



STONE ENVIRONMENTAL

100% EMPLOYEE-OWNED

Understanding Collected Data

Daniel Voisin, Senior Geologist
NEWMOA

Framework

Quality Site Assessments

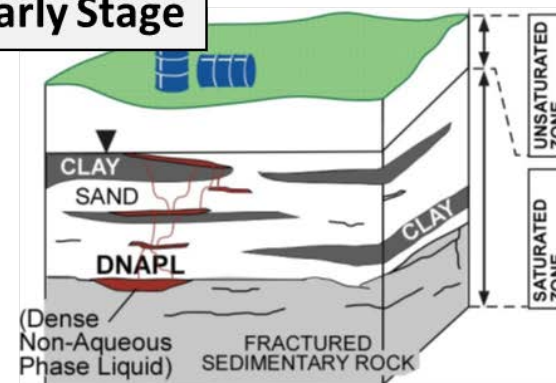
Site Investigation Planning

Understanding the Data

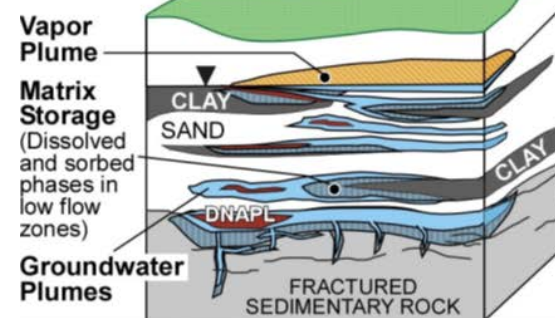
Data Usability and Presentation

Updating the CSM

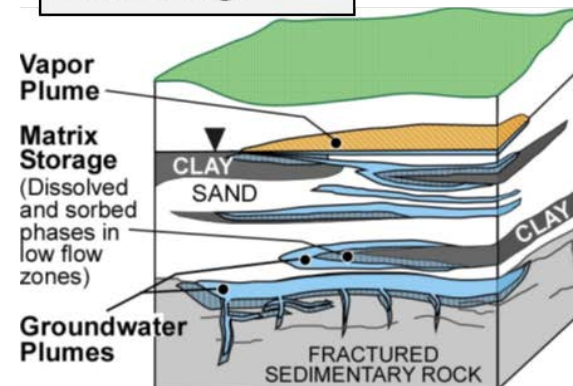
Early Stage



Middle Stage



Late Stage



Multiple stages in the evolution of a chlorinated solvent release. *Sale et al., 2008*

Agenda

1. What are “Useable Data?”
2. Field Preparation
3. Field Records
4. Laboratory Data

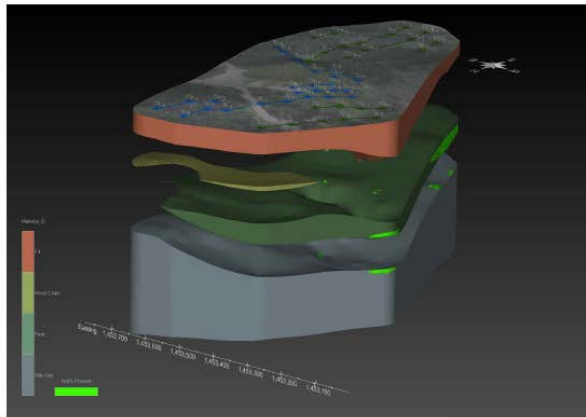


FIGURE 5A
3D VIEW OF COAL TAR NAPL WITH STRATIGRAPHY
(EXPLODED FOR VIEWING PURPOSES), LOOKING
SOUTHEAST

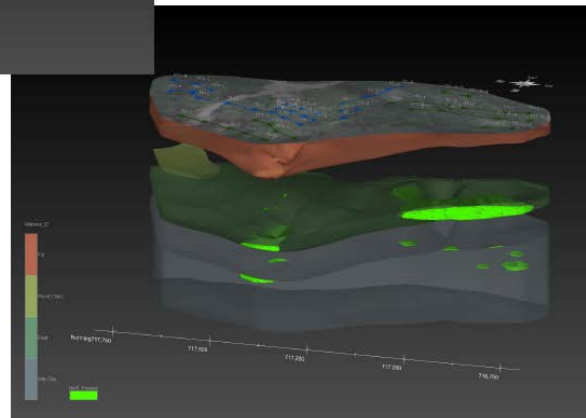
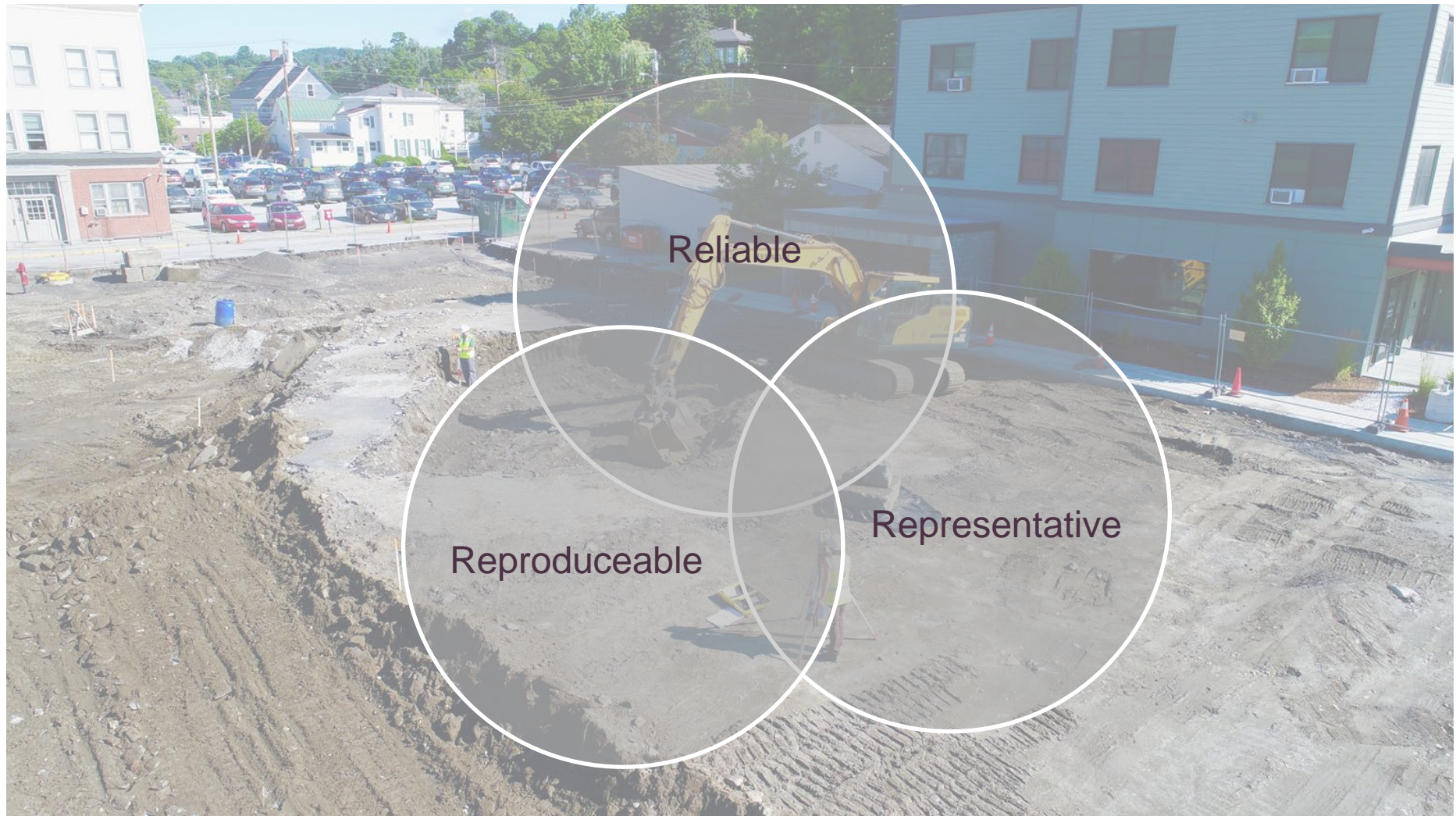


