

Plantation Pipeline Gasoline Pipe Line Release
Double Oak Mountain, AL
Preliminary Summary of Air Monitoring Results
August 29, 2014

Prepared by
Center for Toxicology and Environmental Health, L.L.C. (CTEH®)

Introduction

On August 23, 2014, Center for Toxicology and Environmental Health, LLC (CTEH®) was contacted by Plantation Pipe Line to initiate air monitoring in support of response activities following a gasoline pipeline release in Double Oak Mountain, AL. Site monitoring consisted of manually-logged real-time monitoring as well as remote-telemetry monitoring.

This submittal summarizes air monitoring data for August 28, 2014 17:00 to August 29, 2014 16:00.

Real-time Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Manually-logged monitoring was conducted for benzene, percent of the Lower Explosive Limit (LEL), oxygen (O₂), gasoline, and Volatile Organic Compounds (VOCs), with instruments such as RAESystems® MultiRAEs (MRs), RAESystems® UltraRAEs, and Gastec® colorimetric tubes. Table 1 summarizes data for manually-logged real-time readings in the Work Area.

Table 1: Work Area - Manually-Logged Real-Time Air Monitoring Summary¹
August 28, 2014 17:00 – August 29, 2014 16:00

Analyte	Instrument	Number of Readings	Number of Detections	Average of Detections	Concentration Range
Benzene	UltraRAE	30	7	0.26 ppm	0.05 - 0.55 ppm
Gasoline	Gastec #101L	1	1	50 ppm	50 - 50 ppm
LEL	MultiRAE Plus	18	0	NA	<1 %
O ₂	MultiRAE Plus	13	13	21.0 %	20.9 - 21.3 %
VOC	MultiRAE Plus	46	39	18.2 ppm	0.9 - 175 ppm

¹Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.

²Maximum detections preceded by the "<" symbol are considered non-detects at or above reporting limit value to the right.

Remote-telemetry Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Remote-telemetry monitoring was conducted for percent of the Lower Explosive Limit (LEL) and Volatile Organic Compounds (VOCs) with RAESystems® AreaRAEs. Table 2 summarizes data for remote-telemetry data in the work area and Appendix B includes the remote-telemetry data graphs.

Table 2: Remote-telemetry Air Monitoring Summary¹
August 28, 2014 17:00 – August 29, 2014 16:00

Unit	Analyte	Number of Readings	Number of Detections	Average of Detections	Concentration Range
AR01	LEL	1634	0	NA	<1 %
	O2	1634	1634	20.7 %	20.4 - 20.9 %
	VOC	1634	1587	3.4 ppm	0.1 - 13.2 ppm
AR05	LEL	1729	0	NA	<1 %
	O2	1729	1729	20.6 %	20.4 - 20.9 %
	VOC	1729	1729	4.4 ppm	0.2 - 96.5 ppm
AR06	LEL	5387	3	1.6 %	1.1 - 2.5 %
	O2	5387	5387	20.9 %	20.5 - 20.9 %
	VOC	5387	4157	3.1 ppm	0.1 - 58.7 ppm
AR08	LEL	5444	0	NA	<1 %
	O2	5444	5444	20.9 %	20.5 - 21.1 %
	VOC	5444	5081	5.3 ppm	0.1 - 136.2 ppm
AR09	LEL	3715	0	NA	<1 %
	O2	3715	3715	20.9 %	20.5 - 20.9 %
	VOC	3715	3641	4.3 ppm	0.1 - 101.5 ppm
AR10	LEL	3761	0	NA	<1 %
	O2	3761	3761	20.9 %	20.9 - 21.3 %
	VOC	3761	3761	13.0 ppm	0.3 - 74.7 ppm

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Data Logging Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Data logging monitoring was conducted for percent of the Lower Explosive Limit (LEL), oxygen (O₂), and Volatile Organic Compounds (VOCs), with RAESystems® MultiRAEs (MRs). Table 3 summarizes data for data-logged readings in the Work Area and Appendix C includes the data logging data graphs.

Table 3: Work Area – Data Logged Air Monitoring Summary¹
August 28, 2014 08:23 – August 29, 2014 04:48

Unit	Analyte	Number of Readings	Number of Detections	Average of Detections	Concentration Range
Excavation Operations					
095-527944 8/28 10:16 - 8/28 14:10	LEL	939	0	NA	<1 %
	O ₂	939	939	20.9 %	20.9 - 20.9 %
	VOC	939	318	1.6 ppm	0.1 - 15.4 ppm
Vac Operations					
095-527887 8/28 08:23 - 8/28 14:04	LEL	1146	377	3.4 %	0.1 - 40.4 %
	O ₂	1146	1146	20.9 %	19.9 - 20.9 %
	VOC	1146	778	11.6 ppm	0.1 - 331 ppm
095-527887 8/28 20:33 - 8/29 04:48	LEL	1978	2	1.1 %	0.7 - 1.4 %
	O ₂	1978	1978	20.8 %	20.2 - 26.4 %
	VOC	1978	231	1.8 ppm	0.1 - 44.2 ppm
095-528039 8/28 08:47 - 8/28 17:05	LEL	1719	0	NA	<1 %
	O ₂	1719	1719	20.9 %	20.7 - 21.2 %
	VOC	1719	975	11.0 ppm	0.1 - 391 ppm
095-528075 8/28 15:52 - 8/28 17:04	LEL	291	0	NA	<1 %
	O ₂	291	291	20.9%	20.9 - 20.9 %
	VOC	291	117	4.3 ppm	0.1 - 16.9 ppm

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Personal Sampling

In accordance with the Occupational Safety and Health Administration (OSHA) benzene standard 29 CFR 1910.1028, analytical air samples (3M 3520 organic vapor badges) were collected in the breathing space of representative workers to monitor personal exposures to selected petroleum mixture constituents during work activities. In accordance with the OSHA access to employee exposure and medical records standard 29 CFR 1910.1020, notification letters will be produced for delivery to employees sampled. All analytical samples were shipped to an off-site accredited laboratory for chemical analysis. A detailed list of personal sampling results from the work area is provided in Table 4.

Table 4: Personal Air Sampling Results¹
August 24, 2014 – August 26, 2014

Sample Date	Sample ID	Sample Duration	Benzene (ppm)	Ethyl Benzene (ppm)	Naphthalene (ppm)	N-Hexane (ppm)	Toluene (ppm)	Xylene (ppm)
8/24/2014	NT5436^	555	<0.03	<0.07	<0.32	0.1	0.1	<0.24
	NW7912^	379	<0.05	<0.1	<0.47	<0.1	<0.1	<0.34
	WA5387^	483	0.09	<0.08	<0.36	0.31	0.38	<0.27
	WA5458^	1440	0.05	<0.03	<0.12	0.14	0.18	0.14
	WB2699^	181	0.2	<0.2	<0.97	0.77	0.62	<0.72
	WB3172^	631	1.4*	5.1*	1.6*	4.9*	19*	27*
	WB3397^	628	0.16	0.09	<0.28	0.58	0.76	0.44
8/25/2014	NT5611	517	<0.03	<0.08	<0.34	<0.08	0.1	<0.25
	NT5675^	311	<0.06	<0.1	<0.57	<0.1	<0.1	<0.42
	NV5817	558	<0.03	<0.07	<0.32	<0.08	<0.07	<0.23
8/26/2014	WA5298	429	0.07	<0.1	<0.41	0.24	0.33	<0.3
	WB3173	452	0.05	<0.09	<0.39	0.22	0.27	<0.29
	WB3243	468	0.04	<0.09	<0.38	0.2	0.24	<0.28

