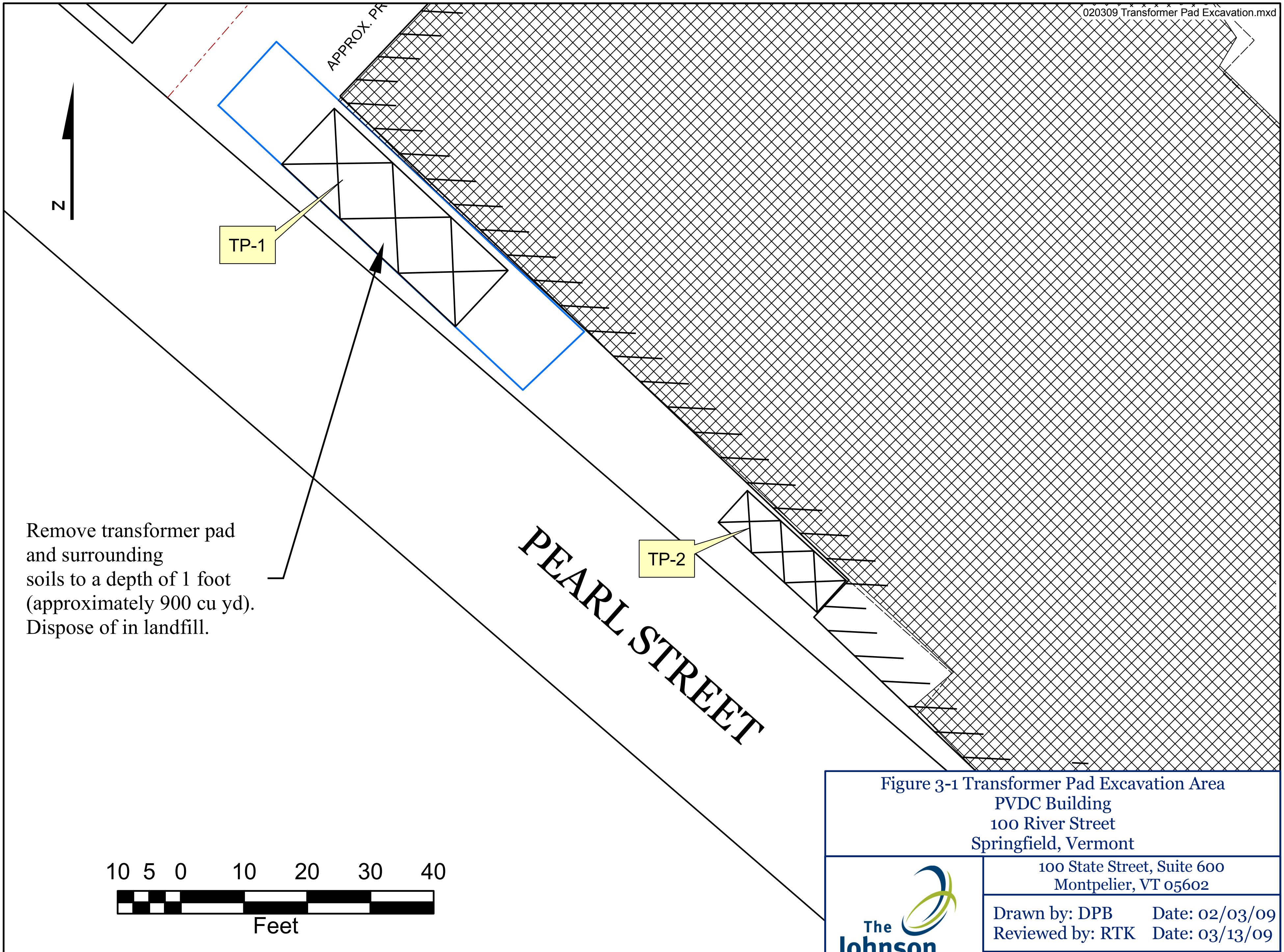



**Figure 2-7. Air Sampling Results**
**PVDC Building**
**100 River Street**
**Springfield, Vermont**




Source: Marin Environmental Site Plant, 08/08/01, Griffin Intl. 4/02 Map and Weston Managers Designers /Consultants Site drawing (11/30/99), and GPS Survey by The Johnson Company, 1/26/06.

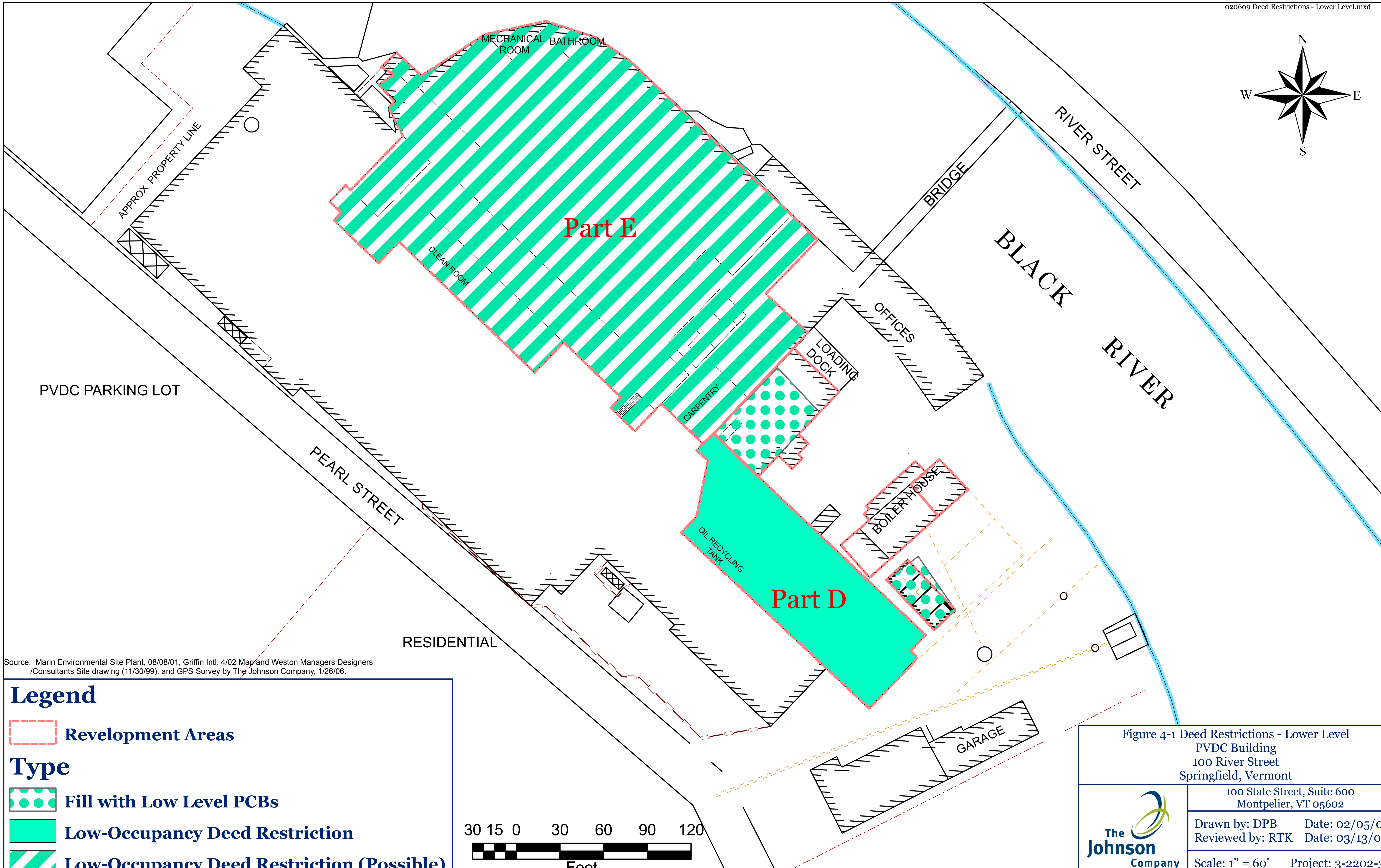
Figure 3-1 Transformer Pad Excavation Area
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 02/03/09
Reviewed by: RTK Date: 03/13/09

Scale: 1" = 20' Project: 3-2202-30




Source: Marin Environmental Site Plant, 08/08/01, Griffin Intl. 4/02 Map and Weston Managers Designers /Consultants Site drawing (11/30/99), and GPS Survey by The Johnson Company, 1/26/06.

Figure 4-1 Deed Restrictions - Lower Level
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 02/05/09
Reviewed by: RTK Date: 03/13/09
Scale: 1" = 60' Project: 3-2202-30

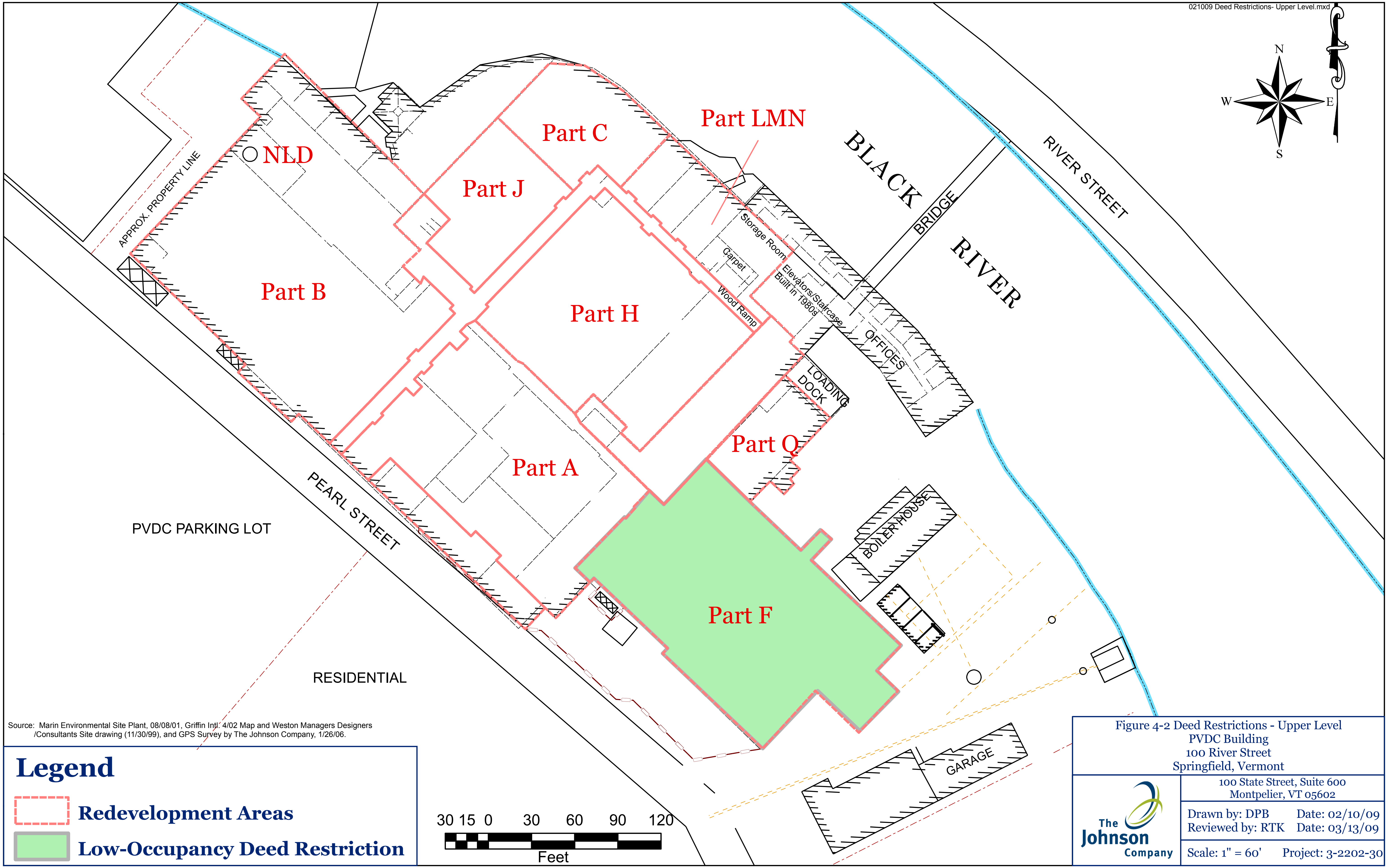

021009 Deed Restrictions- Upper Level.mxd
N
S
E
W
Part LMN
Part C
Part J
NLD
Part B
Part H
Part A
Part Q
Part F
BLACK
RIVER
RIVER STREET
BRIDGE
APPROX. PROPERTY LINE
Storage Room
Carpet
Wood Ramp
Elevators/Staircase Built in 1980s
OFFICES
LOADING DOCK
BOILER HOUSE
GARAGE
PEARL STREET
PVDC PARKING LOT
RESIDENTIAL
Source: Marin Environmental Site Plant, 08/08/01, Griffin Intl. 4/02 Map and Weston Managers Designers /Consultants Site drawing (11/30/99), and GPS Survey by The Johnson Company, 1/26/06.
Legend
Redevelopment Areas
Low-Occupancy Deed Restriction
30 15 0 30 60 90 120
Feet
Figure 4-2 Deed Restrictions - Upper Level
PVDC Building
100 River Street
Springfield, Vermont
The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
Drawn by: DPB Date: 02/10/09
Reviewed by: RTK Date: 03/13/09
Scale: 1" = 60' Project: 3-2202-30


Figure 3-2. Photograph of main building from River Street. Used with permission from Rob Yasinsac / www.hudsonvalleyruins.org.

# APPENDIX A

# SUMMARY OF JOHNSON COMPANY 2008 SUPPLEMENTAL PCB INVESTIGATION

## Concrete Sampling Methodology

Initial samples were collected between August 25 and 28, 2008 from the upper and lower levels of the main building, the Chip Shed, the upper and lower levels of the Boiler Room, the dry well outside the Chip Shed (sediment, not concrete), three external transformer pads, and the former Transformer Room on the Pearl Street side of the facility to determine the extent of PCB contamination at the Site. Samples were analyzed at Phoenix Environmental Laboratories, Inc. for PCBs via EPA Method 8082 with Soxhlet extraction. As a result of the large size of the building's concrete floor, it was cost-prohibitive to collect bulk concrete samples at the 1 per 100 square feet intervals required by 40 CFR §761.61 (a). As such, upon discussion with the EPA, the grid interval in this portion of the building was expanded to approximately 1 per 1,200 square feet, in order to ensure that the general PCB contamination patterns could be inferred over the entire 140,000± square foot building. Based on the results of initial sampling, additional samples were collected from the upper and lower floors on October 8 through 10, 2009. Follow-up samples were collected to delineate areas with elevated PCB concentrations on the upper floor on November 12, 2009. A shot blasting test was also conducted on November 12, and additional shot blast testing was performed in separate areas on December 15, 2009. All sampling results are summarized in CAP Table 2-8. The exact type of PCBs present in many of the samples could not be determined by the laboratory, because the PCB congener pattern did not match any of the standards. In all cases where the exact mixture could not be determined, the mixture most closely resembled a mixture of Aroclor 1254 and Aroclor 1260. All concentrations reported in the analytical results section are total PCB concentrations.

### Floor Samples

Before sampling, each floor location was cleared of any debris and wiped with a moist paper towel to ensure the most representative sample of the in-place concrete. All concrete samples were collected using an impact hammer drill to advance two or more co-located, 1-inch diameter by 0.5-inch deep holes at each of the selected locations. The drill bit was decontaminated between sample locations using Alconox ™ soap and water, and then wiped with a hexane-saturated paper towel. The dry concrete dust which resulted from the advancement of these holes was gathered using a clean scoopula and placed into the laboratory-provided 4 ounce amber glass containers. All samples were packed in a cooler with ice and sent via UPS to Phoenix Analytical Laboratories of Manchester, Connecticut for analysis via EPA Method 8082 for PCBs using Soxhlet extraction. In seven locations (MR2U-6, 9, and 10 and the Chip Shed upper floor samples) the floor was constructed of wood. In these locations the drill was used to splinter the top 0.5 inches of wood in the sample location and the splinters were placed in a glass jar using clean nitrile gloves.

### Wall Samples

Wall samples were collected using an impact hammer drill with a 1 inch diameter drill bit. The drill was used to create multiple co-located 0.5 inch deep holes in the wall at each sample location. Dust was collected using a dedicated tin foil tray which was held under the sample location during drilling. Holes were drilled until approximately 15 ounces of dust collected on the tin foil tray. Samples were placed in a glass jar after enough dust was collected. The drill bit was decontaminated between locations by wiping with a hexane-saturated cloth.

## Main Building

**Part A**

A total of 12 samples were collected from the 20,000 square foot concrete floor in Part A, as shown on Figure A-1. Samples from Part A were called MR2U-1 through 3, and UF-11 through 22. This portion of the building is broken into several smaller rooms that appear to have been used for painting and storage.

PCB concentrations in Part A were between 0.6 and 5.4 parts per million (ppm), with the lowest concentrations along the northern wall and the highest along the southern wall.

**Parts B, NLD, I, K**

Initially, 27 samples and 3 duplicates were collected from Part B, the Northern Loading Dock (NLD), I, and K, as shown on Figure A-2. Samples from this approximately 29,000 square foot area were called UF-1 through 6 and UF-47 through 67.

PCB concentrations in Part B ranged from 0.99 ppm to 41 ppm, although only one of the samples was greater than 20 ppm. In the NLD, sample concentrations were between 0 and 2.9 ppm. In the rooms to the east of the NLD, PCB concentrations were 2.1 and 2.8 ppm. The highest concentrations were detected in the concrete floor along the northern wall of Part B. No wall samples were collected, but it is anticipated that the brick wall here may contain concentrations similar to the floor concentrations.

**Parts C, G, H, J, LMN, and Hall**

A total of 45 samples were collected from Parts C, G, H, J, LMN, and the Hall, which comprises approximately 50,000 square feet, as shown on Figure A-3. Samples from these locations were called MR2U-4 through 6, UF-7 through 10, UF-23 through 46, and 1-UH to 17-UH. In general, a grid spacing of approximately 40 feet by 40 feet was used, except around the highest concentrations detected in Part C and in Part LMN, where spacing was reduced to approximately 20 feet by 20 feet.

Samples from Part C contained the highest PCB concentrations in this general area, ranging from 1.5 to 38 ppm, with one sample from the hallway outside Part C containing a concentration of 48 ppm. Part G samples contained PCB concentrations between 1.6 and 3.3 ppm. In Part H, concentrations were between 1.4 and 20 ppm, with the highest concentrations (16 ppm and 20 ppm) located in opposite corners of the largest room. Part J samples contained PCBs at concentrations between 0.91 and 12 ppm, with the highest concentration at the western wall between Part J and Part C. In Part LMN, which is composed of several small rooms, concentrations ranged from 0.76 to 11 ppm, with the highest concentration in the room beside Part C. Samples collected from the Hall contained PCBs that ranged from 0.36 to 8.8 ppm, with the exception of the 48 ppm concentration at the doorway to Part C.

***Part D***

Part D is the lower level of Machine Room 2. Fifty floor samples were collected from the approximately 12,000 square foot lower level, called MR2L-1 through 50. Thirty five samples were collected in 10 by 10 foot grid squares in the vicinity of the cutting oil recycling tank located in the northwest corner because it was suspected that the highest concentrations of

PCBs would be found in this area. Five samples were collected to the southeast of the recycling tank in 20 by 20 foot grid squares. Two samples were collected in the northeast corner and one sample was collected from the southeast end of the building in 40 by 40 foot grid squares. The remaining seven samples were distributed along the southeast wall in 40 by 20 foot rectangles. Figure A-4 shows the location of each of the lower level samples.

Part D samples contained relatively uniform concentrations of PCBs. Of the 50 samples, 42 contained PCBs at concentrations between 1 and 25 ppm. The remaining eight samples contained less than 1 ppm of PCBs.

***Part E***

Part E is the former Machine Room 4 and hallways on the same floor. As shown on Figure A-5, 34 samples were collected from the floor of Machine Room 4 (called MR4-1 through 34), and 23 samples were collected from the hallways and workshop (called LF-1 through 23). Since no area appeared to be more contaminated than any other, all 34 samples were evenly spaced in 30 by 30 foot grid squares. MR4 is currently in use as a warehouse, so excess dust was collected using a dustpan and brush and placed in a plastic garbage bag. After sampling was complete, this bag was stored in the T1 Electrical Room. The manner of disposal will depend on the concentrations of PCBs found in the MR4 samples.

All of the samples from Part E contained PCBs at concentrations greater than 1 ppm and 7 samples contained between 10 and 21 ppm.

***Part F***

Part F is the upper level of Machine Room 2 (MR2). A total of 32 samples were collected from the concrete floor, as shown on Figure A-6. These samples were called MR2U-7 through 23, MR2U-W1 through W10, and G-1 through 5. Six samples were collected in the hallway to the northwest of MR2 and 17 samples were collected from the main floor area in 40 by 40 foot grid squares. The remaining 10 samples were distributed every 20 feet along the travel lane leading to the upper Chip Shed. The travel lane is marked by two parallel lines of paint and runs across the main floor area from the door located in the northeast wall to the ramp to the Chip Shed, which is located in the southeast corner of the room.

Of the 32 samples collected from Part F, one sample contained less than 1 ppm and two samples contained more than 25 ppm of PCBs (the highest PCB concentrations were detected along the western and southern walls, and the maximum detection was 33 ppm). The rest of the samples contained between 1 and 25 ppm of PCBs.

***Part O***

Part O is the upper level of a workshop area abutting Part F; Part O will be demolished. As shown on Figure A-6, two samples were collected from Part O, called MR2U-9 and 10.

The two samples collected from Part O contained PCB concentrations of 4.3 and 6 ppm, respectively.

***Part P***

Part P is the lower level of Part O, and will also be demolished with Part O. As shown on Figure A-4, Part P abuts Part D, and the two samples collected the concrete floor in Part P were called MR2L-49 and 50.

The two samples collected from Part P contained PCB concentrations of 0.45 to 4.1 ppm.

***Offices***

The Office areas that abut the Black River were considered separate from the manufacturing portions of the main building, and were judged to be less likely to have been impacted by PCBs. As such, a total of three samples were collected from the upper floor (18-UH to 20-UH) of the Offices, and five samples (21-UH through 25-UH) were collected from the lower floor. In these areas, since renovations will include removal of floor coverings such as carpet or vinyl tile, the coverings were removed from the sampling area and the concrete below was sampled.

No PCBs were reported above laboratory detection limits in any samples except at 18-UH, where the concentration was below 1 ppm. As such, the Offices are not considered to be TSCA-regulated.

**Shot Blast Remediation Tests**

On November 12, 2008, a shot blasting remediation test was performed in Part B at the location with the highest PCB concentrations. This test was selected for planning purposes to evaluate the potential effectiveness of shot blasting or scarification as a remedial action at the Site. In this test, the area in the cutting room with the highest PCB concentration was chosen. A 100 square foot area was divided into four quadrants (Q1 through Q4). One sample was collected from each quadrant using the technique described above. A shot blasting machine operated by Clean World Floors of Massachusetts was then used to remove a lift of 1/16 inch of concrete, a 1/8 inch lift, and a 1/4 inch lift, with 1/2 inch deep samples collected from each quadrant between lifts. The shot blasting machine was connected to a dust collector, which effectively removed all residual dust from previous sampling and shot blasting. Overall, PCB concentrations generally declined with each lift, although not to the target concentration of 1 ppm. Following the shot blast test, samples from concrete remaining in this test area (after the concrete was removed to a depth of 1/4 inch) ranged from 14 to 55 ppm. All samples were analyzed at Phoenix Analytical Laboratories for PCBs using EPA Method 8082 with Soxhlet extraction. The analytical results are summarized in CAP Table 2-8.

In an effort to assess the potential effectiveness of shot blasting in areas with lower PCB concentrations, where intensive oil use was less likely to have occurred, an additional shot blast test was conducted on December 15, 2008. In this test, four total locations were selected for shot-blasting an area of approximately 1.5 feet by 3 feet. Two of the locations were located in Part B. These test areas were sited at locations where PCB samples had been previously collected (UF-50 and UF-57). In this test, separate lifts of 1/16 inch, 1/8 inch, 1/4 inch, and 1/2 inch were removed, with samples collected between each lift. Samples were collected at 1/2 inch depths, as described above and analyzed at Phoenix Analytical Laboratories for PCBs using EPA Method 8082 with Soxhlet extraction; analytical results are attached. In these test areas, little to no change was observed between PCB concentrations at the concrete surface and after the top 1/2 inch of concrete had been removed.

## Outbuildings or Exterior Areas

### *Boiler House*

Three floor samples were collected from the large boiler house, as shown on Figure 2-5. One sample was collected near the floor drain on the lower level near the boiler and two samples were collected from the upper floor in the small workshop/storage area. Since the building is built on a hill, both rooms are at ground level and are slab-on-grade. Samples from the boiler house were called Boiler-E, Mid, and W.

Of the three samples taken in the boiler room, Boiler E and W contained PCBs at concentrations below 1 ppm. Boiler-Mid contained PCBs at a concentration of 1.4 ppm.

### *Chip Shed*

The Chip Shed consists of four bays with doors that face northeast. Bays 1, 2 and 3 have overhead doors and were used to store metal chips from the gear shaper machines. Bay 4 is located under the ramp that leads to the upper level, and appears to have been used for general storage. A total of 56 samples were collected from the Chip Shed: 43 from the walls and 13 from the floors, as shown on Figure 2-3. Three floor samples were collected from each bay, two from the lower floor and one from the upper floor. A total of 11 samples were collected from the walls of each bay: 5 lower level samples at approximately 5 feet above the floor and 6 upper level samples at approximately 15 feet above the floor. Of the five lower level samples, one was collected from the wall opposite the overhead door and two were taken from each side wall. No samples were collected from the overhead doors. Of the six upper level samples, one was collected from the wall opposite the overhead door, one was collected from the wall above the overhead door, and two were collected from each of the side walls. In Bay 4, an upper wall sample opposite the door was not taken because the ceiling was too low. Instead, a sample was taken from the wooden ramp leading from the upper level of Machine Room 2 to the Chip Shed. Lower level samples from all bays were sent to the laboratory for immediate analysis. Upper level samples were held until it was determined that PCBs were present in the lower level samples, after which all remaining samples were analyzed.

The highest concentrations of PCBs were found in samples collected from the upper floor, which is made of wood. Samples from Bays 2 and 3 had higher concentrations of PCBs than the samples from the other bays, as detailed below.

#### Bay 1

The lower floor sample nearest the overhead door, CS-Bay1-F2, contained PCBs at 2.1 ppm and the upper floor sample contained PCBs at 21 ppm. All other samples either did not contain PCBs or contained PCBs at concentrations below 1 ppm.

#### Bay 2

The lower floor sample nearest the overhead door, CS-Bay2-F2 and the upper wall sample above the overhead door, CS-Bay2-W-U6 were the only samples that did not contain PCBs at concentrations above 1 ppm. All other samples contained concentrations of PCBs between 1 and 10 ppm, with the exception of CS-Bay2-UF1, the upper floor sample. CS-Bay2-UF1 contained PCBs at 53 ppm, possibly because the floor in this area is made of wood and may be more porous than concrete.

**Bay 3**

The upper wall sample opposite the overhead door and the two upper wall samples nearest the overhead door on the side walls were the only samples with concentrations below 1 ppm. Of the remaining samples, five were between 1 and 10 ppm, three were between 10 and 25 ppm and one, the wooden upper floor sample, contained 96 ppm of PCBs.

**Bay 4**

Bay 4 contained the lowest concentrations of PCBs; no sample contained PCBs at concentrations above 10 ppm. The upper floor sample and the ramp sample, both collected from wood, were 2 and 4.7 ppm respectively.

## Soil, Sediment, or Aqueous Samples

### *Transformer Room and Transformer Pads*

The former Transformer Room and the transformer pads are all located on the southwest side of the building. As shown on Figures 1-2 and A-8, Transformer Pads 1 and 2 are located between the main building's western wall and Pearl Street, and the former Transformer Room is located immediately south of Transformer Pad 2. Transformer Pad 3 is located beside the small former boiler house near the southwestern corner of the main building. Three samples were collected from the concrete at Transformer Pad 1 (TP1-1 to 3), three samples were from the soil surrounding Transformer Pad 2 (TP2-1 to 3), and two samples were from the concrete pad of Transformer Pad 3 (TP3-1 and 2). Soil samples were taken from outside the fence around Transformer Pad 2 because the transformers are active and the concrete pad could not be safely accessed for sampling. Two floor samples (TR-F1 and F2)were collected from the southwestern end of the former Transformer Room, and three wall samples (TR-W1 through W3) were collected, one from each of the walls on the southwestern end of the room. No samples were collected from the northeastern part of the Transformer Room because this area contains live high voltage wires.

None of the exterior transformer pad samples and none of the Transformer Room wall samples contained PCBs at concentrations above laboratory detection limits. The two floor samples collected from the Transformer Room both contained PCBs. TR-F1, the sample nearest the door, contained 0.68 ppm of PCBs and TR-F2 contained a concentration of 2.2 ppm.

### *Chip Shed Dry Well*

The dry well located at the eastern corner of the Chip Shed (Figure 2-3 and 2-6) contained approximately 2 feet of standing water on August 25, 2008. A 5-gallon bucket found in the dry well was used to bail the majority of the water and the remainder was purged with a peristaltic pump. A long handled, stainless steel spoon was used to collect a surficial sediment sample from 0-2 inches. No deep sample was taken because the dry well contained less than 6 inches of sediment.

The sediment sample collected from the Chip Shed dry well contained PCBs at a concentration of 0.57 ppm.

***Chip Shed Soil***

On August 28, 2008, a total of 41 samples were collected at depths ranging from 0-0.5 feet to 8 feet from 17 soil borings located to the northeast and southeast of the Chip Shed (Figure 2-6). Soil borings were advanced using a Geoprobe® drill rig to refusal or to a maximum depth of 9 feet. Continuous core samples were observed and logged for geology and indications of staining or strong odors (boring logs are provided in Attachment A-1). Samples were collected from the surface and at 2 foot increments, although not all samples were analyzed by the laboratory. All samples were sent to Phoenix Environmental Laboratories, Inc. and analyzed for PCBs via EPA Method 8082 with Soxhlet extraction.

Contamination of the soil in the vicinity of the Chip Shed appears to be limited to the soil inside and to the northeast of the building. Concentrations of PCBs in all samples were less than 50 ppm, so the soil in this area does not need to be considered hazardous waste. Of the 28 samples collected to the northeast of the building, 16 contained detectable concentrations of PCBs and ten contained more than 1 ppm of PCBs. Thirteen samples were collected to the south and southwest of the building. Of these 13 samples, only the three samples from B16, the boring location at the eastern corner of the building, contained PCBs at concentrations above 1 ppm, the highest of which was 3.7 ppm in the 8' sample. Profiles of these soil sampling results are provided as Figures A-9 and A-10.

