

December 18, 2015

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Subject: Soil Stockpile Characterization Report of RAVN Combined Stockpile at Alaska Soil Recycling, 2301 Spar Avenue in Anchorage, Alaska.
RAVN Air ADEC Spill Number: 15239929501

Mr. Weimer:

INTRODUCTION

On behalf of NRC and Alaska Soil Recycling (ASR), Restoration Science & Engineering, LLC (RSE) is providing the following Stockpile Characterization Report regarding the soil stockpiled at the ASR Facility located at 2301 Spar Avenue in Anchorage, Alaska. The soil originated from corrective action activities for the jet fuel release at the RAVN Alaska's aircraft maintenance facility located at the Ted Stevens Anchorage International Airport.

OBJECTIVES

The goal of this sampling effort was to characterize the stockpiled soil to determine if detectable concentrations of chlorinated solvents remain in the soil to determine if it can be thermally treated at ASR per Alaska Department of Environmental Conservation (ADEC) permit requirements.

BACKGROUND

During corrective action activities for the RAVN Air jet fuel release, impacted soil was direct-hauled to ASR under ADEC transport and disposal approval. The excavation of impacted soil took place over the course of 9 days, with a total of 1,022.01 tons of soil transported to ASR. Prior to the discovery of Tetrachloroethene (PCE) and Trichloroethene (TCE) impacts, the soil was transported, stockpiled, and blended with an aggregated 858.73 tons of hydrocarbon-impacted soils from various other ASR customers. Due to blending, the stockpile at ASR, a single stockpile of 1,900 tons of impacted soil that required further characterized prior to thermal treatment due to the potential presence of chlorinated solvents.

The stockpiled soil is comprised of soil originating from 15 different projects, including the RAVN Air jet fuel spill soil. Details for each project comingled with the RAVN Air soil and associated Contaminants of Potential Concern (COPCs) were included in the ADEC approved Soil Stockpile Characterization Work Plan REV 1.0, dated December 10, 2015.

STOCKPILE SAMPLING METHODS

The combined stockpile was estimated to be approximately 1,900 tons (1,300 cubic yards), and was broken into nine (9) smaller sub-stockpiles (decision units) consisting of approximately 140-150 cubic yards each. ASR relocated all nine (9) stockpiles to the concrete pad, where to the greatest extent practicable, the soil was segregated into the smaller decision units based on the appearance and soil type with the attempt to separate the RAVN soil from the other project soils. Due to little variation in soil types, segregation of soil by observation was not practicable. RSE field stockpile measurements estimated the stockpiles to range between 120 cubic yards to 211 cubic yards, totaling approximately 1,375 cubic yards of soil.

Field Screening and Analytical Sampling Methodology

Field screening soil samples were collected from discrete locations from spatially representative locations throughout each stockpile at a minimum of 18-inch depths, distributed horizontally and vertically. A front end dozer was used to expose areas of the stockpiles to obtain field screening samples within the stockpile.

Field screening samples were placed into a Ziploc™ quart-sized bag, and warmed to approximately 60° F prior to screening. RSE used a RAE Systems MiniRAE Lite PID calibrated to 100 parts per million by volume (ppmv) to measure the headspace inside the quart-sized Ziploc™ bag for ionization potential of petroleum hydrocarbon related compounds. Each field screening sample was collected using a clean stainless steel spoon. RSE field personnel noted the sample ID, location, soil type using the Unified Soil Classification System (USCS) and PID reading for each sample collected.

All soil samples were collected by RSE ADEC qualified environmental professionals and in accordance with the ADEC approved work plan, dated December 10, 2015. Field screening and laboratory sample frequencies were collected based on the single 1,300 cubic yard stockpile in accordance with the May 2010 ADEC Draft Field Sampling Guidance shown below.

Table 1 – Soil Field Screening and Laboratory Sample Frequency for Excavated Soil

By Volume (cubic yards)	Number of Screening Samples	Associated Number of Laboratory Samples
0 - 10	5	1
11 - 50	5	2
51 - 100	1 per 10 cy	3
More than 100	1 per 10 cubic yards, or as the ADEC determines necessary	3 samples, plus one sample for each additional 200 cubic yards, or portion thereof, or as the ADEC determines necessary

The field screening sample locations with the highest PID reading per stockpile decision unit were submitted for analysis. The analytical samples were collected from the same location and depth of the highest PID screening result from each stockpile decision unit. RSE collected each analytical soil sample using a clean stainless steel spoon to place the soil into method-specific containers provided by the contract laboratory. The follow-on laboratory sample were collected from undisturbed soil from

immediately adjacent and at the same depth where the field screening sample was collected. Samples selected for laboratory analyses will be immediately containerized and preserved upon collection without exception. Samples were analyzed for VOCs as shown in Table 2. The lab sample location soil was also subjected to additional field screening after the lab sample was collected.

Table 2 – Laboratory Sample COPCs, Laboratory Methods, and Sample Container Requirements

COPC	ADEC-Approved Lab Method	Container Type	Preservation	Temperature	Holding Time
Volatile Organic Compounds	EPA 8260C	4 oz. amber glass	MeOH	4° C to ± 2° C	14 days
Percent Solids	SM21 2540G	4 oz. amber glass	None	4° C to ± 2° C	14 days

Soil samples were placed into a cooler packed with gel-ice and maintained between 2° and 6° C. RSE field personnel noted the closure sample ID, location, sample time, and USCS soil-type. All analytical soil samples were transported under chain-of-custody (COC) to SGS North America Environmental Laboratory in Anchorage, Alaska for analyses. Each sample was analyzed for COPCs in accordance with Table 2.

STOCKPILE FIELD SCREENING AND SAMPLING RESULTS

RSE field personnel completed the soil stockpile characterization sampling on December 14 and 15, 2015. The nine (9) stockpiles range between 120 cubic yards to 211 cubic yards, with a range of 12 to 22 field screening samples per stockpile. Stockpile characterization samples consisted of nine (9) samples collected (one per stockpile decision unit) per the frequencies outlined in Table 1. All PID field screening results are presented in Table B1 and analytical results are presented in Table B2 in Attachment B.

Soil throughout all the nine (9) stockpiles appeared to be silt and fine sand with gravel. PID results from the field screening samples collected throughout the stockpiles ranged from 38.7 ppmv (stockpile 9) to 935 ppmv (stockpile 5). In total, nine (9) characterization samples were collected from the nine (9) stockpiles and one (1) blind field duplicated was collected; sample RVN-X was collected as a blind duplicate of sample RVN-3-10. The samples were analyzed for VOCs to evaluate chlorinated compound concentrations in the soil.

Table 3 – Contaminants of Potential Concern and ADEC Method 2 – Soil Cleanup Levels for Migration to Groundwater (18 AAC 75 Table B1 and Table B2)

COPC	COPC Abbreviation	ADEC-Approved Lab Method	ADEC Method 2 Cleanup Level
Volatile Organic Compounds	VOCs	EPA 8260C	Varies (PCE: 24 ug/Kg) (TCE: 20 ug/Kg)

All nine stockpile samples yielded VOC concentrations of Tetrachloroethene (PCE) above the ADEC Method 2 cleanup levels of 24 ug/Kg. PCE concentrations ranged between 26.3 ug/Kg (RVN-5-13) to 63.2 ug/Kg (RVN-6-2). VOC concentrations of Trichloroethene (TCE) were either undetected or below the ADEC Method 2 cleanup levels of 20 ug/Kg. Sample RVN-8-10 yielded 15.2 ug/Kg concentration of TCE, all other samples were non-detect.

QUALITY ASSURANCE AND QUALITY CONTROL

RSE field personnel collected each soil sample in general accordance with applicable ADEC regulation and guidance documents. One field duplicate sample (RVN-X a duplicate of RVN-3-10) was collected and submitted blind to the contract laboratory collected for VOCs analyses. The sample cooler was transported with a temperature blank and one (1) trip blank for quality assurance purposes. A completed ADEC Laboratory Review Checklist for the Laboratory Results is provided in Attachment D.

INVESTIGATIVE DERIVED WASTE

Consumables such as plastic bags, liner material, gloves and used jars were disposed of in appropriate trash receptacles. Non-consumables such as spoons and other field equipment were decontaminated using Alconox and hot water at RSE's equipment room.

TEMPORARY STORAGE, TREATMENT OR DISPOSAL OF IMPACTED SOIL

The stockpiled soils currently remains segregated in the nine (9) stockpiles. ASR would like approval to consolidate the stockpiles back into one large stockpile for temporary storage. One stockpile is proposed to remain segregated for potential treatment at ASR pending work plan approval.

CONCLUSIONS

The soil stockpile characterization effort determined all stockpile decision units exhibited concentrations of the PCE that were greater than the ADEC Method 2 Cleanup Levels for migration to groundwater. All other VOCs in the soil were either not detectable, or were less than the ADEC Method 2 Cleanup Levels.

Please contact David Nyman at (907) 278-1023 ext. 103, if you have any questions or comments to this workplan. This work plan was prepared by an ADEC Qualified Environmental Professional in accordance with 18 AAC 75/78.



David Nyman, PE
Restoration Science & Engineering, LLC



Colette Brandt, Environmental Scientist
Restoration Science & Engineering, LLC

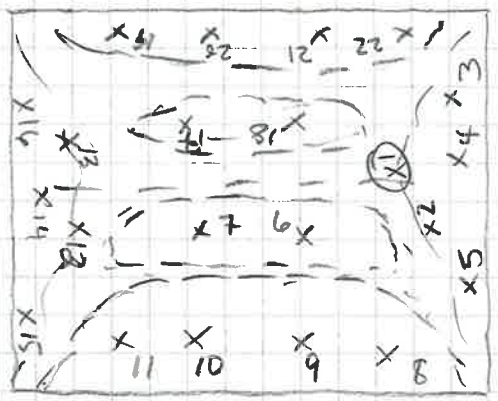
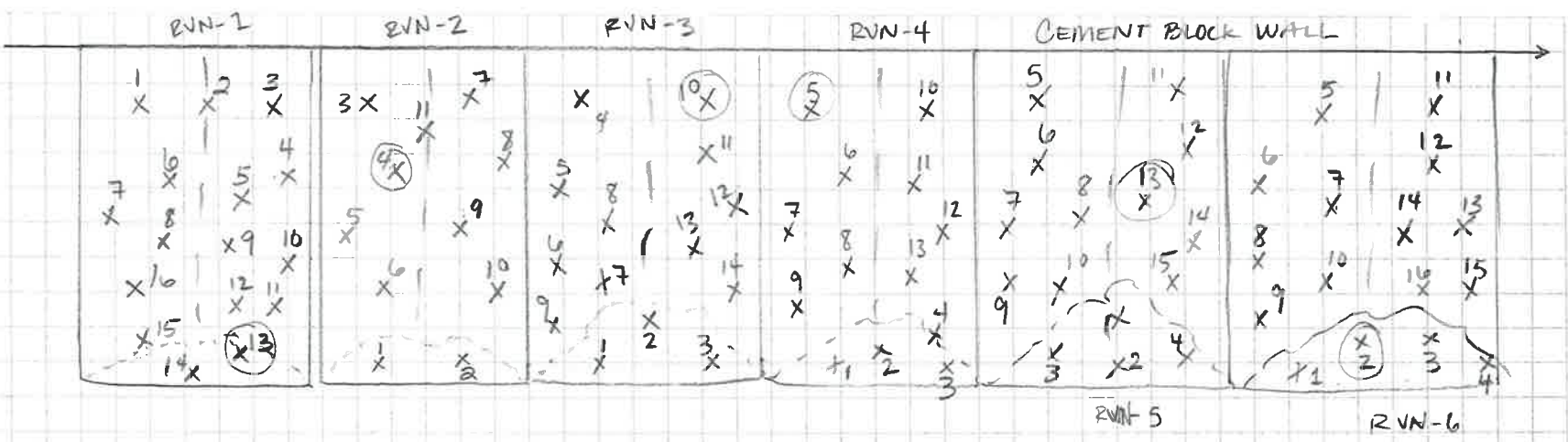
Attachments

- Attachment A: Stockpile Sampling Location Sketch
- Attachment B: Data Tables
- Attachment C: Select Site Photographs and field notes
- Attachment D: ADEC Data Quality Review Checklist
Laboratory Data Report

ATTACHMENT A

Stockpile Sampling Location Sketch

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N



RVN-9

RVN-8

RVN-7

STOCKPILE SAMPLE LOCATION SKETCH

NRC RAINN SOIL STOCKPILE CHARACTERIZATION AT ASD

1 cell = 3'

DEC 14-15, 2015

ATTACHMENT B

Laboratory Data Tables

**TABLE B1
PHOTO IONIZATION DETECTOR FIELD SCREENING
NRC RAVN AIR SOIL STOCKPILE CHARACTERIZATION
DECEMBER 2015**

PHOTO IONIZATION DETECTOR FIELD SCREENING				
SAMPLE ID	DATE	PID RESULT	NOTES	LABORATORY SAMPLE COLLECTED
		(PPMV)		
RVN-1-1	12/14/2015	331.0	Drk Brn Silty Sand with Gravel	
RVN-1-2	12/14/2015	365.0	Drk Brn Silty Sand with Gravel	
RVN-1-3	12/14/2015	331.0	Drk Brn Silty Sand with Gravel	
RVN-1-4	12/14/2015	220.0	Drk Brn Silty Sand with Gravel	
RVN-1-5	12/14/2015	204.0	Drk Brn Silty Sand with Gravel	
RVN-1-6	12/14/2015	301.1	Drk Brn Silty Sand with Gravel	
RVN-1-7	12/14/2015	395.0	Drk Brn Silty Sand with Gravel	
RVN-1-8	12/14/2015	402.5	Drk Brn Silty Sand with Gravel	
RVN-1-9	12/14/2015	221.6	Drk Brn Silty Sand with Gravel	
RVN-1-10	12/14/2015	365.0	Drk Brn Silty Sand with Gravel	
RVN-1-11	12/14/2015	272.0	Drk Brn Silty Sand with Gravel	
RVN-1-12	12/14/2015	172.1	Drk Brn Silty Sand with Gravel	
RVN-1-13	12/14/2015	423.0	Drk Brn Silty Sand with Gravel	X
RVN-1-14	12/14/2015	202.0	Drk Brn Silty Sand with Gravel	
RVN-1-15	12/14/2015	183.6	Drk Brn Silty Sand with Gravel	
RVN-1-16	12/14/2015	309.0	Drk Brn Silty Sand with Gravel	
RVN-2-1	12/14/2015	317.4	Drk Brn Silty Sand with Gravel	
RVN-2-2	12/14/2015	252	Drk Brn Silty Sand with Gravel	
RVN-2-3	12/14/2015	327	Drk Brn Silty Sand with Gravel	
RVN-2-4	12/14/2015	572.0	Drk Brn Silty Sand with Gravel	X
RVN-2-5	12/14/2015	327.0	Drk Brn Silty Sand with Gravel	
RVN-2-6	12/14/2015	188.0	Drk Brn Silty Sand with Gravel	
RVN-2-7	12/14/2015	277.7	Drk Brn Silty Sand with Gravel	
RVN-2-8	12/14/2015	261.0	Drk Brn Silty Sand with Gravel	
RVN-2-9	12/14/2015	375.9	Drk Brn Silty Sand with Gravel	
RVN-2-10	12/14/2015	312.0	Drk Brn Silty Sand with Gravel	
RVN-2-11	12/14/2015	289.4	Drk Brn Silty Sand with Gravel	
RVN-2-12	12/14/2015	351.0	Drk Brn Silty Sand with Gravel	
RVN-3-1	12/14/2015	172.2	Drk Brn Silty Sand with Gravel	
RVN-3-2	12/14/2015	366.5	Drk Brn Silty Sand with Gravel	
RVN-3-3	12/14/2015	378.0	Drk Brn Silty Sand with Gravel	
RVN-3-4	12/14/2015	702.3	Drk Brn Silty Sand with Gravel	
RVN-3-5	12/14/2015	330.7	Drk Brn Silty Sand with Gravel	
RVN-3-6	12/14/2015	317.0	Drk Brn Silty Sand with Gravel	
RVN-3-7	12/14/2015	703.0	Drk Brn Silty Sand with Gravel	
RVN-3-8	12/14/2015	218.0	Drk Brn Silty Sand with Gravel	
RVN-3-9	12/14/2015	283	Drk Brn Silty Sand with Gravel	
RVN-3-10	12/14/2015	706.8	Drk Brn Silty Sand with Gravel	X
RVN-3-11	12/14/2015	483.0	Drk Brn Silty Sand with Gravel	
RVN-3-12	12/14/2015	318.0	Drk Brn Silty Sand with Gravel	
RVN-3-13	12/14/2015	325.5	Drk Brn Silty Sand with Gravel	
RVN-3-14	12/14/2015	362.0	Drk Brn Silty Sand with Gravel	

PHOTO IONIZATION DETECTOR FIELD SCREENING				
SAMPLE ID	DATE	PID RESULT	NOTES	LABORATORY SAMPLE COLLECTED
		(PPMV)		
RVN-4-1	12/14/2015	319.4	Drk Brn Silty Sand with Gravel	
RVN-4-2	12/14/2015	271.0	Drk Brn Silty Sand with Gravel	
RVN-4-3	12/14/2015	316.5	Drk Brn Silty Sand with Gravel	
RVN-4-4	12/14/2015	115.7	Drk Brn Silty Sand with Gravel	
RVN-4-5	12/14/2015	547	Drk Brn Silty Sand with Gravel	X
RVN-4-6	12/14/2015	317	Drk Brn Silty Sand with Gravel	
RVN-4-7	12/14/2015	336	Drk Brn Silty Sand with Gravel	
RVN-4-8	12/14/2015	520	Drk Brn Silty Sand with Gravel	
RVN-4-9	12/14/2015	193	Drk Brn Silty Sand with Gravel	
RVN-4-10	12/14/2015	306	Drk Brn Silty Sand with Gravel	
RVN-4-11	12/14/2015	320	Drk Brn Silty Sand with Gravel	
RVN-4-12	12/14/2015	354	Drk Brn Silty Sand with Gravel	
RVN-4-13	12/14/2015	362	Drk Brn Silty Sand with Gravel	
RVN-5-1	12/14/2015	291	Drk Brn Silty Sand with Gravel	
RVN-5-2	12/14/2015	601	Drk Brn Silty Sand with Gravel	
RVN-5-3	12/14/2015	386.4	Drk Brn Silty Sand with Gravel	
RVN-5-4	12/14/2015	290	Drk Brn Silty Sand with Gravel	
RVN-5-5	12/14/2015	366	Drk Brn Silty Sand with Gravel	
RVN-5-6	12/14/2015	256	Drk Brn Silty Sand with Gravel	
RVN-5-7	12/14/2015	276	Drk Brn Silty Sand with Gravel	
RVN-5-8	12/14/2015	244.6	Drk Brn Silty Sand with Gravel	
RVN-5-9	12/14/2015	284	Drk Brn Silty Sand with Gravel	
RVN-5-10	12/14/2015	325	Drk Brn Silty Sand with Gravel	
RVN-5-11	12/14/2015	349.2	Drk Brn Silty Sand with Gravel	
RVN-5-12	12/14/2015	205	Drk Brn Silty Sand with Gravel	
RVN-5-13	12/14/2015	935	Drk Brn Silty Sand with Gravel	X
RVN-5-14	12/14/2015	212	Drk Brn Silty Sand with Gravel	
RVN-5-15	12/14/2015	265.6	Drk Brn Silty Sand with Gravel	
RVN-6-1	12/14/2015	156.0	Drk Brn Sandy Silt with Gravel	
RVN-6-2	12/14/2015	292.0	Drk Brn Silty Sand with Gravel	X
RVN-6-3	12/14/2015	286.1	Drk Brn Sandy Silt with Gravel	
RVN-6-4	12/14/2015	122.7	Drk Brn Sandy Silt with Gravel	
RVN-6-5	12/14/2015	220.8	Drk Brn Silty Sand with Gravel	
RVN-6-6	12/14/2015	251.0	Drk Brn Silty Sand with Gravel	
RVN-6-7	12/14/2015	120.4	Drk Brn Silty Sand with Gravel	
RVN-6-8	12/14/2015	114.0	Drk Brn Silty Sand with Gravel	
RVN-6-9	12/14/2015	219.8	Drk Brn Silty Sand with Gravel	
RVN-6-10	12/14/2015	175.0	Drk Brn Silty Sand with Gravel	
RVN-6-11	12/14/2015	241.0	Drk Brn Silty Sand with Gravel	
RVN-6-12	12/14/2015	232.0	Drk Brn Silty Sand with Gravel	
RVN-6-13	12/14/2015	193.8	Drk Brn Silty Sand with Gravel	
RVN-6-14	12/14/2015	214.1	Drk Brn Silty Sand with Gravel	
RVN-6-15	12/14/2015	202.0	Drk Brn Silty Sand with Gravel	
RVN-6-16	12/14/2015	193.0	Drk Brn Silty Sand with Gravel	

NOTES:

- 1) All field screening performed using a MiniRae Lite photoionization detector (PID) calibrated to 100 ppmv isobutylene.
- 2) Field screening samples were warmed to approximately 60 °F before measuring headspace.
- 3) The first number in the Sample ID refers to the stockpile and the second number refers to the screening sample location (i.e. RVN-2-4 is stockpile 2, field screening location 4)
- 4) RVN-X is the duplicate of RVN-3-10