FIGURE 5B
3D VIEW OF COAL TAR NAPL WITH STRATIGRAPHY
(EXPLODED FOR VIEWING PURPOSES), LOOKING
NORTHEAST

Objectives of a Site Investigation



Key Point

“An important goal of any monitoring program is collection of data that is truly representative of conditions at the site.” EPA Low Flow Guidance

Field Preparations and Project Kick Off

Field Prep

- Site Access & DigSafe
- Subcontractor Coordination
 - Contracting
 - Confirm Schedule
 - Confirm Materials
- Laboratory Coordination
 - Review DQOs, Reporting Limits, QC Samples
 - Order Bottles/COCs
 - Establish Schedule – especially if rapid TATs are needed

Key
Point

Plan for the Worst, Expect the Best

Field Preparations and Project Kick Off

Project Kick Off

- Review Site History, CSM
- Review Scope and Methods (Field and Lab)
- Review Methods for Documentation
- Assess Training Needs, Fill Gaps
- Health and Safety
- Stakeholders
- Communication Plan
- Decision Logics, as needed
- Schedule & Budget

Key Point

Invest in your staff's understanding of projects, the purpose of the work, and the reasoning behind the approach.

The Field Book

- Project Name/Client/ID
- Location
- Date/Time on and off Site
- Weather
- Personnel, Subs, Stakeholders, General Public, Media
- Objectives for the Day
- Observations/Remarks
- SOPs Followed
- Decontamination Procedures
- QC Samples
- Calibration
- Deviations from Work Plan
- Sketches of Site Observations

Location 160 Clinton St. Date 10/20/22 55
Project/Client J+L / VTDEC, SRDC 15-049

Onsite @ 0800 with EEC+JGW.
Hobson onsite @ 0830
VUL onsite @ 0830.
Objectives: 1) Assess ACM +/- on
south wall.
2) inspect and recover monitoring wells
w/in slab.
3) Mark out utilities, as possible, w/in
slab ext. to edge of slab and adjacent
OWS + catch basins.

Setup Todd Hobson w/ Ladder
to assess wall.

GPR began w/ OWS line on slab

Began w/ wells at south end of
site. Development consists of using
1/2 ID HOPE tubing w/ check valve
and W-tenna x 2.

Inspected well location w/ EEC+JGW
for development.

Rite in the Rain

Strange things happen...



Municipal water main replacement project through industrial area

Conducted oversight for H&S and directed management of excess soils from work.

- Field staff were experienced with local managed sites
- Knew nearby AOCs

Revealed foundry swarf in waterline alignment

- Responded proactively, directed work to manage swarf on approved stockpile yard.
- Collected necessary samples for managing the waste
- Experienced minimal delays for project

Field Forms – Soil Borings

Wentworth – vs – USCS

What matters in a description

- Texture
 - Components of the strata
 - Sorting
 - Roundness
 - Structure (layering)
 - Organic matter
- Evidence of Contamination (odor, sheen, PID)
- Moisture Content, Color

Where are you in the depositional system

Well Details



Key
Point

Your CSM is only as good as the Stratigraphy it's built on

Soil Borings – Digital Field Forms

10:24 Wed, May 17 46%

← Thin Wall Sample | 0.0-5.0(0-5) LAURA RAJNAK

Projects | 20221158 > Holes | SB-1 > Thin Wall Sample | 0.0-5.0(0-5)

0.0-5.0(0-5)

5.0-10.0(5-10)

10.0-15.0(10-15)

10.0-15.0(15-20)

20.0-25.0(20-25)

25.0-30.0(25-30)

30.0-35.0(30-35)

35.0-40.0(35-40)

40.0-45.0(40-45)

45.0-50.0(45-50)

