DORAL FLORIDA FACILITY FIRE

PRELIMINARY AIR MONITORING

SUMMARY

Doral, Florida

07:00 March 19 - 07:00 March 20, 2023

Project #025114

1.0 INTRODUCTION

On February 16, 2023, Covanta Energy requested that CTEH®, LLC provide air monitoring and air sampling support in response to a fire at a Covanta Energy facility in Doral, Florida. CTEH® personnel mobilized to the incident site and began real-time air monitoring in the surrounding community at approximately 0800 Eastern Standard Time (EST) February 17, 2023. This report summarizes the real-time air monitoring data collected from 0700 EST March 19 to 0700 EST March 20, 2023.

2.0 AIR MONITORING AND SAMPLING METHODS

Real-time air monitoring refers to the use of direct-reading instruments to provide a near-instantaneous readout of a chemical concentration in air. CTEH® personnel developed and implemented an Air Sampling and Analysis Plan (SAP), which was reviewed by the U.S. EPA Region 4 On-Scene Coordinator (EPA Region 4 OSC) and other members of Incident Command, to characterize the nature and extent of emissions from the fire. During this reporting period, CTEH personnel conducted real-time air monitoring in accordance with the Community Monitoring plan outlined in the SAP. Community Monitoring was conducted in the residential and commercial locations surrounding the incident site, not necessarily occupied by members of the community. All Community Monitoring was conducted at a height representative of the breathing zone.

During this reporting period, CTEH® personnel conducted handheld real-time air monitoring for carbon monoxide (CO), hydrogen sulfide (H_2S), hydrogen cyanide (HCN), atmospheric flammability measured as a percentage of the lower explosive limit (%LEL), particulate matter less than 2.5 microns ($PM_{2.5}$), and volatile organic compounds (VOCs). Real-time air monitoring was conducted using RAE Systems by Honeywell MultiRAE, TSI DustTrak, and TSI SidePak AM520 handheld instruments.

CTEH personnel also deployed stationary radio-telemetering real-time air monitoring instruments (RAE Systems by Honeywell AreaRAE instruments) at four fixed locations. AreaRAE instruments were used to monitor for CO, H_2S, %LEL, HCN, and VOCs every 15 seconds. In addition, four TSI SidePak AM520 instruments were deployed, co-located with AreaRAE instruments, to log $PM_{2.5}$ data.

Please note that, in addition to fire smoke, automobile exhaust is another source of particulate matter that is detectable on $PM_{2.5}$ instrumentation. $PM_{2.5}$ in exhaust from cars and trucks onsite during response activities and on nearby roads may be associated with momentary elevated $PM_{2.5}$ readings. $PM_{2.5}$ instruments can also overstate $PM_{2.5}$ levels during humid weather conditions.

To supplement real-time air monitoring, analytical air samples were collected at discrete locations around the incident site, co-located with AreaRAE instruments. Samples were collected for asbestos, polynuclear

aromatic hydrocarbons, and metals. All samples will be shipped under chain-of-custody to Pace Analytical, an American Industrial Hygiene Association-accredited laboratory for analysis.

3.0 AIR MONITORING RESULTS

A summary of handheld real-time readings by location is provided in **Table 1**. Radio-telemetering AreaRAE data is provided in **Table 2.** Data-logged $PM_{2.5}$ readings are provided in **Table 3.** Real-time air monitoring action level references, selected in coordination with the EPA Region 4 OSC, are provided in **Table 4**. A $PM_{2.5}$ action level sheet provided by the EPA Region 4 OSC is included as **Attachment A**. Maps of the incident location and air monitoring/sampling locations are provided in **Attachment B**. Graphical representations of radio-telemetering AreaRAE data are provided in **Attachment C**. Graphical representations of data-logged $PM_{2.5}$ readings are provided in **Attachment D**.

Table 1: Community Handheld Real-Time Air Monitoring Results by Location†

Location Code	Location Description	Analyte	Instrument(s)	Number of Readings	Number of Detections	Range of Detections*	Period Average*	Action Level
FRT-001	107 and 66th	%LEL	MultiRAE	1	0	< 1 %	< 1 %	10 %
		CO	MultiRAE	3	0	< 1 ppm	< 1 ppm	83 ppm
		H_2S	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	MultiRAE	1	0	< 0.5 ppm	< 0.5 ppm	2 ppm
		$PM_{2.5}$	AM520/DustTrak	12	12	12 - 31 µg/m³	23 µg/m³	See PM2.5 Action Level Sheet
		VOCs	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	1 ppm
FRT-002	CVS at 107 and 74	%LEL	MultiRAE	1	0	< 1 %	< 1 %	10 %
		CO	MultiRAE	1	0	< 1 ppm	< 1 ppm	83 ppm
		H_2S	MultiRAE	2	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	MultiRAE	1	0	< 0.5 ppm	< 0.5 ppm	2 ppm
		$PM_{2.5}$	AM520/DustTrak	13	13	14 - 31 µg/m³	23 µg/m³	See PM2.5 Action Level Sheet
		VOCs	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	1 ppm
FRT-003	Ronald Reagan High School	%LEL	MultiRAE	1	0	< 1 %	< 1 %	10 %
		CO	MultiRAE	1	0	< 1 ppm	< 1 ppm	83 ppm
		H_2S	MultiRAE	2	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	MultiRAE	2	0	< 0.5 ppm	< 0.5 ppm	2 ppm
		$PM_{2.5}$	AM520/DustTrak	14	14	10 - 30 µg/m³	21 µg/m³	See PM2.5 Action Level Sheet
		VOCs	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	1 ppm

Location Code	Location Description	Analyte	Instrument(s)	Number of Readings	Number of Detections	Range of Detections*	Period Average*	Action Level
FRT-004	8400 102nd Ave, Southeast Corner	%LEL	MultiRAE	3	0	< 1 %	< 1 %	10 %
		CO	MultiRAE	1	0	< 1 ppm	< 1 ppm	83 ppm
		H_2S	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	MultiRAE	1	0	< 0.5 ppm	< 0.5 ppm	2 ppm
		$PM_{2.5}$	AM520/DustTrak	14	14	10 - 32 µg/m³	23 µg/m³	See PM2.5 Action Level Sheet
FRT-005	Andrea Castillo Preparatory Academy	%LEL	MultiRAE	1	0	< 1 %	< 1 %	10 %
		CO	MultiRAE	1	0	< 1 ppm	< 1 ppm	83 ppm
		H_2S	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	MultiRAE	1	0	< 0.5 ppm	< 0.5 ppm	2 ppm
		$PM_{2.5}$	AM520/DustTrak	13	13	13 - 30 µg/m³	21 µg/m³	See PM2.5 Action Level Sheet
		VOCs	MultiRAE	3	0	< 0.1 ppm	< 0.1 ppm	1 ppm
FRT-006	Baptist Health Hospital ER	CO	MultiRAE	1	0	< 1 ppm	< 1 ppm	83 ppm
		$PM_{2.5}$	AM520/DustTrak	12	12	15 - 27 µg/m³	22 µg/m³	See PM2.5 Action Level Sheet
		VOCs	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	1 ppm
FRT-007	Impact Centre at Doral Entrance	%LEL	MultiRAE	1	0	< 1 %	< 1 %	10 %
		H_2S	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		$PM_{2.5}$	AM520/DustTrak	13	13	10 - 31 µg/m³	22 µg/m³	See PM2.5 Action Level Sheet
FRT-008	Aldi Parking lot	HCN	MultiRAE	1	0	< 0.5 ppm	< 0.5 ppm	2 ppm
		$PM_{2.5}$	AM520/DustTrak	13	13	9 - 26 µg/m³	19 µg/m³	See PM2.5 Action Level Sheet
FRT-009	Side of 58th, Next to Golf Course.	CO	MultiRAE	1	0	< 1 ppm	< 1 ppm	83 ppm
		H_2S	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	MultiRAE	1	0	< 0.5 ppm	< 0.5 ppm	2 ppm
		$PM_{2.5}$	AM520/DustTrak	13	13	13 - 36 µg/m³	22 µg/m³	See PM2.5 Action Level Sheet
		VOCs	MultiRAE	3	0	< 0.1 ppm	< 0.1 ppm	1 ppm
Station 1	South Fenceline	%LEL	MultiRAE	1	0	< 1 %	< 1 %	10 %
		CO	MultiRAE	1	0	< 1 ppm	< 1 ppm	83 ppm
		H_2S	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	MultiRAE	1	0	< 0.5 ppm	< 0.5 ppm	2 ppm
		$PM_{2.5}$	AM520/DustTrak	3	3	35 - 60 µg/m³	46 µg/m³	See PM2.5 Action Level Sheet
		VOCs	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	1 ppm