***Groundwater***

On August 28th, 2008, existing wells GMW-3, 4, 5, and 1D and MW-2, 6, 11, 14, 15, and 16 were sampled using the low-flow purge method. MW-15 contained free product, so no parameters were measured; also, because MW-15 has a low recharge rate, it was pumped dry and the recharge was sampled. Samples were sent to Phoenix Environmental Laboratories, Inc. and analyzed for PCBs via EPA method 8082. The field sampling forms are provided in Attachment A-1.

Only the sample from the well nearest the Chip Shed, MW-15, contained PCBs at concentrations above detection limits. The sample from MW-15 contained 48 ug/L of PCBs, above the VGES of 0.5 ug/L. The laboratory results are provided in Table 2-3 of the CAP.

***Cutting Oil Recycling Tank***

A two-compartment cutting oil recycling tank is located in a room off the northwest corner of the lower level of Machine Room 2 (Figure A-4). The eastern compartment contains oily water; the western compartment is empty but the interior walls are coated with about 0.5 inch of oily sludge. An aqueous sample was collected using a long handled dipper and a sludge sample was collected with a putty knife. Both samples were analyzed at Phoenix Analytical Laboratories, Inc. for PCBs via EPA Method 8082; the sludge sample was prepared at the laboratory using Soxhlet extraction. The standing water in the bottom of the tank and in the valve pit beneath the tank were both probed for depth with the long handled dipper.

Upon probing the tank, it was found that the liquid in the tank was approximately 2.5 feet deep. The exterior dimensions are approximately 7 x 20 feet, so the volume of liquid is approximately 350 cubic feet, or 2,618 gallons. In addition, the 5 x 11 foot sump adjacent to the recycle tank contained approximately 2.5 feet of liquid similar in appearance to the liquid in the recycle tank. This is approximately another 138 cubic feet, or 1,032 gallons for a total of approximately 3,200 gallons. The aqueous sample of the liquid in the tank contained PCBs at a concentration of 25 ug/L, above the TSCA limit. This concentration requires the liquid to be disposed of as PCB-contaminated liquid at a TSCA-approved facility. The sludge sample contained a concentration of 23 ppm of PCBs, which indicates that it may be disposed of as solid waste (the sludge would pass a paint filter test and therefore is not considered a liquid waste).

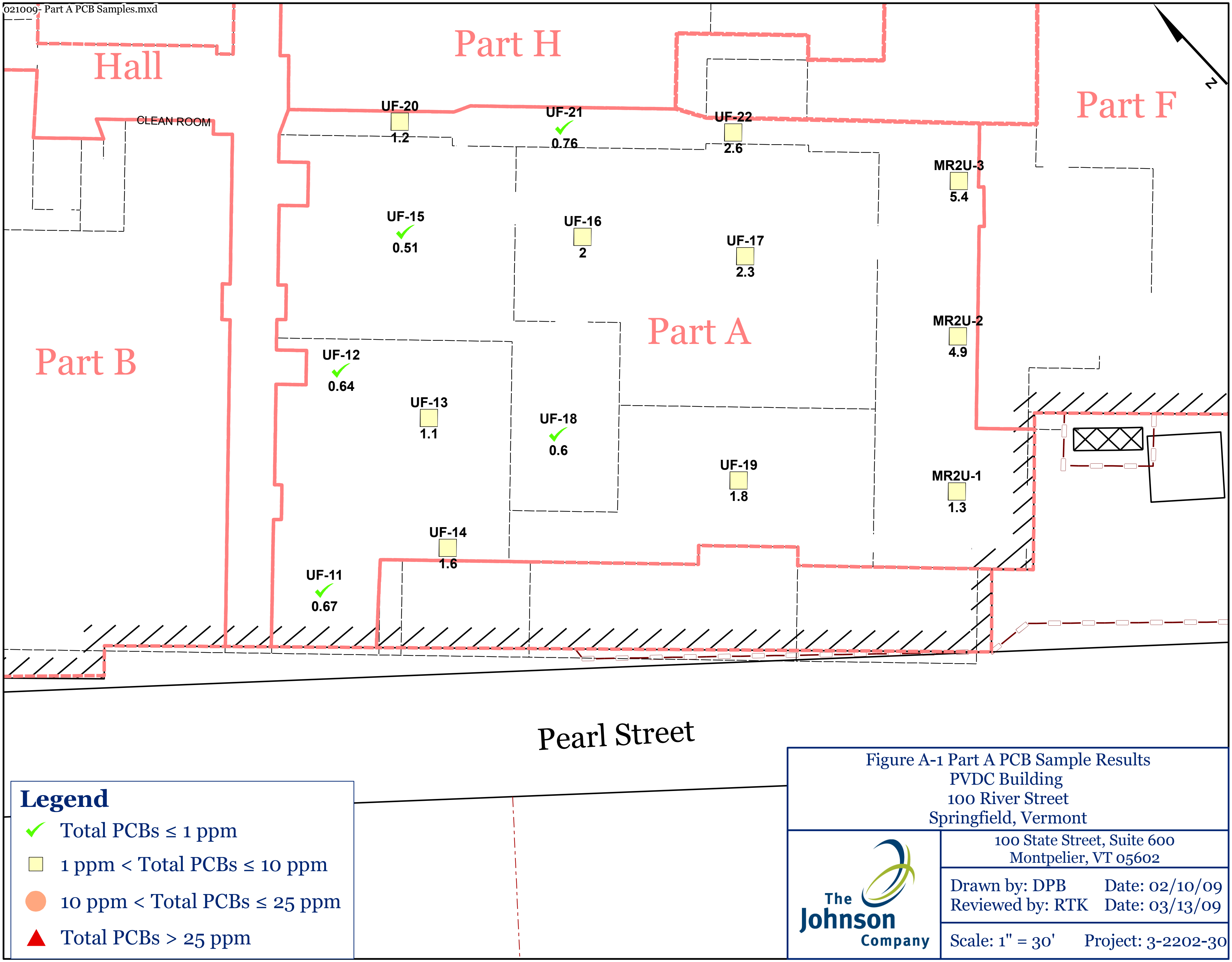
***T2 Electrical Room***

An attempt was made to sample the sediment in the vault in the T2 electrical room, but no sample could be collected. Only minimal amounts of sediment were present and accessibility was limited.

## APPENDIX A FIGURES

***List of Attached Figures:***


| | |
|---|---|
| Figure A-1 | Part A PCB Sample Results |
| Figure A-2 | Parts B, NLD, I, and K PCB Sample Results |
| Figure A-3 | Upper Level – Northeastern Areas PCB Results |
| Figure A-4 | Parts D and P PCB Results |
| Figure A-5 | Part E PCB Results |
| Figure A-6 | Part F PCB Results |
| Figure A-7 | Northeastern Office Area PCB Sample Results |
| Figure A-8 | Transformer Pad PCB Results |
| Figure A-9 | Chip Shed Geologic Profile A-A’ |
| Figure A-10 | Chip Shed Geologic Profile B-B’ |




## Legend

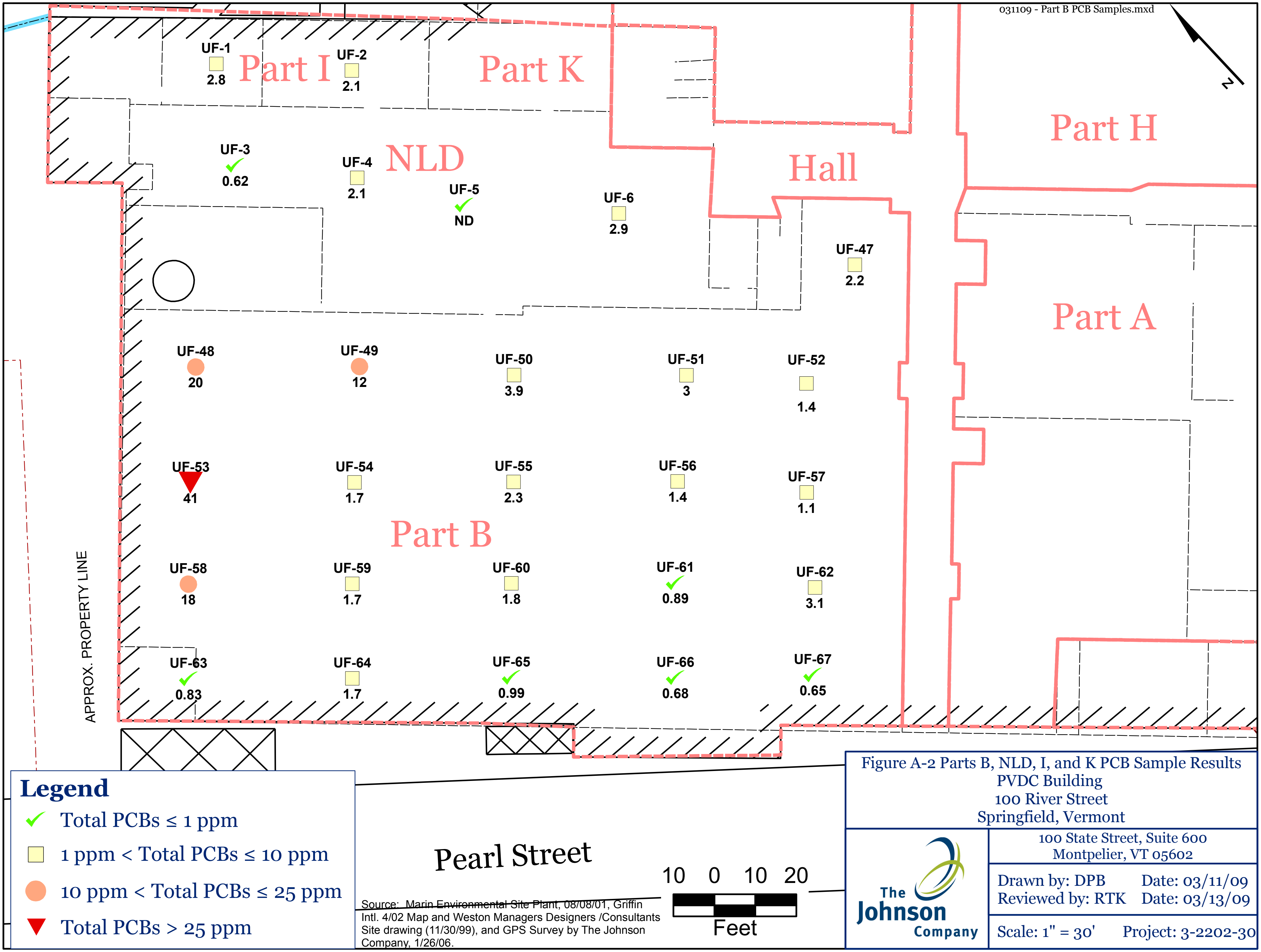
- ✓ Total PCBs ≤ 1 ppm
- □ 1 ppm < Total PCBs ≤ 10 ppm
- ● 10 ppm < Total PCBs ≤ 25 ppm
- ▲ Total PCBs > 25 ppm

Figure A-1 Part A PCB Sample Results
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 02/10/09
Reviewed by: RTK Date: 03/13/09

Scale: 1" = 30' Project: 3-2202-30


031109 - Part B PCB Samples.mxd
N
Part I
Part K
Part H
NLD
Hall
Part A
Part B
UF-1
2.8
UF-2
2.1
UF-3
0.62
UF-4
2.1
UF-5
ND
UF-6
2.9
UF-47
2.2
UF-48
20
UF-49
12
UF-50
3.9
UF-51
3
UF-52
1.4
UF-53
41
UF-54
1.7
UF-55
2.3
UF-56
1.4
UF-57
1.1
UF-58
18
UF-59
1.7
UF-60
1.8
UF-61
0.89
UF-62
3.1
UF-63
0.83
UF-64
1.7
UF-65
0.99
UF-66
0.68
UF-67
0.65
APPROX. PROPERTY LINE
Pearl Street
Legend
Total PCBs ≤ 1 ppm
1 ppm < Total PCBs ≤ 10 ppm
10 ppm < Total PCBs ≤ 25 ppm
Total PCBs > 25 ppm
Source: Marin Environmental Site Plant, 08/08/01, Griffin Intl. 4/02 Map and Weston Managers Designers /Consultants Site drawing (11/30/99), and GPS Survey by The Johnson Company, 1/26/06.
10 0 10 20
Feet
Figure A-2 Parts B, NLD, I, and K PCB Sample Results
PVDC Building
100 River Street
Springfield, Vermont
The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
Drawn by: DPB Date: 03/11/09
Reviewed by: RTK Date: 03/13/09
Scale: 1" = 30' Project: 3-2202-30

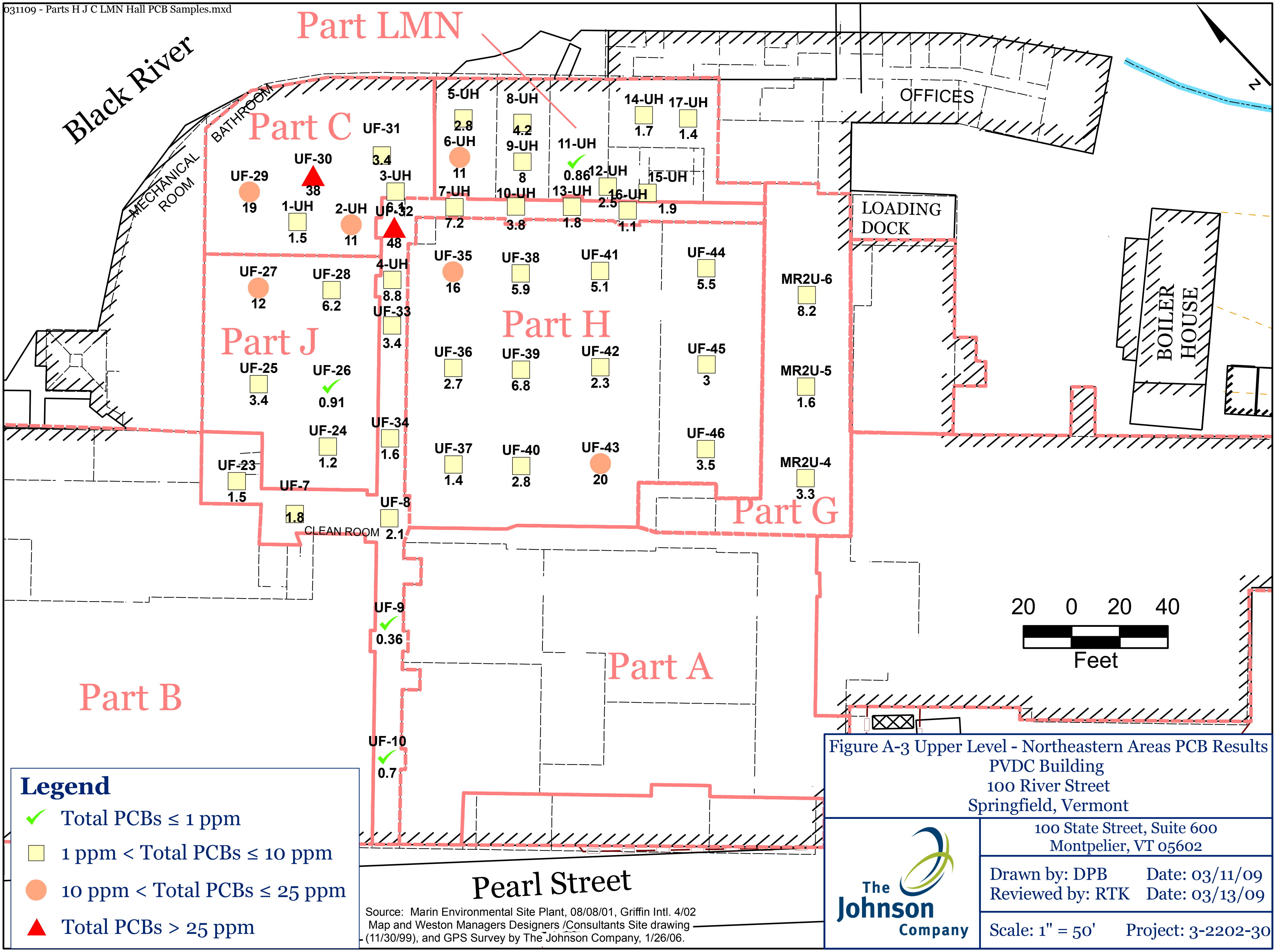
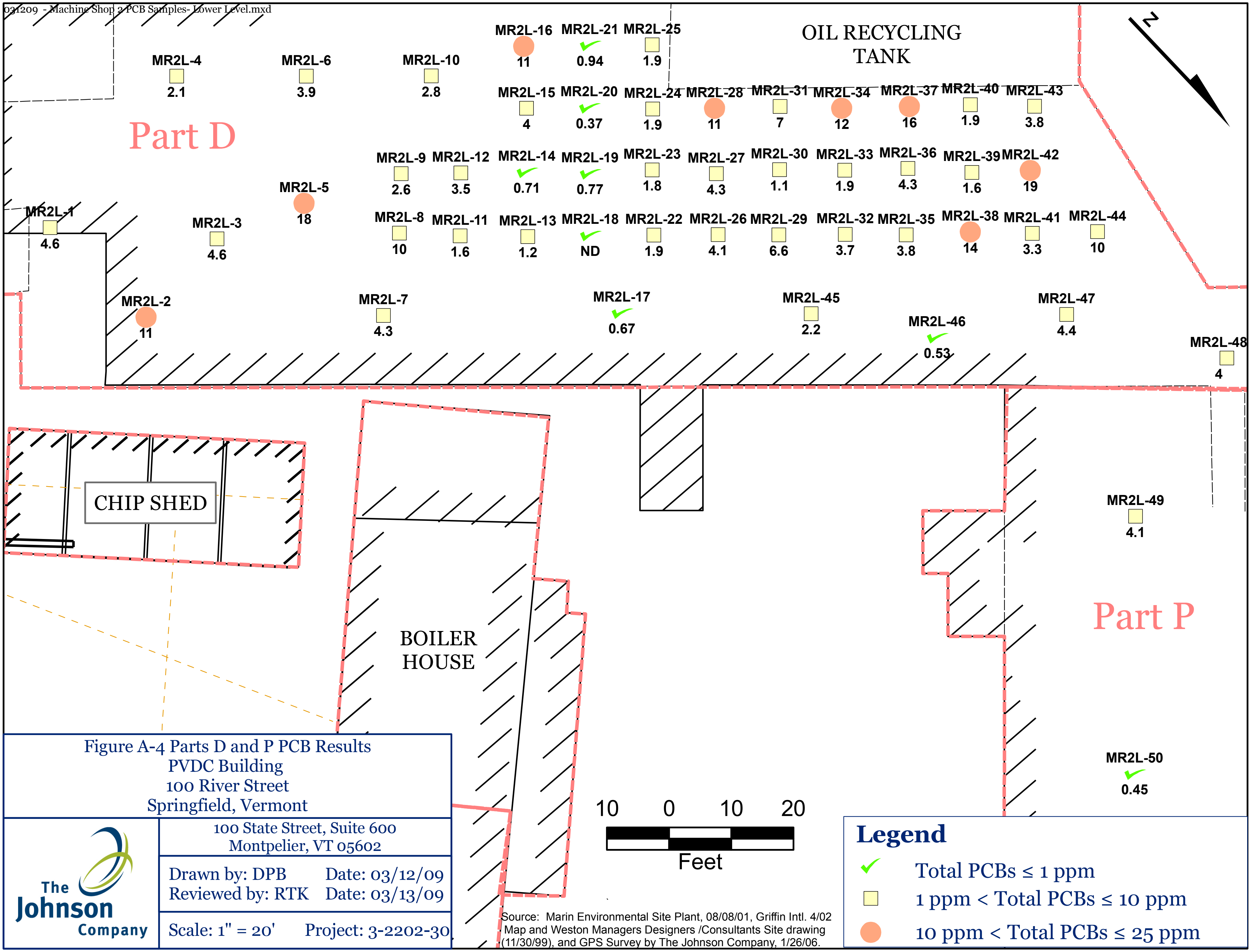
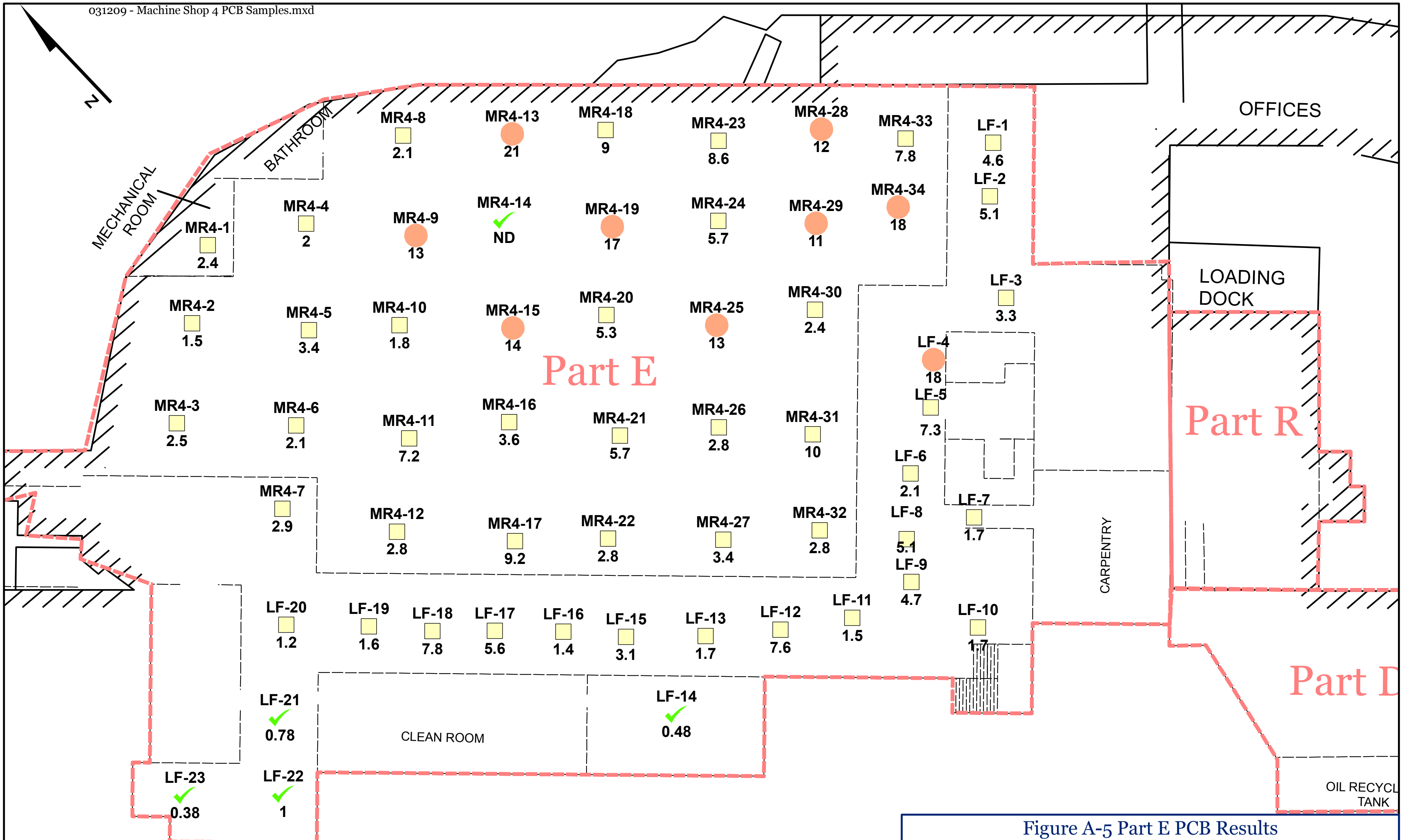



Figure A-3 Upper Level - Northeastern Areas PCB Results
PVDC Building
100 River Street
Springfield, Vermont



031209 - Machine Shop 2 PCB Samples- Lower Level.mxd
OIL RECYCLING TANK
N
Part D
Part P
CHIP SHED
BOILER HOUSE
MR2L-1 4.6
MR2L-2 11
MR2L-3 4.6
MR2L-4 2.1
MR2L-5 18
MR2L-6 3.9
MR2L-7 4.3
MR2L-8 10
MR2L-9 2.6
MR2L-10 2.8
MR2L-11 1.6
MR2L-12 3.5
MR2L-13 1.2
MR2L-14 0.71
MR2L-15 4
MR2L-16 11
MR2L-17 0.67
MR2L-18 ND
MR2L-19 0.77
MR2L-20 0.37
MR2L-21 0.94
MR2L-22 1.9
MR2L-23 1.8
MR2L-24 1.9
MR2L-25 1.9
MR2L-26 4.1
MR2L-27 4.3
MR2L-28 11
MR2L-29 6.6
MR2L-30 1.1
MR2L-31 7
MR2L-32 3.7
MR2L-33 1.9
MR2L-34 12
MR2L-35 3.8
MR2L-36 4.3
MR2L-37 16
MR2L-38 14
MR2L-39 1.6
MR2L-40 1.9
MR2L-41 3.3
MR2L-42 19
MR2L-43 3.8
MR2L-44 10
MR2L-45 2.2
MR2L-46 0.53
MR2L-47 4.4
MR2L-48 4
MR2L-49 4.1
MR2L-50 0.45
10 0 10 20
Feet
Figure A-4 Parts D and P PCB Results
PVDC Building
100 River Street
Springfield, Vermont
The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
Drawn by: DPB Date: 03/12/09
Reviewed by: RTK Date: 03/13/09
Scale: 1" = 20' Project: 3-2202-30
Source: Marin Environmental Site Plant, 08/08/01, Griffin Intl. 4/02 Map and Weston Managers Designers /Consultants Site drawing (11/30/99), and GPS Survey by The Johnson Company, 1/26/06.
Legend
Total PCBs ≤ 1 ppm
1 ppm < Total PCBs ≤ 10 ppm
10 ppm < Total PCBs ≤ 25 ppm




## Legend

- ✓ Total PCBs ≤ 1 ppm
- ☐ 1 ppm < Total PCBs ≤ 10 ppm
- ● 10 ppm < Total PCBs ≤ 25 ppm

20 0 20 40
Feet

Source: Marin Environmental Site Plant, 08/08/01, Griffin Intl. 4/02 Map and Weston Managers Designers /Consultants Site drawing (11/30/99), and GPS Survey by The Johnson Company, 1/26/06.