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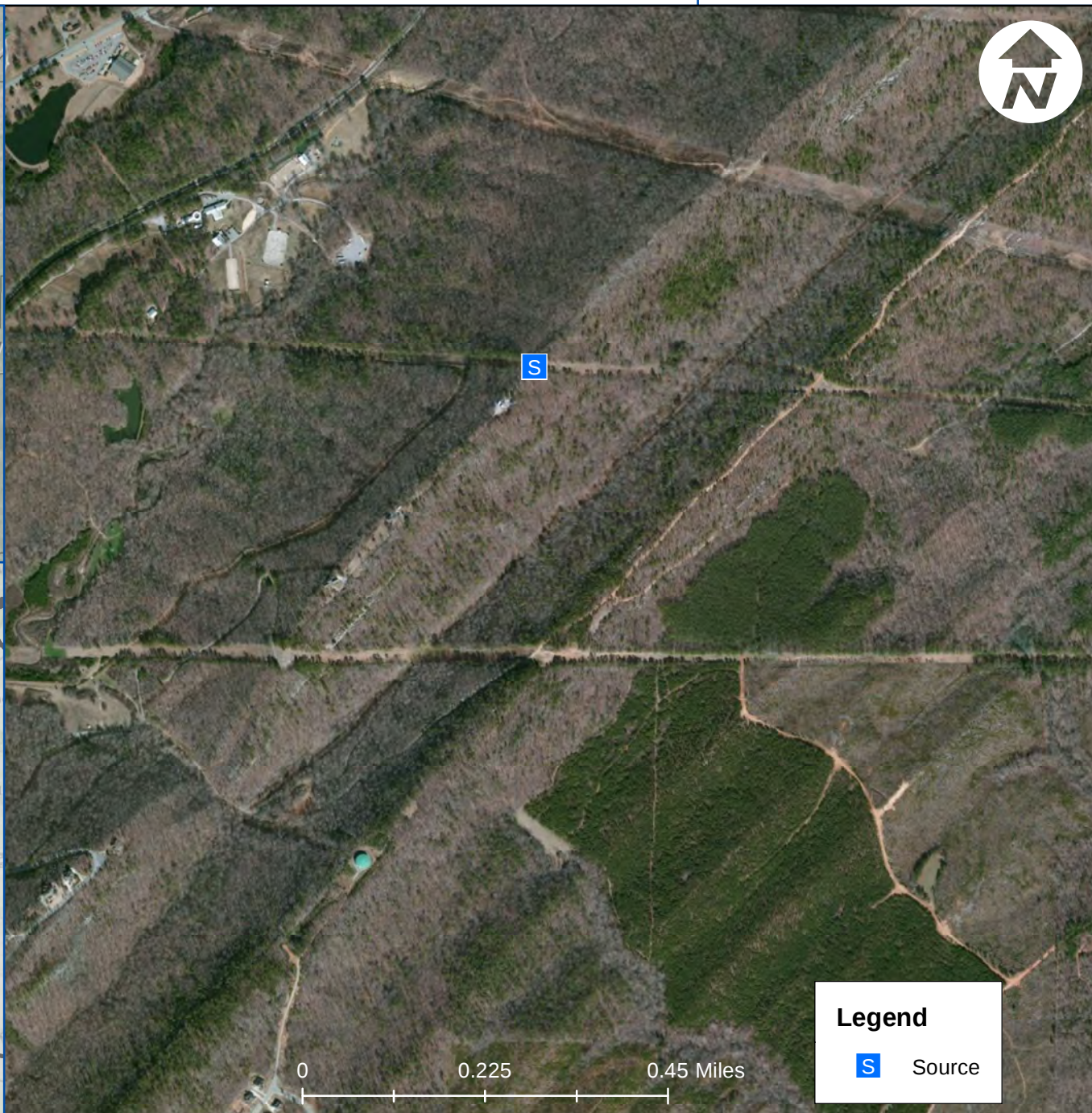
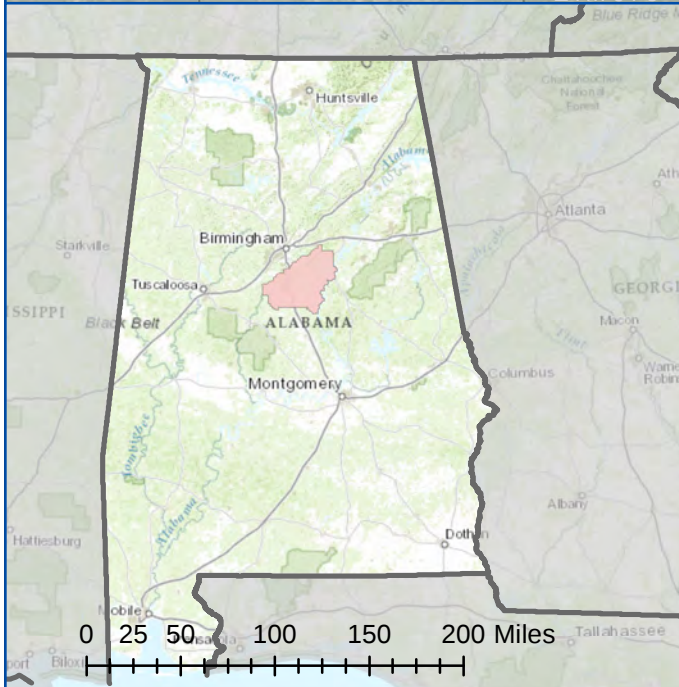
²Maximum detections preceded by the "<" symbol are considered non-detects at or above reporting limit value to the right.

* - Individual wearing this exposure badge tripped, resulting in the badge falling to the ground and breaking open near the released product.

For this reason, the result of this sample may be anomalous and not representative of the individual's exposure to these volatile organic compounds

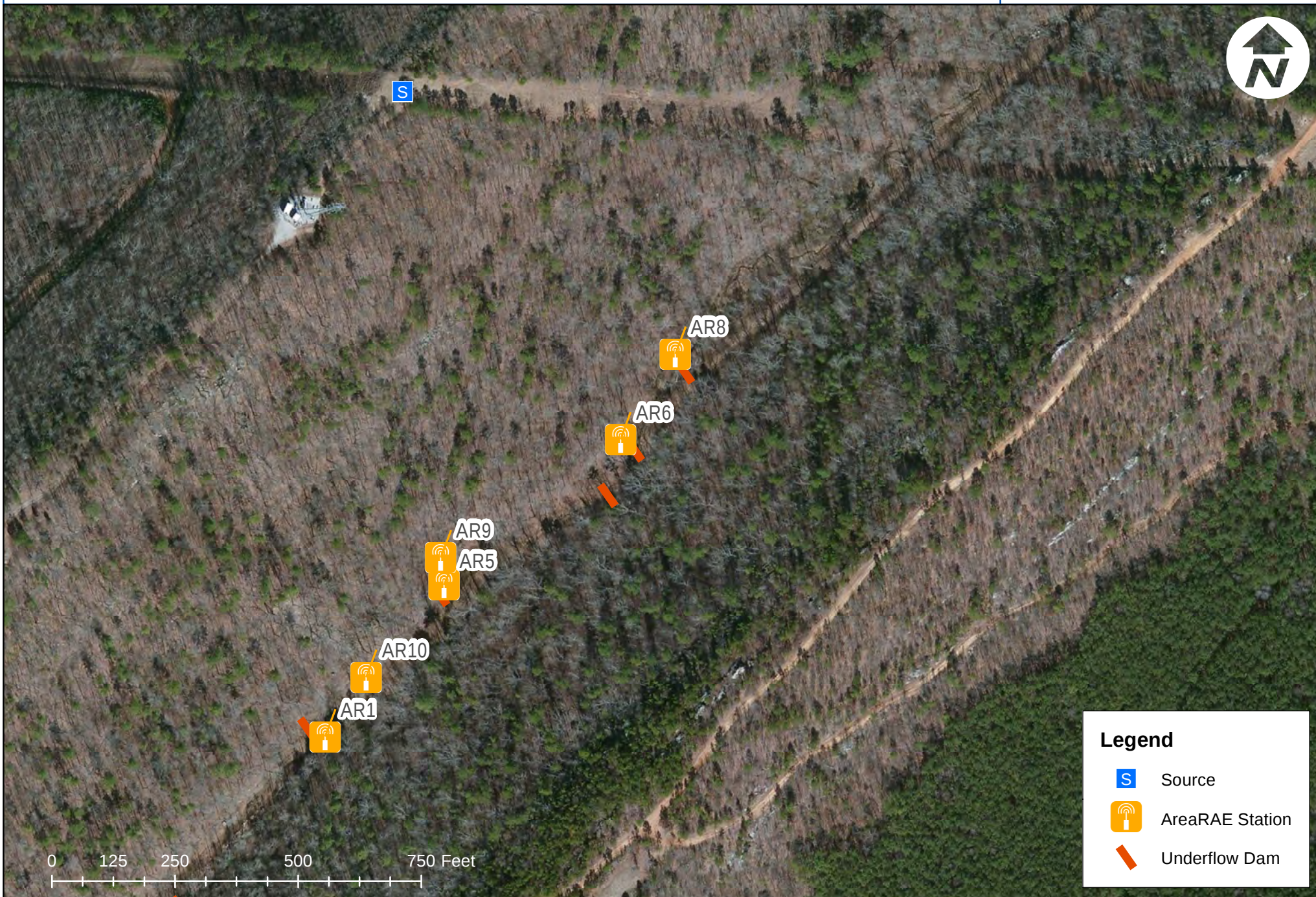
^ - Lab Results have level 2 validation through a third party validator.

