CONESTOGA-ROVERS
& ASSOCIATES

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February 25, 2014 Reference No. 019190

Dr. Bhooma Sundar
Project Coordinator
U.S. Environmental Protection Agency Region 5
Mail Code: DE-9J
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

**VIA ELECTRONIC MAIL**

Dear Dr. Sundar:

Re: Proposed Decommissioning of SMWU 1 and 2 SVE System
Radio Materials Corporation Site
Attica, Indiana

## 1.0 Purpose

The purpose of this correspondence is to request approval from the U.S. Environmental Protection Agency (U.S. EPA) to decommission the Solid Waste Management Units (SWMUs) 1 and 2 soil vapor extraction (SVE) system (the SVE System) at the Radio Materials Corporation Site located in Attica, Indiana (Site). CRA operates the SVE System at SWMUs 1 and 2 on behalf of Kraft Foods Global, Inc. (Kraft Foods). Figure 1 depicts the location of the SVE System on a Site plan. As summarized below, the SVE System has effectively removed over 1,000 pounds of primary volatile organic compounds (VOCs) resulting in over a 90 percent reduction in concentrations of these analytes in soil. However, continued operation of the SVE System is no longer cost effective.

## 2.0 Background

On behalf of Kraft Foods, CRA submitted the following reports and letters to U.S. EPA to address removal of waste and visibly impacted soil from SWMUs 1 and 2:

1. The *Interim Corrective Measures Excavation Work Plan SWMUs 1 and 2 and AOC 3B, Radio Materials Corporation, Attica, Indiana* (CRA 2007) on February 28, 2007, and subsequently approved by U.S. EPA on March 19, 2007.
2. The *Interim Corrective Measures Soil Vapor Extraction and In-Situ Chemical Oxidation Design and Implementation Work Plan* (CRA, April 12, 2007) under a cover letter dated April 12, 2007; U.S. EPA approved the work plan and subsequent modifications on July 9, 2007. The April 12, 2007 work plan described, among other matters, implementation of the SVE interim corrective measures (ICMs) in SWMUs 1 and 2. The purpose of these soil ICMs was to control or abate potential threats to human health and/or the environment by reducing the concentrations of VOCs present in soil and minimize leaching of VOCs from soil to groundwater.

3. A letter to U.S. EPA on April 29, 2008, requesting a modification to the approved ICM work plan for excavation and SVE System for SWMUs 1 and 2. The proposed modification allowed ex-situ treatment of the excavated material within the boundary of SWMUs 1 and 2. The treatment involved construction of a lined cell within the boundaries of the SWMUs 1 and 2 area, placement of approximately 1,000 tons of excavated soil into the lined cell, and connection of the cell to the planned and approved SVE System. In a letter dated May 1, 2008, the U.S.EPA approved the modifications to the ICM work plan.

Following completion of excavation activities, the ex-situ soil treatment cell was constructed in SWMUs 1 and 2 and the excavated soil was moved into the treatment cell. Cain Contracting, under the supervision of CRA, completed the construction of the on-Site treatment cell within the boundary of SWMUs 1 and 2. The cell measures approximately 75 feet by 75 feet and was constructed as follows:

- The footprint of the cell was graded and compacted to form a competent subgrade;
- A 40 mil PVC liner was installed to cover the base of the cell and the surrounding berm;
- A 6-inch layer of sand/select fill was placed in the base of the cell to protect the liner;
- The excavated waste was conditioned for optimal permeability to enhance the vapor flow by mixing in sawdust;
- The excavated waste was placed into the treatment cell and spread in one-foot lifts, the material was not compacted when placed into the cell to maintain its permeability;
- When approximately one-half of the material was in place, the SVE extraction piping, vent piping and the extraction piping header were installed;
- The rest of the excavated waste was placed into the cell;
- A soil berm was constructed around the perimeter of the cell and the base liner was placed over the berm; and
- A 40-mil PVC liner was placed over the cell in a manner that minimizes infiltration.

Once the treatment cell was filled and covered, installation of the in-situ SVE system proceeded. The approved SVE design called for the installation of a series of vertical extraction wells, connected to a manifold system that is attached to a blower. However, due to the relatively shallow depth of groundwater in the treatment area, CRA had concerns about potential groundwater intrusion into the system. In order to address these concerns, CRA submitted a letter to the USEPA on May 1, 2008 containing a proposal to change the SVE well network from vertical to horizontal wells, which was subsequently approved by the U.S. EPA. The horizontal wells were connected to 10-inch ID PVC header lines.

The SVE System components include a 150-horsepower rotary lobe blower, one moisture separator (or knock out tanks) in series, one transfer pump, one 500-gallon condensate storage vessel, various gauges, and system controls (i.e., SCADA 3000). The blower, moisture separators, transfer pump, and various gauges are located inside a shipping container that is being used as the SVE building. The building rests on a concrete pad and is secured by a 6-foot chain link fence. The system controls are located in a separate room within the building. The effluent stack from the system exhausts approximately 20 feet above ground surface. Figure 2 depicts the as-built configuration of the SWMUs 1 and 2 SVE system.

## 3.0 System Operation and Performance

### 3.1 SWMUs 1 and 2 Effluent Air Concentrations

CRA commissioned the SVE System in August 2008 and reported its operation in the monthly ICM status reports provided to the U.S. EPA. Since startup, CRA has collected air effluent samples from the SVE System and analyzed these samples for VOCs. CRA collected the most recent air effluent sample in late-September 2013. A review of these analytical results demonstrates that concentrations of the primary VOCs, including tetrachloroethene (PCE), trichloroethene (TCE), and cis-1,2-dichloroethene (cDCE), have decreased significantly since startup. Attachment A provides a graph of cDCE, TCE, and PCE air effluent concentrations since startup of the SVE System. The concentrations of PCE, TCE, and cDCE in the SVE System effluent are negligible.

### 3.2 Primary VOC Removal Rates

The monthly ICM status reports submitted to the U.S. EPA include estimates of VOC removal based on system telemetry, including flow velocity and photoionization detector (PID) readings, and periodic effluent analytical data. Attachment B provides a graph of cumulative primary VOC removal versus time. The primary VOCs tracked included PCE, TCE, and cDCE. As of November 2013, the total mass of primary VOCs removed from SWMUs 1 and 2 is approximately 1,082 pounds (0.5409 tons), including approximately 815 pounds of PCE, 142 pounds of TCE, and 125 pounds of cDCE.

The highest rate of VOC removal occurred during the first two years of the SVE System operation (i.e., specifically, the period from startup in August 2008 through July 2010) when the total mass of primary VOC removal amounted to approximately 0.5 tons. During the period from July 2010 to January 2012, the SVE System removed another 0.0376 tons (approximately 75 pounds) of primary VOCs. From January 2012 to the present, the SVE System has removed only another approximately 0.004 tons (approximately 8 pounds) of primary VOCs. Currently, the SVE System removes well under a pound of primary VOCs per month of operation.