**Figure A-5 Part E PCB Results**
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 03/12/09
Reviewed by: RTK Date: 03/13/09

Scale: 1" = 40' Project: 3-2202-30

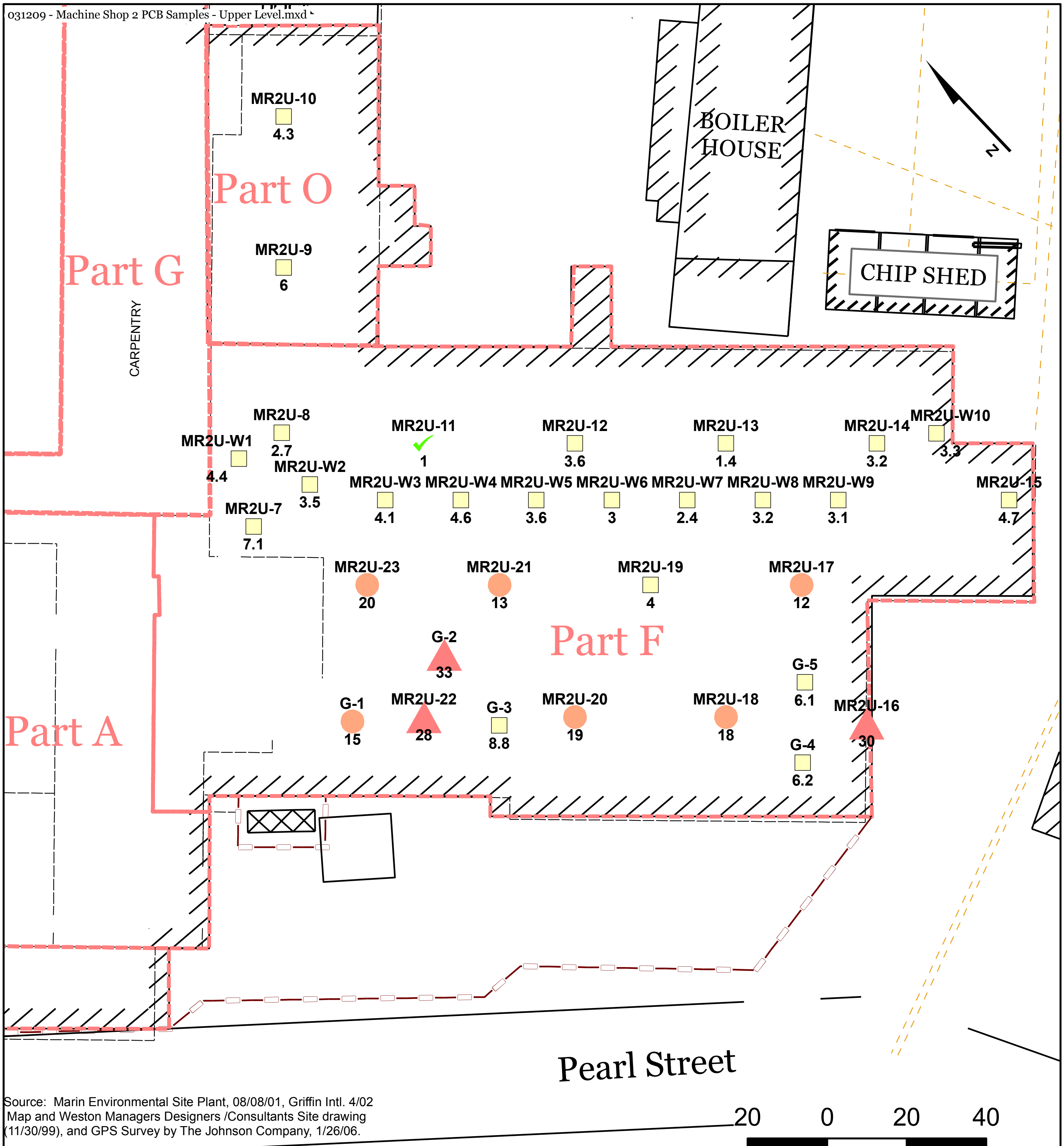



Figure A-6 Part F PCB Results
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company

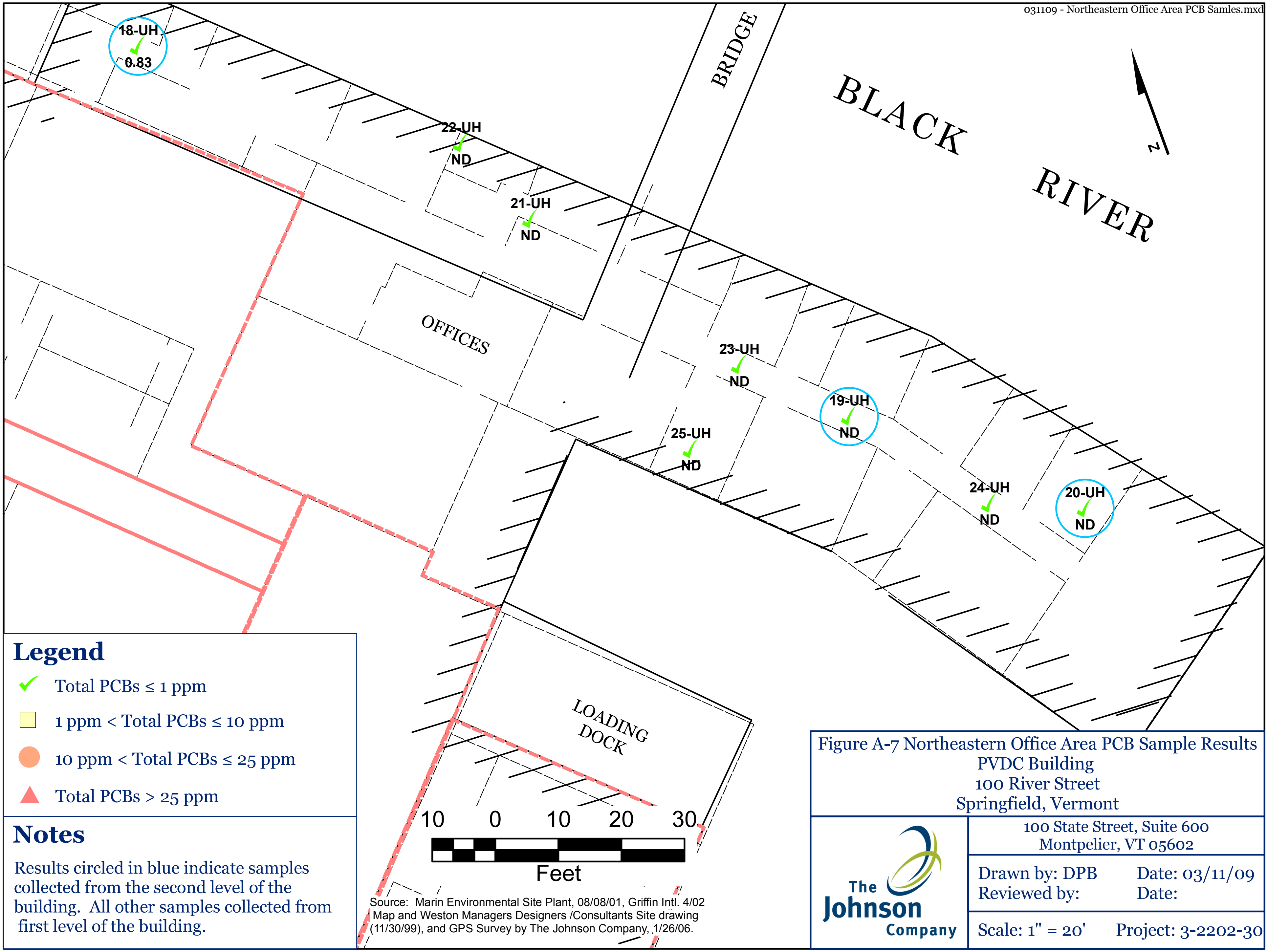
100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 03/12/09
Reviewed by: RTK Date: 03/13/09

Scale: 1" = 35' Project: 3-2202-30

**Legend**

- ✓ Total PCBs ≤ 1 ppm
- □ 1 ppm < Total PCBs ≤ 10 ppm
- ● 10 ppm < Total PCBs ≤ 25 ppm
- ▲ Total PCBs > 25 ppm




## Legend

- ✓ Total PCBs ≤ 1 ppm
- 1 ppm < Total PCBs ≤ 10 ppm
- 10 ppm < Total PCBs ≤ 25 ppm
- Total PCBs > 25 ppm

## Notes

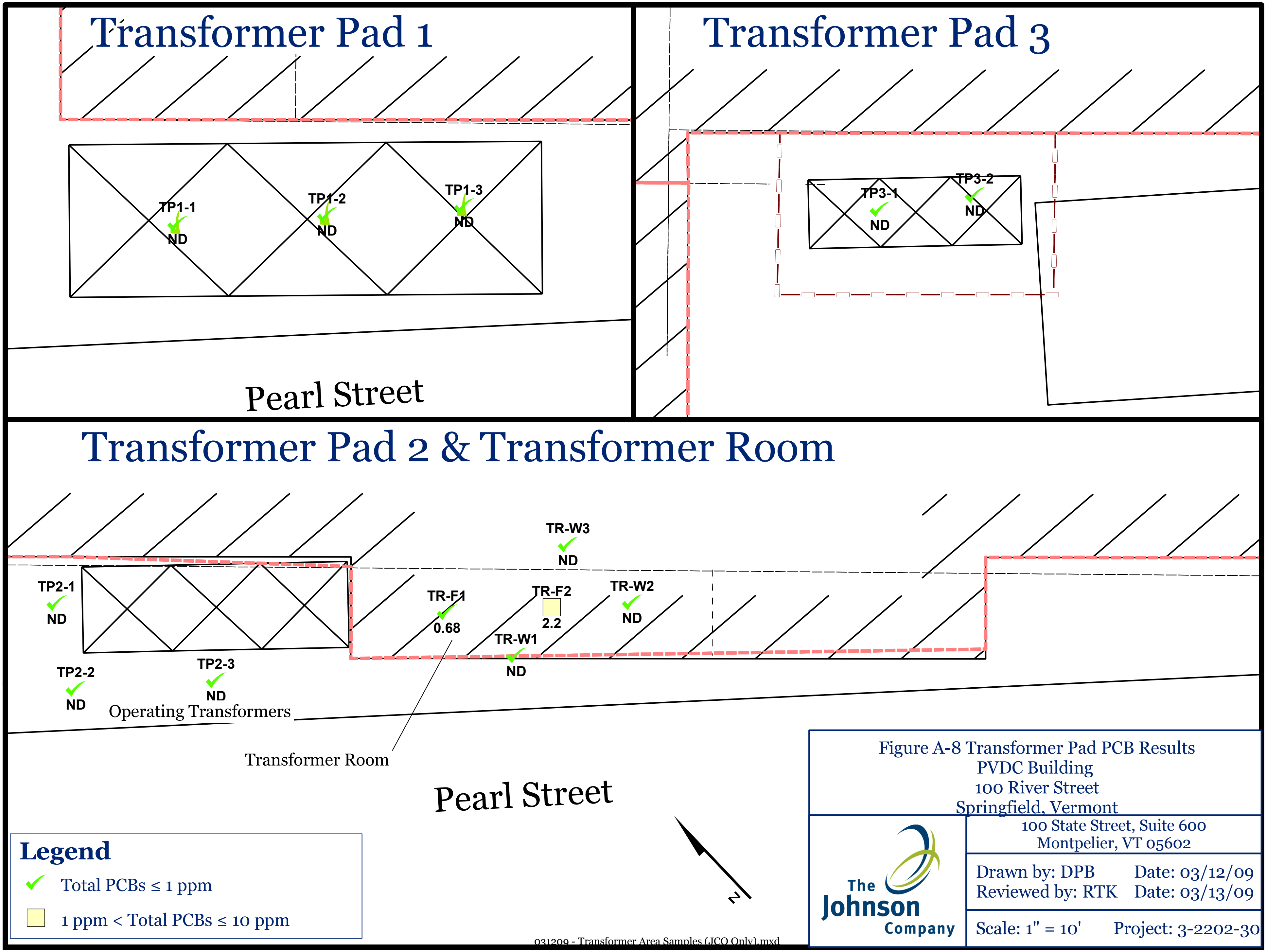
Results circled in blue indicate samples collected from the second level of the building. All other samples collected from first level of the building.

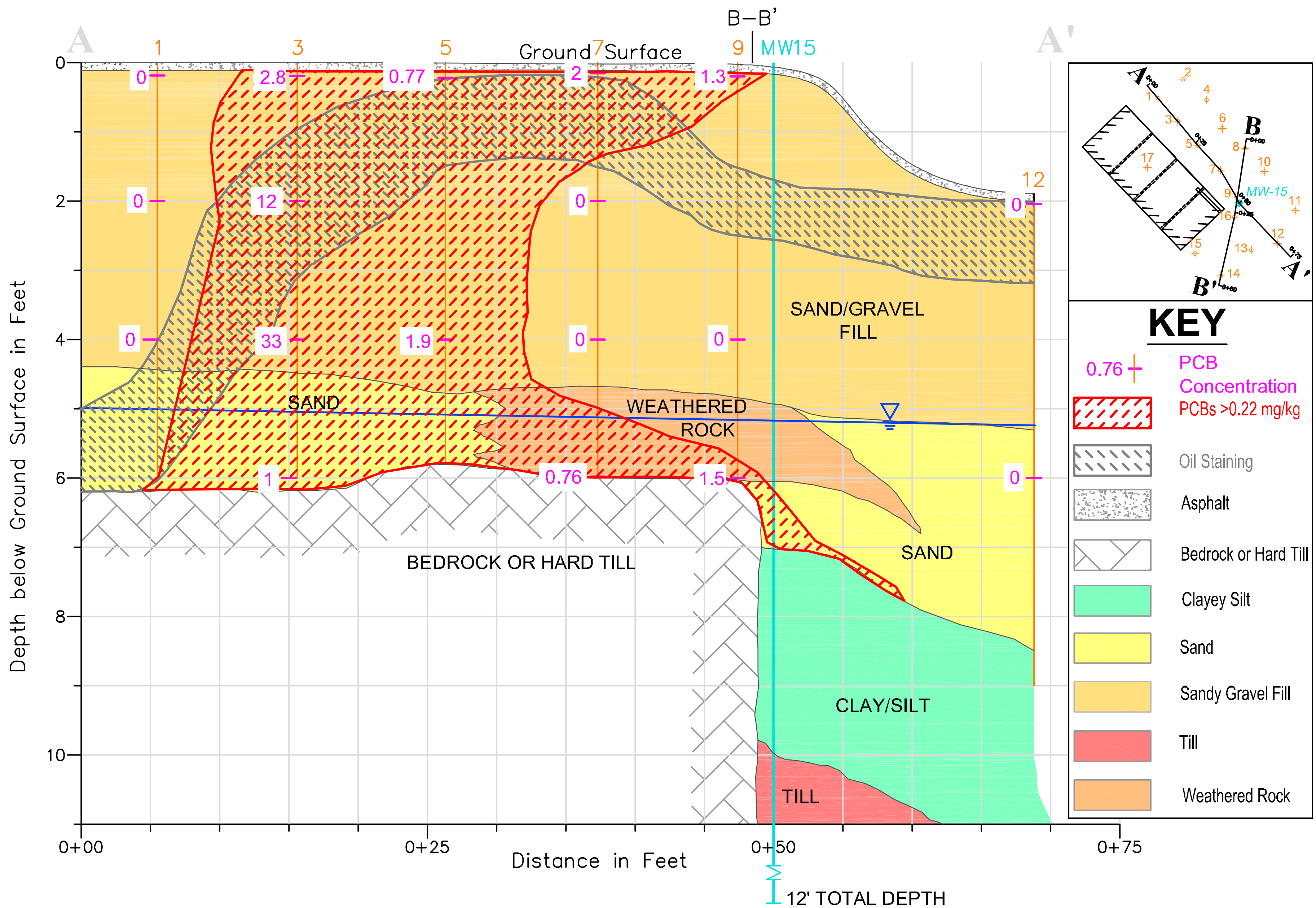
Source: Marin Environmental Site Plant, 08/08/01, Griffin Intl. 4/02 Map and Weston Managers Designers /Consultants Site drawing (11/30/99), and GPS Survey by The Johnson Company, 1/26/06.

Figure A-7 Northeastern Office Area PCB Sample Results
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602

| | |
|---|---|
| Drawn by: DPB | Date: 03/11/09 |
| Reviewed by: | Date: |
| Scale: 1" = 20' | Project: 3-2202-30 |


Transformer Pad 1
TP1-1
ND
TP1-2
ND
TP1-3
ND
Pearl Street
Transformer Pad 3
TP3-1
ND
TP3-2
ND
Transformer Pad 2 & Transformer Room
TP2-1
ND
TP2-2
ND
TP2-3
ND
Operating Transformers
TR-F1
0.68
TR-F2
2.2
TR-W1
ND
TR-W2
ND
TR-W3
ND
Transformer Room
Pearl Street
N
Legend
Total PCBs ≤ 1 ppm
1 ppm < Total PCBs ≤ 10 ppm
031209 - Transformer Area Samples (JCO Only).mxd
Figure A-8 Transformer Pad PCB Results
PVDC Building
100 River Street
Springfield, Vermont
The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
Drawn by: DPB Date: 03/12/09
Reviewed by: RTK Date: 03/13/09
Scale: 1" = 10' Project: 3-2202-30




SCALE: 1"=10' Horizontal
1"=2' Vertical
V.E. = 5:1

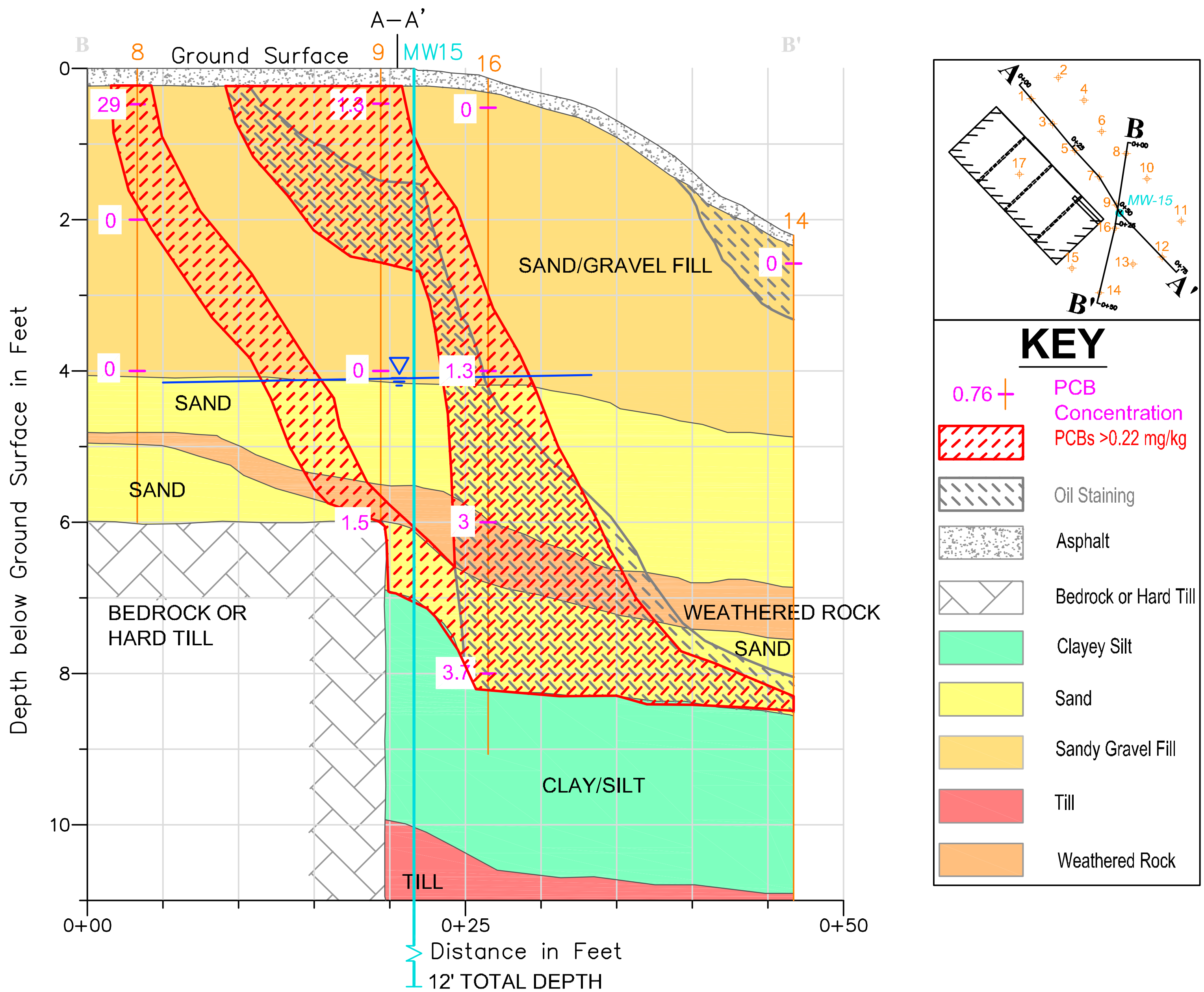
**Figure A-9 Chip Shed Geologic Profile A - A'**
**PVDC Property**
**Springfield, Vermont**

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

| | |
|---|---|
| Drawn by: TJK | Date: 09/23/08 |
| Reviewed by: RTK | Date: 05/06/09 |
| Scale: As Shown | Project: 3-1929-3 |

Profile B.dwg




SCALE: 1"=10' Horizontal
1"=2' Vertical
V.E. = 5:1

**Figure A-10 Chip Shed Geologic Profile B - B'**
**PVDC Property**
**Springfield, Vermont**

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

| | |
|---|---|
| Drawn by: TJK | Date: 09/23/08 |
| Reviewed by: RTK | Date: 05/06/09 |
| Scale: As Shown | Project: 3-1929-3 |

## ATTACHMENT A-1

***List of Items in Attachment A-1:***
Boring Logs

montpelier, vermont 05602

Form jco-hydro
SOIL BORING # B1
SHEET __ OF __
PROJECT PVD
JOB #: 3-1929-
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| ~~0-0.5~~ 0-3 | | 2.5/3.0 | 0-0.5 → asphalt<br>0.5-4.5 → brwn coarse/med sandy fill w/ some gravel | | B1 (0-0.5')<br>B1 (2') |
| | | | 4.5-6, med sand moist slightly stained dark brn.<br>mottling @ 5.1'<br>wet @ 5.3' | | B1 (4') |
| 3-6 | | 3/3 | | | B1 (6')<br>(8082 Sox)<br>@ 0910 |

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Form jco-hydro
SOIL BORING # B-2
SHEET 2 OF
PROJECT AVDC
JOB #: 3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm-to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 2.6/3 | 0-0.4 Asphalt | | B2 (0-0.5') |
| 3-6 | | 2.5/3 | 0.4-6 lt Brn med/fine sand w/ brick frags & some SA gravel Moist @ ~4.8 | | B2 (2') B2 (4') B2 (6') @ 0920 8082 Soxhlet |

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Form jco-hydro
SOIL BORING # B3
SHEET OF
PROJECT AVDC
JOB #: 3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 2.6/3 | 0-0.2 Asphalt<br>0.2-1.1 Med brn sand w/some SA gravel moist<br>1.1-3.0 → It → drk gray possibly staining<br>3.0-3.2 brick | | B3 (0-0.5)<br>B3 (2')<br>B3 (4') |
| 3-6 | | 1.6/3 | 3.2-4.6 → gray wet coarse/med. sand staining w/ gravel chunks | | B3(6')<br>@ 0930<br>(8082) |

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Form jco-hydro
SOIL BORING # B4
SHEET OF
PROJECT
JOB #: PVDC
3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 3/3 | 0-1.3 med/fine dry sandy fill | | B4(0-0.5') |
| 3-6 | | 2.8/3 | 1.3-1.5 gravel | | B4(2') |
| | | | 1.5-4.1 med fine brn - drk brn sandy fill | | B4(4') |
| | | | 4.1-4.3 coarser material | | B4(6') |
| | | | 4.3-6.8 med sand moist | | B4(7.2') 8082 @ 0940 |
| | | | 6.8-7.2 wet drk brn sand stained w/ slight sheen | | |
| | | | BR refuse @ 7.2' | | |

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Form jco-hydro
SOIL BORING # B5
SHEET __ OF __
PROJECT
JOB #: PVDC
3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 2.8/3 | 0-0.4 asphalt | | B5 (0-0.5') |
| 3-5.9 | | 2.3/2.9 | 0.4-5.9 Sandy fill w/ Brick frags @ 0.6<br>Staining @ 1.3<br>wet @ 4.7'<br>Bedrock @ 5.9 | | B5 (2')<br>B5 (4')<br>B5 (6')<br>@ 0950<br>8082 |

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Form jco-hydro
SOIL BORING # B6
SHEET OF
PROJECT PVDC
JOB #: ~~[illegible]~~

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

3-1929-3
8/28/08

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 2.8/3 | 0-0.2 asphalt<br>0.2-5.8 med Brn sand fill w/ some gravel SA | | B6(0-0.5')<br>B6(2') |
| 3-6 | | 2.6/3 | 5.8-6. granite gravel chunks<br>wet @ 4.9'<br>coal chunk @ 5.2'<br>refusal @ 6.0' | | B6(4')<br>B6(6')<br>@ 1005<br>8082 |

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Form jco-hydro
SOIL BORING # B7
SHEET OF
PROJECT JOB #: PVDC
3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 3/3 | 0-0.1 Asphalt<br>0.1-4.7 brn sandy fill<br>drk stain/ 0.8-1.3 | | B7 (0-0.5')<br>* Dup 1 collected @ 1200 |
| 3-6 | | 2.6/3 | 4.7-6. green/grey + lt. tan coarse weathered rock<br>wet @ ~4.8' | | B7 (2')<br>B7 (4')<br>B7 (6')<br>* Dup 2 collected @ 1015 @ 1200<br>8082 |

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Form jco-hydro
SOIL BORING # B8
SHEET OF
PROJECT JOB #: PVDC 3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 3/3 | 0-0.2 Asphalt | | B8 (0-0.5') |
| 3-6 | | 3/3 | 0.2-6 med/coarse Sandy fill<br>drk brn. 0.9-1.4 coal frags<br>1.4 → 6 drk brn → light<br>gravel chunks @ 4.8<br>moist @ 5.3'<br>refusal @ 6.0' | | B8 (2')<br>B8 (4')<br>B8 (6')<br>@ 1035<br>8082 |

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Form jco-hydro
SOIL BORING # B9
SHEET OF
PROJECT
JOB #: VDC
3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 3/3 | 0-0.3 coarse gravel ~~[illegible]~~ asphalt chunks<br>0.3-5.6 med/coarse sand brn w/some SA gravel<br>brick frags @ 1.1'<br>drk brn (staining) @ 1.6-2.4<br>5.6-6 drk brn/blk to coarse material possibly weathered rock stained + wet<br>refusal @ 6.0' | | x B9 (0-0.5')<br>x Dup. 3 @ 1200<br>B9 (2')<br>B9 (4')<br>B9 6' @ 1040<br>8082 |

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Form jco-hydro
SOIL BORING # B10.
SHEET OF
PROJECT
JOB #: 3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 3/3 | 0-0.3 asphalt | | B10 (0-0.5 |
| | | | 0.3-4.2 coarse/med | | |
| 3-4.2 | | 1.2/1.2 | brn sandy fill | | B10 (2') |
| | | | brick frags throughout | | |
| | | | drk brown (stained) | | B10 (4') |
| | | | 0.9-1.4 | | @ 1050 |
| | | | Moist @ 4.0'± | | 8082 |
| | | | Refusal @ 4.2 | | |
| | | | | | * NO B10 (6') Collected see refusal |

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Form jco-hydro
SOIL BORING # B11
SHEET OF
PROJECT
JOB #: 3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 2.6/3 | 0-0.1 asphalt + gravel<br>0.1-3.8 med sandy fill brn w/ some SA gravel No staining | | B11(0-0.5')<br>B11(2') |
| 3-4.5 | | 1.5/1.5 | 3.8-4.2 veiny lt brn + tan med sand moist | | B11(4') |
| | | | 4.2-4.5 lt tan/white med sand moist | | B11(4.5') |
| | | | 4.5' Refusal | | @ 1100<br>8082 |

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Form jco-hydro
SOIL BORING # B12
SHEET OF
PROJECT
JOB #: 3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 2.6/3.0 | 0-0.2 asphalt<br>0.2-1.1 drk brn/blk coarse sand w/ some coal chunks and gravel. | | B12 (0-0.5')<br>B12 (2')<br>B12 (4') |
| 3-6 | | 1.1/3.0 | 1.1-4.0 Stained sand fill brn<br>4.0-4.1 coarse gravel sand lt. brn<br>4.1-6.0 No Recovery | | B12 (6') |
| 6-9 | | 1.4/3.0 | 6.0-6.3 SAA (4-4.1)<br>6.3-7.4 brn/gray wet med sand w/some clay<br>7.4-9. NR | | B12 (7.4')<br>@ 1110<br>8082 |

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Form jco-hydrc
SOIL BORING # B13
SHEET OF 3
PROJECT
JOB #: 3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 3/3 | 0-0.2 Asphalt<br>0.2-0.4 drk stained sandy fill w/ coarse gravel<br>0.4-4.4 brn sandy fill<br>stain @ 3.2' | | B13 (0-0.5)<br>B13 (2') |
| 3-6 | | 2.6/3 | 4.4-5.3 → lt. tan/gray dry micaceous sand<br>5.3-5.6 gray sandy silt moist | | B13 (4')<br>B13 (6') |
| 6-9 | | 2.9/3.0 | 6-8.4 SAA wet @ 6.0'<br>↑ clay w/ depth<br>brn stain @ 7.3'<br>8.4-8.9 very weathered rock wet<br>tan/gray/white | | B13 (7.3')<br>@ 1125<br>8082 |

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Form jco-hydro
SOIL BORING # B14
SHEET OF
PROJECT
JOB #: 3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 2.8/3.0 | 0-0.4 asphalt<br>0.4-1.2 drk brw stained sandy fill w/ some SA gravel | | B14(0-0.5)<br>B14(2') |
| 3-6 | | 3/3 | 1.2-4.9 drk → lighter brown sandy fill<br>4.9-5.5 mottling @5.0' reddish/brn weathered rock veins<br>5.5-6 SAA gray not brn | | B14(4')<br>B14(6') |
| 6-9 | | 3/3 | 6-9 gray sandy silt w/ some clay wet @ 6'<br>slight staining @ 6.5' | | B14(6.5')<br>@ 1140<br>8082 |

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Form jco-hydrc
SOIL BORING # B15
SHEET OF
PROJECT
JOB #:
8/28/08
3-1939-3

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 3/3 | 0-0.4 asphalt<br>0.4-5.1 Sandy fill<br>0.4-2.3 drk brn stained<br>2.3-5.1 drk-light | | B15 0-0.5<br>* Dup 4 @ 1200<br>B15 (2') |
| 3-6 | | 3/3 | wet@ 5.2'<br>5.1-6.0 drk brn/grey w/some light tan weathered rock<br>Some coal chunks<br>Stained @ 6.01 | | B15 (4')<br>B15 (6')<br>* Dup. 5 @ 1200 |
| 6-9 | | 3/3 | 6-7.6 SAA w/ drk staining @ 7.5'<br>7.6-8.1 coarse sand lt. brown (wet)<br>8.1-9. fine silty sand gry/brn wet | | B15 (7.5')<br>@ 1155<br>8082 |

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Form jco-hydro-
SOIL BORING # B16
SHEET OF
PROJECT
JOB #: PVRC
3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm-to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 3/3 | 0.0-0.2 asphalt<br>0.2-4.2<br>drk brn → ~~lt~~ brn<br>sandy fill w/ some SA gravel | | B16 (0-0.5')<br>B16 (2') |
| 3-6 | | 3/3 | 4.2-6.9<br>drk brn/blk staining<br>fill odor<br>wet @ 5.2' | | B16 (4')<br>B16 (6') |
| 6-9 | | 2.2/3 | 6.9-8.2<br>wet gray fine silty sand<br>some staining<br>water beading<br>Sheen oil present<br>odor | | B16 (8')<br>@ 1210<br>8082 |

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Form jco-hydro-
SOIL BORING # B17
SHEET OF
PROJECT
JOB #: 3-1929-3
8/28/08

# BORING LOG
## STRATIGRAPHIC DESCRIPTION

| sample interval fm–to(bgs) | blow counts | recovery out of __ (ft.) | sample description | pid (ppm) | notes |
|---|---|---|---|---|---|
| 0-3 | | 3/3 | 0-0.4 loose dry sand coarse lt brn<br>0.4-4.9 drk brn sandy fill brick frags gravel @ 1.6' | | B17 (0-0.5)<br>B17 (2') |
| 3-6 | | 2.1/3 | 4.9-5.1 Black stained sand odor<br>5.1-6. NR | | B17 (4')<br>B17 (6') |
| 6-8.2 | | 2.2/3 | 6.0-6.3 SAA (4.9-5.1)<br>6.3-6.5 wet coarse sand<br>6.5-~~[illegible]~~ 7.6 silty SAA clay ↑ w/ depth gray oil sheen odor<br>7.6-8.2 gray clayey fine sand | | B17 (7.5')<br>@ 1240<br>8082 |