Appendix A: Incident Maps



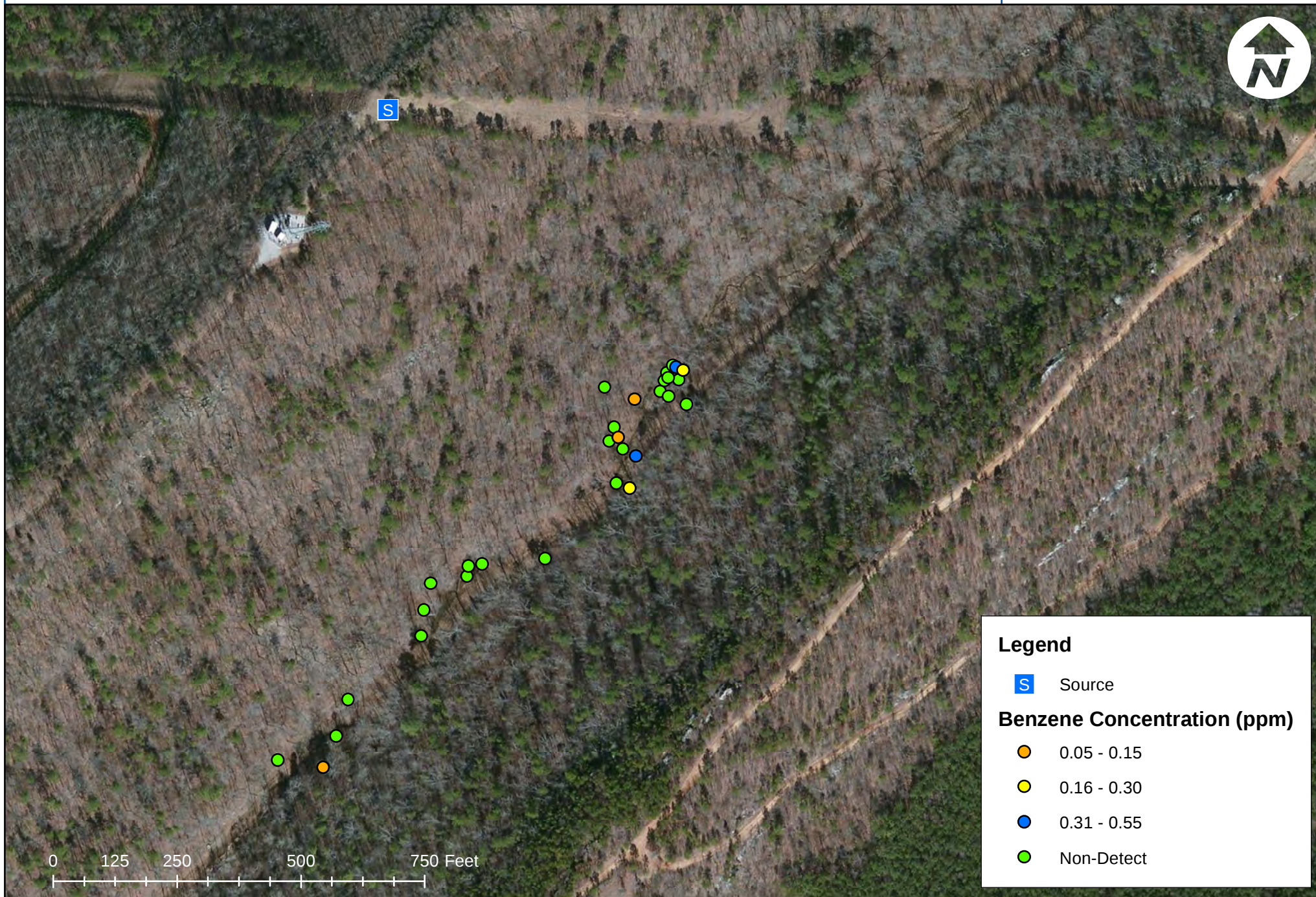
Legend

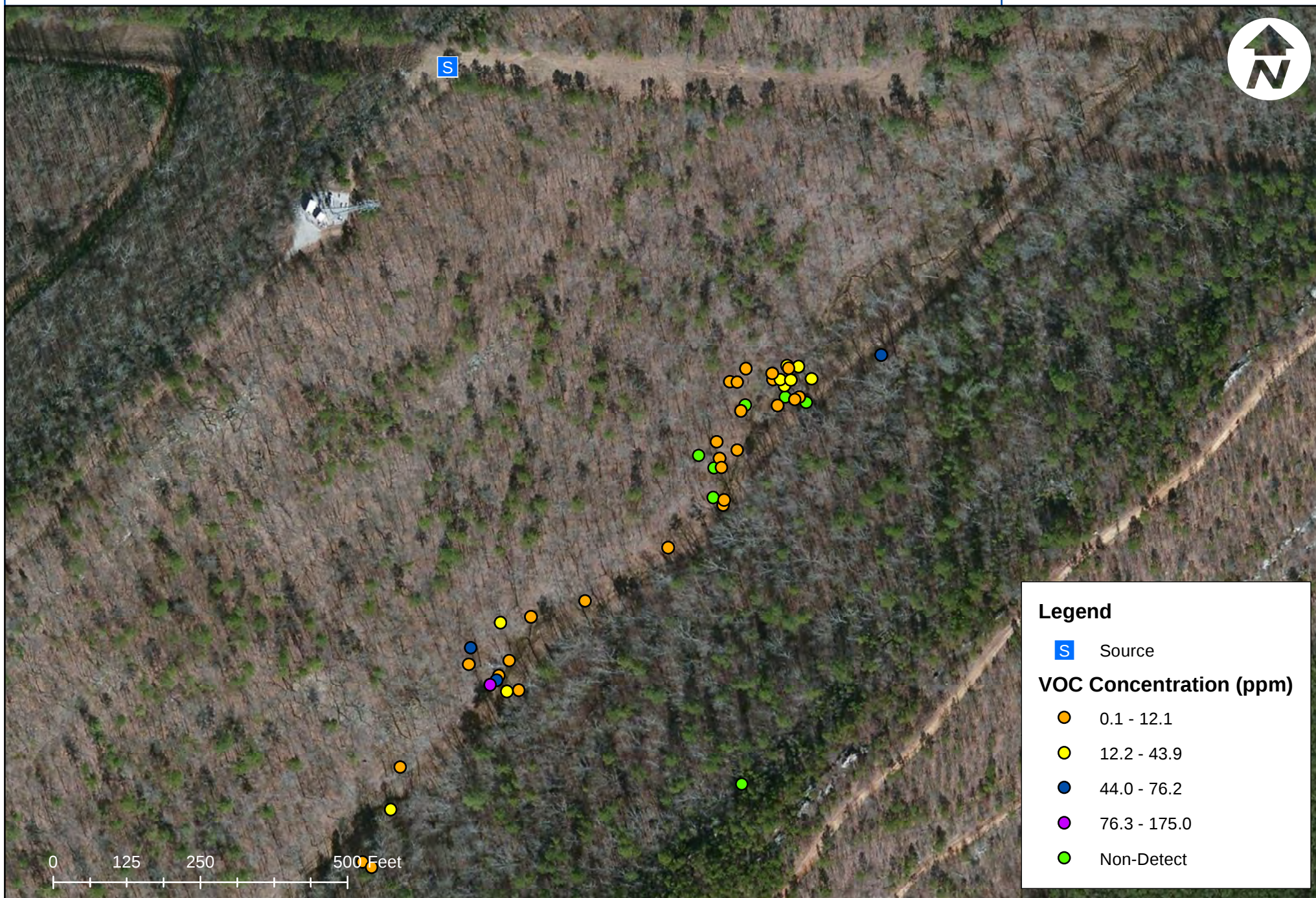
S Source



**Legend**

- S Source
- Real-Time Reading Location

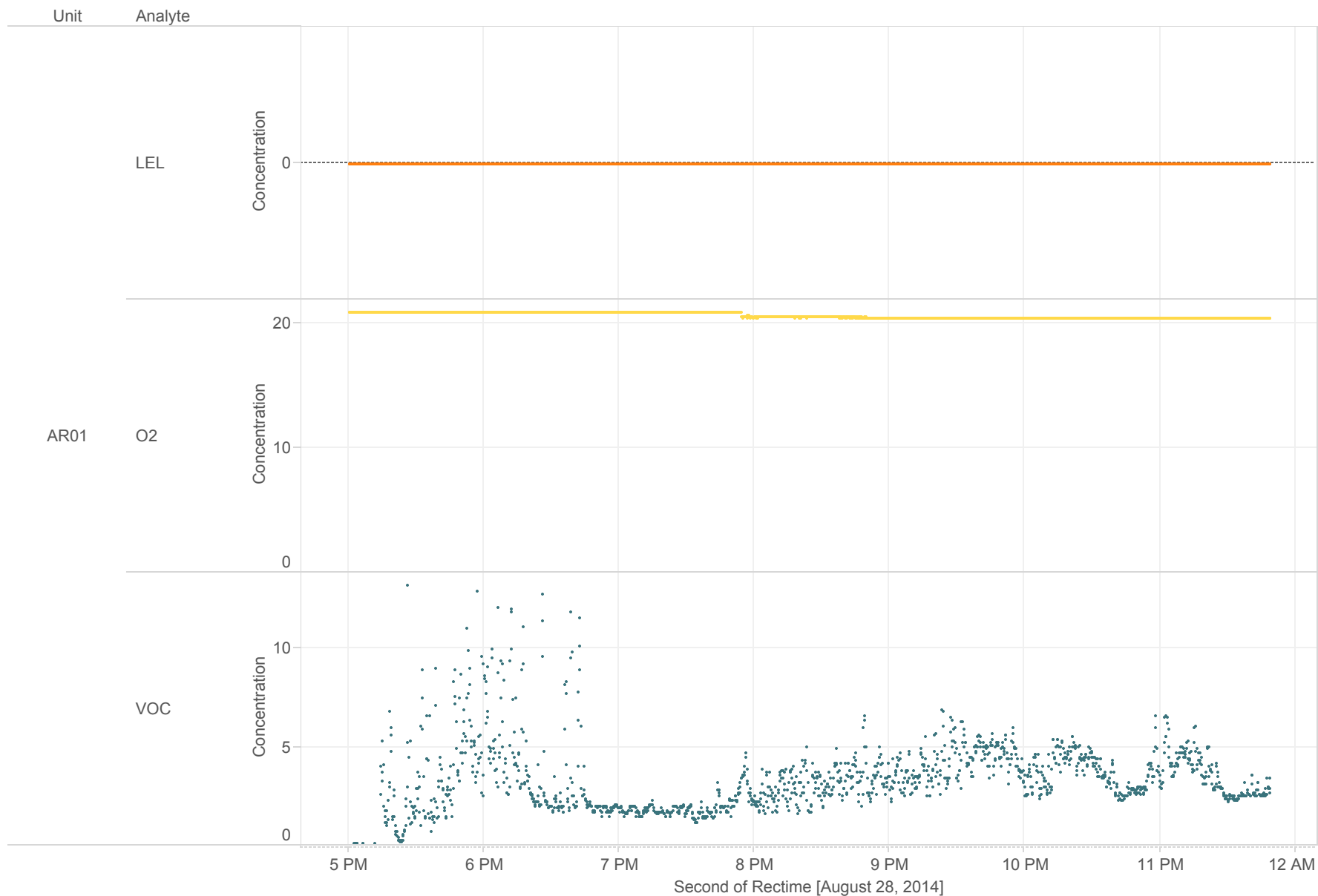




Appendix B:

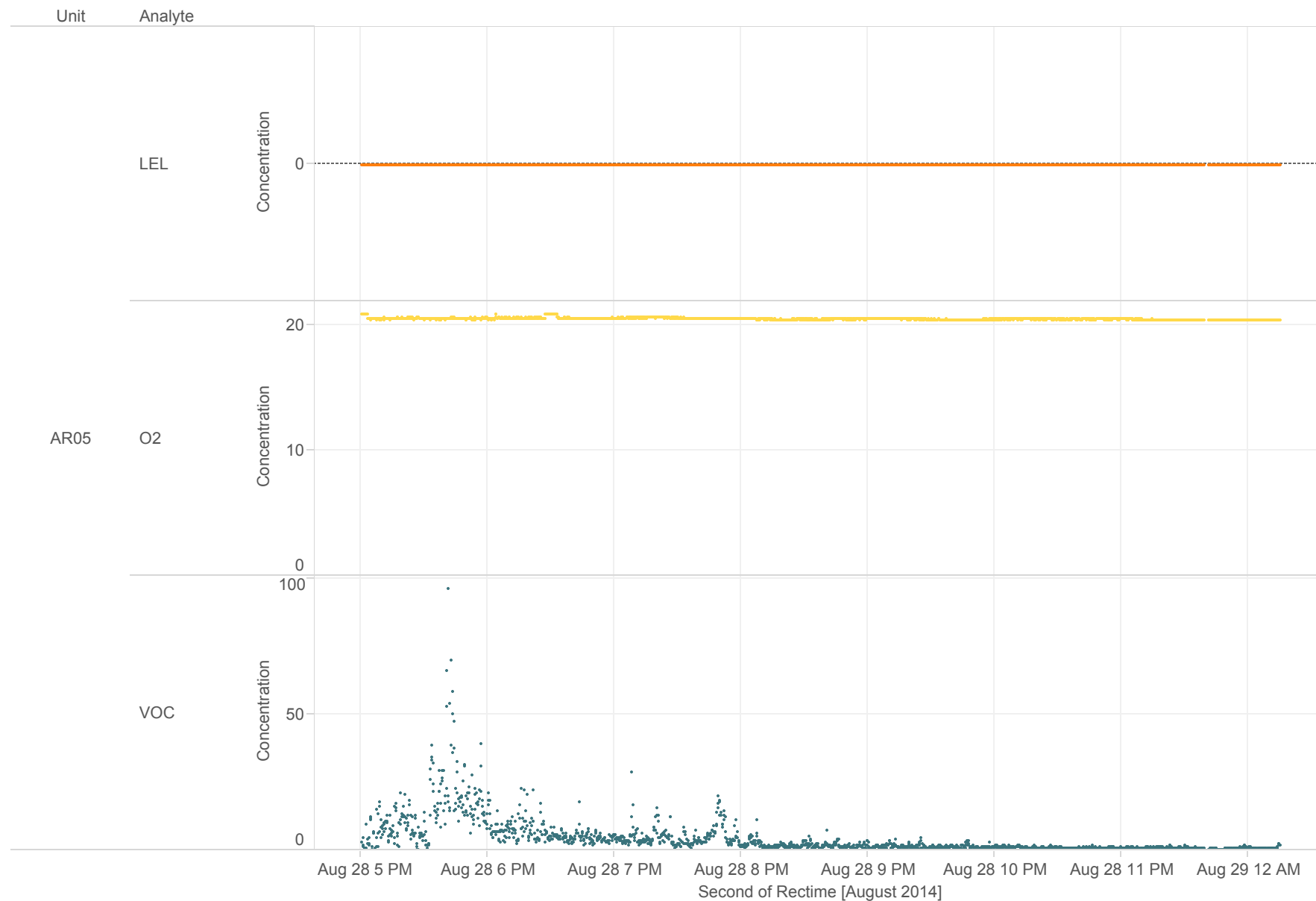
Remote-telemetry Air Monitoring Graphs