### 3.3 Soil Analytical Data

In February 2011, CRA collected progress soil samples from the SWMUs 1 and 2 area consistent with the work plan dated February 3, 2011, which the U.S. EPA approved the same day. CRA selected the progress soil sample locations from the treatment zone of the SWMUs 1 and 2 where elevated VOC concentrations were observed in the pre-ICM soil samples and to provide sufficient areal coverage within the treatment zone. In addition, CRA obtained four soil samples from the treatment cell to assess the VOC concentrations in the soil staged in this cell.

Attachment C and Figure 3 summarize the VOC analytical results for the progress soil samples from 13 soil borings. PCE was the only VOC detected in multiple soil samples at concentrations ranging from non-detect to 8.9 milligrams per kilogram (mg/kg). The only other VOCs detected, in one sample each, were acetone and cDCE. Table 1 summarizes the analytical data from soil samples collected from the same boreholes and depth intervals during 2003 (RFI soil samples) and 2011 (progress soil samples). CRA calculated the geometric mean concentrations for the two sample sets and found the geometric mean concentration for the 2011 progress soil sample set to be over 90 percent lower than the geometric mean concentration of the 2003 RFI soil sample set (3.53 mg/kg versus 0.22 mg/kg). As reported in the Progress Sampling Report dated June 10, 2011, the progress sampling results demonstrated a trend of substantially lower VOC concentrations as compared to the RFI soil samples, which indicated that the SWMUs 1 and 2 SVE system has been effective at removing VOCs from the vadose zone soil.

CRA also collected four soil samples at different elevations and locations in the soil treatment cell and these results are provided in the table in Attachment D. Two VOCs, PCE and cDCE, were detected in the soil samples. cDCE was detected in one soil sample at a concentration of 0.66 mg/kg. PCE was detected in all four treatment cell soil samples collected at concentrations ranging from 1.3 to 7.5 mg/kg. In 2008, 212 soil samples were collected from soil roll-off boxes before the construction of the treatment cell. In 2008, concentrations of PCE in the soil destined for placement in the treatment cell ranged from 0.096 to 9,200 mg/kg, with an average PCE concentration of 1,460 mg/kg. The average concentration for the four soil samples collected in 2011 from the treatment cell was 3.85 mg/kg, which is a decrease of 99.7 percent. These results demonstrate substantially lower PCE concentrations in the soil samples from the treatment cell, indicating the ex-situ SVE system has been effective in removing VOCs from the soil treatment cell.

## 4.0 SVE System Shutdown

As demonstrated by the progress soil sampling data, the SVE System has been very effective at removing VOCs from the soil in this area. As of November 2013, the total mass of primary VOCs removed is approximately 1,082 pounds (0.5409 tons), including approximately 815 pounds of PCE, 142 pounds of TCE, and 125 pounds of cDCE. This has resulted in over a 90 percent reduction in concentration observed between the 2003 RFI soil sample set and the 2011 progress soil sample set. Current removal levels are minimal based VOC concentrations in the effluent gas stream and the volume of VOCs removed per month of operation (currently just a fraction of a pound).

The monthly electrical costs to operate the SVE System during 2012 and 2013 are summarized in Table 2. As shown in Table 2, the SVE System consumes approximately $5,000 in electricity to operate for a full month. On average over the last 24 months (January 2012 to December 2013), the total electrical costs were over $90,000 or just over $4,000 per month (factoring in system downtime while awaiting repairs, etc.). In addition to electrical costs, there are other operation, maintenance, and repair costs associated with system operation. Given that the SVE System removes well below a pound of primary VOCs per month, it is neither useful for remediation nor cost effective to continue to operate this system any longer. Therefore, CRA proposes to shut down and decommission the SVE System.

## 5.0 Post Shutdown Activities

Following shutdown of the SVE System, the aboveground piping and components will be dismantled and disposed. The SVE building will remain in place for the time being, but system components such as the rotary blower, system controls, transfer pumps, and tanks may be dismantled. Subsurface components also will remain in place until the final disposition of SWMUs 1 and 2, including the treated soil pile, is determined during the Corrective Measures Study (CMS).

Regular groundwater monitoring will continue as approved by the U.S. EPA, including sampling of groundwater monitoring wells located in proximity to SWMUs 1 and 2. CRA will assess the analytical data to determine if system shutdown has any demonstrable effect on the VOC concentrations in groundwater in this area and report any such observations to the U.S. EPA.