# APPENDIX B

# LIST OF CONTACTS

| List of Contacts | | |
|---|---|---|
| Party Name | Contact Name, Address, and Telephone Number | Association with Project |
| ***Interested, Threatened or Impacted Third Parties*** | | |
| Springfield Regional Development Corporation | Mr. Bob Flint, Executive Director<br>Springfield Regional Development Corporation<br>14 Clinton Street, Suite 7<br>Springfield, VT 05156<br>(802) 885-3061 | Property owner |
| Southern Windsor County Regional Planning Commission | Mr. Tom Kennedy, Director<br>Southern Windsor County Regional Planning Commission<br>Ascutney Professional Building, Route 5 South<br>P.O. Box 320<br>Ascutney, VT 05030<br>(802) 674-9201 | Redevelopment funding |
| One Hundred River Street, LLC | Mr. John Meekin<br>The Hamilton Group<br>14803-K Southlawn Lane<br>Rockville, MD 20850<br>and<br>Mr. Rick Genderson<br>434 4th Street NE<br>Washington, DC 20002 | Redevelopers |
| United States Environmental Protection Agency | Mr. Alan Peterson<br>US EPA, Region 1<br>1 Congress Street, Suite 1100 (HBT)<br>Boston, MA 02114-2023 | EPA Project Manager |
| United States Environmental Protection Agency | Kimberly Tisa<br>U.S. Environmental Protection Agency<br>1 Congress Street, Suite 1100<br>Boston, MA 02114<br>(603) 918-1527 | EPA PCB Coordinator, Northeast Region |

| List of Contacts | | |
| --- | --- | --- |
| Party Name | Contact Name, Address, and Telephone Number | Association with Project |
| Vermont Department of Environmental Conservation | Patricia Coppolino<br>VT DEC<br>Waste Management Division<br>103 South Main Street, West Office<br>Building<br>Waterbury, VT 05671-0404<br>(802) 241-3967 | VT DEC Project Manager |
| Town of Springfield | Bob Forguites, Town Manager<br>Town Hall<br>96 Main Street<br>Springfield, VT 05156<br>(802) 885-2104 | Town of Springfield contact |
| ***Contractors and Subcontractors*** | | |
| The Johnson Company | Rhonda Kay<br>The Johnson Company, Inc.<br>100 State Street, Suite 600<br>Montpelier, VT 05060<br>(802) 229-4600 | Environmental consultant, developer of CAP, oversight of corrective action |
| Precision Industrial Maintenance | Joe Guzelak<br>Precision Industrial Maintenance<br>PO Box 674<br>Barre, VT 05641<br>(802) 479-0046 | Hazardous waste disposal |
| ENPRO Services of Vermont | Michele Montpetit<br>54 Avenue D<br>Williston, VT 05495<br>(802) 860-1200 | Hazardous waste disposal |
| Eastern Analytical, Inc. | Kathleen Noonan<br>Eastern Analytical, Inc.<br>25 Chenell Drive<br>Concord, NH 03301<br>(800) 287-0525 | Laboratory analysis |
| Gurney Brothers Construction | Doug Gurney<br>Gurney Brothers Construction<br>Gurney Road<br>North Springfield, VT 05150<br>(802) 886-2210 | Demolition, excavation, waste hauling |

| List of Contacts | | |
|---|---|---|
| Party Name | Contact Name, Address, and Telephone Number | Association with Project |
| Turner Building Science | Fred McKnight<br>Turner Building Science<br>1219 East Hill Road<br>Barnet, VT 05821<br>(802) 592-3097 | Design and installation of sub-slab depressurization system |

| Required Permits and Approvals | | |
|---|---|---|
| Permit or Approval Type | Items or Issues Covered | Contact |
| TSCA Self-Implementing Cleanup Plan Approval (to be submitted with Risk-Based Cleanup Plan, below) | Cleanup of Chip Shed and nearby soils, boiler house, transformer pads, transformer room vault, and cutting oil recycling tank | Kimberly Tisa, US EPA (address above) |
| TSCA Risk-Based Cleanup Plan Approval | Cleanup of PCBs in concrete in main building | Kimberly Tisa, US EPA (address above) |

# APPENDIX C

# COST ESTIMATION SPREADSHEETS

**Cost Estimates- Interior of Building Concrete Only**
PVDC Building, Springfield, Vermont
JCO Project #3-1929-3

## *Parts A, O & P- Demolition*

Assumptions:

Demolish floor slab only (walls not included in costs)
Total area in Part A approximately 20,000 square feet
Demolish floor slab in lower basement (beneath wooden floor) near loading dock
Total area for disposal 3,400 square feet
Total floor thickness assumed at 1 foot
Total concrete volume= 741 cu yds + 126 cu yds= 867 cubic yards
Estimated weight of concrete 1,300 tons
Total wood floor volume (Part P)= 31 cu yds
Estimated weight of wood = 24 tons
Dispose of 4" of soil below floor 247 cu yds + 42 cu yds= 289 cubic yards
Demolish wood floor of Part O
Demolish floor slab in lower basement (beneath wooden floor) near loading dock
Total area for disposal 3,400 square feet 189 cu yds
Non-hazardous materials to be disposed of in Moretown landfill
Assumes topsoil placed and grass planted at Part C

***NOTE: IF PART P CAN BE USED FOR FILL PLACEMENT, COSTS FOR DISPOSAL AND DEMOLITION WOULD BE SUBSTANTIALLY LOWER***
***APPROX. 3400 SQ FT CAN BE FILLED, AT 4 FEET HIGH, VOLUME WOULD BE 500 CUBIC YARDS = 750 tons***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Preparation** | | | | | | | |
| | Oversight | 3 | hours | $92 | per hour | $276 | |
| | Coordinate subcontractors | 16 | hours | $64 | per hour | $1,024 | |
| | 761.61(c) application | 10 | hours | $80 | per hour | $800 | |
| | Pre-mark site | 4 | hours | $64 | per hour | $256 | |
| | Communications | 1 | unit | $35 | unit | $35 | |
| | Mileage | 170 | miles | $0.59 | per mile | $100 | |
| | | | | | | | $2,492 |
| **Demolition** | | | | | | | |
| | Demolition | 23,400 | c.f. | $0.30 | cubic foot | $7,020 | |
| | Concrete Cutting | 600 | lin ft | $0.85 | lin ft | $510 | |
| | | | | | | | $7,530 |
| **Material Disposal Costs (Non-Hazardous)** | | | | | | | |
| | Concrete disposal | 550 | tons | $90 | ton | $49,500 | |
| | Wood disposal | 24 | tons | $90 | ton | $2,125 | |
| | Soil disposal | 433 | tons | $90 | ton | $39,000 | |
| | Waste transport | 1007 | tons | $28 | ton | $28,194 | |
| | | | | | | | $118,819 |
| **Confirmatory soil sampling** | | | | | | | |
| | Oversight | 2 | hours | $ 80 | per hour | $160 | |
| | Sampling, reporting | 12 | hours | $ 64 | per hour | $768 | |
| | Communications | 1 | unit | $ 12 | unit | $12 | |
| | Mileage | 170 | miles | $ 0.59 | per mile | $99 | |
| | Sampling | 20 | samples | $ 66 | per sample | $1,320 | |
| | Sample shipping | 1 | units | $100 | per unit | $100 | |
| | | | | | | Subtotal | $2,459 |
| **Topsoil and grass** | | | | | | | |
| | Topsoil (4" thickness) | 289 | cu yds | $25 | cu yd | $7,222 | |
| | Seeding | 20,000 | sq ft | $0.18 | per sf | $3,600 | |
| | | | | | | | $10,822 |
| **Reporting** | | | | | | | |
| | Engineer/ Scientist III | 20 | hours | $64 | per hour | $1,280 | |
| | Mileage | 170 | miles | $0.59 | per mile | $100 | |
| | Reporting | 4 | hours | $59.00 | per hour | $236 | |
| | Communications | 1 | unit | $24 | unit | $24 | |
| | | | | Additional costs subtotal | | | $1,641 |
| | | | | | | Subtotal | $143,763 |
| | | | | | | 10% contingency | $14,376 |
| | **Parts A, O, P floor removal Total Estimated Cost if fill from A placed in P** | | | | | | **$158,139** |

**Cost Estimates- Interior of Building Concrete Only**
PVDC Building, Springfield, Vermont
JCO Project #3-1929-3

## *Part B PCB Concrete, Epoxy Paint and Tile: Cover and Monitor*

Assumptions:

- Contaminated portion of floor with >1 ppm PCBs is 30,000 square feet
  - Approval from PCB coordinator required
- Concrete to be cast over 27,000 square feet
- Epoxy paint used on floors beneath tiles over 3,000 square feet
- 4" of concrete of high strength concrete
- Walls, ceilings, and floors pressure washed, water contained and sampled
- Walls to be painted with epoxy paint
- Inspection, sampling assumed for 100 years
- Annual inspections performed by building employees
- Sampling performed by The Johnson Company or similar environmental professional

| | | | | | | |
|---|---|---|---|---|---|---|
| **Preparation** | | | | | | |
| Oversight | 1 | hours | $95 | per hour | $95 | |
| PCB coordinator approval | 10 | hours | $80 | per hour | $800 | |
| Coordination of subcontractors | 15 | hours | $64 | per hour | $960 | |
| Communications | | | $28 | unit | $28 | |
| | | | | | Subtotal | $1,883 |
| **Initial cleaning and sampling costs** | | | | | | |
| Pressure wash (4 laborers,equip) | 3 | day | $ 1,920 | days | $5,759 | |
| Air sampling | 1 | unit | $ 2,000 | unit | $2,000 | |
| Water sampling | 2 | samples | $ 66 | unit | $132 | |
| | | | | | Subtotal | $7,891 |
| **Concrete installation costs** | | | | | | |
| Flooring subcontractor | 27,000 | sf | $3.40 | per sf | $91,800 | |
| | | | | | Subtotal | $91,800 |
| **Epoxy paint + tile** | | | | | | |
| Paint + tile | 3,000 | sf | $3.00 | per sf | $9,000 | |
| Wall paint | 6,330 | sf | $1.00 | per sf | $6,330 | |
| | | | | | Subtotal | $15,330 |
| **Pre-occupancy sampling** | | | | | | |
| Oversight | 4 | hours | $ 80 | per hour | $320 | |
| Sampling, reporting | 12 | hours | $ 64 | per hour | $768 | |
| Communications | 1 | unit | $ 12 | unit | $12 | |
| Mileage | 170 | miles | $ 0.59 | per mile | $99 | |
| Wipe samples | 7 | samples | $ 66 | per sample | $462 | |
| Sample shipping | 1 | units | $100 | per unit | $100 | |
| Air sampling | 1 | unit | $ 600 | unit | $600 | |
| | | | | | Subtotal | $2,361 |
| **Annual inspection and maintenance** | | | | | | |
| Building employee | 12 | hours | $25 | per hour | $300 | |
| Materials | 100 | sq ft | $4 | per sq ft | $400 | |
| Total inspection and maintenance costs per year | | | | | $700 | |

**Cost Estimates- Interior of Building Concrete Only**
PVDC Building, Springfield, Vermont
JCO Project #3-1929-3

## *Part B PCB Concrete, Epoxy Paint and Tile: Cover and Monitor*

**Air sampling (1 event after 2 years and 1 event after 4 years)**

*Same mobilization as for wipe sampling*

| | | | | | |
|---|---|---|---|---|---|
| Project management | 1 | hours | $95 | per hour | $95 |
| Sampling, reporting | 6 | hours | $54 | per hour | $324 |
| Mileage | 170 | miles | $ 0.59 | per mile | $99 |
| Sample shipping | 1 | units | $100 | per unit | $100 |
| PCB air sample | 1 | unit | $ 600 | unit | $600 |
| | | Total sampling costs per round | | | $1,218 |

**Additional sampling (1 event per two years for first 10 years, 1 per five years thereafter)**

*4 wipe samples from floor, 1 from wall*

| | | | | | |
|---|---|---|---|---|---|
| Project management | 1 | hours | $95 | per hour | $95 |
| Sampling, reporting | 10 | hours | $54 | per hour | $540 |
| Communications | 1 | unit | $ 8 | unit | $8 |
| Mileage | 170 | miles | $ 0.59 | per mile | $99 |
| PCB wipe analysis | 5 | samples | $66 | per sample | $330 |
| Sample shipping | 1 | units | $100 | per unit | $100 |
| | | Total sampling costs per round | | | $1,173 |

**Annual inspection and maintenance costs**

| | | | |
|---|---|---|---|
| Annual monitoring costs (above) | $700 | unit | |
| Interest rate | 4% | year | |
| Duration | 100 | years | |
| | | Present value | $17,153 |

**Total additional sampling costs**

| Year | Cost |
|---|---|
| 1/1/2011 | $2,391 |
| 1/1/2013 | $2,391 |
| 1/1/2015 | $1,173 |
| 1/1/2017 | $1,173 |
| 1/1/2019 | $1,173 |
| 1/1/2024 | $1,173 |
| 1/1/2029 | $1,173 |
| 1/1/2034 | $1,173 |
| 1/1/2039 | $1,173 |
| 1/1/2044 | $1,173 |
| 1/1/2049 | $1,173 |
| 1/1/2054 | $1,173 |
| 1/1/2059 | $1,173 |
| 1/1/2064 | $1,173 |
| 1/1/2069 | $1,173 |
| 1/1/2074 | $1,173 |
| 1/1/2079 | $1,173 |
| 1/1/2084 | $1,173 |
| 1/1/2089 | $1,173 |
| 1/1/2094 | $1,173 |
| 1/1/2099 | $1,173 |
| 1/1/2104 | $1,173 |
| 1/1/2109 | $1,173 |

Net present value for sampling $ 11,000

| | |
|---|---|
| Subtotal for Part B Concrete, Epoxy Paint, Tile | $147,418 |
| 10% contingency | $14,742 |
| **Part B Concrete, Epoxy Paint, Tile Total Estimated Cost** | **$162,160** |

**Cost Estimates- Interior of Building Concrete Only**
PVDC Building, Springfield, Vermont
JCO Project #3-1929-3

## *Parts C, G, H, J, LMN, Hall Epoxy Paint and Tile*

Assumptions:
- Contaminated portion of floor with >1 ppm PCBs is 50,000 square feet
  - Approval from PCB coordinator required
- Walls, ceilings, and floors pressure washed, water contained and sampled
- Walls to be painted with epoxy paint
- Epoxy paint used on floors beneath tiles over 50,000 square feet
- Inspection and sampling for 100 years
- Annual inspections performed by building employees
- Sampling performed by The Johnson Company or similar environmental professional

**Preparation**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oversight | 1 | hours | | $95 | per hour | $95 | |
| Oversight, PCB coordinator approvi | 25 | hours | | $80 | per hour | $2,000 | |
| Coordination | 15 | hours | | $64 | per hour | $960 | |
| Communications | | | | $46 | unit | $46 | |
| | | | | | | Subtotal | $3,101 |

**Initial cleaning and sampling costs**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Pressure wash (4 laborers + equip) | 4 | day | $ | 1,920 | days | $7,678 | |
| Air sampling | 2 | unit | $ | 2,000 | unit | $4,000 | |
| Water sampling | 2 | samples | $ | 66 | unit | $132 | |
| | | | | | | Subtotal | $11,678 |

**Epoxy paint + tile**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Paint + tile | 50,000 | sf | | $3.00 | per sf | $150,000 | |
| Wall paint | 11,750 | sf | | $1.00 | per sf | $11,750 | |
| | | | | | | Subtotal | $161,750 |

**Pre-occupancy sampling**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oversight | 4 | hours | $ | 80 | per hour | $320 | |
| Sampling, reporting | 12 | hours | $ | 64 | per hour | $768 | |
| Communications | 1 | unit | $ | 12 | unit | $12 | |
| Mileage | 170 | miles | $ | 0.59 | per mile | $99 | |
| Wipe samples | 15 | samples | $ | 66 | per sample | $990 | |
| Sample shipping | 2 | units | | $100 | per unit | $200 | |
| Air sampling | 3 | unit | $ | 600 | unit | $1,800 | |
| | | | | | | Subtotal | $4,189 |

**Annual inspection and maintenance**

| | | | | | | |
|---|---|---|---|---|---|---|
| Building employee | 16 | hours | | $25 | per hour | $400 |
| Materials | 200 | sq ft | | $4 | per sq ft | $800 |
| | Total inspection and maintenance costs per year | | | | | $1,200 |

**Additional sampling (1 per two years for first 10 years, 1 per five years thereafter)**

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampling, reporting | 12 | hours | | $54 | per hour | $648 |
| PCB wipe analysis | 10 | samples | | $66 | per sample | $660 |
| Sample shipping | 1 | units | | $100 | per unit | $100 |
| PCB air sample | 2 | unit | $ | 600 | unit | $1,200 |
| | | | Total sampling costs per round | | | $2,608 |

**Cost Estimates- Interior of Building Concrete Only**
PVDC Building, Springfield, Vermont
JCO Project #3-1929-3

## *Parts C, G, H, J, LMN, Hall Epoxy Paint and Tile*

**Annual inspection and maintenance costs**

| | | | |
|---|---|---|---|
| Annual monitoring costs (above) | $1,200 | unit | |
| Interest rate | 4% | year | |
| Duration | 100 | years | |
| | | Present value | $29,406 |

**Total additional sampling costs**

| Year | Cost |
|---|---|
| 1/1/2011 | $2,608 |
| 1/1/2013 | $2,608 |
| 1/1/2015 | $2,608 |
| 1/1/2017 | $2,608 |
| 1/1/2019 | $2,608 |
| 1/1/2021 | $2,608 |
| 1/1/2026 | $2,608 |
| 1/1/2031 | $2,608 |
| 1/1/2036 | $2,608 |
| 1/1/2041 | $2,608 |
| 1/1/2046 | $2,608 |
| 1/1/2051 | $2,608 |
| 1/1/2056 | $2,608 |
| 1/1/2061 | $2,608 |
| 1/1/2066 | $2,608 |
| 1/1/2071 | $2,608 |
| 1/1/2076 | $2,608 |
| 1/1/2081 | $2,608 |
| 1/1/2086 | $2,608 |
| 1/1/2091 | $2,608 |
| 1/1/2096 | $2,608 |
| 1/1/2101 | $2,608 |
| 1/1/2106 | $2,608 |
| 1/1/2111 | $2,608 |

| | |
|---|---|
| **NPV for sampling** | $ 21,000 |
| Subtotal for Parts C, G, H, J, LMN, Hall Epoxy Paint, Tile | $231,124 |
| 10% contingency | $23,112 |
| **Parts C, G, H, J, LMN, Hall Epoxy Paint, Tile Total Estimated Cost** | **$254,236** |

**Cost Estimates- Interior of Building Concrete Only**
PVDC Building, Springfield, Vermont
JCO Project #3-1929-3

## *Parts D and F (Parking Garages) Option 1 - Tar and Chip*

Assumptions:

| | | |
|---|---|---|
| Upper floor PCB contamination: | 23,000 | square feet |
| Lower floor PCB contamination: | 12,000 | square feet |

Approval from PCB coordinator required
Assumes Tar and Chip surface is installed
Inspection for 100 years
Annual inspections performed by building employees
Sampling performed by The Johnson Company or similar environmental professional

**Preparation**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oversight | 1 | hours | $95 | per hour | $95 | | |
| Oversight, PCB coordinator approv | 15 | hours | $80 | per hour | $1,200 | | |
| Coordination | 10 | hours | $64 | per hour | $640 | | |
| Communications | | | $29 | unit | $29 | | |
| | | | | | | Subtotal | $1,964 |

**Tar and Chip Installation**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Tar & Chip subcontractor | 35,000 | sf | $3.00 | per sf | $105,000 | | |
| | | | | | | Subtotal | $105,000 |

**Pre-occupancy sampling**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oversight | 0.5 | hours | $ 80 | per hour | $40 | | |
| Sampling, reporting | 8 | hours | $ 64 | per hour | $512 | | |
| Communications | 1 | unit | $ 8 | unit | $8 | | |
| Mileage | 170 | miles | $ 0.59 | per mile | $99 | | |
| Wipe samples | 4 | samples | $ 66 | per sample | $264 | | |
| Sample shipping | 1 | units | $100 | per unit | $100 | | |
| | | | | | | Subtotal | $1,023 |

**Annual inspection and maintenance**

| | | | | | |
|---|---|---|---|---|---|
| Building employee | 16 | hours | $25 | per hour | $400 |
| Materials | 200 | sq ft | $3 | per sq ft | $600 |
| | Total inspection and maintenance costs per year | | | | $1,000 |

**Annual inspection and maintenance costs**

| | | | |
|---|---|---|---|
| Annual monitoring costs (above) | $1,000 | unit | |
| Interest rate | 4% | year | |
| Duration | 100 | years | |
| | | Present value | $24,505 |

| | |
|---|---|
| Subtotal for Parts D&F Tar & Chip | $132,492 |
| 10% contingency | $13,249 |
| **Parts D&F Tar & Chip Total Estimated Cost** | **$145,741** |

**Cost Estimates- Interior of Building Concrete Only**
PVDC Building, Springfield, Vermont
JCO Project #3-1929-3

## *Parts D and F (Parking Garages) Option 2 - 1.5 to 2" asphalt*

Assumptions:

| | | |
|---|---|---|
| Upper floor PCB contamination: | 23,000 | square feet |
| Lower floor PCB contamination: | 12,000 | square feet |

Approval from PCB coordinator required
Assumes Tar and Chip surface is installed
Inspection for 100 years, no sampling required
Annual inspections performed by building employees
Sampling performed by The Johnson Company or similar environmental professional

**Preparation**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oversight | 1 | hours | | $95 | per hour | $95 | |
| Oversight, PCB coordinator approv | 15 | hours | | $80 | per hour | $1,200 | |
| Coordination | 10 | hours | | $64 | per hour | $640 | |
| Communications | | | | $29 | unit | $29 | |
| | | | | | | Subtotal | $1,964 |

**Tar and Chip Installation**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Asphalt subcontractor | 35,000 | sf | | $3.50 | per sf | $122,500 | |
| | | | | | | Subtotal | $122,500 |

**Pre-occupancy sampling**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oversight | 0.5 | hours | $ | 80 | per hour | $40 | |
| Sampling, reporting | 8 | hours | $ | 64 | per hour | $512 | |
| Communications | 1 | unit | $ | 8 | unit | $8 | |
| Mileage | 170 | miles | $ | 0.59 | per mile | $99 | |
| Wipe samples | 4 | samples | $ | 66 | per sample | $264 | |
| Sample shipping | 1 | units | | $100 | per unit | $100 | |
| | | | | | | Subtotal | $1,023 |

**Annual inspection and maintenance**

| | | | | | |
|---|---|---|---|---|---|
| Building employee | 16 | hours | $25 | per hour | $400 |
| Materials | 200 | sq ft | $3 | per sq ft | $600 |
| | Total inspection and maintenance costs per year | | | | $1,000 |

**Annual inspection and maintenance costs**

| | | | |
|---|---|---|---|
| Annual monitoring costs (above) | $1,000 | unit | |
| Interest rate | 4% | year | |
| Duration | 100 | years | |
| | | Present value | $24,505 |

| | |
|---|---|
| Subtotal for Parts D&F Tar & Chip | $149,992 |
| 10% contingency | $14,999 |
| **Parts D&F Asphalt Total Estimated Cost** | **$164,991** |

**Cost Estimates- Interior of Building Concrete Only**
PVDC Building, Springfield, Vermont
JCO Project #3-1929-3

## *Part E Epoxy Paint and Tile*

Assumptions:

Contaminated portion of floor with >1 ppm PCBs is 50,000 square feet
Approval from PCB coordinator required
Walls, ceilings, and floors pressure washed, water contained and sampled
Walls inside former machine room to be painted with epoxy paint
Epoxy paint used on floors beneath tiles 50,000 square feet
Inspection and sampling for 100 years
Annual inspections performed by building employees
Sampling performed by The Johnson Company or similar environmental professional

| | | | | | | |
|---|---|---|---|---|---|---|
| **Preparation** | | | | | | |
| Oversight | 1 | hours | $95 | per hour | $95 | |
| Oversight, PCB coordinator approvi | 25 | hours | $80 | per hour | $2,000 | |
| Coordination | 15 | hours | $64 | per hour | $960 | |
| Communications | | | $46 | unit | $46 | |
| | | | | | Subtotal | $3,101 |
| **Initial cleaning and sampling costs** | | | | | | |
| Pressure wash (4 laborers + equip) | 3 | day | $1,920 | days | $5,759 | |
| Air sampling | 1 | unit | $2,000 | unit | $2,000 | |
| Water sampling | 2 | samples | $ 66 | unit | $132 | |
| | | | | | Subtotal | $7,759 |
| **Epoxy paint + tile** | | | | | | |
| Paint + tile | 50,000 | sf | $3.00 | per sf | $150,000 | |
| Wall paint | 3,150 | sf | $1.00 | per sf | $3,150 | |
| | | | | | Subtotal | $153,150 |
| **Pre-occupancy sampling** | | | | | | |
| Oversight | 2 | hours | $ 80 | per hour | $160 | |
| Sampling, reporting | 12 | hours | $ 64 | per hour | $768 | |
| Communications | 1 | unit | $ 12 | unit | $12 | |
| Mileage | 170 | miles | $ 0.59 | per mile | $99 | |
| Wipe samples | 6 | samples | $ 66 | per sample | $396 | |
| Sample shipping | 1 | units | $100 | per unit | $100 | |
| Air sampling | 1 | unit | $ 600 | unit | $600 | |
| | | | | | Subtotal | $2,135 |
| **Annual inspection and maintenance** | | | | | | |
| Building employee | 16 | hours | $25 | per hour | $400 | |
| Materials | 100 | sq ft | $3 | per sq ft | $300 | |
| | Total inspection and maintenance costs per year | | | | $700 | |
| **Additional sampling (1 per two years for first 10 years, 1 per five years thereafter)** | | | | | | |
| Sampling, reporting | 12 | hours | $54 | per hour | $648 | |
| PCB wipe analysis | 5 | samples | $66 | per sample | $330 | |
| Sample shipping | 1 | units | $100 | per unit | $100 | |
| PCB air sample | 1 | unit | $ 600 | unit | $600 | |
| | | | Total sampling costs per round | | $1,678 | |

## *Part E Epoxy Paint and Tile*

**Annual inspection and maintenance costs**

| | | | |
|---|---|---|---|
| Annual monitoring costs (above) | $700 | unit | |
| Interest rate | 4% | year | |
| Duration | 100 | years | |
| | | Present value | $17,153 |

**Total additional sampling costs**

| Year | Cost |
|---|---|
| 1/1/2011 | $1,678 |
| 1/1/2013 | $1,678 |
| 1/1/2015 | $1,678 |
| 1/1/2017 | $1,678 |
| 1/1/2019 | $1,678 |
| 1/1/2021 | $1,678 |
| 1/1/2026 | $1,678 |
| 1/1/2031 | $1,678 |
| 1/1/2036 | $1,678 |
| 1/1/2041 | $1,678 |
| 1/1/2046 | $1,678 |
| 1/1/2051 | $1,678 |
| 1/1/2056 | $1,678 |
| 1/1/2061 | $1,678 |
| 1/1/2066 | $1,678 |
| 1/1/2071 | $1,678 |
| 1/1/2076 | $1,678 |
| 1/1/2081 | $1,678 |
| 1/1/2086 | $1,678 |
| 1/1/2091 | $1,678 |
| 1/1/2096 | $1,678 |
| 1/1/2101 | $1,678 |
| 1/1/2106 | $1,678 |
| 1/1/2111 | $1,678 |

| | |
|---|---|
| **NPV for sampling** | $ 13,000 |
| Subtotal for Part B Concrete, Epoxy Paint, Tile | $196,298 |
| 10% contingency | $19,630 |
| **Part E Epoxy Paint, Tile Total Estimated Cost** | **$215,928** |

## *Chip Shed and Boiler House Building Material Removal*

Assumptions:

Demolish Chip Shed
Partial demolition of Boiler House: T1 (walls and slab) + slab of middle room
Total volume (chip shed and boiler house)= 6070 cu ft = 225 cu yds = 365 tons
Assumes concrete with PCB concentrations <3 ppm can be used as backfill on-site 130 tons = 65 cu yds
Non-hazardous materials to be disposed of in Moretown landfill (3 ppm < PCBs < 50 ppm)
Weight of non-hazardous waste = 160 tons
Hazardous materials to be disposed of at Model City, New York
Weight of hazardous waste = 41 tons

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Preparation** | | | | | | | | |
| Oversight | 3 | hours | $95 | per hour | $285 | | | |
| Paperwork, coordinate subcontractors | 16 | hours | $64 | per hour | $1,024 | | | |
| Pre-mark site | 4 | hours | $64 | per hour | $256 | | | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | | | |
| | | | | | | $1,664 | | |
| **Chip Shed and Boiler House Demolition** | | | | | | | | |
| Demolition | 6070 | cu ft | $1.00 | cu ft | $6,070 | | | |
| | | | | | | $6,070 | | |
| **Material Disposal Costs (Non-Hazardous)** | | | | | | | | |
| Waste disposal | 160 | tons | $90 | ton | $14,433 | | | |
| Waste transport | 160 | tons | $28 | ton | $4,490 | | | |
| | | | | | | $18,924 | | |
| **Material Disposal Costs (Hazardous)** | | | | | | | | |
| Concrete Cutting | 1833 | lin ft | $0.35 | lin ft | $642 | | | |
| Waste disposal | 41 | tons | $116 | ton | $4,736 | | | |
| Waste transport | 3 | rolloffs | $4,249 | rolloff | $12,746 | | | |
| | | | | | | $18,123 | | |
| Engineer/ Scientist II | 40 | hours | $59 | per hour | $2,360 | | | |
| Mileage | 680 | miles | $0.59 | per mile | $398 | | | |
| Reporting | 4 | hours | $64.00 | per hour | $256 | | | |
| | | | Additional costs subtotal | | | $3,014 | | |
| | | | | | | | Subtotal | $47,795 |
| | | | | | | | 10% contingency | $4,780 |
| | | | | | | | **Chip Shed and Western Boiler House Removal Total Estimated Cost** | **$52,575** |

## *Outdoor Transformer Pads*

Assumptions:

33 cubic yards of soils and weathered concrete to be removed
No soils have PCBs > 50 ppm
No closure sampling required

| | | | | | | |
|---|---|---|---|---|---|---|
| **Preparation** | | | | | | |
| Oversight | 3 hours | $95 | per hour | $285 | | |
| Paperwork, coordinate subcontractors | 4 hours | $64 | per hour | $256 | | |
| | | | | | $541 | |
| **Transformer Pad & Soil Excavation and Disposal Costs** | *Awaiting estimate from Doug Gurney* | | | | | |
| Excavation | 33 yard | $25 | yard | $833 | | |
| Filling (clean fill) | 33 yard | $25 | yard | $833 | | |
| Waste transport | 53 tons | $28 | load | $1,479 | | |
| Waste Disposal | 53 tons | $90 | ton | $4,753 | | |
| Topsoil placement | 33 cu yd | $25 | per cy | $833 | | |
| Seeding, mulch | 900 sq ft | $0.18 | per sq ft | $162 | | |
| Engineer/ Scientist II | 10 hours | $59 | per hour | $590 | | |
| Mileage | 170 miles | $0.59 | per mile | $99 | | |
| Reporting | 2 hours | $59.00 | per hour | $118 | | |
| | | Additional costs subtotal | | | $9,702 | |
| | | | | Subtotal | | $10,243 |
| | | | | 10% contingency | | $1,024 |
| | | **Transformer Pad Removal Estimated Cost** | | | | **$11,267** |

 ]

## *T2 Transformer Room Vault*

Assumptions:

Total PCB concentration < 3 µg/L

***Option 1: Collection for Treatment Facility Disposal***

Water collected and transported to separate treatment facility (not in Springfield) as non-TSCA waste