Previous Sample ID -- NONE --

Sample ID 0-5

Depth (ft) * 0.0

Length (ft) 5.0

Recovery Length (ft) 2.9

Environmental Data 50

Stratigraphy 20

10:30 Wed, May 17 47%

← Soil Layer | 0.00 - 0.75 LAURA RAJNAK

Projects | 20221158 > Holes | SB-1 > Stratigraphy > Soil Layer | 0.00 - 0.75

Prev. Bottom Depth -- NONE --

Depth (ft) * 0.0

Bottom Depth (ft) 0.75

Constituents Select sandy gravel

Color Select Select gray

Grain Size Select

Angularity Select

Gradation poorly sorted

Minor Percent1 Select

Minor Constituent1 Select

Minor Percent2 Select

Minor Constituent2 Select

Structure Select

Moisture wet to Select

Odor no

Staining no

10:31 Wed, May 17 47%

← Environmental Measurements | 20 LAURA RAJNAK

Projects | 20221158 > Holes | SB-1 > Environmental Measurements | 20

Depth (ft) * 20.0

Test Type * PID

Value 1291.0

Photo

Soil Borings – Digital Field Forms

10:25 Wed, May 17 46%

Stratigraphy LAURA RAJNAK

Projects | 20221158 > Holes | SB-1 > Stratigraphy

DEPTH (Feet)	RECOVERY	LITHOLOGY / SOIL DESCRIPTION	WATER DEPTH (ft)	WELL CONSTRUCTION	PID (ppm v/v)	ANALYTICAL SAMPLE
0.0 - 0.75	Soil Layer	SANDY GRAVEL, gray, poorly sorted, wet, no odor, no staining				
0.75 - 2.5	Soil Layer	GRAVELLY SAND, dark brownish tan, poorly sorted, moist, no odor, no staining, Trace black rubble				
2.5 - 3.0	Soil Layer	SANDY GRAVEL, brownish black, poorly sorted trace cobbles, dry, no odor, no staining				
3.0 - 5.0	Soil Layer	SAND, medium grained, poorly sorted some fine to medium gravel trace cobbles, moist, no odor, no staining, Less gravel near bottom of layer				
5.0 - 6.0	Soil Layer	SAND, tan, medium grained trace coarse sand, dry, no odor, no staining				
6.0 - 9.5	Soil Layer	SILT, gray trace fine sand, moist, no odor, iron oxide staining, Occasional thin fine sand lenses				
9.5 - 10.25	Soil Layer	GRAVEL, reddish brown, poorly sorted, moist, no odor, no staining				
10.25 - 11.5	Soil Layer	GRAVELLY SAND, grayish tan, poorly sorted, dry, no odor, no staining				
11.5 - 17.0	Soil Layer	SAND, grayish tan, medium grained, poorly sorted trace coarse sand, dry to moist, no odor, no staining, Occasional thin lenses of coarse sand				
17.0 - 18.5	Soil Layer	SILT, brown trace fine sand trace clay, moist to wet, no odor, no staining, Water at 18 ft bgs				
18.5 - 24.75	Soil Layer	SILTY SAND, gray, very fine grained, poorly sorted, wet, hydrocarbon odor, no staining				
24.75 - 27.75	Soil Layer	SAND, gray, fine to medium grained, wet, hydrocarbon odor, no staining				
27.75 - 28.5	Soil Layer	CLAYEY SILT, brownish gray, wet, hydrocarbon odor, no staining, Sheen on water				
28.5 - 29.25	Soil Layer	SILTY SAND, brownish gray, very fine grained, poorly sorted, wet, hydrocarbon odor, no staining, Sheen on water				
29.25 - 30.0	Soil Layer	SAND, grayish brown, very fine grained trace silt, wet to dry, hydrocarbon odor, no staining, Faint hydrocarbon odor, Sheen on water, Water ends at 30 ft bgs				

Soil Boring Log
BORING ID: SB-1
30 Henry Street, Bellows Falls, VT

Date Drilled: 01/05/2023
DRILLING CONTRACTOR: Platform
DRILLER: Michael Jordan

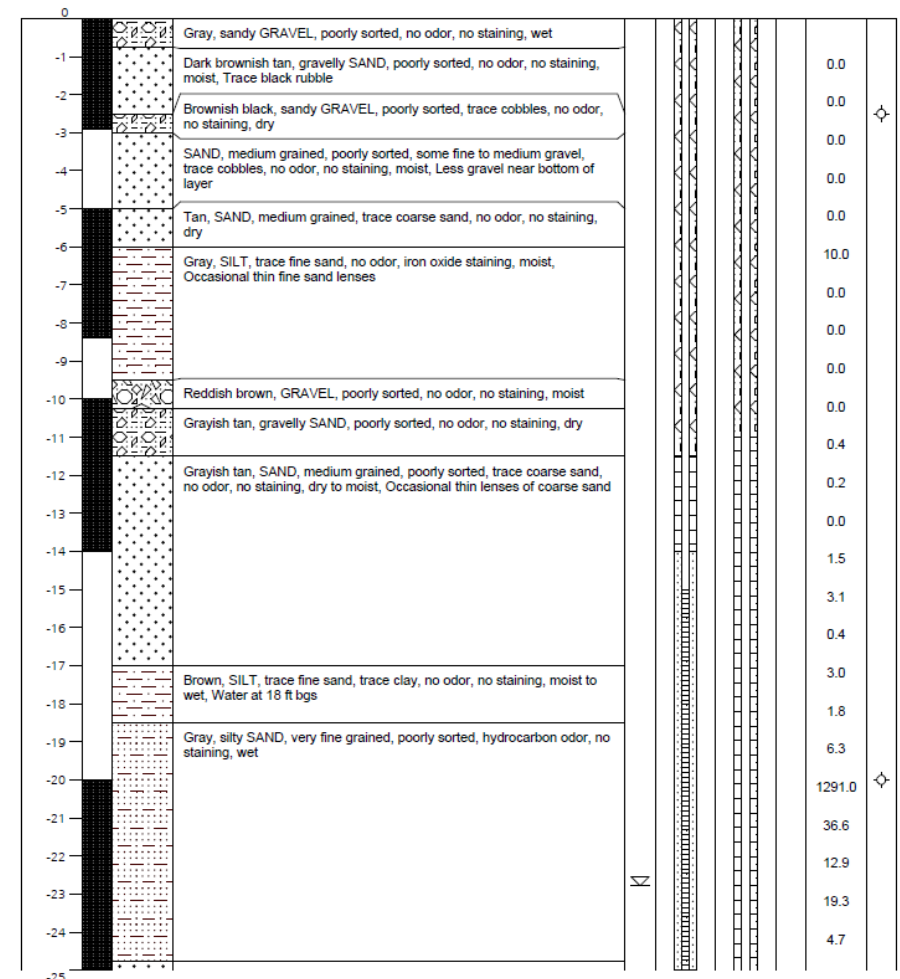
Drilling Method: Geoprobe 3.25 OTE System
Logged by: J. Wright
Source: Field boring log

Page 1 of 2

MW-1A (shallow): Screen 15-25', sand 14-30', bentonite 11.5-14'. Finished with cemented road box.
MW-1B (deep): Screen 35-45', sand 34-45', bentonite 11-34'. Finished with cemented road box.
REFUSAL: Target Depth
Prepared by: JGW 2/24/23

STONE ENVIRONMENTAL

DEPTH (Feet)	RECOVERY	LITHOLOGY / SOIL DESCRIPTION	WATER DEPTH (ft)	WELL CONSTRUCTION	PID (ppm v/v)	ANALYTICAL SAMPLE
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Completeness

- Project Information, Well ID, Sample IDs, Signed/Dated ?
- DTW / Volumes recorded ?
- DTW maintained throughout?

- Equilibrated per SOPs ?
- Turbidity?
- DO/ORP?