Location Code	Location Description	Analyte	Instrument(s)	Number of Readings	Number of Detections	Range of Detections*	Period Average*	Action Level
Station 2	Southeast Corner of Stack	%LEL	MultiRAE	2	0	< 1 %	< 1 %	10 %
		CO	MultiRAE	2	0	< 1 ppm	< 1 ppm	83 ppm
		H_2S	MultiRAE	2	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	MultiRAE	2	0	< 0.5 ppm	< 0.5 ppm	2 ppm
		$PM_{2.5}$	AM520/DustTrak	4	4	40 - 88 µg/m³	62 µg/m³	See PM2.5 Action Level Sheet
		VOCs	MultiRAE	2	0	< 0.1 ppm	< 0.1 ppm	1 ppm
Station 3	West Fenceline	$PM_{2.5}$	AM520/DustTrak	4	4	31 - 56 µg/m³	46 µg/m³	See PM2.5 Action Level Sheet
		VOCs	MultiRAE	1	0	< 0.1 ppm	< 0.1 ppm	1 ppm
Station 4	North Fenceline	$PM_{2.5}$	AM520/DustTrak	3	3	35 - 43 µg/m³	40 µg/m³	See PM2.5 Action Level Sheet

† Note: This is a preliminary data summary, indicating that the data provided have not undergone the full quality assurance and quality control (QAQC) process and should be considered preliminary at this time.
* If no detectable concentration was observed, the instrument detection limit preceded by a "<" is listed.
ppm = parts per million; µg/m³ = micrograms per cubic meter

Table 2: Radio-Telemetering Air Monitoring Results†

Location Code	Location	Analyte	Number of Readings	Number of Detections	Concentration Range*	Period Average*	Action Level
Station 01	South Fenceline	%LEL	4,093	0	< 1 %	< 1 %	10 %
		CO	4,093	1	3 ppm	0.00073 ppm	83 ppm
		H_2S	4,091	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	4,070	0	< 1 ppm	< 1 ppm	2 ppm
		VOCs	4,098	1,148	0.1 - 0.6 ppm	0.04820 ppm	1 ppm
Station 02	Southeast Corner of Stack	%LEL	4,016	0	< 1 %	< 1 %	10 %
		CO	4,016	6	2 - 4 ppm	0.00473 ppm	83 ppm
		H_2S	4,016	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	4,016	0	< 1 ppm	< 1 ppm	2 ppm
		VOCs	4,016	491	0.1 - 0.2 ppm	0.02484 ppm	1 ppm

Location Code	Location	Analyte	Number of Readings	Number of Detections	Concentration Range*	Period Average*	Action Level
Station 03	West Fenceline	%LEL	1,703	0	< 1 %	< 1 %	10 %
		CO	1,703	0	< 1 ppm	< 1 ppm	83 ppm
		H_2S	1,703	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	1,703	0	< 1 ppm	< 1 ppm	2 ppm
		VOCs	1,704	99	0.1 - 0.3 ppm	0.01827 ppm	1 ppm
Station 04	North Fenceline	%LEL	4,454	0	< 1 %	< 1 %	10 %
		CO	4,454	0	< 1 ppm	< 1 ppm	83 ppm
		H_2S	4,454	0	< 0.1 ppm	< 0.1 ppm	0.5 ppm
		HCN	4,454	0	< 1 ppm	< 1 ppm	2 ppm
		VOCs	4,454	0	< 0.1 ppm	< 0.1 ppm	1 ppm

† Note: This is a preliminary data summary, indicating that the data provided have not undergone the full quality assurance and quality control (QAQC) process and should be considered preliminary at this time.
* If no detectable concentration was observed, the instrument detection limit preceded by a "<" is listed
ppm = parts per million

Table 3: Data-Logged $PM_{2.5}$ Real-Time Air Monitoring Results†

Location Code	Location Description	Number of Readings	Concentration Range*	Period Average*	Action Level
Station 1	South Fenceline	36,511	7 - 281 µg/m³	36 µg/m³	See PM2.5 Action Level Sheet
Station 2	Southeast Corner of Stack	37,411	10 - 239 µg/m³	37 µg/m³	See PM2.5 Action Level Sheet
Station 3	West Fenceline	35,726	12 - 1370 µg/m³	30 µg/m³	See PM2.5 Action Level Sheet
Station 4	North Fenceline	35,562	11 - 837 µg/m³	39 µg/m³	See PM2.5 Action Level Sheet

† Note: This is a preliminary data summary, indicating that the data provided have not undergone the full quality assurance and quality control (QAQC) process and should be considered preliminary at this time. $PM_{2.5}$ in exhaust from cars and trucks onsite during response activities and on nearby roads may be associated with momentary elevated $PM_{2.5}$ readings. $PM_{2.5}$ instruments can also overstate $PM_{2.5}$ levels during humid weather conditions.
µg/m³ = micrograms per cubic meter

Table 4: Action Level References†

Analyte	Definition	Action Level Reference
VOCs	Volatile Organic Compounds	Temporary Emergency Exposure Limit (TEEL-0) for Benzene
CO	Carbon Monoxide	Acute Exposure Guideline Level (AEGL-2) 1-hr
H_2S	Hydrogen Sulfide	AEGL-1, 1 hr
%LEL	Lower Explosive Limit	29 CFR 1910.146, Confined Spaces
HCN	Hydrogen Cyanide	AEGL-1, 1 hr
$PM_{2.5}$	Particulate Matter < 2.5 Microns	See PM2.5 Action Level Sheet

† Action levels selected in coordination with EPA Region 4 OSC

4.0 METEOROLOGICAL CONDITIONS

Attachment E contains a wind rose depicting wind speed and direction for this reporting period. Wind data is obtained from publicly available information collected at the Miami International Airport.

