

Air Monitoring Summary Tables

The tables below summarize monitoring data collected by EPA and KYDEP
All data were collected with a RAE Systems AreaRAE



Project Name: CSX Livingston Derailment

From: 11/23/23 To: 11/23/23
12:00 AM 5:31 AM

MEASUREMENT SUMMARY

Analyte	# of Measurements	Maximum	Average	Exceedance of Action Level (AEGL-1 8hr)?
Volatile Organic Compounds (VOCs)	628	479 ppb	380 ppb	No (9000 ppb based on Benzene)
Hydrogen Sulfide (H2S)	628	0.00 ppm	0.00 ppm	No (0.33 ppm)
Hydrogen Cyanide (HCN)	628	9 ppm	2 ppm	Yes (1 ppm)

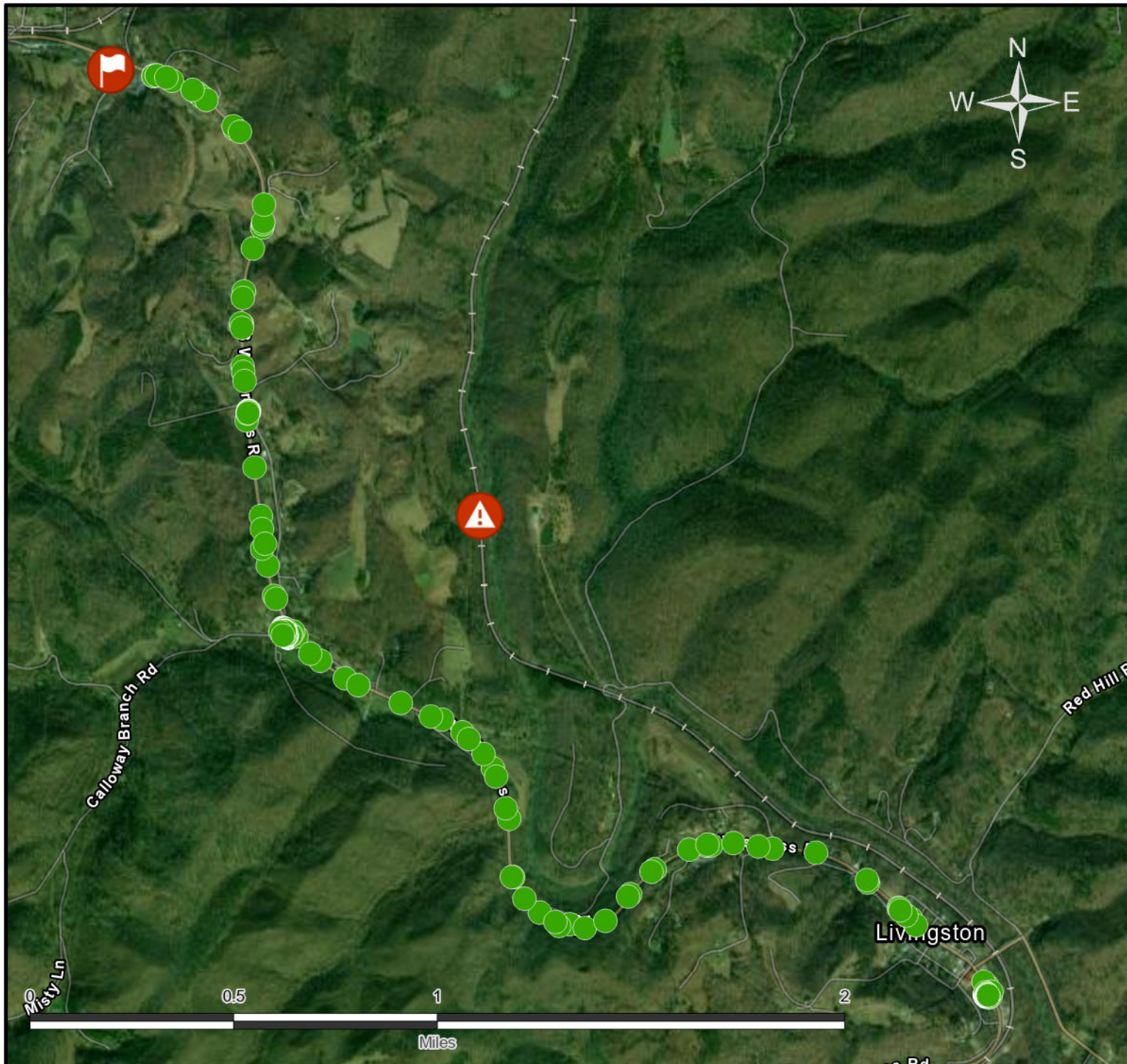
DISCUSSION

Detections of VOCs are not considered elevated and are below 1000 ppb (equivalent to 1 ppm). Dense fog and high humidity are possible contributors to non-zero readings, which can cause interference with the photoionization sensor on the instrument.

Detections of Hydrogen Cyanide may be measurements of Sulfur Dioxide (SO₂) gas which was released from burning molten sulfur at the derailment. Technical documentation for this instrument and its HCN sensor state that there is a cross-sensitivity which can cause positive readings on the HCN sensor in the presence of SO₂ gas - and that the readout on the HCN sensor can be double the SO₂ concentration. The presence of SO₂ was confirmed with other instruments around this same time. The HCN concentrations in the table above at 9 ppm maximum and 2 ppm average might be SO₂ concentrations at approximately 4-5 ppm maximum and around 1 ppm average.

DEFINITIONS

AEGL	Acute Exposure Guideline Levels (see https://www.epa.gov/aegl for more information)
EPA	U.S. Environmental Protection Agency
H2S	Hydrogen Sulfide (see https://www.atsdr.cdc.gov/toxfaqs/tfacts114.pdf for more information)
HCN	Hydrogen Cyanide (see https://www.atsdr.cdc.gov/toxfaqs/tfacts8.pdf for more information)
KYDEP	Kentucky Department of Environmental Protection
ppm	Parts per million
SO ₂	Sulfur Dioxide (see https://www.atsdr.cdc.gov/toxfaqs/tfacts116.pdf for more information)



Derailment



ICP

VOC (11/23 0:00-5:30am)