- Pump/Tubing Depth
- Purge Rates
- Well Condition
- Hydraulic Head



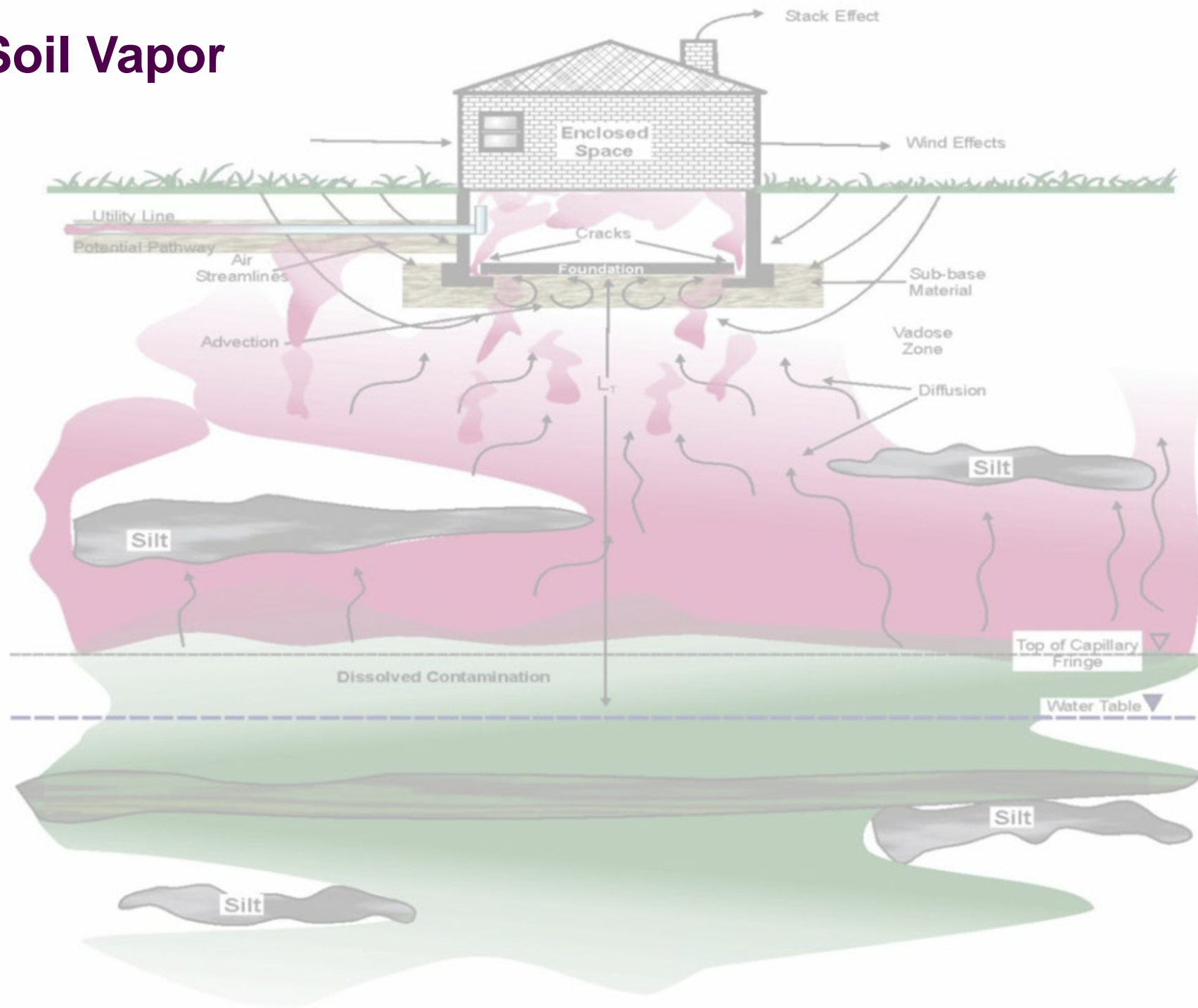
STONE ENVIRONMENTAL
100% EMPLOYEE OWNED

Groundwater – Digital Field Forms

The collage displays the following forms and their key sections:

- Groundwater Monitoring - General of 2**
 - Project Information**
 - *Project Name: Generic
 - *Project Number: TBD
 - *Project Manager:
 - ☒ Dan Voisin
 - ☐ Katrina Mattice
 - ☐ Les Carver
 - ☐ Rebecca Treat
 - ☐ Annemarie Fortune
 - ☐ Jacob Vincent
 - *Location: Test
 - *Sampling Personnel:
 - ☒ Laura Rajnak
- Groundwater Monitoring - Well Inform...**
 - *Measuring Point Description**
 - ☒ Top of Casing ☐ Other
 - Depth to Water (ft): 14.00
 - Total Well Depth (ft): 17.00
 - Well Screen Length (ft): 5
 - Well Diameter:
 - ☐ 1-inch well
 - ☒ 2-inch well
 - Time of Water Level Me: 09:31
 - Depth of Pump/Intake: 15.0
 - One Well Volume (L):
- Groundwater Monitoring - Well Inform...**
 - Enter Groundwater Parameters**
 - *Total Vol. Removed (L): enter number
 - *Meters Calibrated?:
 - *Min. 3 Well Vol. Purged?:
 - *Parameters Stable for 3 Consecutive Measurements?:
 - Collect Sample**
 - Notes/Comments:**
 - Signatures**
 - *Signature 1:
- Groundwater Monitoring - General of 2**
 - Sampling Method:**
 - ☒ Peri Pump ☐ Bladder Pump
 - ☐ Geosub Pump ☐ Bailer
 - ☐ Other
 - Tubing Used for Sample Collection:**
 - ☐ HDPE
 - ☒ FEP
 - ☐ LDPE
 - Pump ID:** GeoPump 535
 - Water Level Indicator:** SEI 1
 - Water Quality Sonde:** Geotech 12345
 - Turbidity Meter:**
- Groundwater Monitoring - Well Inform...**
 - Enter Groundwater Parameters**
 - Time: 09:32
 - Water Level (ft): enter here
 - Cumulative Volume Purged: enter number
 - Flow Rate (mL): enter number
 - Temperature (C) ($\pm 3\%$): enter number
 - ORP (mV) (± 10 mV): enter number
 - pH (su) (± 0.1 su): enter number
 - DO (mg/L) ($\pm 10\%$ or 3 consecutive readings < 0.5 mg/L): enter number
 - Conductivity (uS) ($\pm 3\%$): enter number
 - Turbidity (NTU) ($\pm 10\%$ or 3 consecutive readings < 5 NTU): enter number
 - Groundwater Requirement**
 - Temp ($^{\circ}\text{C}$) ($\pm 3\%$)
 - ORP (mV) (± 10 mV)
 - pH (su) (± 0.1 su)
 - DO (mg/L) ($\pm 10\%$ or 3 consecutive readings < 0.5 mg/L)
 - Conductivity (uS) ($\pm 3\%$)
 - Turbidity (NTU) ($\pm 10\%$ or 3 consecutive readings < 5 NTU)
- Groundwater Monitoring - Well Inform...**
 - Enter Groundwater Parameters**
 - *Total Vol. Removed (L):
- Groundwater Monitoring - General of 2**
 - Equipment Information**
 - Sampling Method:**
 - ☒ Peri Pump ☐ Bladder Pump
 - ☐ Geosub Pump ☐ Bailer
 - ☐ Other
- Collect Sample**
 - Sample Collection**
 - Collect Sample?:
 - Sample Identification**: enter here
 - Time Collected**: 09:33
 - Containers**
 - ☐ 3 x 40mL VOA
 - ☐ 2 x 1L Amber (1)
 - ☐ 2 x 1L Amber (2)
 - ☐ 2 x 250 mL Plastic (1)
 - ☐ 1 x 125 mL Plastic
 - ☐ 2 x 40mL VOA
 - ☐ 2 x 1L Amber (3)
 - ☐ 2 x 250 mL Plastic (2)
 - ☐ Other
 - Preservation**
 - ☐ None ☐ HCl
 - ☐ Nitric Acid ☐ Sulfuric Acid