Attachment A

$PM_{2.5}$ Action Level Sheet

Provided by EPA Region 4 OSC

$PM_{2.5}$ (Particulate Matter ≤ 2.5 microns) Community Action Threshold Levels				
1-Hour Average ($\mu g/m^3$)	24-Hour Average ($\mu g/m^3$)	Level of Health Concern	Meaning	Action
0.0 - 40.0	0.0-12.0	**Good**	Air Quality is considered satisfactory, and air pollution poses little or no risk.	Implement communication plan.
40.1 - 80.0	12.1 - 35.4	**Moderate**	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually senstive to air pollution.	Issue public announcement about health effects. Stay out of areas with visible smoke.
80.1 - 175.0	35.5 - 55.4	**Unhealthy for Sensitive Groups**	Members of sensitive groups may experience health effects. The general public is not likely to be affected.	Recommend evacuation or shelter-in-place for sensitive populations.
175.1 - 300.0	55.5 - 150.4	**Unhealthy**	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.	Consider closing schools and cancelling outdoor events. Recommend shelter-in-place for affected neighborhoods.
300.1 - 500.0	150.5 - 250.4	**Very Unhealthy**	Health warnings of emergency conditions. The entire population is more likely to be affected.	Consider closing schools and cancel all outdoor events. Recommend shelter-in-place and/or evacuation for affected neighborhoods.
> 500.0	> 250.5	**Hazardous**	Health alert: everyone may experience more serious health effects.	Recommend closing schools & cancel outdoor events. Recommend closing workplaces and evacuating affected neighborhoods.