Remote-telemetry Air Monitoring - Double Oak Mountain, AL - 8/28/2014 17:00 - 8/29/2014 16:00



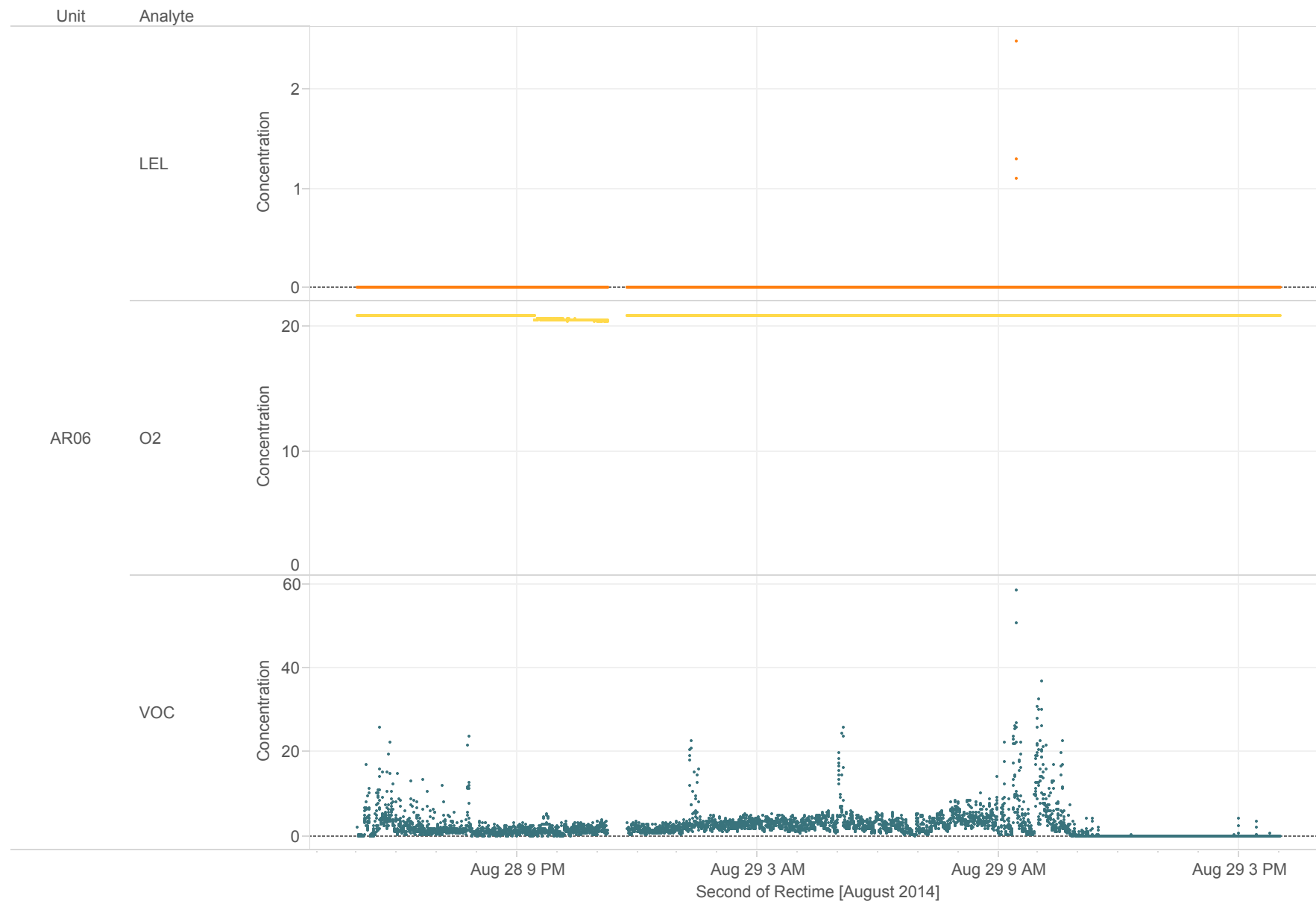
Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Remote-telemetry Air Monitoring - Double Oak Mountain, AL - 8/28/2014 17:00 - 8/29/2014 16:00