Soil Vapor



Conceptual model for subsurface vapor pathways (EPA, 2002)

Soil Vapor

Soil Gas Sample Collection Record



1. PROJECT INFORMATION

Project Name: J&L Project #: 15-049 Site Location: Springfield VT Project Manager: Dan Voisin

Start of Collection Information Date: 11-30-2022 Time on Site: 16:30 Time off Site: 09:45 Stone Personnel: Sandra Walser, Jodie Wright, Other

Rain within last 24 hours? (Y/N): No Amount: _____

2. COLLECTION METHODOLOGY INFORMATION

Contract Laboratory: _____

3. SAMPLE INFORMATION:

Stone Sample ID	Installation & Collection Method	Sample Depth (ft)	PID (ppm) /Differential Press. ("WC)	Pass Leak Test? Method	Summa Cannister ID	Flow Controller ID	Start		End		Location & Notes:
							Time	Canister Vacuum ("Hg)	Time	Canister Vacuum ("Hg)	
SG-C15-8.0	AMS Probe Tedlar Bag	8.0	6.4	Yes helium	NA	NA	09:57		10:02		
SG-C16-8.0	AMS Probe Tedlar Bag	8.0	2.0	Yes	NA	NA	10:20		10:25		
SG-C16-8.0	AMS Probe Summa Cannister	8.0	2.0	Yes helium	NA	NA	10:29	-30	23:09	-4	
SG-B18-8.0	AMS Probe Summa Cannister	8.0	1.9	Yes helium	NA	NA	11:17		11:22		
SG-A17-8.0	AMS Probe Summa Cannister	8.0	2.7	Yes helium	NA	NA	12:24		12:29		
SG-B14-8.0	AMS Probe Summa Cannister	8.0	2.7	Yes helium	NA	NA	14:00		14:05		
SG-B15-8.0	AMS Probe Summa Cannister	8.0	24.7	Yes helium	NA	NA	14:49		14:58		No moisture was collected into the tedlarbag, but water was noted in the FEP tubing when it was pulled from the sampling rod.

Decontamination Procedure:

Alconox, propane torch

Notes:

Signature: SW Date: 11-30-2022

L:\EAR\Field Forms\Vapor\Soil Gas Sampling Form.doc

Before Après...

Completeness

1. Are all forms complete and signed?
2. QA/QC Samples?
3. Verify Samples from Work Plan/SSQAPP through forms to COC to cooler.
4. End-of-day calibration checks.
5. Complete end-of-day notes in logbook.
6. Upload digital files to home office.



The Chain Of Custody



620-10595 Chain of Custody

Stone Environmental Inc.

Billing Information:

Report To: Dan Volisin	Email To: accounting@stone-env.com
Copy To:	Site Collection Info/Address: Springfield VT
Customer Project Name/Number J&L 15-049	State: Vermont City: Time Zone Collected: Eastern
Phone: Email: dvoisin@stone-env.com	Compliance Monitoring? [] Yes [] No
Collected By (print): Laura Rajnak, Jodie Wright	Purchase Order # Quote #:
Collected By (signature): <i>[Signature]</i>	Turnaround Date Required: Standard
Sample Disposal: [X] Dispose as Appropriate	Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day
	Field Filtered (if applicable): [] Yes [] No

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected		Time Frozen	Container Type	# of Ctns	VOCs 8260	SVOCs 8270	PAHs 8270 SIM	PCBs 8082 w Soxhlet	PFAS 537	PP Metals 6010	Mercury 7471	RCRA 8 Metals	TPH GRO 8015	Dioxin/Furans 8290	1,4-Dioxane 8270 SIM	Sulfide 9014	Cyanide 9014 9030	Herbicides / Pesticides	Corrosivity 9045	Flammability / Ignitability	% Moisture	OTHER
SB-C06-15.5	SL	G	03-30-2023	10:05	12:15		6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C07-17.0	SL	G	03-30-2023	10:55	12:15		6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C08-2.5	SL	G	03-30-2023	12:30	16:30		6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C09-16.0	SL	G	03-30-2023	13:25	16:30		6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C09-16.0-FD	SL	G	03-30-2023	13:25	16:30		5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C10-12.0	SL	G	03-30-2023	14:05	16:30		5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C11-19.0	SL	G	03-30-2023	15:05	16:30		5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F08-1.0	SL	G	03-30-2023	15:47	16:30		6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F08-6.0	SL	G	03-30-2023	15:49	16:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F08-9.0	SL	G	03-30-2023	15:51	16:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F08-13.0	SL	G	03-30-2023	15:53	16:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F09-1.0	SL	G	03-30-2023	16:45	17:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F09-2.0	SL	G	03-30-2023	16:46	17:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F09-6.0	SL	G	03-30-2023	16:50	17:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F09-10.0	SL	G	03-30-2023	16:53	17:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hr): Y N NA

Lab Tracking #:

Samples received via: FEDEX Client Courier

Relinquished by/Company (Signature)

Date/Time:

Received by/Company (Signature)

Date/Time:

MTJL LAB USE ONLY

Relinquished by/Company (Signature)

Date/Time:

Received by/Company (Signature)

Date/Time:

Accrual:

Relinquished by/Company (Signature)

Date/Time:

Received by/Company (Signature)

Date/Time:

Template:

Prelogin:

PM:

PB:

LAB Sample Temperature Info:

Temp Blank Received: Y N NA

Comments:

0.0°C | 10.2 | 0.2°C

0.2°C | 10.2 | 0.4°C

Trip Blank Received: Y N NA HCL

MeOH TSP Other

Non Conformance(s):

YES / NO

Page:

1 of 4

IRL

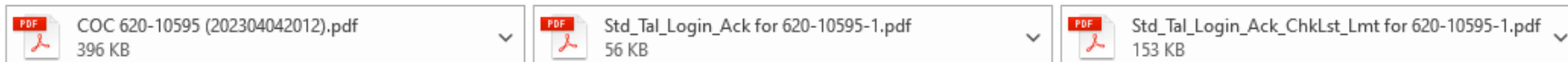
From the ether to Lab

Eurofins Environment Testing Northeast, LLC Sample Login Confirmation files from 620-10595 Jones and Lamson - Springfield, VT



Agnes Huntley <Agnes.Huntley@et.eurofinsus.com>

To ● Daniel Voisin



Hello,

Attached, please find the Sample Confirmation files for job 620-10595; Jones and Lamson - Springfield, VT

Please feel free to contact me if you have any questions.