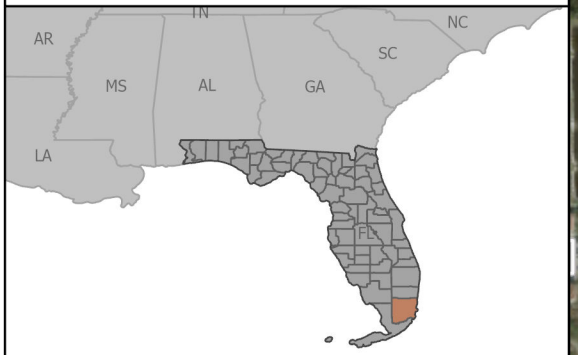
Attachment B

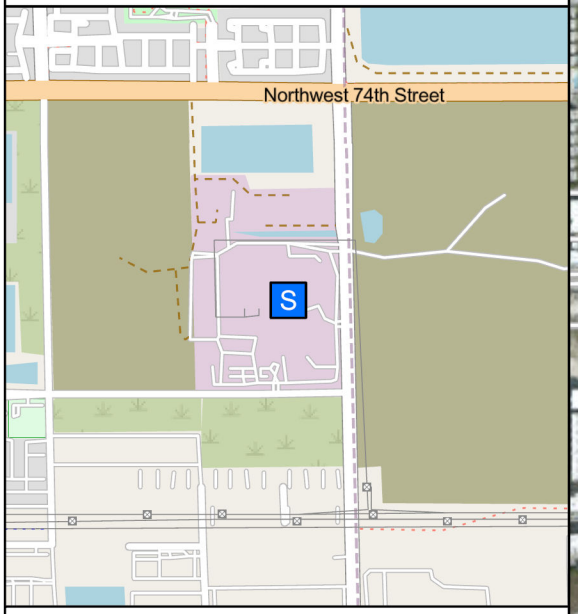
Maps

CTEH®

Doral Florida Facility Fire

Incident Location
Doral, FL | Miami-Dade County
PROJ-025114

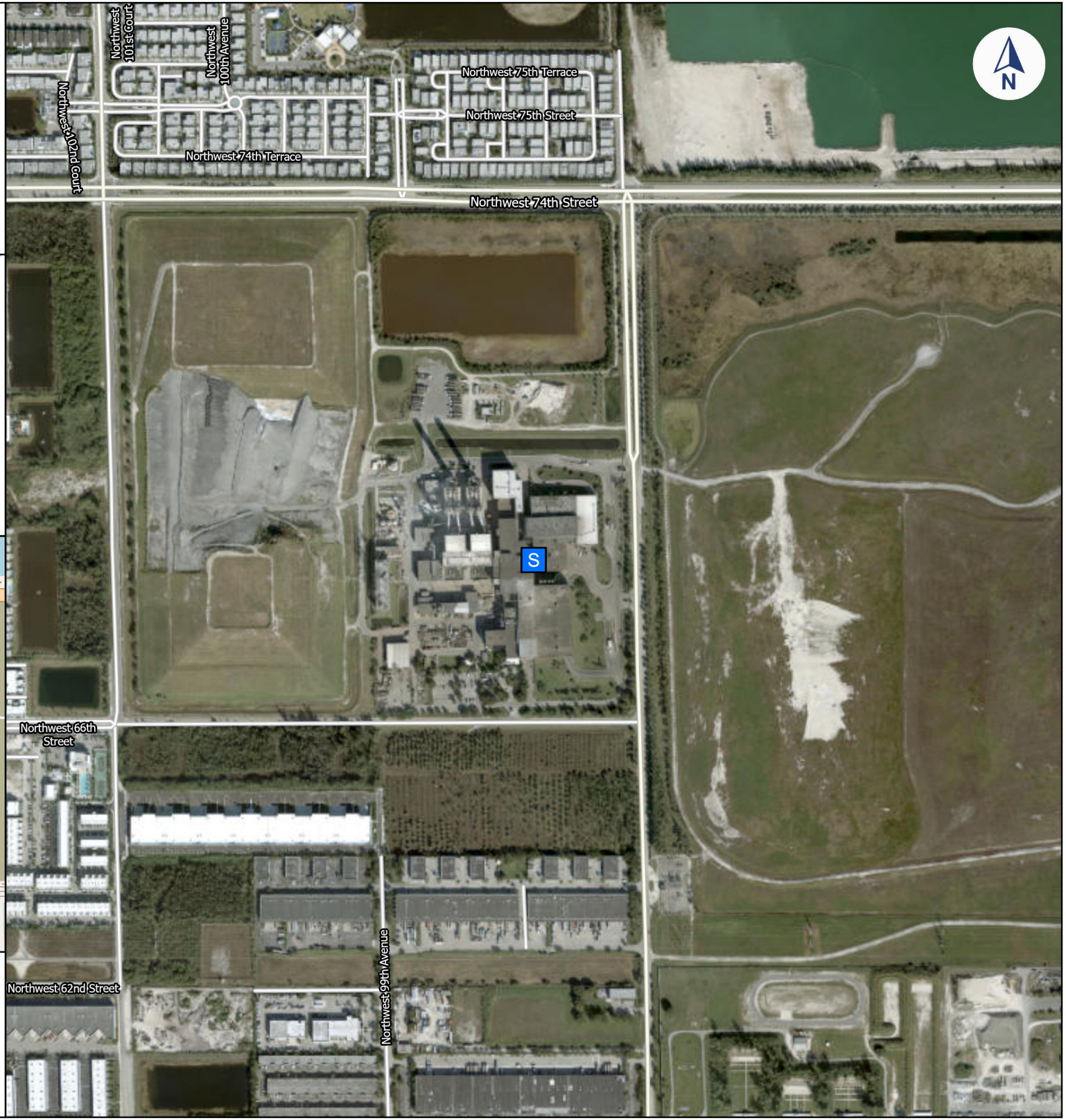




S Incident Location

Updated At: 2/18/2023 8:51 AM

Projection: GCS WGS 1984

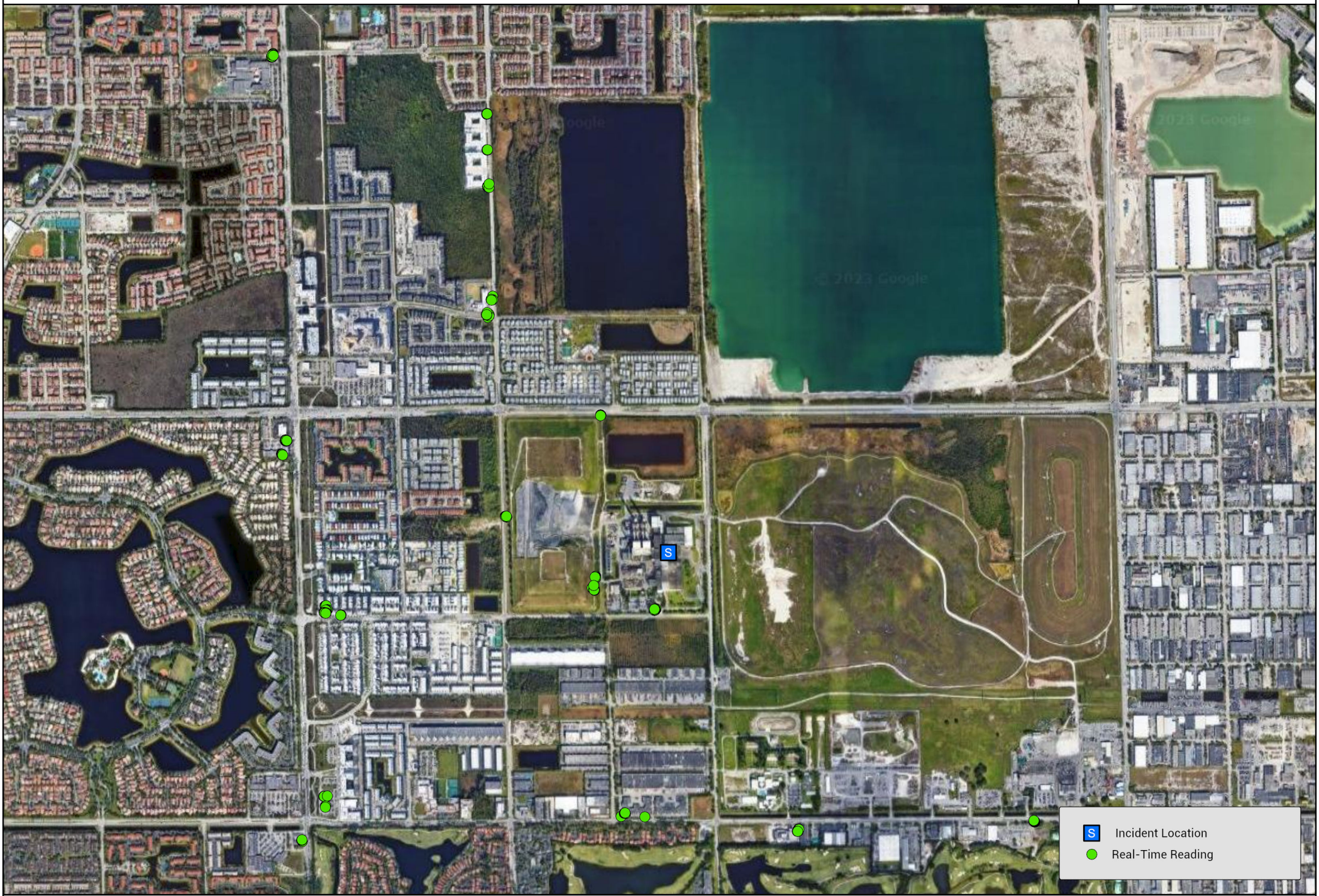


CTEH®

Handheld Real-Time Air Monitoring Locations | Community Monitoring

Doral Florida Facility Fire

Project: PROJ-025114
Client: Covanta Energy
City: Doral, FL
County: Miami-Dade



Projection: WGS 1984 UTM Zone 17N

Datum: WGS 1984

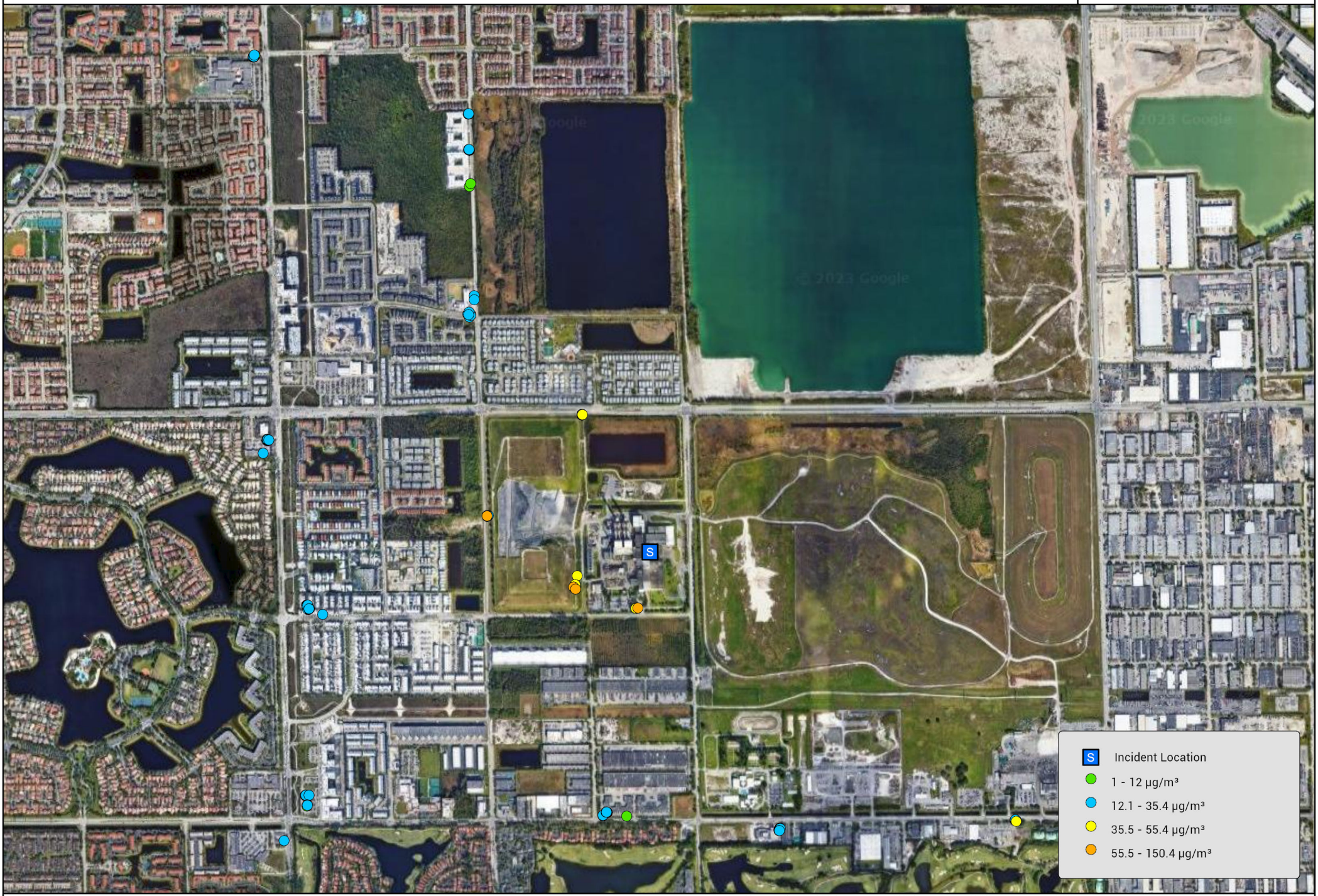
Updated at 3/20/2023 7:27 AM

CTEH®

Handheld Real-Time Air Monitoring Locations | Community Monitoring | $PM_{2.5}$

Doral Florida Facility Fire

