EAST SIDE COASTAL RESILIENCY

SANDRESM1 | PROJECT AREA 1

AIR QUALITY MONITORING REPORT

Q3 | 2024

ISSUE DATE: JULY 2, 2025
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SUBCONSULTANT TO IPC RESILIENCY PARTNERS

NYC DDC Department of Design and Construction

NEW YORK CITY DEPARTMENT OF DESIGN & CONSTRUCTION IN PARTNERSHIP WITH THE CITY OF NEW YORK

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PART 1

I. Air Quality Monitoring: Introduction

The East Side Coastal Resiliency (ESCR) project is a coastal protection initiative, jointly funded by the City of New York and the federal government, aimed at reducing flood risk due to coastal storms and sea level rise on Manhattan's East Side from East 25th Street to Montgomery Street. The ESCR project will protect 110,000 New Yorkers from the impacts of climate change by increasing resiliency for communities, properties, businesses, critical infrastructure, and public open spaces. In addition to providing flood protection, the project will strengthen and enhance waterfront spaces on Manhattan's East Side by improving accessibility, increasing ecological diversity, and delivering improved recreational amenities to a vibrant and highly diverse community.

The project is divided into three project areas: Project Area 1 (from Montgomery Street to East 15th Street, including East River Park), Project Area 2 (East 15th Street to East 25th Street, including Murphy Brothers Playground, Stuyvesant Cove Park, and Asser Levy Playground), and Parallel Conveyance (work to improve inland drainage on local streets between Montgomery Street and East 25th Street).

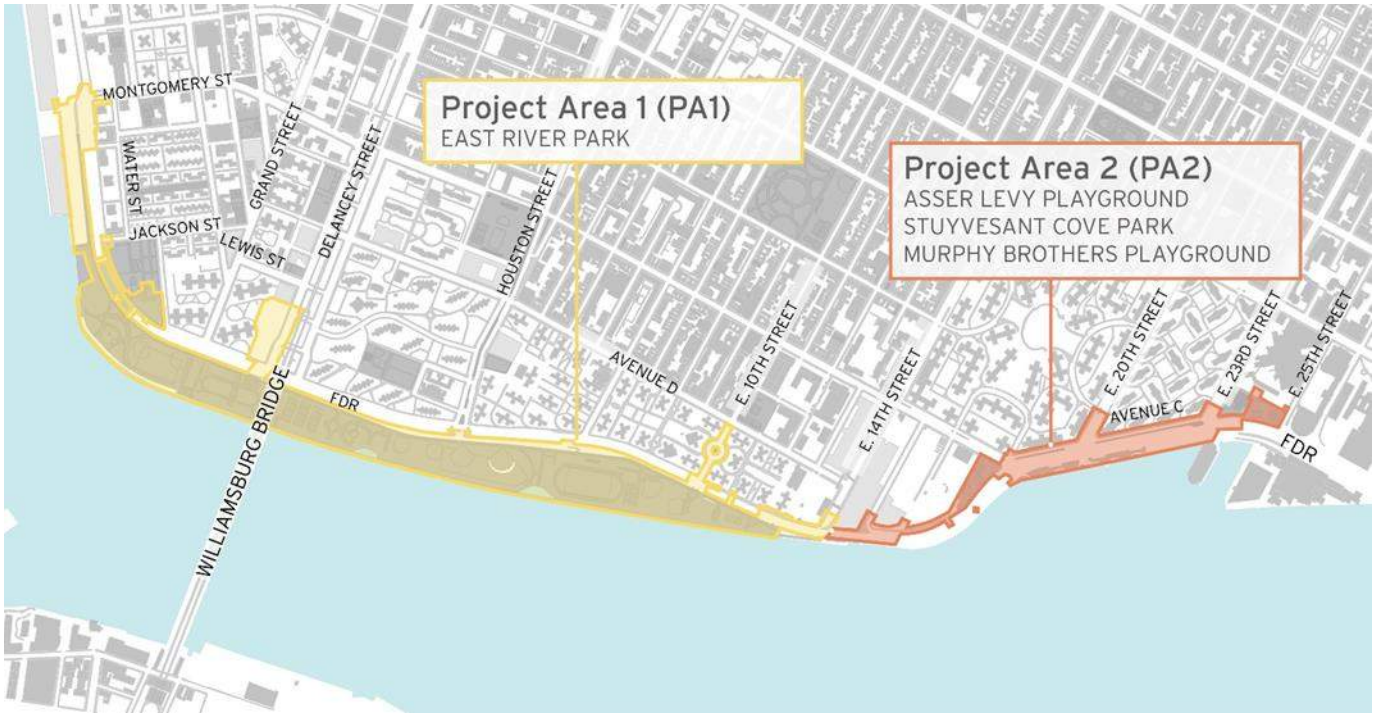


Fig.1 East Side Coastal Resiliency Project Areas

The ESCR team will be conducting air quality monitoring throughout construction in all three Project Areas to ensure the ongoing health and safety of the adjacent community. In particular, the ESCR Air Quality Monitoring program will measure levels of Particulate Matter (PM) at two sizes: PM10 and PM2.5.

As described by the Environmental Protection Agency (EPA):

> PM stands for **particulate matter** (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope. Particle pollution includes:

- PM10: inhalable particles, with diameters that are generally 10 micrometers and smaller (typically from dust)
- PM2.5: fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller (typically from vehicle emissions)

The Clean Air Act requires EPA to set national air quality standards for particulate matter, as one of the six criteria pollutants considered harmful to public health and the environment. The law also requires the United States Environmental Protection Agency (EPA) to periodically review the standards to ensure that they provide adequate health and environmental protection, and to update those standards, as necessary. National Ambient Air Quality Standards (NAAQS) for PM pollution specify a maximum amount of PM to be present in outdoor air.

The **Permissible Exposure Limit (PEL)** is a regulatory limit to protect public health/welfare set by the NAAQS in line with the requirements of the Clean Air Act (CAA) on the amount or concentration of a substance in the air. The EPA has set a **24-hour time weighted average (TWA)** as standard for evaluating PM levels, meaning that they average potential PM exposure over a 24-hour period. This is also referred to as the **daily value**. In the line graphs presented in the ESCR monthly data plots, readings are averaged in 15-minute intervals and do not represent the standard TWA of 24-hrs. This more conservative approach will help the ESCR project team monitor the project's effect on air quality more closely.

The **Action Level (AL)** is lower than the PEL and represents a level set by the ESCR AQM Plan which, when reached, will alert the contractor that there has been an increase in particulate matter so that they can assess construction activities and take necessary measures to remediate the condition. Automated alerts are dispatched to the general contractor and the construction management team whenever the AL is exceeded.

The table here illustrates the PEL and AL for net PM2.5 and PM10 concentrations over a 24-hour TWA. These levels are measured in micrograms per cubic meter air ($\mu g/m^3$):

	Action Level (AL) over a 24-hour TWA	**Permissible Exposure Limit (PEL) over a 24-hour TWA**
PM2.5	25 $\mu g/m^3$	35 $\mu g/m^3$
PM10	100 $\mu g/m^3$	150 $\mu g/m^3$

The ESCR Final Environmental Impact Statement (FEIS) analyzed the potential impact of the construction on community air quality and determined that **with consistent air quality monitoring and application of measures to reduce pollutant emissions and suppress dust, "construction of the Preferred Alternative would not result in any predicted concentrations above the National Ambient Air Quality Standards (NAAQS)** for NO2, CO, and PM10 or the de minimis thresholds for PM2.5 from nonroad and on-road sources. **Therefore, *no significant adverse air quality impacts are predicted* from the construction of the Preferred Alternative."** (ESCR FEIS, Chapter 6.10 Construction Air-Quality, 6.10-2)

Along with air quality monitoring, the contractor is required to take extensive preventative measures to control dust and limit vehicle emissions. Potential mitigation techniques include but are not limited to:

- use of water spray for roads, trucks, excavation areas and stockpiles
- use of anchored tarps to cover stockpiles
- use of truck covers during soil transport within site limits and during off-site transport

- employment of extra care during dry and/or high-wind periods
- use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface
- use of a truck wheel wash at site access/egress points to prevent fugitive dust and off-site migration of dust and other particulates

How to Read the Data Plots

The PM readings that follow by month in this report are shown in data plots, as below. The data plots illustrate **PM** levels in a **15-minute TWA.** As mentioned above, the federal limits for PM exposure are evaluated on a **24-hour TWA**. By evaluating PM readings on the 15-minute TWA, the ESCR project can ensure that Net PM never exceeds the 24-hour TWA, or daily value.

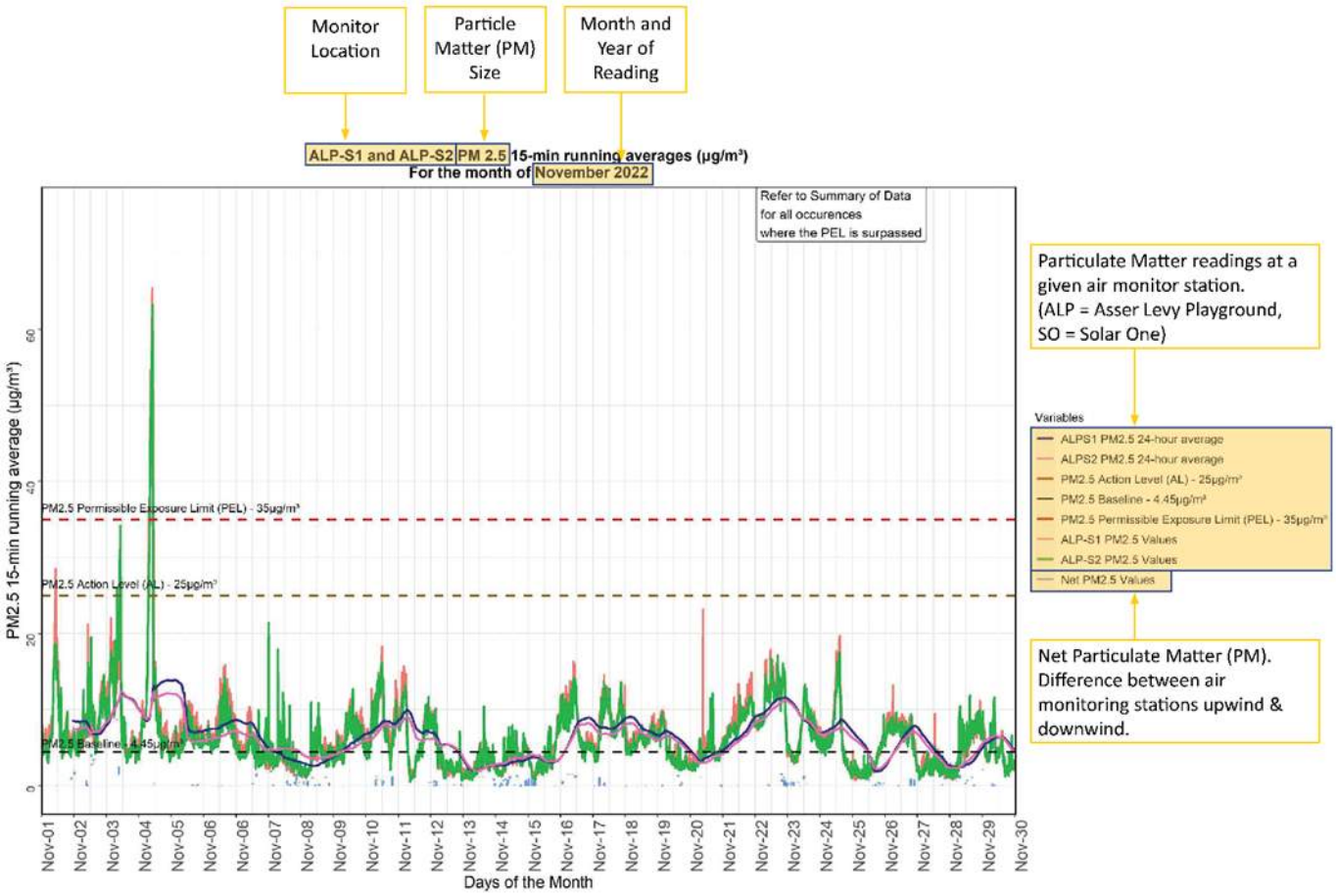


Fig.2 Sample Air Quality Data Plot

The **Net particulate matter (Net PM)** readings are determined as the difference between the upwind and downwind monitoring stations as determined on any day given the wind speed and wind direction. At each construction location at least two air quality monitors are required to determine the Net PM. The Net PM value is important because it measures the **potential increase of particulate matter due to construction activities**. If the wind-speed is less than 0.5 meters per second, the downwind station is considered undetermined, and the Net PM will be absent from the data plot. In these circumstances, high readings at one or both monitoring stations will still be noted, however the increased levels in the PM readings may be due to conditions unrelated to construction.

An **exceedance** is a daily value that is above the level of the 24-hour TWA after rounding to the nearest 10 $\mu g/m^3$ (i.e., values ending in 5 or greater are to be rounded up).

An **exceptional event** is an uncontrollable event caused by natural sources of particulate matter or an event that is not expected to recur at a given location. Inclusion of such a value in the computation of exceedances or averages could result in inappropriate estimates of their respective expected annual values.

An **outlier** is a data point on a graph or in a set of results that is very much bigger or smaller than the next nearest data point. For example, outliers among monitoring data can be due to instrument malfunctions, the influence of harsh environments, and the limitation of measuring methods.

II. Executive Summary

This report summarizes the PM readings for ESCR Project Area 1 (PA1), collected by SA Engineering, environmental subconsultant to the PA1 contractor, IPC Resiliency Partners (IPC) October through December 2023. The PA1 contract requires a minimum of six (6) air quality monitoring stations throughout construction, which are relocated as necessary to reflect the phased construction activities. Currently sixteen (16) air quality monitoring stations are active throughout the construction area perimeter and reflect current construction areas. For this report, each monitor will be referred to as "AQM-#" – referring to the numbers in Figures 3A-D. Figure 3A details the locations of the air quality monitoring stations prior to March 24, 2023. Figure 3B details the locations of the air quality monitoring stations from March 24, 2023 to March 5, 2024. Figure 3C details the locations of the air quality monitoring stations from March 5, 2024 and Figure 3D details the locations from June 6, 2024.

Fig.3A ESCR Project Area 1 Phase 1 Air Quality Monitoring Station Locations, as of January 13, 2023

Fig.3B ESCR Project Area 1 Phase 1 Air Quality Monitoring Station Locations, as of March 24, 2023

Fig.3C ESCR Project Area 1 Phase 1 Air Quality Monitoring Station Locations, as of March 5, 2024

Due to construction activities, by March 5, 2024, the AQM-5 monitor were installed in Reach G at the location shown above; the monitor began recording upon installation (Figure 3C).

Fig.3D ESCR Project Area 1 Phase 1 Air Quality Monitoring Station Locations, as of June 6, 2024

Due to construction activities, by June 6, 2024, the AQM-GS and AQM-CH monitors were installed in Reach H and Reach I (AQM-THR and AQM-10SR, respectively) at the locations shown above; the monitors began recording upon installation (Figure 3D).

Work Activities from July to September 2024:

Reach A:

- Excavate, install micro-piles and jet grout, and backfill at Montgomery Street;
- Break concrete, excavate, install micro-piles and jet grout, and backfill at Gouverneur Gardens (Monday through Friday and Saturday, 8/10);
- Excavate for closure wall along FDR Drive;
- Excavate for footing at floodwall sheets near ConEd utilities;
- Install footings for Overhead Sign Structure #1 (Monday through Friday and Saturday, 8/10);
- Excavate, form, and pour floodgate monolith;
- Excavate, support, abatement and carbon fiber wrap ConEd utilities along FDR Drive and shared use path; and
- Form floodgates and install floodgate embedments.

Reach B:

- ConEd utility support (Monday through Friday, and Saturday and Sunday, 7/20 - 7/21);
- Excavate for closure wall along FDR Drive;
- Demolish Overhead Sign Structure #1 Footing and install footings (Monday through Friday and Saturday, 8/10);
- Cut and remove pavement base, install utility crossings across FDR Drive, pour concrete and re-pave Monday through Friday, 9 PM - 5:30 AM);
- Obstruction drilling for jet grout;
- Excavate and sheet for steam line work along FDR Drive;
- Drill micro-piles Monday through Friday, 9/9 - 9/30, 9 PM - 5:30 AM); and
- Install ConEd electrical conduit along shared use path.

Reach C:

- o Grade, form, and pour amphitheater structures (Monday through Saturday);
- o Form and pour curbs in Corlears Hook Park;
- o Grading in Corlears Hook Park;
- o FDR Electrical Utility Crossing at Jackson Street (Monday through Friday, 9 PM - 5:30 AM);
- o Excavate, grade, form, and pour light poles and pull boxes;
- o Erect and paint Corlears Hook Bridge; and
- o Excavate, grade, form, and pour curbs (Monday through Friday and Saturday, 9/21).

Corlears Hook Park:

- Install watermain in Corlears Hook Park (Monday through Friday, 9 PM - 5:30 AM);
- Rub and patch Corlears Hook Bridge west abutment; and
- Form west abutment walls.

Reach D:

- Grade, form, and pour exposed aggregate sidewalk;
- Excavate, relocate utilities, and backfill for new comfort station;
- Grade for horticultural soil;
- Install fence around Fields 1/2;

- Install horticultural soil;
- Assemble and set stadium light poles around Fields 1/2;
- Chip out, form, and re-pour southeast embayment cutoff wall;
- Grade, form, and pour sidewalks around Fields 1/2 (Monday through Friday, and Saturday, 8/24);
- Pour Maintenance & Operations Area #2 retaining wall south footing;
- Form and pour curbs south of Maintenance & Operations Area #2; and
- Demolish Fireboat House stairs.

Reach E:

- Form and pour curbs and Williamsburg Bridge bollard wall (Monday through Friday and Saturday, 7/27);
- Place CA Fill for multi-purpose field;
- Form and pour Delancey Street bridge deck, curbs, and west ramps and seal bridge joints (7 days/week excluding 7/4, 7/6, and 7/7);
- Chop out, form, and pour Type 2 stone foundations (M - F and Saturday);
- Install fence around multi-purpose field;
- Install subgrade and grade fill for horticultural soil;
- Unload and place horticultural soil;
- Form, pour, strip, and backfill Williamsburg Bridge security fence, tennis court curb, Parks curbs, Type II stone foundations (Monday through Friday, Saturday 8/17, and Saturday 8/24);
- Pour Delancey Bridge east approach slab and exposed aggregate sidewalk (Saturday, 8/17 and Saturday, 8/24);
- Unload and install barriers for path from Delancey Bridge to Fields 1/2;
- Excavate, grade, form, and pour sidewalks, curbs, and light poles/pull boxes (Monday through Saturday);
- Install and stripe turf at multi-purpose field;
- Scarify, grade, form, and pour paver base on esplanade;
- Remove Delancey Bridge overhang brackets (Monday through Friday, 9/9 - 9/13; 9 PM - 5:30 AM);
- Install picnic tables on esplanade; and
- Excavate and install drainage structures along shared use path road (Monday through Friday and 9/30 3 PM - 11 PM).

Delancey West:

- Rub and patch Delancey West ramp walls and piers;
- Excavate, grade, form, and pour light pole foundations, curbs, and sidewalks; and
- Excavate for and install hydrant.

Reach F:

- Unload and place CA and lightweight fill;
- Form, pour, and strip tennis court curb and tennis step down (Monday through Friday, Saturday, 8/17 and Saturday, 8/24);
- Install underdrain near tennis court;
- Fine grade CA fill for horticultural soil (Monday through Friday and Saturday, 9/21); and
- Install sewer bypass (Saturday, 9/21 and Sunday 9/22).

Reach G:

- Excavate, form, pour, and backfill regulator chamber and 36" sewer;
- Demolish and remove existing esplanade;

- Install rigid inclusions;
- Install wick drains;
- Load out excavation spoils;
- Drive piles for sewer chamber;
- Obstruction drilling for wick drains; and
- Load out excavation spoils.

Reach H:

- Move sheeting panels back to storage area by track house.

Reach J:

- Install pits for micro-tunneling across FDR Drive at 10th Street.

10th Street:

- Excavate, install helical piles, form, pour, strip, and backfill watermains, sewer chambers, and sewer manholes; and
- Install sheeting at receiving pit.

14th Street:

- Test pits for ConEd utilities (Monday through Friday, 7 AM - 3:30 PM and 9 PM - 5:30 AM);
- Lane closures for night work (Monday through Friday, 9 PM - 5:30 AM).

Though air quality is monitored 24/7, typical day time work hours during the period of this report are Monday through Friday, 7:00 am – 3:30 pm, unless otherwise noted above.

Summary of Air Quality Monitoring Reports

For the months of July to September 2024, construction-related levels of PM at both net PM2.5 and PM10 levels did not surpass Daily PEL as set by federal standards for the 24-hour TWA, or daily value, and did not cause additional air quality concerns to the public or on-site workers. The contractor, IPC, in conjunction with the contractor's environmental specialist, has successfully implemented mitigation techniques when PM levels surpasses both the AL as well as the PEL (15-minute TWA) to suppress construction activity effects on air quality in East River Park. Air quality impacts from July 4th Fireworks, and other citywide air quality events were observed on July 4th and July 5th.