Placement and monitoring of oil-sorbent sock conducted during site visits for other items 2 and 4 years after pumping, remove on year 10

| | | | | | | |
|---|---|---|---|---|---|---|
| **Preparation** | | | | | | |
| Coordination w/EPA for Self-Implementing cleanup | 2 | hours | $80 | per hour | $160 | |
| | | | | | | $160 |
| **Transformer Room Vault** | | | | | | |
| Engineer/ Scientist II | 1 | hours | $59 | per hour | $59 | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | |
| Waste subcontractor (including disposal) | 1 | unit | $4,758 | unit | $4,758 | |
| Reporting | 1 | hours | $59 | per hour | $59 | |
| | | | Additional costs subtotal | | | $4,975 |
| **Placement and monitoring of oil-absorbent sock** | | | | | | |
| Engineer/Scientis II | 3 | hours | $59 | per hour | $177 | |
| Sorbent sock | 2 | units | $10 | per unit | $20 | |
| | | | | | | $197 |

| | |
|---|---|
| Subtotal | $5,332 |
| 10% contingency | $533 |
| **Transformer Room Vault Option 2 (Disposal Facility) Cleanup Estimated Cost** | **$5,865** |

## *Cutting Oil Recycling Tank*

Assumptions:

Water removed from tank and valve pit and disposed as PCB-containing liquid waste
Tank cleaned sufficiently for disposal as scrap metal at smelter
4 PCB wipe samples collected from interior of tank

| | | | | | | |
|---|---|---|---|---|---|---|
| **Preparation** | | | | | | |
| Oversight | 2 | hours | $95 | per hour | $190 | |
| Paperwork, coordinate subcontracto | 4 | hours | $64 | per hour | $256 | |
| Coordinate self-implenting cleanup v | 4 | hours | $64 | per hour | $256 | |
| | | | | | | $702 |
| **Cutting Oil Recycling Tank Cleanup** | | | | | | |
| Waste Contractor | 1 | job | $27,650 | job | $27,650 | |
| Engineer/ Scientist II | 10 | hours | $59 | per hour | $590 | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | |
| Sampling | 4 | samples | $66.00 | per sample | $264 | |
| Reporting | 1 | hours | $59.00 | per hour | $59 | |
| | | | Additional costs subtotal | | | $1,012 |

| | |
|---|---|
| Subtotal | $29,364 |
| 10% contingency | $2,936 |
| **Cutting Oil Recycling Tank Cleanup Estimated Cost** | **$32,301** |

**Cost Estimate- Exterior Items**
PVDC Building, Springfield, VT
JCO Project #3-2202-30

## *Chip Shed Soils: Option 1 - Cap with Asphalt*

Assumptions:
- 6" layer of asphalt to satisfy TSCA regs
- Wall of main building is used to replace part of fence
- 4000 s.f. area to be capped

**Preparation**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oversight | 4 | hours | $92 | per hour | $368 | | |
| Paperwork, coordinate subcontractor | 5 | hours | $59 | per hour | $295 | | |
| Pre-mark site | 4 | hours | $59 | per hour | $236 | | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | | |
| Coordinate self-implementing cleanu | 4 | hours | $92 | per hour | $368 | | |
| | | | | | | $1,366 | |

**Cap Installation**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6" Asphalt Cap Installation | 4000 | sf | $6 | s.f. | $24,000 | | |
| | | | | | | | |
| Engineer/ Scientist II | 6 | hours | $59 | per hour | $354 | | oversight |
| Mileage | 340 | miles | $0.59 | per mile | $199 | | |
| Monitoring & mapping equipment | 1 | day | $250.00 | day | $250 | | |
| TPH and VOC samples | 4 | samples | $165.00 | per sample | $660 | | |
| Reporting | 2 | hours | $59 | per hour | $118 | | |
| | | | Additional costs subtotal | | | $25,581 | |

| | |
|---|---|
| Subtotal | $26,947 |
| 10% contingency | $2,695 |
| **Capping Total Estimated Cost** | **$29,642** |

**Cost Estimate- Exterior Items**

PVDC Building, Springfield, VT

JCO Project #3-2202-30

## *Chip Shed Soils:  Option 2 - Fence*

Assumptions:

2" layer of asphalt for dust prevention

Wall of main building is used to replace part of fence

Dimensions are 30 - 50 - 70 - 50

**Preparation**

| | | | | | | |
|---|---|---|---|---|---|---|
| Oversight | 4 | hours | $95 | per hour | $380 | |
| Paperwork, coordinate subcontract | 5 | hours | $64 | per hour | $320 | |
| Pre-mark site | 4 | hours | $64 | per hour | $256 | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | |
| Coordinate cleanup w/TSCA | 4 | hours | $80 | per hour | $320 | |
| | | | | | | $1,375 |

**Fence Installation**

| | | | | | | |
|---|---|---|---|---|---|---|
| Fence Materials & Installation | 200 | ft | $35 | ft | $7,000 | |
| Asphalt Paving | 4000 | sf | $3 | s.f. | $12,000 | |
| | | | | | | |
| Engineer/ Scientist II | 6 | hours | $59 | per hour | $354 | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | |
| Monitoring & mapping equipment | 1 | day | $250 | day | $250 | |
| Reporting | 2 | hours | $59 | per hour | $118 | |
| | | | Additional costs subtotal | | | $19,821 |

| | |
|---|---|
| Subtotal | $28,197 |
| 10% contingency | $2,820 |
| **Fence Total Estimated Cost** | **$31,017** |

Cost Estimate- Exterior Items
PVDC Building, Springfield, VT
JCO Project #3-2202-30

## *Chip Shed Soil: Option 3 - Removal of all soils over Industrial PRGs*

Assumptions:

| | | | | | |
|---|---|---|---|---|---|
| Excavate soils and asphalt from 1' depth: | 2200 | sq ft = | 81 | cu yds | |
| Excavate soils from 1 to 6 ft: | 1350 | sq ft = | 250 | cu yds | |
| 331 cubic yards of soils to be removed | | | | | |
| No soils have PCBs > 50 ppm, cleanup level is 0.74 ppm | | | | | |
| No closure sampling required | | | | | $1,350 |
| 1/3 of the 0-6' excavation can be filled with concrete with concentrations below 3 ppm (>100 ft from river) | | | | | $1.000 |
| Replace MW-15 well with new well | | | | | |
| Monitor groundwater in new MW-15 and 2 downgradient wells annually for 10 years | | | | | |

**Preparation**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oversight | 3 | hours | $95 | per hour | $285 | | |
| Paperwork, coordinate subcontractors | 8 | hours | $64 | per hour | $512 | | |
| Pre-mark site | 4 | hours | $64 | per hour | $256 | | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | | |
| Coordinate self-implementing cleanup w/TSCA | 4 | hours | $80 | per hour | $320 | | |
| | | | | | | | $1,472 |

**Chip Shed Excavation and Disposal Costs**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Excavation | 1 | job | $5,500 | job | $5,500 | | |
| Stockpiling, Loading Trucks | 331 | yard | $5 | yard | $1,657 | | |
| Filling (use building materials) | 65 | yard | $10 | yard | $648 | | |
| Waste transport | 497 | tons | $28 | ton | $13,922 | | |
| Waste Disposal | 497 | tons | $90 | ton | $44,750 | | |
| Backfill | 267 | cu yds | $16 | cu yd | $4,267 | | |
| Install replacement well | 1 | day | $2,500 | per day | $2,500 | | |
| | | | | | | | $73,244 |
| Engineer/ Scientist II | 20 | hours | $59 | per hour | $1,180 | | |
| Mileage | 340 | miles | $0.59 | per mile | $199 | | |
| Confirmation samples | 5 | samples | $66.00 | per sample | $330 | | |
| Reporting | 4 | hours | $59.00 | per hour | $236 | | |
| | | | | | | | $1,945 |

**Groundwater Monitoring Costs per Round**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Engineer II | 7 | hours | $54 | hr | $378 | | |
| Mileage | 170 | miles | $0.59 | mile | $99 | | |
| Equipment | 1 | day | $200 | day | $200 | | |
| Sampling | 4 | samples | $88 | sample | $352 | 1 duplicate | |
| Reporting | 4 | hours | $59 | hour | $236 | | |
| | | | | | $1,265 | | |

**Groundwater Monitoring costs for years 5 and 10**

| | | | |
|---|---|---|---|
| Annual monitoring costs | $1,265 | unit | |
| Interest rate | 4% | year | |
| Duration | 10 | years | |
| Present value | | | $2,530 |

| | |
|---|---|
| Subtotal | $79,192 |
| 10% contingency | $7,919 |
| **All Soil > PRGs Removal Total Estimated Cost** | **$87,111** |

## *Chip Shed Soil: Option 4 - Removal of the most impacted soils*

Assumptions:

| | | | | | | |
|---|---|---|---|---|---|---|
| Excavate soils and asphalt from 1' depth: | 2200 | sq ft = | 81 | cu yds | 122 | tons |
| Excavate soils from 1 to 6 ft: | 500 | sq ft = | 93 | cu yds | 139 | tons |

174 cubic yards of soils to be removed 261 tons
No soils have PCBs > 50 ppm, cleanup level is 0.74 ppm from 0-1' and 3 ppm from 1-6'
No closure sampling required
The 0-6' excavation can be filled with concrete with concentrations below 3 ppm
Monitor groundwater in 2 downgradient wells annually for 10 years (MW-15 will be destroyed)
Replace MW-15 well with new well
Monitor groundwater in new MW-15 and 2 downgradient wells annually for 10 years

**Preparation**

| | | | | | | |
|---|---|---|---|---|---|---|
| Oversight | 3 | hours | $95 | per hour | $285 | |
| Paperwork, coordinate subcontractors | 8 | hours | $64 | per hour | $512 | |
| Pre-mark site | 4 | hours | $64 | per hour | $256 | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | |
| Coordinate self-implementing cleanup w/TSCA | 4 | hours | $80 | per hour | $320 | |
| | | | | | | $1,472 |

**Chip Shed Excavation and Disposal Costs**

| | | | | | | |
|---|---|---|---|---|---|---|
| Excavation | 1 | job | $5,500 | job | $5,500 | |
| Stockpiling, Loading Trucks | 174 | yard | $5 | yard | $870 | |
| Filling (use building materials) | 93 | yard | $10 | yard | $926 | |
| Waste transport | 129 | tons | $28 | ton | $3,615 | |
| Waste Disposal | 129 | tons | $90 | ton | $11,619 | |
| Backfill | 143 | cu yds | $16 | cu yd | $2,291 | |
| Install replacement well | 1 | day | $2,500 | per day | $2,500 | |
| | | | | | | $27,322 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Engineer/ Scientist II | 20 | hours | $59 | per hour | $1,180 | | |
| | Mileage | 340 | miles | $0.59 | per mile | $199 | | |
| | Confirmation samples | 5 | samples | $66.00 | per sample | $330 | | |
| | Reporting | 4 | hours | $59.00 | per hour | $236 | | |
| | | | | | | | $1,945 | |
| **Groundwater Monitoring Costs per Round** | | | | | | | | |
| | Engineer II | 7 | hours | $54 | hr | $378 | | |
| | Mileage | 170 | miles | $0.59 | mile | $99 | | |
| | Equipment | 1 | day | $200 | day | $200 | | |
| | Sampling | 4 | samples | $88 | sample | $352 | 1 duplicate | |
| | Reporting | 4 | hours | $59 | hour | $236 | | |
| | | | | | | $1,265 | | |
| **Groundwater Monitoring costs for years 5 and 10** | | | | | | | | |
| Annual monitoring costs | | | | $1,265 | unit | | | |
| Interest rate | | | | 4% | year | | | |
| Duration | | | | 10 | years | | | |
| Present value | | | | | | | $2,530 | |
| | | | | | Subtotal | | | $33,269 |
| | | | | | 10% contingency | | | $3,327 |
| | | | | | **Shallow Soil Removal Total Estimated Cost** | | | **$36,596** |

**Cost Estimate- Exterior Items**
**PVDC Building, Springfield, VT**
**JCO Project #3-2202-30**

***UST Closure***

Assumptions:

- 15,000-gallons of fuel oil in UST
- 4 confirmatory samples for TPH
- 4 confirmatory samples for VOCs
- UST closed in accordance with VT DEC UST Program Requirements

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Preparation** | | | | | | | |
| Oversight | 4 | hours | $95 | per hour | $380 | | |
| Paperwork, coordinate subcontractors | 5 | hours | $64 | per hour | $320 | | |
| Pre-mark site | 4 | hours | $64 | per hour | $256 | | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | | |
| | | | | | | $1,055 | |
| **UST Closure Costs** | | | | | | | |
| Waste Contractor (high) | 1 | job | $16,000 | job | $16,000 | *assumes some waste product in tank* | |
| Engineer/ Scientist II | 10 | hours | $59 | per hour | $590 | oversight | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | | |
| Monitoring & mapping equipment | 1 | day | $250.00 | day | $250 | | |
| TPH and VOC samples | 4 | samples | $165.00 | per sample | $660 | | |
| Reporting | 8 | hours | $59.00 | per hour | $472 | | |
| | | | Additional costs subtotal | | | $18,071 | |
| | | | | | Subtotal | | $19,127 |
| | | | | | 10% contingency | | $1,913 |
| | | | | | **UST Closure Total Estimated Cost** | | **$21,040** |

## *Waste Drums in Building*

Assumptions:

Approximately 200 gallons of wastes

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Preparation** | | | | | | | | |
| Oversight | 2 | hours | $92 | per hour | $184 | | | |
| Paperwork, coordinate subcontract | 3 | hours | $59 | per hour | $177 | | | |
| | | | | | | $361 | | |
| **Drum Disposal Costs** | | | | | | | | |
| Waste Contractor (high) | 1 | job | $10,000 | job | $10,000 | | | |
| Engineer/ Scientist II | 10 | hours | $54 | per hour | $540 | | | oversight |
| Mileage | 170 | miles | $0.59 | per mile | $99 | | | |
| Reporting | 5 | hours | $59 | per hour | $295 | | | |
| | | | Additional costs subtotal | | | $10,934 | | |
| | | | | | Subtotal | | $11,295 | |
| | | | | | 10% contingency | | $1,130 | |
| | | | | | **Drum disposal Total** | | **$12,425** | |

**Cost Estimate- Exterior Items**
**PVDC, Springfield, VT**
**JCO Project #3-2202-30**

## *Chlorinated Solvent in Groundwater: Option 1 - Monitored Natural Attenuation*

Assumptions:
- 10 years of monitoring required
- Two events per year of monitoring for first two years; annual monitoring thereafter
- Each monitoring round to include 3 samples by 8260B, 1 (bathroom supply) by 524.1, 1 duplicate

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Preparation** | | | | | | | |
| Oversight | 2 | hours | $92 | per hour | $184 | | |
| Legal fees | 1 | unit | $2,000 | per unit | $2,000 | | |
| | | | | | | $2,184 | |
| **Monitoring Costs per Round** | | | | | | | |
| Engineer II | 8 | hours | $54 | hr | $432 | | |
| Mileage | 170 | miles | $0.59 | mile | $99 | | |
| Equipment | 1 | day | $200 | day | $200 | | |
| Sampling | 5 | samples | $80 | sample | $400 | | |
| Reporting | 4 | hours | $59 | hour | $236 | | |
| | | | | | $1,367 | | |
| **Monitoring costs for first two years** | | | | | | | |
| Semi-annual monitoring costs | | | $1,367 | per event | | | |
| Interest rate | | | 2% | per 6 months | | | |
| Duration | | | 4 | events | | | |
| Present value | | | | | | $5,207 | |
| **Monitoring costs for years 3-10** | | | | | | | |
| Annual monitoring costs | | | $1,367 | unit | | | |
| Interest rate | | | 4% | year | | | |
| Duration | | | 8 | years | | | |
| Present value | | | | | | $8,525 | |
| | | | | | Subtotal | | $15,916 |
| | | | | | 10% contingency | | $1,592 |
| | | | | | **Present Value Monitored Natural Attenuation Total** | | **$17,507** |

**Cost Estimate- Exterior Items**
PVDC Building, Springfield, VT
JCO Project #3-2202-30

## *Chlorinated Solvent in Groundwater: Option 2 -SVE System*

Assumptions:
- Power drop required
- 1 vapor recovery well installed for pilot test, use existing wells for monitoring network
- Sample groundwater for 8260B 4 times per year
- 3 indoor air samples
- Run system for 5 years

**Preparation**

| | | | | | | |
|---|---|---|---|---|---|---|
| Oversight | 2 | hours | $92 | per hour | $184 | |
| Paperwork, coordinate subcontractors | 4 | hours | $64 | per hour | $256 | |
| Premark site | 4 | hours | $64 | per hour | $256 | |
| Mileage | 170 | miles | $0.59 | per mile | $99 | |
| Equipment prep | 4 | hours | $54 | per hour | $216 | |
| | | | | | | $827 |

**SVE Pilot Test**

| | | | | | | |
|---|---|---|---|---|---|---|
| Sr. Technician | 24 | hr | $54 | hrs | $1,296.00 | |
| Eng/Sci III | 30 | hr | $64 | hrs | $1,920.00 | |
| Mileage | 340 | mile | $0.59 | miles | $198.90 | |
| Telephone | 1 | day | $10 | days | $10.00 | |
| Well installation | 1 | well | $800 | per well | $800.00 | |
| Well box | 1 | ea | $55 | boxes | $55.00 | |
| Vacuum gauges | 6 | ea | $50 | gauges | $300.00 | |
| Blower rental | 1 | ea | $200 | blower | $200.00 | |
| PVC piping | 1 | project | $500 | project | $500.00 | |
| Misc. Supplies | 1 | project | $200 | project | $200.00 | |
| Pitot tube | 3 | ea | $50 | units | $150.00 | |
| PID | 1 | day | $75 | per day | $75.00 | |
| TO-15 Lab Samples | 3 | sample | $360 | per sample | $1,080.00 | |
| | | | **Sub Total for Pilot Test** | | | $11,720 |

**Full SVE System Installation**

| | | | | | | |
|---|---|---|---|---|---|---|
| Reporting and design | 40 | hr | $64 | per hour | $2,560.00 | |
| Reporting and design | 25 | hr | $95 | per hour | $2,375.00 | |
| Well installation | 6 | wells | $800 | well | $4,800 | |
| Engineer/Scientist III | 40 | hours | $64 | per hour | $2,560 | |
| Sr. Technician | 40 | hours | $54 | hour | $2,160 | |
| Mileage | 850 | miles | $0.59 | mile | $497 | |
| Power drop | 1 | unit | $3,000 | unit | $3,000 | |
| Equipment (based on Pilot test equip) | 10 | unit | $1,405 | unit | $14,050 | |
| Electrical | 60 | months | $100 | month | $6,000 | |
| Site visits (8 hours per visit, 12 per yr) | 60 | visits | $432 | visit | $25,920 | |
| Mileage | 60 | visits | $99 | visit | $5,967 | |
| VOC GW Sampling | 20 | samples | $124 | sample | $2,480 | |
| TO-15 Lab Samples | 3 | sample | $360 | per sample | $1,080.00 | |
| Reporting | 20 | hours | $59 | hour | $1,180 | |
| | | | | | | $74,629 |

| | |
|---|---|
| Subtotal | $87,177 |
| 10% contingency | $8,718 |
| **SVE System Estimated Cost** | **$95,894** |

**Cost Estimate- Exterior Items**
**PVDC, Springfield, VT**
**JCO Project #3-2202-30**

### *Closure of boiler supply well*

Assumptions:
- Pump and all wiring removed from well
- Well completely filled with grout material

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Preparation** | | | | | | | |
| Oversight | 1 | hours | $64 | per hour | $64 | | |
| | | | | | | $64 | |
| **Well closure** | | | | | | | |
| Subcontractor | 1 | unit | $1,100 | per unit | $1,100 | | |
| | | | | | | $1,100 | |
| | | | | | Subtotal | | $1,164 |
| | | | | | 10% contingency | | $116 |
| | | | | | **Boiler Supply Well Closure Total** | | **$1,280** |

**Cost Estimate- Exterior Items**
PVDC Building, Springfield, VT
JCO Project #3-2202-30

## *Sub-Slab Depressurization in SE Office Area*

Assumptions:

- Required in NE Office Area of Building
- Turner Building Science provided preliminary design and installation estimates
- Post-installation sampling includes collecting 2 indoor air samples, 1 outdoor, 1 trip blank annually for 2 years
- Indoor air samples are 12 hour samples, require 2 mobilizations per event
- System operated for 25 years

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oversight | 2 | hours | $95 | per hour | $190 | | |
| Paperwork, coordinate subcontractors | 10 | hours | $64 | per hour | $640 | | |
| | | | | | | $640 | |
| **System design and installation** | | | | | | | |
| Diagnostics (subcontracted) | 1 | unit | $8,000 | per unit | $8,000 | | |
| Design (subcontracted) | 1 | unit | $15,000 | per unit | $15,000 | | |
| Installation (subcontracted) | 2 | units | $2,500 | per point | $5,000 | | |
| Pre-design mileage | 340 | miles | $0.59 | per mile | $201 | | |
| Pre-design labor | 16 | hours | $64.00 | per hour | $1,024 | | |
| Pre-design equipment/materials | 1 | unit | $500.00 | per unit | $500 | | |
| Pre-design sampling | 6 | samples | $300.00 | per sample | $1,800 | | |
| | | | | | | $31,525 | |
| **System operation and monitoring** | | | | | | | |
| 25-year operating costs | 300 | months | $49 | per month | $9,207 | | 4% interest rate |
| Engineer II (8 hours per visit) | 2 | visits | $472 | per visit | $944 | | |
| Mileage | 680 | miles | $0.59 | per mile | $398 | | |
| TO-15 indoor air samples | 8 | samples | $300 | per sample | $2,400 | | |
| Reporting | 6 | hours | $64 | per hour | $384 | | |
| | | | | | Sub Total | $13,333 | |

Assumptions:

- Sample result not above TCLP limits, not hazardous
- Area of excavation approximately 6' wide by 6' long by 4' deep = 5.3 cu yds = 8.0 tons
- Backfill with clean sand
- Collect 2 TCE confirmation laboratory samples
- Assumes premarking performed during a site visit for other work

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Preparation** | | | | | | | |
| Oversight | 1 | hours | $95 | per hour | $95 | | |
| Paperwork, coordinate subcontractors | 1 | hours | $64 | per hour | $64 | | |
| Premark site | 1 | hours | $64 | per hour | $64 | | |
| | | | | | | $223 | |
| **TCE Contaminated Soil Removal and Disposal Costs** | | | | | | | |
| Excavation | 1 | job | $1,000 | job | $1,000 | | |
| Stockpiling, Loading Trucks | 5.3 | yard | $5 | yard | $27 | | |
| Filling | 5.3 | yard | $10 | yard | $53 | | |
| Waste transport | 8.0 | tons | $28 | ton | $224 | | |
| Waste Disposal | 8.0 | tons | $90 | ton | $720 | | |
| Backfill | 5.3 | cu yds | $16 | cu yd | $85 | | |
| Chlorinated VOC samples | 2 | samples | $83 | per sample | $165 | | |
| | | | | | | $2,274 | |
| Engineer/ Scientist II | 6 | hours | $59 | per hour | $354 | oversight | |
| mileage | 170 | miles | $0.59 | per mile | $99 | | |
| Reporting | 2 | hours | $64.00 | per hour | $128 | | |
| Communications | 1.50% | labor | $10.58 | | $11 | | |
| | | | Additional costs subtotal | | | $592 | |
| | | | | | Subtotal | | $48,587 |
| | | | | | 10% contingency | | $4,859 |
| | | | **Total for SSD and TCE-Contaminated Soil Removal** | | | | $53,446 |

Cost Estimate- All Items
PVDC Building, Springfield, VT
JCO Project #3-2202-30

| Item | Cost |
|---|---|
| Chip Shed and Boiler House Building Material Removal | $ 52,575 |
| Outdoor Transformer Pads | $ 11,267 |
| T2 Transformer Room Vault | $ 5,865 |
| Cutting Oil Recycling Tank | $ 32,301 |
| Chip Shed Soils: Option 1 - Cap with Asphalt | $ 29,642 |
| Chip Shed Soils: Option 2 - Fence | $ 31,017 |
| Chip Shed Soil: Option 3 - Removal of all soils over Industrial PRGs | $ 87,111 |
| Chip Shed Soil: Option 4 - Removal of the most impacted soils | $ 36,596 |
| UST Closure | $ 21,040 |
| Waste Drums in Building | $ 12,425 |
| Chlorinated Solvent in Groundwater: Option 1 - Monitored Natural Attenuation | $ 17,507 |
| Chlorinated Solvent in Groundwater: Option 2 -SVE System | $ 95,894 |
| Closure of boiler supply well | $ 1,280 |
| Sub-Slab Depressurization in SE Office Area | $ 53,446 |

| **Recommended Alternatives (building exterior):** | |
|---|---|
| Chip Shed and Boiler House Building Material Removal | $ 52,575 |
| Outdoor Transformer Pads | $ 11,267 |
| T2 Transformer Room Vault | $ 5,865 |
| Cutting Oil Recycling Tank | $ 32,301 |
| Chip Shed Soil: Option 4 - Removal of the most impacted soils | $ 36,596 |
| UST Closure | $ 21,040 |
| Waste Drums in Building | $ 12,425 |
| Chlorinated Solvent in Groundwater: Option 1 - Monitored Natural Attenuation | $ 17,507 |
| Closure of boiler supply well | $ 1,280 |
| Sub-Slab Depressurization in SE Office Area | $ 53,446 |
| ***Total Costs for recommended alternatives:*** | ***$ 244,302*** |

| **Summary of Interior PCB Alternatives** | |
|---|---|
| Parts A, O & P- Demolition | $ 158,139 |
| Part B PCB Concrete, Epoxy Paint and Tile: Cover and Monitor | $ 162,160 |
| Parts C, G, H, J, LMN, Hall Epoxy Paint and Tile | $ 254,236 |
| Parts D and F (Parking Garages) Option 2 - 1.5 to 2" asphalt | $ 164,991 |
| Part E Epoxy Paint and Tile | $ 215,928 |
| ***Total Cost*** | ***$ 955,454*** |
| | |

***Total costs for Interior and Exterior Alternatives: $ 1,199,755***

# APPENDIX D

# RISK-BASED PCB CLEANUP CORRESPONDENCE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

RECEIVED
APR - 2 2009
THE JOHNSON COMPANY, INC.

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

MAR 31 2009

Bob Flint, President
Precision Valley Development Corporation
100 River Street
Springfield, Vermont 05156

Re: PCB Risk-Based Disposal Approval under 40 CFR § 761.61(c)

Dear Mr. Flint:

This is in response to the Notification[1] by Precision Valley Development Corporation (PVDC) for approval of risk-based plan to address PCB-contamination at the former Fellows Gear Shaper Facility, 100 River Street, Springfield, Vermont. PCB-contaminated concrete that exceeds the allowable PCB levels for unrestricted use under the federal PCB regulations at 40 CFR § 761.61(a) is present in concrete floors and walls located in the former manufacturing space and in the northern loading dock.

PVDC has proposed a plan under the PCB risk-based disposal option at 40 CFR § 761.61(c) that includes the following major activities:

- Washing of *porous surfaces* to remove dust, dirt, and debris;
- Capping of PCB-contaminated concrete on the floor at greater than or equal to (≥) 1 part per million (ppm) located in the manufacturing space and in the northern loading dock beneath a vapor barrier and a minimum 4-inches of concrete;
- Capping of PCB-contaminated concrete on the floor at less than or equal to (≤) 10 ppm located in the storage and electrical rooms and in the bathroom beneath an epoxy coating and tile;
- Encapsulation of PCB-contaminated concrete on the walls with a 2-colored epoxy paint; and,
- Establishment of a long-term monitoring and maintenance plan for monitoring of indoor air and surfaces and maintenance of physical barriers.

---

1 Information was submitted by the Johnson Company on behalf of PVDC to support a risk-based disposal approach for PCB remediation waste under 40 CFR § 761.61(c). Information was submitted dated January 28, 2009; March 6, 2009; and, March 25, 2009 and, March 27, 2009 (via e-mail). These submissions will be referred to as the "Notification."

EPA finds that the proposed measures should effectively prevent direct exposure of the PCB-contaminated *porous surfaces* to building tenants and Site users provided the barriers are maintained. As such, EPA may approve this proposed work under § 761.61(c).

PVDC may proceed with its project in accordance with 40 CFR § 761.61(c); its Notification; and, this Approval, subject to the conditions of Attachment 1. Following completion of the activities authorized under this Approval, the PCB surface wipe samples and PCB indoor air samples should indicate that there is no unreasonable risk to future tenants or Site users. However, under this Approval, EPA is reserving its rights to require additional mitigation measures should indoor air concentrations or surface wipe sample results indicate that PCBs are present at concentrations which could result in a risk to Site users.

Please note that upon completion of the activities authorized under this Approval, the Site owner will be required to record a notation with the property's deed (Attachment 1, Condition 16) which will identify the PCB contamination remaining at the Site and the long-term monitoring and maintenance requirements.

Questions and correspondence on this Approval should be directed to:

> Kimberly N. Tisa, PCB Coordinator
> United States Environmental Protection Agency
> 1 Congress Street, Suite 1100 - CPT
> Boston, Massachusetts 02114-2023
> Telephone: (617) 918-1527
> Facsimile: (617) 918-0527

Please note that this Approval only addresses PCB contamination located within the former manufacturing space and the northern loading dock (Attachment 1, Condition 1). As PCBs exceeding the allowable concentrations for unrestricted use are present in other locations on the property, separate plan(s) to address this contamination shall be submitted in accordance with 40 CFR § 761.61.

EPA shall not consider the work authorized under this Approval to be complete until it has received all submittals required under this Approval.

Sincerely,

James T. Owens, III, Director
Office of Site Remediation & Restoration

cc R. Genderson and J. Meekin, One Hundred River Street LLC
A. Peterson, EPA
T. Coppolino, VTDEC
Springfield Department of Health

Attachment 1

**ATTACHMENT 1: PCB APPROVAL CONDITIONS**
**PRECISION VALLEY DEVELOPMENT CORPORATION**
**100 RIVER STREET**
**MANUFACTURING SPACE AND NORTHERN LOADING DOCK**
**SPRINGFIELD, VERMONT**

## GENERAL CONDITIONS

1. This Approval is granted under the authority of Section 6(e) of the Toxic Substances Control Act (TSCA), 15 U.S.C. § 2605(e), and the PCB regulations at 40 CFR Part 761, and applies solely to *PCB remediation waste* identified in the Notification as shown on Figure 2 of the January 28, 2009 submittal (the Site.)

2. Precision Valley Development Corporation (PVDC) shall conduct on-site activities in accordance with the conditions of this Approval and the Notification.

3. This Approval may be revoked if the EPA does not receive written notification from PVDC of its acceptance of the conditions of this Approval within ten (10) business days of receipt.