Project: PROJ-025114
Client: Covanta Energy
City: Doral, FL
County: Miami-Dade



Projection: WGS 1984 UTM Zone 17N

Datum: WGS 1984

0 500 1,000 2,000 3,000 4,000 Feet

Updated at 3/20/2023 7:28 AM

CTEH®

Fixed Real-Time Air Monitoring and Analytical Sampling Locations

Doral Florida Facility Fire

Project: PROJ-025114
Client: Covanta Energy
City: Doral, FL
County: Miami-Dade



Projection: WGS 1984 UTM Zone 17N

Datum: WGS 1984

0 500 1,000 2,000 3,000 4,000 Feet

Updated at 2023-02-09 09:12

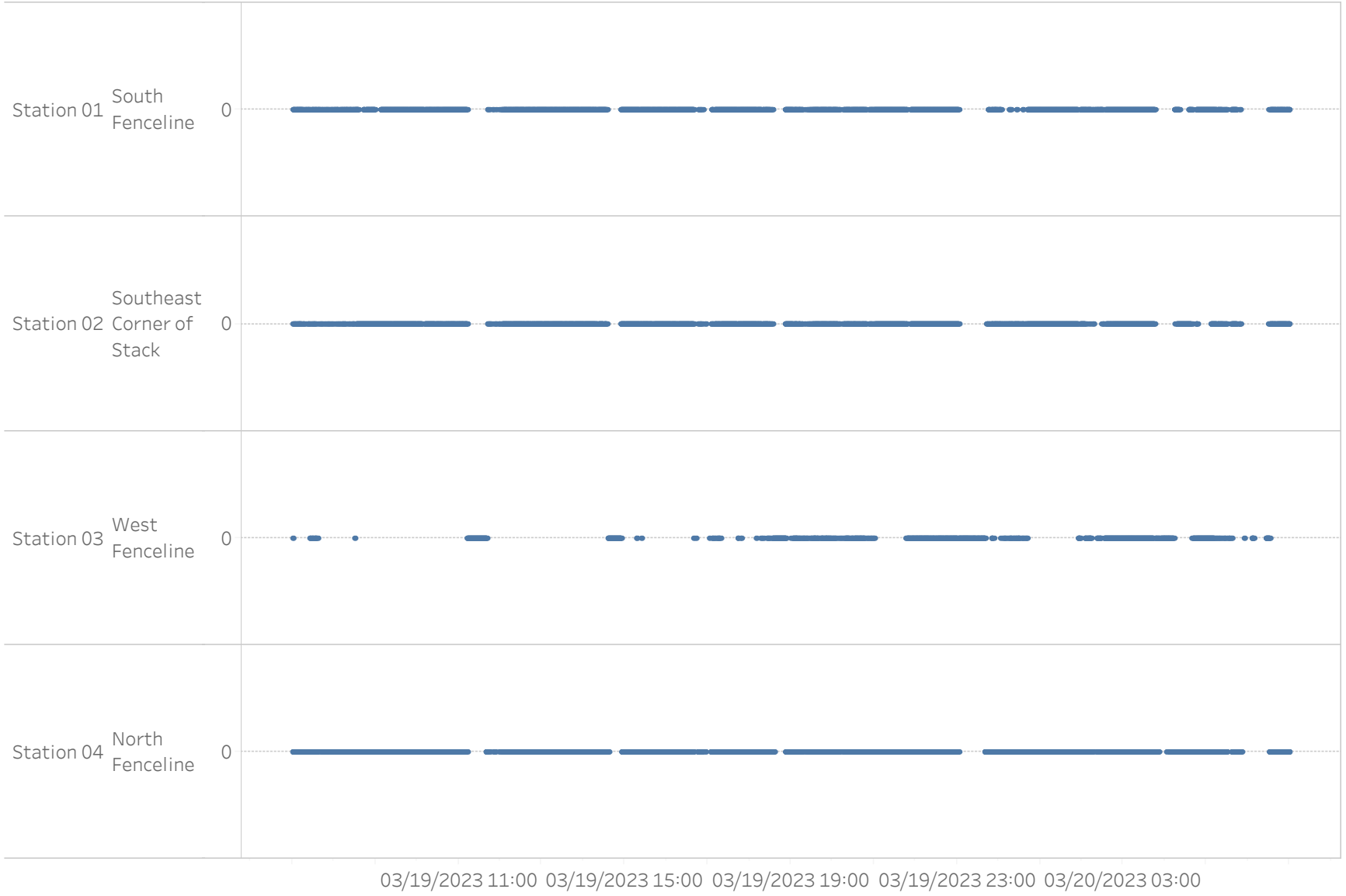
Attachment C

AreaRAE Graphs

Preliminary Remote-telemetered Real-time Air Monitoring Readings

PROJ-025114 | Doral Florida Facility Fire | Doral, FL

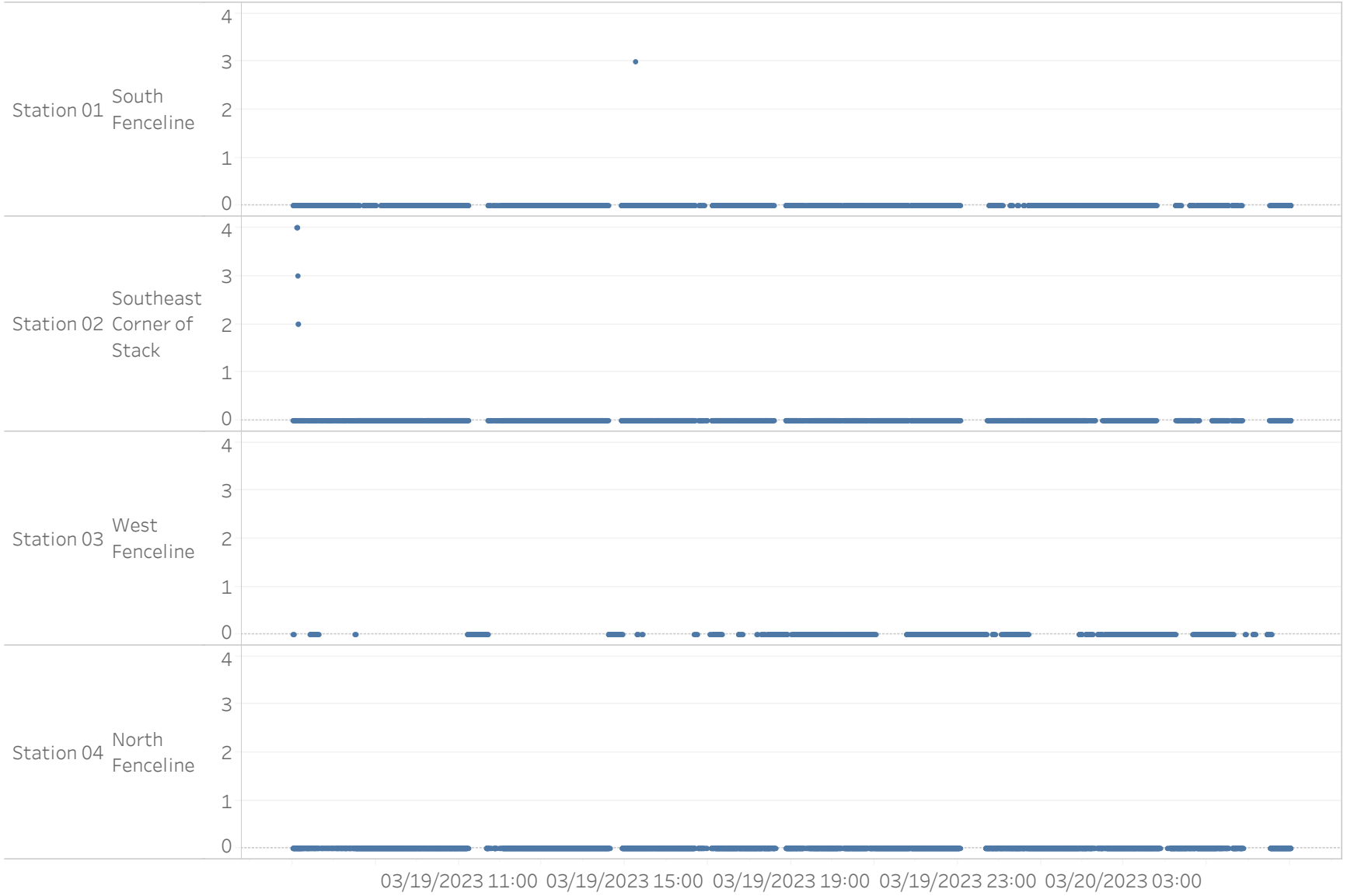
03/19/2023 07:00 to 03/20/2023 07:00 | **Analyte: %LEL**