Thank you.

Agnes R Huntley

Project Manager

Eurofins New England

Phone: 401-372-3482

E-mail: Agnes.Huntley@et.eurofinsus.com

www.eurofinsus.com/env



Reference: [620-033748]

Attachments: 3

From the Ether to Lab

Login Sample Receipt Checklist

Client: Stone Environmental

Job Number: 620-10595-1

Login Number: 10595

List Number: 1

Creator: Scott, Krishnan F

List Source: Eurofins New England

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

From the Ether to Lab



620-10595 Chain of Custody

Stone Environmental Inc.

Billing Information:

Report To: Dan Voisin	Email To: accounting@stone-env.com
Copy To:	Site Collection Info/Address: Springfield VT
Customer Project Name/Number: J&L 15-049	State: Vermont City: Time Zone Collected: Eastern
Phone: Email: dvoisin@stone-env.com	Site/Facility ID #: Compliance Monitoring? [] Yes [] No
Collected By (print): Laura Rajnak, Jodie Wright	Purchase Order # Quote #: DW PWS ID #: DW Location Code:
Collected By (signature): <i>Lm</i>	Turnaround Date Required: Standard Immediately Packed on Ice: [] Yes [] No
Sample Disposal: [X] Dispose as Appropriate	Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day Field Filtered (if applicable): [] Yes [] No Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected		Time Frozen	Container Type	# of Ctns	VOCs 8260	PAHs 8270 SIM	PCBs 8082 w Soxhlet	PFAS 537	PP Metals 6010	Mercury 7471	RCRA 8 Metals	TPH GRO 8015	Dioxin/Furans 8290	1,4-Dioxane 8270 SIM	Sulfide 9014	Cyanide 9014 9030	Herbicides / Pesticides	Corrosivity 9045	Flammability / Ignitability	% Moisture	OTHER
SB-C06-15.5	SL	G	03-30-2023	10:05	12:15		6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C07-17.0	SL	G	03-30-2023	10:55	12:15		6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C08-2.5	SL	G	03-30-2023	12:30	16:30		6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C09-16.0	SL	G	03-30-2023	13:25	16:30		6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C09-16.0-FD	SL	G	03-30-2023	13:25	16:30		5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C10-12.0	SL	G	03-30-2023	14:05	16:30		5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-C11-19.0	SL	G	03-30-2023	15:05	16:30		5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F08-1.0	SL	G	03-30-2023	18:47	16:30		6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F08-6.0	SL	G	03-30-2023	15:49	16:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F08-9.0	SL	G	03-30-2023	15:51	16:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F08-13.0	SL	G	03-30-2023	15:53	16:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F09-1.0	SL	G	03-30-2023	16:45	17:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F09-2.0	SL	G	03-30-2023	16:46	17:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F09-6.0	SL	G	03-30-2023	16:50	17:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SB-F09-10.0	SL	G	03-30-2023	16:53	17:30		3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hr): Y N NA

Lab Tracking #:

Samples received via: FEDEX Client Courier

Relinquished by/Company (Signature): *J. Rajnak*
 Relinquished by/Company (Signature): *FEDEX*
 Relinquished by/Company (Signature):

Date/Time: 4/3/23 14:30
 Date/Time: 4/4/23 901
 Date/Time:

Received by/Company (Signature): *FEDEX*
 Received by/Company (Signature): *Angus Roberts* ENG
 Received by/Company (Signature):

Date/Time: 4/4/23 901
 Date/Time:

MTJL LAB USE ONLY
 Table #:
 Accnum:
 Template:
 Prelogin:
 PM:
 PB:

LAB Sample Temperature Info:
 Temp Blank Received: Y N NA
 Comments: 0.0°C / 10.2 / 0.2°C
 0.2°C / 10.2 / 0.4°C
 Trip Blank Received: Y N NA HCL MeOH TSP Other
 Non Conformance(s): YES / NO
 Page: 1 of 4

IRL

From the Ether to Lab

Sample Login Acknowledgement

Job 620-10595-1

Client Job Description:	Jones and Lamson - Springfield, VT	Report To:	Stone Environmental
Purchase Order #:	15-049		Daniel Voisin
Work Order #:			535 Stone Cutters Way
Project Manager:	Agnes R Huntley		Montpelier, VT 05602
Job Due Date:	4/18/2023		
Job TAT:	10 Days		
Max Deliverable Level:	II	Bill To:	Stone Environmental
			Accounts Payable
Earliest Deliverable Due:	4/18/2023		535 Stone Cutters Way
			Montpelier, VT 05602

Login 620-10595

Sample Receipt:	4/4/2023 9:01:00 AM	Number of Coolers:	2
Method of Delivery:	FedEx Priority Overnight	Cooler Temperature(s) (C°):	0.2; 0.4;

Lab Sample #	Client Sample ID	Date Sampled	Matrix		
Method	Method Description / Work Location			Rpt Basis	Dry / Wet **
620-10595-1	SB-C06-15.5	3/30/2023 10:05:00 AM	Solid		
6010D	Priority Pollutants (ICP) / In-Lab			Total	Dry
7471B	Mercury / In-Lab			Total	Dry
8082A	8082 Standard List / In-Lab			Total	Dry
8260C	8260 Standard List / In-Lab			Total	Dry
8270D	8270 BNA Standard List / In-Lab			Total	Dry
Moisture	Percent Moisture / In-Lab			Total	Wet
620-10595-2	SB-C07-17.0	3/30/2023 10:55:00 AM	Solid		
6010D	Priority Pollutants (ICP) / In-Lab			Total	Dry
7471B	Mercury / In-Lab			Total	Dry
8082A	8082 Standard List / In-Lab			Total	Dry
8260C	8260 Standard List / In-Lab			Total	Dry
8270D	8270 BNA Standard List / In-Lab			Total	Dry
Moisture	Percent Moisture / In-Lab			Total	Wet

The Laboratory Report

Client: Stone Environmental
Project/Site: Jones and Lamson - Springfield, VT

Laboratory Job ID: 620-10595-1

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The Laboratory Report

Detection Summary – bringing you the hits!