4. In the event that the activities described in the Notification differ from the conditions specified in this Approval, the conditions of this Approval shall govern.

5. The terms and abbreviations used herein shall have the meanings as defined in 40 CFR § 761.3 unless otherwise defined within this Approval.

6. PVDC must comply with all applicable federal, state and local regulations in the storage, handling, and disposal of all PCB wastes, including PCBs, PCB Items and decontamination wastes generated under this Approval. In the event of a new spill during response actions, PVDC shall contact EPA within twenty-four (24) hours for direction on sampling and cleanup requirements.

7. PVDC is responsible for the actions of all officers, employees, agents, contractors, subcontractors, and others who are involved in activities conducted under this Approval. If at any time PVDC has or receives information indicating that PVDC or any other person has failed, or may have failed, to comply with any provision of this Approval, it must report the information to EPA in writing within twenty-four (24) hours of having or receiving the information.

8. This Approval does not constitute a determination by EPA that the contractors, transporters or disposal facilities selected by PVDC are authorized to conduct the activities set forth in the Notification. PVDC is responsible for ensuring that its selected contractors, transporters and disposal facilities are authorized to conduct these activities in accordance with all applicable federal, state and local statutes and regulations.

9. PVDC shall notify EPA in writing of the scheduled date of commencement of on-site activities at least one (1) business day prior to conducting any work under this Approval.

10. This Approval does not: 1) waive or compromise EPA's enforcement and regulatory authority; 2) release PVDC from compliance with any applicable requirements of federal, state or local law; or 3) release PVDC from liability for, or otherwise resolve any violations of federal, state or local law.

**ABATEMENT CONDITIONS**

11. Prior to initiating onsite work under this Approval, PVDC shall submit the following information for EPA review and/or approval:

    a. A certification signed by its selected cleanup contractor, stating that the contractor(s) has read and understands the Notification, and agrees to abide by the conditions specified in this Approval; and,

    b. A certification signed by the selected analytical laboratory, stating that the laboratory has read and understands the extraction and analytical method requirements and the quality assurance requirements under this Approval.

12. Prior to occupancy of the Site by a tenant, the Site owner shall submit the following information to EPA:

    a. a certification signed by the tenant acknowledging the PCB contamination at the Site, and the tenant's agreement to inform its employees of the presence of PCBs. The certification also shall specify how the tenant shall provide the information to its employees.

13. PCB-contaminated concrete shall be covered by a physical barrier as described in the Notification. Initial post-abatement indoor air sampling and indoor surface sampling for PCBs shall be conducted to determine the impact of the abatement activities.

    a. PVDC shall submit a post-abatement indoor air and surface sampling plan for EPA review and approval prior to conducting said activities. At a minimum, the plan shall include: locations of air and surface wipe samples; extraction and analytical methods and detection limits; and QA/QC criteria.

    b. Initial post-abatement sampling

        i) A minimum of one indoor air sample and a background air sample shall be collected. Sufficient sample volumes shall be collected to provide a laboratory reporting limit of less than (<) 0.1 $\mu g/m^3$.

ii) Wipe sampling of indoor surfaces shall be performed on a surface area basis by the standard wipe test as specified in 40 CFR § 761.123 (i.e. µg/100 cm$^2$). Chemical extraction for PCBs shall be conducted using Methods 3500B/3540C of SW-846 and chemical analysis for PCBs shall be conducted using Method 8082 of SW-846, unless another method(s) is validated according to Subpart Q.

iii) Analytical results of the initial surface wipe and air sampling shall be submitted to EPA within 10 business days of PVDC's receipt of the results.

(1) In the event that PCB concentrations in the wipe samples are greater than or equal to (≥) 1 $\mu$g/100 cm$^2$ or air samples results are greater than (>) 0.10 $\mu$g/m$^3$, PVDC shall contact EPA for further discussion and direction on alternatives, which may include development of a site-specific risk exposure assessment.

c. PVDC shall submit a monitoring and maintenance implementation plan (MMIP) to monitor the long-term effectiveness of the physical barriers in reducing exposure to building users (see Condition 19).

14. PCB waste (at any concentration) generated as a result of the activities described in the Notification, excluding any decontaminated materials, shall be marked in accordance with CFR 40 CFR § 761.40; stored in a manner consistent with 40 CFR § 761.65; and, disposed of in accordance with 40 CFR § 761.61, unless otherwise specified below.

a. Non-liquid cleaning materials, PPE and similar materials resulting from decontamination may be disposed of in accordance with 40 CFR § 761.79(g)(6).

b. Moveable equipment, tools, and sampling equipment shall be decontaminated in accordance with either 40 CFR § 761.79(b)(3)(i)(A), § 761.79(b)(3)(ii)(A), or § 761.79(c)(2).

c. PCB-contaminated water generated during decontamination or dewatering shall be decontaminated in accordance with 40 CFR § 761.79(b)(1) or disposed of under § 761.70.

15. To the maximum extent practical, engineering controls shall be utilized to minimize the potential for PCB releases during the abatement. In addition, to the maximum extent possible, disposable equipment and materials, including PPE, will be used to reduce the amount of decontamination necessary.

**DEED RESTRICTION AND USE CONDITIONS**

16. Within thirty (30) days of completing the activities described in the Notification and in the Approval, PVDC shall submit for EPA's review and approval, a draft deed restriction for the Site. The deed restriction shall include: a description of the extent and levels of contamination at the Site following the abatement work; a description of the actions taken at the Site; and, a description of the use restrictions for the Site. Within 30 days of receipt of EPA's approval of the draft deed restriction, PVDC shall record the deed restriction. A copy of this Approval and the long-term monitoring and maintenance implementation plan (see Condition 19) shall be attached to the deed restriction.

**SALE, LEASE OR TRANSFER OF SITE**

17. PVDC shall notify the EPA of the sale, lease or transfer of any portion of the Site, in writing, no later than 10 days prior to such action. This notification shall include the name, address, and telephone number of the new owner(s). In the event that PVDC sells, leases or transfers any portion of the Site, PVDC shall continue to be bound by all the terms and conditions of this Approval, unless EPA allocates some or all of this Approval's responsibilities to the new owner through the issuance of a new approval associated with those activities. The procedures for the issuance of a new approval are as follows:

    a. The new owner(s), lessee or transfer entity must request, in writing, that the EPA issue a new approval to the new owner(s), lessee or transfer entity which transfers some or all responsibilities to comply with the terms and conditions of this Approval to that entity or entities;

    b. The EPA reviews the request, and determines whether to issue a new approval; and,

    c. The new owner(s), lessee or transfer entity provides written notification to the EPA of its acceptance of and intention to comply with the terms and conditions of the new approval. The new approval may be withdrawn if the EPA does not receive written notification from the new owner(s), lessee or transfer entity of its acceptance of, and intention to comply with, the terms and conditions of the new approval within ten (10) days of the date of the new approval. Under such circumstances, all terms and conditions of this Approval will continue to be binding on PVDC.

d. In the event that the sale, lease or transfer of the Site will involve or result in a change in the use of the Site, EPA may revoke, suspend, and/or modify this Approval or the new approval if it finds, due to the change in use, that the measures implemented under this Approval will not be protective of public health or the environment. The new owner shall record any amendment to the deed restriction, resulting from any approved modification(s), within sixty (60) days of such change(s).

18. In any sale, lease or transfer of the Site, PVDC shall retain sufficient access rights to enable it to continue to meet its obligations under this Approval, except as provided above.

## INSPECTION, MONITORING, MODIFICATION AND REVOCATION CONDITIONS

19. Within sixty (60) days of receipt of this Approval, PVDC shall submit for EPA's review and approval, a detailed long-term monitoring and maintenance implementation plan (MMIP) for the barrier(s) and for indoor air quality and surface monitoring.

a. The MMIP shall include: a description of the activities that will be conducted, including barrier inspection criteria and frequency; and, indoor air quality monitoring and surface sampling locations; sampling protocols, sampling frequency, and analytical criteria; and reporting requirements.

b. The MMIP shall include a communications component which details how the maintenance and monitoring results will be communicated to the Site tenants.

c. PVDC shall submit the results of these long-term monitoring and maintenance activities to EPA. Based on its review of the results, EPA may determine that modification to the MMIP is necessary in order insure long-term effectiveness of the physical barriers.

d. PVDC shall incorporate any changes to the MMIP required by EPA. Activities required under the MMIP shall be conducted until such time that EPA determines, in writing, that such activities are no longer necessary.

20. Any modification(s) in the plan, specifications, or information submitted by PVDC, contained in the Notification, and forming the basis upon which this Approval has been issued, must receive prior written approval from the EPA. PVDC shall inform the EPA of any modification, in writing, at least 10 days prior to such change. No action may be taken to implement any such modification unless the EPA has approved of the modification in writing. The EPA may request additional information in order to determine whether to approve the modification.

If such modification involves a change in the use of the Site which results in exposures not considered in the Notification, the EPA may revoke, suspend, and/or modify this Approval upon finding that this cleanup and disposal action may pose an unreasonable risk of injury to health or the environment due to the change in use. EPA may take similar action if the EPA does not receive requested information from PVDC needed to make a determination regarding potential risk.

21. Any departure from the conditions of this Approval without prior, written authorization from the EPA may result in the revocation, suspension and/or modification of the Approval, in addition to any other legal or equitable relief or remedy the EPA may choose to pursue.

22. Any misrepresentation or omission of any material fact in the Notification or in any future records or reports may result in the EPA's revocation, suspension and/or modification of the Approval, in addition to any other legal or equitable relief or remedy the EPA may choose to pursue.

23. Approval for these activities may be revoked, modified or otherwise altered: if EPA finds a violation of the conditions of this Approval or of 40 CFR Part 761, including EPA's PCB Spill Cleanup Policy, or other applicable rules and regulations; if EPA finds that these activities present an unreasonable risk to public health or the environment; or if EPA finds that changes are necessary to comply with new rules, standards, or guidance for such approvals. PVDC may apply for appropriate modifications in the event new rules, standards, or guidance come into effect.

24. PVDC shall allow any authorized representative of the Administrator of the EPA to inspect the Site and to inspect records and take samples as may be necessary to determine compliance with the PCB regulations and this Approval. Any refusal to allow such an inspection (as authorized by Section 11 of TSCA) shall be grounds for revocation of this Approval.

## RECORDKEEPING AND REPORTING CONDITIONS

25. PVDC shall prepare and maintain all records and documents required by 40 CFR Part 761, including, but not limited to, the records required by Subparts J and K. PVDC shall maintain a written record of and the analytical sampling for the activities conducted under this Approval.. All records shall be made available for inspection by authorized representatives of the EPA, until such time as EPA approves in writing a request for an alternative disposition of such records.

26. PVDC shall submit a Final Completion Report (Report) to the EPA within 120 days of completion of the activities described under this Approval. At a minimum, this Report shall include: a discussion of the project activities; characterization and confirmation sampling analytical results; copies of the accompanying analytical chains of custody; field and laboratory quality control/quality assurance checks; an estimate of the quantity of PCBs removed and disposed off-site; copies of manifests; and, copies of certificates of disposal or similar certifications issued by the disposer, if applicable. The Report shall also include a copy of the recorded deed restriction and a certification signed by PVDC and the Site owner (if applicable) verifying that the authorized activities have been implemented in accordance with this Approval and the Notification.

27. As required under Condition 19 of this Approval and unless otherwise modified, PVDC shall submit the results of the long-term monitoring and maintenance activities to EPA as specified in the final MMIP to be approved by EPA.

28. Required submittals shall be mailed to:

    Kimberly N. Tisa, PCB Coordinator
    United States Environmental Protection Agency
    1 Congress Street, Suite 1100 - CPT
    Boston, Massachusetts 02114-2023
    Telephone: (617) 918-1527
    Facsimile: (617) 918-0527

29. No record, report or communication required under this Approval shall qualify as a self-audit or voluntary disclosure under EPA audit, self disclosure or penalty policies.

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**END OF ATTACHMENT 1**

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
REGION I
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

OCT 13 2009

Bob Flint, President, Executive Director
Precision Valley Development Corporation
c/o Springfield Regional Development Corporation
14 Clinton Street, Suite 7
Springfield, Vermont 05156

Re: PCB Cleanup and Disposal Approval under 40 CFR §§ 761.61(a) and (c)
100 River Street, Springfield, Vermont

Dear Mr. Flint:

This is in response to the Notification[1] by Precision Valley Development Corporation (PVDC) for approval of plan to address PCB-contamination at the former Fellows Gear Shaper Facility, 100 River Street, Springfield, Vermont. PCB-contaminated concrete, soil, and wood flooring that exceeds the allowable PCB levels for unrestricted use under the federal PCB regulations at 40 CFR § 761.61(a) are present in the former T1 area, the boiler house workshop, and the former chip shed area.

PVDC has proposed a PCB cleanup and disposal plan that includes the following major activities:

- Removal of PCB-contaminated concrete and wood flooring and disposal as a greater than or equal to (≥) 50 parts per million waste in a RCRA hazardous waste or TSCA-approved disposal facility;
- Removal of PCB-contaminated concrete, soil, and wood flooring and disposal as a less than (<) 50 ppm waste in a RCRA solid waste landfill;
- Consolidation of < 3 ppm PCB waste to the former chip shed area and capping beneath an asphalt cover for future use as a parking lot, as space allows;
- Establishment of a long-term inspection and maintenance plan for the asphalt cover and groundwater monitoring; and,

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[1] Information was submitted by the Johnson Company on behalf of PVDC to support a risk-based disposal approach for PCB remediation waste under 40 CFR § 761.61(c). Information was submitted dated July 20, 2009 and September 9, 2009. These submissions will be referred to as the "Notification."

- Record a deed restriction to document the PCB contamination remaining at the Site.

PVDC has proposed this work under the risk-based disposal option at § 761.61(c). With the exception of the characterization sampling requirements and proposed consolidation, PVDC's proposed plan meets the notification requirements and PCB cleanup standards under § 761.61(a). Given the Site history, the sampling that has been conducted, and the proposed removal plan, it appears that the PCB-contaminated areas with ≥ 50 ppm have been adequately delineated from < 50 ppm PCB waste for purposes of segregation and off-site disposal. Further the consolidation of PCB-contaminated wastes at < 3 ppm to the chip shed area will reduce the overall PCB-impacted areas at the Site. EPA finds that the proposed asphalt cover should effectively prevent direct exposure of the PCB-contaminated wastes to building tenants and Site users provided the asphalt cover is maintained. As such, EPA may approve the sampling and consolidation under §§ 761.61(a) and (c).

PVDC may proceed with its project in accordance with 40 CFR §§ 761.61(a) and(c); its Notification; and, this Approval, subject to the conditions of Attachment 1. Following completion of the activities authorized under this Approval, long-term inspection and maintenance of the asphalt cover and groundwater monitoring will be required to assess the impact of the PCB cleanup on groundwater conditions. Please note that EPA is requiring that initial groundwater sampling be conducted within one (1) year of completion of the activities authorized under this Approval (see Attachment 1, Condition 19).

EPA is reserving its rights to require additional cleanup measures should groundwater conditions not improve or if sample results indicate that PCBs are present at concentrations which could result in a risk to public health or the environment.

Please note that upon completion of the activities authorized under this Approval, the Site owner will be required to record a notation with the property's deed (Attachment 1, Condition 15) which will identify the PCB contamination remaining at the Site and the long-term monitoring and maintenance requirements. EPA is authorizing a deviation from the required timeframe for recording the deed notation due to the ongoing activities at the property. Allowing this deviation poses no unreasonable risk to public health or the environment given the current property status. EPA is approving this deviation under § 761.61(c).

Questions and correspondence on this Approval should be directed to:

Kimberly N. Tisa, PCB Coordinator
United States Environmental Protection Agency
1 Congress Street, Suite 1100 - CPT
Boston, Massachusetts 02114-2023
Telephone: (617) 918-1527
Facsimile: (617) 918-0527

Please note that this Approval only addresses PCB contamination located within the former T1 area, the boiler house workshop and the chip shed area. (Attachment 1, Condition 1). As PCBs exceeding the allowable concentrations for unrestricted use are present in other locations on the property, separate plan(s) to address this contamination will be required in accordance with 40 CFR § 761.61.

EPA shall not consider this project complete until it has received all submittals required under this Approval. Please be aware that upon EPA receipt and review of the submittals, EPA may request any additional information necessary to establish that the work has been completed in accordance with 40 CFR Part 761, the Notification, and this Approval.

Sincerely,

James T. Owens, III, Director
Office of Site Remediation & Restoration

cc R. Genderson and J. Meekin, One Hundred River Street LLC
A. Peterson, EPA
T. Coppolino, VTDEC
Springfield Department of Health

Attachment 1

**ATTACHMENT 1: PCB APPROVAL CONDITIONS**
**PRECISION VALLEY DEVELOPMENT CORPORATION**
**100 RIVER STREET**
**FORMER T1 ROOM, CHIP SHED AREA, AND BOILER HOUSE WORKSHOP**
**SPRINGFIELD, VERMONT**

## GENERAL CONDITIONS

1. This Approval is granted under the authority of Section 6(e) of the Toxic Substances Control Act (TSCA), 15 U.S.C. § 2605(e), and the PCB regulations at 40 CFR Part 761, and applies solely to *PCB remediation waste* identified in the Notification as shown on Figure 1 of the July 20, 2009 submittal and identified as the chip shed area, T1 transformer room, and boiler house workshop (the Site.)

2. Precision Valley Development Corporation (PVDC) shall conduct on-site activities in accordance with the conditions of this Approval and the Notification.

3. In the event that the activities described in the Notification differ from the conditions specified in this Approval, the conditions of this Approval shall govern.

4. The terms and abbreviations used herein shall have the meanings as defined in 40 CFR § 761.3 unless otherwise defined within this Approval.

5. PVDC must comply with all applicable federal, state and local regulations in the storage, handling, and disposal of all PCB wastes, including PCBs, PCB Items and decontamination wastes generated under this Approval. In the event of a new spill of PCBs during response actions, PVDC shall contact EPA within twenty-four (24) hours for direction on sampling and cleanup requirements.

6. PVDC is responsible for the actions of all officers, employees, agents, contractors, subcontractors, and others who are involved in activities conducted under this Approval. If at any time PVDC has or receives information indicating that PVDC or any other person has failed, or may have failed, to comply with any provision of this Approval, it must report the information to EPA in writing within twenty-four (24) hours of having or receiving the information.

7. This Approval does not constitute a determination by EPA that the contractors, transporters or disposal facilities selected by PVDC are authorized to conduct the activities set forth in the Notification. PVDC is responsible for ensuring that its selected contractors, transporters and disposal facilities are authorized to conduct these activities in accordance with all applicable federal, state and local statutes and regulations.

8. This Approval does not: 1) waive or compromise EPA's enforcement and regulatory authority; 2) release PVDC from compliance with any applicable requirements of federal, state or local law; or 3) release PVDC from liability for, or otherwise resolve any violations of federal, state or local law.

## NOTIFICATION and CERTIFICATION CONDITIONS

9. This Approval may be revoked if the EPA does not receive written notification from PVDC of its acceptance of the conditions of this Approval within ten (10) business days of receipt.

10. PVDC shall notify EPA in writing of the scheduled date of commencement of on-site activities at least one (1) business day prior to conducting any work under this Approval.

11. Prior to initiating onsite work under this Approval, PVDC shall submit the following information for EPA review and/or approval:

    a. A certification signed by its selected cleanup contractor, stating that the contractor(s) has read and understands the Notification, and agrees to abide by the conditions specified in this Approval; and,

    b. A certification signed by the selected analytical laboratory, stating that the laboratory has read and understands the extraction and analytical method requirements and the quality assurance requirements under this Approval.

## CLEANUP AND DISPOSAL CONDITIONS

12. The cleanup level for *PCB-remediation wastes* shall be less than (<) 3 parts per million (ppm).

    a. *PCB remediation waste* (i.e. PCB-contaminated concrete and soils) with < 3 ppm shall be consolidated within the chip shed area (as space allows) and covered by an asphalt cover as described in the Notification, or shall be disposed of off-site in a solid waste landfill in accordance with § 761.61(a)(5)(i)(B)(*2*)(*ii*);

    b. *PCB remediation waste* with greater than or equal to (≥) 3 ppm but < 50 ppm shall be excavated and disposed of off-site in a solid waste landfill in accordance with § 761.61(a)(5)(i)(B)(*2*)(*ii*) or § 761.61(a)(5)(i)(B)(*2*)(*iii*);

    c. *PCB remediation waste* with ≥ 50 ppm shall be excavated and disposed of off-site at a RCRA hazardous waste landfill or at a TSCA-approved disposal facility in accordance with § 761.61(a)(5)(i)(B)(*2*)(*iii*);

d. PVDC shall submit a long-term monitoring and maintenance implementation plan (MMIP) to monitor the impacts of the cleanup on the groundwater quality and to ensure the long-term effectiveness of the asphalt cover (see Condition 19).

13. PCB waste (at any concentration) generated as a result of the activities described in the Notification, excluding any decontaminated materials, shall be marked in accordance with CFR 40 CFR § 761.40; stored in a manner consistent with 40 CFR § 761.65; and, disposed of in accordance with 40 CFR § 761.61, unless otherwise specified below.

a. Non-liquid cleaning materials, PPE and similar materials resulting from decontamination may be disposed of in accordance with 40 CFR § 761.79(g)(6).

b. Moveable equipment, tools, and sampling equipment shall be decontaminated in accordance with either 40 CFR § 761.79(b)(3)(i)(A), § 761.79(b)(3)(ii)(A), or § 761.79(c)(2).

c. PCB-contaminated water generated during decontamination or dewatering shall be decontaminated in accordance with 40 CFR § 761.79(b)(1) or disposed of under § 761.70.

14. To the maximum extent practical, engineering controls shall be utilized to minimize the potential for PCB releases during the cleanup and disposal activities. In addition, to the maximum extent possible, disposable equipment and materials, including PPE, will be used to reduce the amount of decontamination necessary.

## DEED RESTRICTION AND USE CONDITIONS

15. Within thirty (30) days of completing the activities described in the Notification and in this Approval, PVDC shall submit for EPA's review and approval, a draft deed restriction for the Site. The deed restriction shall include: a description of the extent and levels of contamination at the Site following the cleanup work; a description of the actions taken at the Site; and, a description of the use restrictions for the Site. Within 30 days of receipt of EPA's approval of the draft deed restriction, PVDC shall record the deed restriction. A copy of this Approval and the long-term monitoring and maintenance implementation plan (see Condition 19) shall be attached to the deed restriction. A copy of the recorded deed restriction shall be submitted to EPA within 7 days of the recording.

In the alternative, PVDC may opt to combine the deed restriction for the Site with the deed restriction(s) for other areas of the property. If this option is chosen, the draft deed restriction which is to be submitted above, must include all areas that will be incorporated under this deed restriction.

## SALE, LEASE OR TRANSFER OF SITE

16. PVDC shall notify the EPA of the sale, lease or transfer of any portion of the Site, in writing, no later than thirty (30) days prior to such action. This notification shall include the name, address, and telephone number of the new owner(s). In the event that PVDC sells, leases or transfers any portion of the Site, PVDC shall continue to be bound by all the terms and conditions of this Approval, unless EPA allocates some or all of this Approval's responsibilities to the new owner through the issuance of a new approval. The new approval shall be based on the Site conditions at the time of the notification. The procedures for the issuance of a new approval ("re-issued approval") are as follows:

    a. The new owner(s), lessee or transfer entity must request, in writing, that the EPA issue a new approval to the new owner(s), lessee or transfer entity which transfers some or all responsibilities to comply with the terms and conditions of this Approval to that entity or entities;

    b. The EPA reviews the request, and determines whether to issue a new approval; and,

    c. The new owner(s), lessee or transfer entity provides written notification to the EPA of its acceptance of and intention to comply with the terms and conditions of the re-issued approval. The re-issued approval may be withdrawn if the EPA does not receive written notification from the new owner(s), lessee or transfer entity of its acceptance of, and intention to comply with, the terms and conditions of the re-issued approval within thirty (30) days of the date of the re-issued approval. Under such circumstances, all terms and conditions of this Approval will continue to be binding on PVDC.

17. In the event that the sale, lease or transfer of the Site will involve or result in a change in the use of the Site, EPA may revoke, suspend, and/or modify this Approval or the re-issued approval if it finds, due to the change in use, that this cleanup and disposal action will not be protective of health or the environment. The new owner shall record any amendment to the deed restriction, resulting from any approved modification(s), within sixty (60) days of such change(s).

18. In any sale, lease or transfer of the Site, PVDC shall retain sufficient access rights to enable it to continue to meet its obligations under this Approval for maintenance and monitoring of the coating, except as provided above.

## INSPECTION, MONITORING, MODIFICATION AND REVOCATION CONDITIONS

19. A long-term monitoring and maintenance implementation plan (MMIP) shall be developed for the asphalt cover and for the groundwater. At a minimum, the groundwater shall be monitored within one (1) year of completion of the activities authorized under this Approval.

    a. The MMIP shall include: a description of the activities that will be conducted, including asphalt cover inspection criteria and frequency; groundwater monitoring locations; sampling protocols, sampling frequency, and analytical criteria; and, reporting requirements.

    b. The MMIP shall include a communications component which details how the maintenance and monitoring results will be communicated to the Site tenants, if requested.

    c. PVDC shall submit the results of these long-term monitoring and maintenance activities to EPA. Based on its review of the results, EPA may determine that modification to the MMIP is necessary in order insure long-term effectiveness of the asphalt cover or if additional cleanup or monitoring is needed to improve groundwater conditions.

20. Any proposed modification(s) in the plan, specifications, or information in the Notification must be submitted to EPA no less than 14 calendar days prior to the proposed implementation of the change. Such proposed modifications will be subject to the procedures of 40 CFR § 761.61(a)(3)(ii).

21. Any departure from the conditions of this Approval without prior, written authorization from the EPA may result in the revocation, suspension and/or modification of the Approval, in addition to any other legal or equitable relief or remedy the EPA may choose to pursue.

22. Any misrepresentation or omission of any material fact in the Notification or in any future records or reports may result in the EPA's revocation, suspension and/or modification of the Approval, in addition to any other legal or equitable relief or remedy the EPA may choose to pursue.

23. Approval for these activities may be revoked, modified or otherwise altered: if EPA finds a violation of the conditions of this Approval or of 40 CFR Part 761, including EPA's PCB Spill Cleanup Policy, or other applicable rules and regulations; or if EPA finds that these activities present an unreasonable risk to public health or the environment. PVDC may apply for appropriate modifications in the event new rules, standards, or guidance come into effect.

24. PVDC shall allow any authorized representative of the Administrator of the EPA to inspect the Site and to inspect records and take samples as may be necessary to determine compliance with the PCB regulations and this Approval. Any refusal to allow such an inspection (as authorized by Section 11 of TSCA) shall be grounds for revocation of this Approval.

## RECORDKEEPING AND REPORTING CONDITIONS

25. PVDC shall prepare and maintain all records and documents required by 40 CFR Part 761, including, but not limited to, the records required by Subparts J and K. PVDC shall maintain a written record of and the analytical sampling for the activities conducted under this Approval. All records shall be made available for inspection by authorized representatives of the EPA, until such time as EPA approves in writing a request for an alternative disposition of such records.

26. PVDC shall submit a Final Completion Report (Report) to the EPA within 120 days of completion of the activities described under this Approval. At a minimum, this Report shall include: a discussion of the project activities; characterization and confirmation sampling analytical results; copies of the accompanying analytical chains of custody; field and laboratory quality control/quality assurance checks; an estimate of the quantity of PCBs removed and disposed off-site; copies of manifests; and, copies of certificates of disposal or similar certifications issued by the disposer, if applicable. The Report shall also include a copy of a certification signed by PVDC and/or the Site owner (if applicable) verifying that the authorized activities have been implemented in accordance with this Approval and the Notification.

27. As required under Condition 19 of this Approval and unless otherwise modified, PVDC shall submit the results of the long-term monitoring and maintenance activities to EPA as specified in the final MMIP to be approved by EPA.

28. Required submittals shall be mailed to:

Kimberly N. Tisa, PCB Coordinator
United States Environmental Protection Agency
1 Congress Street, Suite 1100 - CPT
Boston, Massachusetts 02114-2023
Telephone: (617) 918-1527
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29. No record, report or communication required under this Approval shall qualify as a self-audit or voluntary disclosure under EPA audit, self disclosure or penalty policies.