July 2024:

- PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-1 on July 4th, July 27th, July 29th, and July 30th; AQM-6 on July 30th and July 31st; AQM-CHR on July 4th, July 22nd, July 29th, and July 31st; AQM-AT on July 1st; AQM-FB on July 4th; AQM-WB on July 4th, July 9th, July 16th, and July 27th; AQM-2 on July 4th and July 8th; AQM-3 on July 4th, July 19th, July 21st, and July 28th; AQM-WBN on July 4th; AQM-5 on July 4th and July 6th; AQM-TH on July 4th, July 10th, July 16th, and July 17th; AQM-THR on July 4th and July 20th; AQM-10S on July 4th; and July AQM-10SR on July 4th.

- PM10 levels surpassed the PEL (15-minute TWA) at AQM-6 on July 30th; AQM-CHR on July 22nd and July 31st; AQM-AT on July 1st; AQM-3 on July 28th; AQM-WB on July 16th and July 27th; AQM-TH on July 10th, July 16th, July 17th, and July 22nd; and AQM-10S on July 4th and July 19th.

August 2024:

- PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-1 on August 10th; AQM-3 on August 13th; AQM-AT on August 15th; AQM-FB on August 15th; AQM-WB on August 17th, August 23rd, and August 24th; AQM-HS on August 8th and August 16th; and AQM-TH on August 24th.

- PM10 levels surpassed the PEL (15-minute TWA) at AQM-3 on August 13th and AQM-HS on August 8th and August 16th.

September 2024:

- PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-1 on September 12th; AQM-6 on September 27th; AQM-CHR on September 17th; AQM-3 on September 11th, September 17th, September 18th, September 20th, September 22nd, and September 23rd; AQM-FB on September 13th; AQM-AT on September 25th, AQM-WB on September 25th; and AQM-HS on September 4th and September 29th.

- PM10 levels surpassed the PEL (15-minute TWA) at AQM-1 on September 12th; AQM-CHR on September 17th; AQM-3 on September 4th, September 17th, September 20th, and September 23rd; AQM-AT on September 25th; AQM-WB on September 25th; AQM-WBN on September 5th; and AQM-HS on September 29th.

Baselines:

- PM10 baseline air quality at the site was previous determined to be between 0.149 and 5.00 $\mu g/m^3$
- PM2.5 baseline air quality at the site was previous determined to be between 0.105 and 4.09 $\mu g/m^3$

Notes

- On July 4th and 5th, impacts from the citywide fireworks celebration for July 4th impacted air quality at the site for extended durations
- AQM-1 was disconnected from power and not monitoring from August 9th to August 13th and August 28th to September 2nd and September 13th to October 3rd
- AQM-2 was disconnected from power and not monitoring from August 12th to August 28th
- AQM-4 was disconnected from power and not monitoring from August 7th to August 9th and August 18th to August 28th and September 20th to September 26th
- AQM-5 was disconnected from power and not monitoring from September 25th to September 30th
- AQM-WB was disconnected from power and not monitoring from August 24th to August 31st
- AQM-WBN was disconnected from power and not monitoring from August 23rd to August 28th
- AQM-10SR was disconnected from power and not monitoring from July 6th to July 9th, July 17th to the July 23rd, and July 27th to July 30th; August 9th to August 13th and August 23rd to August 28th; and September 20th to September 26th

PART 2

Summary of Data July 2024

PM2.5 levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 7/4 for 300 minutes, 7/27 for 14 minutes, 7/29 for 3 minutes, and 7/30 for 6 minutes;
- AQM-6 on 7/30 for 26 minutes and 7/31 for 16 minutes;
- AQM-CHR on 7/4 for 300 minutes, 7/22 for 63 minutes, 7/29 for 16 minutes, 7/31 for 43 minutes;
- AQM-AT on 7/1 for 28 minutes;
- AQM-FB on 7/4 for 350 minutes;
- AQM-WB on 7/4 for 360 minutes, 7/9 for 18 minutes, 7/16 for 58 minutes, and 7/27 for 17 minutes;
- AQM-2 on 7/4 for 240 minutes and 7/8 for 9 minutes;
- AQM-3 on 7/4 for 260 minutes, 7/19 for 16 minutes, 7/21 for 14 minutes, and 7/28 for 16 minutes;
- AQM-WBN on 7/4 for 300 minutes;
- AQM-5 on 7/4 for 300 minutes and 7/6 for 17 minutes;
- AQM-TH on 7/4 for 285 minutes, 7/10 for 62 minutes, 7/16 for 49 minutes, and 7/17 for 24, 43, and 48 minutes;
- AQM-THR on 7/4 for 285 minutes and 7/20 for 18 minutes;
- AQM-10SR on 7/4 for 300 minutes;
- AQM-10S on 7/4 for 210 minutes and 7/30 for 17 minutes.

PM10 levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-6 on 7/30 for 17 minutes;
- AQM-CHR on 7/22 for 46 minutes and 7/31 for 26 minutes;
- AQM-AT on 7/1 for 34 minutes;
- AQM-3 on 7/28 for 16 minutes;
- AQM-WB on 7/16 for 28 minutes and 7/27 for 14 minutes;
- AQM-TH on 7/10 for 37 minutes, 7/16 for 28 minutes, 7/17 for 29 minutes, and 7/22 for 14 minutes; and
- AQM-10S on 7/4 for 15 minutes and 7/19 for 15 minutes.

For the month of July 2024, PM net 2.5 levels were surpassed on 7/1, 7/4, 7/6, 7/8, 7/9, 7/10, 7/16, 7/17, 7/19, 7/20, 7/21, 7/22, 7/27, 7/28, 7/30, and 7/31. PM net 10 were exceeded on 7/1, 7/4, 7/16, 7/17, 7/19, 7/22, 7/27, 7/28, 7/30, and 7/31.

For the month of July 2024, construction-related PM net 2.5 or 10 levels did not surpass the Daily PEL (24-hour TWA).

PM 2.5 µg/m^3

- PM 2.5 µg/m^3 levels surpassed the PEL (15-minute TWA) on 36 occasions (7/1, 7/4, 7/6, 7/8, 7/9, 7/10, 7/16, 7/17, 7/20, 7/21, 7/22, 7/79, 7/28, 7/29, 7/30, and 7/31) for between 3 and 360 minutes.
    - AQM-1 is located near the site access gate at Gouverneur Slip West and adjacent to another construction site and an FDR entry ramp.
        - Elevated readings on 7/4 were related to July 4th celebrations and fireworks.
        - Elevated readings on 7/27 were related to unknown off-site activities.

        - Elevated readings on 7/29 and 7/30 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-6 is located on the corner of South Street and Gouverneur's Slip East; elevated readings on 7/30 and 7/31 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-CHR is located on the construction access road/shared use path in Reach B.
        - Elevated readings on 7/4 were related to July 4th celebrations and fireworks.
        - Elevated readings on 7/29 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 7/22 and 7/31 were related to construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-AT is located near the former amphitheater and Corlears Hook pedestrian bridge; the elevated readings on 7/1 were related to unknown off-site activity.
    - AQM-FB is located in the vicinity of the Fire Boat House; elevated readings on 7/4 were related to July 4th celebrations and fireworks.
    - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River.
        - Elevated readings on 7/4 were related to July 4th celebrations and fireworks.
        - Elevated readings on 7/9, 7/16, 7/27 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-2 is located in Corlears Hook Park adjacent to Cherry Street.
        - Elevated readings on 7/4 were related to July 4th celebrations and fireworks.
        - Elevated readings on 7/8 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-3 is located is located west of the FDR on Delancey Street.
        - Elevated readings on 7/4 were related to July 4th celebrations and fireworks.
        - Elevated readings on 7/19, 7/21, and 7/28 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-WBN is north of the Williamsburg Bridge; elevated readings on 7/4 were related to July 4th celebrations and fireworks.
    - AQM-5 is located between Houston Street and East 6th Street.
        - Elevated readings on 7/4 were related to July 4th celebrations and fireworks.
        - Elevated readings on 7/6 were related to unknown off-site activity.
    - AQM-TH is located near the Track House in the vicinity of the shared use path and open sections of East River Park.
        - Elevated readings on 7/4 were related to July 4th celebrations and fireworks.
        - Elevated readings on 7/10, 7/16, and 7/17 were related to on-site construction activity. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-THR is located in Reach F between the esplanade and the existing track.
        - Elevated readings on 7/4 were related to July 4th celebrations and fireworks.
        - Elevated readings on 7/20 were related to unknown off-site activity.
    - AQM-10SR is located on the east side of the 10th Avenue bridge; elevated readings on 7/4 were related to July 4th celebrations and fireworks.
    - AQM-10S is located west of the FDR on East 10th Street.
        - Elevated readings on 7/4 were related to July 4th celebrations and fireworks.
        - Elevated readings on 7/30 were related to on-site construction activity. Dust mitigation measures were deployed to mitigate airborne dust.

PM 10 µg/m^3

- PM 10 µg/m^3 levels surpassed the PEL (15-minute TWA) 13 occasions (7/1, 7/4, 7/10, 7/16, 7/17, 7/19, 7/22, 7/27, 7/28, 7/30, and 7/31) for between 14 and 46 minutes.
    - AQM-6 is located on the corner of South Street and Gouverneur's Slip East; elevated readings on 7/30 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-CHR is located on the construction access road/shared use path in Reach B; elevated readings on 7/22 and 7/31 were related to construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-AT is located near the former amphitheater and Corlears Hook pedestrian bridge; the elevated readings on 7/1 were related to unknown off-site activities.
    - AQM-3 is located is located west of the FDR on Delancey Street; elevated readings on 7/28 were related on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; elevated readings on 7/16 and 7/27 were related on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-TH is located near the Track House in the vicinity of the shared use path and open sections of East River Park.
        - Elevated readings on 7/1, 7/16, and 7/17 were related to on-site construction activity. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 7/22 were related to unknown off-site activities.
    - AQM-10S is located west of the FDR on East 10th Street; the elevated readings on 7/4 and 7/19 were related to unknown off-site activities.

Mitigation Measures

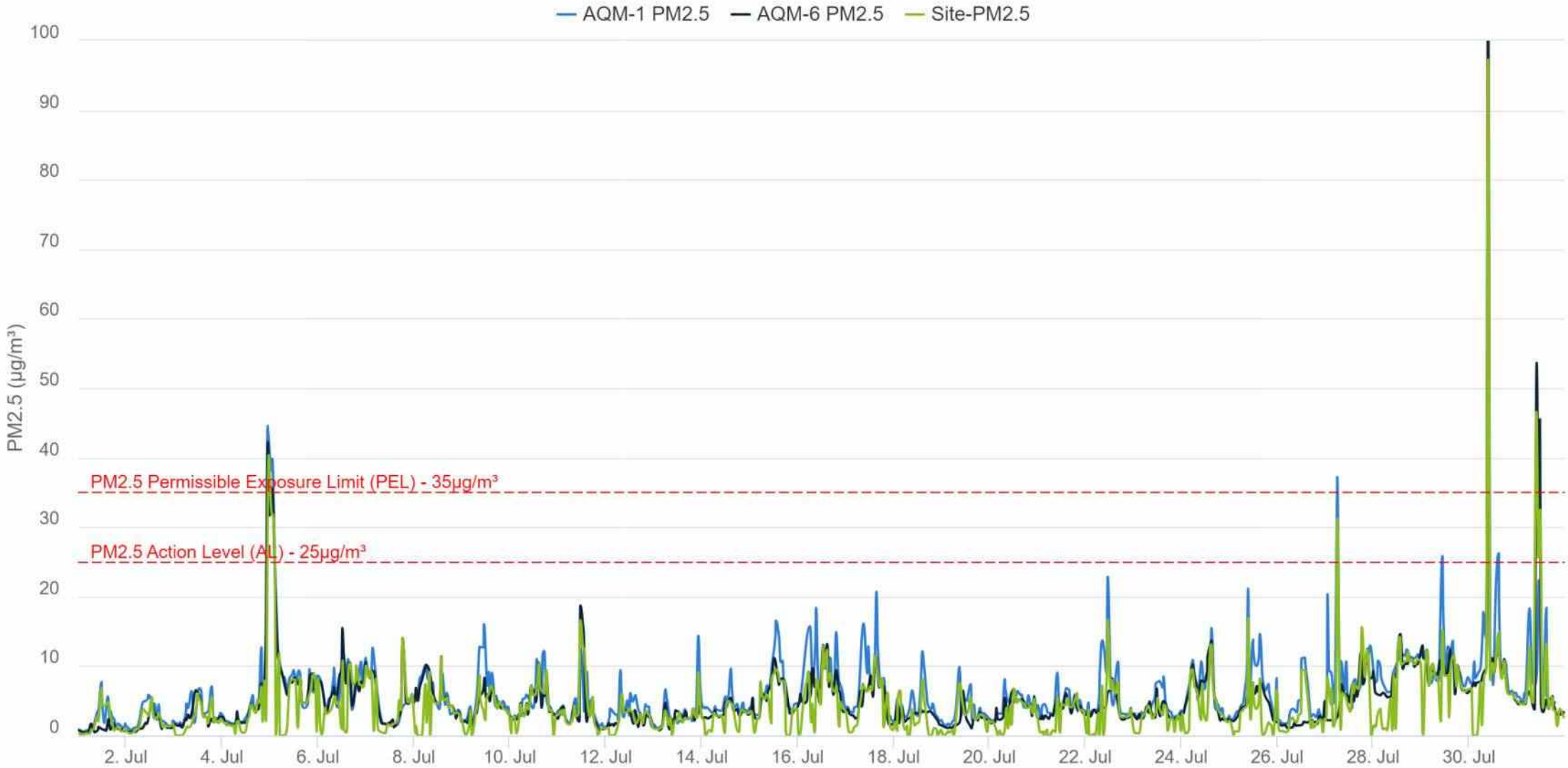
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

Notes

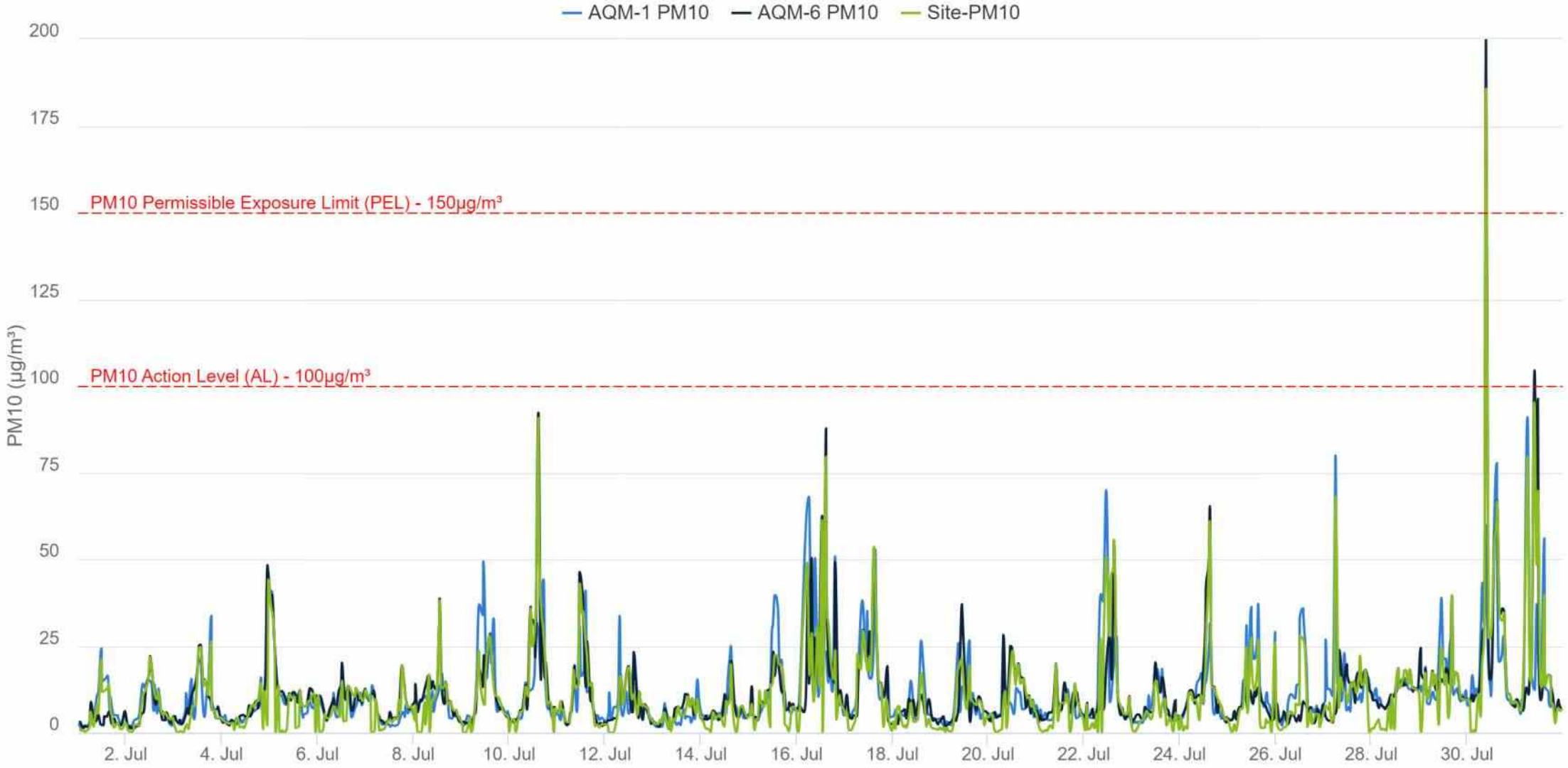
- AQM-10SR was disconnected from power and not monitoring from July 6th to July 9th, July 17th to the July 23rd, and July 27th to July 30th
- On July 4th and 5th, impacts from the citywide fireworks celebration for July 4th impacted air quality at the site for extended durations

JULY 2024 DATA PLOTS

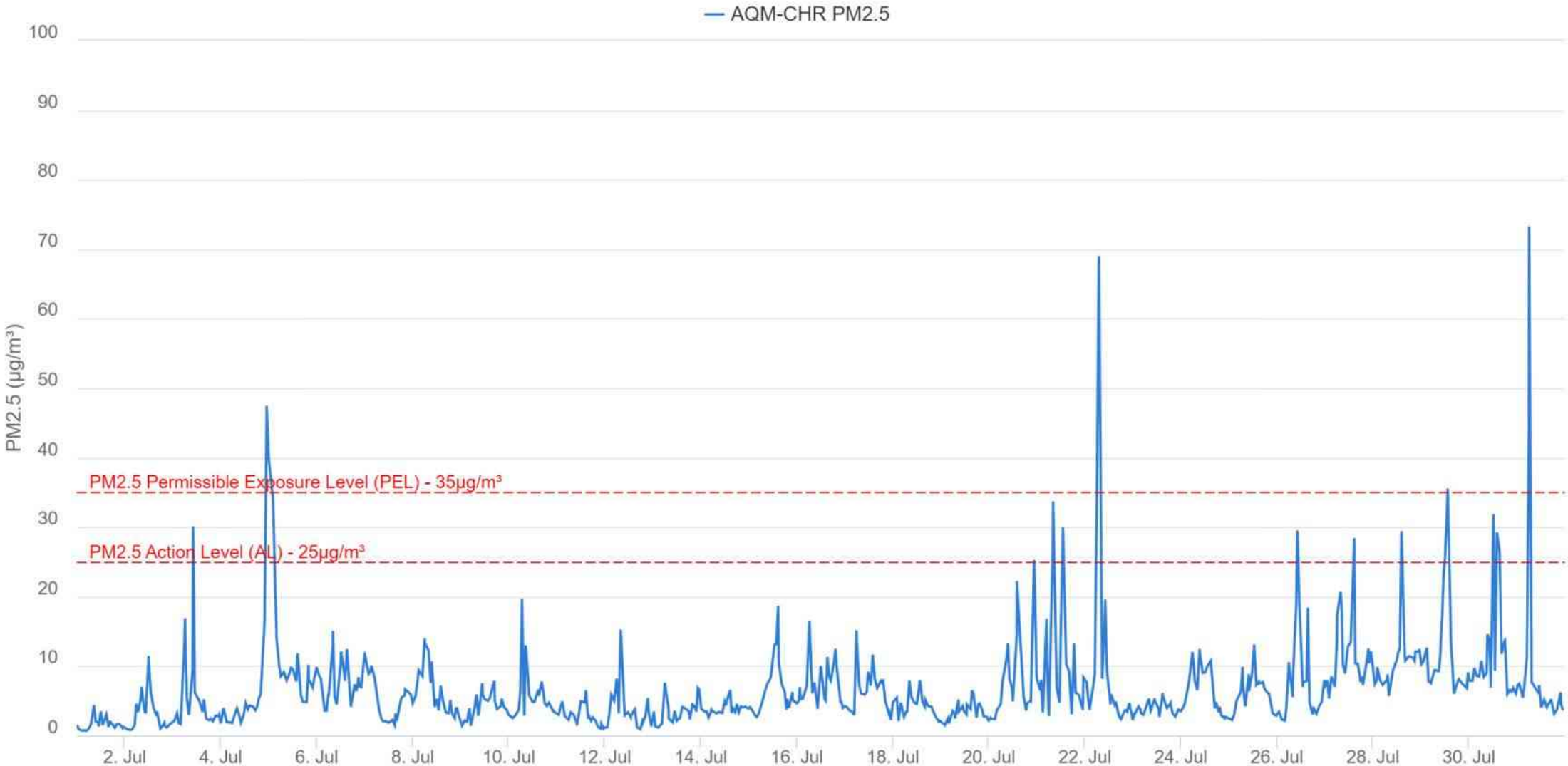
Reach A - PM2.5 - 15 min Running avg. (July 2024)