TABLE 1 CONTINUED
PHOTO IONIZATION DETECTOR FIELD SCREENING
NRC RAVN AIR SOIL STOCKPILE CHARACTERIZATION
DECEMBER 2015

PHOTO IONIZATION DETECTOR FIELD SCREENING				
SAMPLE ID	DATE	PID RESULT	NOTES	LABORATORY SAMPLE COLLECTED
		(PPMV)		
RVN-7-1	12/15/2015	359.8	Drk Brn Silty Sand with Gravel	X
RVN-7-2	12/15/2015	236.6	Drk Brn Silty Sand with Gravel	
RVN-7-3	12/15/2015	136.9	Drk Brn Silty Sand with Gravel	
RVN-7-4	12/15/2015	257.8	Drk Brn Silty Sand with Gravel	
RVN-7-5	12/15/2015	149.9	Drk Brn Sandy Silt with Gravel	
RVN-7-6	12/15/2015	281.7	Drk Brn Silty Sand with Gravel	
RVN-7-7	12/15/2015	147.4	Drk Brn Silty Sand with Gravel	
RVN-7-8	12/15/2015	203.5	Drk Brn Silty Sand with Gravel	
RVN-7-9	12/15/2015	296.6	Drk Brn Silty Sand with Gravel	
RVN-7-10	12/15/2015	214.5	Drk Brn Sandy Silt with Gravel	
RVN-7-11	12/15/2015	245.6	Drk Brn Silty Sand with Gravel	
RVN-7-12	12/15/2015	197.4	Drk Brn Silty Sand with Gravel	
RVN-7-13	12/15/2015	240.3	Drk Brn Silty Sand with Gravel	
RVN-7-14	12/15/2015	200.0	Drk Brn Silty Sand with Gravel	
RVN-7-15	12/15/2015	247.0	Drk Brn Silty Sand with Gravel	
RVN-7-16	12/15/2015	276.6	Drk Brn Silty Sand with Gravel	
RVN-7-17	12/15/2015	256.3	Drk Brn Silty Sand with Gravel	
RVN-7-18	12/15/2015	302.8	Drk Brn Silty Sand with Gravel	
RVN-8-1	12/15/2015	358.7	Drk Brn Silty Sand with Gravel	
RVN-8-2	12/15/2015	223.4	Drk Brn Silty Sand with Gravel	
RVN-8-3	12/15/2015	357.4	Drk Brn Silty Sand with Gravel	
RVN-8-4	12/15/2015	287.4	Drk Brn Silty Sand with Gravel	
RVN-8-5	12/15/2015	348.7	Drk Brn Silty Sand with Gravel	
RVN-8-6	12/15/2015	338.8	Drk Brn Silty Sand with Gravel	
RVN-8-7	12/15/2015	301.7	Drk Brn Silty Sand with Gravel	
RVN-8-8	12/15/2015	351.6	Drk Brn Silty Sand with Gravel	
RVN-8-9	12/15/2015	359.9	Drk Brn Silty Sand with Gravel	
RVN-8-10	12/15/2015	398.0	Drk Brn Silty Sand with Gravel	X
RVN-8-11	12/15/2015	376.0	Drk Brn Silty Sand with Gravel	
RVN-8-12	12/15/2015	371.1	Drk Brn Silty Sand with Gravel	
RVN-8-13	12/15/2015	249.6	Drk Brn Silty Sand with Gravel	
RVN-8-14	12/15/2015	254.1	Drk Brn Silty Sand with Gravel	
RVN-8-15	12/15/2015	198.3	Drk Brn Silty Sand with Gravel	
RVN-8-16	12/15/2015	253.3	Drk Brn Silty Sand with Gravel	
RVN-8-17	12/15/2015	330.6	Drk Brn Silty Sand with Gravel	
RVN-8-18	12/15/2015	270.0	Drk Brn Silty Sand with Gravel	

PHOTO IONIZATION DETECTOR FIELD SCREENING				
SAMPLE ID	DATE	PID RESULT	NOTES	LABORATORY SAMPLE COLLECTED
		(PPMV)		
RVN-9-1	12/15/2015	295.6	Drk Brn Silty Sand with Gravel	X
RVN-9-2	12/15/2015	255.0	Drk Brn Sandy Silt with Gravel	
RVN-9-3	12/15/2015	248.3	Drk Brn Silty Sand with Gravel	
RVN-9-4	12/15/2015	168.0	Drk Brn Silty Sand with Gravel	
RVN-9-5	12/15/2015	235.4	Drk Brn Silty Sand with Gravel	
RVN-9-6	12/15/2015	85.0	Drk Brn Silty Sand with Gravel	
RVN-9-7	12/15/2015	162.8	Drk Brn Silty Sand with Gravel	
RVN-9-8	12/15/2015	160.6	Drk Brn Silty Sand with Gravel	
RVN-9-9	12/15/2015	143.5	Drk Brn Silty Sand with Gravel	
RVN-9-10	12/15/2015	169.1	Drk Brn Silty Sand with Gravel	
RVN-9-11	12/15/2015	38.7	Drk Brn Sandy Silt with Gravel	
RVN-9-12	12/15/2015	140.0	Drk Brn Silty Sand with Gravel	
RVN-9-13	12/15/2015	200.5	Drk Brn Silty Sand with Gravel	
RVN-9-14	12/15/2015	104.8	Drk Brn Silty Sand with Gravel	
RVN-9-15	12/15/2015	142.0	Drk Brn Silty Sand with Gravel	
RVN-9-16	12/15/2015	107.1	Drk Brn Silty Sand with Gravel	
RVN-9-17	12/15/2015	104.7	Drk Brn Silty Sand with Gravel	
RVN-9-18	12/15/2015	120.6	Drk Brn Sandy Silt with Gravel	
RVN-9-19	12/15/2015	106.7	Drk Brn Silty Sand with Gravel	
RVN-9-20	12/15/2015	154.0	Drk Brn Silty Sand with Gravel	
RVN-9-21	12/15/2015	220.7	Drk Brn Silty Sand with Gravel	
RVN-9-22	12/15/2015	244.5	Drk Brn Silty Sand with Gravel	

NOTES:

- 1) All field screening performed using a MiniRae Lite photoionization detector (PID) calibrated to 100 ppmv isobutylene.
- 2) Field screening samples were warmed to approximately 60 °F before measuring headspace.
- 3) The first number in the Sample ID refers to the stockpile and the second number refers to the screening sample location (i.e. RVN-2-4 is stockpile 2, field screening location 4)
- 4) RVN-X is the duplicate of RVN-3-10

TABLE B2
VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN SOIL
NRC RAVN AIR SOIL STOCKPILE CHARACTERIZATION
DECEMBER 2015

VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN SOIL						
SAMPLE ID	RVN-1-13	RVN-2-4	RVN-3-10	RVN-X	RVN-4-5	ADEC METHOD 2 MIGRATION TO GROUNDWATER SOIL CLEANUP LEVELS (µg/Kg)
DATE	12/14/15	12/14/2015	12/15/2015	12/16/2015	12/17/2015	
UNITS	(µg/Kg)	(µg/Kg)	(µg/Kg)	(µg/Kg)	(µg/Kg)	
PERCENT SOLIDS (%)	85.4	83.3	83.6	82.3	84.9	
1,1,1,2-Tetrachloroethane	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	--
1,1,1-Trichloroethane	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	820
1,1,2,2-Tetrachloroethane	12.8 U	13.1 U	11.9 U	13.9 U	12.3 U	17
1,1,2-Trichloroethane	10.2 U	10.5 U	9.52 U	11.1 U	9.86 U	18
1,1-Dichloroethane	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	25,000
1,1-Dichloroethene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	--
1,1-Dichloropropene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	--
1,2,3-Trichlorobenzene	51.1 U	52.4 U	47.6 U	55.5 U	49.3 U	--
1,2,3-Trichloropropane	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	0.53
1,2,4-Trichlorobenzene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	850
1,2,4-Trimethylbenzene	1880	1000	1510	1570	1510	23,000
1,2-Dibromo-3-chloropropane	102 U	105 U	95.2 U	111 U	98.6 U	--
1,2-Dibromoethane	10.2 U	10.5 U	9.52 U	11.1 U	9.86 U	0.16
1,2-Dichlorobenzene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	5,100
1,2-Dichloroethane	10.2 U	10.5 U	9.52 U	11.1 U	9.86 U	16
1,2-Dichloropropane	10.2 U	10.5 U	9.52 U	11.1 U	9.86 U	18
1,3,5-Trimethylbenzene	1500	816	1010	1150	982	23,000
1,3-Dichlorobenzene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	28,000
1,3-Dichloropropane	10.2 U	10.5 U	9.52 U	11.1 U	9.86 U	--
1,4-Dichlorobenzene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	640
2,2-Dichloropropane	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	--
2-Butanone (MEK)	256 U	262 U	238 U	278 U	247 U	59,000
2-Chlorotoluene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	--
2-Hexanone	256 U	262 U	238 U	278 U	247 U	--
4-Chlorotoluene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	--
4-Isopropyltoluene	201	112	161	160	133	--
4-Methyl-2-pentanone (MIBK)	256 U	262 U	238 U	278 U	247 U	8,100
Benzene	63.7	54.2	29.5	61.4	47.6	25
Bromobenzene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	--
Bromochloromethane	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	--
Bromodichloromethane	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	44
Bromoform	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	340
Bromomethane	205 U	210 U	190 U	222 U	197 U	160
Carbon disulfide	102 U	105 U	95.2 U	111 U	98.6 U	12,000
Carbon tetrachloride	12.8 U	13.1 U	11.9 U	13.9 U	12.3 U	23
Chlorobenzene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	630
Chloroethane	205 U	210 U	190 U	222 U	197 U	580,000
Chloroform	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	460
Chloromethane	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	210
cis-1,2-Dichloroethene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	240
cis-1,3-Dichloropropene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	--
Dibromochloromethane	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	32
Dibromomethane	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	--
Dichlorodifluoromethane	51.1 U	52.4 U	47.6 U	55.5 U	49.3 U	140,000
Ethylbenzene	145	35.4	48.8	71.9	96.6	6,900
Freon-113	102 U	105 U	95.2 U	111 U	98.6 U	--
Hexachlorobutadiene	51.1 U	52.4 U	47.6 U	55.5 U	49.3 U	120
Isopropylbenzene (Cumene)	66.5	36.7	53.6	56.1	68.3	51,000
Methylene chloride	102 U	105 U	95.2 U	111 U	98.6 U	16
Methyl-t-butyl ether	102 U	105 U	95.2 U	111 U	98.6 U	1,300
Naphthalene	1390	824	1300	1340	1330	20,000
n-Butylbenzene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	15,000
n-Propylbenzene	134	63.4	94.0	98.8	128	15,000
o-Xylene	594	268	374	450	424	63,000
P & M -Xylene	671	205	323	423	491	63,000
sec-Butylbenzene	166	101	142	134	128	12,000
Styrene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	960
tert-Butylbenzene	44.7	26.2 U	29.8	32.2	28.1	12,000
Tetrachloroethene	55.0	50.1	49.5	54.1	38.0	24
Toluene	123	69.4	46.4	98.6	106	6,500
trans-1,2-Dichloroethene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	370
trans-1,3-Dichloropropene	25.6 U	26.2 U	23.8 U	27.8 U	24.7 U	33
Trichloroethene	12.8 U	13.1 U	11.9 U	13.9 U	12.3 U	20
Trichlorofluoromethane	51.1 U	52.4 U	47.6 U	55.5 U	49.3 U	86,000
Vinyl acetate	102 U	105 U	95.2 U	111 U	98.6 U	--
Vinyl chloride	10.2 U	10.5 U	9.52 U	11.1 U	9.86 U	8.5
Xylenes (total)	1260	472	697	872	915	63,000

NOTES:

- 1) Volatile Organic Compounds (VOC) analysis by Method EPA 8260B.
- 2) Bold font indicates that contaminant concentrations were detected above the Detection Limit (DL).
- 4) Italicized values with a U flag indicate the analyte measured non-detectable at the DL, the value given is the Limit of Detection (LOD = 1/2 LOQ).
- 5) Light yellow highlighting indicates the analyte measured above ADEC Method 2 Migration to Groundwater Soil Cleanup Levels.
- 6) FT = feet; PPMV = parts per million by volume; µg/Kg = micrograms per kilogram; LOQ = limit of quantitation
- 7) RV-X is the duplicate of RV-3-10

TABLE B2 - VOC SAMPLE LOCATIONS CONTINUED
VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN SOIL
NRC RAVN AIR SOIL STOCKPILE CHARACTERIZATION
DECEMBER 2015

VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN SOIL							
SAMPLE ID	RVN-5-13	RVN-6-2	RVN-7-1	RVN-8-10	RVN-9-1	TRIP BLANK	ADEC METHOD 2 MIGRATION TO GROUNDWATER SOIL CLEANUP LEVELS (µg/Kg)
DATE	12/14/15	12/14/15	12/15/15	12/16/15	12/17/15		
UNITS	(µg/Kg)	(µg/Kg)	(µg/Kg)	(µg/Kg)	(µg/Kg)	(µg/Kg)	
PERCENT SOLIDS (%)	85.7	82.9	86.3	85.7	85.6		
1,1,1,2-Tetrachloroethane	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	--
1,1,1-Trichloroethane	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	820
1,1,2,2-Tetrachloroethane	13.3 U	16.8 U	12.0 U	14.4 U	12.8 U	12.3 U	17
1,1,2-Trichloroethane	10.6 U	13.5 U	9.62 U	11.5 U	10.2 U	9.82 U	18
1,1-Dichloroethane	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	25,000
1,1-Dichloroethene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	--
1,1-Dichloropropene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	--
1,2,3-Trichlorobenzene	53.0 U	67.3 U	48.1 U	57.4 U	51.2 U	49.1 U	--
1,2,3-Trichloropropane	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	0.53
1,2,4-Trichlorobenzene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	850
1,2,4-Trimethylbenzene	8070	3040	3400	73.2	242	49.1 U	23,000
1,2-Dibromo-3-chloropropane	106 U	135 U	96.2 U	115 U	102 U	98.2 U	--
1,2-Dibromoethane	10.6 U	13.5 U	9.62 U	11.5 U	10.2 U	9.82 U	0.16
1,2-Dichlorobenzene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	5,100
1,2-Dichloroethane	10.6 U	13.5 U	9.62 U	11.5 U	10.2 U	9.82 U	16
1,2-Dichloropropane	10.6 U	13.5 U	9.62 U	11.5 U	10.2 U	9.82 U	18
1,3,5-Trimethylbenzene	2820	1480	1340	384	305	24.5 U	23,000
1,3-Dichlorobenzene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	28,000
1,3-Dichloropropane	10.6 U	13.5 U	9.62 U	28.7 U	10.2 U	9.82 U	--
1,4-Dichlorobenzene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	640
2,2-Dichloropropane	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	--
2-Butanone (MEK)	265 U	336 U	241 U	287 U	256 U	245 U	59,000
2-Chlorotoluene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	--
2-Hexanone	265 U	336 U	241 U	287 U	256 U	245 U	--
4-Chlorotoluene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	--
4-Isopropyltoluene	400	237	143	34.2	37.1	24.5 U	--
4-Methyl-2-pentanone (MIBK)	265 U	336 U	214 U	287 U	256 U	245 U	8,100
Benzene	189	93.5	93.3	16.9	12.8 U	12.3 U	25
Bromobenzene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	--
Bromochloromethane	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	--
Bromodichloromethane	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	44
Bromoform	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	340
Bromomethane	212 U	269 U	192 U	230 U	205 U	196 U	160
Carbon disulfide	106 U	135 U	96.2 U	115 U	102 U	98.2 U	12,000
Carbon tetrachloride	13.3 U	16.8 U	12.0 U	14.4 U	12.8 U	12.3 U	23
Chlorobenzene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	630
Chloroethane	212 U	269 U	192 U	230 U	205 U	196 U	580,000
Chloroform	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	460
Chloromethane	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	210
cis-1,2-Dichloroethene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	240
cis-1,3-Dichloropropene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	--
Dibromochloromethane	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	32
Dibromomethane	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	--
Dichlorodifluoromethane	53.0 U	67.3 U	48.1 U	57.4 U	51.2 U	49.1 U	140,000
Ethylbenzene	441	156	400	28.7 U	25.9	24.5 U	6,900
Freon-113	106 U	135 U	96.2 U	115 U	102 U	98.2 U	--
Hexachlorobutadiene	53.0 U	67.3 U	48.1 U	57.4 U	51.2 U	49.1 U	120
Isopropylbenzene (Cumene)	311	125	104	28.7 U	25.6 U	24.5 U	51,000
Methylene chloride	106 U	135 U	96.2 U	115 U	102 U	98.2 U	16
Methyl-t-butyl ether	106 U	135 U	96.2 U	115 U	102 U	98.2 U	1,300
Naphthalene	5730	2510	1180	168	261	49.1 U	20,000
n-Butylbenzene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	15,000
n-Propylbenzene	764	237	259	28.7 U	28.7	24.5 U	15,000
o-Xylene	944	691	498	91.3	81.1	24.5 U	63,000
P & M -Xylene	1720	880	1190	78.4	108	49.1 U	63,000
sec-Butylbenzene	553	246	143	28.7 U	33.5	24.5 U	12,000
Styrene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	960
tert-Butylbenzene	55.7	42.4	43.8	28.7 U	25.6 U	24.5 U	12,000
Tetrachloroethene	26.3	63.2	34.2	49.1	31.5	12.3 U	24
Toluene	191	118	152	28.7 U	25.6 U	24.5 U	6,500
trans-1,2-Dichloroethene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	370
trans-1,3-Dichloropropene	26.5 U	33.6 U	24.1 U	28.7 U	25.6 U	24.5 U	33
Trichloroethene	13.3 U	16.8 U	12.0 U	15.2	12.8 U	12.3 U	20
Trichlorofluoromethane	53.0 U	67.3 U	48.1 U	57.4 U	51.2 U	49.1 U	86,000
Vinyl acetate	106 U	135 U	96.2 U	115 U	102 U	98.2 U	--
Vinyl chloride	10.6 U	13.5 U	9.62 U	11.5 U	10.2 U	9.82 U	8.5
Xylenes (total)	2660	1570	1690	170	189	73.6 U	63,000

NOTES:

- 1) Volatile Organic Compounds (VOC) analysis by Method EPA 8260B.
- 2) Bold font indicates that contaminant concentrations were detected above the Detection Limit (DL).
- 4) Italicized values with a U flag indicate the analyte measured non-detectable at the DL, the value given is the Limit of Detection (LOD = 1/2 LOQ).
- 5) Light yellow highlighting indicates the analyte measured above ADEC Method 2 Migration to Groundwater Soil Cleanup Levels.
- 6) FT = feet; PPMV = parts per million by volume; µg/Kg = micrograms per kilogram; LOQ = limit of quantitation

ATTACHMENT C

Select Site Photographs

Field Notes



Stockpile Decision Units RVN 1, 2, 3 and 4 (12.14.15)



Stockpile Decision Units RVN 5 and 6 (12.14.15)



Stockpile Decision Units RVN 7 and 8 (12.14.15)



Stockpile Decision Unit RVN 8 (12.14.15)



Stockpile Decision Unit RVN 9 (12.14.15)



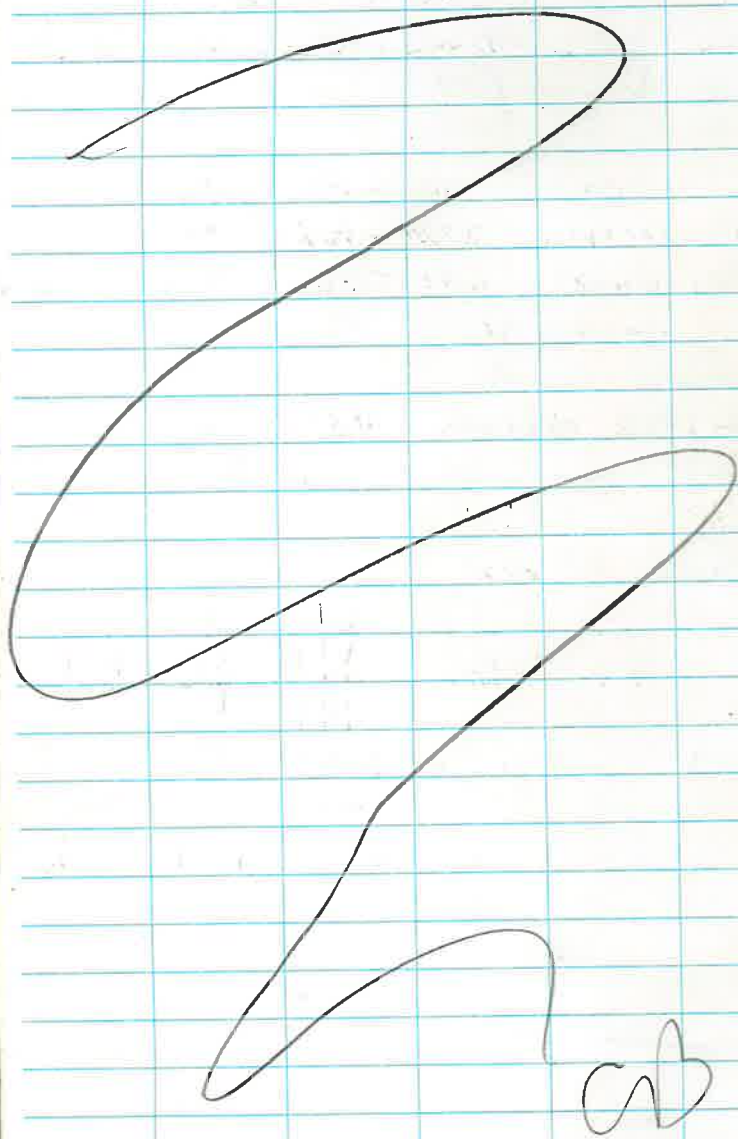
All Stockpile Decision Units – View North (12.15.15)



Stockpile Decision Unit RVN-1 – View West (12.14.15)



Stockpile RVN-7 – portion of stockpile opened up by equipment (12.15.15)



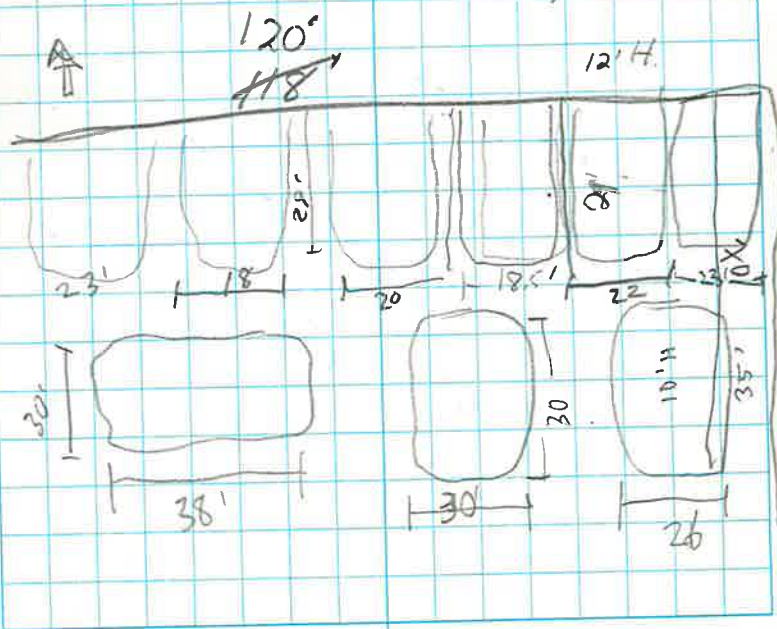
12/14/15 RAVN SOIL STOCKPILE

ONSITE @ ASR @ 1040 AM

STOCK PILE has been segregated into 9
Sub stock piles

ASR attempted to segregate by soil type
all stockpiles appear to be silty sand
w/gravel - will document soil types
by stockpile.