● <9000 ppb

● >9000 ppb

of Measurements: 628

Maximum: 479 ppb

Average: 380 ppb



EMERGENCY RESPONSE TEAM

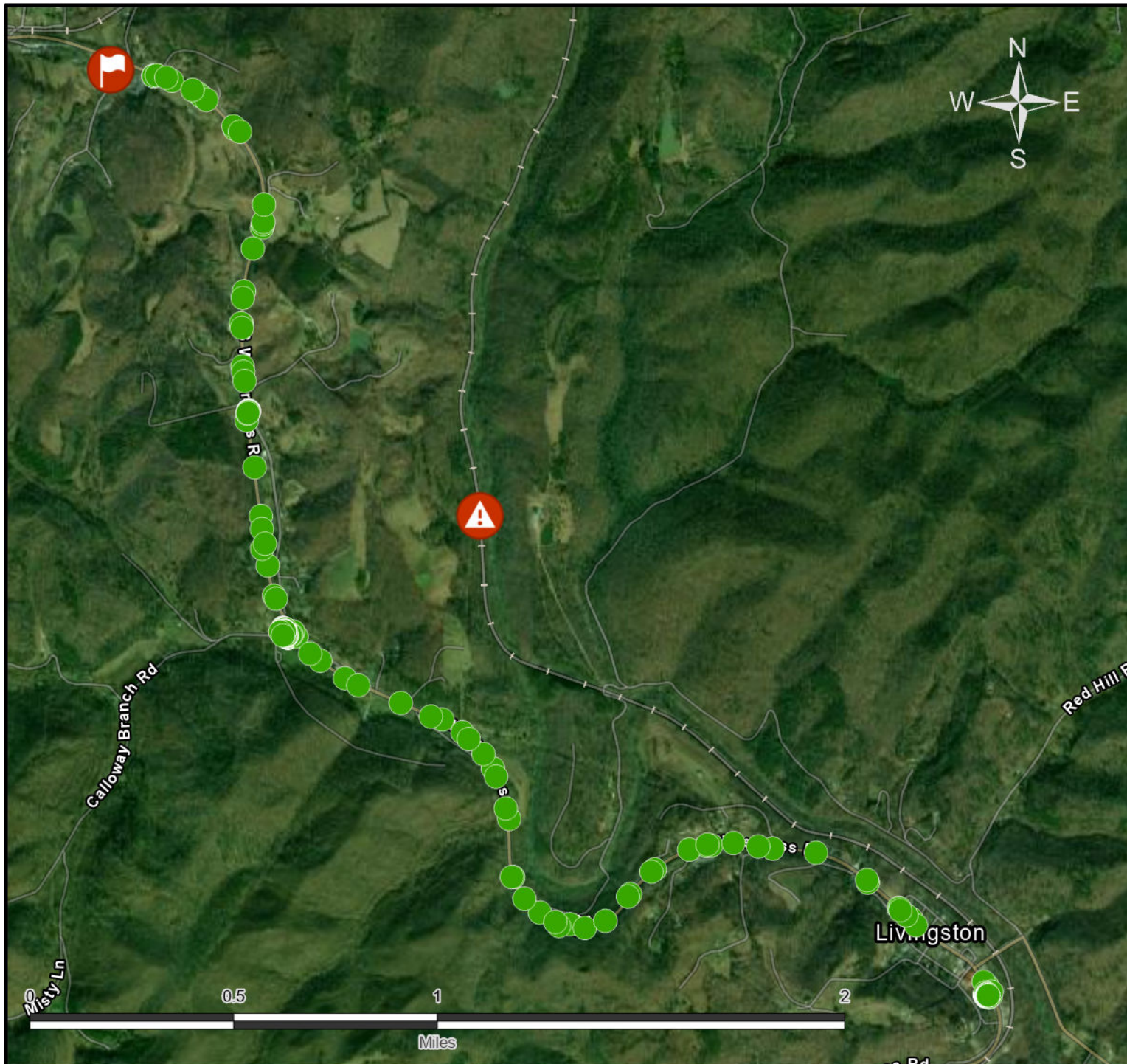


United States
Environmental Protection Agency
Region 4

**CSX Livingston
EPA and KYDEP
VOC Air Monitoring**

11/23/23 - midnight to 5:30am

City: Livingston County: Rockcastle State: Kentucky



Derailment



ICP

H2S (11/23 0:00-5:30am)