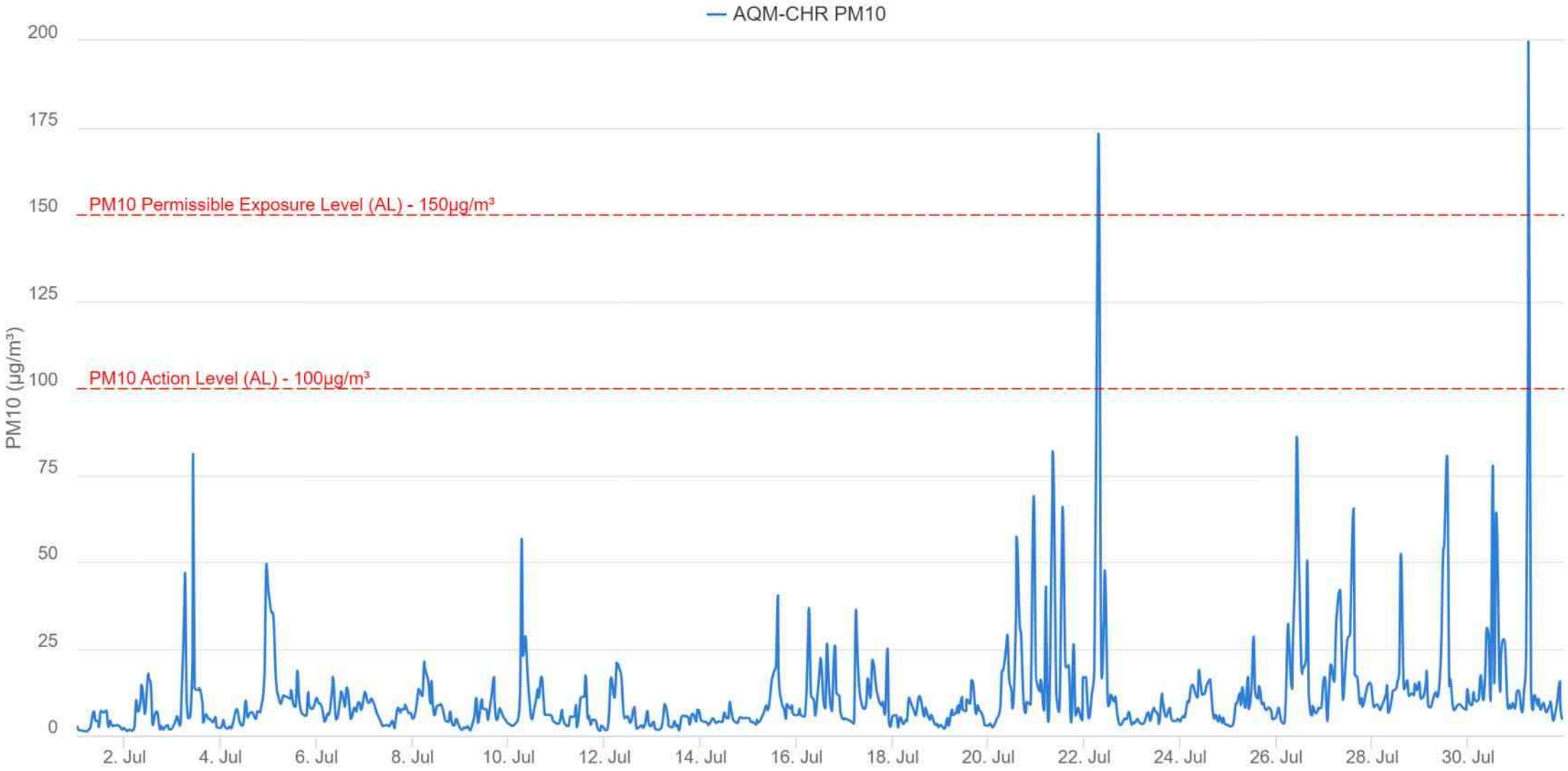
Reach A - PM10 - 15 min Running Avg. (July 2024)



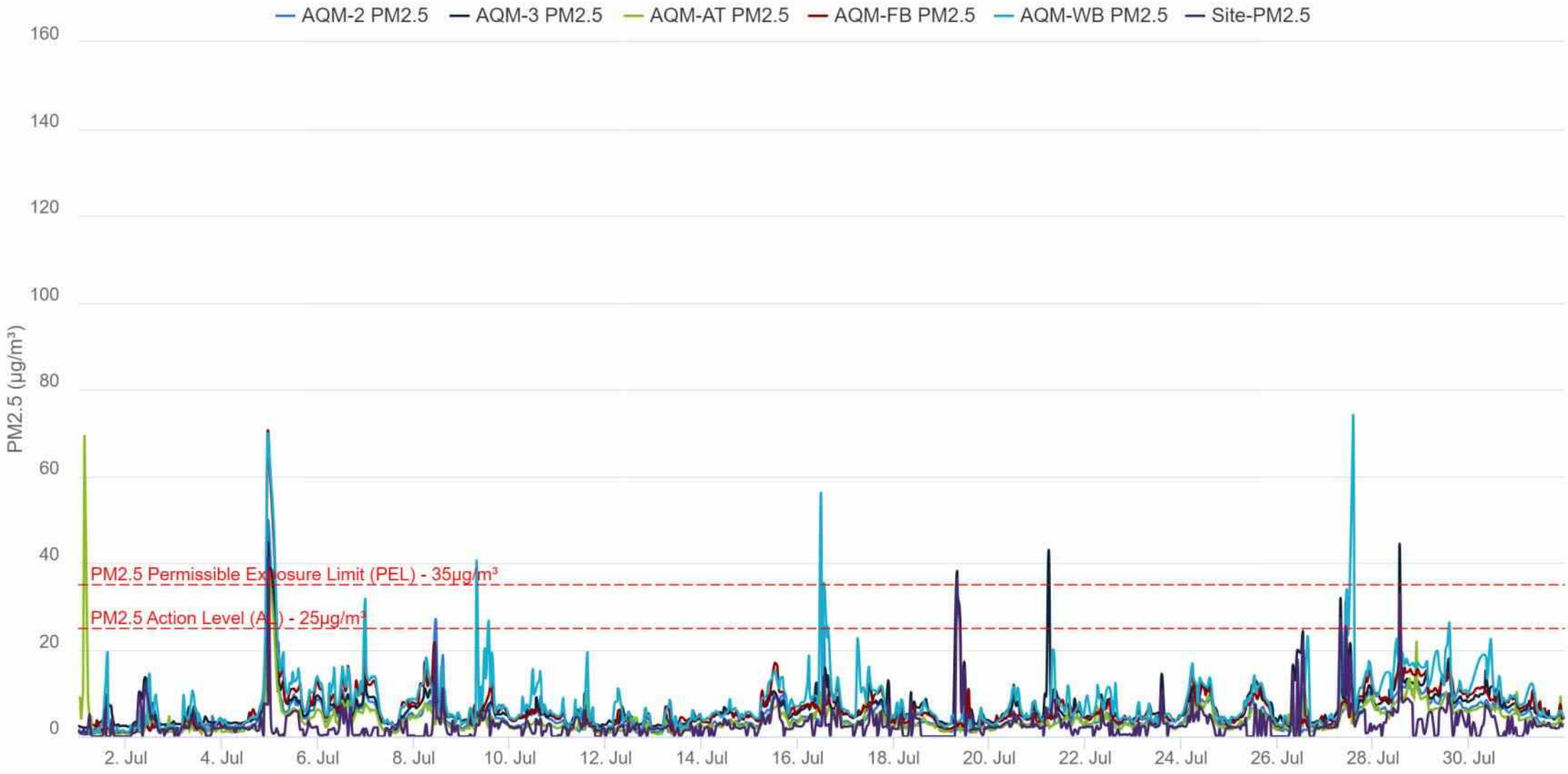
Reach B - PM2.5 - 15 min Running Avg. (July 2024)



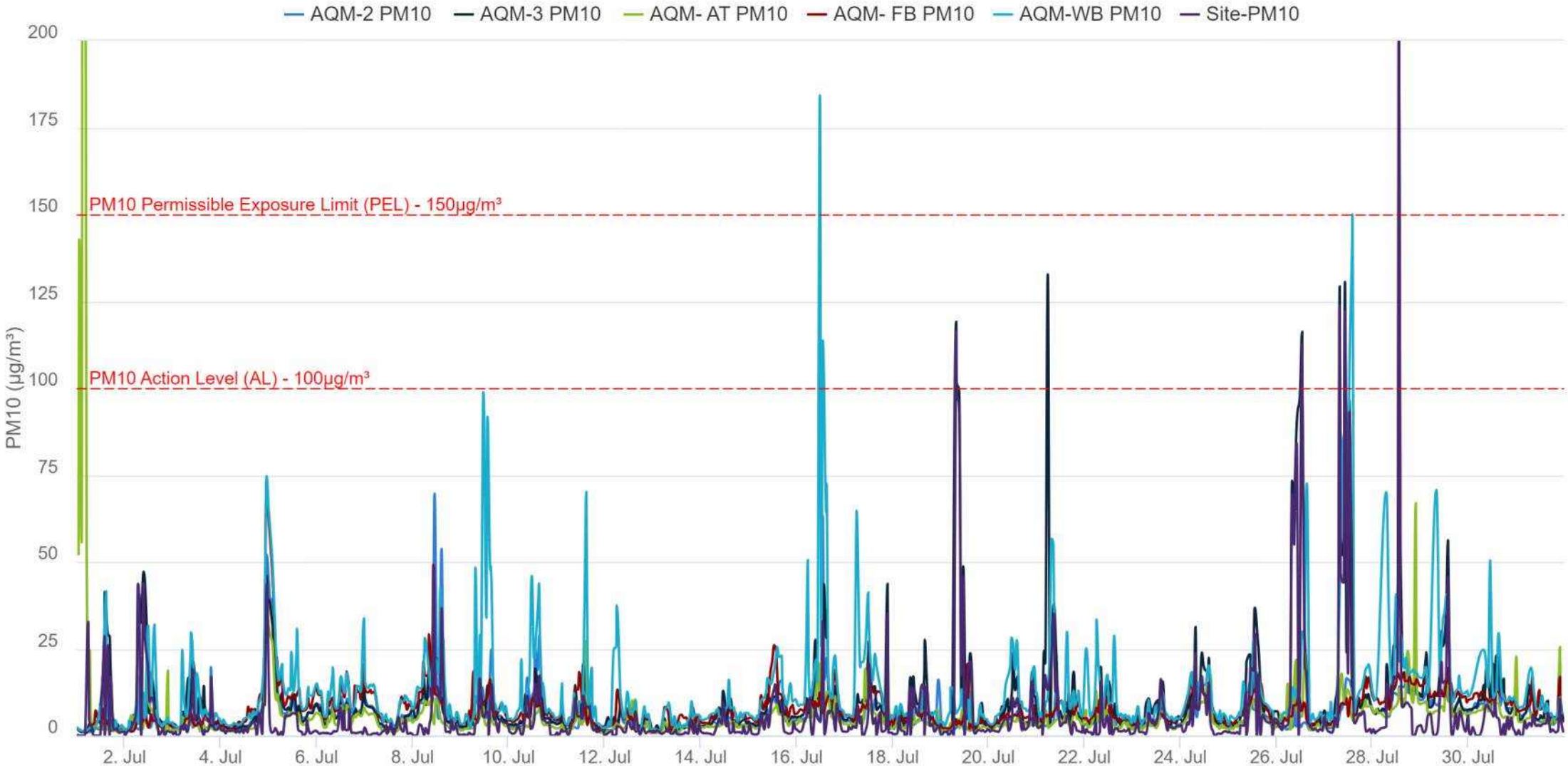
Reach B - PM10 - 15 min Running avg. (July 2024)



Reach C,D,& E - PM2.5 - 15 min Running Avg. (July 2024)

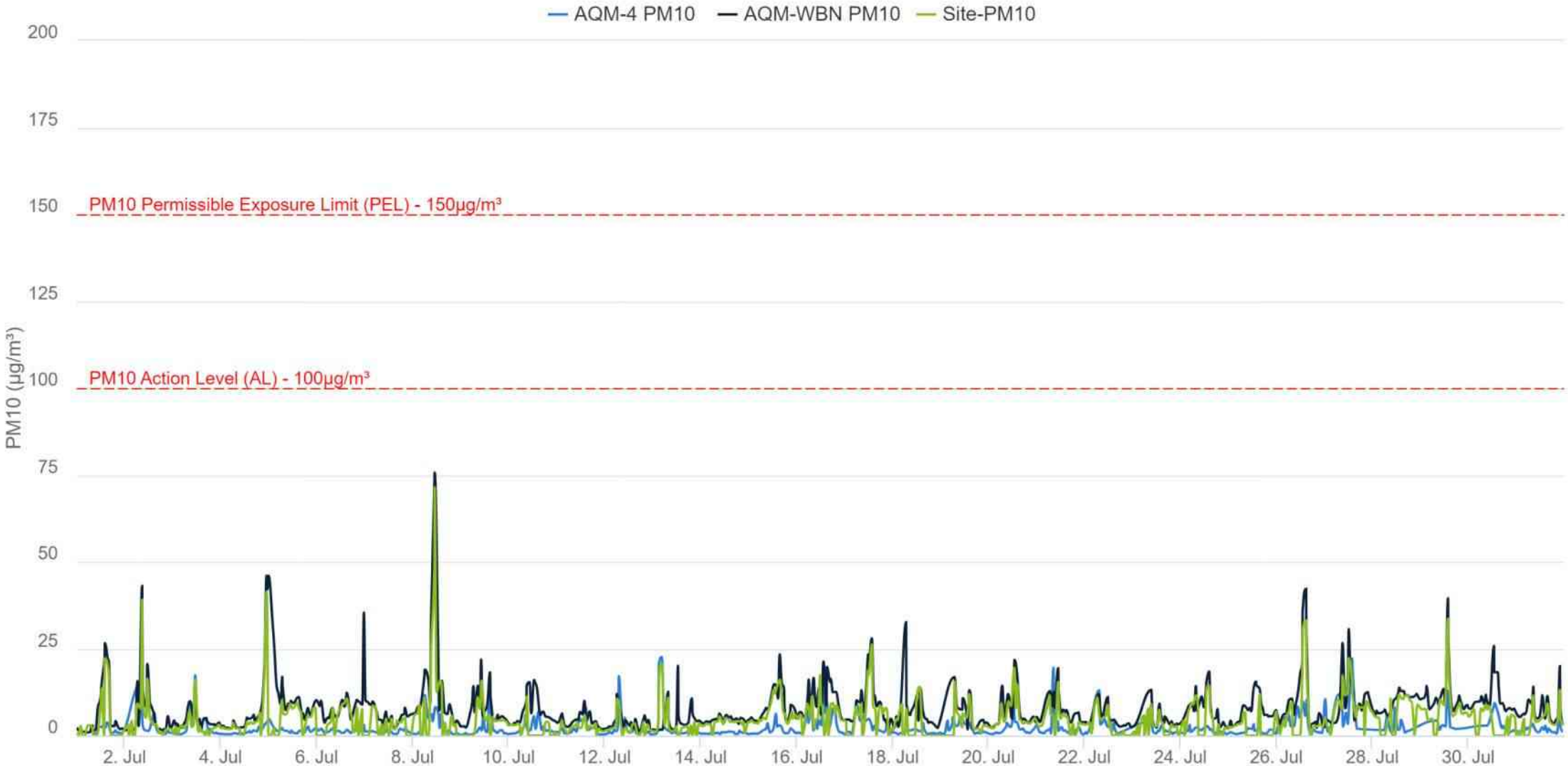


Reach C,D,& E - PM10 - 15 min Running avg. (July 2024)



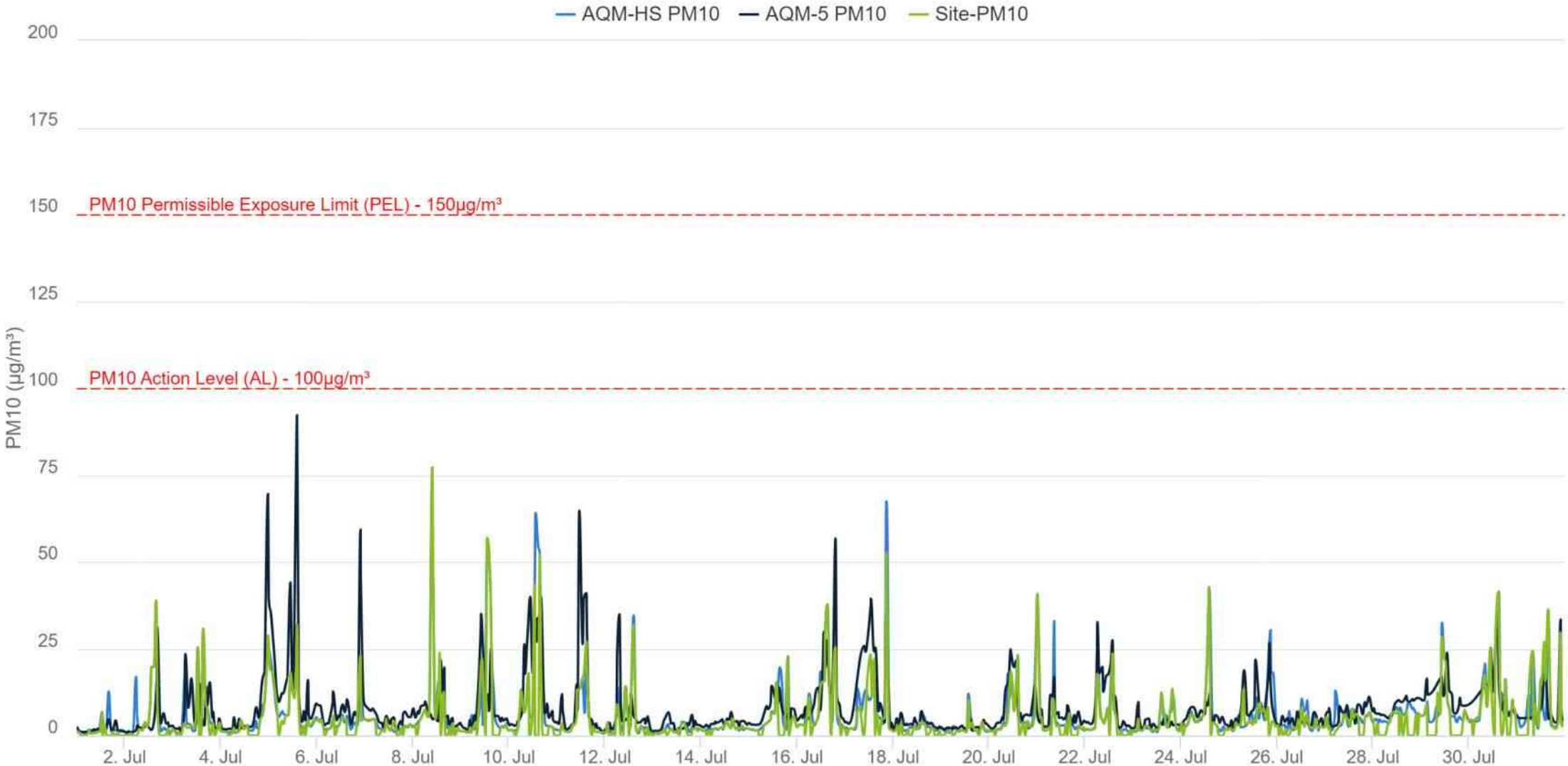
Reach F - PM2.5 - 15 min Running avg. (July 2024)

Reach F - PM10 - 15 min Running avg. (July 2024)