Detection Summary

Client: Stone Environmental

Project/Site: Jones and Lamson - Springfield, VT

Job ID: 620-10595-1

Client Sample ID: SB-C10-12.0 (Continued)

Lab Sample ID: 620-10595-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	13		2.0	0.23	mg/Kg	1	⊗	8010D	Total/NA
Zinc	33		6.1	1.6	mg/Kg	1	⊗	8010D	Total/NA

Client Sample ID: SB-C11-19.0

Lab Sample ID: 620-10595-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Butanone (MEK)	120	J	140	31	ug/Kg	1	⊗	8260C	Total/NA
Antimony	0.71	J	9.1	0.68	mg/Kg	1	⊗	8010D	Total/NA
Arsenic	0.61	J	2.7	0.34	mg/Kg	1	⊗	8010D	Total/NA
Chromium	13		1.8	0.24	mg/Kg	1	⊗	8010D	Total/NA
Copper	7.8		1.8	0.44	mg/Kg	1	⊗	8010D	Total/NA
Lead	4.6		2.7	0.38	mg/Kg	1	⊗	8010D	Total/NA
Nickel	7.8		1.8	0.21	mg/Kg	1	⊗	8010D	Total/NA
Zinc	29		5.4	1.4	mg/Kg	1	⊗	8010D	Total/NA

Client Sample ID: SB-F08-1.0

Lab Sample ID: 620-10595-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	110	J	840	110	ug/Kg	1	⊗	8260C	Total/NA
Antimony	0.95	J	8.8	0.68	mg/Kg	1	⊗	8010D	Total/NA
Arsenic	1.8	J	2.6	0.33	mg/Kg	1	⊗	8010D	Total/NA
Chromium	14		1.8	0.23	mg/Kg	1	⊗	8010D	Total/NA
Copper	20		1.8	0.42	mg/Kg	1	⊗	8010D	Total/NA
Lead	5.2		2.6	0.37	mg/Kg	1	⊗	8010D	Total/NA
Nickel	18		1.8	0.20	mg/Kg	1	⊗	8010D	Total/NA
Zinc	43		5.3	1.4	mg/Kg	1	⊗	8010D	Total/NA

The Laboratory Report

Detection Summary – What's up with those Qualifiers?

Client Sample ID: SB-F08-6.0

Lab Sample ID: 620-10595-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,2-Trichlorotrifluoroethane (Freon 113)	3600		200	110	ug/Kg	1	⊗	8280C	Total/NA
Benzene	49	J ←	200	31	ug/Kg	1	⊗	8280C	Total/NA
Carbon tetrachloride	190	J	200	59	ug/Kg	1	⊗	8280C	Total/NA
Chloroform	2400	←	200	23	ug/Kg	1	⊗	8280C	Total/NA
1,1-Dichloroethane	410		200	45	ug/Kg	1	⊗	8280C	Total/NA
cis-1,2-Dichloroethene	2600		200	65	ug/Kg	1	⊗	8280C	Total/NA
trans-1,2-Dichloroethene	210		200	45	ug/Kg	1	⊗	8280C	Total/NA
Tetrachloroethene	55000	E ←	200	62	ug/Kg	1	⊗	8280C	Total/NA
Toluene	160	J	200	32	ug/Kg	1	⊗	8280C	Total/NA
1,1,1-Trichloroethane	1400		200	47	ug/Kg	1	⊗	8280C	Total/NA
Trichloroethene	270000	E ←	200	34	ug/Kg	1	⊗	8280C	Total/NA
1,2,4-Trimethylbenzene	190	J	200	50	ug/Kg	1	⊗	8280C	Total/NA
1,3,5-Trimethylbenzene	170	J	200	41	ug/Kg	1	⊗	8280C	Total/NA
m,p-Xylene	230	'+ ←	200	120	ug/Kg	1	⊗	8280C	Total/NA
o-Xylene	170	J	200	60	ug/Kg	1	⊗	8280C	Total/NA
Chloroform - DL	4700	J ←	9800	1200	ug/Kg	50	⊗	8280C	Total/NA
Tetrachloroethene - DL	63000	←	9800	3100	ug/Kg	50	⊗	8280C	Total/NA
Trichloroethene - DL	510000	←	9800	1700	ug/Kg	50	⊗	8280C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins New England

The Laboratory Report – Case Narrative

Case Narrative

Client: Stone Environmental
Project/Site: Jones and Lamson - Springfield, VT

Job ID: 620-10595-1

Job ID: 620-10595-1

Laboratory: Eurofins New England

Narrative

Job Narrative
620-10595-1

Receipt

The samples were received on 4/4/2023 9:01 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.2° C and 0.4° C.

GC/MS VOA

Method 8260C: The large number of analytes included in the continuing calibration verification (CCV) gives a high probability that one or more analytes will be outside acceptance criteria. As indicated in the reference method, analysis may proceed as long as no more than 20% of the analytes of interest are outside the method-defined %D criteria. Affected analytes: m,p-Xylenes, Hexachlorobutadiene, and 1,3,5-Trichlorobenzene.
(CCVIS 620-21127/3)

Method 8260C: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 620-21126 and analytical batch 620-21127 recovered outside in-house control limits for the following analytes: m,p-Xylenes. These analytes were biased high in the LCS and were not detected in the associated samples. According to 8260C requirements, < 10% of analytes are allowed to fall outside control limits; therefore, the data have been reported.

Method 8260C: The large number of analytes included in the continuing calibration verification (CCV) gives a high probability that one or more analytes will be outside acceptance criteria. As indicated in the reference method, analysis may proceed as long as no more than 20% of the analytes of interest are outside the method-defined %D criteria. Affected analytes: trans-1,3-Dichloropropene, and 4-Chlorotoluene.
(CCVIS 620-21227/3)

Method 8260C: The continuing calibration verification (CCV) associated with batch 620-21227 exhibited % difference of > 20% for the following analytes: m,p-Xylenes; however, the results of the LCS were within the CCV acceptance limits. The EPA method requires that all target analytes in the continuing calibration verification standard be within 20% difference from the initial calibration. According to the laboratory standard operating procedure, the LCS is acceptable if it meets the CCV acceptance criteria.