************************

**END OF ATTACHMENT 1**

# APPENDIX E

# HEALTH AND SAFETY PLAN

# DRAFT HEALTH AND SAFETY PLAN

## Remedial Action

## PVDC Property (Former Fellows Gear Shaper)
## 100 River Street
## Springfield, Vermont

**March 2009**

**Project Client:**

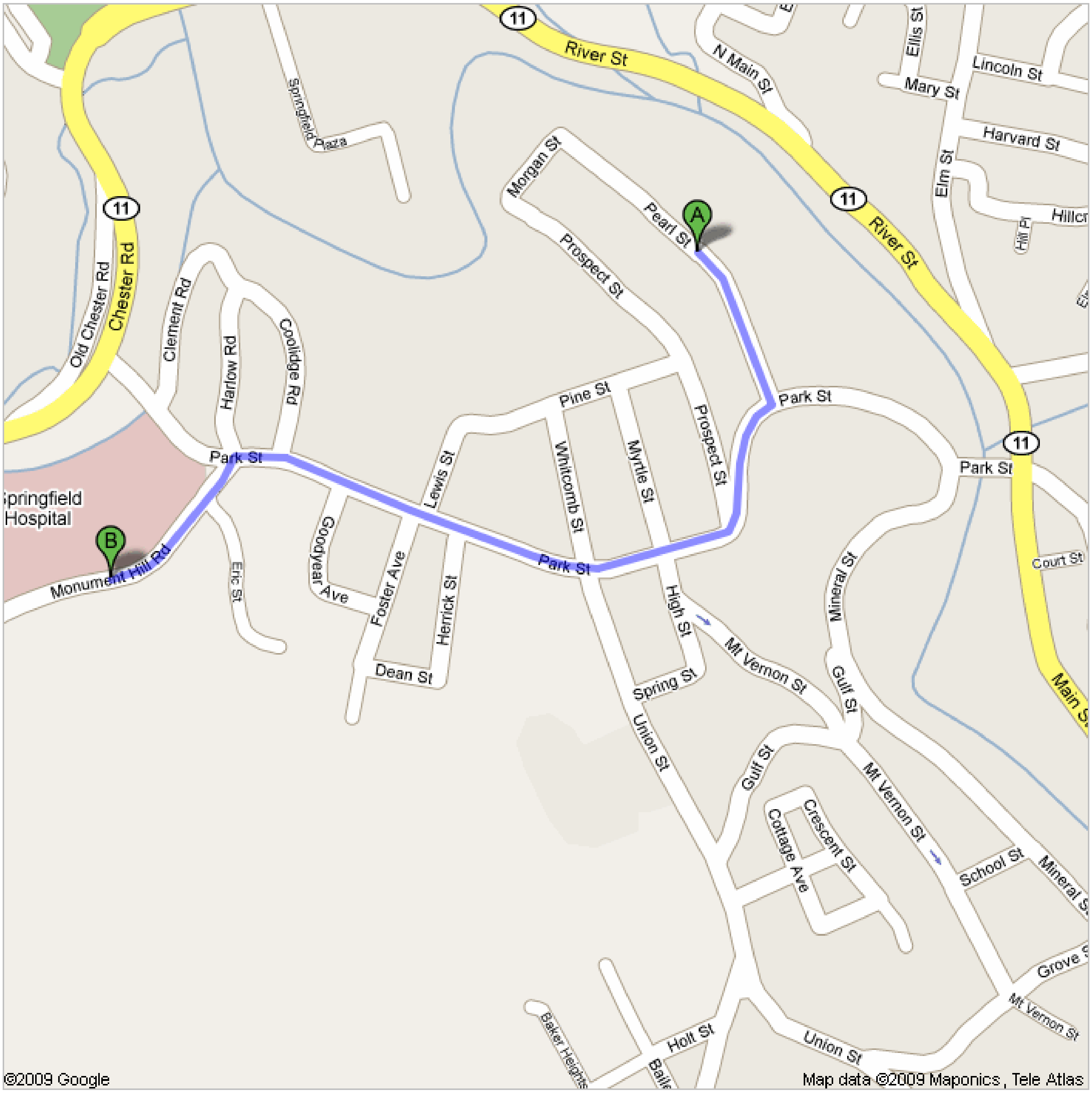
**Precision Valley Development Corporation**
**14 Clinton Street, Suite 7**
**Springfield, VT  05156**

# Directions to Springfield Hospital

25 Ridgewood Rd, Springfield, VT 05156 - (802) 885-2151

**0.7 mi** – about **2 mins**





**DRAFT Health and Safety Plan**

for

Remedial Action

at

PVDC Property (Former Fellows Gear Shaper)
100 River Street
Springfield, Vermont

Adopted by: DRAFT Date: DRAFT
Rhonda Kay
Project Manager

Adopted by: DRAFT Date: DRAFT
TO BE DETERMINED
Site Safety Officer

Adopted by: DRAFT Date: DRAFT
Thomas R. Osborne
Corporate Health and Safety Officer

## ***SITE SAFETY PLAN ACKNOWLEDGMENT FORM***

I have read, understand and will abide by the procedures set forth in this Health and Safety Plan and any amendments thereto. I have also been briefed of the contents of this plan and been given sufficient opportunity to ask any questions that have arisen, and have received answers which I believe are appropriate and complete which are incorporated in this Health and Safety Plan or its Amendments.

| Printed Name | Signature | Representing | Date |
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By acknowledging the contents of this plan, individuals are recognizing the hazards present at the site and are indicating that they are willing to accept the jurisdiction of the appropriate site officials as well as the policies and procedures required to minimize exposure to potentially hazardous substances.

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# 1.0 INTRODUCTION

## 1.1 SCOPE OF WORK

The Johnson Company will be performing Phase III environmental site assessment activities at the PVDC (former Fellows Gear Shaper) property in Springfield, Vermont in support of the Southern Windsor County Regional Planning Commission's (SWCRPC) EPA Brownfields Assessment Grant. The Site is located at 100 River Street, between the western edge of the Black River and Pearl Street. The general location of the subject area is indicated in Figure 1. The layout of the Site is included as Figure 2. This work is scheduled to be conducted during the summer of 2009 and consists of soil and concrete removal, tank cleaning, the collection of soil and groundwater samples for fixed laboratory analysis and the removal of an underground storage tank (UST).

As the work will occur in and around the PVDC building, which currently houses several separate businesses, the general public are likely to be on-site. The Johnson Company will be responsible for performance of all concrete, soil, and groundwater monitoring well sampling at the Site. Site surveying will also be conducted by The Johnson Company. Precision Industrial Maintenance will be responsible for UST removal and tank cleaning, and The Johnson Company will subcontract with Gurney Brothers for excavation soils and demolition of concrete. Concrete cutting will be performed by *TO BE DETERMINED*. All personnel who visit the site or participate in on-site activities and have the potential to be exposed to contaminants will be required to read and sign this Health and Safety Plan.

The contaminants of concern for on-site activities consist of trichloroethene (TCE), vinyl chloride, polychlorinated biphenyls (PCBs), and fuel oil.

Concentrations of volatile organic compounds (VOCs) will be monitored with a PID in the breathing zone during all on-site investigatory activities. A sustained reading of 5 parts per

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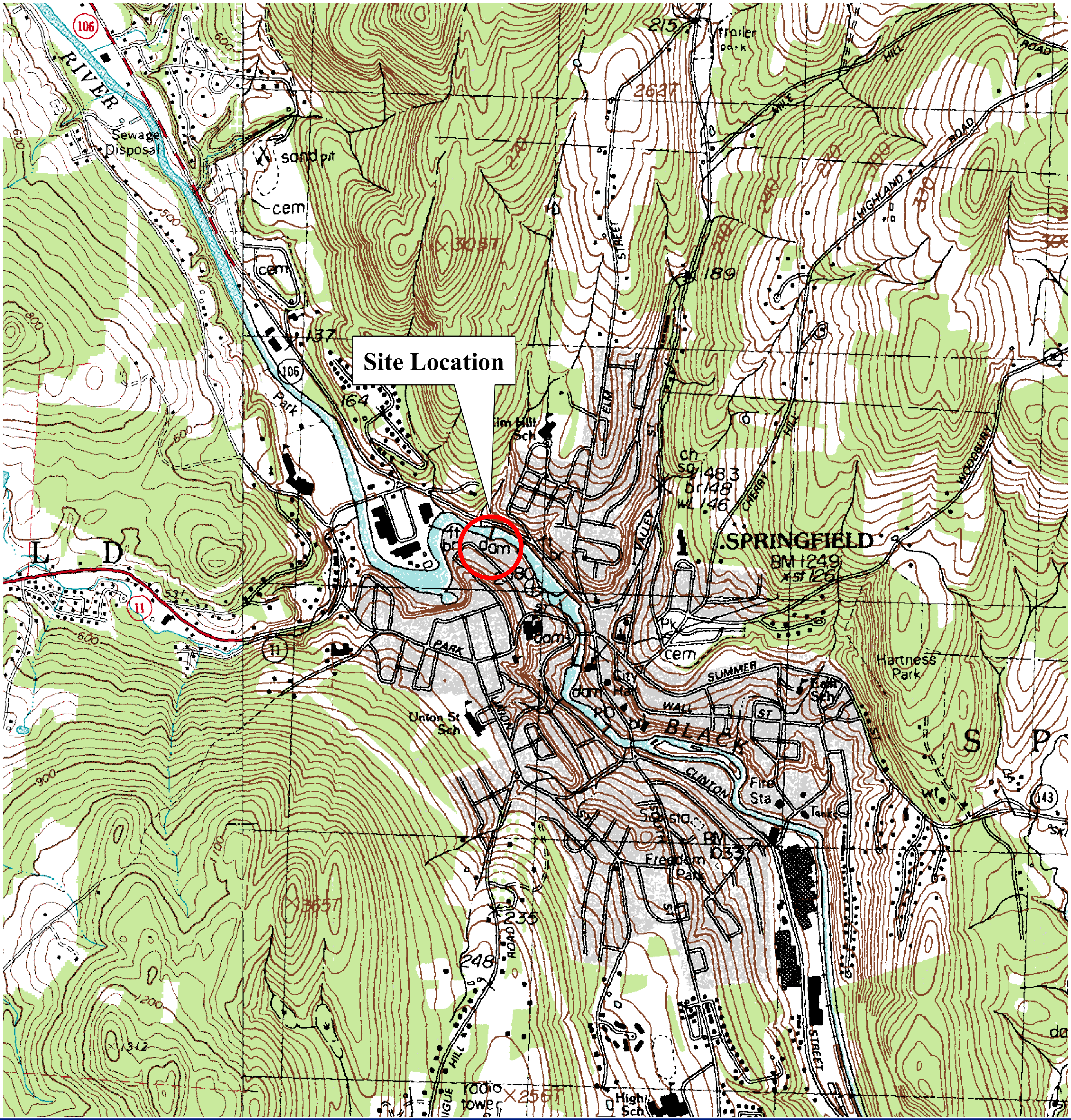


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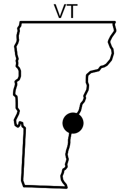



MAP LOCATION

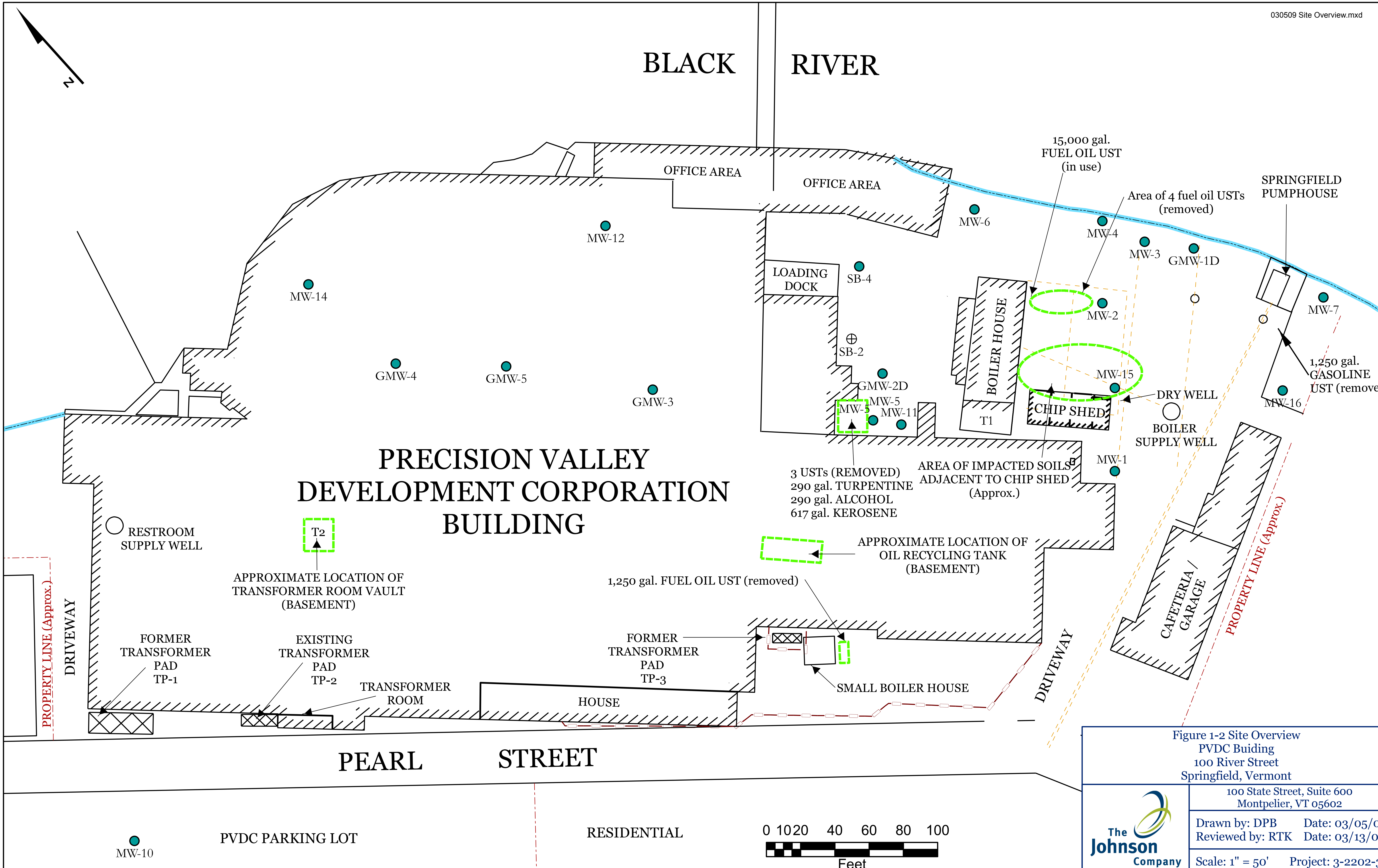
BASE MAP: USGS 7.5 Minute Topographic Quadrangle Chester, VT and Springfield, VT-NH

Figure 1-1 Site Location
PVDC Building
100 River Street
Springfield, Vermont

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: RTK Date: 02/24/09
Chk'd by: Date:
Scale: 1:24,000 Project: 3-2202-30




| Figure 1-2 Site Overview<br>PVDC Buiding<br>100 River Street<br>Springfield, Vermont | |
|---|---|
| The Johnson Company | 100 State Street, Suite 600<br>Montpelier, VT 05602 |
| | Drawn by: DPB Date: 03/05/09<br>Reviewed by: RTK Date: 03/13/09 |
| | Scale: 1" = 50' Project: 3-2202-30 |

million (ppm) above background levels as indicated on the calibrated PID will be used as the initial threshold for re-evaluation. If this threshold is exceeded, an air sample will be taken using a Draeger tube specific to vinyl chloride. If the concentration of vinyl chloride is greater than 5 ppm, all work will cease and the site will be evacuated until the circumstances are evaluated in relation to the risk to human health of on-site workers. Engineering controls or an amendment to the Health and Safety Plan may be needed to continue work. A sustained reading is defined as three consecutive one-minute readings (with a minimum one-minute spacing) in a 15 minute period.

If the concentration of vinyl chloride is less than 5 ppm and the sustained PID reading is less than 100 ppm, work will continue with no modifications. If the PID reading is greater than 100 ppm, all work will cease and the site will be evacuated until the circumstances are evaluated in relation to the risk to human health of on-site workers.

Sustained concentrations of contaminants in the breathing zone are not anticipated to be above 5 ppm and it is anticipated that Level D PPE is adequate for site entry, and to initiate and conduct the work as planned. Level D protection includes chemical resistant gloves (nitrile), steel-toed boots, sight and hearing protection, and hard hats. The Level D PPE ensemble is described in detail in Section 2.2 of this plan. Use of modified Level D protection will be required during concrete sampling, and will include use of a close-fitting dust mask or half-face respirator with a particulate filter.

If airborne contaminants in the breathing zone show a sustained increase as a result of the planned intrusive activities by 5 ppm (as vinyl chloride) or 100 ppm (as other VOCs) or more above the background levels, PPE will be upgraded to Level C prior to continuing with any work.

## 1.2 HEALTH AND SAFETY PLAN (HSP)

This site Health and Safety Plan (HSP) has been developed by The Johnson Company, Inc., for use during the performance of subsurface environmental site assessment activities at the

PVDC property in Springfield. The plan describes the health and safety guidelines that will be implemented during this work to protect on-site personnel, visitors and the public from physical harm and exposure to hazardous materials. The specific requirements of this HSP will be revised if new information is received or conditions change. All revisions will be in writing and attached as amendments in Appendix A.

### 1.3 TRAINING REQUIREMENTS

All personnel, including subcontractors and visitors who will enter the exclusion zone (EZ) or contamination reduction zone (CRZ), must have fulfilled the appropriate training requirements stated in 29 CFR 1910.120, Occupational Safety and Health Administration, Hazardous Waste Operations and Emergency Response, Final Rule. Where work is to proceed in the parking lot or near the road, the exclusion zone is defined herein as the area surrounding the excavator, which is to be blocked off by traffic cones.

Further site-specific training will be conducted prior to the initiation of field activities. This training will include but will not necessarily be limited to: emergency procedures, site control, personnel responsibilities, and provisions of this HASP.

In addition, all personnel entering an exclusion zone or a contamination reduction zone must have completed the appropriate medical monitoring requirements under 29 CFR 1910.120(f) and must have successfully passed a qualitative respiratory fit test in accordance with 29 CFR 1910.134 within the last twelve months.

Documentation of the appropriate training, baseline medical monitoring (where required), and respirator fit tests may be requested by the Site Safety Officer (SSO) for site workers prior to entering the exclusion area.

### 1.4 HEALTH AND SAFETY PERSONNEL

Personnel responsible for the health and safety provisions of this project are the Project Supervisor, Corporate Health and Safety Officer, the Project Manager and the Site Safety

Officer.

### *1.4.1 Project Supervisor – Christopher M. Crandell, P.E., President*

The general supervisor has the responsibility and authority to direct all hazardous waste operations. He/she has the authority and responsibility to suspend or modify work practices for any reason, including health and safety issues.

### *1.4.2 Project Manager – Rhonda Kay, Project Manager*

The Project Manager is responsible for overseeing the entire project operation, implementing the project HSP, providing an adequate supply of safety equipment, and ensuring that all personnel have received adequate safety training, and have read this document and understand it. He/she has the authority to enforce compliance with the HSP, suspend or modify work practices for safety reasons, and to exclude from the site and project-related operations any individual whose on-site conduct endangers his/her own health and safety or the health and safety of others.

### *1.4.3 Site Safety Officer – TO BE DETERMINED, Project Engineer*

The Site Safety Officer (SSO) is responsible for advising the Project Manager of health and safety matters. Further, he/she is responsible for implementing this plan, supervising any monitoring programs, establishing necessary work zones and preparing any written amendments to the HSP. The SSO will also be responsible for providing Material Safety Data Sheets (MSDS) or Chemical Hazard Resource Information System (CHRIS) Sheets to the Project Manager regarding chemicals that may be present at each site. The SSO shall be responsible for informing all individuals involved in this project of the contents of this plan and shall ensure that each person acknowledges an understanding of this plan in writing. He/she is responsible for thoroughly briefing all individuals on the anticipated hazards pertinent to the chemical and physical environment, protective clothing, and emergency procedures. By acknowledging the contents of this plan, individuals are recognizing the hazards presented on site, the policies and procedures required to minimize exposure and are willing to accept the jurisdiction of the appropriate site officials. The SSO has the authority to ensure compliance with the HSP, suspend or modify work practices for safety reasons and to exclude from the site any individual whose on-site conduct endangers his/her own health or the health and safety of others.

#### *1.4.4 Project Professionals*

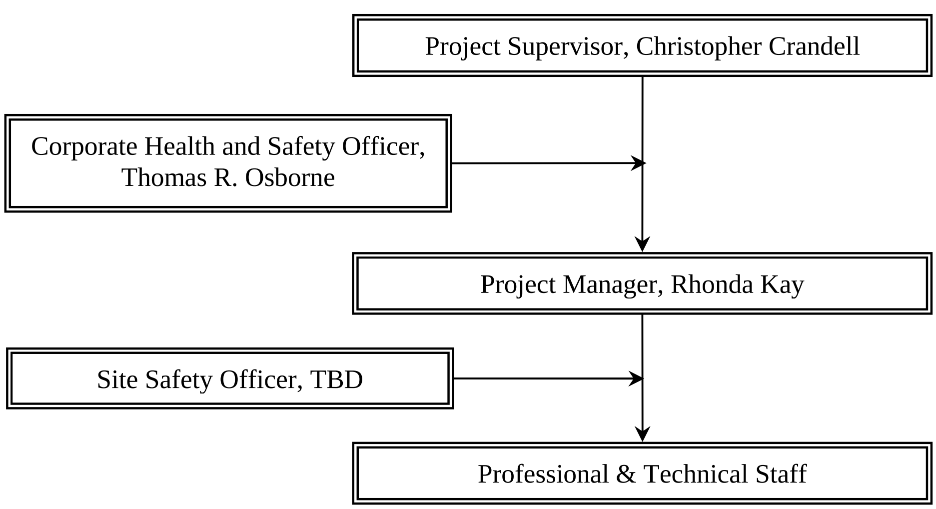
Project professionals are responsible for conducting individual tasks at project sites. They have the responsibility and authority to exclude any persons from the site for reasons associated with health and safety issues.

#### *1.4.5 Corporate Health and Safety Officer – Thomas R. Osborne*

The Corporate Health and Safety Officer is responsible for the overall health and safety of the personnel conducting work associated with this project, compliance with the appropriate regulations, review of the HSP to ensure its compliance with all appropriate regulations and ensuring compliance to Company policy by all projects. Any significant changes in working conditions requiring a written amendment to this plan requires the oral or written authorization of the Corporate Health and Safety Officer. The Corporate Health and Safety Officer will have the final word in any dispute with regard to health and safety.

### 1.5 CHAIN OF COMMAND

The organizational structure at The Johnson Company for issues pertaining to health and safety pursuant to 29 CFR 1910.120 is as follows:



## 1.6 PROJECT PERSONNEL RESPONSIBILITIES DURING EMERGENCIES

The SSO is responsible for responding to and correcting an emergency situation. These duties include the protection of employees, evacuating and securing the work area, ensuring the protection of the public and the environment, ensuring that appropriate decontamination procedures are implemented on all personnel, determining the cause of the incident, recommending changes to prevent its reoccurrence, upgrading or downgrading the level of personal protection equipment, and notification of the appropriate Federal, State and local agencies.

## 1.7 MEDICAL EMERGENCIES

All personnel who are injured or become ill in the Exclusion Zone must be decontaminated to the maximum extent possible. If injuries are minor, a full decontamination procedure as described in Section 3.0 will be completed and first-aid administered as needed prior to transport. If injuries are severe, a partial decontamination will be completed which will include the removal of all contaminated clothing and redressing in clean coveralls or appropriate materials. First-aid will be administered by trained personnel as needed prior to the arrival of medical personnel. Any person transported for further medical attention will be accompanied by information regarding the chemical(s) to which they may have been exposed.

Any vehicle and equipment used to transport contaminated personnel will be cleaned or decontaminated, as necessary.

## 1.8 EVACUATION ROUTES

In the event of an emergency that requires evacuation of the work area, a verbal command will be sounded to clearly inform all personnel of the emergency situation. At that time, all personnel will proceed to a point within the clean zone, upwind of any smoke, vapors or spills and proceed with decontamination procedures.

*A gathering point and a secondary location will be determined by the SSO and communicated to all site workers prior to the start of work. Personnel should gather* *immediately at the designated location for a head count in the event of an emergency requiring evacuation. In the event that environmental conditions preclude congregating at the primary gathering location, all personnel will use the evacuation route safest for them and re-convene at the secondary gathering location.*

# 2.0 PERSONAL PROTECTIVE EQUIPMENT

## 2.1 INTRODUCTION

As required by OSHA 1910.120, PPE must be selected which will protect employees from the specific hazards they are likely to encounter on-site. Selection of the appropriate PPE shall be in compliance with 29 CFR 1910.120(g)(3). In areas where the chemicals of potential concern are known, Level D will be worn unless air monitoring indicates that Action Levels are exceeded. If this occurs, all work will stop, and the health and safety procedures will be re-evaluated. The evaluation will be used to prepare an amendment to this HSP.

The site information may suggest the use of combinations of PPE selected from the different protection levels as being more suitable to the hazards of the work. It should be cautioned that the listing below does not fully address the performance of specific PPE material in relation to the specific hazards at the job site, and that PPE selection, evaluation and selection is an ongoing process until sufficient information about the hazards and PPE performance is obtained.

## 2.2 DESCRIPTION OF LEVEL D

The equipment used in the Level D ensemble is meant to provide protection from minimal hazardous contamination. It should be used for nuisance contamination only.

Boots/shoes: Heavy duty leather work boots or shoes with steel toe and shank. In wet environments, or if preferred, these can be substituted with heavy duty rubber boots with steel toe and shank.

Gloves: Nitrile inner gloves whenever the possibility of contact with contaminated water or soils exists. Heavy duty, chemical resistant outer gloves as necessary.

Coveralls: White Tyvek to protect clothes against nuisance contamination (optional). No hood or booties required. As necessary.

Safety Glasses: NIOSH-approved (as necessary) when potential eye hazard exist.

Hard Hat: NIOSH-approved.

During PCB concrete sampling the Level D protective equipment will be modified as follows:

- The modification to the Level D protection will include use of a close-fitting dust mask or half-face respirator with a particulate filter for protection against PCBs absorbed on silica.

## 3.0 DECONTAMINATION PROCEDURES

### 3.1 DECONTAMINATION OF PERSONNEL

*Level D*

All disposable gloves and Tyvek if utilized will be disposed of properly as solid waste. The heavy duty work boots will be washed of all nuisance contaminants. The employee's hands and face will be washed as soon as possible.

All disposable gear will be placed in a double lined garbage bag and securely sealed. The garbage bag will be delivered to a solid waste repository as soon as is reasonable after the job is complete.

### 3.2 DECONTAMINATION OF MACHINERY AND EQUIPMENT

All equipment and excavation machinery will be decontaminated as appropriate on site.

All hand-held equipment will be decontaminated by removal of disposable wrappings or by washing in soapy water, followed by a clean water rinse on site.

Any drilling equipment will be decontaminated by steam cleaning all parts of the equipment that were in contact with the contaminated soil or water. Decontamination water will be disposed on site in a fashion that does not pose threat to the environment or human health.

# 4.0 SITE AND ACTIVITY HAZARDS

## 4.1 GENERAL

Potential hazards and their context are listed together with Standard Operating Procedures (SOPs) for health and safety.

### 4.1.1 *Hazards and SOPs Associated with Potentially Contaminated Water and Soil*

Hazard: ingestion, inhalation and skin absorption

SOPs: Nitrile gloves (selection of glove type shall be as directed in Section 2.2) will be worn when handling contaminated solids and liquids. Ambient air monitoring will be conducted. Personal protective equipment will be upgraded or downgraded at the direction of the SSO, as necessary. Safety glasses will be worn to reduce the likelihood of splashes in the eyes. If deemed necessary by the SSO, all site work will cease until air quality analysis or supplied air is available.

### 4.1.2 *Hazards and SOPs Associated with Ambient Air Contaminants*

Hazard: Inhalation

SOPs: Prior to entering the work zone, the ambient air will be tested with the PID to ensure non-lethal conditions exist. Dust levels will be monitored visually during site work. If the PID registers a sustained (one minute) level of VOC concentration greater than 5 ppm (as TCE) or 100 ppm (as other VOCs) above background levels, then all work shall cease, the area will be cleared of personnel, and field operations will be re-evaluated. Personal protective equipment will be upgraded or downgraded at the direction of the SSO, as necessary.

### 4.1.3 *Heavy Equipment Operation*

Hazard: Injury due to impact from equipment.

SOPs: Excavating and coring equipment shall be operated by experienced and skilled operators. Care shall be taken in the movement and placing of equipment to prevent collision with other vehicles or equipment, to stay away from power sources, to avoid poor footing, and to avoid injury in the operation of the equipment. Equipment shall not be operated during or in the proximity of lightning storms. NIOSH approved hard hats and steel-toed boots shall be worn when working around heavy equipment. Jackhammer operators shall wear steel-toed boots, eye protection and hearing protection.

### 4.1.4 *Excavation Hazards*

Hazard: Injury due to falls into open excavations.

SOPs: Precautions will be taken to remove snow, ice and other slippery materials near the sides of the excavation. Samplers will not enter excavations deeper than four (4) feet to collect samples. In excavations greater than four (4) feet, samples will be obtained either using a soil auger, a long-handled dipper, or from the excavator bucket.

#### *4.1.5 Roadway Hazards*

Hazard: Injury from passing vehicles

SOPs: Signs signaling to traffic that work is occurring in the roadway shall be placed ahead of the excavating and support equipment. Traffic cones will be used to direct drivers around the Site workers and equipment. Site workers will wear VOSHA approved, high-visibility vests. Site workers will use caution when entering the roadway.

#### *4.1.6 Electrical Hazards*

Hazard: Injury from contacting electrical lines present overhead or inside the electrical room

SOPs: Survey area for overhead lines before mobilizing excavating equipment. Take care that tall equipment will not contact the overhead lines or utility poles when being moved or used. Inside the electrical room, survey the area with a voltage meter to determine which items inside the room carry voltage (including metal bars). Use extreme caution to avoid contacting the live items with coring equipment and the jackhammer. If electrocution occurs, move the worker away from the electrical source using a non-conductive material and initiate appropriate first aid measures.

#### *4.1.7 Cold Exposure*

Hazard: Cold injury (frostbite and hypothermia) and impaired ability to work in low temperatures.

SOP: Wear appropriate clothing, have warm shelter readily available, schedule work and rest periods, and monitor workers conditions.

#### *4.1.8 Heat Stress*[1]

Hazard: Heat stress and heat exhaustion producing personal injury

SOP: When the ambient temperature exceeds 70 °F and personnel are wearing protective clothing, a heat stress monitoring program shall be implemented. If deemed appropriate by the SSO or the Project Manager, all employees will work in 50 minute cycles separated by a minimum 10 minute rest in a shaded location.

---

[1] NIOSH/OSHA/USCG/EPA - Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, U.S. Department of Health and Human Services, October, 1985, pp. 8-20 to 8-23.

*4.1.8.1 Monitoring Protocol:*

- Heart rate. Count the radial pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. If the heart rates still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.

- Oral temperature. Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking). If the oral temperature exceeds 99.6EF (37.6EC), shorten the next work cycle by one-third without changing the rest period. If oral temperature still exceeds 99.6EF (37.6EC) at the beginning of the next rest period, shorten the following work cycle by one-third.

**DO NOT PERMIT A WORKER TO WEAR A SEMI-PERMEABLE OR IMPERMEABLE GARMENT WHEN HIS/HER ORAL TEMPERATURE EXCEEDS 100.6EF (38.1EC).**

*4.1.8.2 Prevention*

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat injuries. To avoid heat stress, management should take the following steps:

- Adjust work schedules: Modify work/rest schedules according to monitoring requirements. Mandate work slowdowns as needed.
- 
- Rotate personnel: Alternate job functions to minimize over stress or overexertion at one task. Add additional personnel to work teams. Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- 
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- 
- Maintain workers' body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must be approximately equal to the amount of water lost in sweat. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:

1. Maintain water temperature at 50E to 60EF (10E to 15.6EC).
2. Provide small disposable cups that hold about 4 ounces (0.1 liter).
3. Have workers drink at least a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.

## 4.2 TASK SAFETY

Dig Safe will be notified and a Dig Safe permit will be obtained prior to any subsurface activity located outside buildings. Town of Springfield Department of Public Works personnel will also be notified to provide mark-outs of subsurface public utilities including municipal sewer and water lines.

#### *4.2.1 Soil Coring and Sampling Hazard: Contact with contaminated soil, water and physical injury associated with use of a jackhammer.*

SOPs: Gloves, selected as per Section 2.2, and heavy duty steel toe/shank boots, hearing protection and safety glasses shall be worn at all times. Level D gear shall be worn as required by this HASP and the SSO. Contact by workers or equipment with electrical hazards inside the electric room shall be avoided. The number of workers inside the room shall be limited to as few as necessary, but no worker shall perform work inside the electrical room alone due to electrocution hazards.