● <0.33 ppm

● >0.33 ppm

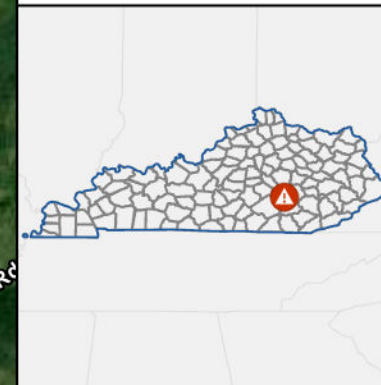
of Measurements: 628

Maximum: 0.00 ppm

Average: 0.00 ppm



EMERGENCY RESPONSE TEAM

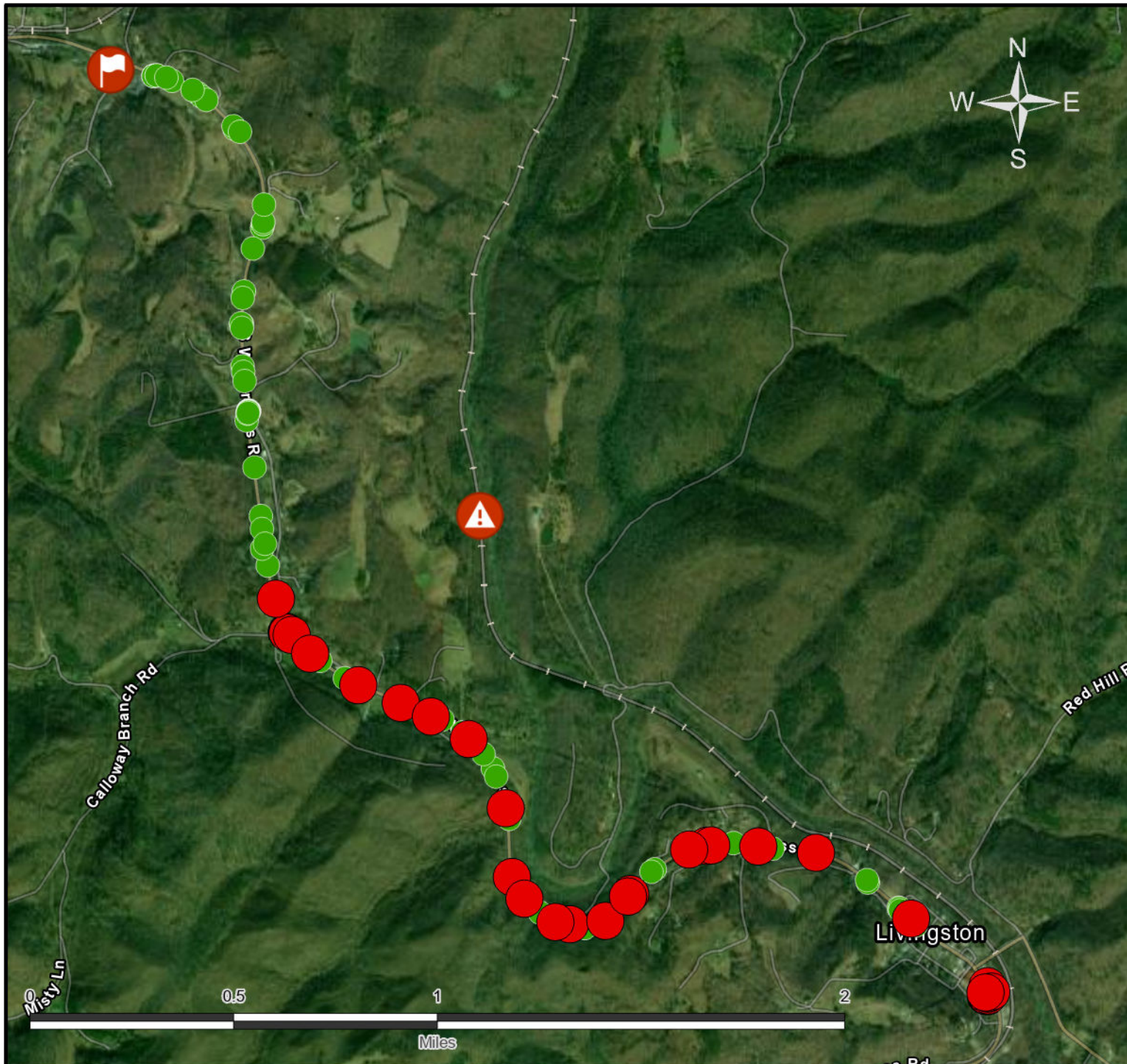


United States
Environmental Protection Agency
Region 4

**CSX Livingston
EPA and KYDEP
H2S Air Monitoring**

11/23/23 - midnight to 5:30am

City: Livingston County: Rockcastle State: Kentucky



Derailment



ICP

HCN (11/23 0:00-5:30am)



>1 ppm



<1ppm

of Measurements: 628

Maximum: 9 ppm

Average: 2 ppm



EMERGENCY RESPONSE TEAM



United States
Environmental Protection Agency
Region 4

**CSX Livingston
EPA and KYDEP
HCN Air Monitoring**

11/23/23 - midnight to 5:30am

City:
Livingston

County:
Rockcastle

State:
Kentucky