Yours truly,

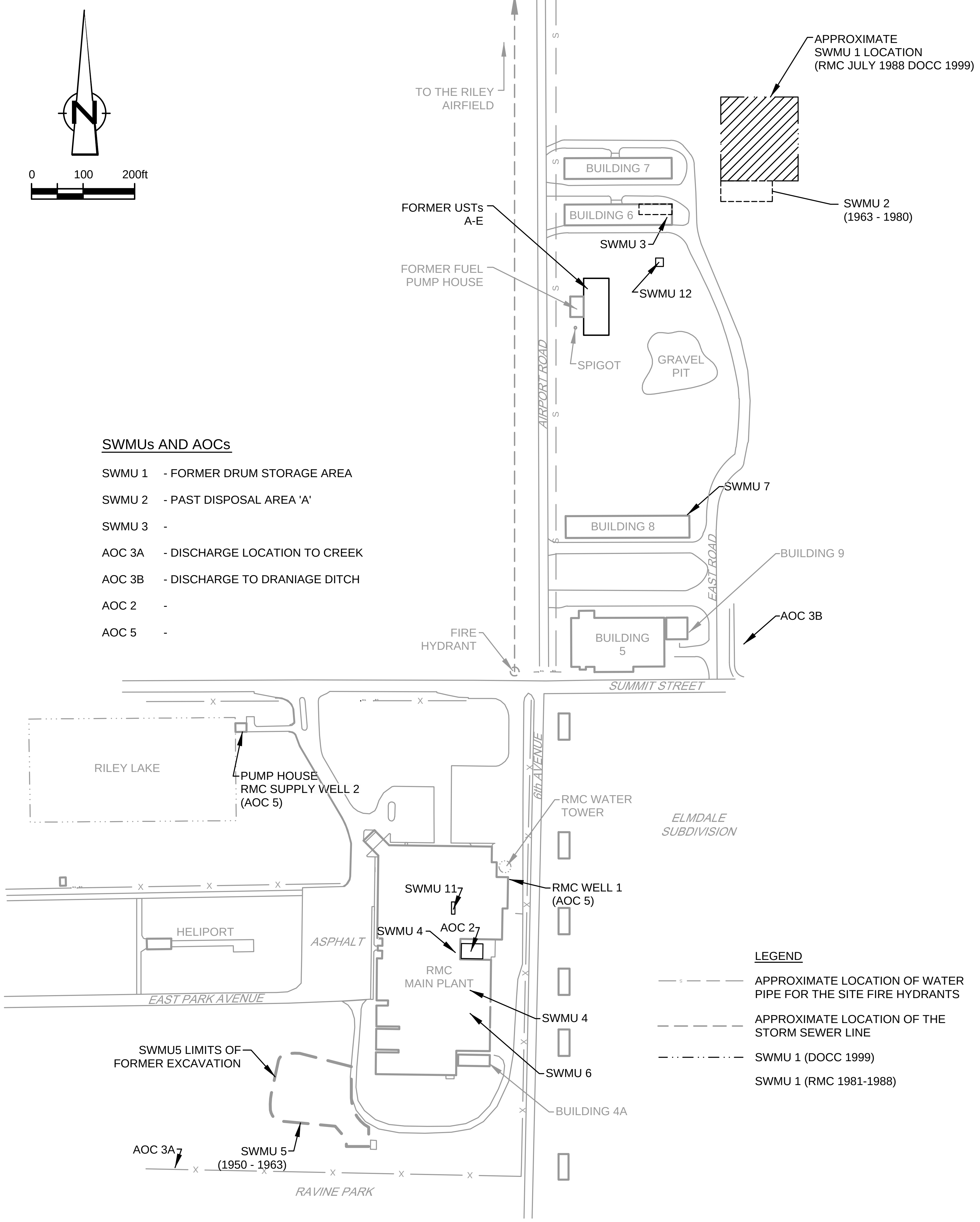
CONESTOGA-ROVERS & ASSOCIATES

Steven J. Wanner, L.P.G.

SJW/br/157
Encl.

cc: L. Krogman, ENVIRON
J. Nijman, Nijman Franzetti

# Figures




NOTE:

SWMU 1 APPEARS TO HAVE VARIED IN SIZE FROM THE EXTENTS
SHOWN IN RMC DRAWINGS (1981 TO 1988) TO THE DOCC REPORT (1999)

figure 1

SITE PLAN WITH SWMUs AND AOCs
RADIO MATERIALS CORPORATION
*Attica, Indiana*

SOURCE: PHASE I RFI (2000)

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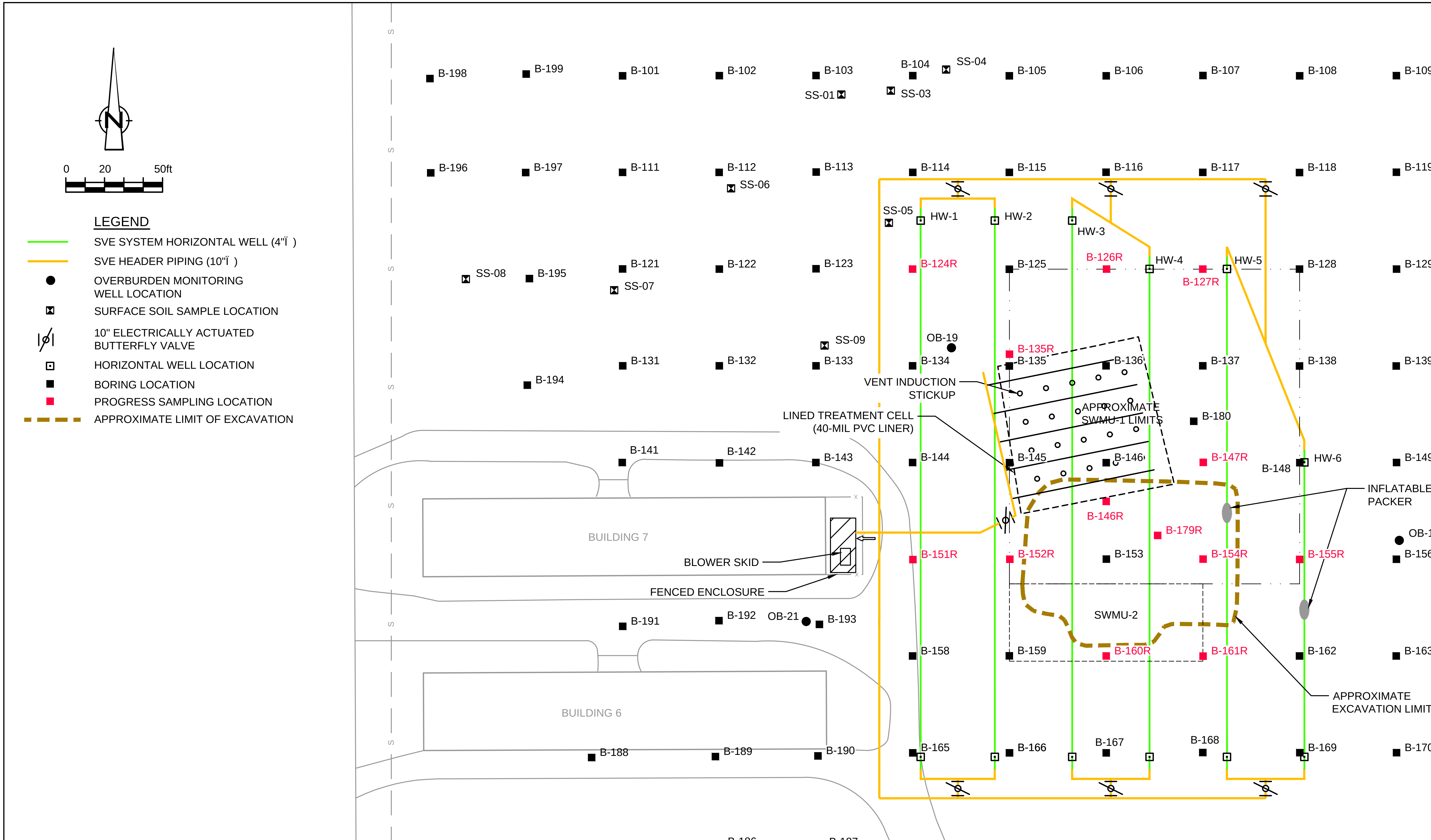