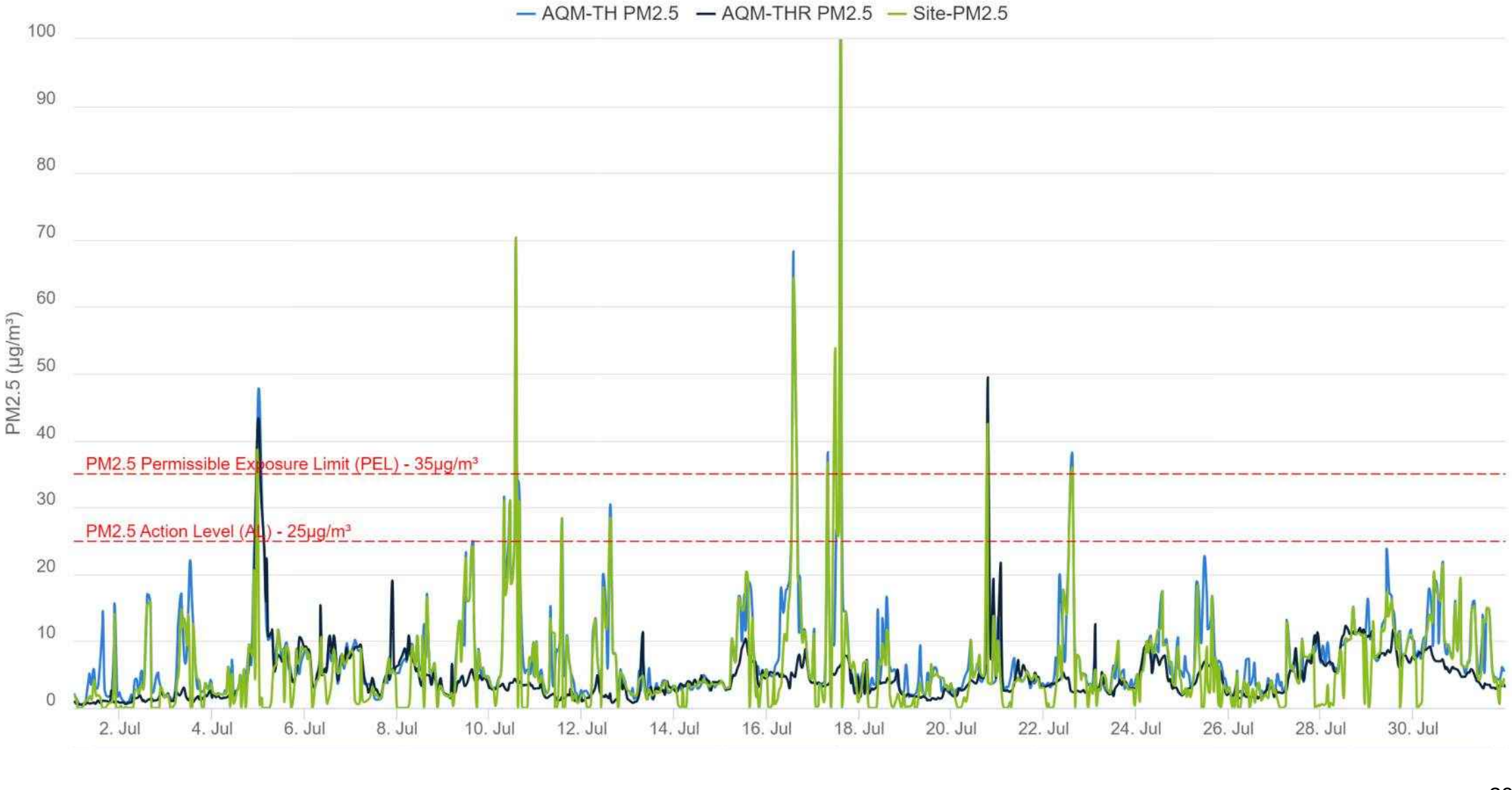


Reach G - PM2.5 - 15 min Running avg. (July 2024)

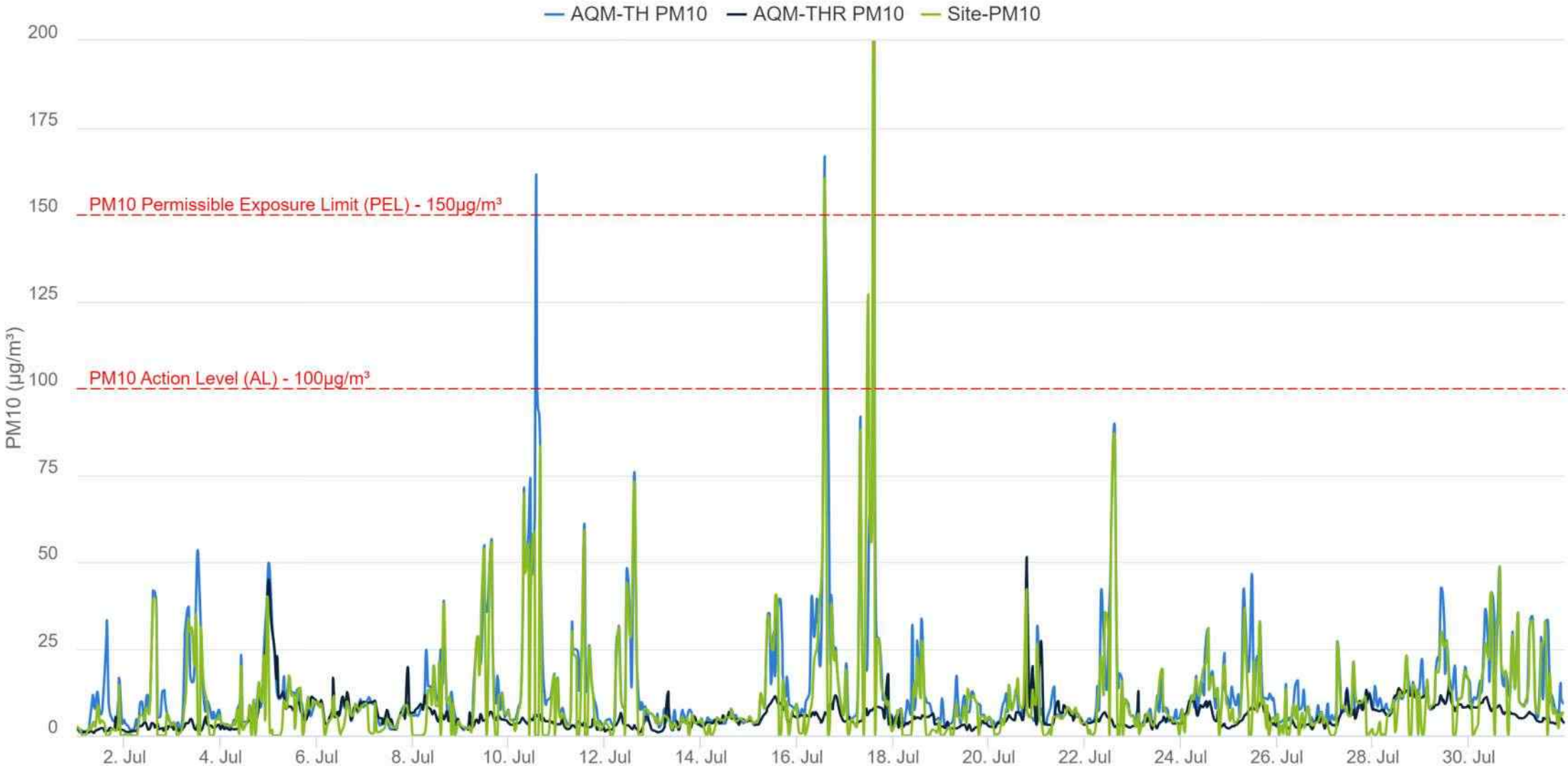
Reach G - PM10 - 15 min Running avg. (July 2024)



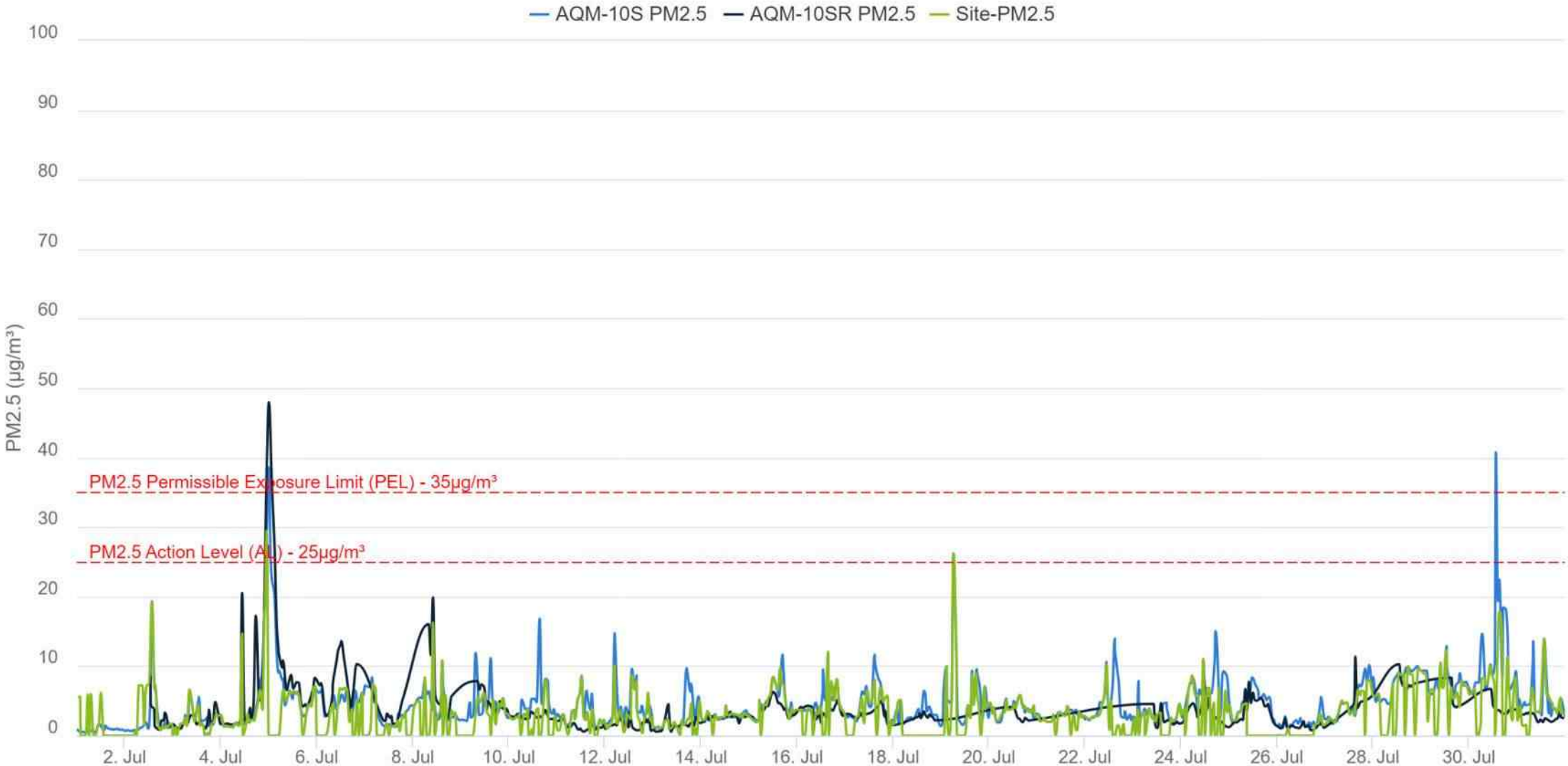
Reach H - PM2.5 - 15 min Running avg. (July 2024)



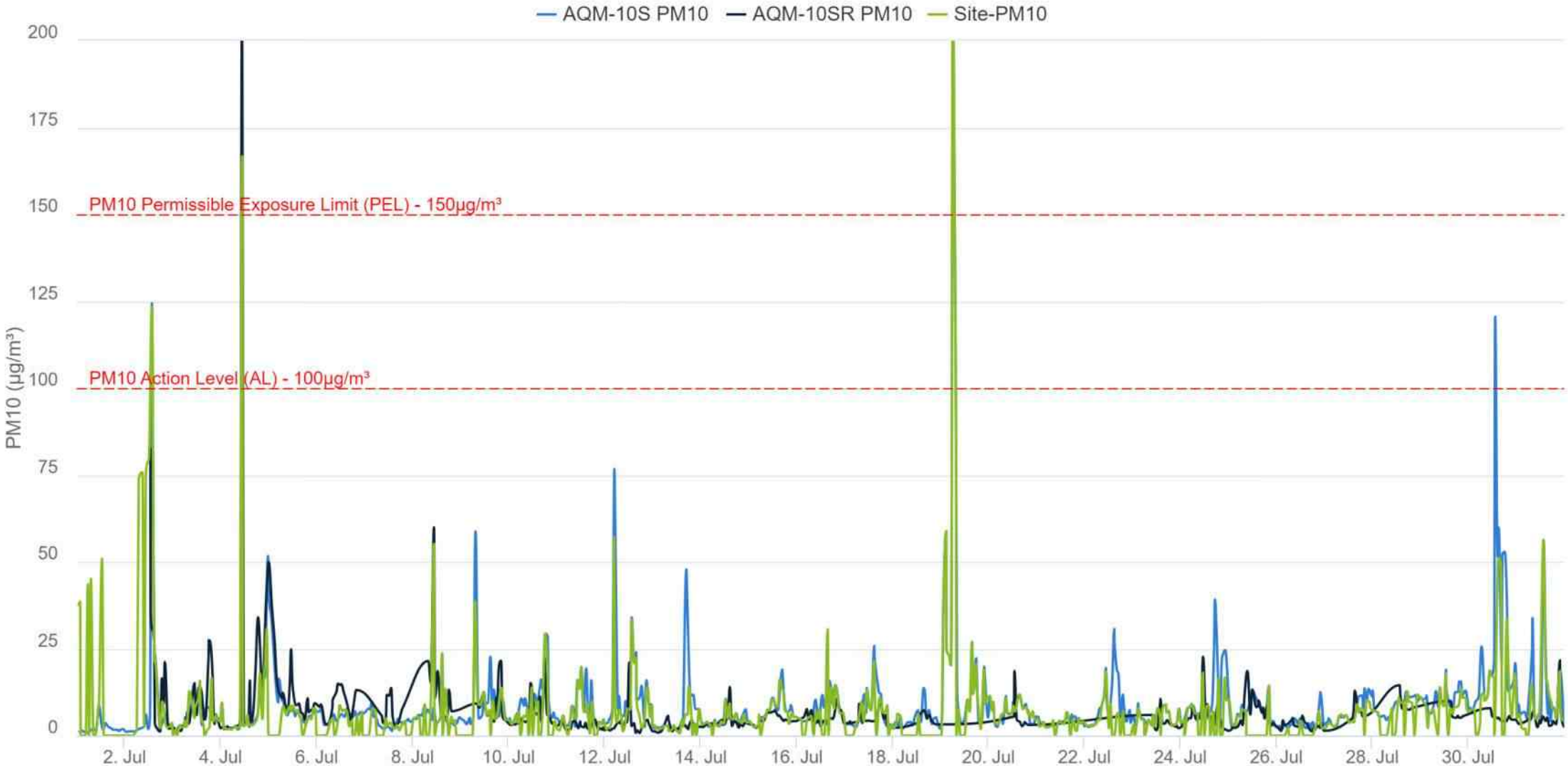
Reach H - PM10 - 15 min Running avg. (July 2024)



Reach I - PM2.5 - 15 min Running avg. (July 2024)



Reach I - PM10 - 15 min Running avg. (July 2024)



Summary of Data August 2024

PM2.5 levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 8/10 for 2 minutes;
- AQM-3 on 8/13 for 14 minutes;
- AQM-AT on 8/15 for 17 minutes;
- AQM-FB on 8/15 for 16 minutes;
- AQM-WB on 8/17 for 19 minutes, 8/23 for 15 minutes, and 8/24 for 16 minutes;
- AQM-HS on 8/8 for 2 minutes and 8/16 for 31 minutes; and
- AQM-TH on 8/24 for 15 minutes.

PM10 levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-3 on 8/13 for 14 minutes; and
- AQM-HS on 8/8 for 2 minutes and 8/16 for 29 minutes.

For the month of August 2024, PM net 2.5 levels were exceeded on 8/8, 8/10, 8/13, 8/15, 8/16, 8/17, 8/23, and 8/24. PM net 10 levels were exceeded on 8/8, 8/13, and 8/16.

For the month of August 2024, construction-related PM net 2.5 or 10 levels did not surpass the Daily PEL (24-hour TWA).

PM 2.5 µg/m^3

- PM 2.5 µg/m^3 levels surpassed the PEL (15-minute TWA) on 10 occasions (8/8, 8/10, 8/13, 8/15, 8/16, 8/17, 8/23, and 8/24) for between 2 and 31 minutes.
    - AQM-1 is located near the site access gate at Gouverneur Slip West and adjacent to another construction site and an FDR entry ramp; elevated readings on 8/10 were related to anomalous readings during instrument maintenance.
    - AQM-3 is located is located west of the FDR on Delancey Street; elevated readings on 8/13 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-AT is located near the former amphitheater and Corlears Hook pedestrian bridge; the elevated readings on 8/15 were related to unknown off-site activity.
    - AQM-FB is located in the vicinity of the Fire Boat House; elevated readings on 8/15 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; elevated readings on 8/17, 8/23, and 8/24 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-HS is located near the Houston Street ramp at the exit to the construction on the FDR; elevated readings on 8/8 and 8/16 were related to anomalous readings during instrument maintenance.
    - AQM-TH is located near the Track House in the vicinity of the shared use path and open sections of East River Park; the elevated readings on 8/24 were related to unknown off-site activity.

PM 10 µg/m^3

- PM 10 µg/m^3 levels surpassed the PEL on three occasions (8/8, 8/13, and 8/16) for between 2 and 29 minutes:
    - AQM-3 is located is located west of the FDR on Delancey Street; elevated readings on 8/13 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-HS is located near the Houston Street ramp at the exit to the construction on the FDR; elevated readings on 8/8 and 8/16 were related to anomalous readings during instrument maintenance.

Mitigation Measures:

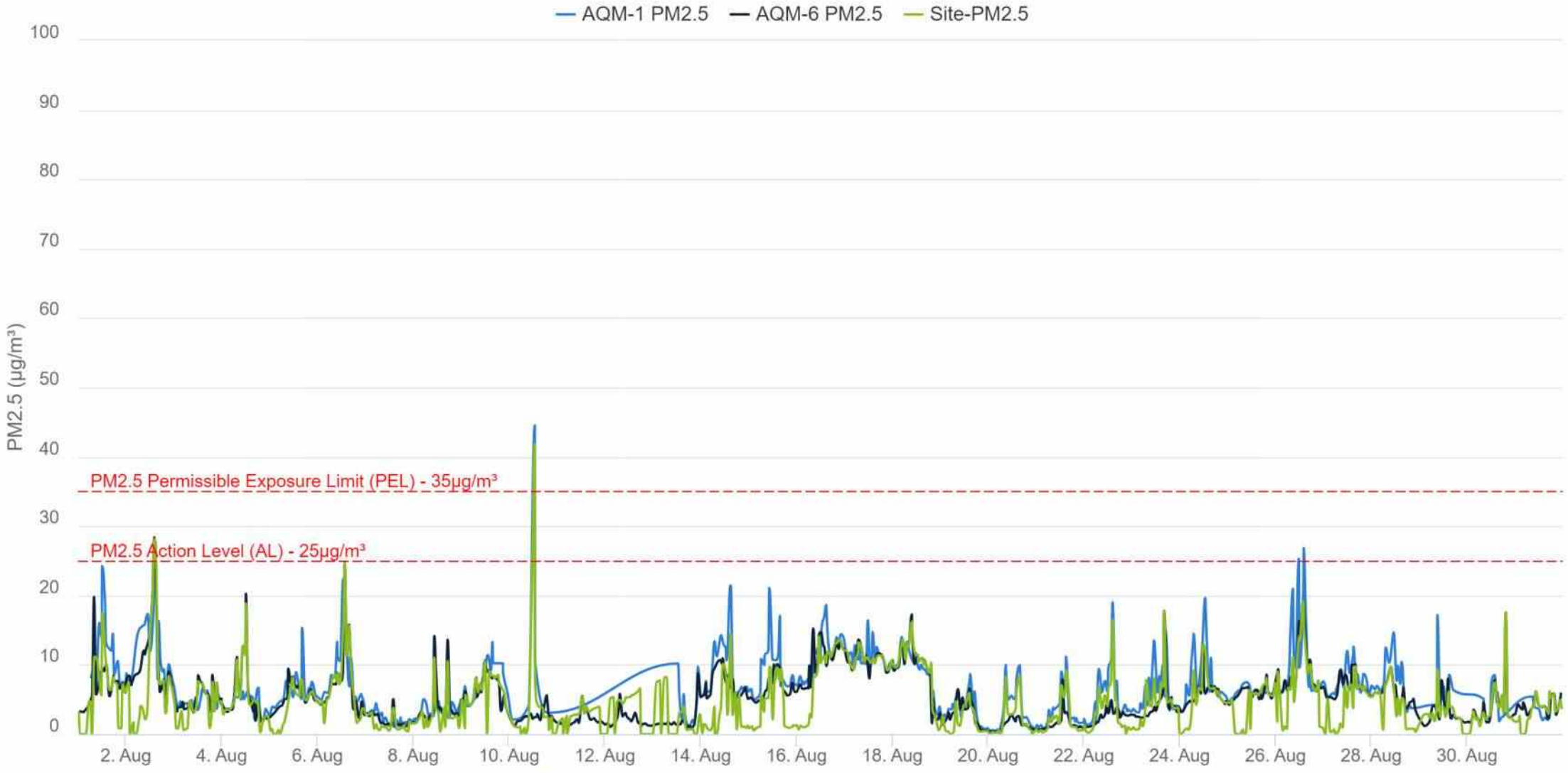
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