Preliminary Remote-telemetered Real-time Air Monitoring Readings

PROJ-025114 | Doral Florida Facility Fire | Doral, FL

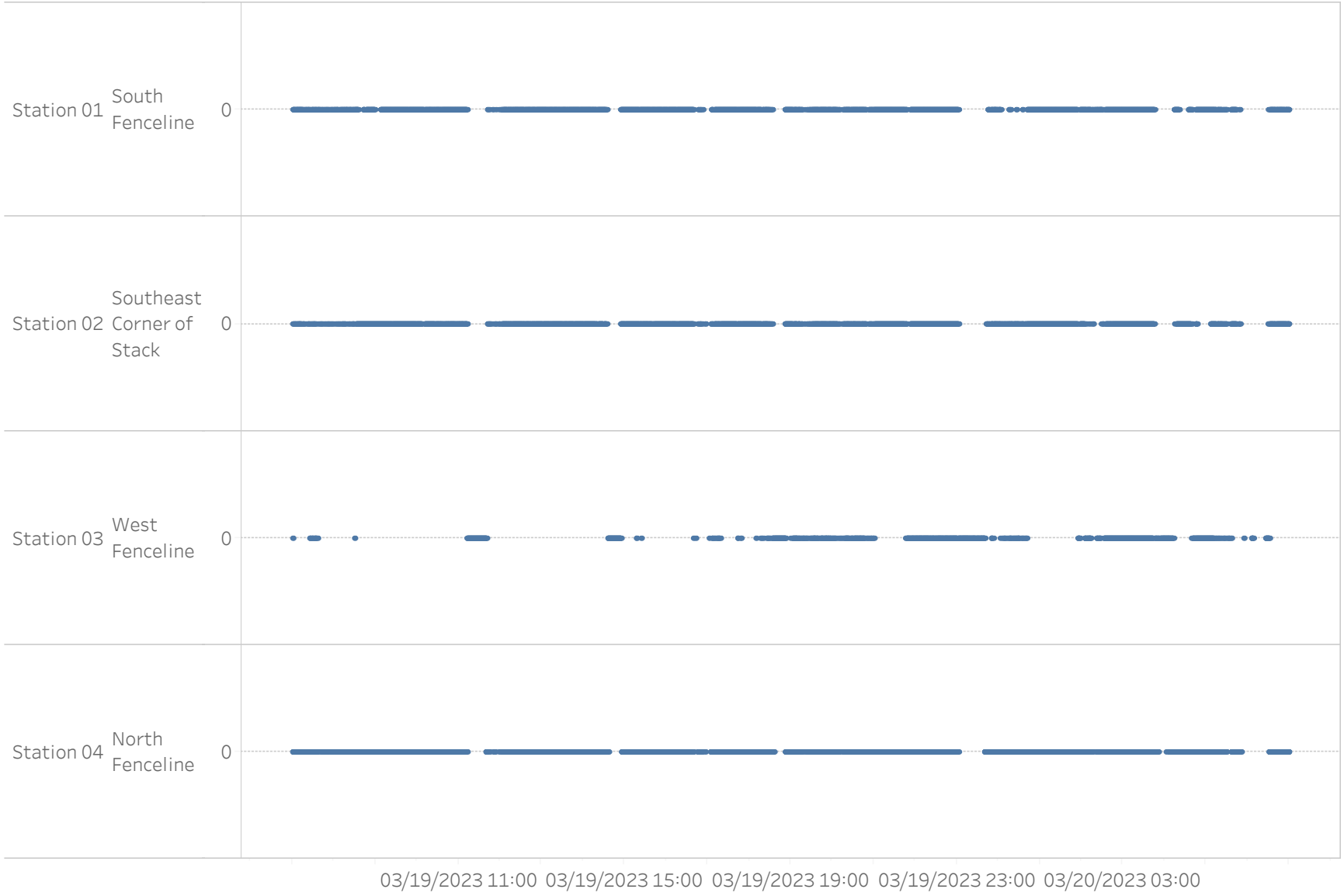
03/19/2023 07:00 to 03/20/2023 07:00 | **Analyte: CO (ppm)**



Preliminary Remote-telemetered Real-time Air Monitoring Readings

PROJ-025114 | Doral Florida Facility Fire | Doral, FL

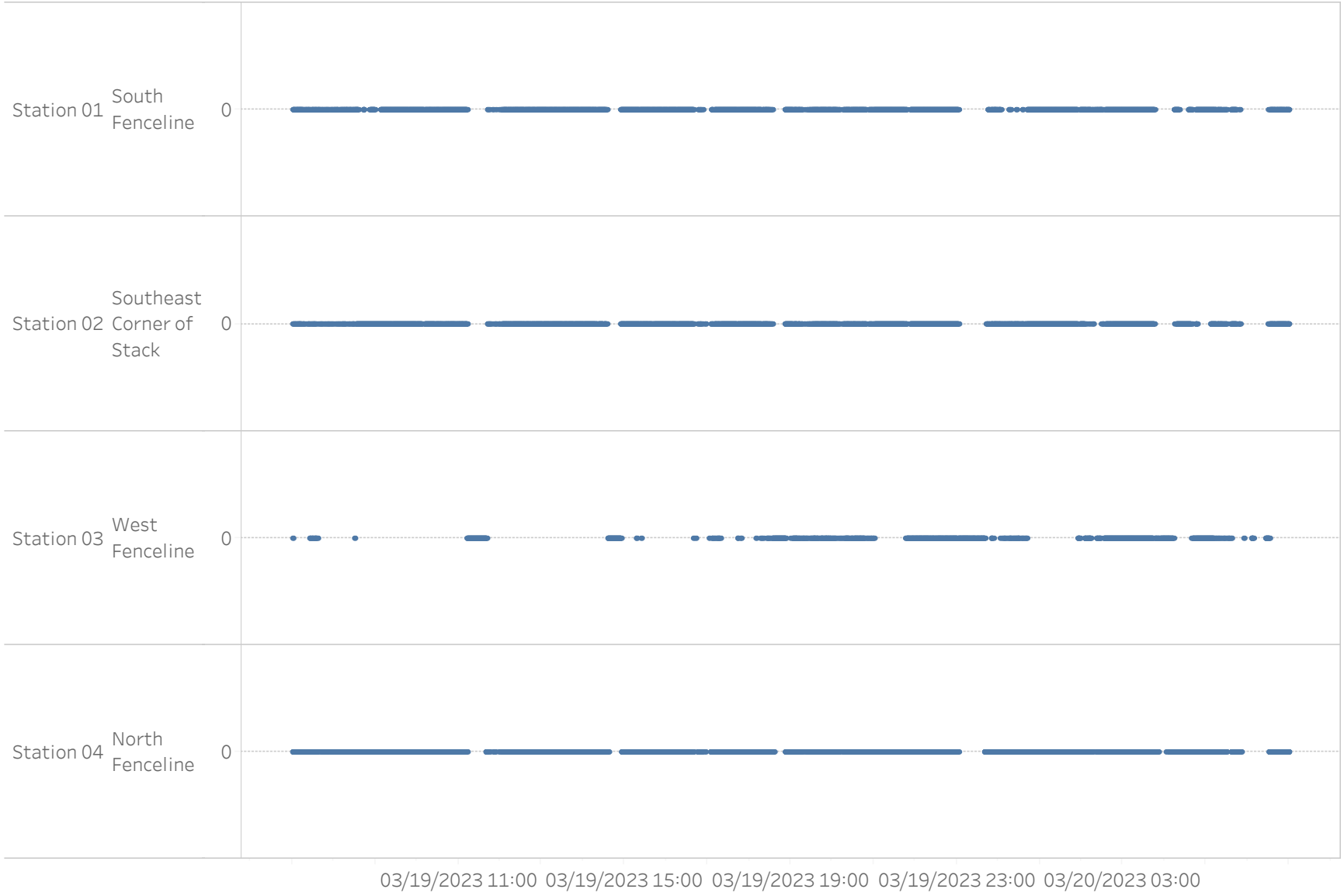
03/19/2023 07:00 to 03/20/2023 07:00 | **Analyte: H2S (ppm)**