figure 2

SWMU 1 & 2 SVE CONFIGURATION AND SOIL SAMPLE LOCATIONS
RADIO MATERIALS CORPORATION
*Attica, Indiana*

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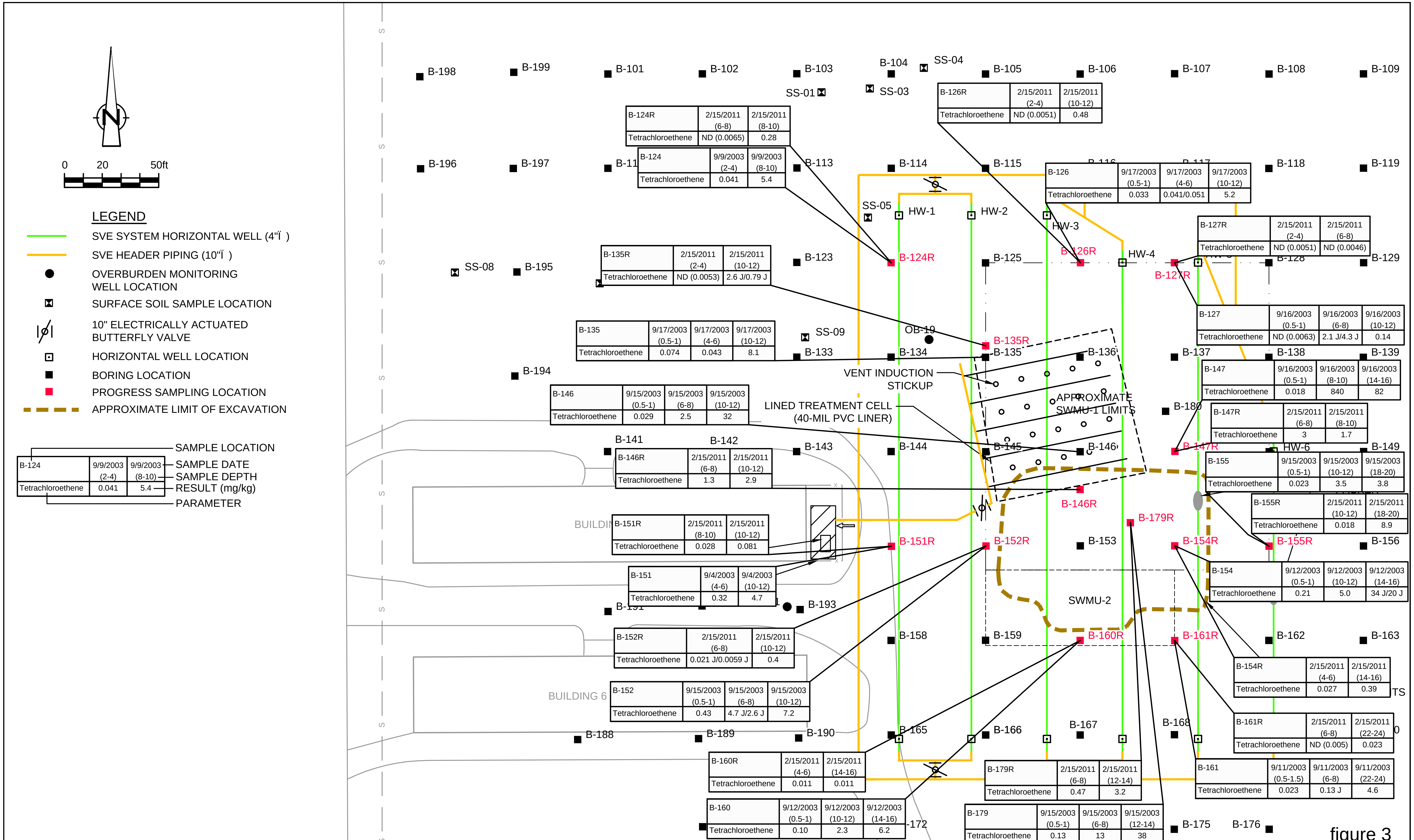


figure 3

PROGRESS SAMPLING SOIL PCE CONCENTRATIONS
RADIO MATERIALS CORPORATION
*Attica, Indiana*

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# Tables

**TABLE 1**



**TOTAL PRIMARY VOC CONCENTRATIONS BY DEPTH ZONE**
**SWMU 1 and 2 RFI AND PROGRESS SOIL SAMPLES**
**RADIO MATERIALS CORPORATION**
**ATTICA, INDIANA**

| | *Sample Year* | *Depth 1 Interval (ft bgs)* | *Total Primary VOCs (mg/kg)* | *Depth Interval 2 (ft bgs)* | *Total Primary VOCs (mg/kg)* |
|---|---|---|---|---|---|
| B-124 | 2003 | | | 8-10 | 5.90 |
| B-124R | 2011 | | | 8-10 | 0.53 |
| B-126 | 2003 | | | 10-12 | 5.361 |
| B-126R | 2011 | | | 10-12 | 0.73 |
| B-127 | 2003 | 6-8 | 2.178 | | |
| B-127R | 2011 | 6-8 | ND | | |
| B-135 | 2003 | | | 10-12 | 8.586 |
| B-135R | 2011 | | | 10-12 | 2.84 |
| B-146 | 2003 | 6-8 | 2.681 | 10-12 | 35.822 |
| B-146R | 2011 | 6-8 | 1.59 | 10-12 | 3.15 |
| B-147 | 2003 | 8-10 | 960.2 | | |
| B-147R | 2011 | 8-10 | 1.92 | | |
| B-151 | 2003 | | | 10-12 | 4.784 |
| B-151R | 2011 | | | 10-12 | 0.086 |
| B-152 | 2003 | 6-8 | 4.769 | 10-12 | 7.284 |
| B-152R | 2011 | 6-8 | 0.026 | 10-12 | 0.64 |
| B-154 | 2003 | | | 14-16 | 34.383 |
| B-154R | 2011 | | | 14-16 | 0.66 |
| B-155 | 2003 | | | 18-20 | 3.867 |
| B-155R | 2011 | | | 18-20 | 9.16 |
| B-160 | 2003 | | | 14-16 | 6.267 |
| B-160R | 2011 | | | 14-16 | 0.016 |
| B-161 | 2003 | 6-8 | 0.134 | 22-24 | 4.662 |
| B-161R | 2011 | 6-8 | ND | 22-24 | 0.029 |
| B-179 | 2003 | 6-8 | 13.171 | 12-14 | 38.75 |
| B-179R | 2011 | 6-8 | 0.7 | 12-14 | 3.48 |

***Geometric Mean Concentrations (mg/kg)***

| | |
|---|---|
| RFI Soil Samples | 3.53 |
| Progress Soil Samples | 0.22 |
| **Relative Percent Difference (%)** | **-93.7** |

Notes:

1. Primary VOCs is the sum of the concentration of cis-1,2-DCE, PCE and TCE
2. ND - primary VOCs non-detect
3. Concentrations include one-half the detection limit for ND results
4. ND - All primary VOCs were ND