Notes

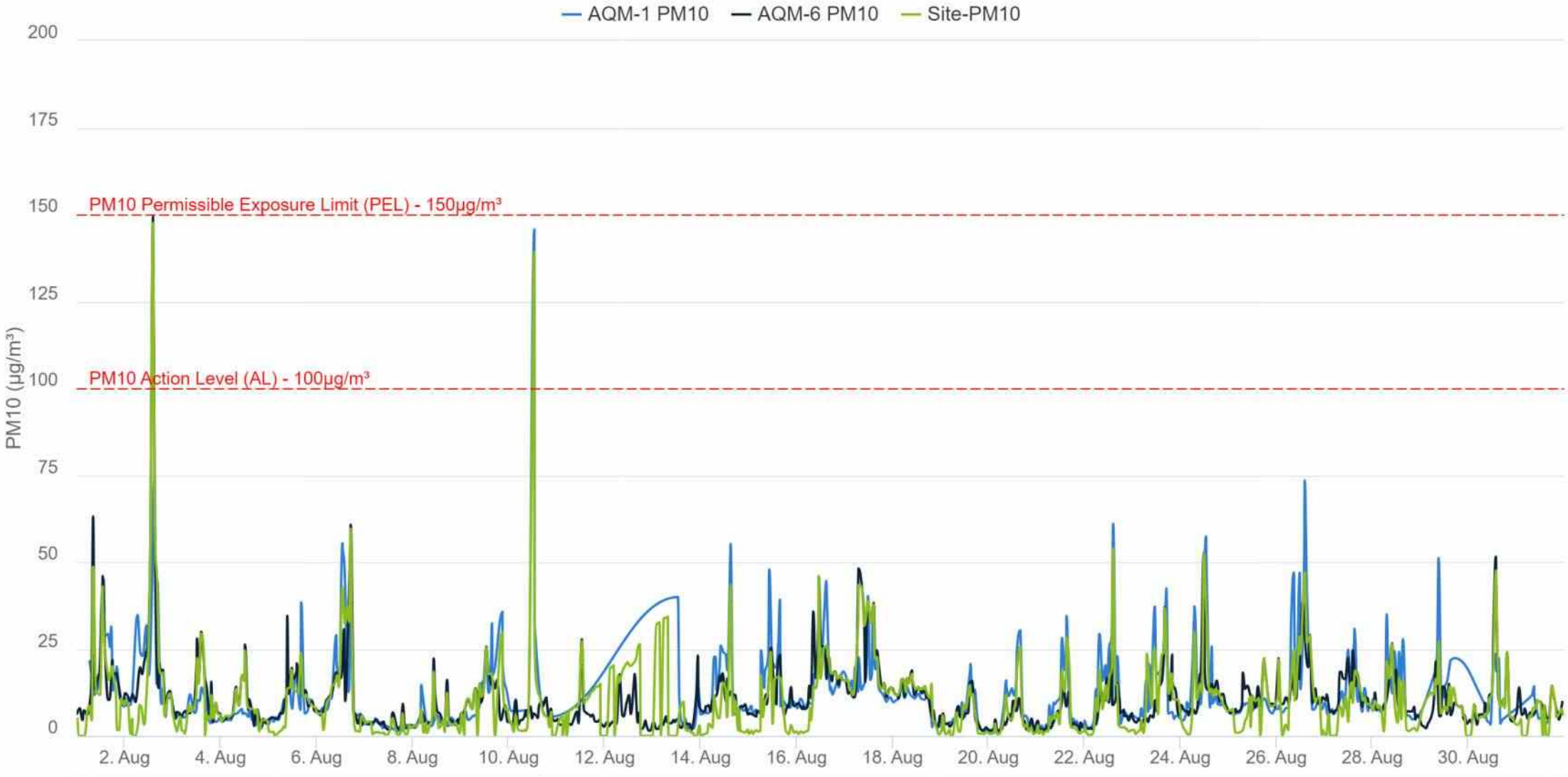
- AQM-1 was disconnected from power and not monitoring from August 9th to August 13th and August 28th to September 2nd
- AQM-2 was disconnected from power and not monitoring from August 12th to August 28th
- AQM-4 was disconnected from power and not monitoring from August 7th to August 9th and August 18th to August 28th
- AQM-WB was disconnected from power and not monitoring from August 24th to August 31st
- AQM-WBN was disconnected from power and not monitoring from August 23rd to August 28th
- AQM-10SR was disconnected from power and not monitoring from August 9th to August 13th and August 23rd to August 28th

August 2024 DATA PLOTS

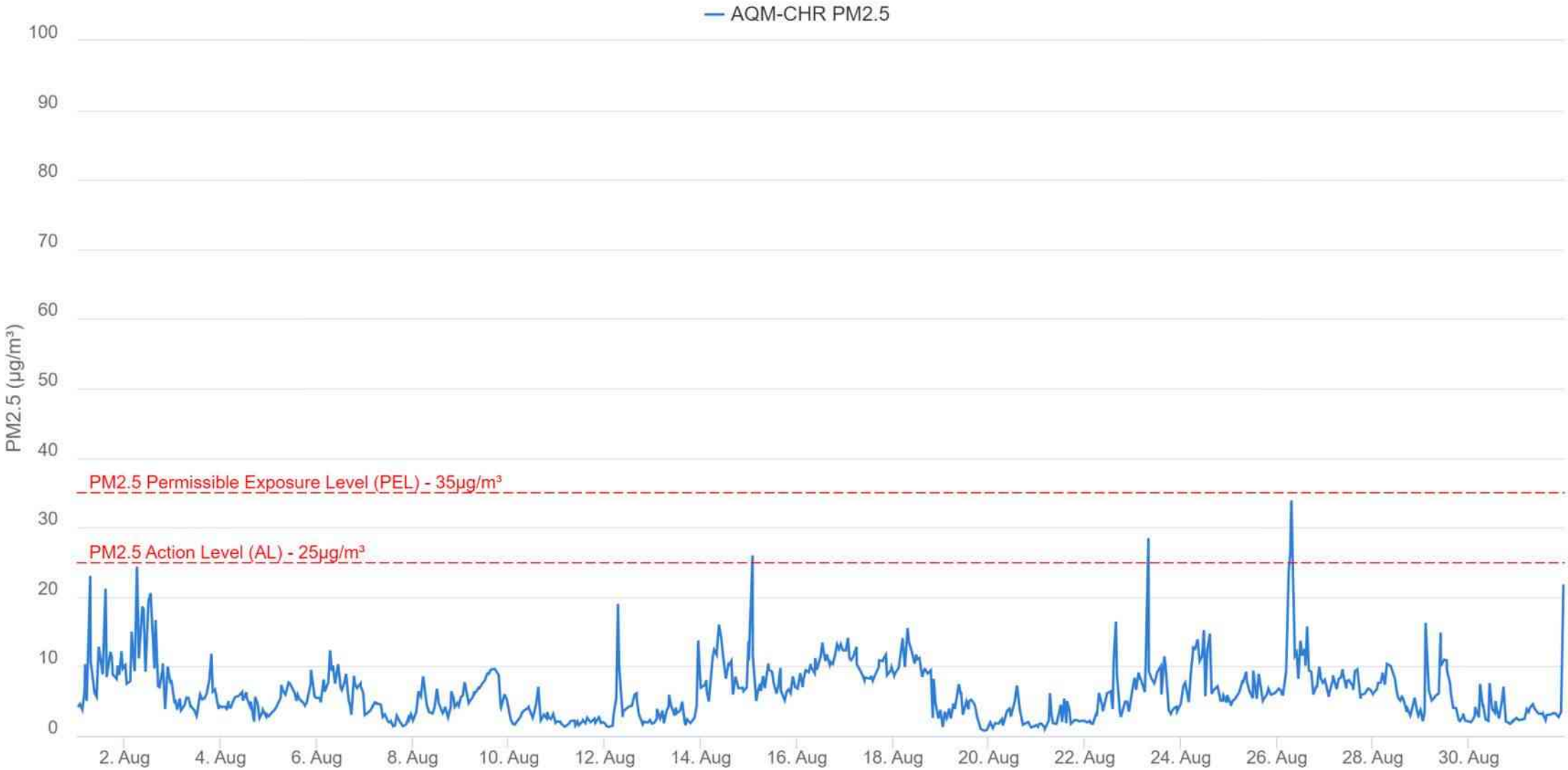
Reach A - PM2.5 - 15 min Running avg. (August 2024)



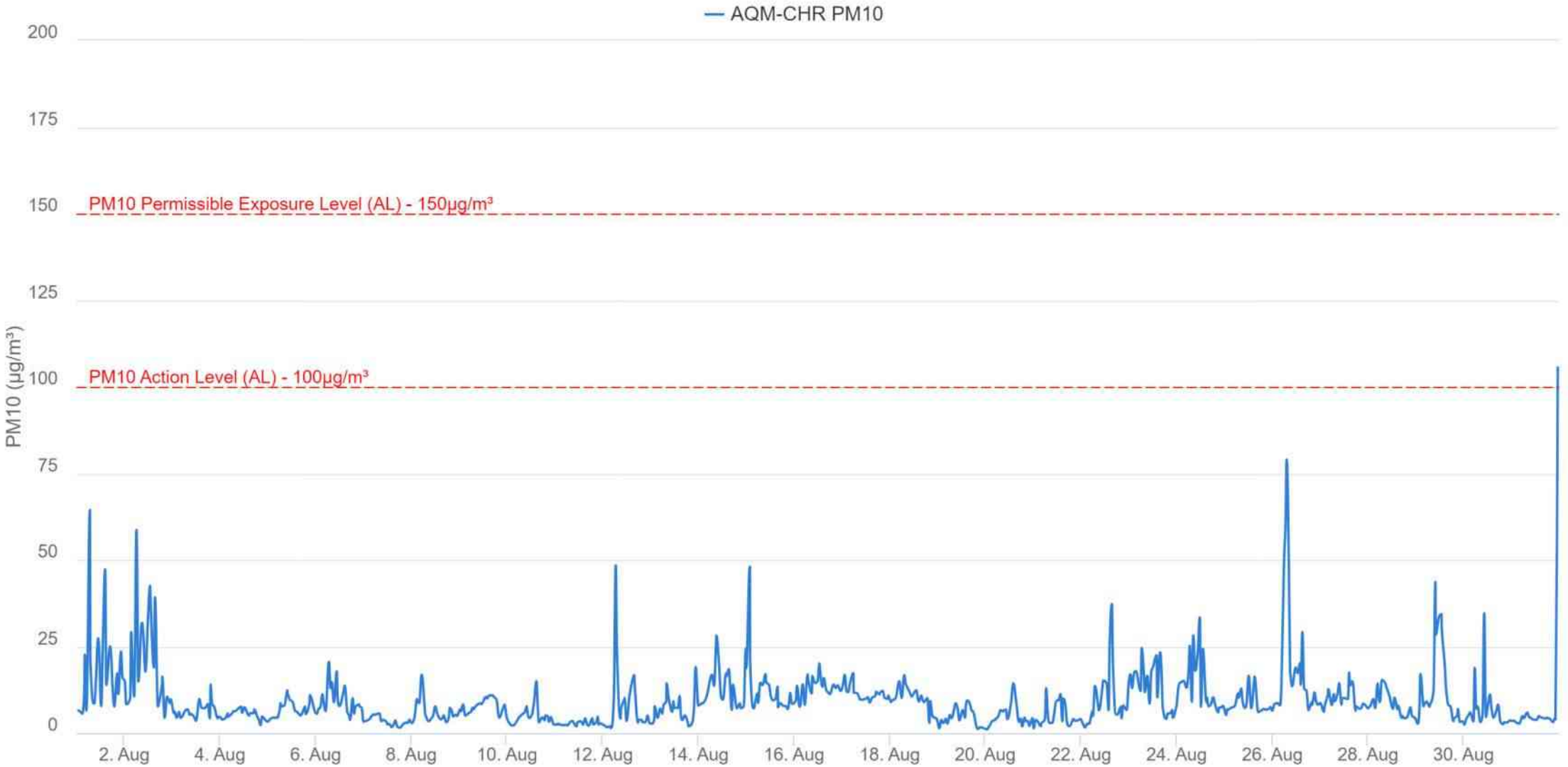
Reach A - PM10 - 15 min Running Avg. (August 2024)



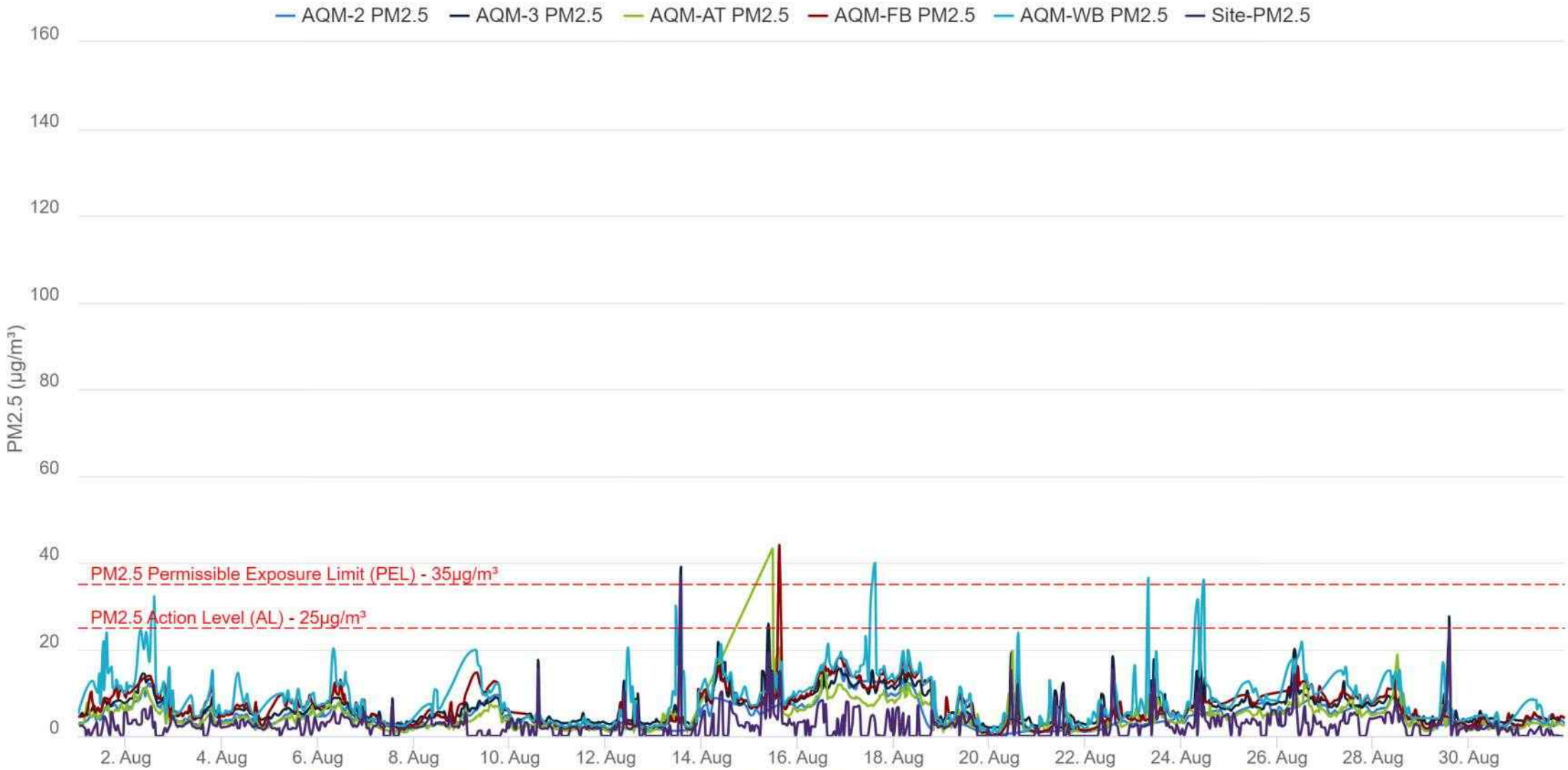
Reach B - PM2.5 - 15 min Running Avg. (August 2024)



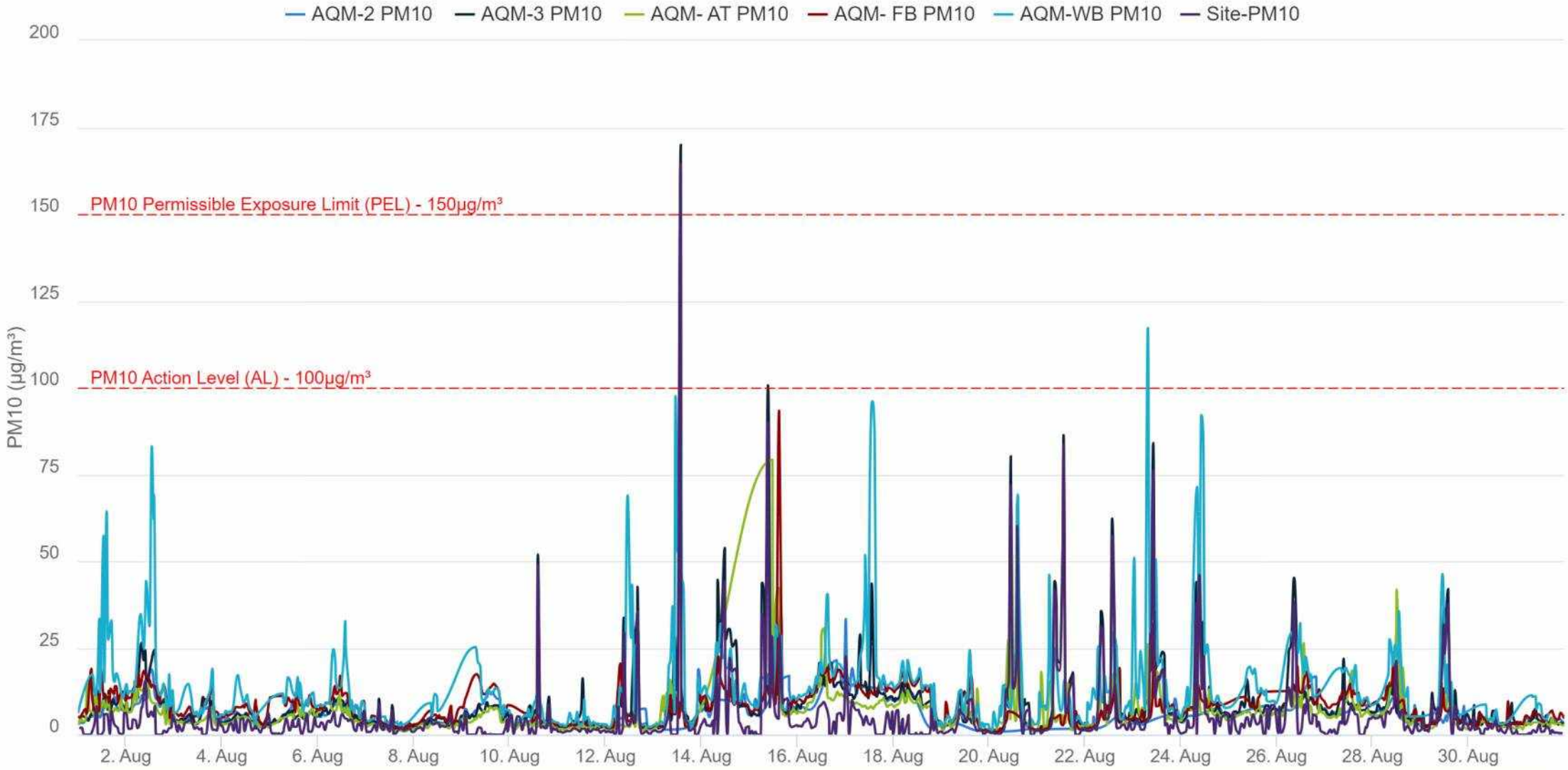
Reach B - PM10 - 15 min Running avg. (August 2024)