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The Laboratory Report – QC

Project/Site: Jones and Lamson - Springfield, VT

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 620-21126/1-A

Matrix: Solid

Analysis Batch: 21127

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 21126

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,3-Trichlorobenzene	1000	1300		ug/Kg		130	88 - 145
1,2,4-Trichlorobenzene	1000	1170		ug/Kg		117	57 - 141
1,3,5-Trichlorobenzene	1000	1270		ug/Kg		127	70 - 137
1,1,1-Trichloroethane	1000	1030		ug/Kg		103	88 - 131
1,1,2-Trichloroethane	1000	1120		ug/Kg		112	91 - 129
Trichloroethene	1000	981		ug/Kg		98	88 - 131
Trichlorofluoromethane (Freon 11)	1000	977		ug/Kg		98	88 - 130
1,2,3-Trichloropropane	1000	1120		ug/Kg		112	92 - 128
1,2,4-Trimethylbenzene	1000	1080		ug/Kg		108	87 - 128
1,3,5-Trimethylbenzene	1000	1070		ug/Kg		107	90 - 125
Vinyl chloride	1000	918		ug/Kg		92	73 - 145
m,p-Xylene	2000	2660	*+	ug/Kg		133	83 - 122
o-Xylene	1000	1110		ug/Kg		111	87 - 122
Tetrahydrofuran	1000	1090		ug/Kg		109	81 - 134
Ethyl ether	1000	954		ug/Kg		95	84 - 144
Tert-amyl methyl ether	1000	1050		ug/Kg		105	89 - 151
Ethyl tert-butyl ether	1000	927		ug/Kg		93	75 - 128
di-Isopropyl ether	1000	1000		ug/Kg		100	82 - 131
tert-Butanol	10000	13200		ug/Kg		132	85 - 148
1,4-Dioxane	10000	11000		ug/Kg		110	10 - 178
trans-1,4-Dichloro-2-butene	1000	1110		ug/Kg		111	74 - 151
Ethanol	20000	21900		ug/Kg		110	83 - 135
Surrogate		LCS %Recovery	LCS Qualifier	Limits			
4-Bromofluorobenzene (Surr)		101		70 - 130			

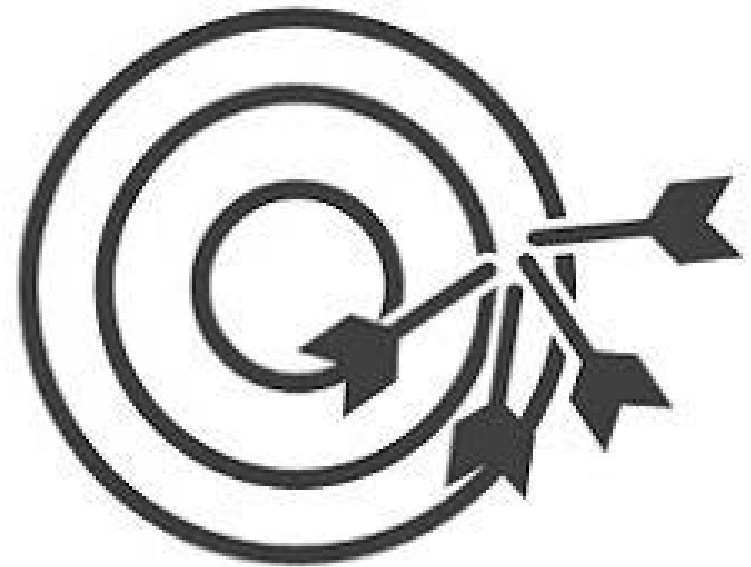
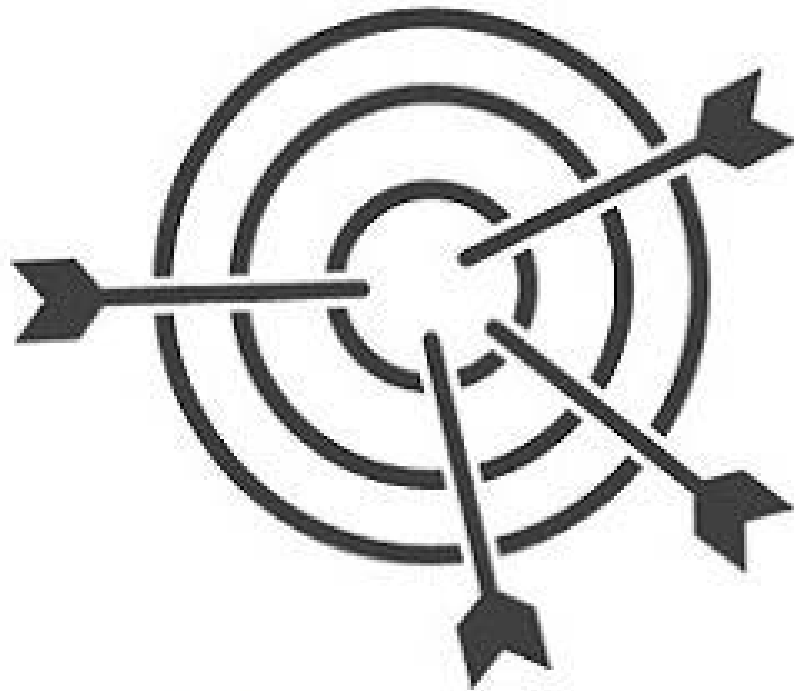
Qualifiers

A few examples...

Qualifier	Description
U	Analyte was analyzed for but not detected at RL
J	Analyte is positively identified, but associated value is an estimated quantity.
J+	Associated value is estimated, and QC data indicate positive bias
J-	Associated value is estimated, and QC data indicate negative bias
EB/TB	Analyte detected in relevant blank sample (e.g., equipment, trip)
E	Value exceeds upper limit of calibration
R	The data are unusable. Analyte may or may not be present; resampling/reanalysis is necessary

Contact your contract laboratory with any questions!

Field Quality Samples: a Primer



Accuracy Vs Precision

Trip Blank (1 per cooler w/ VOCs)
Equipment Blank (1 per day)
Field Blank (1 per day)
Matrix Spike (1 per 20 samples, based on DQOs)

Field Duplicates (1 per 20 or 10 samples)
Matrix Spike Duplicates (1 per 20 samples, based on DQOs)

Field QC Samples – What to do when

QC Sample	Problem	What now?
Trip Blank	Detection of analyte above RL	Identify source of contamination. Qualify data. Consider raise reporting limit for affected samples.
Equipment/Field Blank	Detection of analyte above RL	Identify source of contamination. Qualify data. Consider raise reporting limit for affected samples.
Temperature Blanks	>6° when received by lab	Report to client, Use professional judgement on whether to continue with analysis if >10°
Field Duplicate	RPD >30% (aq.) >50% (other)	Evaluate sampling method, and lab precision, consider qualifying data.
MS/MSD	Method dependent (%Recovery +/- 30%)	Review LCS and other lab recoveries, evaluate matrix effects.



STONE ENVIRONMENTAL

100% EMPLOYEE-OWNED

Thank You.

For more information / <https://www.stone-env.com/>

Contact: Daniel Voisin, Senior Geologist

dvoisin@stone-env.com