**TABLE 2**

**SWMU 1 AND 2 MONTHLY ELECTRICAL CHARGES**
**RADIO MATERIALS CORPORATION**
**ATTICA, INDIANA**

| *January* | *February* | *March* | *April* | *May* | *June* | *July* | *August* | *September* | *October* | *November* | *December* | *2012 Totals* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $5,783.93 | $5,131.20 | $4,960.58 | $5,725.73 | $5,297.40 | $5,412.82 | $5,133.65 | $4,693.56 | $ 1,606.00 | $ 307.48 | $ 134.58 | $2,396.24 | **$ 46,583.17** |

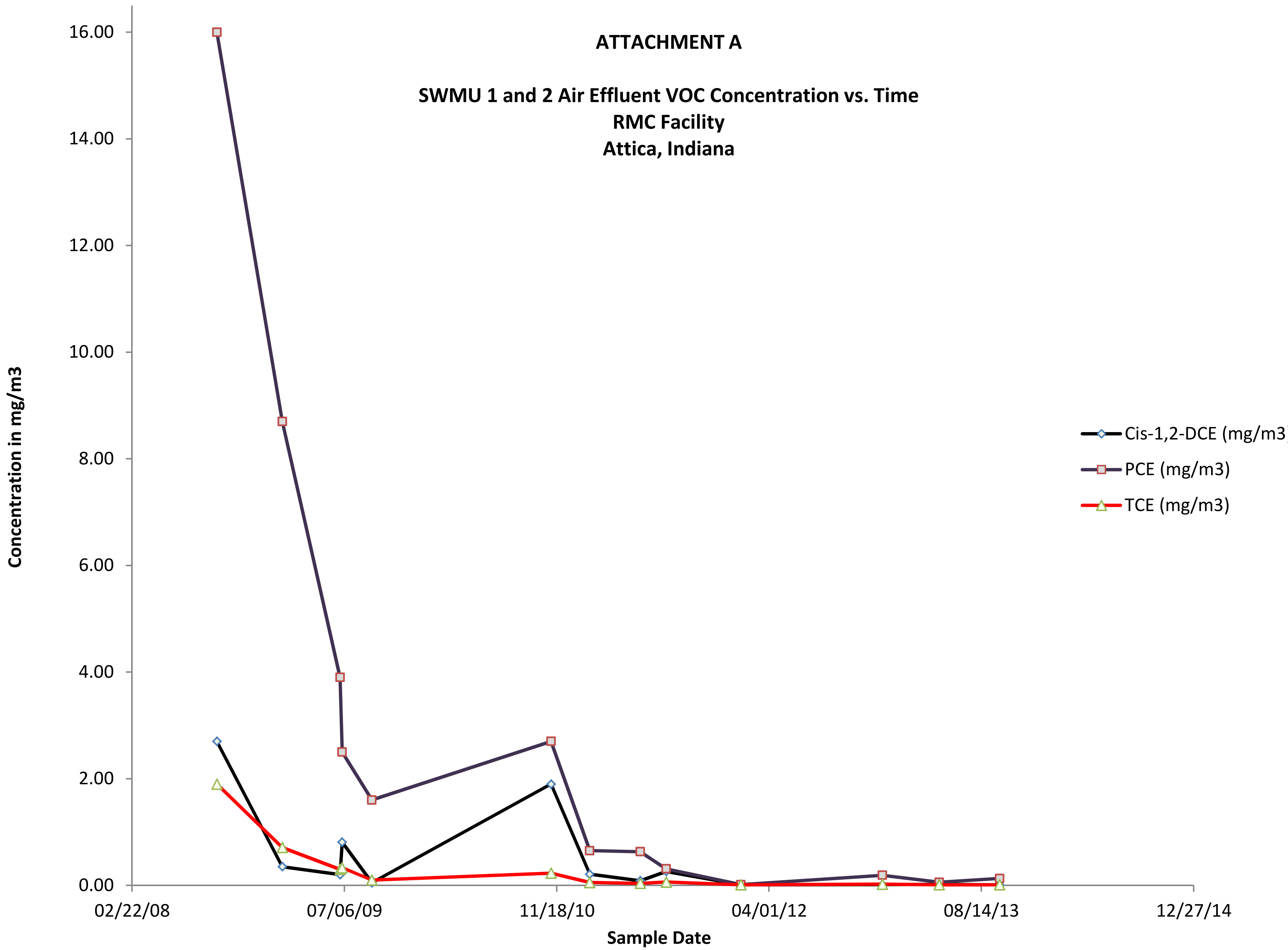
| *January* | *February* | *March* | *April* | *May* | *June* | *July* | *August* | *September* | *October* | *November* | *December* | *2013 Totals* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $5,210.83 | $4,926.48 | $5,087.87 | $2,850.02 | $1,766.02 | $4,661.06 | $4,306.07 | $4,143.14 | $ 4,696.81 | $4,347.09 | $ 4,628.47 | $5,113.86 | **$ 51,737.72** |

| | |
|---|---|
| **TOTAL ELECTRICAL COSTS** | **$ 98,320.89** |
| **AVERAGE MONTHLY ELECTRICAL COSTS** | **$ 4,096.70** |