Stockpile naming RVN - Stockpile - PID
(1-9) (1-15)



Site in the Rain.

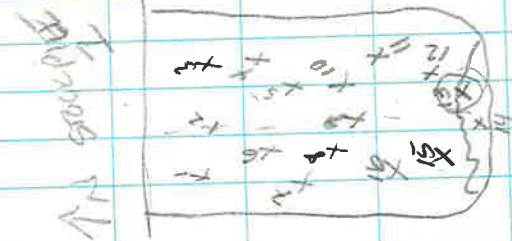
24

12/14/15 RAIN STOCKPILE

STARTING W/ STOCKPILE # 1

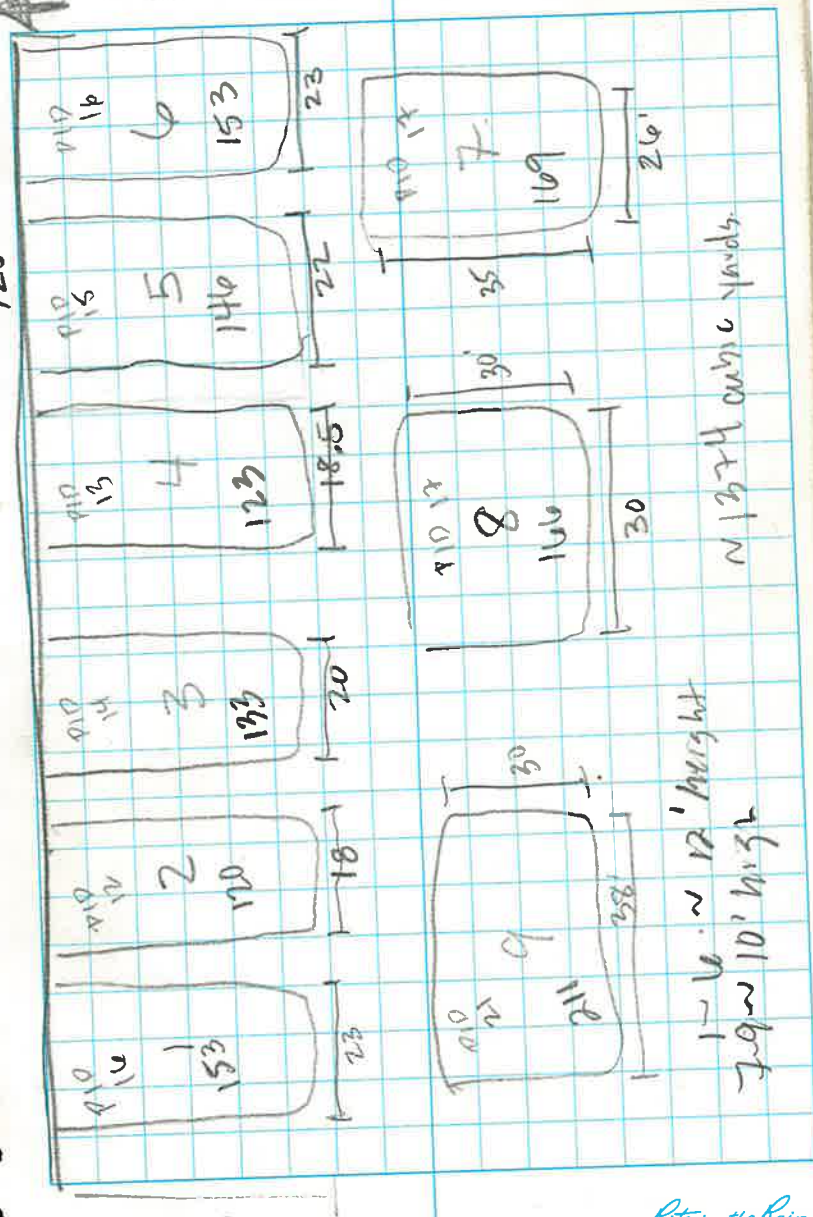
RVN-1-	PID	NOTES
-1	331	DRK BRN SILTY SAND W/ GRAVEL
-2	365	DRK BRN SILTY SAND W/ GRAVEL
-3	331	DRK BRN SILTY SAND W/ GRAVEL
-4	220	DRK BRN SILTY SAND W/ GRAVEL
-5	204	DRK BRN SILTY SAND W/ GRAVEL
-6	301.1	DRK BRN SILTY SAND W/ GRAVEL
-7	395.0	DRK BRN SILTY SAND W/ GRAVEL
-8	402.5	DRK BRN SILTY SAND W/ GRAVEL
-9	221.6	DRK BRN SILTY SAND W/ GRAVEL + SILTY CLUNK - MORE SILTY BUT SAND
-10	365	DRK BRN SILTY SAND W/ GRAVEL
-11	272	DRK BRN SILTY SAND W/ GRAVEL
-12	172.1	DRK BRN SILTY SAND W/ GRAVEL
RVN-1-13	423	DRK BRN SILTY SAND W/ GRAVEL
-14	202	DRK BRN SILTY SAND W/ GRAVEL
-15	183.6	DRK BRN SILTY SAND W/ GRAVEL
-16	309	DRK BRN SILTY SAND W/ GRAVEL

RE: RVN-1-13 333 DB SILTY SAND W/ GR.
Soil mostly silty sand w/ gravel



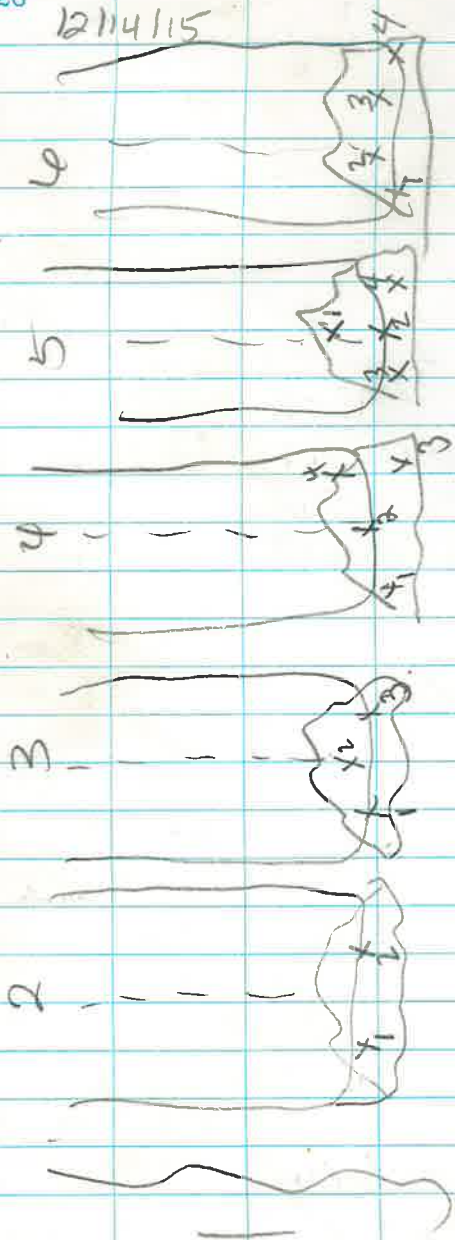
154476 RAIN STOCKPILE

12/14/25



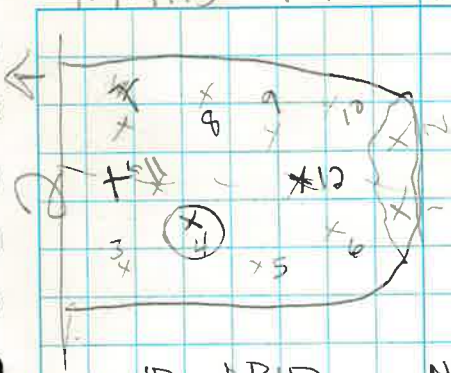
Rite in the Rain

12/14/15



Equipment opened up the S face of the
Stockpiles.

12/14/15 RAIN STOCKPILE



ID	PID	NOTES
RVN-2-1	317.4	DRK BRN SILTY SAND W/ GRAVEL
2-2	252	DRK BRN SILTY SAND W/ GRAVEL
2-3	327	DRK BRN SILTY SAND W/ GRAVEL
RVN-2-4	572	DRK BRN SILTY SAND W/ GRAVEL
2-5	327	DRK BRN SILTY SAND W/ GRAVEL
2-6	188	DRK BRN SILTY SAND W/ GRAVEL
2-7	277.7	DRK BRN SILTY SAND W/ GRAVEL
2-8	261	DRK BRN SILTY SAND W/ GR.
2-9	375.9	DRK BRN SILTY SAND W/ GRAVEL
2-10	312	DRK BRN SILTY SAND W/ GRAVEL
2-11	289.4	DRK BRN SILTY SAND W/ GRAVEL
2-12	351	DRK BRN SILTY SAND W/ GRAVEL
RVN-2-4	317	
RVN-2		→ SILTY SAND W/ GRAVEL

Rite in the Rain.

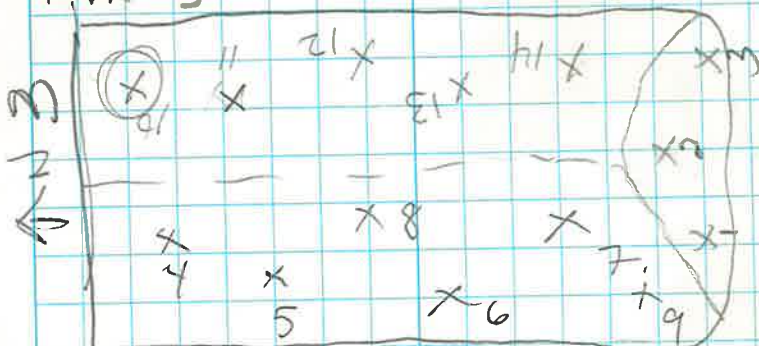
12/14

15-~~1476~~ 1476 RAIN STOCKPILE

RVN-ID	PID	NOTES
3-1	172.2	DRK BRN SILTY SAND W/ GRAVEL
3-2	366.5	DRK BRN SILTY SAND W/ GRAVEL
3-3	378	DRK BRN SILTY SAND W/ GRAVEL
4-1	319.4	DRK BRN SILTY SAND W/ GRAVEL
4-2	271	DRK BRN SILTY SAND W/ GRAVEL
4-3	316.5	DRK BRN SILTY SAND W/ GRAVEL
4-4	115.7	DRK BRN SANDY SILT W/ GRAVEL
5-1	291	DRK BRN SILTY SAND W/ GRAVEL
5-2	601	DRK BRN SILTY SAND W/ GRAVEL
5-3	386.4	DRK BRN SILTY SAND W/ GRAVEL
5-4	290	DRK BRN SILTY SAND W/ GRAVEL
6-1	156.0	DRK BRN SANDY SILT W/ GRAVEL
<u>RVN-6-2</u>	<u>292</u>	<u>DRK BRN SILTY SAND W/ GRAVEL</u>
6-3	286.1	DRK BRN SANDY SILT W/ GRAVEL
6-4	122.7	DRK BRN SANDY SILT
<hr/>		
<u>RVN-3-4</u>	<u>702.3</u>	<u>DRK BRN SILTY SAND W/ GRAVEL</u>
3-5	330.7	DRK BRN SILTY SAND W/ GRAVEL
3-6	317	DRK BRN SILTY SAND W/ GRAVEL
3-7	703	DRK BRN SILTY SAND W/ GRAVEL
3-8	218	DRK BRN SILTY SAND W/ GRAVEL
3-9	283	DRK BRN SILTY SAND W/ GRAVEL
<u>RVN-3-10</u>	<u>706.8</u>	<u>DRK BRN SILTY SAND W/ GRAVEL</u>
3-11	483	DRK BRN SILTY SAND W/ GRAVEL

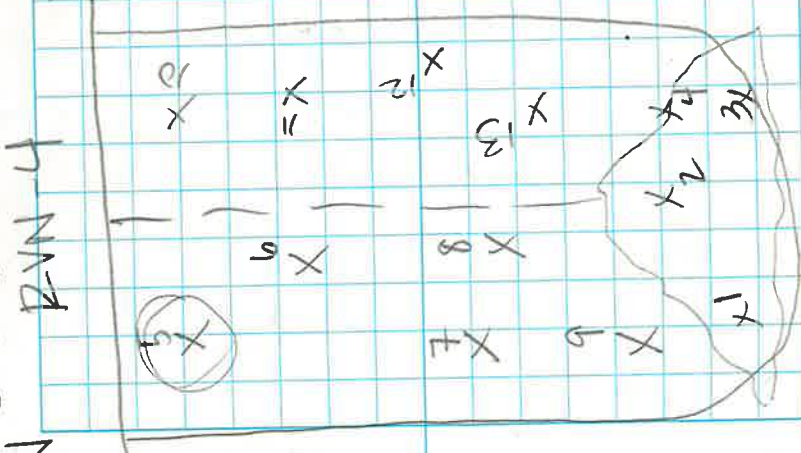
15-1476 12/14/15 RAIN STOCKPILE

RVN-3



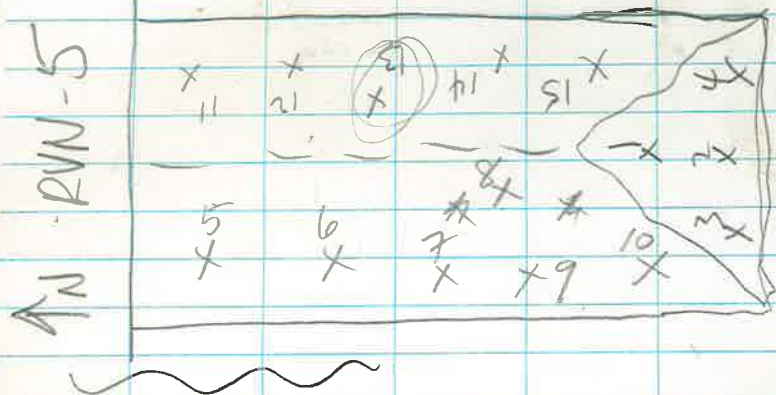
ID	PID	NOTES
RVN-3-12	318	DRK BRN SILTY SAND W/ GRAVEL
3-13	325.5	DRK BRN SILTY SAND W/ GRAVEL
3-14	362	DRK BRN SILTY SAND W/ GRAVEL
RVN-3-10	547	RVN-3 SILTY SAND W/ GRAVEL

* DUPLICATE RVN-X IS RVN-3-10



Rite in the Rain.

12/14/15 RAIN STOCKPILE



ID	PID	NOTES
RVN-4-5	547	DRK BRN SILTY SAND W/ GRAVEL
4-6	317	DRK BRN SILTY SAND W/ GRAVEL
4-7	336	DRK BRN SILTY SAND W/ GRAVEL
4-8	520	DRK BRN SILTY SAND W/ GRAVEL
4-9	193	DRK BRN SILTY SAND W/ GRAVEL
4-10	306	DRK BRN SILTY SAND W/ GRAVEL
4-11	320	DRK BRN SILTY SAND W/ GRAVEL
4-12	354	DRK BRN SILTY SAND W/ GRAVEL
4-13	362	DRK BRN SILTY SAND W/ GRAVEL

RVN-4-5 334

RVN-4 SILTY SAND W/ GRAVEL

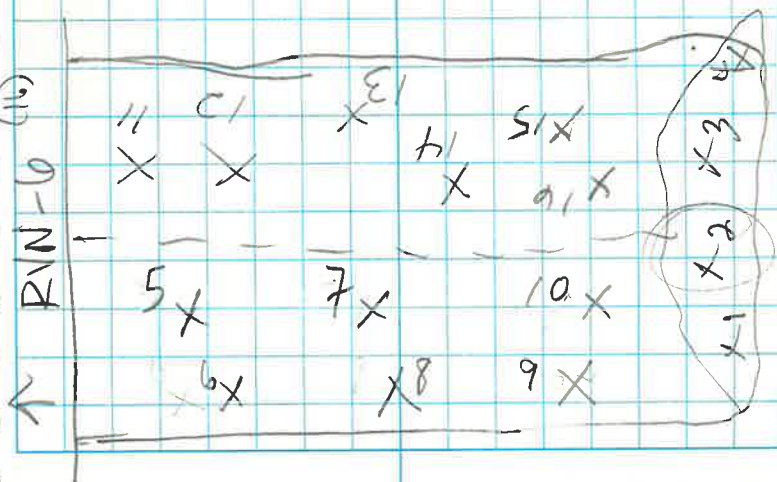
RVN-STOCKPILE

12/14/15

ID	PID	NOTES
RVN-5-5	366	DRK BRN SILTY SAND W/ GRAVEL
5-6	256	DRK BRN SILTY SAND W/ GRAVEL
5-7	276	DRK BRN SILTY SAND W/ GRAVEL
5-8	244.2	DRK BRN SILTY SAND W/ GRAVEL
5-9	284	DRK BRN SILTY SAND W/ GRAVEL
5-10	325	DRK BRN SILTY SAND W/ GRAVEL
5-11	349.2	DRK BRN SILTY SAND W/ GRAVEL
5-12	205	DRK BRN SILTY SAND W/ GRAVEL
RVN-5-13	935	DRK BRN SILTY SAND W/ GRAVEL
5-14	212	DRK BRN SILTY SAND W/ GRAVEL
5-15	265.6	DRK BRN SILTY SAND W/ GRAVEL

RVN-5-13 690

RVN-5 SILTY SAND W/ GRAVEL



Rite in the Rain.

12/14/15 RAVN STOCKPILE

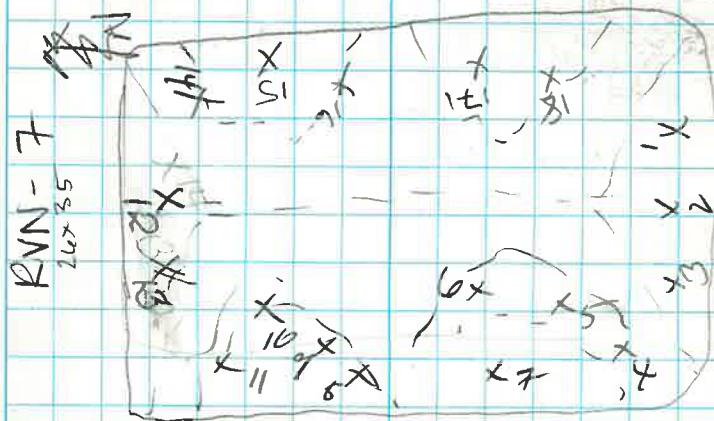
ID	PID	NOTES
RVN-6-5	220.8	DRK BRN SILTY SAND W/ GRAVEL
6-6	251	DRK BRN SILTY SAND W/ GRAVEL
6-7	120.4	DRK BRN SILTY SAND W/ GRAVEL
6-8	114	DRK BRN SILTY SAND W/ GRAVEL
6-9	219.8	DRK BRN SILTY SAND W/ GRAVEL
6-10	175	DRK BRN SILTY SAND W/ GRAVEL
6-11	241	DRK BRN SILTY SAND W/ GRAVEL
6-12	232	DRK BRN SILTY SAND W/ GRAVEL
6-13	193.8	DRK BRN SILTY SAND W/ GRAVEL
6-14	241.1	DRK BRN SILTY SAND W/ GRAVEL
6-15	202	DRK BRN SILTY SAND W/ GRAVEL
6-16	193	DRK BRN SILTY SAND W/ GRAVEL
RVN-6-2	223.4	
RVN-6		Overall SILTY SAND W/ GRAVEL

Headed to office - end of day @ 1710

OB

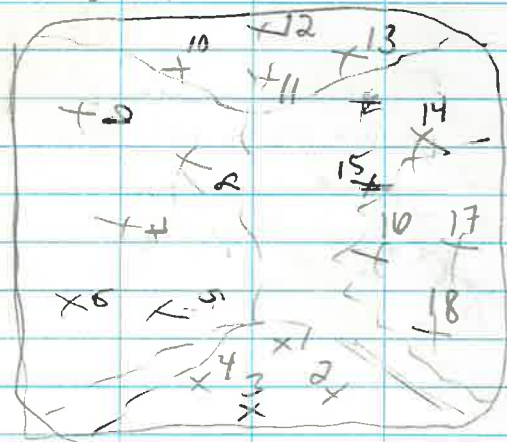
12/15/15 RAVN STOCKPILE

0900 ONSITE - Going to work w/ equip on last 3 stockpiles to get deep into the stockpiles for samples.



Loader dug in areas opening up about 2-3 feet into stockpile for grabbing holes - dug in additional 10-12" for grab samples

15-1476 RAIN STOCKPILE



RVN-7-ID PID NOTES

RVN-7-ID	PID	NOTES
RVN-7-1	359.8	DRK BRN SILTY SAND W/ GRAV.
-2	236.6	DRK BRN SILTY SAND W/ GRAV.
-3	136.9	DRK BRN SILTY SAND W/ GRAV.
-4	257.8	DRK BRN SILTY SAND W/ GRAV.
-5	149.8	DRK BRN SANDY SILT W/ GRAV.
-6	281.7	DRK BRN SILTY SAND W/ GRAV.
-7	147.4	DRK BRN SILTY SAND W/ GRAV.
-8	203.5	DRK BRN SILTY SAND W/ GRAV.
-9	296.6	DRK BRN SILTY SAND W/ GRAV.
-10	214.5	DRK BRN SANDY SILT W/ GRAV.
-11	245.6	DRK BRN SILTY SAND W/ GRAV.
-12	197.4	DRK BRN SILTY SAND W/ GRAV.
-13	240.3	DRK BRN SILTY SAND W/ GRAV.
-14	200.0	DRK BRN SILTY SAND W/ GRAV.