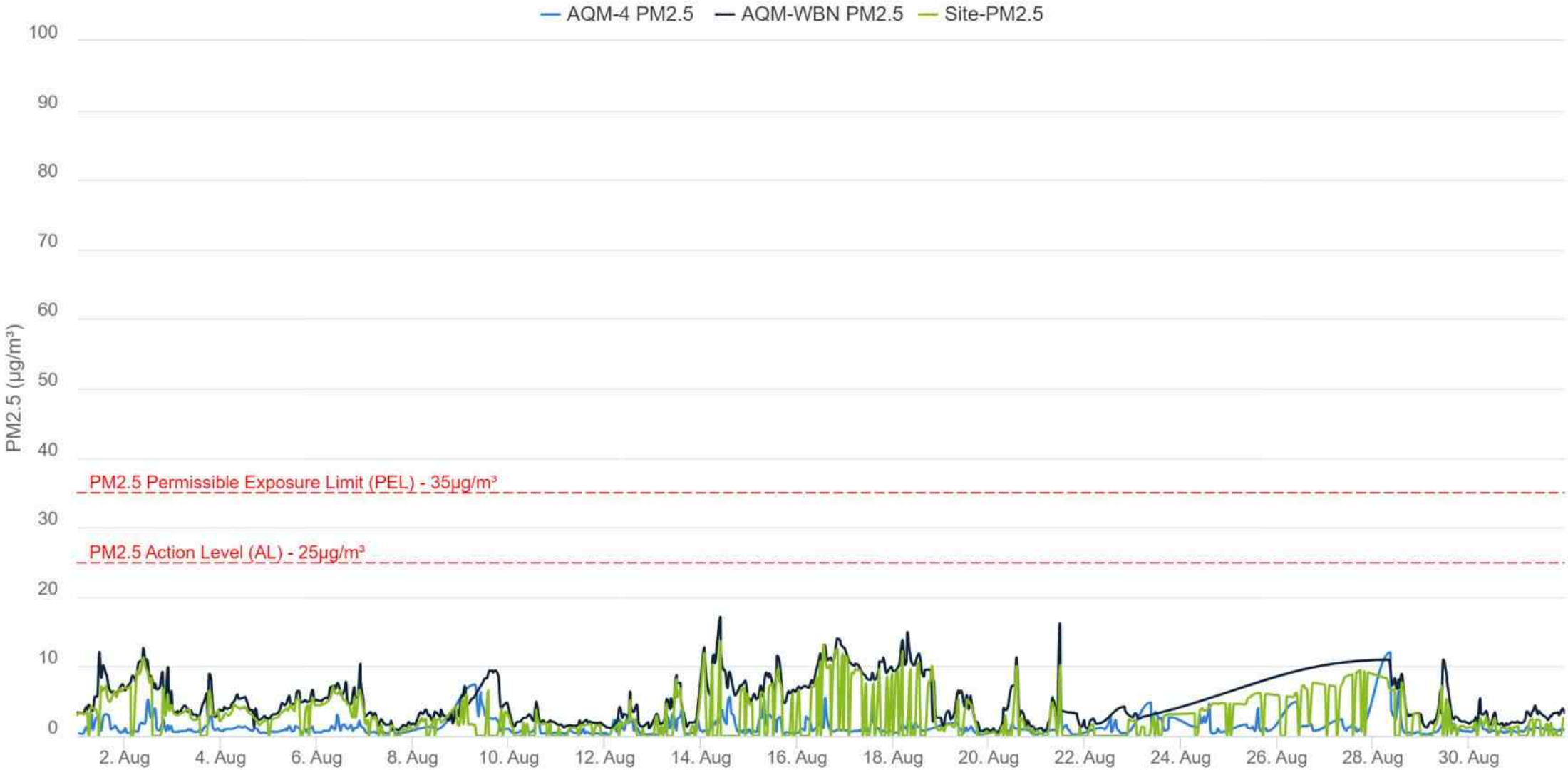
Reach C,D,& E - PM2.5 - 15 min Running Avg. (August 2024)



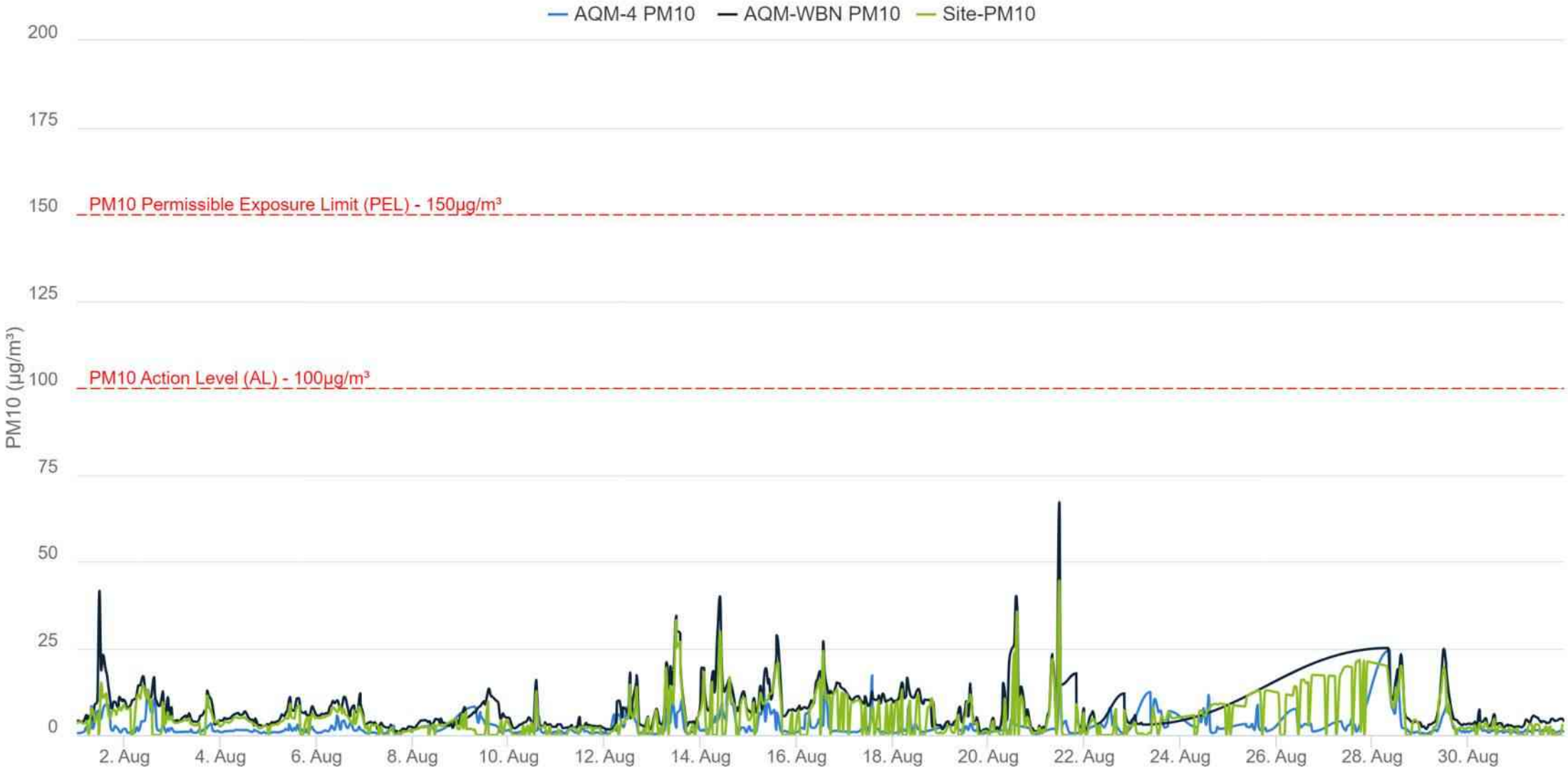
Reach C,D,& E - PM10 - 15 min Running avg. (August 2024)



Reach F - PM2.5 - 15 min Running avg. (August 2024)

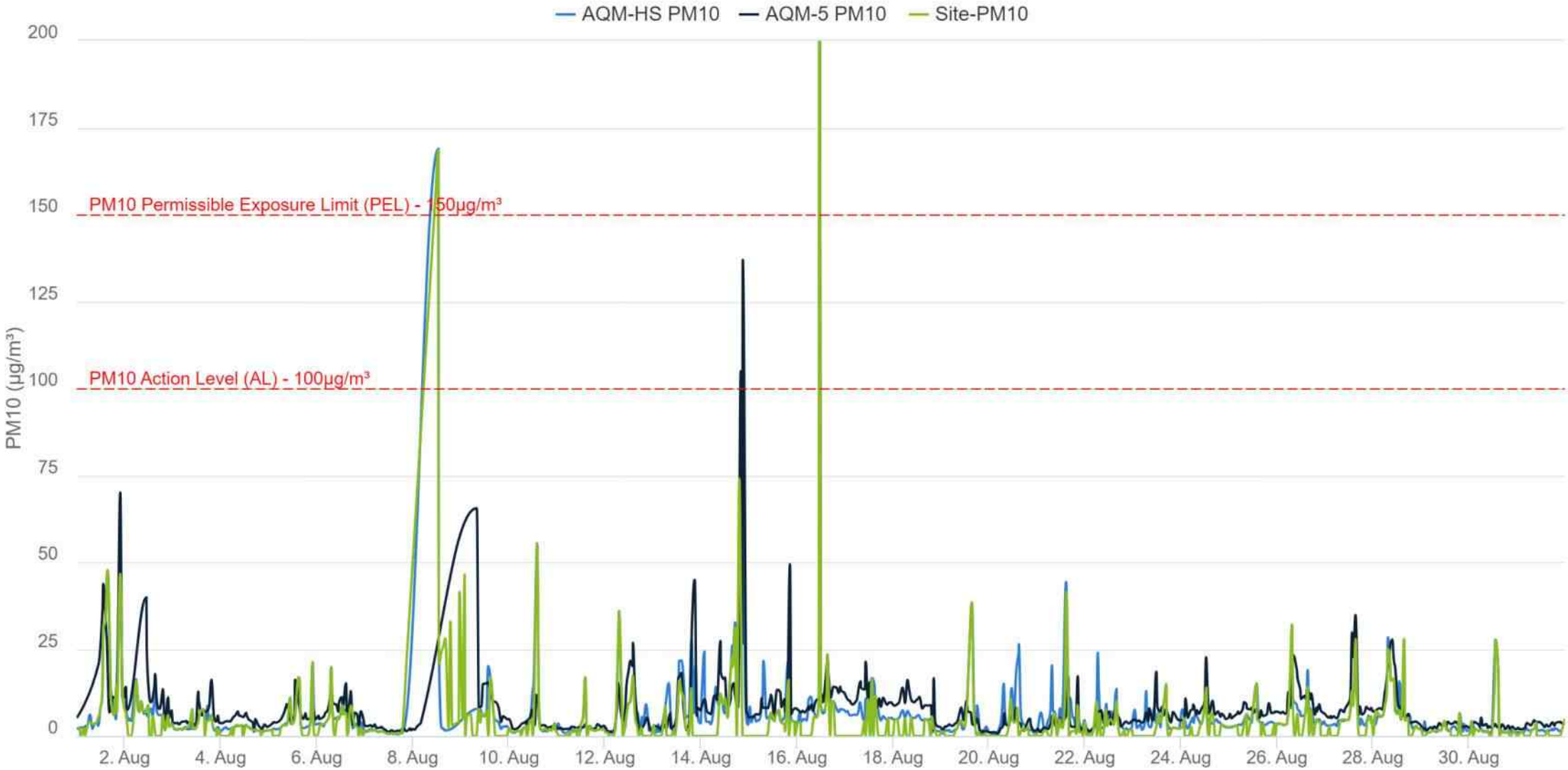


Reach F - PM10 - 15 min Running avg. (August 2024)



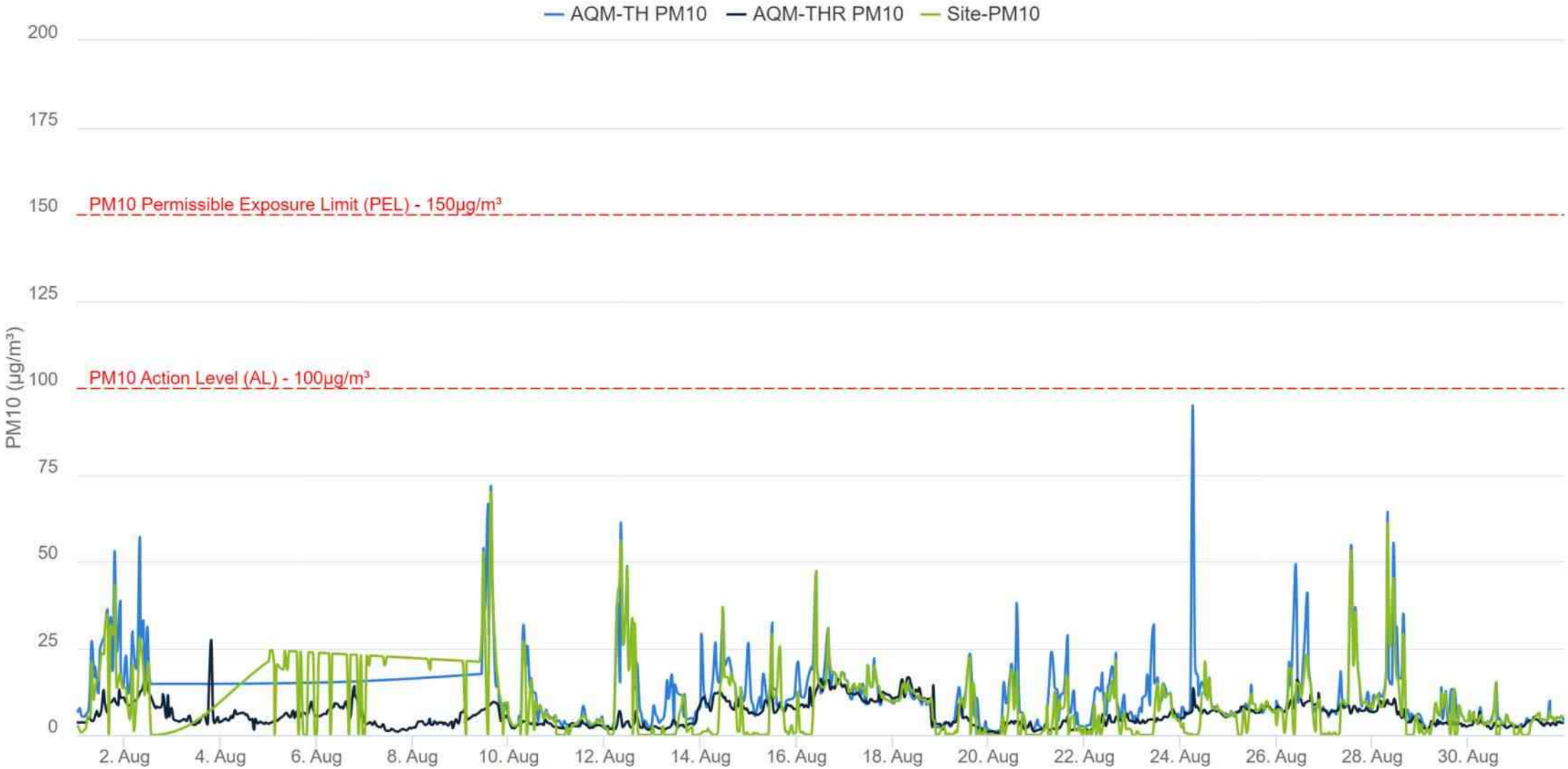
Reach G - PM2.5 - 15 min Running avg. (August 2024)

Reach G - PM10 - 15 min Running avg. (August 2024)



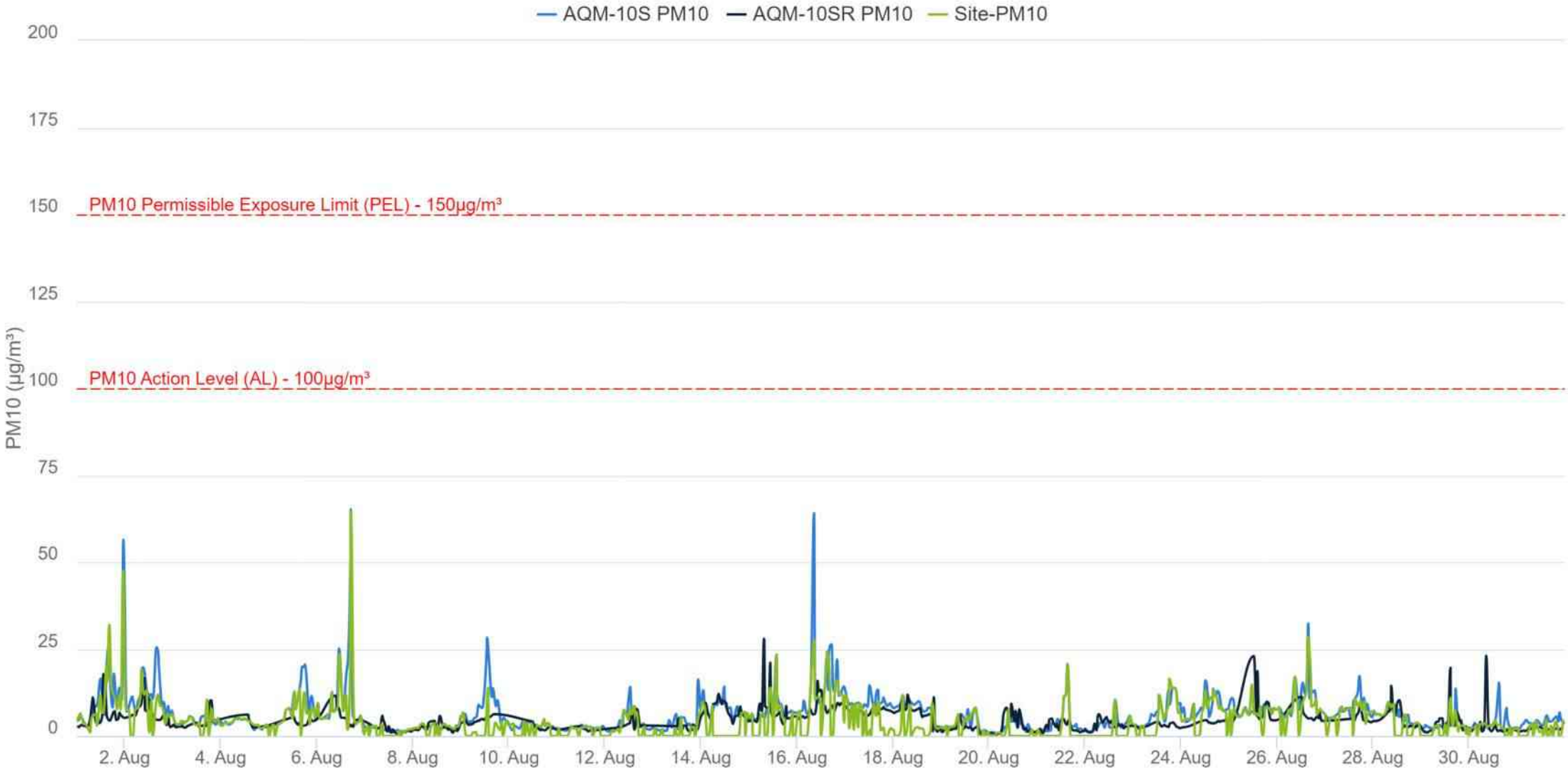
Reach H - PM2.5 - 15 min Running avg. (August 2024)

Reach H - PM10 - 15 min Running avg. (August 2024)



Reach I - PM2.5 - 15 min Running avg. (August 2024)

Reach I - PM10 - 15 min Running avg. (August 2024)



Summary of Data September 2024

PM2.5 levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 9/12 for 15 minutes;
- AQM-6 on 9/27 for 19 minutes;
- AQM-CHR on 9/17 for 17 minutes;
- AQM-3 on 9/11 for 11 minutes, 9/17 for 26 minutes, 9/18 for 13 minutes, 9/20 for 16 minutes, 9/22 for 14 minutes, and 9/23 for 47 minutes;
- AQM-FB on 9/13 for 14 minutes;
- AQM-AT on 9/25 for 18 minutes;
- AQM-WB on 9/25 for 15 minutes; and
- AQM-HS on 9/4 for 14 minutes and 9/29 for 2 minutes.

PM10 levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 9/12 for 18 minutes;
- AQM-CHR on 9/17 for 12 minutes;
- AQM-3 on 9/4 for 8 minutes, 9/17 for 18 minutes, 9/20 for 16 minutes, and 9/23 for 47 minutes;
- AQM-AT on 9/25 for 17 minutes;
- AQM-WB on 9/25 for 15 minutes;
- AQM-WBN on 9/5 for 15 minutes; and
- AQM-HS on 9/29 for 3 minutes.

For the month of September 2024, PM net 2.5 levels were exceeded 9/4, 9/11, 9/12, 9/13, 9/17, 9/18, 9/20, 9/22, 9/23, 9/25, 9/27, and 9/29. PM net 10 levels were exceeded on 9/4, 9/5, 9/12, 9/17, 9/20, 9/23, 9/25, and 9/29.

For the month of September 2024, construction-related PM net 2.5 or 10 levels did not surpass the Daily PEL (24-hour TWA).

PM 2.5 µg/m^3

- PM 2.5 µg/m^3 levels surpassed the PEL (15-minute TWA) on 14 occasions (9/4, 9/11, 9/12, 9/13, 9/17, 9/18, 9/20, 9/22, 9/23, 9/25, 9/27, and 9/29) for between 2 and 47 minutes.
    - AQM-1 is located near the site access gate at Gouverneur Slip West and adjacent to another construction site and an FDR entry ramp; elevated readings on 9/12 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-6 is located on the corner of South Street and Gouverneur's Slip East; elevated readings on 9/27 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-CHR is located on the construction access road/shared use path in Reach B; elevated readings on 9/17 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-3 is located is located west of the FDR on Delancey Street; elevated readings on 9/11, 9/17, 9/18, 9/20, 9/22, and 9/23 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.

- AQM-FB is located in the vicinity of the Fire Boat House; the elevated readings on 9/13 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-AT is located near the former amphitheater and Corlears Hook pedestrian bridge; the elevated readings on 9/25 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; elevated readings on 9/25 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-HS is located near the Houston Street ramp at the exit to the construction on the FDR.
  - Elevated readings on 9/4 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
  - Elevated readings on 9/29 were related to anomalous readings during instrument maintenance.