# Attachments

# Attachment A

**Air Effluent Concentrations versus Time**

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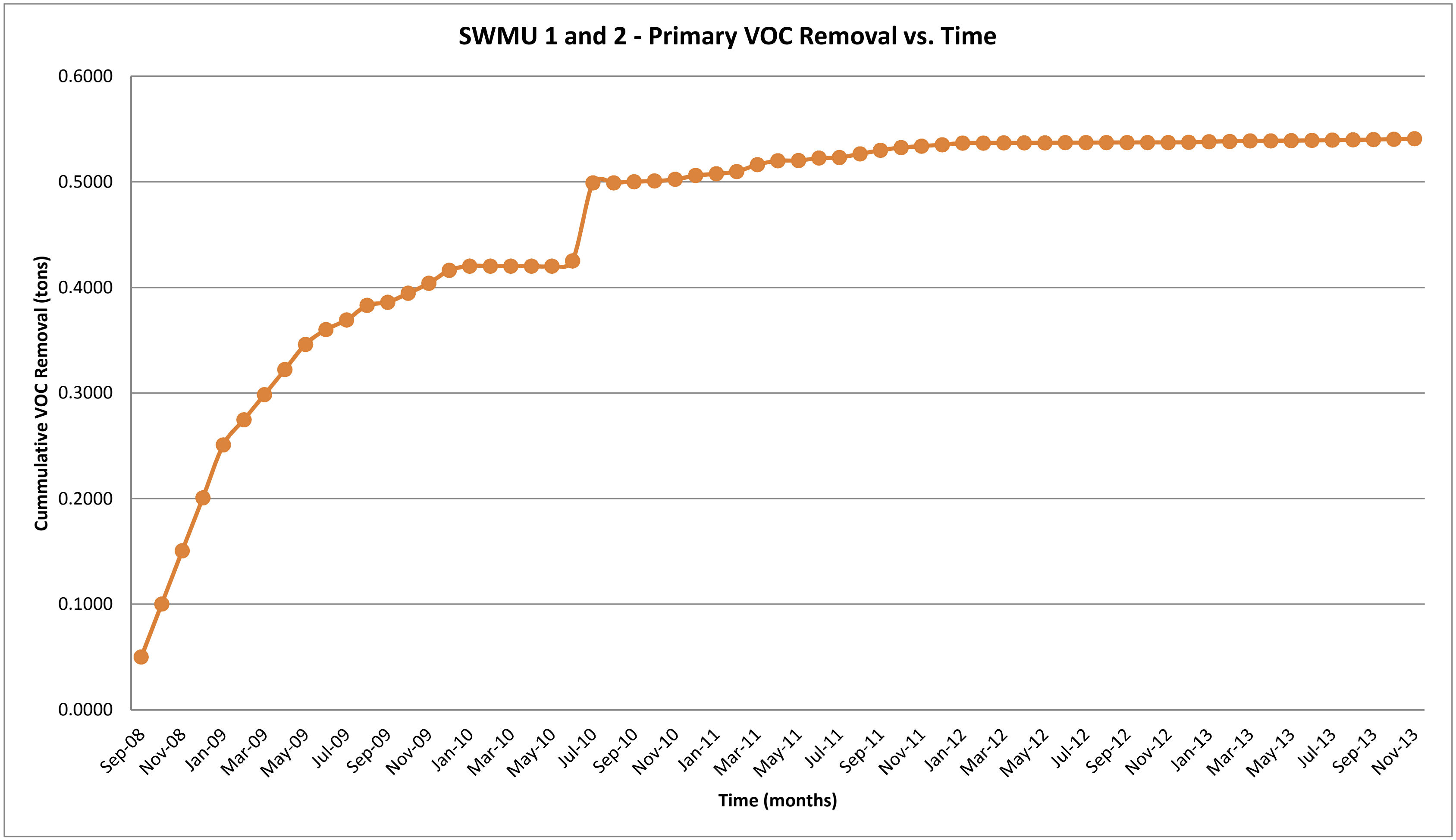
# Attachment B

**Cumulative Primary VOC Removal versus Time**


SWMU 1 and 2 - Primary VOC Removal vs. Time
Cummulative VOC Removal (tons)
0.6000
0.5000
0.4000
0.3000
0.2000
0.1000
0.0000
Sep-08
Nov-08
Jan-09
Mar-09
May-09
Jul-09
Sep-09
Nov-09
Jan-10
Mar-10
May-10
Jul-10
Sep-10
Nov-10
Jan-11
Mar-11
May-11
Jul-11
Sep-11
Nov-11
Jan-12
Mar-12
May-12
Jul-12
Sep-12
Nov-12
Jan-13
Mar-13
May-13
Jul-13
Sep-13
Nov-13
Time (months)

# Attachment C

## SWMU 1 and 2 Progress Soil Sample Analytical Results

**ATTACHMENT C**

**SWMU 1 AND 2 PROGRESS SOIL SAMPLE ANALYTICAL RESULTS**
**RADIO MATERIALS CORPORATION**
**ATTICA, INDIANA**

| *Sample Location:* | | *B-124R* | *B-124R* | *B-126R* | *B-126R* | *B-127R* | *B-127R* | *B-135R* | *B-135R* | *B-135R* | *B-146R* | *B-146R* | *B-147R* | *B-147R* | *B-151R* | *B-151R* | *B-152R* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Sample ID:* | | *S-021511-NH-024* | *S-021511-NH-023* | *S-021511-NH-026* | *S-021511-NH-025* | *S-021511-NH-028* | *S-021511-NH-027* | *S-021511-NH-020* | *S-021511-NH-021* | *S-021511-NH-022* | *S-021511-NH-018* | *S-021511-NH-019* | *S-021511-NH-017* | *S-021511-NH-016* | *S-021511-NH-005* | *S-021511-NH-006* | *S-021511-NH-007* |
| *Sample Date:* | | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* | *2/15/2011* |
| *Sample Depth:* | | *(6-8) ft BGS* | *(8-10) ft BGS* | *(2-4) ft BGS* | *(10-12) ft BGS* | *(2-4) ft BGS* | *(6-8) ft BGS* | *(2-4) ft BGS* | *(10-12) ft BGS* | *(10-12) ft BGS (Duplicate)* | *(6-8) ft BGS* | *(10-12) ft BGS* | *(6-8) ft BGS* | *(8-10) ft BGS* | *(8-10) ft BGS* | *(10-12) ft BGS* | *(6-8) ft BGS* |
| *Parameters* | *Units* | | | | | | | | | | | | | | | | |
| *Volatile Organic Compounds* | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,1,2,2-Tetrachloroethane | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,1,2-Trichloroethane | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,1-Dichloroethane | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,1-Dichloroethene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,2,4-Trichlorobenzene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | ND (0.013) | ND (0.49) | ND (0.01) | ND (0.5) | ND (0.01) | ND (0.0092) | ND (0.011) | ND (0.47) | ND (0.53) | ND (0.57) | ND (0.5) | ND (0.48) | ND (0.45) | ND (0.01) | ND (0.0099) | ND (0.011) |
| 1,2-Dibromoethane | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,2-Dichlorobenzene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,2-Dichloroethane | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,2-Dichloropropane | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,3-Dichlorobenzene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 1,4-Dichlorobenzene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| 2-Butanone (Methyl ethyl ketone) | mg/kg | ND (0.026) | ND (0.99) | ND (0.02) | ND (1) | ND (0.02) | ND (0.018) | ND (0.021) | ND (0.95) | ND (1.1) | ND (1.1) | ND (0.99) | ND (0.97) | ND (0.89) | ND (0.02) | ND (0.02) | ND (0.021) |
| 2-Hexanone | mg/kg | ND (0.026) | ND (0.99) | ND (0.02) | ND (1) | ND (0.02) | ND (0.018) | ND (0.021) | ND (0.95) | ND (1.1) | ND (1.1) | ND (0.99) | ND (0.97) | ND (0.89) | ND (0.02) | ND (0.02) | ND (0.021) |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | ND (0.026) | ND (0.99) | ND (0.02) | ND (1) | ND (0.02) | ND (0.018) | ND (0.021) | ND (0.95) | ND (1.1) | ND (1.1) | ND (0.99) | ND (0.97) | ND (0.89) | ND (0.02) | ND (0.02) | ND (0.021) |
| Acetone | mg/kg | ND (0.026) | ND (0.99) | ND (0.02) | ND (1) | **0.02** | ND (0.018) | ND (0.021) | ND (0.95) | ND (1.1) | ND (1.1) | ND (0.99) | ND (0.97) | ND (0.89) | ND (0.02) | ND (0.02) | ND (0.021) |
| Benzene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Bromodichloromethane | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Bromoform | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Bromomethane (Methyl bromide) | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Carbon disulfide | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Carbon tetrachloride | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Chlorobenzene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Chloroethane | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Chloroform (Trichloromethane) | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Chloromethane (Methyl chloride) | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| cis-1,2-Dichloroethene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| cis-1,3-Dichloropropene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Cyclohexane | mg/kg | ND (0.013) | ND (0.49) | ND (0.01) | ND (0.5) | ND (0.01) | ND (0.0092) | ND (0.011) | ND (0.47) | ND (0.53) | ND (0.57) | ND (0.5) | ND (0.48) | ND (0.45) | ND (0.01) | ND (0.0099) | ND (0.011) |
| Dibromochloromethane | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Dichlorodifluoromethane (CFC-12) | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Ethylbenzene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Isopropyl benzene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Methyl acetate | mg/kg | ND (0.013) | ND (0.49) | ND (0.01) | ND (0.5) | ND (0.01) | ND (0.0092) | ND (0.011) | ND (0.47) | ND (0.53) | ND (0.57) | ND (0.5) | ND (0.48) | ND (0.45) | ND (0.01) | ND (0.0099) | ND (0.011) |
| Methyl cyclohexane | mg/kg | ND (0.013) | ND (0.49) | ND (0.01) | ND (0.5) | ND (0.01) | ND (0.0092) | ND (0.011) | ND (0.47) | ND (0.53) | ND (0.57) | ND (0.5) | ND (0.48) | ND (0.45) | ND (0.01) | ND (0.0099) | ND (0.011) |
| Methyl tert butyl ether (MTBE) | mg/kg | ND (0.026) | ND (0.99) | ND (0.02) | ND (1) | ND (0.02) | ND (0.018) | ND (0.021) | ND (0.95) | ND (1.1) | ND (1.1) | ND (0.99) | ND (0.97) | ND (0.89) | ND (0.02) | ND (0.02) | ND (0.021) |
| Methylene chloride | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Styrene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Tetrachloroethene | mg/kg | ND (0.0065) | **0.28** | ND (0.0051) | **0.48** | ND (0.0051) | ND (0.0046) | ND (0.0053) | **2.6 J** | **0.79 J** | **1.3** | **2.9** | **3** | **1.7** | **0.028** | **0.081** | **0.021 J** |
| Toluene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| trans-1,2-Dichloroethene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| trans-1,3-Dichloropropene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Trichloroethene | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Trichlorofluoromethane (CFC-11) | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Trifluorotrichloroethane (Freon 113) | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Vinyl chloride | mg/kg | ND (0.0065) | ND (0.25) | ND (0.0051) | ND (0.25) | ND (0.0051) | ND (0.0046) | ND (0.0053) | ND (0.24) | ND (0.26) | ND (0.29) | ND (0.25) | ND (0.24) | ND (0.22) | ND (0.0051) | ND (0.005) | ND (0.0053) |
| Xylenes (total) | mg/kg | ND (0.013) | ND (0.49) | ND (0.01) | ND (0.5) | ND (0.01) | ND (0.0092) | ND (0.011) | ND (0.47) | ND (0.53) | ND (0.57) | ND (0.5) | ND (0.48) | ND (0.45) | ND (0.01) | ND (0.0099) | ND (0.011) |