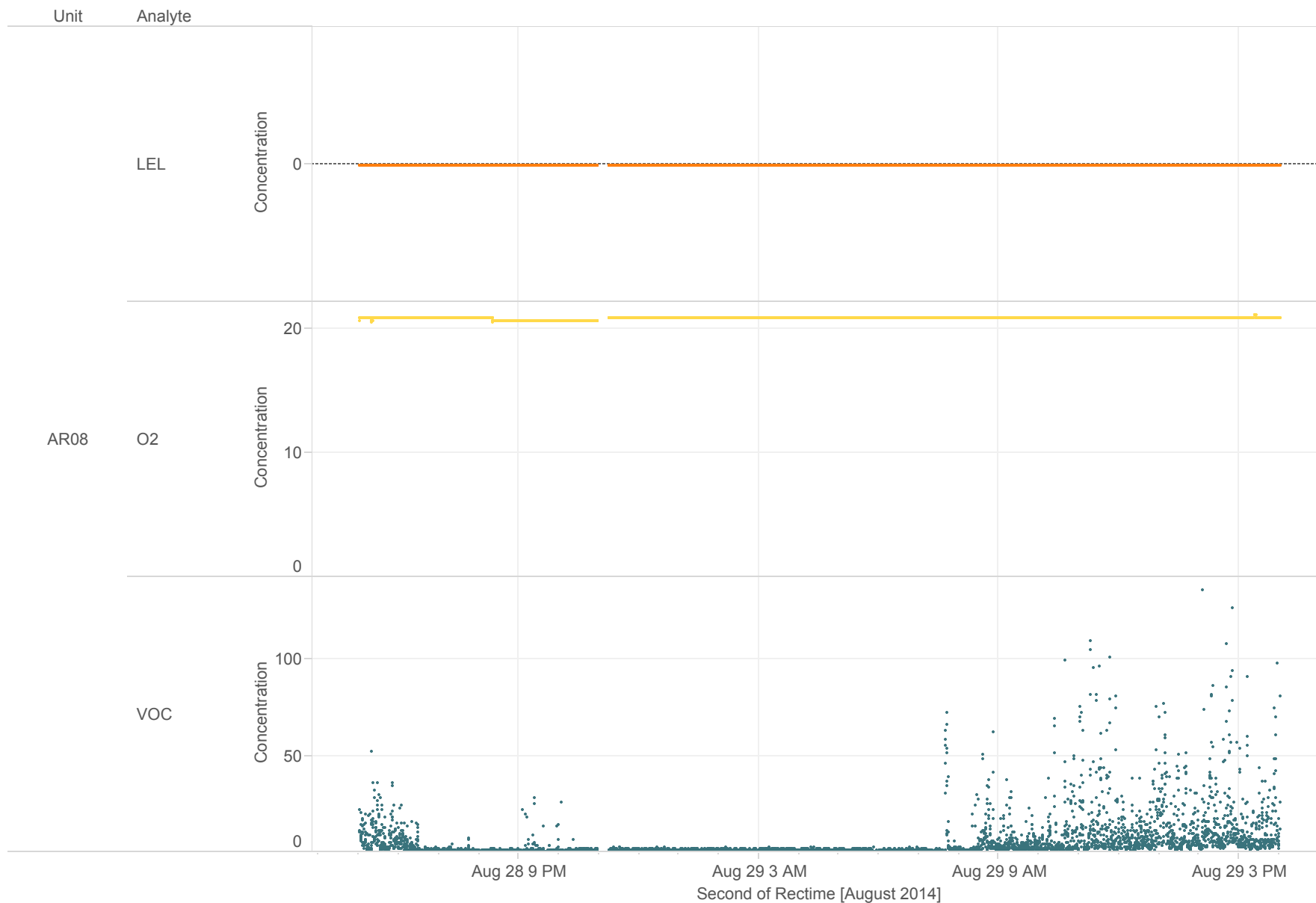
Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Remote-telemetry Air Monitoring - Double Oak Mountain, AL - 8/28/2014 17:00 - 8/29/2014 16:00



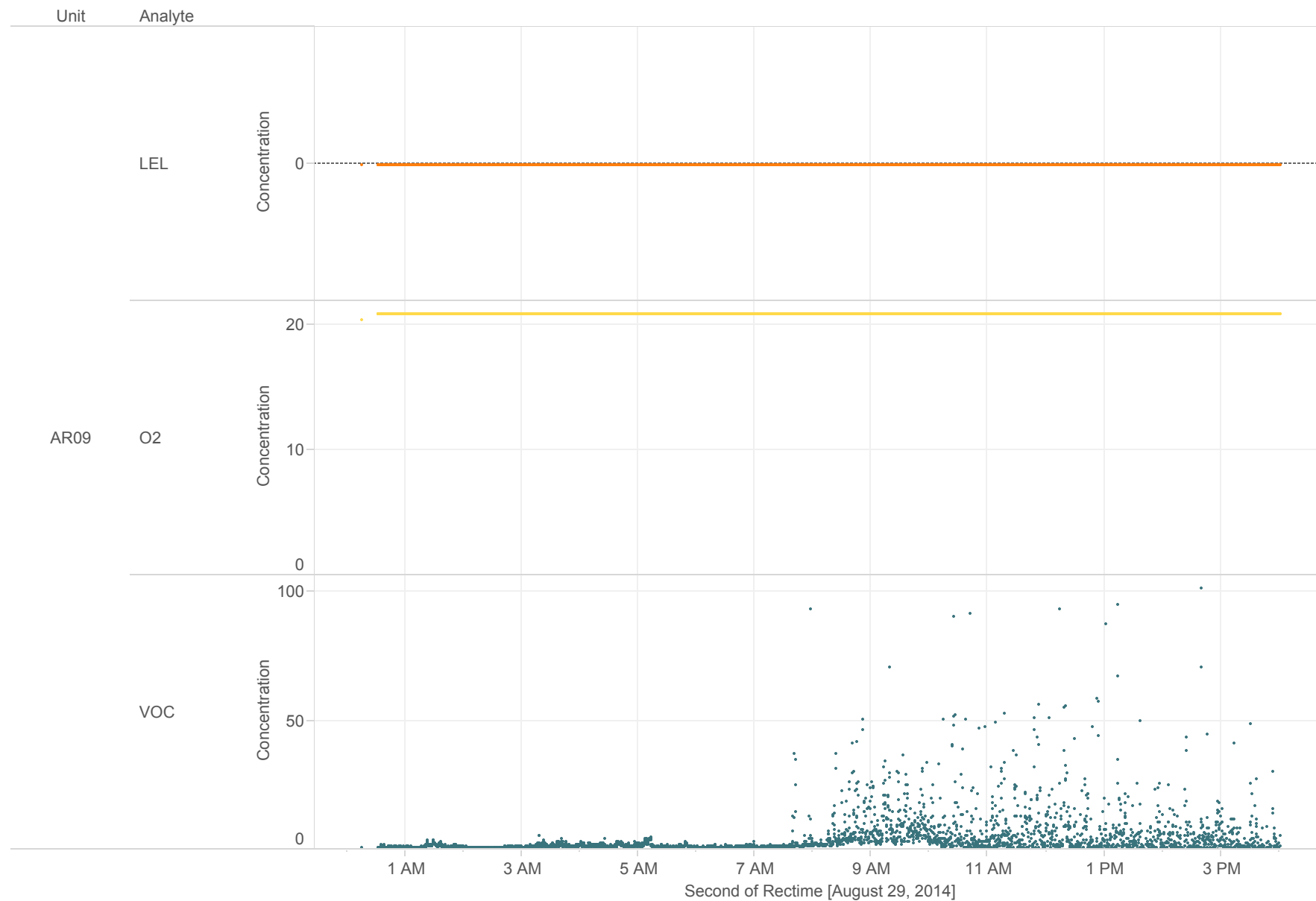
Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Remote-telemetry Air Monitoring - Double Oak Mountain, AL - 8/28/2014 17:00 - 8/29/2014 16:00