RVN STOCKPILE

12/15/15

RVN-7-CONT-PID NOTES

-15	247	DRK BRN SILTY SAND W/ GRAV.
-16	276.6	DRK BRN SILTY SAND W/ GRAV.
-17	256.3	DRK BRN SILTY SAND W/ GRAV.
-18	302.8	DRK BRN SILTY SAND W/ GRAV.
RVN-7-1	129.8	

RVN-7 SILTY SAND W/ GRAVEL

RVN-8-ID DID NOTES

-1	358.7	DRK BRN SILTY SAND W/ GRAV.
-2	223.4	DRK BRN SILTY SAND W/ GRAV.
-3	357.4	DRK BRN SILTY SAND W/ GRAVEL.
-4	297.4	DRK BRN SILTY SAND W/ GRAVEL.
-5	348.7	DRK BRN SILTY SAND W/ GRAV.
-6	338.8	DRK BRN SILTY SAND W/ GRAV.
-7	301.7	DRK BRN SILTY SAND W/ GRAV.
-8	351.6	DRK BRN SILTY SAND W/ GRAV.
-9	359.9	DRK BRN SILTY SAND W/ GRAV.
RVN-8-10	398.0	DRK BRN SILTY SAND W/ GRAV.
-11	376.0	DRK BRN SILTY SAND W/ GRAV.
-12	371.1	DRK BRN SILTY SAND W/ GRAV.
-13	249.6	DRK BRN SILTY SAND W/ GRAV.
-14	254.1	DRK BRN SILTY SAND W/ GRAV.

Rite in the Rain.

RVN-8-	PID	NOTES
-15	198.3	DRK BRN SILT SAND W/ GRAVEL
-16	253.3	DRK BRN SILTY SAND W/ GRAV.
-17	330.16	DRK BRN SILTY SAND W/ GRAVEL
-18	270.0	DRK BRN SILTY SAND W/ GRAV.

RVN-8-10 184.0

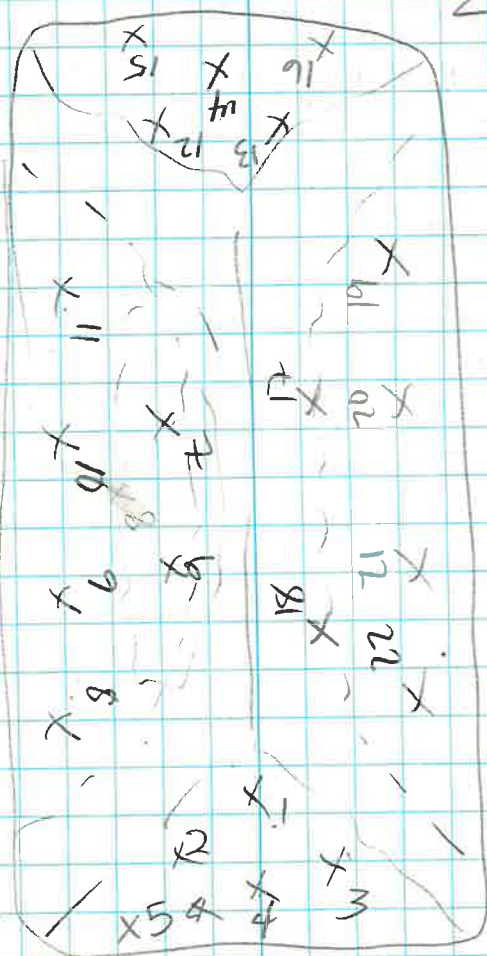
RVN-8 SILTY SAND W/ GRAVEL

RVN-9-ID PID NOTES

RVN-9-ID	PID	NOTES
RVN-9-1	295.6	DRK BRN SILT SAND W/ GRAV
-2	255.0	DRK BRN SANDY SILT W/ GRAV
-3	248.3	DRK BRN SILTY SAND W/ GRAV
-4	1168.0	DRK BRN SILTY SAND W/ GRAV
-5	235.4	DRK BRN SILTY SAND W/ GRAV
-6	85.0	DRK BRN SILT SAND W/ GRAV
-7	162.8	DRK BRN SILTY SAND W/ GRAV
-8	160.6	DRK BRN SILTY SAND W/ GRAV
-9	143.5	DRK BRN SANDY SILTY SAND W/ GRAV
-10	169.1	DRK BRN SILTY SAND W/ GRAV
-11	38.7	DRK BRN SAND, SILT W/ GRAV
-12	140.0	DRK BRN SILTY SAND W/ GRAV
-13	200.5	DRK BRN SILTY SAND W/ GRAV
-14	104.8	DRK BRN SILTY SAND W/ GRAV
-15	142.0	DRK BRN SILT SAND W/ GRAV
-16	107.1	DRK BRN SILTY SAND W/ GRAVEL

12/15/15

RVN-9



12/15/15 RAIN STOCKPILE

RVN-9	DID	NOTES
-17	104.7	DRK BRN SILTY SAND W/ GRAV
-18	120.6	DRK BRN SANDY SILT W/ GRAV
-19	106.7	DRK BRN SILTY SAND W/ GRAVEL
-20	154.0	DRK BRN SILTY SAND W/ GRAV
-21	220.7	DRK BRN SILTY SAND W/ GR.
-22	244.5	DRK BRN SILTY SAND W/ GRAV

RVN-9-1 133.8

RVN-9 silty sand w/ gravel

HEADED TO OFFICE & SGS @ 1330

CB

ATTACHMENT D

ADEC Data Quality Review Checklist

Laboratory Data Report

Laboratory Data Review Checklist

Completed by:

Title: Date:

CS Report Name: Report Date:

Consultant Firm:

Laboratory Name: Laboratory Report Number:

ADEC File Number: ADEC RecKey Number:

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
 Yes No NA (Please explain.) Comments:

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
 Yes No NA (Please explain.) Comments:

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?
 Yes No NA (Please explain.) Comments:

- b. Correct analyses requested?
 Yes No NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?
 Yes No NA (Please explain.) Comments:

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
 Yes No NA (Please explain.) Comments:

- c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
 Yes No NA (Please explain.) Comments:

Review of the sample receipt form indicated the samples were received in good condition.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
 Yes No NA (Please explain.) Comments:

SGS noted that samples do not match the COC, a sample may have not matched the sample label and the COC

- e. Data quality or usability affected? (Please explain.) Comments:

Data quality and usability was not affected.

4. Case Narrative

- a. Present and understandable?
 Yes No NA (Please explain.) Comments:

The case narrative is present and understandable on page 2 of the lab report.

- b. Discrepancies, errors or QC failures identified by the lab?
 Yes No NA (Please explain.) Comments:

The case narrative notes that multiple internal standard recoveries associated with and MS/MSDs did not meet QC goals. Corrective actions for these are noted in the case narrative and described subsequently in this document.

- c. Were all corrective actions documented?
 Yes No NA (Please explain.) Comments:

No Corrective actions were required.

- d. What is the effect on data quality/usability according to the case narrative? Comments:

There is no effect on data quality and usability.

5. Samples Results

- a. Correct analyses performed/reported as requested on COC?
 Yes No NA (Please explain.) Comments:

The correct analyses were performed and reported as requested on the COC.

b. All applicable holding times met?

Yes No NA (Please explain.)

Comments:

Holding times were met for all samples according to the lab method.

c. All soils reported on a dry weight basis?

Yes No NA (Please explain.)

Comments:

Sample weights are reported on a dry weight basis on each page of the report describing the target sample.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes No NA (Please explain.)

Comments:

SGS refers to the PQL as the LOQ and reports data below the PQL but above the detection limit (DL) as estimated results with a "J". Constituents that were analyzed for but not detected are reported as a value equal to 2 times the DL and flagged with a "U". All PQLs were below the cleanup level.

e. Data quality or usability affected?

Comments:

There is no effect on data quality or usability.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No NA (Please explain.)

Comments:

There is one method blank for each requested analyses.

ii. All method blank results less than PQL?

Yes No NA (Please explain.)

Comments:

All method blank results are less than the LOQ (PQL).

iii. If above PQL, what samples are affected?

Comments:

No method blank samples were reported above the LOQ (PQL).

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

Yes No NA (Please explain.)

Comments:

No method blank samples were reported above the LOQ (PQL).

v. Data quality or usability affected? (Please explain.)

Data quality or usability was not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No NA (Please explain.) Comments:

LCS was performed for 8260B analysis, but not LCSD

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No NA (Please explain.) Comments:

Metals analysis was not performed

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.) Comments:

An LCSD was not performed in association with the 8260 analysis. MS/MSDs failed to meet QC goals for multiple analytes, but MS/MSDs were not carried out on samples originating from the project site and are not likely to reflect matrix conditions associated with samples from this project.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

No samples were affected

Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.) Comments:

There were no reported LCS failures, no data was flagged.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality or usability was not affected.

c. Surrogates – Organics Only

- i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
 Yes No NA (Please explain.) Comments:

Surrogate recoveries are reported for all organic analyses.

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits?
And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
 Yes No NA (Please explain.) Comments:

All percent recoveries for organic analyses are reported and within method and laboratory limits.

- iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
 Yes No NA (Please explain.) Comments:

There were no reported surrogate recovery QC failures.

- iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Data quality or usability not affected.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)
 Yes No NA (Please explain.) Comments:

A trip blank for water and soil samples were included.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?
(If not, a comment explaining why must be entered below)
 Yes No NA (Please explain.) Comments:

No trip blank were in cooler with samples.

- iii. All results less than PQL?
 Yes No NA (Please explain.) Comments:

All trip blank results were less than the PQL.

- iv. If above PQL, what samples are affected?

No affected samples.

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability not affected.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No NA (Please explain.)

Comments:

A field duplicate was collected in association with sample RVN-3-10

ii. Submitted blind to lab?

Yes No NA (Please explain.)

Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No NA (Please explain.)

Comments:

Blind duplicate samples met QC goals for all detectable analytes with the exception of benzene and toluene, which exhibited RPDs greater than QC goals.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability was not affected.

f. Decontamination or Equipment Blank (If not used explain why).

Yes No NA (Please explain.)

Comments:

All equipment used in sampling was dedicated and disposable, or was cleaned inalconox solution and rinsed with Deionized water prior to sampling. Equipment was not re-used during the sampling event. Based on previous experience, and equipment blank was not determined necessary.

i. All results less than PQL?

Yes No NA (Please explain.)

Comments:

There are no decontamination or equipment blanks

ii. If above PQL, what samples are affected?

Comments:

There are no decontamination equipment blanks

iii. Data quality or usability affected? (Please explain.)

Data quality or usability was not affected.

Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No NA (Please explain.)

Comments:

Data flags and qualifiers are defined appropriately. Page 3 of the lab report describes the qualifiers used.



Laboratory Report of Analysis

To: Restoration Science & Eng
911 West 8th Ave Suite 100
Anchorage, AK 99501
(907)278-1023

Report Number: **1157173**

Client Project: **RAVN ASR**

Dear Nick Braman,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Chuck at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Chuck Homestead
Project Manager
Charles.Homestead@sgs.com

Date

Print Date: 12/17/2015 10:30:34AM

Case Narrative

SGS Client: **Restoration Science & Eng**

SGS Project: **1157173**

Project Name/Site: **RAVN ASR**

Project Contact: **Nick Braman**

Refer to sample receipt form for information on sample condition.

15-KKIC-SD-I17(1157110009MS) (1307599) MS

8260B -MS recoveries for n-Butylbenzene and Hexachlorobutadiene do not meet QC criteria. Refer to LCS for accuracy.

1157173009MS (1307659) MS

8260B -MS/MSD recoveries for several analytes do not meet QC criteria. Refer to LCS for accuracy.

15-KKIC-SD-I17(1157110009MSD) (1307600) MSD

8260B -MSD recoveries for several analytes do not meet QC criteria. Refer to LCS for accuracy.

8260B -MS/MSD RPD for Naphthalene and 1,2,3-Trichlorobenzene do not meet QC criteria. These analytes were not detected above the LOQ in the associated samples.

1157173009MSD (1307660) MSD

8260B -MS/MSD recoveries for several analytes do not meet QC criteria. Refer to LCS for accuracy.

8260B -MS/MSD RPD for several analytes do not meet QC criteria. These analytes were not detected above the LOQ in the associated samples.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 12/17/2015 10:30:35AM

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
SW8260B				
1157173001	RVN-1-13	VMS15477	4-Isopropyltoluene	SP
1157173002	RVN-2-4	VMS15477	4-Isopropyltoluene	SP
1157173003	RVN-3-10	VMS15477	4-Isopropyltoluene	SP
1157173004	RVN-X	VMS15477	4-Isopropyltoluene	SP
1157173005	RVN-4-5	VMS15477	4-Isopropyltoluene	SP
1157173006	RVN-5-13	VMS15477	4-Isopropyltoluene	SP
1157173007	RVN-6-2	VMS15477	4-Isopropyltoluene	SP
1157173008	RVN-7-1	VMS15477	4-Isopropyltoluene	SP
1157173009	RVN-8-10	VMS15478	4-Isopropyltoluene	SP
1157173010	RVN-9-1	VMS15477	4-Isopropyltoluene	SP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
RVN-1-13	1157173001	12/14/2015	12/15/2015	Soil/Solid (dry weight)
RVN-2-4	1157173002	12/14/2015	12/15/2015	Soil/Solid (dry weight)
RVN-3-10	1157173003	12/14/2015	12/15/2015	Soil/Solid (dry weight)
RVN-X	1157173004	12/14/2015	12/15/2015	Soil/Solid (dry weight)
RVN-4-5	1157173005	12/14/2015	12/15/2015	Soil/Solid (dry weight)
RVN-5-13	1157173006	12/14/2015	12/15/2015	Soil/Solid (dry weight)
RVN-6-2	1157173007	12/14/2015	12/15/2015	Soil/Solid (dry weight)
RVN-7-1	1157173008	12/15/2015	12/15/2015	Soil/Solid (dry weight)
RVN-8-10	1157173009	12/15/2015	12/15/2015	Soil/Solid (dry weight)
RVN-9-1	1157173010	12/15/2015	12/15/2015	Soil/Solid (dry weight)
Trip Blank	1157173011	12/14/2015	12/15/2015	Soil/Solid (dry weight)

Method

SM21 2540G

SW8260B

Method Description

Percent Solids SM2540G

VOC 8260 (S) Field Extracted

Detectable Results Summary

Client Sample ID: **RVN-1-13**

Lab Sample ID: 1157173001

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1,2,4-Trimethylbenzene	1880	ug/Kg
1,3,5-Trimethylbenzene	1500	ug/Kg
4-Isopropyltoluene	201	ug/Kg
Benzene	63.7	ug/Kg
Ethylbenzene	145	ug/Kg
Isopropylbenzene (Cumene)	66.5	ug/Kg
Naphthalene	1390	ug/Kg
n-Propylbenzene	134	ug/Kg
o-Xylene	594	ug/Kg
P & M -Xylene	671	ug/Kg
sec-Butylbenzene	166	ug/Kg
tert-Butylbenzene	44.7	ug/Kg
Tetrachloroethene	55.0	ug/Kg
Toluene	123	ug/Kg
Xylenes (total)	1260	ug/Kg

Client Sample ID: **RVN-2-4**

Lab Sample ID: 1157173002

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1,2,4-Trimethylbenzene	1000	ug/Kg
1,3,5-Trimethylbenzene	816	ug/Kg
4-Isopropyltoluene	112	ug/Kg
Benzene	54.2	ug/Kg
Ethylbenzene	35.4	ug/Kg
Isopropylbenzene (Cumene)	36.7	ug/Kg
Naphthalene	824	ug/Kg
n-Propylbenzene	63.4	ug/Kg
o-Xylene	268	ug/Kg
P & M -Xylene	205	ug/Kg
sec-Butylbenzene	101	ug/Kg
Tetrachloroethene	50.1	ug/Kg
Toluene	69.4	ug/Kg
Xylenes (total)	472	ug/Kg

Detectable Results Summary

Client Sample ID: **RVN-3-10**

Lab Sample ID: 1157173003

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1,2,4-Trimethylbenzene	1510	ug/Kg
1,3,5-Trimethylbenzene	1010	ug/Kg
4-Isopropyltoluene	161	ug/Kg
Benzene	29.5	ug/Kg
Ethylbenzene	48.8	ug/Kg
Isopropylbenzene (Cumene)	53.6	ug/Kg
Naphthalene	1300	ug/Kg
n-Propylbenzene	94.0	ug/Kg
o-Xylene	374	ug/Kg
P & M -Xylene	323	ug/Kg
sec-Butylbenzene	142	ug/Kg
tert-Butylbenzene	29.8	ug/Kg
Tetrachloroethene	49.5	ug/Kg
Toluene	46.4	ug/Kg
Xylenes (total)	697	ug/Kg

Client Sample ID: **RVN-X**

Lab Sample ID: 1157173004

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1,2,4-Trimethylbenzene	1570	ug/Kg
1,3,5-Trimethylbenzene	1150	ug/Kg
4-Isopropyltoluene	160	ug/Kg
Benzene	61.4	ug/Kg
Ethylbenzene	71.9	ug/Kg
Isopropylbenzene (Cumene)	56.1	ug/Kg
Naphthalene	1340	ug/Kg
n-Propylbenzene	98.8	ug/Kg
o-Xylene	450	ug/Kg
P & M -Xylene	423	ug/Kg
sec-Butylbenzene	134	ug/Kg
tert-Butylbenzene	32.2	ug/Kg
Tetrachloroethene	54.1	ug/Kg
Toluene	98.6	ug/Kg
Xylenes (total)	872	ug/Kg

Detectable Results Summary

Client Sample ID: **RVN-4-5**

Lab Sample ID: 1157173005

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1,2,4-Trimethylbenzene	1510	ug/Kg
1,3,5-Trimethylbenzene	982	ug/Kg
4-Isopropyltoluene	133	ug/Kg
Benzene	47.6	ug/Kg
Ethylbenzene	96.6	ug/Kg
Isopropylbenzene (Cumene)	68.3	ug/Kg
Naphthalene	1330	ug/Kg
n-Propylbenzene	128	ug/Kg
o-Xylene	424	ug/Kg
P & M -Xylene	491	ug/Kg
sec-Butylbenzene	128	ug/Kg
tert-Butylbenzene	28.1	ug/Kg
Tetrachloroethene	38.0	ug/Kg
Toluene	106	ug/Kg
Xylenes (total)	915	ug/Kg

Client Sample ID: **RVN-5-13**

Lab Sample ID: 1157173006

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1,2,4-Trimethylbenzene	8070	ug/Kg
1,3,5-Trimethylbenzene	2820	ug/Kg
4-Isopropyltoluene	400	ug/Kg
Benzene	189	ug/Kg
Ethylbenzene	441	ug/Kg
Isopropylbenzene (Cumene)	311	ug/Kg
Naphthalene	5730	ug/Kg
n-Propylbenzene	764	ug/Kg
o-Xylene	944	ug/Kg
P & M -Xylene	1720	ug/Kg
sec-Butylbenzene	553	ug/Kg
tert-Butylbenzene	55.7	ug/Kg
Tetrachloroethene	26.3	ug/Kg
Toluene	191	ug/Kg
Xylenes (total)	2660	ug/Kg

Detectable Results Summary

Client Sample ID: **RVN-6-2**

Lab Sample ID: 1157173007

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1,2,4-Trimethylbenzene	3040	ug/Kg
1,3,5-Trimethylbenzene	1480	ug/Kg
4-Isopropyltoluene	237	ug/Kg
Benzene	93.5	ug/Kg
Ethylbenzene	156	ug/Kg
Isopropylbenzene (Cumene)	125	ug/Kg
Naphthalene	2510	ug/Kg
n-Propylbenzene	237	ug/Kg
o-Xylene	691	ug/Kg
P & M -Xylene	880	ug/Kg
sec-Butylbenzene	246	ug/Kg
tert-Butylbenzene	42.4	ug/Kg
Tetrachloroethene	63.2	ug/Kg
Toluene	118	ug/Kg
Xylenes (total)	1570	ug/Kg

Client Sample ID: **RVN-7-1**

Lab Sample ID: 1157173008

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1,2,4-Trimethylbenzene	3400	ug/Kg
1,3,5-Trimethylbenzene	1340	ug/Kg
4-Isopropyltoluene	143	ug/Kg
Benzene	93.3	ug/Kg
Ethylbenzene	400	ug/Kg
Isopropylbenzene (Cumene)	104	ug/Kg
Naphthalene	1180	ug/Kg
n-Propylbenzene	259	ug/Kg
o-Xylene	498	ug/Kg
P & M -Xylene	1190	ug/Kg
sec-Butylbenzene	143	ug/Kg
tert-Butylbenzene	43.8	ug/Kg
Tetrachloroethene	34.2	ug/Kg
Toluene	152	ug/Kg
Xylenes (total)	1690	ug/Kg

Detectable Results Summary

Client Sample ID: **RVN-8-10**

Lab Sample ID: 1157173009

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1,2,4-Trimethylbenzene	73.2	ug/Kg
1,3,5-Trimethylbenzene	384	ug/Kg
4-Isopropyltoluene	34.2	ug/Kg
Benzene	16.9	ug/Kg
Naphthalene	168	ug/Kg
o-Xylene	91.3	ug/Kg
P & M -Xylene	78.4	ug/Kg
Tetrachloroethene	49.1	ug/Kg
Trichloroethene	15.2	ug/Kg
Xylenes (total)	170	ug/Kg