**ATTACHMENT C**

**SWMU 1 AND 2 PROGRESS SOIL SAMPLE ANALYTICAL RESULTS**
**RADIO MATERIALS CORPORATION**
**ATTICA, INDIANA**

| ***Sample Location:*** | | ***B-152R*** | ***B-152R*** | ***B-154R*** | ***B-154R*** | ***B-155R*** | ***B-155R*** | ***B-160R*** | ***B-160R*** | ***B-161R*** | ***B-161R*** | ***B-179R*** | ***B-179R*** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Sample ID:*** | | ***S-021511-NH-008*** | ***S-021511-NH-009*** | ***S-021511-NH-012*** | ***S-021511-NH-013*** | ***S-021511-NH-014*** | ***S-021511-NH-015*** | ***S-021511-NH-003*** | ***S-021511-NH-004*** | ***S-021511-NH-001*** | ***S-021511-NH-002*** | ***S-021511-NH-010*** | ***S-021511-NH-011*** |
| ***Sample Date:*** | | ***2/15/2011*** | ***2/15/2011*** | ***2/15/2011*** | ***2/15/2011*** | ***2/15/2011*** | ***2/15/2011*** | ***2/15/2011*** | ***2/15/2011*** | ***2/15/2011*** | ***2/15/2011*** | ***2/15/2011*** | ***2/15/2011*** |
| ***Sample Depth:*** | | ***(6-8) ft BGS*** | ***(10-12) ft BGS*** | ***(4-6) ft BGS*** | ***(14-16) ft BGS*** | ***(10-12) ft BGS*** | ***(18-20) ft BGS*** | ***(4-6) ft BGS*** | ***(14-16) ft BGS*** | ***(6-8) ft BGS*** | ***(22-24) ft BGS*** | ***(6-8) ft BGS*** | ***(12-14) ft BGS*** |
| | | ***(Duplicate)*** | | | | | | | | | | | |
| ***Parameters*** | ***Units*** | | | | | | | | | | | | |
| ***Volatile Organic Compounds*** | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,1,2,2-Tetrachloroethane | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,1,2-Trichloroethane | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,1-Dichloroethane | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,1-Dichloroethene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,2,4-Trichlorobenzene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | ND (0.0093) | ND (0.48) | ND (0.0095) | ND (0.53) | ND (0.0091) | ND (0.52) | ND (0.011) | ND (0.01) | ND (0.01) | ND (0.011) | ND (0.45) | ND (0.57) |
| 1,2-Dibromoethane | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,2-Dichlorobenzene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,2-Dichloroethane | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,2-Dichloropropane | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,3-Dichlorobenzene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 1,4-Dichlorobenzene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| 2-Butanone (Methyl ethyl ketone) | mg/kg | ND (0.019) | ND (0.96) | ND (0.019) | ND (1.1) | ND (0.018) | ND (1) | ND (0.022) | ND (0.02) | ND (0.02) | ND (0.023) | ND (0.9) | ND (1.1) |
| 2-Hexanone | mg/kg | ND (0.019) | ND (0.96) | ND (0.019) | ND (1.1) | ND (0.018) | ND (1) | ND (0.022) | ND (0.02) | ND (0.02) | ND (0.023) | ND (0.9) | ND (1.1) |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | ND (0.019) | ND (0.96) | ND (0.019) | ND (1.1) | ND (0.018) | ND (1) | ND (0.022) | ND (0.02) | ND (0.02) | ND (0.023) | ND (0.9) | ND (1.1) |
| Acetone | mg/kg | ND (0.019) | ND (0.96) | ND (0.019) | ND (1.1) | ND (0.018) | ND (1) | ND (0.022) | ND (0.02) | ND (0.02) | ND (0.023) | ND (0.9) | ND (1.1) |
| Benzene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Bromodichloromethane | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Bromoform | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Bromomethane (Methyl bromide) | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Carbon disulfide | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Carbon tetrachloride | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Chlorobenzene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Chloroethane | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Chloroform (Trichloromethane) | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Chloromethane (Methyl chloride) | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| cis-1,2-Dichloroethene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| cis-1,3-Dichloropropene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Cyclohexane | mg/kg | ND (0.0093) | ND (0.48) | ND (0.0095) | ND (0.53) | ND (0.0091) | ND (0.52) | ND (0.011) | ND (0.01) | ND (0.01) | ND (0.011) | ND (0.45) | ND (0.57) |
| Dibromochloromethane | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Dichlorodifluoromethane (CFC-12) | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Ethylbenzene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Isopropyl benzene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Methyl acetate | mg/kg | ND (0.0093) | ND (0.48) | ND (0.0095) | ND (0.53) | ND (0.0091) | ND (0.52) | ND (0.011) | ND (0.01) | ND (0.01) | ND (0.011) | ND (0.45) | ND (0.57) |
| Methyl cyclohexane | mg/kg | ND (0.0093) | ND (0.48) | ND (0.0095) | ND (0.53) | ND (0.0091) | ND (0.52) | ND (0.011) | ND (0.01) | ND (0.01) | ND (0.011) | ND (0.45) | ND (0.57) |
| Methyl tert butyl ether (MTBE) | mg/kg | ND (0.019) | ND (0.96) | ND (0.019) | ND (1.1) | ND (0.018) | ND (1) | ND (0.022) | ND (0.02) | ND (0.02) | ND (0.023) | ND (0.9) | ND (1.1) |
| Methylene chloride | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Styrene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Tetrachloroethene | mg/kg | **0.0059 J** | **0.4** | **0.027** | **0.39** | **0.018** | **8.9** | **0.011** | **0.011** | ND (0.005) | **0.023** | **0.47** | **3.2** |
| Toluene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| trans-1,2-Dichloroethene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| trans-1,3-Dichloropropene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Trichloroethene | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Trichlorofluoromethane (CFC-11) | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Trifluorotrichloroethane (Freon 113) | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Vinyl chloride | mg/kg | ND (0.0047) | ND (0.24) | ND (0.0048) | ND (0.27) | ND (0.0046) | ND (0.26) | ND (0.0054) | ND (0.005) | ND (0.005) | ND (0.0056) | ND (0.23) | ND (0.28) |
| Xylenes (total) | mg/kg | ND (0.0093) | ND (0.48) | ND (0.0095) | ND (0.53) | ND (0.0091) | ND (0.52) | ND (0.011) | ND (0.01) | ND (0.01) | ND (0.011) | ND (0.45) | ND (0.57) |