Preliminary Remote-telemetered Real-time Air Monitoring Readings

PROJ-025114 | Doral Florida Facility Fire | Doral, FL

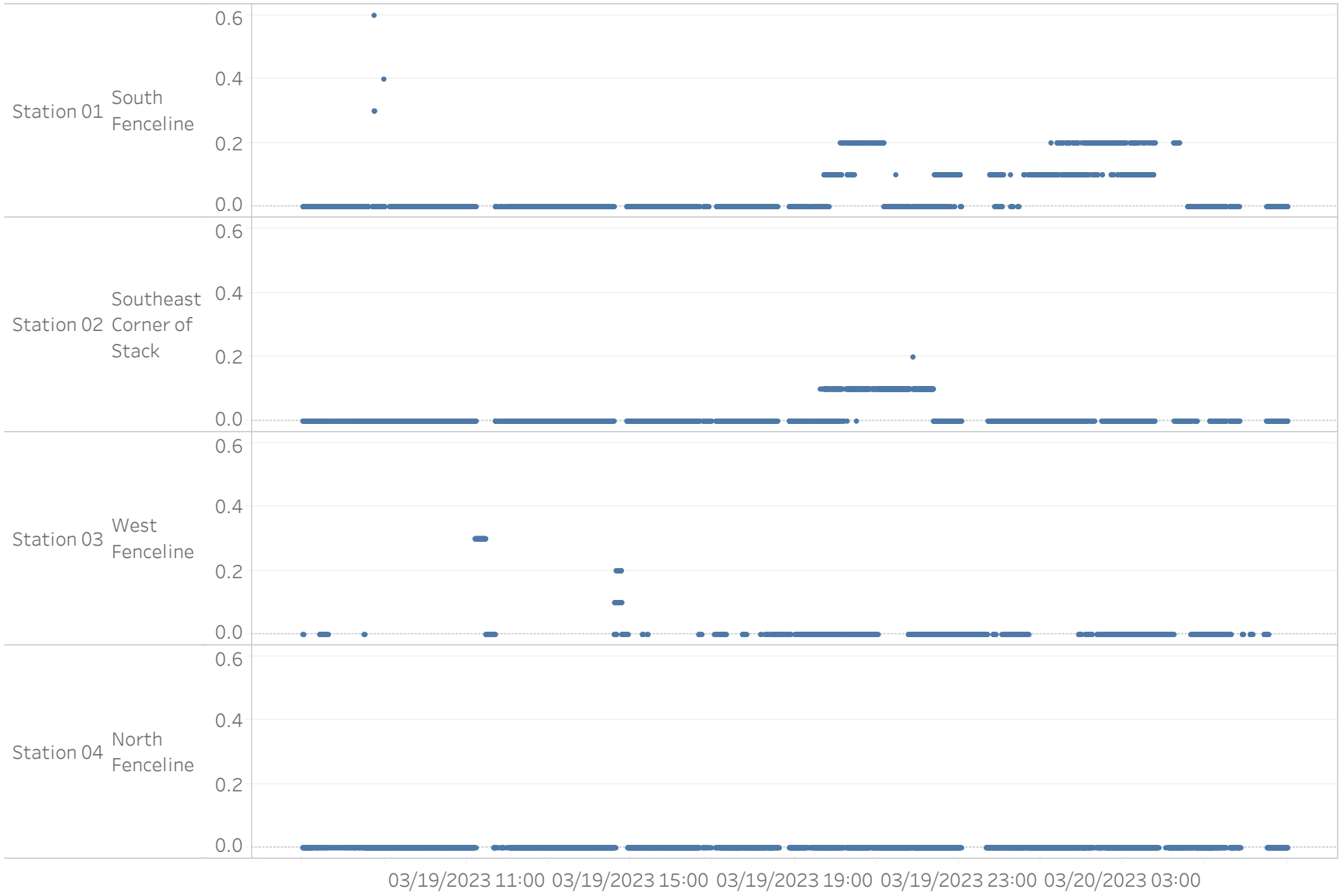
03/19/2023 07:00 to 03/20/2023 07:00 | **Analyte: HCN (ppm)**