PM 10 µg/m^3

- PM 10 µg/m^3 levels surpassed the PEL (15-minute TWA) on 10 occasions (9/4, 9/5, 9/12, 9/17, 9/20, 9/23, 9/25, and 9/29) for between 3 and 47 minutes.
  - AQM-1 is located near the site access gate at Gouverneur Slip West and adjacent to another construction site and an FDR entry ramp; elevated readings on 9/12 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
  - AQM-CHR is located on the construction access road/shared use path in Reach B; elevated readings on 9/17 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
  - AQM-3 is located is located west of the FDR on Delancey Street; elevated readings on 9/4, 9/17, 9/20, and 9/23 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
  - AQM-AT is located near the former amphitheater and Corlears Hook pedestrian bridge; the elevated readings on 9/25 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
  - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; elevated readings on 9/25 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
  - AQM-WBN is north of the Williamsburg Bridge; elevated readings on 9/5 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
  - AQM-HS is located near the Houston Street ramp at the exit to the construction on the FDR; elevated readings on 9/29 were related to anomalous readings during instrument maintenance.

Mitigation Measures

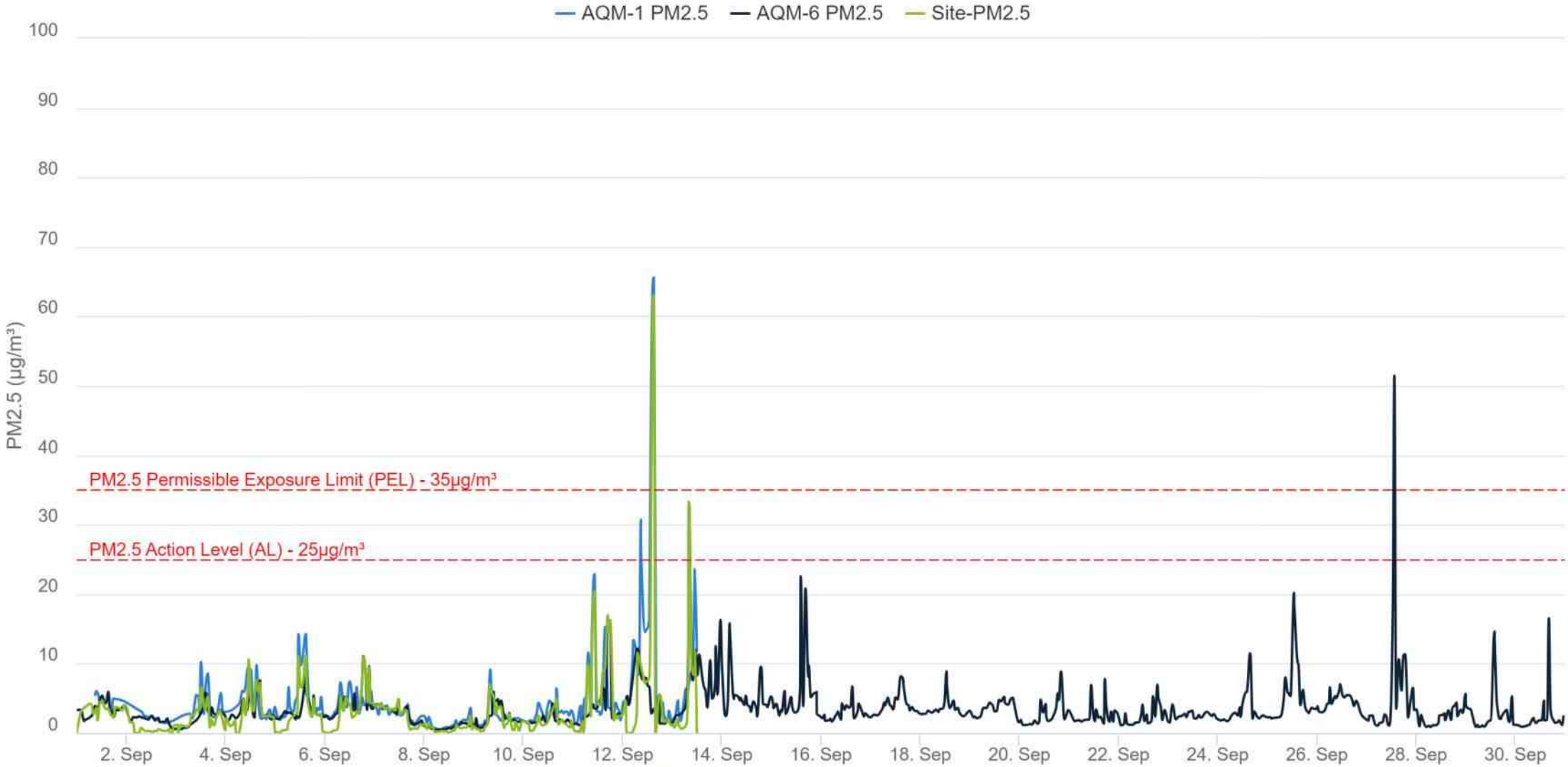
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

Notes

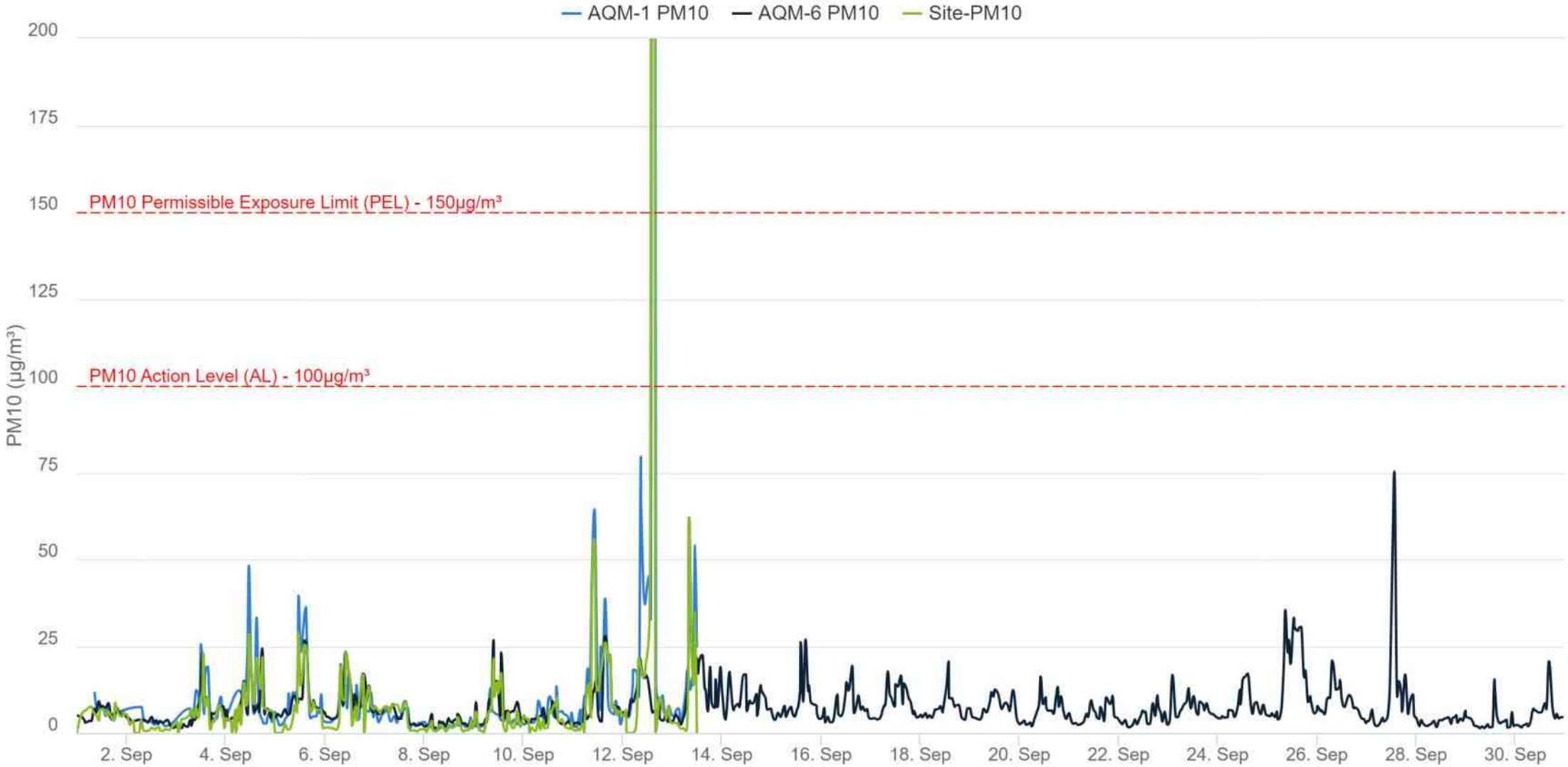
- AQM-1 was disconnected from power and not monitoring from September 13th to October 3rd
- AQM-4 was disconnected from power and not monitoring from September 20th to September 26th
- AQM-5 was disconnected from power and not monitoring from September 25th to September 30th
- AQM-10SR was disconnected from power and not monitoring from September 20th to September 26th

SEPTEMBER 2024 DATA PLOTS

Reach A - PM2.5 - 15 min Running avg. (September 2024)

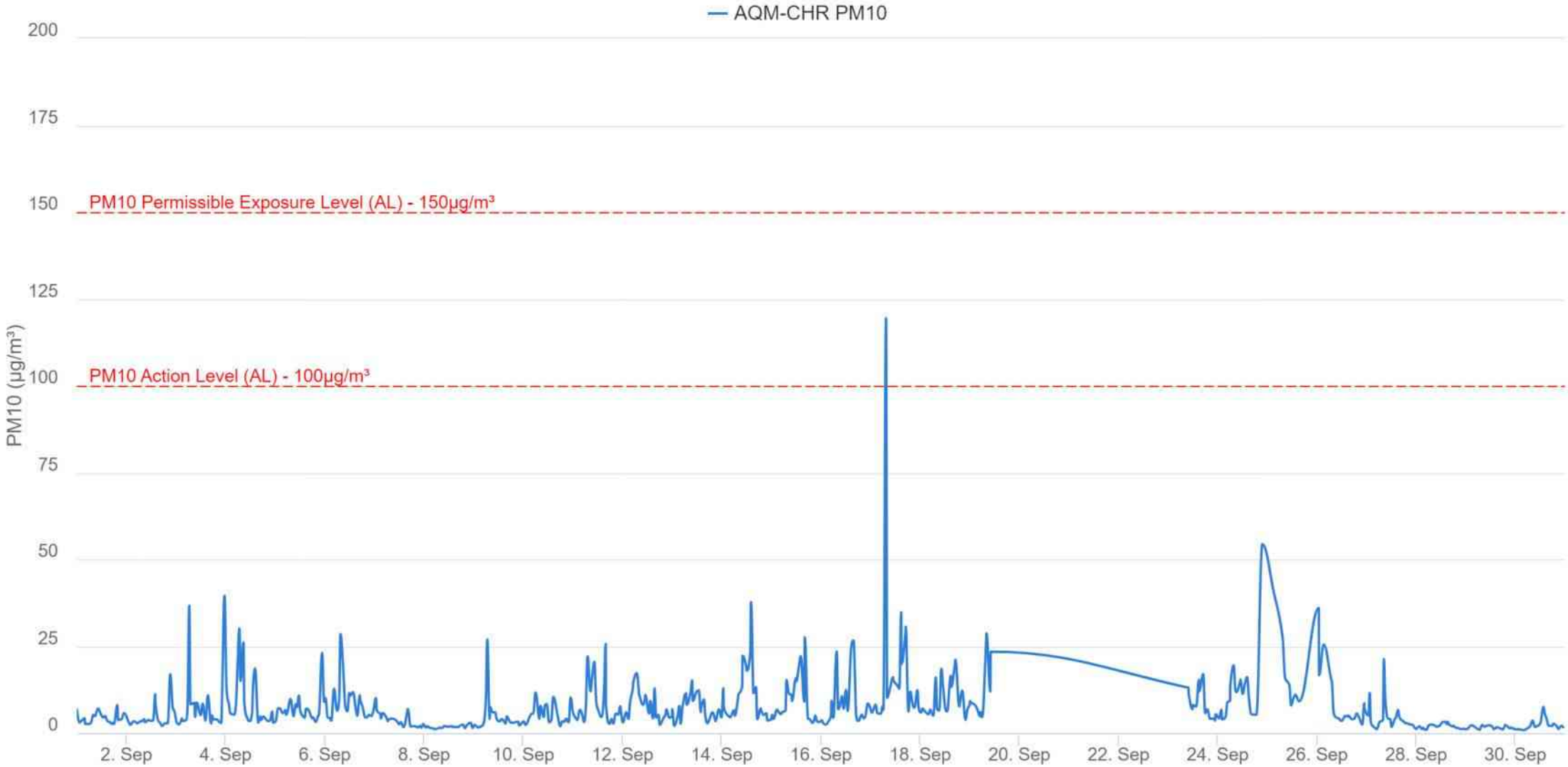


Reach A - PM10 - 15 min Running Avg. (September 2024)

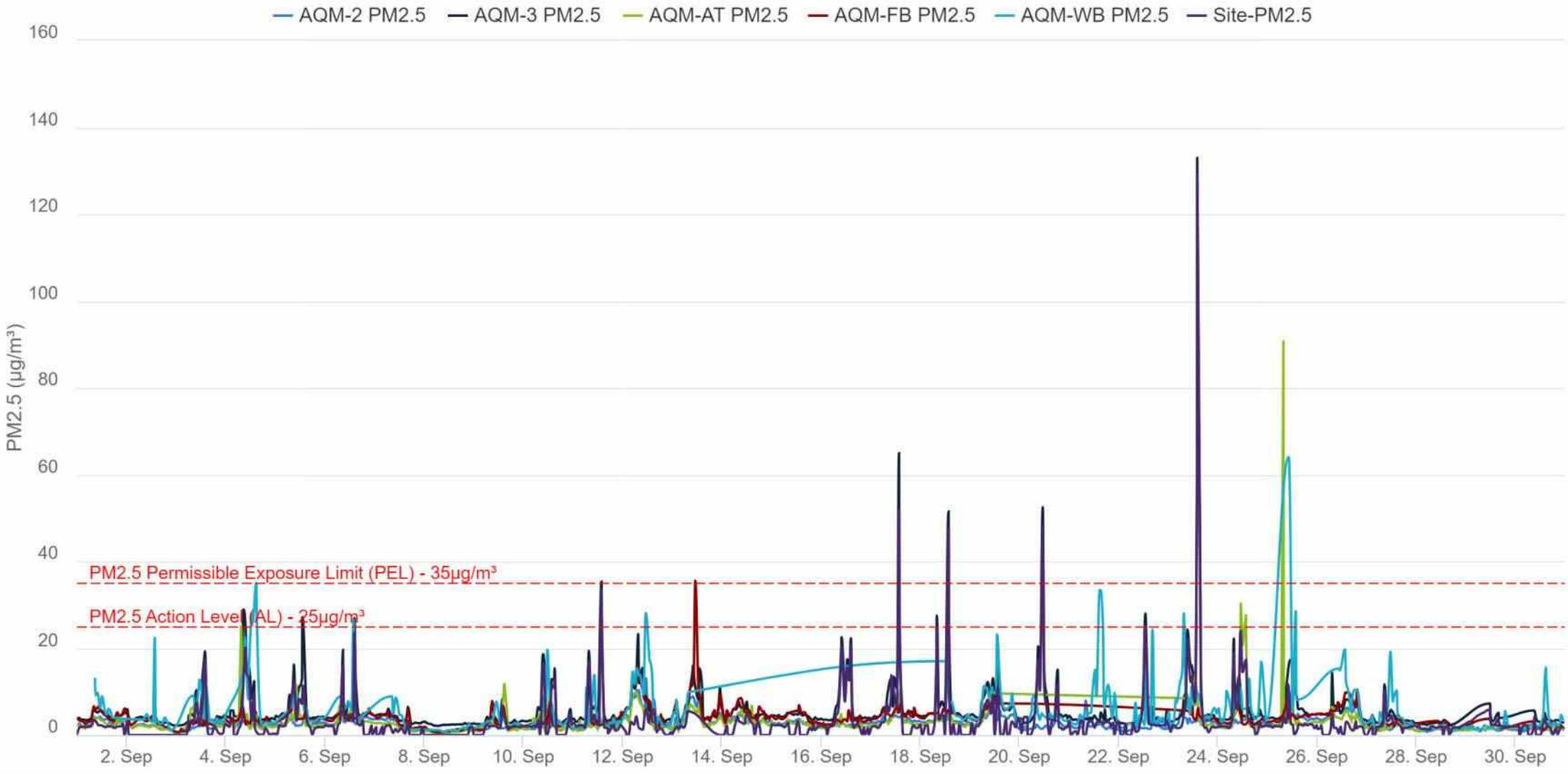


Reach B - PM2.5 - 15 min Running Avg. (September 2024)

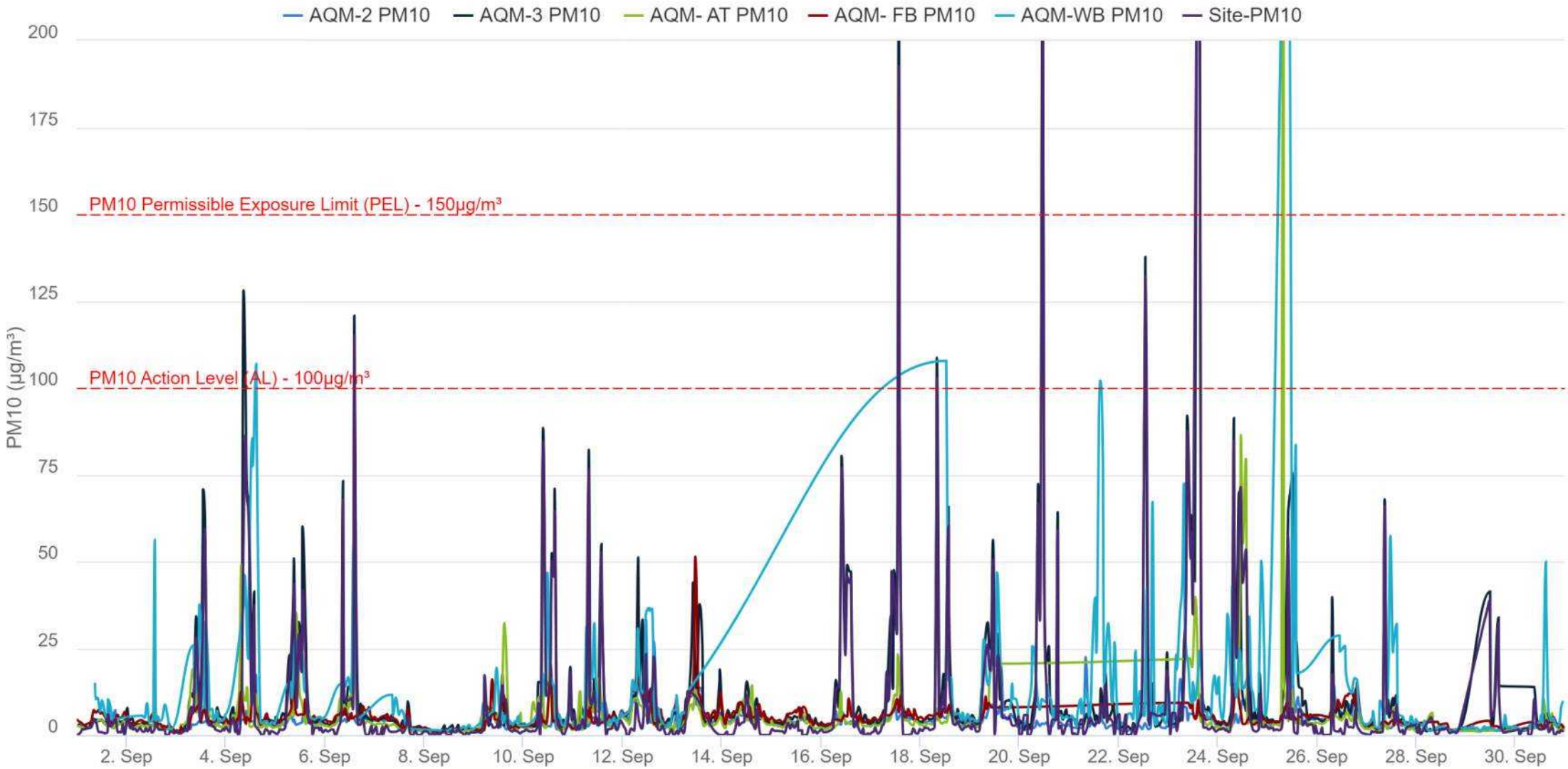
Reach B - PM10 - 15 min Running Avg. (September 2024)