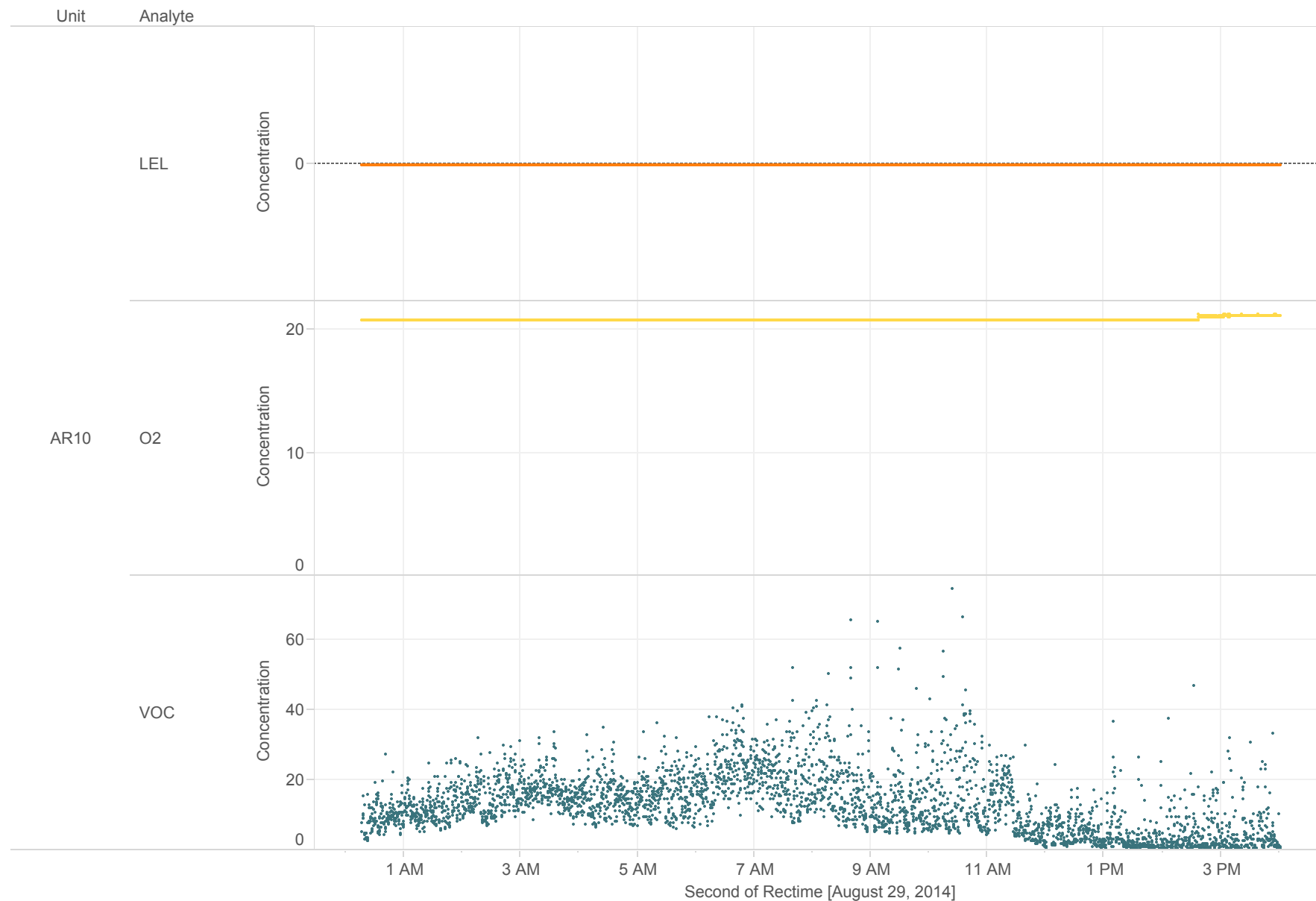
Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Remote-telemetry Air Monitoring - Double Oak Mountain, AL - 8/28/2014 17:00 - 8/29/2014 16:00



Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Remote-telemetry Air Monitoring - Double Oak Mountain, AL - 8/28/2014 17:00 - 8/29/2014 16:00

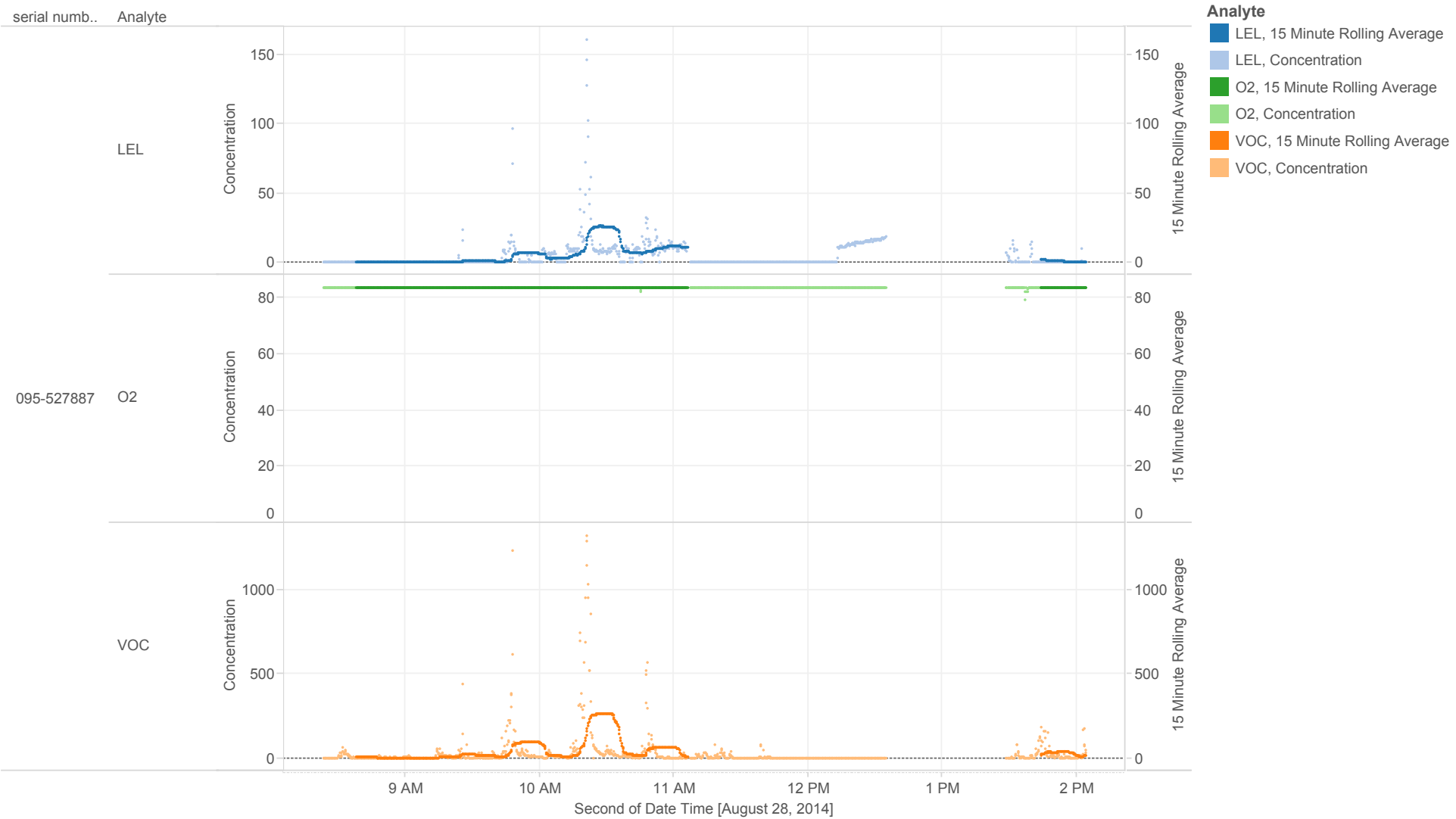


Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Appendix C:

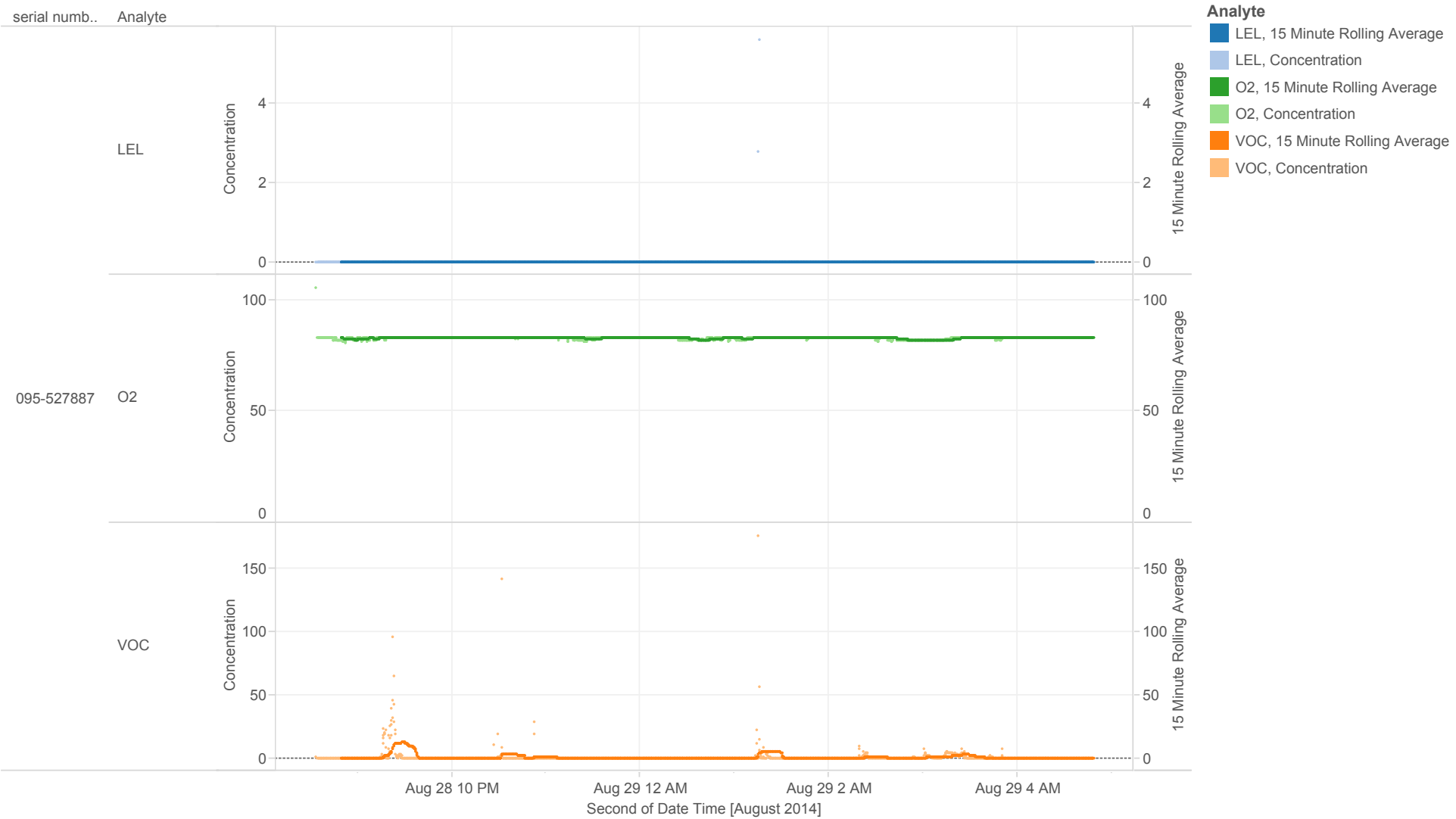
Data Logging Air Monitoring Graphs

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/28/2014 08:23 - 8/28/2014 04:48



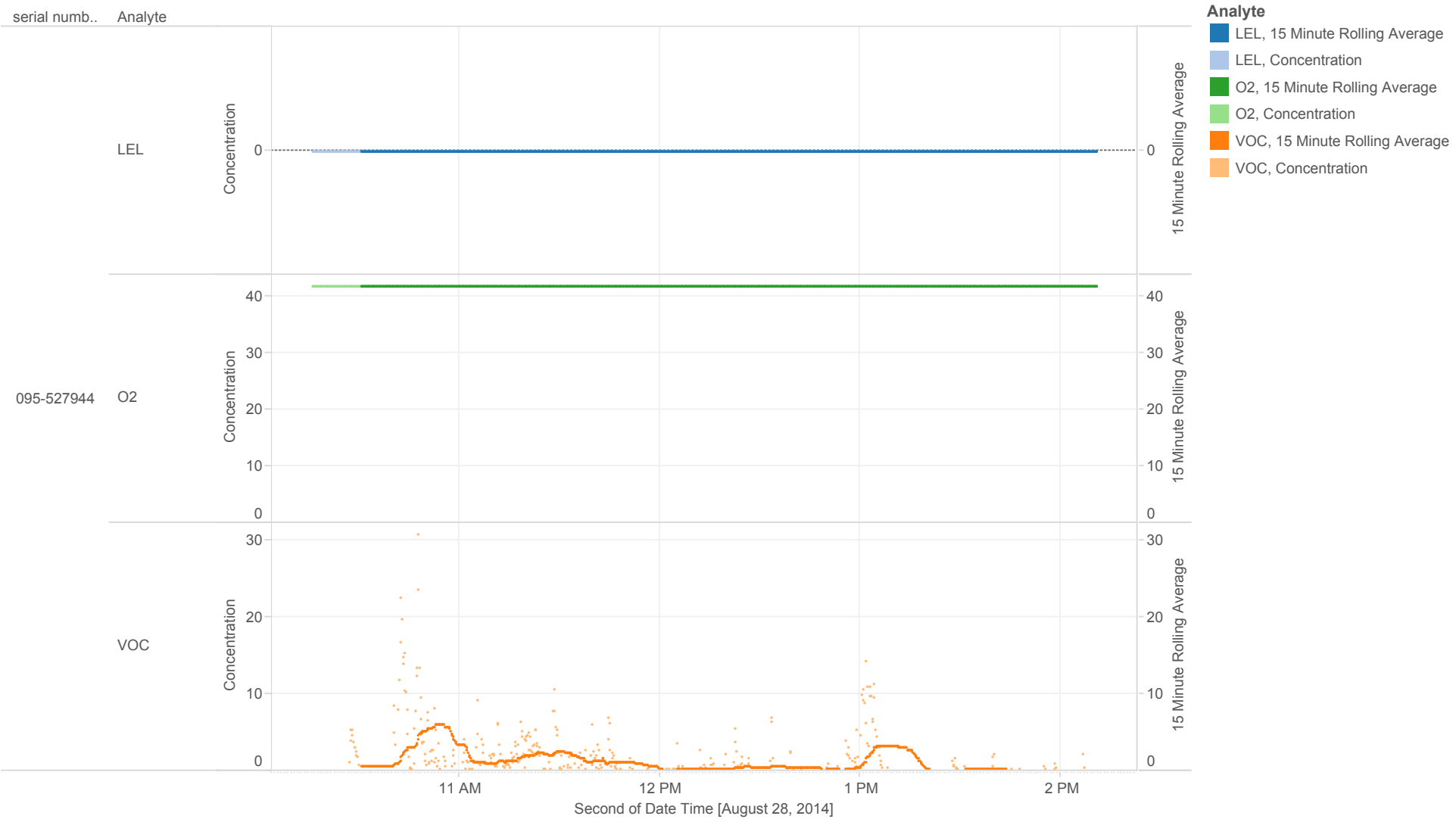
Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/28/2014 08:23 - 8/28/2014 04:48