Preliminary Remote-telemetered Real-time Air Monitoring Readings

PROJ-025114 | Doral Florida Facility Fire | Doral, FL

03/19/2023 07:00 to 03/20/2023 07:00 | **Analyte: VOCs (ppm)**



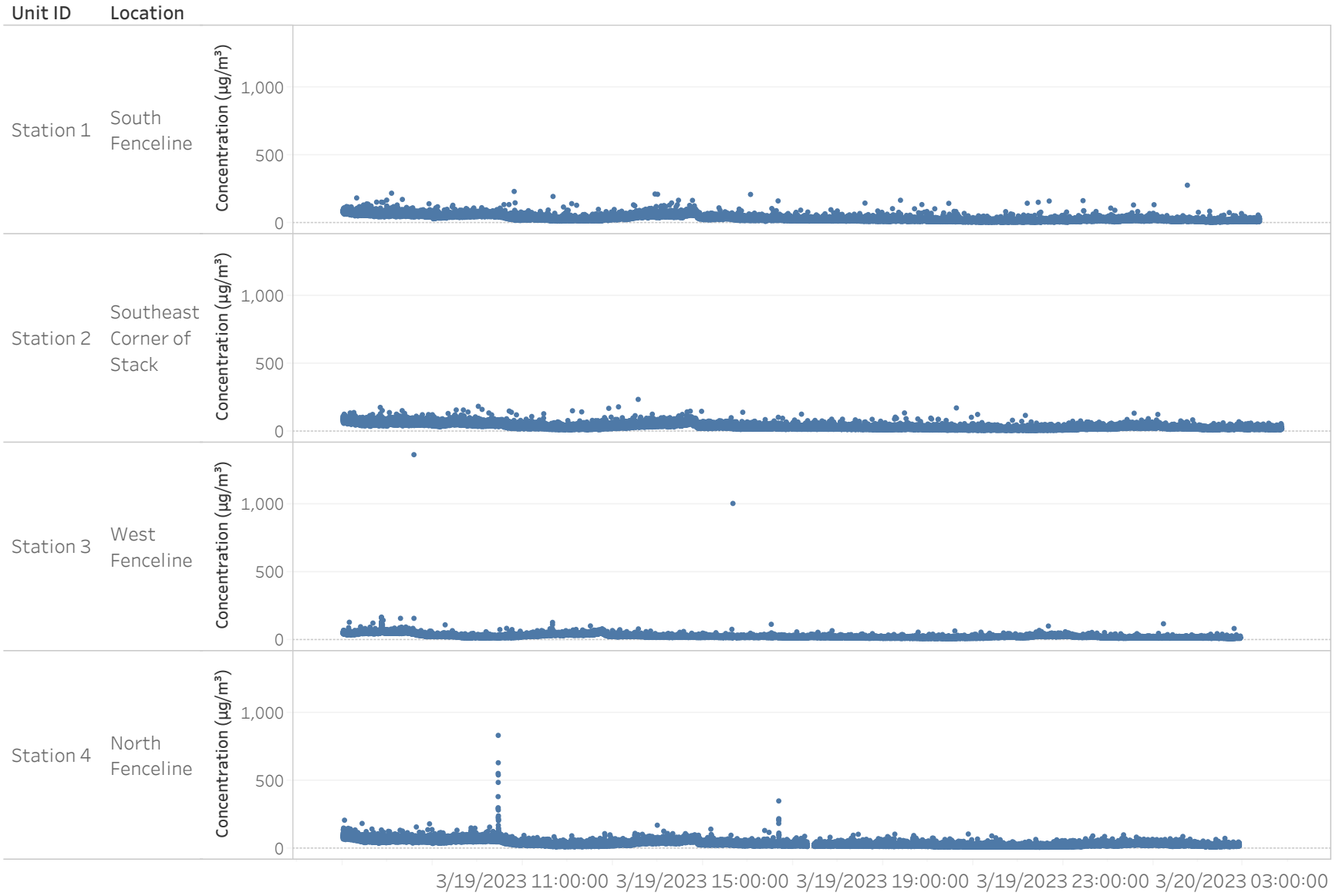
Attachment D

AM520 Graphs

Datalogged PM2.5 Air Monitoring Results

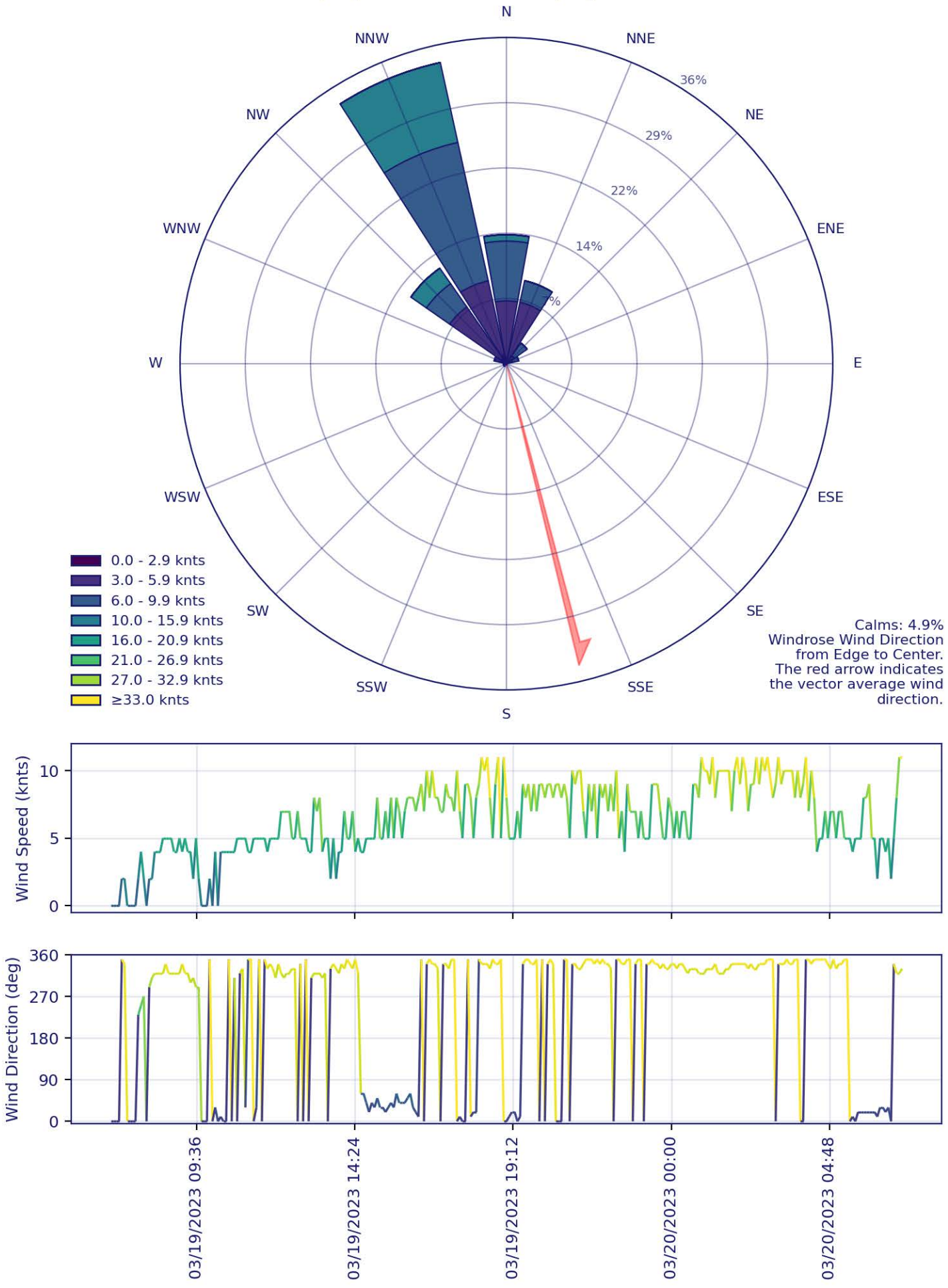
PROJ-025114 | Doral Florida Facility Fire | Doral, FL

3/19/2023 07:00:00 to 3/20/2023 03:50:43



Attachment E

Meteorological Conditions


Weather Station: MIAMI INTL AIRPORT
03/19/2023 07:00 TO 03/20/2023 07:00
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
36%
29%
22%
14%
0.0 - 2.9 knts
3.0 - 5.9 knts
6.0 - 9.9 knts
10.0 - 15.9 knts
16.0 - 20.9 knts
21.0 - 26.9 knts
27.0 - 32.9 knts
≥33.0 knts
Calms: 4.9%
Windrose Wind Direction
from Edge to Center.
The red arrow indicates
the vector average wind
direction.
Wind Speed (knts)
0
5
10
Wind Direction (deg)
0
90
180
270
360
03/19/2023 09:36
03/19/2023 14:24
03/19/2023 19:12
03/20/2023 00:00
03/20/2023 04:48