Client Sample ID: **RVN-9-1**

Lab Sample ID: 1157173010

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1,2,4-Trimethylbenzene	242	ug/Kg
1,3,5-Trimethylbenzene	305	ug/Kg
4-Isopropyltoluene	37.1	ug/Kg
Ethylbenzene	25.9	ug/Kg
Naphthalene	261	ug/Kg
n-Propylbenzene	28.7	ug/Kg
o-Xylene	81.1	ug/Kg
P & M -Xylene	108	ug/Kg
sec-Butylbenzene	33.5	ug/Kg
Tetrachloroethene	31.5	ug/Kg
Xylenes (total)	189	ug/Kg



Results of RVN-1-13

Client Sample ID: **RVN-1-13**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173001
Lab Project ID: 1157173

Collection Date: 12/14/15 12:21
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):85.4
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
1,1,1-Trichloroethane	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
1,1,2,2-Tetrachloroethane	12.8 U	12.8	3.99	ug/Kg	1		12/15/15 17:56
1,1,2-Trichloroethane	10.2 U	10.2	3.17	ug/Kg	1		12/15/15 17:56
1,1-Dichloroethane	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
1,1-Dichloroethene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
1,1-Dichloropropene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
1,2,3-Trichlorobenzene	51.1 U	51.1	15.3	ug/Kg	1		12/15/15 17:56
1,2,3-Trichloropropane	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
1,2,4-Trichlorobenzene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
1,2,4-Trimethylbenzene	1880	511	153	ug/Kg	10		12/16/15 15:16
1,2-Dibromo-3-chloropropane	102 U	102	31.7	ug/Kg	1		12/15/15 17:56
1,2-Dibromoethane	10.2 U	10.2	3.17	ug/Kg	1		12/15/15 17:56
1,2-Dichlorobenzene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
1,2-Dichloroethane	10.2 U	10.2	3.17	ug/Kg	1		12/15/15 17:56
1,2-Dichloropropane	10.2 U	10.2	3.17	ug/Kg	1		12/15/15 17:56
1,3,5-Trimethylbenzene	1500	25.6	7.98	ug/Kg	1		12/15/15 17:56
1,3-Dichlorobenzene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
1,3-Dichloropropane	10.2 U	10.2	3.17	ug/Kg	1		12/15/15 17:56
1,4-Dichlorobenzene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
2,2-Dichloropropane	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
2-Butanone (MEK)	256 U	256	79.8	ug/Kg	1		12/15/15 17:56
2-Chlorotoluene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
2-Hexanone	256 U	256	79.8	ug/Kg	1		12/15/15 17:56
4-Chlorotoluene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
4-Isopropyltoluene	201	25.6	7.98	ug/Kg	1		12/15/15 17:56
4-Methyl-2-pentanone (MIBK)	256 U	256	79.8	ug/Kg	1		12/15/15 17:56
Benzene	63.7	12.8	3.99	ug/Kg	1		12/15/15 17:56
Bromobenzene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
Bromochloromethane	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
Bromodichloromethane	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
Bromoform	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
Bromomethane	205 U	205	63.4	ug/Kg	1		12/15/15 17:56
Carbon disulfide	102 U	102	31.7	ug/Kg	1		12/15/15 17:56
Carbon tetrachloride	12.8 U	12.8	3.99	ug/Kg	1		12/15/15 17:56
Chlorobenzene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
Chloroethane	205 U	205	63.4	ug/Kg	1		12/15/15 17:56

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Results of RVN-1-13

Client Sample ID: **RVN-1-13**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173001
Lab Project ID: 1157173

Collection Date: 12/14/15 12:21
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):85.4
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
Chloromethane	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
cis-1,2-Dichloroethene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
cis-1,3-Dichloropropene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
Dibromochloromethane	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
Dibromomethane	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
Dichlorodifluoromethane	51.1 U	51.1	15.3	ug/Kg	1		12/15/15 17:56
Ethylbenzene	145	25.6	7.98	ug/Kg	1		12/15/15 17:56
Freon-113	102 U	102	31.7	ug/Kg	1		12/15/15 17:56
Hexachlorobutadiene	51.1 U	51.1	15.3	ug/Kg	1		12/15/15 17:56
Isopropylbenzene (Cumene)	66.5	25.6	7.98	ug/Kg	1		12/15/15 17:56
Methylene chloride	102 U	102	31.7	ug/Kg	1		12/15/15 17:56
Methyl-t-butyl ether	102 U	102	31.7	ug/Kg	1		12/15/15 17:56
Naphthalene	1390	51.1	15.3	ug/Kg	1		12/15/15 17:56
n-Butylbenzene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
n-Propylbenzene	134	25.6	7.98	ug/Kg	1		12/15/15 17:56
o-Xylene	594	25.6	7.98	ug/Kg	1		12/15/15 17:56
P & M -Xylene	671	51.1	15.3	ug/Kg	1		12/15/15 17:56
sec-Butylbenzene	166	25.6	7.98	ug/Kg	1		12/15/15 17:56
Styrene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
tert-Butylbenzene	44.7	25.6	7.98	ug/Kg	1		12/15/15 17:56
Tetrachloroethene	55.0	12.8	3.99	ug/Kg	1		12/15/15 17:56
Toluene	123	25.6	7.98	ug/Kg	1		12/15/15 17:56
trans-1,2-Dichloroethene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
trans-1,3-Dichloropropene	25.6 U	25.6	7.98	ug/Kg	1		12/15/15 17:56
Trichloroethene	12.8 U	12.8	3.99	ug/Kg	1		12/15/15 17:56
Trichlorofluoromethane	51.1 U	51.1	15.3	ug/Kg	1		12/15/15 17:56
Vinyl acetate	102 U	102	31.7	ug/Kg	1		12/15/15 17:56
Vinyl chloride	10.2 U	10.2	3.17	ug/Kg	1		12/15/15 17:56
Xylenes (total)	1260	76.7	23.3	ug/Kg	1		12/15/15 17:56
Surrogates							
1,2-Dichloroethane-D4 (surr)	121	71-136		%	1		12/15/15 17:56
4-Bromofluorobenzene (surr)	110	55-151		%	1		12/15/15 17:56
Toluene-d8 (surr)	108	85-116		%	1		12/15/15 17:56

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Results of RVN-1-13

Client Sample ID: **RVN-1-13**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173001
Lab Project ID: 1157173

Collection Date: 12/14/15 12:21
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):85.4
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/15/15 17:56
Container ID: 1157173001-B

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/14/15 12:21
Prep Initial Wt./Vol.: 85.977 g
Prep Extract Vol: 37.5493 mL

Analytical Batch: VMS15478
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/16/15 15:16
Container ID: 1157173001-B

Prep Batch: VXX28357
Prep Method: SW5035A
Prep Date/Time: 12/14/15 12:21
Prep Initial Wt./Vol.: 85.977 g
Prep Extract Vol: 37.5493 mL

Print Date: 12/17/2015 10:30:42AM



Results of RVN-2-4

Client Sample ID: RVN-2-4
Client Project ID: RAVN ASR
Lab Sample ID: 1157173002
Lab Project ID: 1157173

Collection Date: 12/14/15 14:01
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):83.3
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 12/17/2015 10:30:42AM



Results of RVN-2-4

Client Sample ID: RVN-2-4
Client Project ID: RAVN ASR
Lab Sample ID: 1157173002
Lab Project ID: 1157173

Collection Date: 12/14/15 14:01
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):83.3
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 12/17/2015 10:30:42AM

Results of RVN-2-4

Client Sample ID: **RVN-2-4**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173002
Lab Project ID: 1157173

Collection Date: 12/14/15 14:01
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):83.3
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/15/15 18:12
Container ID: 1157173002-B

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/14/15 14:01
Prep Initial Wt./Vol.: 92.92 g
Prep Extract Vol: 40.55 mL

Print Date: 12/17/2015 10:30:42AM



Results of RVN-3-10

Client Sample ID: RVN-3-10
Client Project ID: RAVN ASR
Lab Sample ID: 1157173003
Lab Project ID: 1157173

Collection Date: 12/14/15 14:41
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):83.6
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 12/17/2015 10:30:42AM



Results of RVN-3-10

Client Sample ID: **RVN-3-10**
 Client Project ID: **RAVN ASR**
 Lab Sample ID: 1157173003
 Lab Project ID: 1157173

Collection Date: 12/14/15 14:41
 Received Date: 12/15/15 13:45
 Matrix: Soil/Solid (dry weight)
 Solids (%):83.6
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	23.8 U	23.8	7.43	ug/Kg	1		12/15/15 18:28
Chloromethane	23.8 U	23.8	7.43	ug/Kg	1		12/15/15 18:28
cis-1,2-Dichloroethene	23.8 U	23.8	7.43	ug/Kg	1		12/15/15 18:28
cis-1,3-Dichloropropene	23.8 U	23.8	7.43	ug/Kg	1		12/15/15 18:28
Dibromochloromethane	23.8 U	23.8	7.43	ug/Kg	1		12/15/15 18:28
Dibromomethane	23.8 U	23.8	7.43	ug/Kg	1		12/15/15 18:28
Dichlorodifluoromethane	47.6 U	47.6	14.3	ug/Kg	1		12/15/15 18:28
Ethylbenzene	48.8	23.8	7.43	ug/Kg	1		12/15/15 18:28
Freon-113	95.2 U	95.2	29.5	ug/Kg	1		12/15/15 18:28
Hexachlorobutadiene	47.6 U	47.6	14.3	ug/Kg	1		12/15/15 18:28
Isopropylbenzene (Cumene)	53.6	23.8	7.43	ug/Kg	1		12/15/15 18:28
Methylene chloride	95.2 U	95.2	29.5	ug/Kg	1		12/15/15 18:28
Methyl-t-butyl ether	95.2 U	95.2	29.5	ug/Kg	1		12/15/15 18:28
Naphthalene	1300	47.6	14.3	ug/Kg	1		12/15/15 18:28
n-Butylbenzene	23.8 U	23.8	7.43	ug/Kg	1		12/15/15 18:28
n-Propylbenzene	94.0	23.8	7.43	ug/Kg	1		12/15/15 18:28
o-Xylene	374	23.8	7.43	ug/Kg	1		12/15/15 18:28
P & M -Xylene	323	47.6	14.3	ug/Kg	1		12/15/15 18:28
sec-Butylbenzene	142	23.8	7.43	ug/Kg	1		12/15/15 18:28
Styrene	23.8 U	23.8	7.43	ug/Kg	1		12/15/15 18:28
tert-Butylbenzene	29.8	23.8	7.43	ug/Kg	1		12/15/15 18:28
Tetrachloroethene	49.5	11.9	3.71	ug/Kg	1		12/15/15 18:28
Toluene	46.4	23.8	7.43	ug/Kg	1		12/15/15 18:28
trans-1,2-Dichloroethene	23.8 U	23.8	7.43	ug/Kg	1		12/15/15 18:28
trans-1,3-Dichloropropene	23.8 U	23.8	7.43	ug/Kg	1		12/15/15 18:28
Trichloroethene	11.9 U	11.9	3.71	ug/Kg	1		12/15/15 18:28
Trichlorofluoromethane	47.6 U	47.6	14.3	ug/Kg	1		12/15/15 18:28
Vinyl acetate	95.2 U	95.2	29.5	ug/Kg	1		12/15/15 18:28
Vinyl chloride	9.52 U	9.52	2.95	ug/Kg	1		12/15/15 18:28
Xylenes (total)	697	71.4	21.7	ug/Kg	1		12/15/15 18:28
Surrogates							
1,2-Dichloroethane-D4 (surr)	120	71-136		%	1		12/15/15 18:28
4-Bromofluorobenzene (surr)	107	55-151		%	1		12/15/15 18:28
Toluene-d8 (surr)	110	85-116		%	1		12/15/15 18:28

Print Date: 12/17/2015 10:30:42AM



Results of RVN-3-10

Client Sample ID: **RVN-3-10**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173003
Lab Project ID: 1157173

Collection Date: 12/14/15 14:41
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):83.6
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/15/15 18:28
Container ID: 1157173003-B

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/14/15 14:41
Prep Initial Wt./Vol.: 107.065 g
Prep Extract Vol: 42.5934 mL

Print Date: 12/17/2015 10:30:42AM



Results of RVN-X

Client Sample ID: **RVN-X**
 Client Project ID: **RAVN ASR**
 Lab Sample ID: 1157173004
 Lab Project ID: 1157173

Collection Date: 12/14/15 11:41
 Received Date: 12/15/15 13:45
 Matrix: Soil/Solid (dry weight)
 Solids (%):82.3
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
1,1,1-Trichloroethane	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
1,1,2,2-Tetrachloroethane	13.9 U	13.9	4.33	ug/Kg	1		12/15/15 18:44
1,1,2-Trichloroethane	11.1 U	11.1	3.44	ug/Kg	1		12/15/15 18:44
1,1-Dichloroethane	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
1,1-Dichloroethene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
1,1-Dichloropropene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
1,2,3-Trichlorobenzene	55.5 U	55.5	16.7	ug/Kg	1		12/15/15 18:44
1,2,3-Trichloropropane	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
1,2,4-Trichlorobenzene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
1,2,4-Trimethylbenzene	1570	55.5	16.7	ug/Kg	1		12/15/15 18:44
1,2-Dibromo-3-chloropropane	111 U	111	34.4	ug/Kg	1		12/15/15 18:44
1,2-Dibromoethane	11.1 U	11.1	3.44	ug/Kg	1		12/15/15 18:44
1,2-Dichlorobenzene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
1,2-Dichloroethane	11.1 U	11.1	3.44	ug/Kg	1		12/15/15 18:44
1,2-Dichloropropane	11.1 U	11.1	3.44	ug/Kg	1		12/15/15 18:44
1,3,5-Trimethylbenzene	1150	27.8	8.66	ug/Kg	1		12/15/15 18:44
1,3-Dichlorobenzene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
1,3-Dichloropropane	11.1 U	11.1	3.44	ug/Kg	1		12/15/15 18:44
1,4-Dichlorobenzene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
2,2-Dichloropropane	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
2-Butanone (MEK)	278 U	278	86.6	ug/Kg	1		12/15/15 18:44
2-Chlorotoluene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
2-Hexanone	278 U	278	86.6	ug/Kg	1		12/15/15 18:44
4-Chlorotoluene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
4-Isopropyltoluene	160	27.8	8.66	ug/Kg	1		12/15/15 18:44
4-Methyl-2-pentanone (MIBK)	278 U	278	86.6	ug/Kg	1		12/15/15 18:44
Benzene	61.4	13.9	4.33	ug/Kg	1		12/15/15 18:44
Bromobenzene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
Bromochloromethane	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
Bromodichloromethane	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
Bromoform	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
Bromomethane	222 U	222	68.8	ug/Kg	1		12/15/15 18:44
Carbon disulfide	111 U	111	34.4	ug/Kg	1		12/15/15 18:44
Carbon tetrachloride	13.9 U	13.9	4.33	ug/Kg	1		12/15/15 18:44
Chlorobenzene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
Chloroethane	222 U	222	68.8	ug/Kg	1		12/15/15 18:44

Print Date: 12/17/2015 10:30:42AM



Results of RVN-X

Client Sample ID: **RVN-X**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173004
Lab Project ID: 1157173

Collection Date: 12/14/15 11:41
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):82.3
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
Chloromethane	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
cis-1,2-Dichloroethene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
cis-1,3-Dichloropropene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
Dibromochloromethane	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
Dibromomethane	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
Dichlorodifluoromethane	55.5 U	55.5	16.7	ug/Kg	1		12/15/15 18:44
Ethylbenzene	71.9	27.8	8.66	ug/Kg	1		12/15/15 18:44
Freon-113	111 U	111	34.4	ug/Kg	1		12/15/15 18:44
Hexachlorobutadiene	55.5 U	55.5	16.7	ug/Kg	1		12/15/15 18:44
Isopropylbenzene (Cumene)	56.1	27.8	8.66	ug/Kg	1		12/15/15 18:44
Methylene chloride	111 U	111	34.4	ug/Kg	1		12/15/15 18:44
Methyl-t-butyl ether	111 U	111	34.4	ug/Kg	1		12/15/15 18:44
Naphthalene	1340	55.5	16.7	ug/Kg	1		12/15/15 18:44
n-Butylbenzene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
n-Propylbenzene	98.8	27.8	8.66	ug/Kg	1		12/15/15 18:44
o-Xylene	450	27.8	8.66	ug/Kg	1		12/15/15 18:44
P & M -Xylene	423	55.5	16.7	ug/Kg	1		12/15/15 18:44
sec-Butylbenzene	134	27.8	8.66	ug/Kg	1		12/15/15 18:44
Styrene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
tert-Butylbenzene	32.2	27.8	8.66	ug/Kg	1		12/15/15 18:44
Tetrachloroethene	54.1	13.9	4.33	ug/Kg	1		12/15/15 18:44
Toluene	98.6	27.8	8.66	ug/Kg	1		12/15/15 18:44
trans-1,2-Dichloroethene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
trans-1,3-Dichloropropene	27.8 U	27.8	8.66	ug/Kg	1		12/15/15 18:44
Trichloroethene	13.9 U	13.9	4.33	ug/Kg	1		12/15/15 18:44
Trichlorofluoromethane	55.5 U	55.5	16.7	ug/Kg	1		12/15/15 18:44
Vinyl acetate	111 U	111	34.4	ug/Kg	1		12/15/15 18:44
Vinyl chloride	11.1 U	11.1	3.44	ug/Kg	1		12/15/15 18:44
Xylenes (total)	872	83.3	25.3	ug/Kg	1		12/15/15 18:44
Surrogates							
1,2-Dichloroethane-D4 (surr)	118	71-136		%	1		12/15/15 18:44
4-Bromofluorobenzene (surr)	99.1	55-151		%	1		12/15/15 18:44
Toluene-d8 (surr)	108	85-116		%	1		12/15/15 18:44

Print Date: 12/17/2015 10:30:42AM



Results of **RVN-X**

Client Sample ID: **RVN-X**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173004
Lab Project ID: 1157173

Collection Date: 12/14/15 11:41
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):82.3
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/15/15 18:44
Container ID: 1157173004-B

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/14/15 11:41
Prep Initial Wt./Vol.: 89.14 g
Prep Extract Vol: 40.7486 mL

Print Date: 12/17/2015 10:30:42AM



Results of RVN-4-5

Client Sample ID: RVN-4-5
Client Project ID: RAVN ASR
Lab Sample ID: 1157173005
Lab Project ID: 1157173

Collection Date: 12/14/15 15:28
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):84.9
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 12/17/2015 10:30:42AM



Results of RVN-4-5

Client Sample ID: **RVN-4-5**
 Client Project ID: **RAVN ASR**
 Lab Sample ID: 1157173005
 Lab Project ID: 1157173

Collection Date: 12/14/15 15:28
 Received Date: 12/15/15 13:45
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.9
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	24.7 U	24.7	7.69	ug/Kg	1		12/15/15 19:00
Chloromethane	24.7 U	24.7	7.69	ug/Kg	1		12/15/15 19:00
cis-1,2-Dichloroethene	24.7 U	24.7	7.69	ug/Kg	1		12/15/15 19:00
cis-1,3-Dichloropropene	24.7 U	24.7	7.69	ug/Kg	1		12/15/15 19:00
Dibromochloromethane	24.7 U	24.7	7.69	ug/Kg	1		12/15/15 19:00
Dibromomethane	24.7 U	24.7	7.69	ug/Kg	1		12/15/15 19:00
Dichlorodifluoromethane	49.3 U	49.3	14.8	ug/Kg	1		12/15/15 19:00
Ethylbenzene	96.6	24.7	7.69	ug/Kg	1		12/15/15 19:00
Freon-113	98.6 U	98.6	30.6	ug/Kg	1		12/15/15 19:00
Hexachlorobutadiene	49.3 U	49.3	14.8	ug/Kg	1		12/15/15 19:00
Isopropylbenzene (Cumene)	68.3	24.7	7.69	ug/Kg	1		12/15/15 19:00
Methylene chloride	98.6 U	98.6	30.6	ug/Kg	1		12/15/15 19:00
Methyl-t-butyl ether	98.6 U	98.6	30.6	ug/Kg	1		12/15/15 19:00
Naphthalene	1330	49.3	14.8	ug/Kg	1		12/15/15 19:00
n-Butylbenzene	24.7 U	24.7	7.69	ug/Kg	1		12/15/15 19:00
n-Propylbenzene	128	24.7	7.69	ug/Kg	1		12/15/15 19:00
o-Xylene	424	24.7	7.69	ug/Kg	1		12/15/15 19:00
P & M -Xylene	491	49.3	14.8	ug/Kg	1		12/15/15 19:00
sec-Butylbenzene	128	24.7	7.69	ug/Kg	1		12/15/15 19:00
Styrene	24.7 U	24.7	7.69	ug/Kg	1		12/15/15 19:00
tert-Butylbenzene	28.1	24.7	7.69	ug/Kg	1		12/15/15 19:00
Tetrachloroethene	38.0	12.3	3.85	ug/Kg	1		12/15/15 19:00
Toluene	106	24.7	7.69	ug/Kg	1		12/15/15 19:00
trans-1,2-Dichloroethene	24.7 U	24.7	7.69	ug/Kg	1		12/15/15 19:00
trans-1,3-Dichloropropene	24.7 U	24.7	7.69	ug/Kg	1		12/15/15 19:00
Trichloroethene	12.3 U	12.3	3.85	ug/Kg	1		12/15/15 19:00
Trichlorofluoromethane	49.3 U	49.3	14.8	ug/Kg	1		12/15/15 19:00
Vinyl acetate	98.6 U	98.6	30.6	ug/Kg	1		12/15/15 19:00
Vinyl chloride	9.86 U	9.86	3.06	ug/Kg	1		12/15/15 19:00
Xylenes (total)	915	74.0	22.5	ug/Kg	1		12/15/15 19:00
Surrogates							
1,2-Dichloroethane-D4 (surr)	120	71-136		%	1		12/15/15 19:00
4-Bromofluorobenzene (surr)	97.7	55-151		%	1		12/15/15 19:00
Toluene-d8 (surr)	104	85-116		%	1		12/15/15 19:00