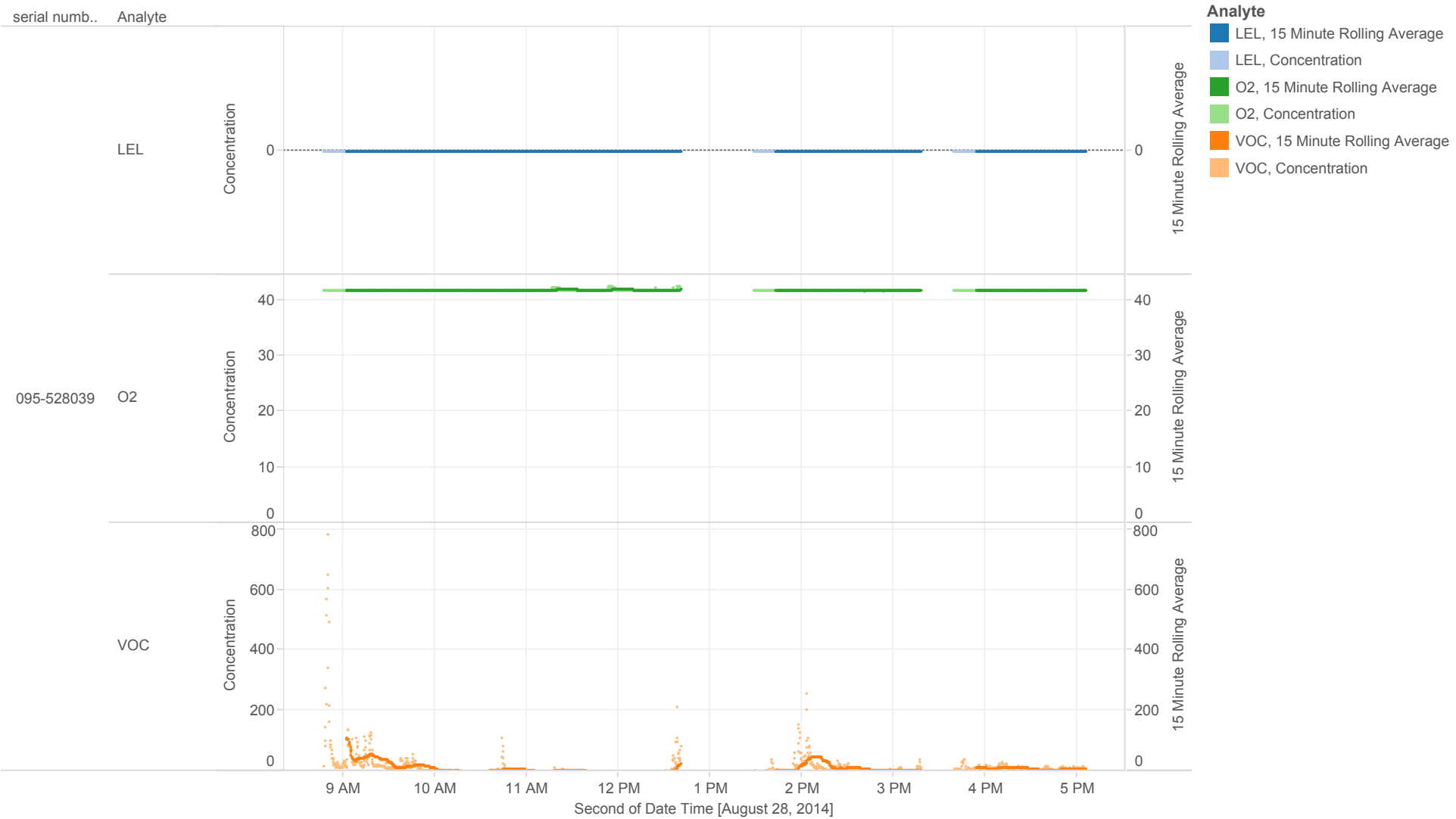
Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/28/2014 08:23 - 8/28/2014 04:48



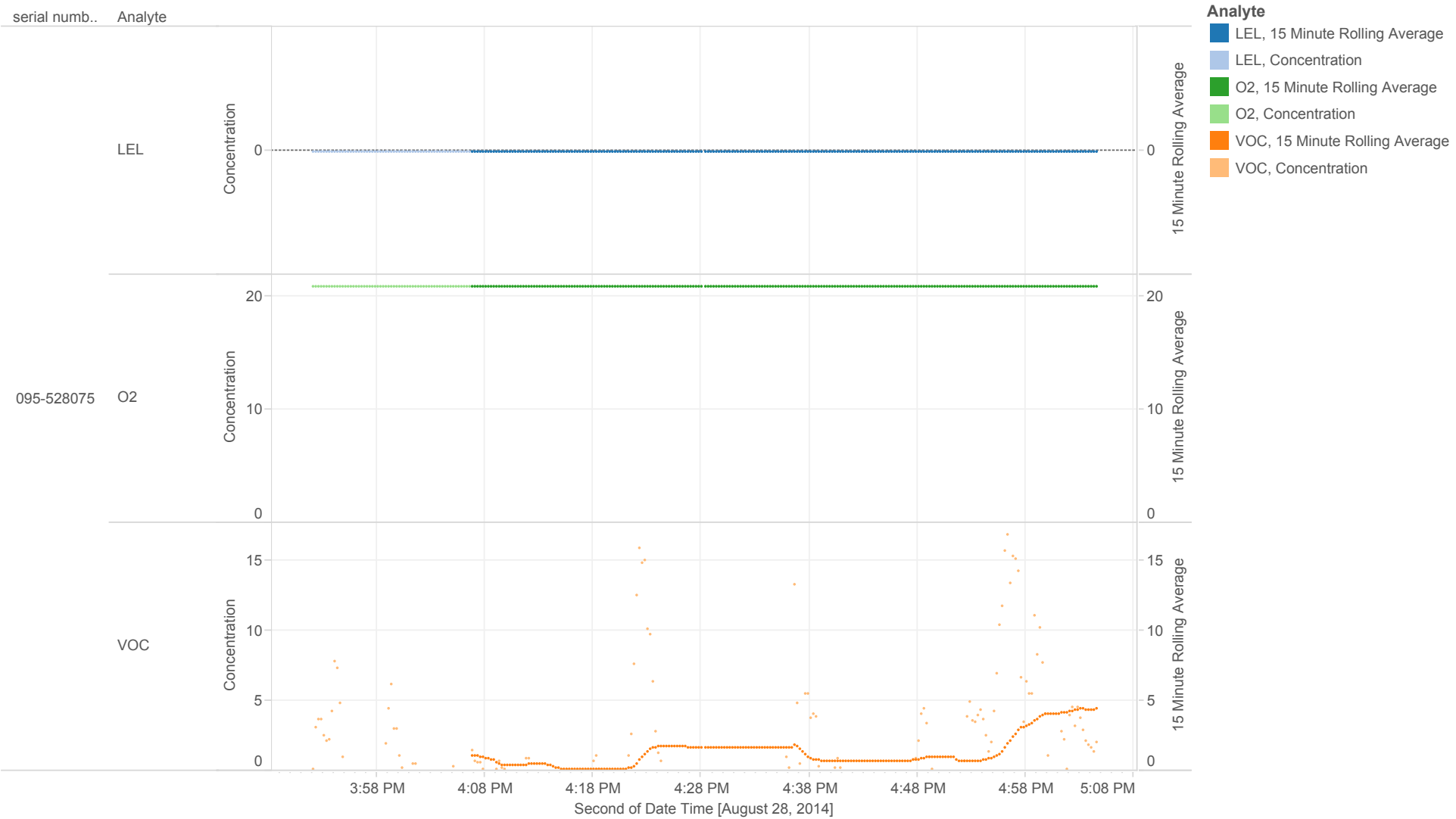
Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/28/2014 08:23 - 8/28/2014 04:48



Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

MultiRAE Data Logging Air Monitoring - Double Oak Mountain, AL - 8/28/2014 08:23 - 8/28/2014 04:48



Please note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format

Appendix D: Calibration Logs

Calibration Log

Date	Time	Instrument	Serial Number	Cal Gas	Concentration	Lot Number	Expiration/ Mfg. Date	Calibrated By
8/28	0510	UltraPac	596-905842	Benzene	5ppm	968564	5/17	AR
+	0544	+	596-901157	+	+	+	+	+
8/28	0600	M2+	045-527915	ISO / Quac	100ppm / 20.9% 50% LEL	955431 / 970235	4/16 / 7/16	AR
+	0602	+	645-528003	+	+	+	+	+
+	0605	+	045-528039	+	+	+	+	+
+	0607	+	045-528887	+	+	+	+	+
+	0609	+	045-527944	+	+	+	+	+
8/29	2306	AR08	292-504133	ISO Quac N	100ppm 50% LEL 99.9%	970235 971532 970543	8/17 7/16 8/17	AR
+	2327	AR06	292-500716	+	+	+	+	+
+	2357	AR10	292-504111	+	+	+	+	+
8/29	0023	AR09	292-504109	+	+	+	+	+
8/29	0532	M2+	045-527231	+	+	+	+	AR
8/29	0550	UltraPac	596-905842	Benzene	5ppm	968564	5/17	AR
+	+	+	596-901284	+	+	+	+	AR
8/29	0602	PRB Pac	594-901451	ISO	10ppm	952863	12/15	AR
+	+	+	594-901471	+	+	+	+	AR
8/29	0637	M2+	045-528061	ISO Quac N	100ppm 50% LEL 99.9%	971532 970235 970543	8/17 7/16 7/17	AR
+	+	+	045-507929	+	+	+	+	+

Project# 106608

Client Kinder Morgan
Plantation

Location Pelham, AL

Calibration Log

[illegible]

Project# 106608

Client Penetration

Location Pelham, LA