<u>Notes</u>
J - Estimated Concentration
mg/kg - Milligrams per kilogram
ft BGS - Feet below ground surface
ND (0.013) - Not detected at quantitation limit in parentheses

# Attachment D

## Soil Analytical Results Summary

**ATTACHMENT D**

**SOIL ANALYTICAL RESULTS SUMMARY**
**RADIO MATERIALS CORPORATION**
**ATTICA, INDIANA**

| | | | | | |
|---|---|---|---|---|---|
| ***Sample Location:*** | | ***HA-1*** | ***HA-2*** | ***HA-3*** | ***HA-4*** |
| ***Sample ID:*** | | ***S-021611-NH-029*** | ***S-021611-NH-030*** | ***S-021611-NH-031*** | ***S-021611-NH-032*** |
| ***Sample Date:*** | | ***2/16/2011*** | ***2/16/2011*** | ***2/16/2011*** | ***2/16/2011*** |
| ***Sample Depth:*** | | ***(0.5-1) ft BGS*** | ***(1-1.5) ft BGS*** | ***(0-0.5) ft BGS*** | ***(0.5-1) ft BGS*** |
| ***Parameters*** | ***Units*** | | | | |
| ***Volatile Organic Compounds*** | | | | | |
| 1,1,1-Trichloroethane | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,1,2,2-Tetrachloroethane | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,1,2-Trichloroethane | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,1-Dichloroethane | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,1-Dichloroethene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,2,4-Trichlorobenzene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | ND (0.47) | ND (1) | ND (0.5) | ND (0.51) |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,2-Dichlorobenzene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,2-Dichloroethane | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,2-Dichloropropane | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,3-Dichlorobenzene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 1,4-Dichlorobenzene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | ND (0.94) | ND (2) | ND (1) | ND (1) |
| 2-Hexanone | mg/kg | ND (0.94) | ND (2) | ND (1) | ND (1) |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | ND (0.94) | ND (2) | ND (1) | ND (1) |
| Acetone | mg/kg | ND (0.94) | ND (2) | ND (1) | ND (1) |
| Benzene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Bromodichloromethane | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Bromoform | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Bromomethane (Methyl bromide) | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Carbon disulfide | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Carbon tetrachloride | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Chlorobenzene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Chloroethane | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Chloroform (Trichloromethane) | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Chloromethane (Methyl chloride) | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| cis-1,2-Dichloroethene | mg/kg | ND (0.24) | **0.66** | ND (0.25) | ND (0.25) |
| cis-1,3-Dichloropropene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Cyclohexane | mg/kg | ND (0.47) | ND (1) | ND (0.5) | ND (0.51) |
| Dibromochloromethane | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Dichlorodifluoromethane (CFC-12) | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Ethylbenzene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Isopropyl benzene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Methyl acetate | mg/kg | ND (0.47) | ND (1) | ND (0.5) | ND (0.51) |
| Methyl cyclohexane | mg/kg | ND (0.47) | ND (1) | ND (0.5) | ND (0.51) |
| Methyl tert butyl ether (MTBE) | mg/kg | ND (0.94) | ND (2) | ND (1) | ND (1) |
| Methylene chloride | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Styrene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Tetrachloroethene | mg/kg | **1.3** | **7.5** | **4.8** | **1.8** |
| Toluene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| trans-1,2-Dichloroethene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| trans-1,3-Dichloropropene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Trichloroethene | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Trichlorofluoromethane (CFC-11) | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Trifluorotrichloroethane (Freon 113) | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Vinyl chloride | mg/kg | ND (0.24) | ND (0.5) | ND (0.25) | ND (0.25) |
| Xylenes (total) | mg/kg | ND (0.47) | ND (1) | ND (0.5) | ND (0.51) |