Print Date: 12/17/2015 10:30:42AM

Results of RVN-4-5

Client Sample ID: **RVN-4-5**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173005
Lab Project ID: 1157173

Collection Date: 12/14/15 15:28
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):84.9
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/15/15 19:00
Container ID: 1157173005-B

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/14/15 15:28
Prep Initial Wt./Vol.: 93.308 g
Prep Extract Vol: 39.0682 mL



Results of RVN-5-13

Client Sample ID: **RVN-5-13**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173006
Lab Project ID: 1157173

Collection Date: 12/14/15 16:25
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):85.7
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
1,1,1-Trichloroethane	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
1,1,2,2-Tetrachloroethane	13.3 U	13.3	4.14	ug/Kg	1		12/15/15 19:16
1,1,2-Trichloroethane	10.6 U	10.6	3.29	ug/Kg	1		12/15/15 19:16
1,1-Dichloroethane	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
1,1-Dichloroethene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
1,1-Dichloropropene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
1,2,3-Trichlorobenzene	53.0 U	53.0	15.9	ug/Kg	1		12/15/15 19:16
1,2,3-Trichloropropane	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
1,2,4-Trichlorobenzene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
1,2,4-Trimethylbenzene	8070	530	159	ug/Kg	10		12/16/15 15:32
1,2-Dibromo-3-chloropropane	106 U	106	32.9	ug/Kg	1		12/15/15 19:16
1,2-Dibromoethane	10.6 U	10.6	3.29	ug/Kg	1		12/15/15 19:16
1,2-Dichlorobenzene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
1,2-Dichloroethane	10.6 U	10.6	3.29	ug/Kg	1		12/15/15 19:16
1,2-Dichloropropane	10.6 U	10.6	3.29	ug/Kg	1		12/15/15 19:16
1,3,5-Trimethylbenzene	2820	265	82.7	ug/Kg	10		12/16/15 15:32
1,3-Dichlorobenzene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
1,3-Dichloropropane	10.6 U	10.6	3.29	ug/Kg	1		12/15/15 19:16
1,4-Dichlorobenzene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
2,2-Dichloropropane	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
2-Butanone (MEK)	265 U	265	82.7	ug/Kg	1		12/15/15 19:16
2-Chlorotoluene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
2-Hexanone	265 U	265	82.7	ug/Kg	1		12/15/15 19:16
4-Chlorotoluene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
4-Isopropyltoluene	400	26.5	8.27	ug/Kg	1		12/15/15 19:16
4-Methyl-2-pentanone (MIBK)	265 U	265	82.7	ug/Kg	1		12/15/15 19:16
Benzene	189	13.3	4.14	ug/Kg	1		12/15/15 19:16
Bromobenzene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
Bromochloromethane	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
Bromodichloromethane	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
Bromoform	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
Bromomethane	212 U	212	65.8	ug/Kg	1		12/15/15 19:16
Carbon disulfide	106 U	106	32.9	ug/Kg	1		12/15/15 19:16
Carbon tetrachloride	13.3 U	13.3	4.14	ug/Kg	1		12/15/15 19:16
Chlorobenzene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
Chloroethane	212 U	212	65.8	ug/Kg	1		12/15/15 19:16

Print Date: 12/17/2015 10:30:42AM



Results of RVN-5-13

Client Sample ID: **RVN-5-13**
 Client Project ID: **RAVN ASR**
 Lab Sample ID: 1157173006
 Lab Project ID: 1157173

Collection Date: 12/14/15 16:25
 Received Date: 12/15/15 13:45
 Matrix: Soil/Solid (dry weight)
 Solids (%):85.7
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
Chloromethane	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
cis-1,2-Dichloroethene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
cis-1,3-Dichloropropene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
Dibromochloromethane	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
Dibromomethane	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
Dichlorodifluoromethane	53.0 U	53.0	15.9	ug/Kg	1		12/15/15 19:16
Ethylbenzene	441	26.5	8.27	ug/Kg	1		12/15/15 19:16
Freon-113	106 U	106	32.9	ug/Kg	1		12/15/15 19:16
Hexachlorobutadiene	53.0 U	53.0	15.9	ug/Kg	1		12/15/15 19:16
Isopropylbenzene (Cumene)	311	26.5	8.27	ug/Kg	1		12/15/15 19:16
Methylene chloride	106 U	106	32.9	ug/Kg	1		12/15/15 19:16
Methyl-t-butyl ether	106 U	106	32.9	ug/Kg	1		12/15/15 19:16
Naphthalene	5730	530	159	ug/Kg	10		12/16/15 15:32
n-Butylbenzene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
n-Propylbenzene	764	26.5	8.27	ug/Kg	1		12/15/15 19:16
o-Xylene	944	26.5	8.27	ug/Kg	1		12/15/15 19:16
P & M -Xylene	1720	53.0	15.9	ug/Kg	1		12/15/15 19:16
sec-Butylbenzene	553	26.5	8.27	ug/Kg	1		12/15/15 19:16
Styrene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
tert-Butylbenzene	55.7	26.5	8.27	ug/Kg	1		12/15/15 19:16
Tetrachloroethene	26.3	13.3	4.14	ug/Kg	1		12/15/15 19:16
Toluene	191	26.5	8.27	ug/Kg	1		12/15/15 19:16
trans-1,2-Dichloroethene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
trans-1,3-Dichloropropene	26.5 U	26.5	8.27	ug/Kg	1		12/15/15 19:16
Trichloroethene	13.3 U	13.3	4.14	ug/Kg	1		12/15/15 19:16
Trichlorofluoromethane	53.0 U	53.0	15.9	ug/Kg	1		12/15/15 19:16
Vinyl acetate	106 U	106	32.9	ug/Kg	1		12/15/15 19:16
Vinyl chloride	10.6 U	10.6	3.29	ug/Kg	1		12/15/15 19:16
Xylenes (total)	2660	79.6	24.2	ug/Kg	1		12/15/15 19:16
Surrogates							
1,2-Dichloroethane-D4 (surr)	117	71-136		%	1		12/15/15 19:16
4-Bromofluorobenzene (surr)	107	55-151		%	1		12/15/15 19:16
Toluene-d8 (surr)	102	85-116		%	1		12/15/15 19:16

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Results of RVN-5-13

Client Sample ID: **RVN-5-13**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173006
Lab Project ID: 1157173

Collection Date: 12/14/15 16:25
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):85.7
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/15/15 19:16
Container ID: 1157173006-B

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/14/15 16:25
Prep Initial Wt./Vol.: 80.254 g
Prep Extract Vol: 36.4799 mL

Analytical Batch: VMS15478
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/16/15 15:32
Container ID: 1157173006-B

Prep Batch: VXX28357
Prep Method: SW5035A
Prep Date/Time: 12/14/15 16:25
Prep Initial Wt./Vol.: 80.254 g
Prep Extract Vol: 36.4799 mL

Print Date: 12/17/2015 10:30:42AM



Results of RVN-6-2

Client Sample ID: RVN-6-2
Client Project ID: RAVN ASR
Lab Sample ID: 1157173007
Lab Project ID: 1157173

Collection Date: 12/14/15 17:00
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):82.9
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

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Results of RVN-6-2

Client Sample ID: RVN-6-2
Client Project ID: RAVN ASR
Lab Sample ID: 1157173007
Lab Project ID: 1157173

Collection Date: 12/14/15 17:00
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):82.9
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	33.6 U	33.6	10.5	ug/Kg	1		12/15/15 19:32
Chloromethane	33.6 U	33.6	10.5	ug/Kg	1		12/15/15 19:32
cis-1,2-Dichloroethene	33.6 U	33.6	10.5	ug/Kg	1		12/15/15 19:32
cis-1,3-Dichloropropene	33.6 U	33.6	10.5	ug/Kg	1		12/15/15 19:32
Dibromochloromethane	33.6 U	33.6	10.5	ug/Kg	1		12/15/15 19:32
Dibromomethane	33.6 U	33.6	10.5	ug/Kg	1		12/15/15 19:32
Dichlorodifluoromethane	67.3 U	67.3	20.2	ug/Kg	1		12/15/15 19:32
Ethylbenzene	156	33.6	10.5	ug/Kg	1		12/15/15 19:32
Freon-113	135 U	135	41.7	ug/Kg	1		12/15/15 19:32
Hexachlorobutadiene	67.3 U	67.3	20.2	ug/Kg	1		12/15/15 19:32
Isopropylbenzene (Cumene)	125	33.6	10.5	ug/Kg	1		12/15/15 19:32
Methylene chloride	135 U	135	41.7	ug/Kg	1		12/15/15 19:32
Methyl-t-butyl ether	135 U	135	41.7	ug/Kg	1		12/15/15 19:32
Naphthalene	2510	673	202	ug/Kg	10		12/16/15 15:47
n-Butylbenzene	33.6 U	33.6	10.5	ug/Kg	1		12/15/15 19:32
n-Propylbenzene	237	33.6	10.5	ug/Kg	1		12/15/15 19:32
o-Xylene	691	33.6	10.5	ug/Kg	1		12/15/15 19:32
P & M -Xylene	880	67.3	20.2	ug/Kg	1		12/15/15 19:32
sec-Butylbenzene	246	33.6	10.5	ug/Kg	1		12/15/15 19:32
Styrene	33.6 U	33.6	10.5	ug/Kg	1		12/15/15 19:32
tert-Butylbenzene	42.4	33.6	10.5	ug/Kg	1		12/15/15 19:32
Tetrachloroethene	63.2	16.8	5.25	ug/Kg	1		12/15/15 19:32
Toluene	118	33.6	10.5	ug/Kg	1		12/15/15 19:32
trans-1,2-Dichloroethene	33.6 U	33.6	10.5	ug/Kg	1		12/15/15 19:32
trans-1,3-Dichloropropene	33.6 U	33.6	10.5	ug/Kg	1		12/15/15 19:32
Trichloroethene	16.8 U	16.8	5.25	ug/Kg	1		12/15/15 19:32
Trichlorofluoromethane	67.3 U	67.3	20.2	ug/Kg	1		12/15/15 19:32
Vinyl acetate	135 U	135	41.7	ug/Kg	1		12/15/15 19:32
Vinyl chloride	13.5 U	13.5	4.17	ug/Kg	1		12/15/15 19:32
Xylenes (total)	1570	101	30.7	ug/Kg	1		12/15/15 19:32
Surrogates							
1,2-Dichloroethane-D4 (surr)	123	71-136		%	1		12/15/15 19:32
4-Bromofluorobenzene (surr)	113	55-151		%	1		12/15/15 19:32
Toluene-d8 (surr)	111	85-116		%	1		12/15/15 19:32

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Results of **RVN-6-2**

Client Sample ID: **RVN-6-2**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173007
Lab Project ID: 1157173

Collection Date: 12/14/15 17:00
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):82.9
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/15/15 19:32
Container ID: 1157173007-B

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/14/15 17:00
Prep Initial Wt./Vol.: 64.72 g
Prep Extract Vol: 36.0814 mL

Analytical Batch: VMS15478
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/16/15 15:47
Container ID: 1157173007-B

Prep Batch: VXX28357
Prep Method: SW5035A
Prep Date/Time: 12/14/15 17:00
Prep Initial Wt./Vol.: 64.72 g
Prep Extract Vol: 36.0814 mL

Print Date: 12/17/2015 10:30:42AM



Results of RVN-7-1

Client Sample ID: RVN-7-1
Client Project ID: RAVN ASR
Lab Sample ID: 1157173008
Lab Project ID: 1157173

Collection Date: 12/15/15 11:00
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):86.3
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

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Results of RVN-7-1

Client Sample ID: **RVN-7-1**
 Client Project ID: **RAVN ASR**
 Lab Sample ID: 1157173008
 Lab Project ID: 1157173

Collection Date: 12/15/15 11:00
 Received Date: 12/15/15 13:45
 Matrix: Soil/Solid (dry weight)
 Solids (%):86.3
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	24.1 U	24.1	7.51	ug/Kg	1		12/15/15 19:48
Chloromethane	24.1 U	24.1	7.51	ug/Kg	1		12/15/15 19:48
cis-1,2-Dichloroethene	24.1 U	24.1	7.51	ug/Kg	1		12/15/15 19:48
cis-1,3-Dichloropropene	24.1 U	24.1	7.51	ug/Kg	1		12/15/15 19:48
Dibromochloromethane	24.1 U	24.1	7.51	ug/Kg	1		12/15/15 19:48
Dibromomethane	24.1 U	24.1	7.51	ug/Kg	1		12/15/15 19:48
Dichlorodifluoromethane	48.1 U	48.1	14.4	ug/Kg	1		12/15/15 19:48
Ethylbenzene	400	24.1	7.51	ug/Kg	1		12/15/15 19:48
Freon-113	96.2 U	96.2	29.8	ug/Kg	1		12/15/15 19:48
Hexachlorobutadiene	48.1 U	48.1	14.4	ug/Kg	1		12/15/15 19:48
Isopropylbenzene (Cumene)	104	24.1	7.51	ug/Kg	1		12/15/15 19:48
Methylene chloride	96.2 U	96.2	29.8	ug/Kg	1		12/15/15 19:48
Methyl-t-butyl ether	96.2 U	96.2	29.8	ug/Kg	1		12/15/15 19:48
Naphthalene	1180	48.1	14.4	ug/Kg	1		12/15/15 19:48
n-Butylbenzene	24.1 U	24.1	7.51	ug/Kg	1		12/15/15 19:48
n-Propylbenzene	259	24.1	7.51	ug/Kg	1		12/15/15 19:48
o-Xylene	498	24.1	7.51	ug/Kg	1		12/15/15 19:48
P & M -Xylene	1190	48.1	14.4	ug/Kg	1		12/15/15 19:48
sec-Butylbenzene	143	24.1	7.51	ug/Kg	1		12/15/15 19:48
Styrene	24.1 U	24.1	7.51	ug/Kg	1		12/15/15 19:48
tert-Butylbenzene	43.8	24.1	7.51	ug/Kg	1		12/15/15 19:48
Tetrachloroethene	34.2	12.0	3.75	ug/Kg	1		12/15/15 19:48
Toluene	152	24.1	7.51	ug/Kg	1		12/15/15 19:48
trans-1,2-Dichloroethene	24.1 U	24.1	7.51	ug/Kg	1		12/15/15 19:48
trans-1,3-Dichloropropene	24.1 U	24.1	7.51	ug/Kg	1		12/15/15 19:48
Trichloroethene	12.0 U	12.0	3.75	ug/Kg	1		12/15/15 19:48
Trichlorofluoromethane	48.1 U	48.1	14.4	ug/Kg	1		12/15/15 19:48
Vinyl acetate	96.2 U	96.2	29.8	ug/Kg	1		12/15/15 19:48
Vinyl chloride	9.62 U	9.62	2.98	ug/Kg	1		12/15/15 19:48
Xylenes (total)	1690	72.2	21.9	ug/Kg	1		12/15/15 19:48
Surrogates							
1,2-Dichloroethane-D4 (surr)	119	71-136		%	1		12/15/15 19:48
4-Bromofluorobenzene (surr)	115	55-151		%	1		12/15/15 19:48
Toluene-d8 (surr)	104	85-116		%	1		12/15/15 19:48

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Results of **RVN-7-1**

Client Sample ID: **RVN-7-1**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173008
Lab Project ID: 1157173

Collection Date: 12/15/15 11:00
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):86.3
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/15/15 19:48
Container ID: 1157173008-B

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/15/15 11:00
Prep Initial Wt./Vol.: 89.99 g
Prep Extract Vol: 37.3514 mL

Analytical Batch: VMS15478
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/16/15 16:03
Container ID: 1157173008-B

Prep Batch: VXX28357
Prep Method: SW5035A
Prep Date/Time: 12/15/15 11:00
Prep Initial Wt./Vol.: 89.99 g
Prep Extract Vol: 37.3514 mL

Print Date: 12/17/2015 10:30:42AM



Results of RVN-8-10

Client Sample ID: **RVN-8-10**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173009
Lab Project ID: 1157173

Collection Date: 12/15/15 12:10
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):85.7
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
1,1,1-Trichloroethane	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
1,1,2,2-Tetrachloroethane	14.4 U	14.4	4.48	ug/Kg	1		12/16/15 15:00
1,1,2-Trichloroethane	11.5 U	11.5	3.56	ug/Kg	1		12/16/15 15:00
1,1-Dichloroethane	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
1,1-Dichloroethene	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
1,1-Dichloropropene	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
1,2,3-Trichlorobenzene	57.4 U	57.4	17.2	ug/Kg	1		12/16/15 15:00
1,2,3-Trichloropropane	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
1,2,4-Trichlorobenzene	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
1,2,4-Trimethylbenzene	73.2	57.4	17.2	ug/Kg	1		12/16/15 15:00
1,2-Dibromo-3-chloropropane	115 U	115	35.6	ug/Kg	1		12/16/15 15:00
1,2-Dibromoethane	11.5 U	11.5	3.56	ug/Kg	1		12/16/15 15:00
1,2-Dichlorobenzene	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
1,2-Dichloroethane	11.5 U	11.5	3.56	ug/Kg	1		12/16/15 15:00
1,2-Dichloropropane	11.5 U	11.5	3.56	ug/Kg	1		12/16/15 15:00
1,3,5-Trimethylbenzene	384	28.7	8.96	ug/Kg	1		12/16/15 15:00
1,3-Dichlorobenzene	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
1,3-Dichloropropane	11.5 U	11.5	3.56	ug/Kg	1		12/16/15 15:00
1,4-Dichlorobenzene	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
2,2-Dichloropropane	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
2-Butanone (MEK)	287 U	287	89.6	ug/Kg	1		12/16/15 15:00
2-Chlorotoluene	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
2-Hexanone	287 U	287	89.6	ug/Kg	1		12/16/15 15:00
4-Chlorotoluene	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
4-Isopropyltoluene	34.2	28.7	8.96	ug/Kg	1		12/16/15 15:00
4-Methyl-2-pentanone (MIBK)	287 U	287	89.6	ug/Kg	1		12/16/15 15:00
Benzene	16.9	14.4	4.48	ug/Kg	1		12/16/15 15:00
Bromobenzene	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
Bromochloromethane	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
Bromodichloromethane	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
Bromoform	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
Bromomethane	230 U	230	71.2	ug/Kg	1		12/16/15 15:00
Carbon disulfide	115 U	115	35.6	ug/Kg	1		12/16/15 15:00
Carbon tetrachloride	14.4 U	14.4	4.48	ug/Kg	1		12/16/15 15:00
Chlorobenzene	28.7 U	28.7	8.96	ug/Kg	1		12/16/15 15:00
Chloroethane	230 U	230	71.2	ug/Kg	1		12/16/15 15:00

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Results of RVN-8-10

Client Sample ID: RVN-8-10
Client Project ID: RAVN ASR
Lab Sample ID: 1157173009
Lab Project ID: 1157173

Collection Date: 12/15/15 12:10
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):85.7
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

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Results of RVN-8-10

Client Sample ID: **RVN-8-10**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173009
Lab Project ID: 1157173

Collection Date: 12/15/15 12:10
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):85.7
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15478
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/16/15 15:00
Container ID: 1157173009-B

Prep Batch: VXX28357
Prep Method: SW5035A
Prep Date/Time: 12/15/15 12:10
Prep Initial Wt./Vol.: 71.519 g
Prep Extract Vol: 35.21 mL

Print Date: 12/17/2015 10:30:42AM



Results of RVN-9-1

Client Sample ID: RVN-9-1
Client Project ID: RAVN ASR
Lab Sample ID: 1157173010
Lab Project ID: 1157173

Collection Date: 12/15/15 13:05
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 12/17/2015 10:30:42AM



Results of RVN-9-1

Client Sample ID: **RVN-9-1**
 Client Project ID: **RAVN ASR**
 Lab Sample ID: 1157173010
 Lab Project ID: 1157173

Collection Date: 12/15/15 13:05
 Received Date: 12/15/15 13:45
 Matrix: Soil/Solid (dry weight)
 Solids (%):85.6
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
Chloromethane	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
cis-1,2-Dichloroethene	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
cis-1,3-Dichloropropene	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
Dibromochloromethane	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
Dibromomethane	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
Dichlorodifluoromethane	51.2 U	51.2	15.4	ug/Kg	1		12/15/15 20:19
Ethylbenzene	25.9	25.6	7.99	ug/Kg	1		12/15/15 20:19
Freon-113	102 U	102	31.7	ug/Kg	1		12/15/15 20:19
Hexachlorobutadiene	51.2 U	51.2	15.4	ug/Kg	1		12/15/15 20:19
Isopropylbenzene (Cumene)	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
Methylene chloride	102 U	102	31.7	ug/Kg	1		12/15/15 20:19
Methyl-t-butyl ether	102 U	102	31.7	ug/Kg	1		12/15/15 20:19
Naphthalene	261	51.2	15.4	ug/Kg	1		12/15/15 20:19
n-Butylbenzene	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
n-Propylbenzene	28.7	25.6	7.99	ug/Kg	1		12/15/15 20:19
o-Xylene	81.1	25.6	7.99	ug/Kg	1		12/15/15 20:19
P & M -Xylene	108	51.2	15.4	ug/Kg	1		12/15/15 20:19
sec-Butylbenzene	33.5	25.6	7.99	ug/Kg	1		12/15/15 20:19
Styrene	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
tert-Butylbenzene	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
Tetrachloroethene	31.5	12.8	3.99	ug/Kg	1		12/15/15 20:19
Toluene	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
trans-1,2-Dichloroethene	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
trans-1,3-Dichloropropene	25.6 U	25.6	7.99	ug/Kg	1		12/15/15 20:19
Trichloroethene	12.8 U	12.8	3.99	ug/Kg	1		12/15/15 20:19
Trichlorofluoromethane	51.2 U	51.2	15.4	ug/Kg	1		12/15/15 20:19
Vinyl acetate	102 U	102	31.7	ug/Kg	1		12/15/15 20:19
Vinyl chloride	10.2 U	10.2	3.17	ug/Kg	1		12/15/15 20:19
Xylenes (total)	189	76.8	23.3	ug/Kg	1		12/15/15 20:19
Surrogates							
1,2-Dichloroethane-D4 (surr)	120	71-136		%	1		12/15/15 20:19
4-Bromofluorobenzene (surr)	121	55-151		%	1		12/15/15 20:19
Toluene-d8 (surr)	105	85-116		%	1		12/15/15 20:19