#### *4.2.2 Oversight of UST Removal and Test Pit Excavation*

Hazard: Contact with contaminated soil, water and physical injury.

SOPs: Gloves, selected as per Section 2.2, hard hat, and heavy duty steel toe/shank boots shall be worn at all times. Level D gear shall be worn as required by this HASP and the SSO. A PID will be utilized to quantify the presence of volatile organic materials and indicate the necessity of personal protective gear. Electrical hazards require that no excavating activities will be performed during thunderstorms or around buried or overhead electrical or telephone cables or conduits. Extreme care must be taken in the vicinity of gas lines and other explosive or high pressure utility lines. Appropriate signs and traffic cones will be used when performing work on or near the roadway, and NIOSH-approved high-visibility vests will be worn.

#### *4.2.3 Soil and Groundwater Sampling*

Hazard: Contact with contaminated soil, water and physical injury.

SOPs: Gloves, selected as per section 2.2, hard hat, and heavy duty steel toe/shank boots shall be worn at all times. Level D gear shall be worn as required by this HSP and the SSO. A PID will be utilized to quantify the presence of volatile organic materials and indicate the necessity of personal protective gear. Wet clothing will be removed or dried immediately to avoid increasing risks of cold exposure.

## 5.0 SITE CONTROL

### 5.1 RESTRICTED AREAS

Where VOCs in the breathing zone are found to be sustained over 5 ppm (as vinyl chloride) or 100 ppm (as other VOCs) above background levels, all work shall cease until breathing zone levels decline to below 5 ppm (as vinyl chloride) or 100 ppm (as other VOCs), until engineering controls are established, or until the chemical constituents and concentrations are measured and known and appropriate personnel protection equipment is available. An exclusion zone will be established by the SSO a minimum of 15 feet away from any excavation or subsurface sampling location, as required. The contamination reduction zone will be located at the perimeter of the exclusion zone to facilitate the egress of employees and equipment. These zones will function to protect the employees, subcontractors, and general public from exposure to potentially hazardous materials and to allow for easy egress and decontamination of all personnel and equipment.

## 5.2 GENERAL FIELD STANDARD OPERATING PROCEDURES

1 The "buddy system" shall be used at all times by field personnel in the Exclusion Zone.
2. Visual, voice or radio communications shall be maintained at all times.
3. Contact with contaminated surfaces, waters, soils, and equipment shall be avoided whenever possible. Do not walk through discolored surfaces or kneel on the ground, nor lean, sit or place equipment on chemical containment drums or containers.
4. Eating, drinking, and smoking are prohibited in exclusion and contamination reduction zones. Alcoholic beverages are prohibited on the job site.
5. Hands and face must be thoroughly washed upon leaving the contamination reduction area. Further, whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.
6. Failure to complete a respiratory fit test shall preclude admission to any zone requiring respiratory protection.
7. All equipment must be decontaminated or discarded upon exiting the exclusion zone.
8. Personal protective equipment shall be required for all field personnel and may include, but is not limited to respiratory protection, hard hat, chemical resistant coveralls, boots, gloves, safety glasses, and ear protection.
9. Anyone reporting to work under the influence of alcohol and/or illicit drugs will be subject to disciplinary action. Any employee taking prescription medication or under a physicians care must notify the SSO prior to reporting to the work site.
10. All employees shall listen for and yield the right-of-way to construction equipment.

11. All equipment operators shall provide warning prior to movement and watch for personnel in their path.
12. Employees are responsible to clean and maintain the protective equipment issued to them. Any and all defects or failures of the equipment shall be reported immediately to the SSO.
13. All personnel shall report all injuries and/or illnesses to the SSO regardless of the severity of injuries.
14. Personnel shall avoid any potentially dangerous environmental situations such as entering a confined space without proper supervision, training and equipment.
15. "Dig Safe" number must be notified not less than 48 hours prior to all drilling and excavation operations.
16. All personnel are required to contact the Project Manager or Project Officer when conducting a field investigation or site inspection. They must at a minimum, call prior to, or as soon as possible after leaving a site.
17. Personnel encountering a potentially hazardous environment (e.g., noticing strong vapor levels of unidentified substances) shall instruct all other on-site personnel to leave the site and shall call the on-site project manager and site safety officer for instruction. Personnel shall not re-enter the site without proper protective clothing, and shall not work at the site until the unknown substance is further characterized.
18. A hard hat shall be worn when working around heavy equipment.
19. A shirt and long pants shall be worn at all times.
20. Protective eyewear shall be worn when handling chemicals that may damage the eyes.
21. Skin abrasions must be thoroughly protected to prevent chemical exposure.
22. Each employee is responsible for his or her health and safety.

## 6.0 EMERGENCY PHONE NUMBERS / HOSPITAL LOCATION

| | TELEPHONE |
|---|---|
| Ambulance: | 911 |
| Fire: | 911 |
| Police: | 911 |
| Springfield Hospital* | 802-885-2151 |
| VT Poison Control Center | 802-658-3456 |

The Johnson Company, Inc.:

Rhonda Kay, Project Manager ........ 802-229-4600, ext. 137

Thomas R. Osborne, Corporate Health & Safety Officer ........ 802-229-4600, ext. 111

State of Vermont Contact:

Patricia Coppolino ........ 802-241-3967

Client Contact:

Bob Flint, PVDC ........ 802-885-3061

* Hospital Location:

Springfield Hospital
25 Ridgewood Road, Springfield, VT

For a map of the route to the hospital, see the following page.

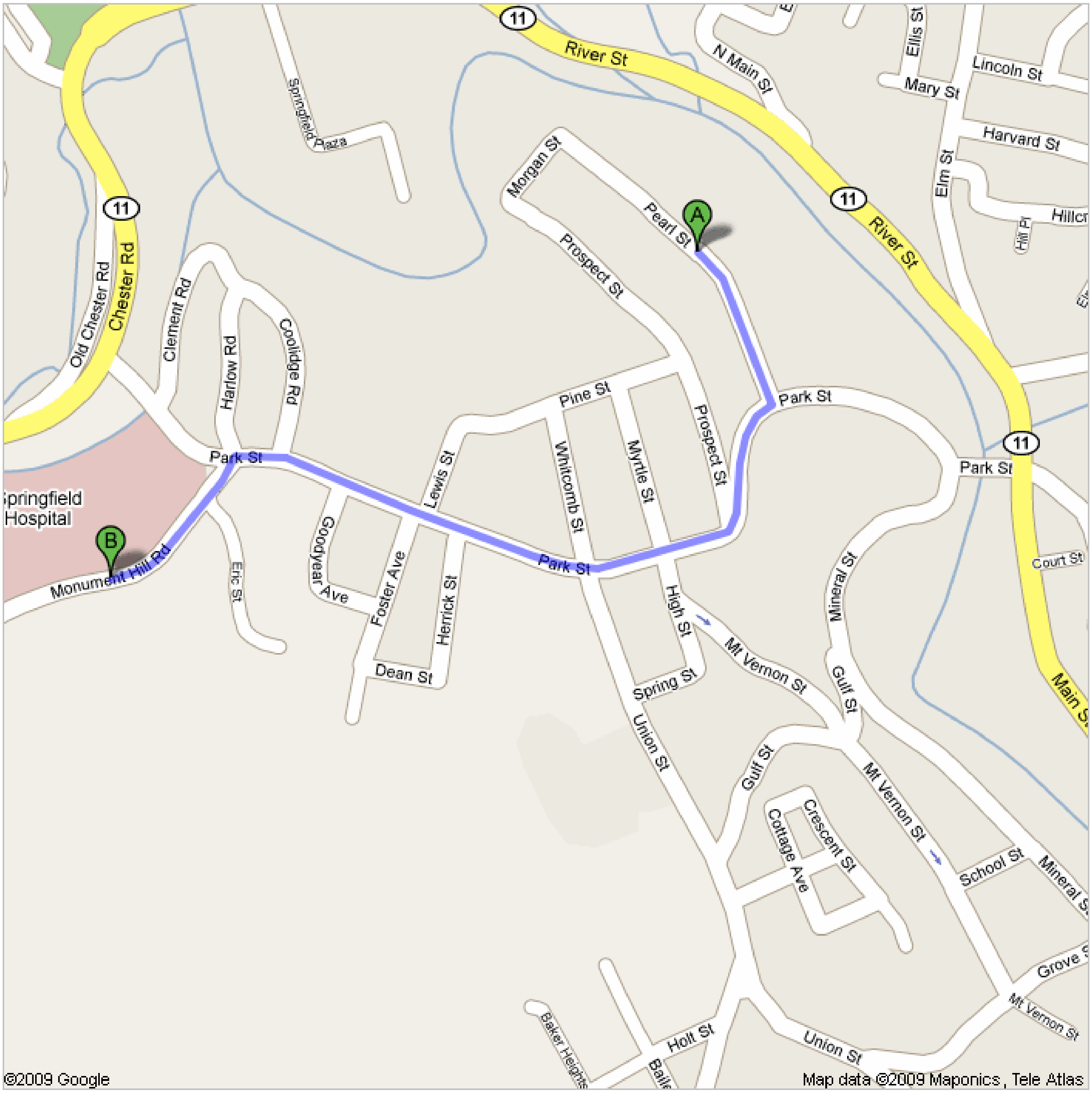
Google Maps

# Directions to Springfield Hospital

25 Ridgewood Rd, Springfield, VT 05156 - (802) 885-2151

**0.7 mi** – about **2 mins**





# APPENDIX A

## AMENDMENTS TO THE HEALTH AND SAFETY PLAN

# APPENDIX B

## GLOSSARY

| | |
|---|---|
| ºC | Degrees Celsius |
| CFR | Codified Federal Regulations |
| CHRIS | Chemical Hazard Resource Information System |
| CO | Carbon monoxide |
| CRZ | Contamination Reduction Zone |
| EPA | U. S. Environmental Protection Agency |
| EZ | Exclusion Zone |
| ºF | Degrees Fahrenheit |
| $H_2S$ | Hydrogen sulfide |
| HSP | Health and Safety Plan |
| IDLH | Immediately Dangerous to Life and Health level |
| LEL | Lower Explosive Limit |
| MGI | Multigas Indicator |
| MSDS | Materials Safety Data Sheets |
| NIOSH | National Institute for Occupational Safety and Health |
| $O_2$ | Oxygen |
| OSHA | U. S. Occupational Safety and Health Administration |
| PCB | Polychlorinated biphenyl |
| PID | Photoionization Detector |
| PPE | Personal Protective Equipment |
| ppm | Parts per million |
| SOP | Standard Operating Procedure |
| SSO | Site Safety Officer |
| SZ | Support Zone |
| TLV | Threshold Limit Value |
| VOC | Volatile Organic Compounds |

# APPENDIX C

# MATERIALS SAFETY DATA SHEETS

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

# POLYCHLORINATED BIPHENYLS

**Division of Toxicology ToxFAQs™** **February 2001**

**This fact sheet answers the most frequently asked health questions (FAQs) about polychlorinated biphenyls. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: Polychlorinated biphenyls (PCBs) are a mixture of individual chemicals which are no longer produced in the United States, but are still found in the environment. Health effects that have been associated with exposure to PCBs include acne-like skin conditions in adults and neurobehavioral and immunological changes in children. PCBs are known to cause cancer in animals. PCBs have been found in at least 500 of the 1,598 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

### What are polychlorinated biphenyls?

Polychlorinated biphenyls are mixtures of up to 209 individual chlorinated compounds (known as congeners). There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Some PCBs can exist as a vapor in air. PCBs have no known smell or taste. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.

PCBs have been used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. The manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects. Products made before 1977 that may contain PCBs include old fluorescent lighting fixtures and electrical devices containing PCB capacitors, and old microscope and hydraulic oils.

### What happens to PCBs when they enter the environment?

- ❑ PCBs entered the air, water, and soil during their manufacture, use, and disposal; from accidental spills and leaks during their transport; and from leaks or fires in products containing PCBs.
- ❑ PCBs can still be released to the environment from hazardous waste sites; illegal or improper disposal of industrial wastes and consumer products; leaks from old electrical transformers containing PCBs; and burning of some wastes in incinerators.
- ❑ PCBs do not readily break down in the environment and thus may remain there for very long periods of time. PCBs can travel long distances in the air and be deposited in areas far away from where they were released. In water, a small amount of PCBs may remain dissolved, but most stick to organic particles and bottom sediments. PCBs also bind strongly to soil.
- ❑ PCBs are taken up by small organisms and fish in water. They are also taken up by other animals that eat these aquatic animals as food. PCBs accumulate in fish and marine mammals, reaching levels that may be many thousands of times higher than in water.

### How might I be exposed to PCBs?

- ❑ Using old fluorescent lighting fixtures and electrical devices and appliances, such as television sets and refrigerators, that were made 30 or more years ago. These items may leak small amounts of PCBs into the air when they get hot during operation, and could be a source of skin exposure.
- ❑ Eating contaminated food. The main dietary sources of PCBs are fish (especially sportfish caught in contaminated lakes or rivers), meat, and dairy products.
- ❑ Breathing air near hazardous waste sites and drinking contaminated well water.
- ❑ In the workplace during repair and maintenance of PCB transformers; accidents, fires or spills involving transformers, fluorescent lights, and other old electrical devices; and disposal of PCB materials.

### How can PCBs affect my health?

The most commonly observed health effects in people exposed to large amounts of PCBs are skin conditions such as acne and rashes. Studies in exposed workers have shown changes in blood and urine that may indicate liver damage. PCB exposures in the general population are not likely to result in skin and liver effects. Most of the studies of health effects of PCBs in the general population examined children of mothers who were exposed to PCBs.

Animals that ate food containing large amounts of PCBs for short periods of time had mild liver damage and some died. Animals that ate smaller amounts of PCBs in food over several weeks or months developed various kinds of health effects, including anemia; acne-like skin conditions; and liver, stomach, and thyroid gland injuries. Other effects of PCBs in animals include changes in the immune system, behavioral alterations, and impaired reproduction. PCBs are not known to cause birth defects.

**How likely are PCBs to cause cancer?**

Few studies of workers indicate that PCBs were associated with certain kinds of cancer in humans, such as cancer of the liver and biliary tract. Rats that ate food containing high levels of PCBs for two years developed liver cancer. The Department of Health and Human Services (DHHS) has concluded that PCBs may reasonably be anticipated to be carcinogens. The EPA and the International Agency for Research on Cancer (IARC) have determined that PCBs are probably carcinogenic to humans.

**How can PCBs affect children?**

Women who were exposed to relatively high levels of PCBs in the workplace or ate large amounts of fish contaminated with PCBs had babies that weighed slightly less than babies from women who did not have these exposures. Babies born to women who ate PCB-contaminated fish also showed abnormal responses in tests of infant behavior. Some of these behaviors, such as problems with motor skills and a decrease in short-term memory, lasted for several years. Other studies suggest that the immune system was affected in children born to and nursed by mothers exposed to increased levels of PCBs. There are no reports of structural birth defects caused by exposure to PCBs or of health effects of PCBs in older children. The most likely way infants will be exposed to PCBs is from breast milk. Transplacental transfers of PCBs were also reported In most cases, the benefits of breast-feeding outweigh any risks from exposure to PCBs in mother's milk.

**How can families reduce the risk of exposure to PCBs?**

❏ You and your children may be exposed to PCBs by eating fish or wildlife caught from contaminated locations. Certain states, Native American tribes, and U.S. territories have issued advisories to warn people about PCB-contaminated fish and fish-eating wildlife. You can reduce your family's exposure to PCBs by obeying these advisories.

❏ Children should be told not play with old appliances, electrical equipment, or transformers, since they may contain PCBs.

❏ Children should be discouraged from playing in the dirt near hazardous waste sites and in areas where there was a transformer fire. Children should also be discouraged from eating dirt and putting dirty hands, toys or other objects in their mouths, and should wash hands frequently.

❏ If you are exposed to PCBs in the workplace it is possible to carry them home on your clothes, body, or tools. If this is the case, you should shower and change clothing before leaving work, and your work clothes should be kept separate from other clothes and laundered separately.

**Is there a medical test to show whether I've been exposed to PCBs?**

Tests exist to measure levels of PCBs in your blood, body fat, and breast milk, but these are not routinely conducted. Most people normally have low levels of PCBs in their body because nearly everyone has been environmentally exposed to PCBs. The tests can show if your PCB levels are elevated, which would indicate past exposure to above-normal levels of PCBs, but cannot determine when or how long you were exposed or whether you will develop health effects.

**Has the federal government made recommendations to protect human health?**

The EPA has set a limit of 0.0005 milligrams of PCBs per liter of drinking water (0.0005 mg/L). Discharges, spills or accidental releases of 1 pound or more of PCBs into the environment must be reported to the EPA. The Food and Drug Administration (FDA) requires that infant foods, eggs, milk and other dairy products, fish and shellfish, poultry and red meat contain no more than 0.2-3 parts of PCBs per million parts (0.2-3 ppm) of food. Many states have established fish and wildlife consumption advisories for PCBs.

**References**

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological profile for polychlorinated biphenyls (PCBs). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

# TRICHLOROETHYLENE

## CAS # 79-01-6

**Division of Toxicology ToxFAQs™** **July 2003**

**This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

### What is trichloroethylene?

Trichloroethylene (TCE) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

### What happens to trichloroethylene when it enters the environment?

- Trichloroethylene dissolves a little in water, but it can remain in ground water for a long time.
- Trichloroethylene quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- Trichloroethylene evaporates less easily from the soil than from surface water. It may stick to particles and remain for a long time.
- Trichloroethylene may stick to particles in water, which will cause it to eventually settle to the bottom sediment.
- Trichloroethylene does not build up significantly in plants and animals.

### How might I be exposed to trichloroethylene?

- Breathing air in and around the home which has been contaminated with trichloroethylene vapors from shower water or household products such as spot removers and typewriter correction fluid.
- Drinking, swimming, or showering in water that has been contaminated with trichloroethylene.
- Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site.
- Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment.

### How can trichloroethylene affect my health?

Breathing small amounts may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

Breathing large amounts of trichloroethylene may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage.

**ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html**

Drinking large amounts of trichloroethylene may cause nausea, liver damage, unconsciousness, impaired heart function, or death.

Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear.

Skin contact with trichloroethylene for short periods may cause skin rashes.

## How likely is trichloroethylene to cause cancer?

Some studies with mice and rats have suggested that high levels of trichloroethylene may cause liver, kidney, or lung cancer. Some studies of people exposed over long periods to high levels of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. Although, there are some concerns about the studies of people who were exposed to trichloroethylene, some of the effects found in people were similar to effects in animals.

In its 9th Report on Carcinogens, the National Toxicology Program (NTP) determined that trichloroethylene is "reasonably anticipated to be a human carcinogen." The International Agency for Research on Cancer (IARC) has determined that trichloroethylene is "probably carcinogenic to humans."

## Is there a medical test to show whether I've been exposed to trichloroethylene?

If you have recently been exposed to trichloroethylene, it can be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene.

Exposure to larger amounts is assessed by blood and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

## Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level for trichloroethylene in drinking water at 0.005 milligrams per liter (0.005 mg/L) or 5 parts of TCE per billion parts water.

The EPA has also developed regulations for the handling and disposal of trichloroethylene.

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 100 parts of trichloroethylene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

## Glossary

Carcinogenicity: The ability of a substance to cause cancer.
CAS: Chemical Abstracts Service.
Evaporate: To change into a vapor or gas.
Milligram (mg): One thousandth of a gram.
Nonflammable: Will not burn.
ppm: Parts per million.
Sediment: Mud and debris that have settled to the bottom of a body of water.
Solvent: A chemical that dissolves other substances.

## References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Trichloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES
AND DISEASE REGISTRY

# VINYL CHLORIDE

## CAS # 75-01-4

**Division of Toxicology and Environmental Medicine ToxFAQs™** **July 2006**

**This fact sheet answers the most frequently asked health questions (FAQs) about vinyl chloride. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: Exposure to vinyl chloride occurs mainly in the workplace. Breathing high levels of vinyl chloride for short periods of time can cause dizziness, sleepiness, unconsciousness, and at extremely high levels can cause death. Breathing vinyl chloride for long periods of time can result in permanent liver damage, immune reactions, nerve damage, and liver cancer. This substance has been found in at least 616 of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).**

### What is vinyl chloride?

Vinyl chloride is a colorless gas. It burns easily and it is not stable at high temperatures. It has a mild, sweet odor. It is a manufactured substance that does not occur naturally. It can be formed when other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC). PVC is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Vinyl chloride is also known as chloroethene, chloroethylene, and ethylene monochloride.

### What happens to vinyl chloride when it enters the environment?

❏ Liquid vinyl chloride evaporates easily. Vinyl chloride in water or soil evaporates rapidly if it is near the surface.
❏ Vinyl chloride in the air breaks down in a few days to other substances, some of which can be harmful.
❏ Small amounts of vinyl chloride can dissolve in water.
❏ Vinyl chloride is unlikely to build up in plants or animals that you might eat.

### How might I be exposed to vinyl chloride?

❏ Breathing vinyl chloride that has been released from plastics industries, hazardous waste sites, and landfills.
❏ Breathing vinyl chloride in air or during contact with your skin or eyes in the workplace.
❏ Drinking water from contaminated wells.

### How can vinyl chloride affect my health?

Breathing high levels of vinyl chloride can cause you to feel dizzy or sleepy. Breathing very high levels can cause you to pass out, and breathing extremely high levels can cause death.

Some people who have breathed vinyl chloride for several years have changes in the structure of their livers. People are more likely to develop these changes if they breathe high levels of vinyl chloride. Some people who work with vinyl chloride have nerve damage and develop immune reactions. The lowest levels that produce liver changes, nerve damage, and immune reaction in people are not known. Some workers exposed to very high levels of vinyl chloride have problems with the blood flow in their hands. Their fingers turn white and hurt when they go into the cold.

The effects of drinking high levels of vinyl chloride are unknown. If you spill vinyl chloride on your skin, it will cause numbness, redness, and blisters.

Animal studies have shown that long-term exposure to vinyl chloride can damage the sperm and testes.

## How likely is vinyl chloride to cause cancer?

The U.S. Department of Health and Human Services has determined that vinyl chloride is a known carcinogen. Studies in workers who have breathed vinyl chloride over many years showed an increased risk of liver, brain, lung cancer, and some cancers of the blood have also been observed in workers.

## How can vinyl chloride affect children?

It has not been proven that vinyl chloride causes birth defects in humans, but studies in animals suggest that vinyl chloride might affect growth and development. Animal studies also suggest that infants and young children might be more susceptible than adults to vinyl chloride-induced cancer.

## How can families reduce the risk of exposure to vinyl chloride?

Tobacco smoke contains low levels of vinyl chloride, so limiting your family's exposure to cigarette or cigar smoke may help reduce their exposure to vinyl chloride.

## Is there a medical test to show whether I've been exposed to vinyl chloride?

The results of several tests can sometimes show if you have been exposed to vinyl chloride. Vinyl chloride can be measured in your breath, but the test must be done shortly after exposure. This is not helpful for measuring very low levels of vinyl chloride.

The amount of the major breakdown product of vinyl chloride, thiodiglycolic acid, in the urine may give some information about exposure. However, this test must be done shortly after exposure and does not reliably indicate the level of exposure.

## Has the federal government made recommendations to protect human health?

Vinyl chloride is regulated in drinking water, food, and air. The EPA requires that the amount of vinyl chloride in drinking water not exceed 0.002 milligrams per liter (mg/L) of water.

The Occupational Safety and Health Administration (OSHA) has set a limit of 1 part vinyl chloride per 1 million parts of air (1 ppm) in the workplace.

The Food and Drug Administration (FDA) regulates the vinyl chloride content of various plastics. These include plastics that carry liquids and plastics that contact food. The limits for vinyl chloride content vary depending on the nature of the plastic and its use.

## Reference

Agency for Toxic Substances and Disease Registry (ATSDR). 2006. Toxicological Profile for Vinyl Chloride (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

# TOTAL PETROLEUM HYDROCARBONS (TPH)

**Agency for Toxic Substances and Disease Registry ToxFAQs** **August 1999**

**This fact sheet answers the most frequently asked health questions (FAQs) about total petroleum hydrocarbons (TPH). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: TPH is a mixture of many different compounds. Everyone is exposed to TPH from many sources, including gasoline pumps, spilled oil on pavement, and chemicals used at home or work. Some TPH compounds can affect your nervous system, causing headaches and dizziness. TPH has been found in at least 23 of the 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

## What are total petroleum hydrocarbons?

(Pronounced tōt′l pə-trō′lē-əm hī′drə-kär′bənz)

Total petroleum hydrocarbons (TPH) is a term used to describe a large family of several hundred chemical compounds that originally come from crude oil. Crude oil is used to make petroleum products, which can contaminate the environment. Because there are so many different chemicals in crude oil and in other petroleum products, it is not practical to measure each one separately. However, it is useful to measure the total amount of TPH at a site.

TPH is a mixture of chemicals, but they are all made mainly from hydrogen and carbon, called hydrocarbons. Scientists divide TPH into groups of petroleum hydrocarbons that act alike in soil or water. These groups are called petroleum hydrocarbon fractions. Each fraction contains many individual chemicals.

Some chemicals that may be found in TPH are hexane, jet fuels, mineral oils, benzene, toluene, xylenes, naphthalene, and fluorene, as well as other petroleum products and gasoline components. However, it is likely that samples of TPH will contain only some, or a mixture, of these chemicals.

## What happens to TPH when it enters the environment?

- TPH may enter the environment through accidents, from industrial releases, or as byproducts from commercial or private uses.
- TPH may be released directly into water through spills or leaks.
- Some TPH fractions will float on the water and form surface films.
- Other TPH fractions will sink to the bottom sediments.
- Bacteria and microorganisms in the water may break down some of the TPH fractions.
- Some TPH fractions will move into the soil where they may stay for a long time.

## How might I be exposed to TPH?

- Everyone is exposed to TPH from many sources.
- Breathing air at gasoline stations, using chemicals at home or work, or using certain pesticides.
- Drinking water contaminated with TPH.
- Working in occupations that use petroleum products.
- Living in an area near a spill or leak of petroleum products.
- Touching soil contaminated with TPH.

## How can TPH affect my health?

Some of the TPH compounds can affect your central nervous system. One compound can cause headaches and dizziness at high levels in the air. Another compound can cause a nerve disorder called "peripheral neuropathy," consisting of numbness in the feet and legs. Other TPH compounds can cause effects on the blood, immune system, lungs, skin, and eyes.

Animal studies have shown effects on the lungs, central nervous system, liver, and kidney from exposure to TPH compounds. Some TPH compounds have also been shown to affect reproduction and the developing fetus in animals.

## How likely is TPH to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that one TPH compound (benzene) is carcinogenic to humans. IARC has determined that other TPH compounds (benzo[a]pyrene and gasoline) are probably and possibly carcinogenic to humans. Most of the other TPH compounds are considered not to be classifiable by IARC.

## Is there a medical test to show whether I've been exposed to TPH?

There is no medical test that shows if you have been exposed to TPH. However, there are methods to determine if you have been exposed to some TPH compounds. Exposure to kerosene can be determined by its smell on the breath or clothing. Benzene can be measured in exhaled air and a breakdown product of benzene can be measured in urine. Other TPH compounds can be measured in blood, urine, breath, and some body tissues.

## Has the federal government made recommendations to protect human health?

There are no regulations or advisories specific to TPH. The following are recommendations for some of the TPH fractions and compounds:

The EPA requires that spills or accidental releases into the environment of 10 pounds or more of benzene be reported to the EPA.

The Occupational Safety and Health Administration has set an exposure limit of 500 parts of petroleum distillates per million parts of air (500 ppm) for an 8-hour workday, 40-hour workweek.

## Glossary

Carcinogenicity: Ability to cause cancer.

CAS: Chemical Abstracts Service.

Immune system: Body organs and cells that fight disease.

Pesticides: Chemicals used to kill pests.

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for total petroleum hydrocarbons (TPH). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

# APPENDIX F

# NEWS BRIEF

A Corrective Action Plan (CAP) was prepared by the Johnson Company for the PVDC Building/Former Fellows Gear Shaper Facility located at 100 River Street in Springfield, Vermont (the Site). The Site consists of an approximately 140,000 square foot building and several small outbuildings on an approximately 6-acre parcel adjacent to the Black River. Remedial actions are necessary at the Site due to the presence of polychlorinated biphenyls (PCBs), chlorinated volatile organic compounds (CVOCs), and petroleum hydrocarbons in building materials, soil, and/or groundwater at the Site. Specifically, the CAP addresses the following areas of concern: 1) the concrete slab and walls of the main building and two outbuildings, in which PCBs have been detected; 2) outdoor transformer pads and adjacent soils, in which PCBs have been detected; 3) an underground vault containing PCB-contaminated water; 4) a cutting oil recycling tank containing PCB-contaminated water and sludge; 5) soils and groundwater in the vicinity of the Chip Shed, which have been impacted by PCBs and petroleum hydrocarbons; 6) an underground storage tank located adjacent to the boiler house, which has been used for the storage of #2 fuel oil; 7) waste-containing drums located throughout the building; and 8) a chlorinated solvent plume in groundwater, which may be discharging to the Black River and/or impacting indoor air quality.

These areas of concern have been characterized through a series of site investigations, beginning in 1998 and continuing to the present. A compilation of all data collected in these investigations was used in a Corrective Action Feasibility Investigation (CAFI) in which one to three remedial alternatives were assessed for each item of concern for its effectiveness, cost, and implementability at the Site. As a result of the CAFI process, the following actions are proposed to address the areas of concern:

1. Risk-based management of the PCB-impacted portions of the building that will minimize risk to future users.
2. A transformer pad and adjacent soils will be removed from the northwestern corner of the building. Remaining transformer pads will be left intact.
3. The contents of the underground vault will be removed and disposed of at a treatment facility.
4. An environmental contractor will remove and dispose of the contents of the cutting oil recycling tank. The tank will be cleaned and left in place.
5. The Chip Shed and a portion of the boiler house will be demolished. Some of the demolished concrete will be used as fill in the adjacent soil excavation.
6. Soils with PCB concentrations above 3 parts per million will be removed from the vicinity of the Chip Shed and disposed of in a lined landfill.
7. The fuel oil underground storage tank will be emptied, cleaned, and removed from the Site.
8. An environmental contractor will inventory and remove all drums from within the building.
9. A sub-slab depressurization system will be installed to mitigate vapor intrusion of vinyl trichloroethene in the northeastern area of the building.
10. Four monitoring wells and one water supply well will be sampled for VOCs on a semi-annual basis for two years, after which monitoring will continue on an annual basis.