Print Date: 12/17/2015 10:30:42AM



Results of RVN-9-1

Client Sample ID: **RVN-9-1**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173010
Lab Project ID: 1157173

Collection Date: 12/15/15 13:05
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/15/15 20:19
Container ID: 1157173010-B

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/15/15 13:05
Prep Initial Wt./Vol.: 85.079 g
Prep Extract Vol: 37.2747 mL

Print Date: 12/17/2015 10:30:42AM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173011
Lab Project ID: 1157173

Collection Date: 12/14/15 12:21
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
1,1,1-Trichloroethane	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
1,1,2,2-Tetrachloroethane	12.3 U	12.3	3.83	ug/Kg	1		12/15/15 17:41
1,1,2-Trichloroethane	9.82 U	9.82	3.04	ug/Kg	1		12/15/15 17:41
1,1-Dichloroethane	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
1,1-Dichloroethene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
1,1-Dichloropropene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
1,2,3-Trichlorobenzene	49.1 U	49.1	14.7	ug/Kg	1		12/15/15 17:41
1,2,3-Trichloropropane	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
1,2,4-Trichlorobenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
1,2,4-Trimethylbenzene	49.1 U	49.1	14.7	ug/Kg	1		12/15/15 17:41
1,2-Dibromo-3-chloropropane	98.2 U	98.2	30.4	ug/Kg	1		12/15/15 17:41
1,2-Dibromoethane	9.82 U	9.82	3.04	ug/Kg	1		12/15/15 17:41
1,2-Dichlorobenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
1,2-Dichloroethane	9.82 U	9.82	3.04	ug/Kg	1		12/15/15 17:41
1,2-Dichloropropane	9.82 U	9.82	3.04	ug/Kg	1		12/15/15 17:41
1,3,5-Trimethylbenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
1,3-Dichlorobenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
1,3-Dichloropropane	9.82 U	9.82	3.04	ug/Kg	1		12/15/15 17:41
1,4-Dichlorobenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
2,2-Dichloropropane	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
2-Butanone (MEK)	245 U	245	76.6	ug/Kg	1		12/15/15 17:41
2-Chlorotoluene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
2-Hexanone	245 U	245	76.6	ug/Kg	1		12/15/15 17:41
4-Chlorotoluene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
4-Isopropyltoluene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
4-Methyl-2-pentanone (MIBK)	245 U	245	76.6	ug/Kg	1		12/15/15 17:41
Benzene	12.3 U	12.3	3.83	ug/Kg	1		12/15/15 17:41
Bromobenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Bromochloromethane	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Bromodichloromethane	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Bromoform	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Bromomethane	196 U	196	60.9	ug/Kg	1		12/15/15 17:41
Carbon disulfide	98.2 U	98.2	30.4	ug/Kg	1		12/15/15 17:41
Carbon tetrachloride	12.3 U	12.3	3.83	ug/Kg	1		12/15/15 17:41
Chlorobenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Chloroethane	196 U	196	60.9	ug/Kg	1		12/15/15 17:41

Print Date: 12/17/2015 10:30:42AM



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **RAVN ASR**
 Lab Sample ID: 1157173011
 Lab Project ID: 1157173

Collection Date: 12/14/15 12:21
 Received Date: 12/15/15 13:45
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Chloromethane	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
cis-1,2-Dichloroethene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
cis-1,3-Dichloropropene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Dibromochloromethane	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Dibromomethane	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Dichlorodifluoromethane	49.1 U	49.1	14.7	ug/Kg	1		12/15/15 17:41
Ethylbenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Freon-113	98.2 U	98.2	30.4	ug/Kg	1		12/15/15 17:41
Hexachlorobutadiene	49.1 U	49.1	14.7	ug/Kg	1		12/15/15 17:41
Isopropylbenzene (Cumene)	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Methylene chloride	98.2 U	98.2	30.4	ug/Kg	1		12/15/15 17:41
Methyl-t-butyl ether	98.2 U	98.2	30.4	ug/Kg	1		12/15/15 17:41
Naphthalene	49.1 U	49.1	14.7	ug/Kg	1		12/15/15 17:41
n-Butylbenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
n-Propylbenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
o-Xylene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
P & M -Xylene	49.1 U	49.1	14.7	ug/Kg	1		12/15/15 17:41
sec-Butylbenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Styrene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
tert-Butylbenzene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Tetrachloroethene	12.3 U	12.3	3.83	ug/Kg	1		12/15/15 17:41
Toluene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
trans-1,2-Dichloroethene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
trans-1,3-Dichloropropene	24.5 U	24.5	7.66	ug/Kg	1		12/15/15 17:41
Trichloroethene	12.3 U	12.3	3.83	ug/Kg	1		12/15/15 17:41
Trichlorofluoromethane	49.1 U	49.1	14.7	ug/Kg	1		12/15/15 17:41
Vinyl acetate	98.2 U	98.2	30.4	ug/Kg	1		12/15/15 17:41
Vinyl chloride	9.82 U	9.82	3.04	ug/Kg	1		12/15/15 17:41
Xylenes (total)	73.6 U	73.6	22.4	ug/Kg	1		12/15/15 17:41
Surrogates							
1,2-Dichloroethane-D4 (surr)	120	71-136		%	1		12/15/15 17:41
4-Bromofluorobenzene (surr)	115	55-151		%	1		12/15/15 17:41
Toluene-d8 (surr)	107	85-116		%	1		12/15/15 17:41

Print Date: 12/17/2015 10:30:42AM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **RAVN ASR**
Lab Sample ID: 1157173011
Lab Project ID: 1157173

Collection Date: 12/14/15 12:21
Received Date: 12/15/15 13:45
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Analyst: ST
Analytical Date/Time: 12/15/15 17:41
Container ID: 1157173011-A

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/14/15 12:21
Prep Initial Wt./Vol.: 50.921 g
Prep Extract Vol: 25 mL

Print Date: 12/17/2015 10:30:42AM



Method Blank

Blank ID: MB for HBN 1726336 [SPT/9812]

Matrix: Soil/Solid (dry weight)

Blank Lab ID: 1307595

QC for Samples:

1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007, 1157173008, 1157173009, 1157173010

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT9812

Analytical Method: SM21 2540G

Instrument:

Analyst: MEV

Analytical Date/Time: 12/16/2015 9:27:00AM

Print Date: 12/17/2015 10:30:45AM



Duplicate Sample Summary

Original Sample ID: 1157173001

Duplicate Sample ID: 1307596

Analysis Date: 12/16/2015 09:27

Matrix: Soil/Solid (dry weight)

QC for Samples:

1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007, 1157173008, 1157173009, 1157173010

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	85.4	84.0	%	1.70	(< 15)

Batch Information

Analytical Batch: SPT9812

Analytical Method: SM21 2540G

Instrument:

Analyst: MEV

Print Date: 12/17/2015 10:30:45AM



Method Blank

Blank ID: MB for HBN 1726337 [VXX/28356]
Blank Lab ID: 1307597

Matrix: Soil/Solid (dry weight)

QC for Samples:

1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007, 1157173008, 1157173010, 1157173011

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	12.5U	25.0	7.80	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	6.25U	12.5	3.90	ug/Kg
1,1,2-Trichloroethane	5.00U	10.0	3.10	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	12.5U	25.0	7.80	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	125U	250	78.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	12.5U	25.0	7.80	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	12.5U	25.0	7.80	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	100U	200	62.0	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg
Chloroform	12.5U	25.0	7.80	ug/Kg

Print Date: 12/17/2015 10:30:48AM



Method Blank

Blank ID: MB for HBN 1726337 [VXX/28356]
Blank Lab ID: 1307597

Matrix: Soil/Solid (dry weight)

QC for Samples:

1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007, 1157173008, 1157173010, 1157173011

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	12.5U	25.0	7.80	ug/Kg
Dibromochloromethane	12.5U	25.0	7.80	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	25.0U	50.0	15.0	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	25.0U	50.0	15.0	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	16.0J	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	8.50J	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	12.5U	25.0	7.80	ug/Kg
Trichloroethene	6.25U	12.5	3.90	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	5.00U	10.0	3.10	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	115	71-136		%
4-Bromofluorobenzene (surr)	111	55-151		%
Toluene-d8 (surr)	107	85-116		%

Print Date: 12/17/2015 10:30:48AM



Method Blank

Blank ID: MB for HBN 1726337 [VXX/28356]
Blank Lab ID: 1307597

Matrix: Soil/Solid (dry weight)

QC for Samples:

1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007, 1157173008, 1157173010, 1157173011

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Instrument: Agilent 7890-75MS
Analyst: ST
Analytical Date/Time: 12/15/2015 9:41:00AM

Prep Batch: VXX28356
Prep Method: SW5035A
Prep Date/Time: 12/15/2015 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 12/17/2015 10:30:48AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1157173 [VXX28356]

Blank Spike Lab ID: 1307598

Date Analyzed: 12/15/2015 11:03

Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007, 1157173008, 1157173010, 1157173011

Results by SW8260B

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	750	735	98	(78-125)
1,1,1-Trichloroethane	750	794	106	(73-130)
1,1,2,2-Tetrachloroethane	750	817	109	(70-124)
1,1,2-Trichloroethane	750	717	96	(78-121)
1,1-Dichloroethane	750	896	120	(76-125)
1,1-Dichloroethene	750	883	118	(70-131)
1,1-Dichloropropene	750	771	103	(76-125)
1,2,3-Trichlorobenzene	750	621	83	(66-130)
1,2,3-Trichloropropane	750	793	106	(73-125)
1,2,4-Trichlorobenzene	750	725	97	(67-129)
1,2,4-Trimethylbenzene	750	751	100	(75-123)
1,2-Dibromo-3-chloropropane	750	708	94	(61-132)
1,2-Dibromoethane	750	716	95	(78-122)
1,2-Dichlorobenzene	750	815	109	(78-121)
1,2-Dichloroethane	750	855	114	(73-128)
1,2-Dichloropropane	750	756	101	(76-123)
1,3,5-Trimethylbenzene	750	757	101	(73-124)
1,3-Dichlorobenzene	750	830	111	(77-121)
1,3-Dichloropropane	750	719	96	(77-121)
1,4-Dichlorobenzene	750	846	113	(75-120)
2,2-Dichloropropane	750	834	111	(67-133)
2-Butanone (MEK)	2250	2200	98	(51-148)
2-Chlorotoluene	750	749	100	(75-122)
2-Hexanone	2250	2300	102	(53-145)
4-Chlorotoluene	750	762	102	(72-124)
4-Isopropyltoluene	750	787	105	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2450	109	(65-135)
Benzene	750	758	101	(77-121)
Bromobenzene	750	838	112	(78-121)
Bromochloromethane	750	820	109	(78-125)
Bromodichloromethane	750	781	104	(75-127)
Bromoform	750	740	99	(67-132)
Bromomethane	750	796	106	(53-143)
Carbon disulfide	1130	1350	120	(63-132)

Print Date: 12/17/2015 10:30:48AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1157173 [VXX28356]

Blank Spike Lab ID: 1307598

Date Analyzed: 12/15/2015 11:03

Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007, 1157173008, 1157173010, 1157173011

Results by SW8260B

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Carbon tetrachloride	750	787	105	(70-135)
Chlorobenzene	750	849	113	(79-120)
Chloroethane	750	920	123	(59-139)
Chloroform	750	811	108	(78-123)
Chloromethane	750	840	112	(50-136)
cis-1,2-Dichloroethene	750	857	114	(77-123)
cis-1,3-Dichloropropene	750	765	102	(74-126)
Dibromochloromethane	750	721	96	(74-126)
Dibromomethane	750	848	113	(78-125)
Dichlorodifluoromethane	750	807	108	(29-149)
Ethylbenzene	750	740	99	(76-122)
Freon-113	1130	1190	106	(66-136)
Hexachlorobutadiene	750	796	106	(61-135)
Isopropylbenzene (Cumene)	750	752	100	(68-134)
Methylene chloride	750	770	103	(70-128)
Methyl-t-butyl ether	1130	1100	98	(73-125)
Naphthalene	750	636	85	(62-129)
n-Butylbenzene	750	829	111	(70-128)
n-Propylbenzene	750	771	103	(73-125)
o-Xylene	750	743	99	(77-123)
P & M -Xylene	1500	1480	99	(77-124)
sec-Butylbenzene	750	788	105	(73-126)
Styrene	750	750	100	(76-124)
tert-Butylbenzene	750	770	103	(73-125)
Tetrachloroethene	750	720	96	(73-128)
Toluene	750	722	96	(77-121)
trans-1,2-Dichloroethene	750	886	118	(74-125)
trans-1,3-Dichloropropene	750	721	96	(71-130)
Trichloroethene	750	757	101	(77-123)
Trichlorofluoromethane	750	829	110	(62-140)
Vinyl acetate	750	703	94	(50-151)
Vinyl chloride	750	900	120	(56-135)
Xylenes (total)	2250	2220	99	(78-124)

Print Date: 12/17/2015 10:30:48AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1157173 [VXX28356]

Blank Spike Lab ID: 1307598

Date Analyzed: 12/15/2015 11:03

Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007,
1157173008, 1157173010, 1157173011

Results by SW8260B

Parameter	Blank Spike (%)			CL
	Spike	Result	Rec (%)	
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	117	117	(71-136)
4-Bromofluorobenzene (surr)	750	103	103	(55-151)
Toluene-d8 (surr)	750	108	108	(85-116)

Batch Information

Analytical Batch: **VMS15477**

Analytical Method: **SW8260B**

Instrument: **Agilent 7890-75MS**

Analyst: **ST**

Prep Batch: **VXX28356**

Prep Method: **SW5035A**

Prep Date/Time: **12/15/2015 08:00**

Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1307639
 MS Sample ID: 1307599 MS
 MSD Sample ID: 1307600 MSD

Analysis Date: 12/15/2015 13:34
 Analysis Date: 12/15/2015 12:14
 Analysis Date: 12/15/2015 12:30
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007, 1157173008, 1157173010, 1157173011

Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	121U	7230	6810	94	7230	7070	98	78-125	3.80	(< 20)
1,1,1-Trichloroethane	121U	7230	7640	106	7230	7650	106	73-130	0.10	(< 20)
1,1,2,2-Tetrachloroethane	60.0U	7230	8640	120	7230	8650	120	70-124	0.06	(< 20)
1,1,2-Trichloroethane	48.2U	7230	8320	115	7230	8790	122 *	78-121	5.50	(< 20)
1,1-Dichloroethane	121U	7230	8790	122	7230	8480	117	76-125	3.60	(< 20)
1,1-Dichloroethene	121U	7230	8770	121	7230	8430	117	70-131	3.90	(< 20)
1,1-Dichloropropene	121U	7230	7250	100	7230	7410	103	76-125	2.20	(< 20)
1,2,3-Trichlorobenzene	241U	7230	6720	93	7230	9300	129	66-130	32.20 *	(< 20)
1,2,3-Trichloropropane	121U	7230	8440	117	7230	8450	117	73-125	0.20	(< 20)
1,2,4-Trichlorobenzene	121U	7230	7450	103	7230	9030	125	67-129	19.20	(< 20)
1,2,4-Trimethylbenzene	10500	7230	17800	102	7230	17500	98	75-123	1.70	(< 20)
1,2-Dibromo-3-chloropropane	482U	7230	8240	114	7230	8970	124	61-132	8.50	(< 20)
1,2-Dibromoethane	48.2U	7230	6690	93	7230	7080	98	78-122	5.60	(< 20)
1,2-Dichlorobenzene	121U	7230	7860	109	7230	7830	108	78-121	0.28	(< 20)
1,2-Dichloroethane	48.2U	7230	8550	118	7230	8300	115	73-128	2.90	(< 20)
1,2-Dichloropropane	48.2U	7230	7260	100	7230	7370	102	76-123	1.60	(< 20)
1,3,5-Trimethylbenzene	4290	7230	11400	98	7230	11300	97	73-124	0.87	(< 20)
1,3-Dichlorobenzene	121U	7230	7960	110	7230	7860	109	77-121	1.30	(< 20)
1,3-Dichloropropane	48.2U	7230	6710	93	7230	7040	97	77-121	4.70	(< 20)
1,4-Dichlorobenzene	121U	7230	8050	111	7230	7960	110	75-120	1.10	(< 20)
2,2-Dichloropropane	121U	7230	8020	111	7230	7860	109	67-133	2.00	(< 20)
2-Butanone (MEK)	1205U	21700	23100	106	21700	26500	122	51-148	14.00	(< 20)
2-Chlorotoluene	121U	7230	8220	114	7230	8110	112	75-122	1.30	(< 20)
2-Hexanone	1205U	21700	24000	111	21700	25800	119	53-145	7.30	(< 20)
4-Chlorotoluene	121U	7230	7090	98	7230	6950	96	72-124	2.00	(< 20)
4-Isopropyltoluene	2750	7230	10400	106	7230	10100	101	73-127	3.00	(< 20)
4-Methyl-2-pentanone (MIBK)	1205U	21700	26400	122	21700	26400	122	65-135	0.10	(< 20)
Benzene	91.5J	7230	7130	97	7230	7270	99	77-121	2.00	(< 20)
Bromobenzene	121U	7230	8090	112	7230	7920	110	78-121	2.20	(< 20)
Bromochloromethane	121U	7230	8290	115	7230	7810	108	78-125	5.90	(< 20)
Bromodichloromethane	121U	7230	7690	106	7230	7570	105	75-127	1.50	(< 20)
Bromoform	121U	7230	7150	99	7230	7190	100	67-132	0.50	(< 20)
Bromomethane	965U	7230	8200	113	7230	7660	106	53-143	6.80	(< 20)
Carbon disulfide	482U	10800	13200	122	10800	12700	117	63-132	3.90	(< 20)
Carbon tetrachloride	60.0U	7230	7620	105	7230	7620	105	70-135	0.06	(< 20)
Chlorobenzene	121U	7230	8150	113	7230	8200	114	79-120	0.68	(< 20)
Chloroethane	965U	7230	8670	120	7230	7940	110	59-139	8.80	(< 20)

Print Date: 12/17/2015 10:30:49AM



Matrix Spike Summary

Original Sample ID: 1307639
 MS Sample ID: 1307599 MS
 MSD Sample ID: 1307600 MSD

Analysis Date: 12/15/2015 13:34
 Analysis Date: 12/15/2015 12:14
 Analysis Date: 12/15/2015 12:30
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007, 1157173008, 1157173010, 1157173011

Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroform	121U	7230	8090	112	7230	7820	108	78-123	3.40	(< 20)
Chloromethane	121U	7230	8200	113	7230	7560	105	50-136	8.10	(< 20)
cis-1,2-Dichloroethene	121U	7230	8640	120	7230	8110	112	77-123	6.30	(< 20)
cis-1,3-Dichloropropene	121U	7230	7440	103	7230	7490	104	74-126	0.65	(< 20)
Dibromochloromethane	121U	7230	6800	94	7230	7090	98	74-126	4.20	(< 20)
Dibromomethane	121U	7230	8540	118	7230	8300	115	78-125	2.90	(< 20)
Dichlorodifluoromethane	241U	7230	6800	94	7230	6310	87	29-149	7.40	(< 20)
Ethylbenzene	848	7230	7870	97	7230	7980	99	76-122	1.40	(< 20)
Freon-113	482U	10800	11600	107	10800	11500	106	66-136	1.00	(< 20)
Hexachlorobutadiene	241U	7230	9880	137 *	7230	11000	153 *	61-135	11.20	(< 20)
Isopropylbenzene (Cumene)	549	7230	7690	99	7230	7670	99	68-134	0.25	(< 20)
Methylene chloride	482U	7230	7730	107	7230	7210	100	70-128	7.00	(< 20)
Methyl-t-butyl ether	482U	10800	10900	101	10800	11000	101	73-125	0.42	(< 20)
Naphthalene	6450	7230	12400	83	7230	16700	142 *	62-129	29.10	* (< 20)
n-Butylbenzene	121U	7230	10500	145 *	7230	10100	139 *	70-128	3.70	(< 20)
n-Propylbenzene	1090	7230	8370	101	7230	8090	97	73-125	3.40	(< 20)
o-Xylene	3150	7230	10300	99	7230	10300	98	77-123	0.63	(< 20)
P & M -Xylene	5480	14500	19600	97	14500	19600	98	77-124	0.11	(< 20)
sec-Butylbenzene	761	7230	8300	104	7230	8090	101	73-126	2.60	(< 20)
Styrene	121U	7230	7200	100	7230	7020	97	76-124	2.50	(< 20)
tert-Butylbenzene	121U	7230	7450	103	7230	7250	100	73-125	2.70	(< 20)
Tetrachloroethene	60.0U	7230	6770	94	7230	6900	95	73-128	1.80	(< 20)
Toluene	253	7230	7160	96	7230	7320	98	77-121	2.20	(< 20)
trans-1,2-Dichloroethene	121U	7230	8710	121	7230	8370	116	74-125	3.90	(< 20)
trans-1,3-Dichloropropene	121U	7230	6640	92	7230	6960	96	71-130	4.60	(< 20)
Trichloroethene	60.0U	7230	7170	99	7230	7370	102	77-123	2.80	(< 20)
Trichlorofluoromethane	241U	7230	7040	97	7230	6630	92	62-140	6.10	(< 20)
Vinyl acetate	482U	7230	6960	96	7230	6970	97	50-151	0.14	(< 20)
Vinyl chloride	48.2U	7230	8140	113	7230	7560	105	56-135	7.30	(< 20)
Xylenes (total)	8630	21700	29900	98	21700	29800	98	78-124	0.15	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		7230	8780	122	7230	8490	117	71-136	3.50	
4-Bromofluorobenzene (surr)		8430	8910	106	8430	8800	104	55-151	1.30	
Toluene-d8 (surr)		7230	7710	107	7230	7950	110	85-116	3.00	

Print Date: 12/17/2015 10:30:49AM



Matrix Spike Summary

Original Sample ID: 1307639
MS Sample ID: 1307599 MS
MSD Sample ID: 1307600 MSD

Analysis Date:
Analysis Date: 12/15/2015 12:14
Analysis Date: 12/15/2015 12:30
Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173002, 1157173003, 1157173004, 1157173005, 1157173006, 1157173007,
1157173008, 1157173010, 1157173011

Results by SW8260B

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS15477
Analytical Method: SW8260B
Instrument: Agilent 7890-75MS
Analyst: ST
Analytical Date/Time: 12/15/2015 12:14:00PM

Prep Batch: VXX28356
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 12/15/2015 8:00:00AM
Prep Initial Wt./Vol.: 51.89g
Prep Extract Vol: 25.00mL

Print Date: 12/17/2015 10:30:49AM



Method Blank

Blank ID: MB for HBN 1726350 [VXX/28357]
Blank Lab ID: 1307657

Matrix: Soil/Solid (dry weight)

QC for Samples:
1157173001, 1157173006, 1157173007, 1157173008, 1157173009

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	12.5U	25.0	7.80	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	6.25U	12.5	3.90	ug/Kg
1,1,2-Trichloroethane	5.00U	10.0	3.10	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	12.5U	25.0	7.80	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	125U	250	78.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	12.5U	25.0	7.80	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	12.5U	25.0	7.80	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	100U	200	62.0	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg
Chloroform	12.5U	25.0	7.80	ug/Kg

Print Date: 12/17/2015 10:30:50AM



Method Blank

Blank ID: MB for HBN 1726350 [VXX/28357]

Blank Lab ID: 1307657

QC for Samples:

1157173001, 1157173006, 1157173007, 1157173008, 1157173009

Matrix: Soil/Solid (dry weight)

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	12.5U	25.0	7.80	ug/Kg
Dibromochloromethane	12.5U	25.0	7.80	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	25.0U	50.0	15.0	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	25.0U	50.0	15.0	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	8.00J	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	12.5U	25.0	7.80	ug/Kg
Trichloroethene	6.25U	12.5	3.90	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	5.00U	10.0	3.10	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	116	71-136		%
4-Bromofluorobenzene (surr)	114	55-151		%
Toluene-d8 (surr)	110	85-116		%

Print Date: 12/17/2015 10:30:50AM



Method Blank

Blank ID: MB for HBN 1726350 [VXX/28357]
Blank Lab ID: 1307657

Matrix: Soil/Solid (dry weight)

QC for Samples:
1157173001, 1157173006, 1157173007, 1157173008, 1157173009

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS15478
Analytical Method: SW8260B
Instrument: Agilent 7890-75MS
Analyst: ST
Analytical Date/Time: 12/16/2015 11:42:00AM

Prep Batch: VXX28357
Prep Method: SW5035A
Prep Date/Time: 12/16/2015 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 12/17/2015 10:30:50AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1157173 [VXX28357]

Blank Spike Lab ID: 1307658

Date Analyzed: 12/16/2015 12:11

Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173006, 1157173007, 1157173008, 1157173009

Results by SW8260B

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	750	718	96	(78-125)
1,1,1-Trichloroethane	750	759	101	(73-130)
1,1,2,2-Tetrachloroethane	750	846	113	(70-124)
1,1,2-Trichloroethane	750	722	96	(78-121)
1,1-Dichloroethane	750	868	116	(76-125)
1,1-Dichloroethene	750	869	116	(70-131)
1,1-Dichloropropene	750	743	99	(76-125)
1,2,3-Trichlorobenzene	750	636	85	(66-130)
1,2,3-Trichloropropane	750	807	108	(73-125)
1,2,4-Trichlorobenzene	750	720	96	(67-129)
1,2,4-Trimethylbenzene	750	749	100	(75-123)
1,2-Dibromo-3-chloropropane	750	692	92	(61-132)
1,2-Dibromoethane	750	713	95	(78-122)
1,2-Dichlorobenzene	750	812	108	(78-121)
1,2-Dichloroethane	750	851	113	(73-128)
1,2-Dichloropropane	750	746	100	(76-123)
1,3,5-Trimethylbenzene	750	753	100	(73-124)
1,3-Dichlorobenzene	750	827	110	(77-121)
1,3-Dichloropropane	750	716	95	(77-121)
1,4-Dichlorobenzene	750	841	112	(75-120)
2,2-Dichloropropane	750	686	91	(67-133)
2-Butanone (MEK)	2250	2210	98	(51-148)
2-Chlorotoluene	750	751	100	(75-122)
2-Hexanone	2250	2310	103	(53-145)
4-Chlorotoluene	750	757	101	(72-124)
4-Isopropyltoluene	750	767	102	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2480	110	(65-135)
Benzene	750	730	97	(77-121)
Bromobenzene	750	829	111	(78-121)
Bromochloromethane	750	824	110	(78-125)
Bromodichloromethane	750	779	104	(75-127)
Bromoform	750	726	97	(67-132)
Bromomethane	750	830	111	(53-143)
Carbon disulfide	1130	1310	117	(63-132)

Print Date: 12/17/2015 10:30:51AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1157173 [VXX28357]

Blank Spike Lab ID: 1307658

Date Analyzed: 12/16/2015 12:11

Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173006, 1157173007, 1157173008, 1157173009

Results by SW8260B

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Carbon tetrachloride	750	763	102	(70-135)
Chlorobenzene	750	827	110	(79-120)
Chloroethane	750	941	125	(59-139)
Chloroform	750	806	107	(78-123)
Chloromethane	750	846	113	(50-136)
cis-1,2-Dichloroethene	750	839	112	(77-123)
cis-1,3-Dichloropropene	750	724	97	(74-126)
Dibromochloromethane	750	713	95	(74-126)
Dibromomethane	750	859	115	(78-125)
Dichlorodifluoromethane	750	779	104	(29-149)
Ethylbenzene	750	724	97	(76-122)
Freon-113	1130	1140	102	(66-136)
Hexachlorobutadiene	750	723	96	(61-135)
Isopropylbenzene (Cumene)	750	750	100	(68-134)
Methylene chloride	750	770	103	(70-128)
Methyl-t-butyl ether	1130	1080	96	(73-125)
Naphthalene	750	644	86	(62-129)
n-Butylbenzene	750	800	107	(70-128)
n-Propylbenzene	750	771	103	(73-125)
o-Xylene	750	744	99	(77-123)
P & M -Xylene	1500	1460	98	(77-124)
sec-Butylbenzene	750	792	106	(73-126)
Styrene	750	743	99	(76-124)
tert-Butylbenzene	750	773	103	(73-125)
Tetrachloroethene	750	696	93	(73-128)
Toluene	750	712	95	(77-121)
trans-1,2-Dichloroethene	750	856	114	(74-125)
trans-1,3-Dichloropropene	750	657	88	(71-130)
Trichloroethene	750	734	98	(77-123)
Trichlorofluoromethane	750	804	107	(62-140)
Vinyl acetate	750	633	84	(50-151)
Vinyl chloride	750	887	118	(56-135)
Xylenes (total)	2250	2210	98	(78-124)

Print Date: 12/17/2015 10:30:51AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1157173 [VXX28357]

Blank Spike Lab ID: 1307658

Date Analyzed: 12/16/2015 12:11

Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173006, 1157173007, 1157173008, 1157173009

Results by SW8260B

Parameter	Blank Spike (%)			CL
	Spike	Result	Rec (%)	
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	115	115	(71-136)
4-Bromofluorobenzene (surr)	750	104	104	(55-151)
Toluene-d8 (surr)	750	106	106	(85-116)

Batch Information

Analytical Batch: **VMS15478**

Analytical Method: **SW8260B**

Instrument: **Agilent 7890-75MS**

Analyst: **ST**

Prep Batch: **VXX28357**

Prep Method: **SW5035A**

Prep Date/Time: **12/16/2015 08:00**

Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1157173009
 MS Sample ID: 1307659 MS
 MSD Sample ID: 1307660 MSD

Analysis Date: 12/16/2015 15:00
 Analysis Date: 12/16/2015 13:56
 Analysis Date: 12/16/2015 14:12
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173006, 1157173007, 1157173008, 1157173009

Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	28.7U	611	547	90	611	590	97	78-125	7.60	(< 20)
1,1,1-Trichloroethane	28.7U	611	550	90	611	649	106	73-130	16.70	(< 20)
1,1,2,2-Tetrachloroethane	14.4U	611	769	126 *	611	753	123	70-124	2.30	(< 20)
1,1,2-Trichloroethane	11.5U	611	586	96	611	660	108	78-121	12.00	(< 20)
1,1-Dichloroethane	28.7U	611	680	111	611	746	122	76-125	9.20	(< 20)
1,1-Dichloroethene	28.7U	611	693	113	611	798	130	70-131	14.10	(< 20)
1,1-Dichloropropene	28.7U	611	540	88	611	635	104	76-125	16.10	(< 20)
1,2,3-Trichlorobenzene	57.4U	611	686	112	611	847	138 *	66-130	20.90	* (< 20)
1,2,3-Trichloropropane	28.7U	611	698	114	611	692	113	73-125	0.91	(< 20)
1,2,4-Trichlorobenzene	28.7U	611	739	121	611	821	134 *	67-129	10.70	(< 20)
1,2,4-Trimethylbenzene	73.2	611	660	96	611	615	89	75-123	7.10	(< 20)
1,2-Dibromo-3-chloropropane	115U	611	615	100	611	697	114	61-132	12.50	(< 20)
1,2-Dibromoethane	11.5U	611	529	86	611	594	97	78-122	11.60	(< 20)
1,2-Dichlorobenzene	28.7U	611	648	106	611	639	104	78-121	1.30	(< 20)
1,2-Dichloroethane	11.5U	611	615	101	611	712	116	73-128	14.50	(< 20)
1,2-Dichloropropane	11.5U	611	525	86	611	620	101	76-123	16.60	(< 20)
1,3,5-Trimethylbenzene	384	611	870	80	611	805	69 *	73-124	7.80	(< 20)
1,3-Dichlorobenzene	28.7U	611	659	108	611	630	103	77-121	4.60	(< 20)
1,3-Dichloropropane	11.5U	611	512	84	611	583	95	77-121	13.00	(< 20)
1,4-Dichlorobenzene	28.7U	611	658	108	611	639	105	75-120	2.80	(< 20)
2,2-Dichloropropane	28.7U	611	536	88	611	634	104	67-133	16.80	(< 20)
2-Butanone (MEK)	287U	1832	1622	89	1832	2054	112	51-148	23.10	* (< 20)
2-Chlorotoluene	28.7U	611	607	99	611	567	93	75-122	6.90	(< 20)
2-Hexanone	287U	1832	1890	103	1832	2112	115	53-145	11.00	(< 20)
4-Chlorotoluene	28.7U	611	576	94	611	545	89	72-124	5.60	(< 20)
4-Isopropyltoluene	34.2	611	784	123	611	693	108	73-127	12.30	(< 20)
4-Methyl-2-pentanone (MIBK)	287U	1832	2065	112	1832	2194	119	65-135	5.90	(< 20)
Benzene	16.9	611	566	90	611	622	99	77-121	9.50	(< 20)
Bromobenzene	28.7U	611	639	104	611	611	100	78-121	4.30	(< 20)
Bromochloromethane	28.7U	611	637	104	611	688	113	78-125	7.80	(< 20)
Bromodichloromethane	28.7U	611	551	90	611	646	106	75-127	15.80	(< 20)
Bromoform	28.7U	611	559	91	611	611	100	67-132	8.90	(< 20)
Bromomethane	230U	611	608	99	611	629	103	53-143	3.50	(< 20)
Carbon disulfide	115U	918	1075	117	918	1202	131	63-132	11.30	(< 20)
Carbon tetrachloride	14.4U	611	546	89	611	650	106	70-135	17.40	(< 20)
Chlorobenzene	28.7U	611	672	110	611	698	114	79-120	3.90	(< 20)
Chloroethane	230U	611	784	128	611	667	109	59-139	16.10	(< 20)

Print Date: 12/17/2015 10:30:52AM



Matrix Spike Summary

Original Sample ID: 1157173009
 MS Sample ID: 1307659 MS
 MSD Sample ID: 1307660 MSD

Analysis Date: 12/16/2015 15:00
 Analysis Date: 12/16/2015 13:56
 Analysis Date: 12/16/2015 14:12
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173006, 1157173007, 1157173008, 1157173009

Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroform	28.7U	611	609	100	611	684	112	78-123	11.50	(< 20)
Chloromethane	28.7U	611	691	113	611	673	110	50-136	2.60	(< 20)
cis-1,2-Dichloroethene	28.7U	611	634	104	611	718	117	77-123	12.50	(< 20)
cis-1,3-Dichloropropene	28.7U	611	531	87	611	614	100	74-126	14.40	(< 20)
Dibromochloromethane	28.7U	611	506	83	611	592	97	74-126	15.60	(< 20)
Dibromomethane	28.7U	611	634	104	611	716	117	78-125	12.20	(< 20)
Dichlorodifluoromethane	57.4U	611	659	108	611	632	103	29-149	4.20	(< 20)
Ethylbenzene	28.7U	611	597	94	611	611	96	76-122	2.40	(< 20)
Freon-113	115U	918	855	93	918	1043	114	66-136	19.70	(< 20)
Hexachlorobutadiene	57.4U	611	1065	174 *	611	995	163 *	61-135	6.70	(< 20)
Isopropylbenzene (Cumene)	28.7U	611	621	99	611	613	98	68-134	1.30	(< 20)
Methylene chloride	115U	611	616	101	611	643	105	70-128	4.30	(< 20)
Methyl-t-butyl ether	115U	918	756	82	918	890	97	73-125	16.30	(< 20)
Naphthalene	168	611	713	89	611	898	120	62-129	23.00	* (< 20)
n-Butylbenzene	28.7U	611	853	139 *	611	729	119	70-128	15.70	(< 20)
n-Propylbenzene	28.7U	611	628	103	611	565	92	73-125	10.60	(< 20)
o-Xylene	91.3	611	638	89	611	656	92	77-123	2.70	(< 20)
P & M -Xylene	78.4	1225	1202	92	1225	1225	93	77-124	1.80	(< 20)
sec-Butylbenzene	28.7U	611	698	111	611	604	95	73-126	14.40	(< 20)
Styrene	28.7U	611	587	96	611	607	99	76-124	3.30	(< 20)
tert-Butylbenzene	28.7U	611	641	105	611	580	95	73-125	10.00	(< 20)
Tetrachloroethene	49.1	611	579	87	611	617	93	73-128	6.50	(< 20)
Toluene	28.7U	611	594	93	611	602	95	77-121	1.50	(< 20)
trans-1,2-Dichloroethene	28.7U	611	656	107	611	748	122	74-125	13.10	(< 20)
trans-1,3-Dichloropropene	28.7U	611	488	80	611	554	91	71-130	12.80	(< 20)
Trichloroethene	15.2	611	539	86	611	622	99	77-123	14.30	(< 20)
Trichlorofluoromethane	57.4U	611	670	110	611	716	117	62-140	6.70	(< 20)
Vinyl acetate	115U	611	492	81	611	557	91	50-151	12.20	(< 20)
Vinyl chloride	11.5U	611	755	123	611	723	118	56-135	4.30	(< 20)
Xylenes (total)	170	1832	1832	91	1832	1879	93	78-124	2.10	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		611	627	102	611	732	120	71-136	15.60	
4-Bromofluorobenzene (surr)		1634	1494	92	1634	1400	86	55-151	6.50	
Toluene-d8 (surr)		611	651	106	611	664	109	85-116	2.00	

Print Date: 12/17/2015 10:30:52AM



Matrix Spike Summary

Original Sample ID: 1157173009
MS Sample ID: 1307659 MS
MSD Sample ID: 1307660 MSD

Analysis Date:
Analysis Date: 12/16/2015 13:56
Analysis Date: 12/16/2015 14:12
Matrix: Soil/Solid (dry weight)

QC for Samples: 1157173001, 1157173006, 1157173007, 1157173008, 1157173009

Results by SW8260B

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS15478
Analytical Method: SW8260B
Instrument: Agilent 7890-75MS
Analyst: ST
Analytical Date/Time: 12/16/2015 1:56:00PM

Prep Batch: VXX28357
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 12/16/2015 8:00:00AM
Prep Initial Wt./Vol.: 71.52g
Prep Extract Vol: 25.00mL

Print Date: 12/17/2015 10:30:52AM



1157173



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Section 1		Section 3				Section 4		Section 5		
CLIENT: Restoration Science & Engineering CONTACT: Cuthie Brandt & Nick Blanton PHONE NO.: 278-1023 PROJECT PWSID/ PERMIT#: REPORTS TO: RSN INVOICE TO: RSE, Lucas Gambler QUOTE #: 15-1476 E-MAIL: cbrandt@restorsci.com		Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis. Preservative Type C = COMP G = GRAB Multi-Incre-mental Soils				Section 4 DOD Project? Yes No Cooler ID: Requested Turnaround Time and/or Special Instructions: Push: 24 HR TURN AROUND		Data Deliverable Requirements: Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT Temp Blank °C: 0.7/02 or Ambient [] (See attached Sample Receipt Form)		Page <u>1</u> of <u>1</u>
RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX CODE	#	CONTAINER	% Moist	% Percent Solids	REMARKS/ LOC ID	
	1 AB RUN-1-13	12/14/15	12:21	Soil	2	G	X	X		
	2 AB RUN-2-4	12/14/15	14:01	Soil	2	G	X	X		
	3 AB RUN-3-10	12/14/15	14:41	Soil	2	G	X	X		
	4 AB RUN-X	12/14/15	11:41	Soil	2	G	X	X		
	5 AB RUN-4-5	12/14/15	15:28	Soil	2	G	X	X		
	6 AB RUN-5-13	12/14/15	16:25	Soil	2	G	X	X		
	7 AB RUN-6-2	12/14/15	17:00	Soil	2	G	X	X		
	8 AB RUN-7-1	12/15/15	11:00	Soil	2	G	X	X		
	9 AB RUN-8-10	12/15/15	12:10	Soil	2	G	X	X		
	10 AB RUN-9-1	12/15/15	13:05	Soil	2	G	X	X		
Relinquished By: (1) <i>[Signature]</i>		Date	12/15/15	Time	1345	Received By:				
Relinquished By: (2) <i>[Signature]</i>		Date		Time		Received By:				
Relinquished By: (3) <i>[Signature]</i>		Date		Time		Received By:				
Relinquished By: (4) <i>[Signature]</i>		Date	12/15/15	Time	1345	Received For Laboratory By:				



1157173



1 1 5 7 1 7 3

SAMPLE RECEIPT FORM

Review Criteria:	Yes	N/A	No	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Exemption permitted if sampler hand carries/delivers.</i>
Temperature blank compliant* (i.e., 0-6°C after CF)? <i>If >6°C, were samples collected <8 hours ago?</i> <i>If <0°C, were all sample containers ice free?</i> Cooler ID: <u>1</u> @ <u>0.7</u> w/ Therm.ID: <u>D2</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ If samples are received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled."	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Exemption permitted if chilled & collected <8 hrs ago.</i> <i>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</i>
Delivery method (specify all that apply): <input checked="" type="checkbox"/> Client (hand carried) <input type="checkbox"/> USPS <input type="checkbox"/> Lynden <input type="checkbox"/> AK Air <input type="checkbox"/> Alert Courier <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> RAVN <input type="checkbox"/> C&D Delivery <input type="checkbox"/> Carlife <input type="checkbox"/> Pen Air <input type="checkbox"/> Warp Speed <input type="checkbox"/> Other: _____ → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	Yes	N/A	No	
Were samples received within hold time? Do samples match COC* (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Note: Refer to form F-083 "Sample Guide" for hold times.</i> <i>Note: If times differ <1hr, record details and login per COC.</i>
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): <input checked="" type="checkbox"/> Bubble Wrap <input type="checkbox"/> Separate plastic bags <input type="checkbox"/> Vermiculite <input type="checkbox"/> Other:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were proper containers (type/mass/volume/preservative*) used? Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <i>Exemption permitted for metals (e.g., 200.8/6020A).</i>
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant ? If pH was adjusted, were bottles flagged (i.e., stickers)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
For special handling (e.g., "MI" soils, foreign soils, lab filter for dissolved..., lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For RUSH/SHORT Hold Time , were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Rush due 12/16
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP , were containers / paperwork flagged accordingly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SRF Completed by: VDL PM notified:
Was PEER REVIEW of <i>sample numbering/labeling completed</i> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Peer Reviewed by: EDJ
Additional notes (if applicable):				

Note to Client: Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1157173001-A	No Preservative Required	OK			
1157173001-B	Methanol field pres. 4 C	OK			
1157173002-A	No Preservative Required	OK			
1157173002-B	Methanol field pres. 4 C	OK			
1157173003-A	No Preservative Required	OK			
1157173003-B	Methanol field pres. 4 C	OK			
1157173004-A	No Preservative Required	OK			
1157173004-B	Methanol field pres. 4 C	OK			
1157173005-A	No Preservative Required	OK			
1157173005-B	Methanol field pres. 4 C	OK			
1157173006-A	No Preservative Required	OK			
1157173006-B	Methanol field pres. 4 C	OK			
1157173007-A	No Preservative Required	OK			
1157173007-B	Methanol field pres. 4 C	OK			
1157173008-A	No Preservative Required	OK			
1157173008-B	Methanol field pres. 4 C	OK			
1157173009-A	No Preservative Required	OK			
1157173009-B	Methanol field pres. 4 C	OK			
1157173010-A	No Preservative Required	OK			
1157173010-B	Methanol field pres. 4 C	OK			
1157173011-A	Methanol field pres. 4 C	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.