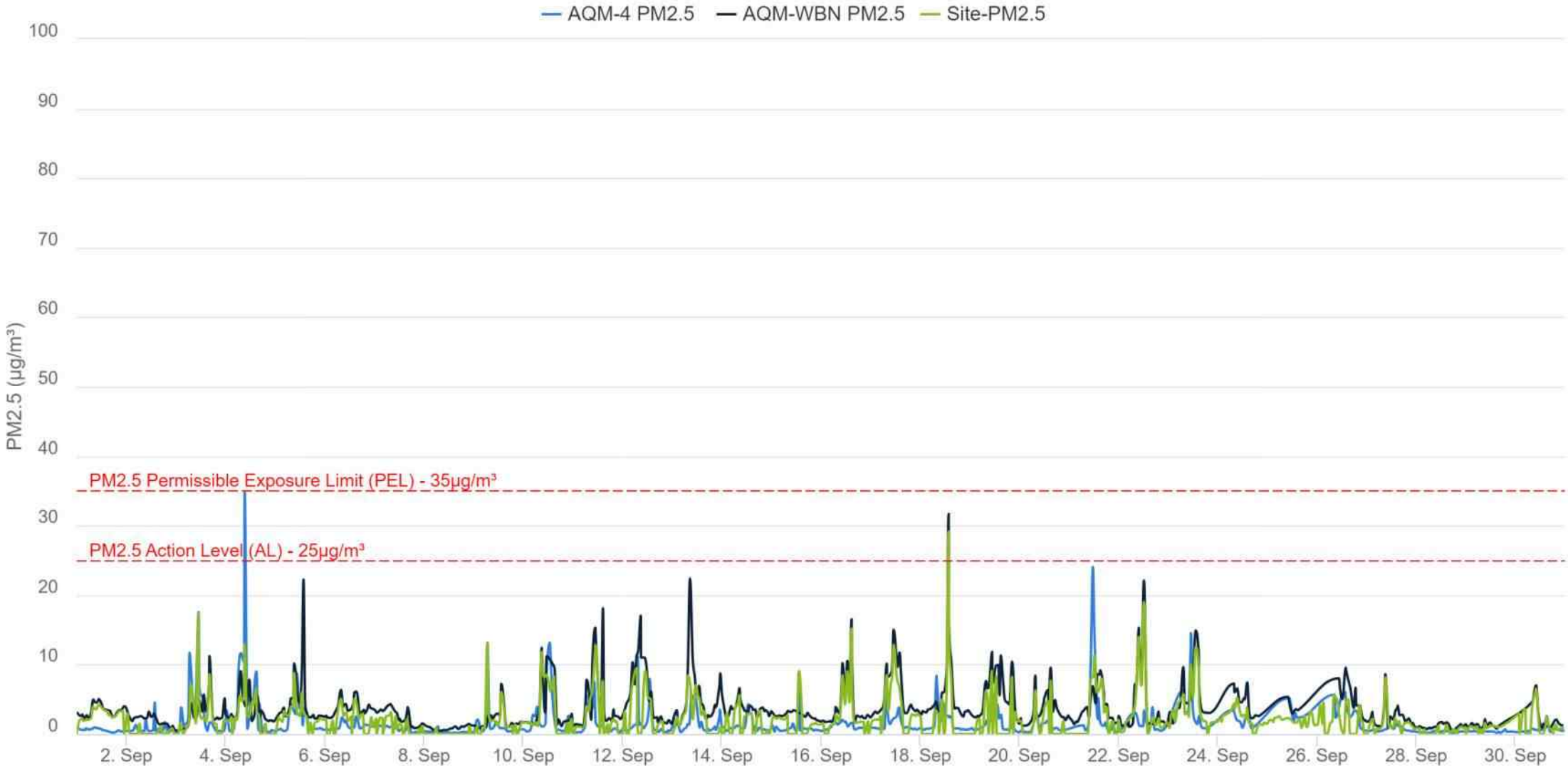
Reach C,D,& E - PM2.5 - 15 min Running Avg. (September 2024)



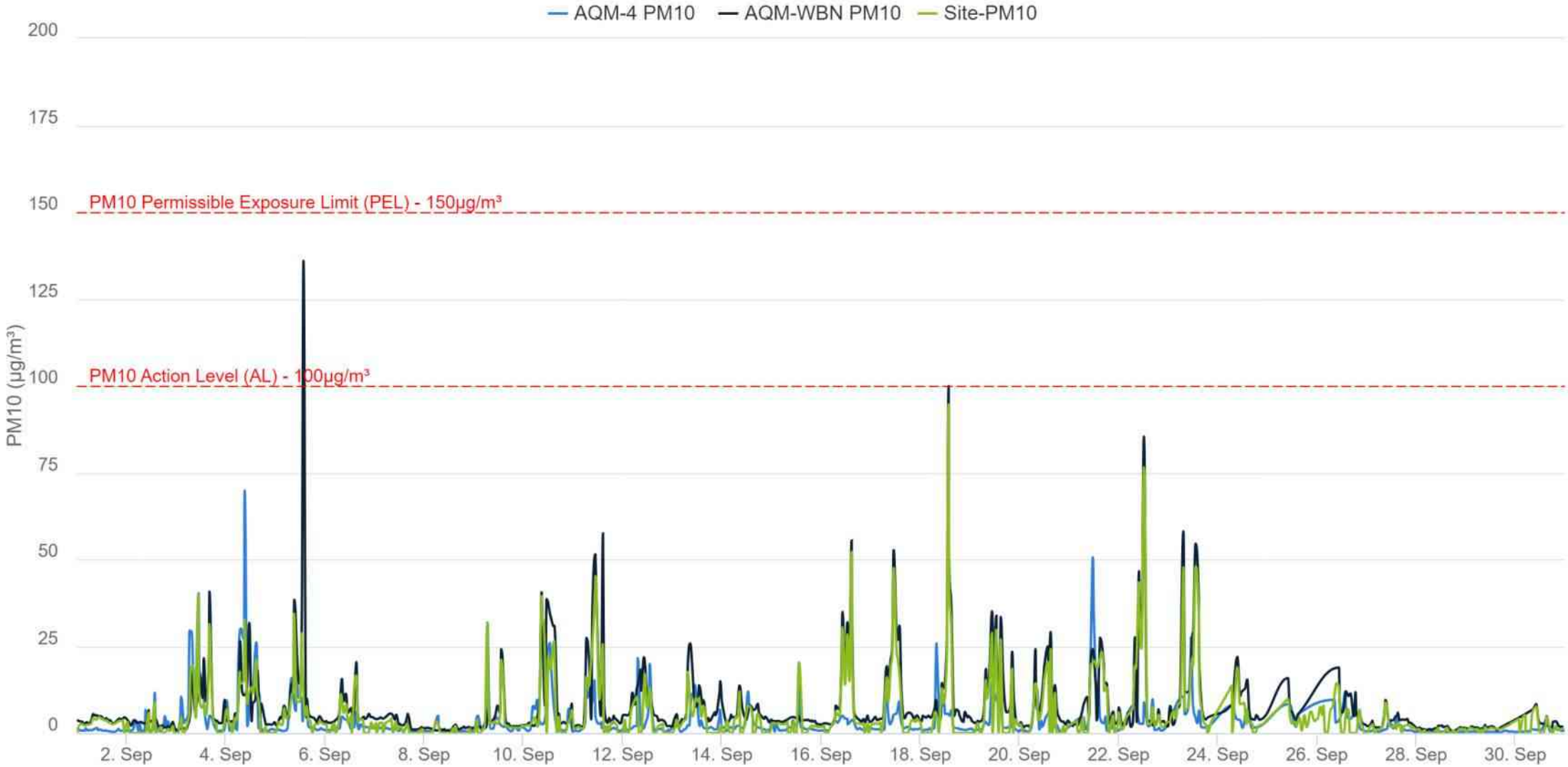
Reach C,D,& E - PM2.5 - 15 min Running Avg. (September 2024)



Reach F - PM2.5 - 15 min Running avg. (September 2024)

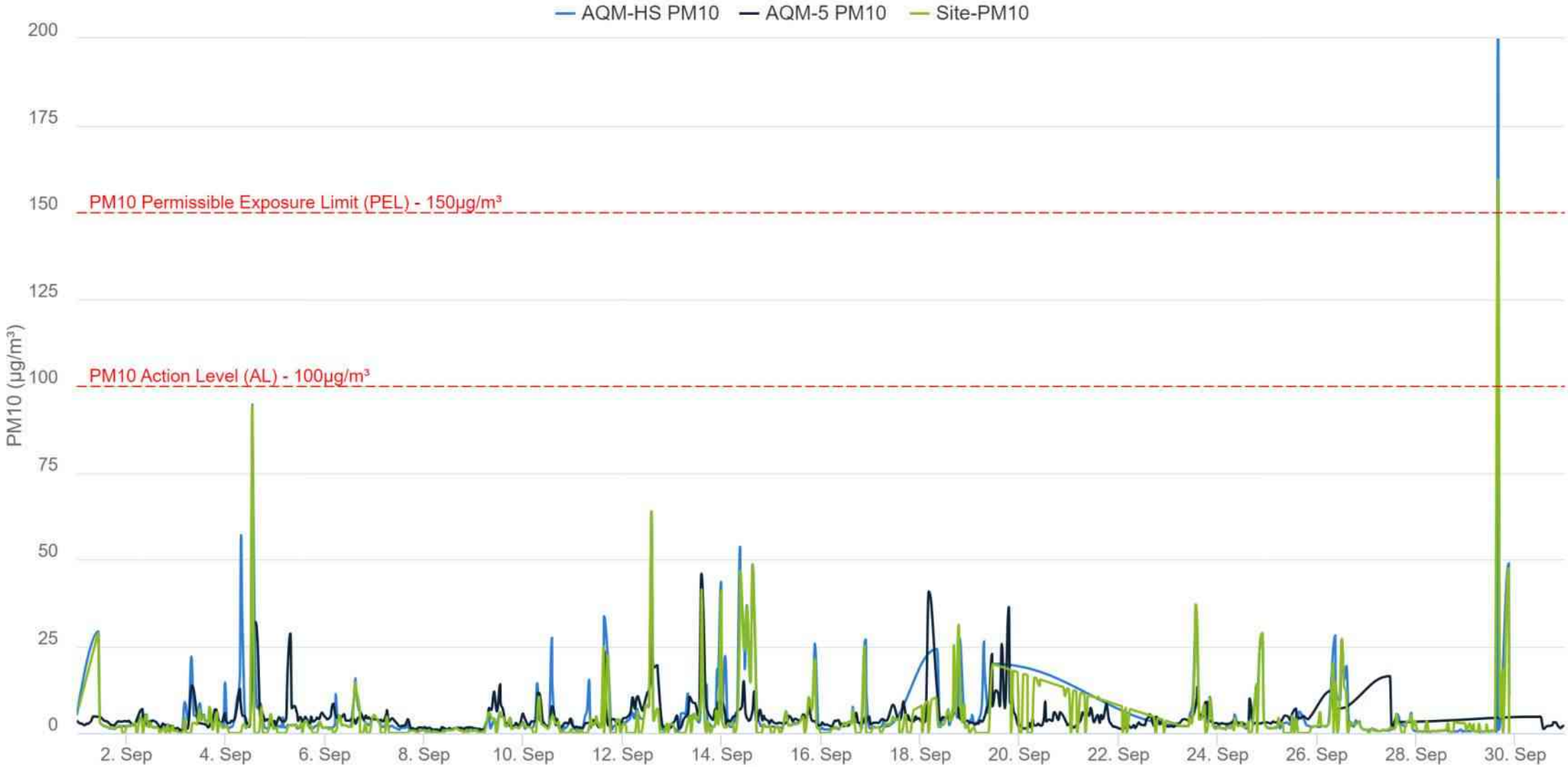


Reach F - PM10 - 15 min Running avg. (September 2024)



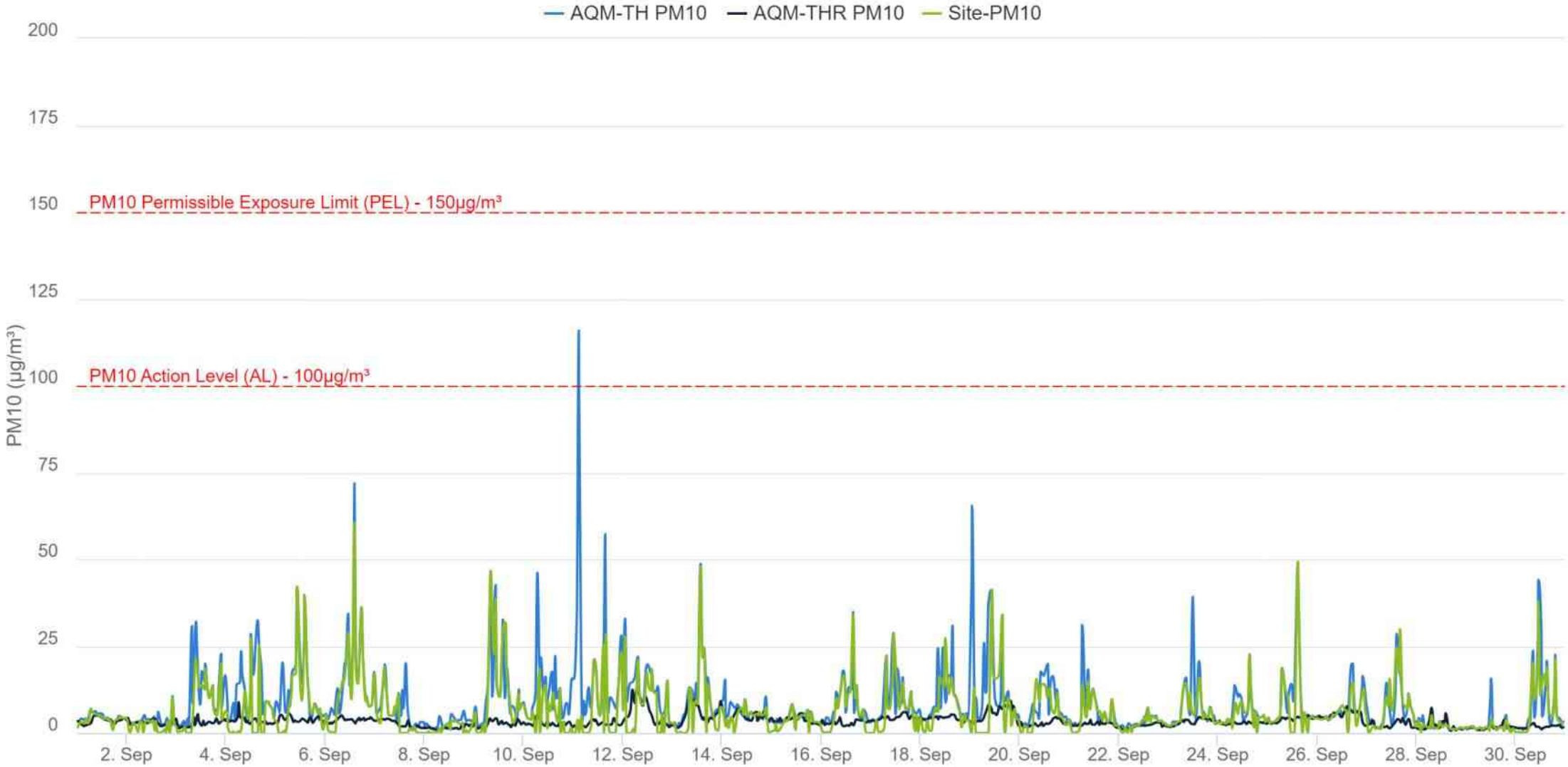
Reach G - PM2.5 - 15 min Running avg. (September 2024)

Reach G - PM10 - 15 min Running avg. (September 2024)



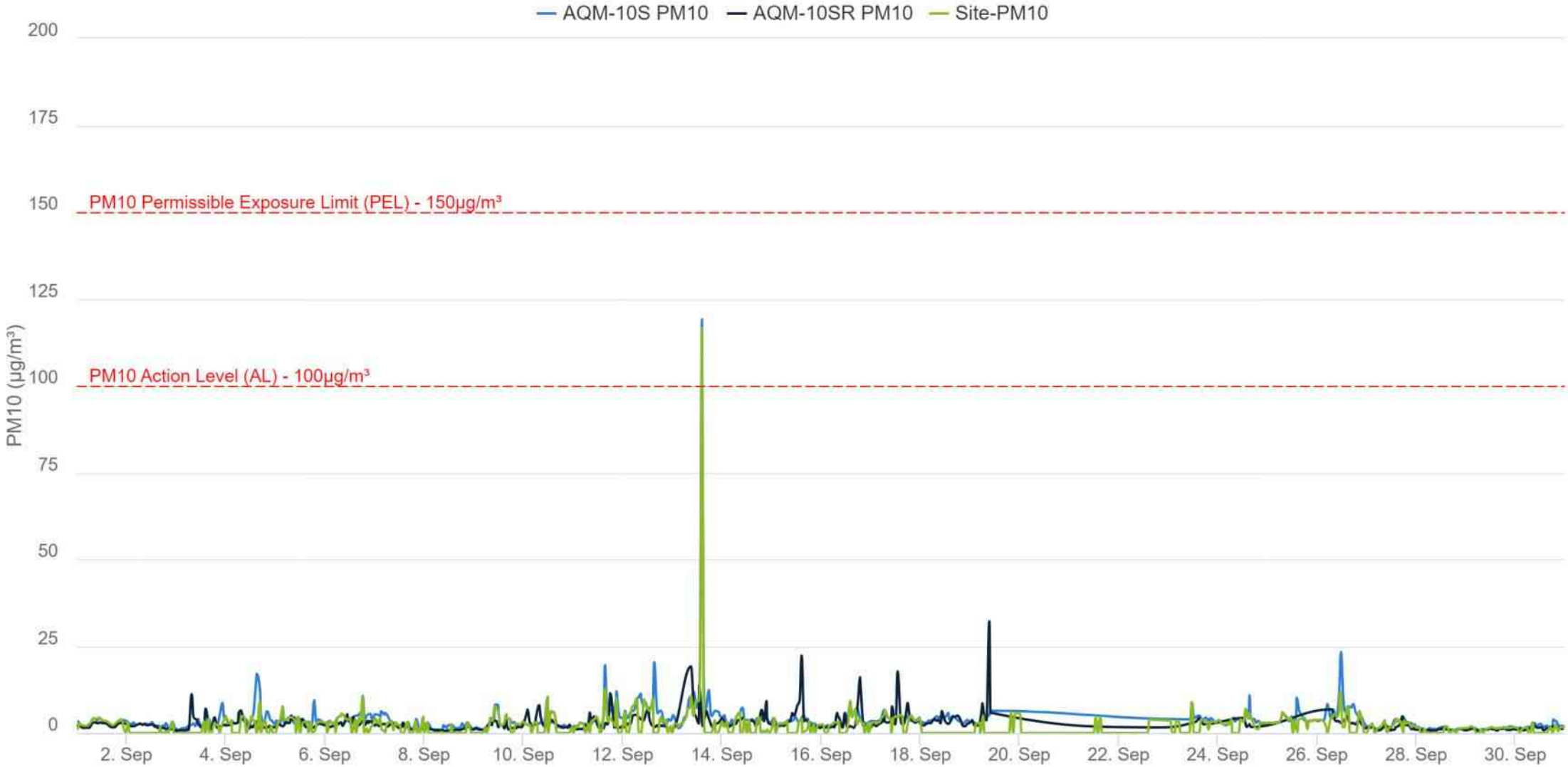
Reach H - PM2.5 - 15 min Running avg. (September 2024)

Reach H - PM10 - 15 min Running avg. (September 2024)



Reach I - PM2.5 - 15 min Running avg. (September 2024)

Reach I - PM10 - 15 min Running avg. (September 2024)



APPENDIX

I. ESCR Air Quality Management Program

Community health and safety is of utmost importance to the City of New York, the NYC Department of Design and Construction (DDC), and the East Side Coastal Resiliency Team. The ESCR Team is implementing a multi-level approach to Air Quality Management with includes:

- Step 1: Air Quality Management Plan
- Step 2: Daily Air Quality Mitigation Techniques
- Step 3: Daily Air Quality Monitoring
- Step 4: Air Quality oversight by environmental specialists

Step 1: The Air Quality Management Plan
The AQM Plan is submitted at the start of the project to outline the management of air quality for the project. It includes contractor roles and responsibilities, mitigation techniques, and action plans. This Plan is reviewed and approved by the Program Management / Construction Management (PMCM) Team HNTB-LiRo-Joint Venture, and the DDC.

Step 2: Daily Air Quality Mitigation Techniques
As mentioned in Chapter 6.6 of the EIS, Construction-Hazardous Materials Section "Dust management during soil-disturbing work would include the following: (1) use of water spray for roads, trucks, excavation areas and stockpiles; (2) use of anchored tarps to cover stockpiles; (3) use of truck covers during soil transport within site limits and during off-site transport; (4) employment of extra care during dry and/or high-wind periods; (5) use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface; and (6) use of a truck wheel wash at site access/egress points to prevent fugitive dust and off-site migration of dust and other particulates. The source(s) of any dust emissions would be identified and addressed immediately and appropriately.

Step 3: Daily Air Quality Monitoring
The air quality monitoring confirms the daily mitigation techniques in place are being implemented and are effective. Action levels are set to alert the contractor when a technique is not working, and adjustments are required to maintain the levels as set by the National Ambient Air Quality Standards (NAAQS) for PM pollution as mentioned above. Step 3 is implemented daily and mitigation techniques will vary depending on work activities. The EPA Standard Time Weighted Average (TWA) for analyzing PM levels is 24 hours, the ESCR project is analyzing levels more frequently at 15-minute TWA.

Step 4: Air Quality Oversight by Environmental Specialists
The oversight for environmental monitoring for the ESCR project is multi-tiered and includes relationships between several agencies and entities. As shown in the exhibit on the following page, a series of checks and balances have been implemented to assure compliance with environmental regulations. See *Fig. 4 East Side Coastal Resiliency Air Quality Monitoring Flow Chart*

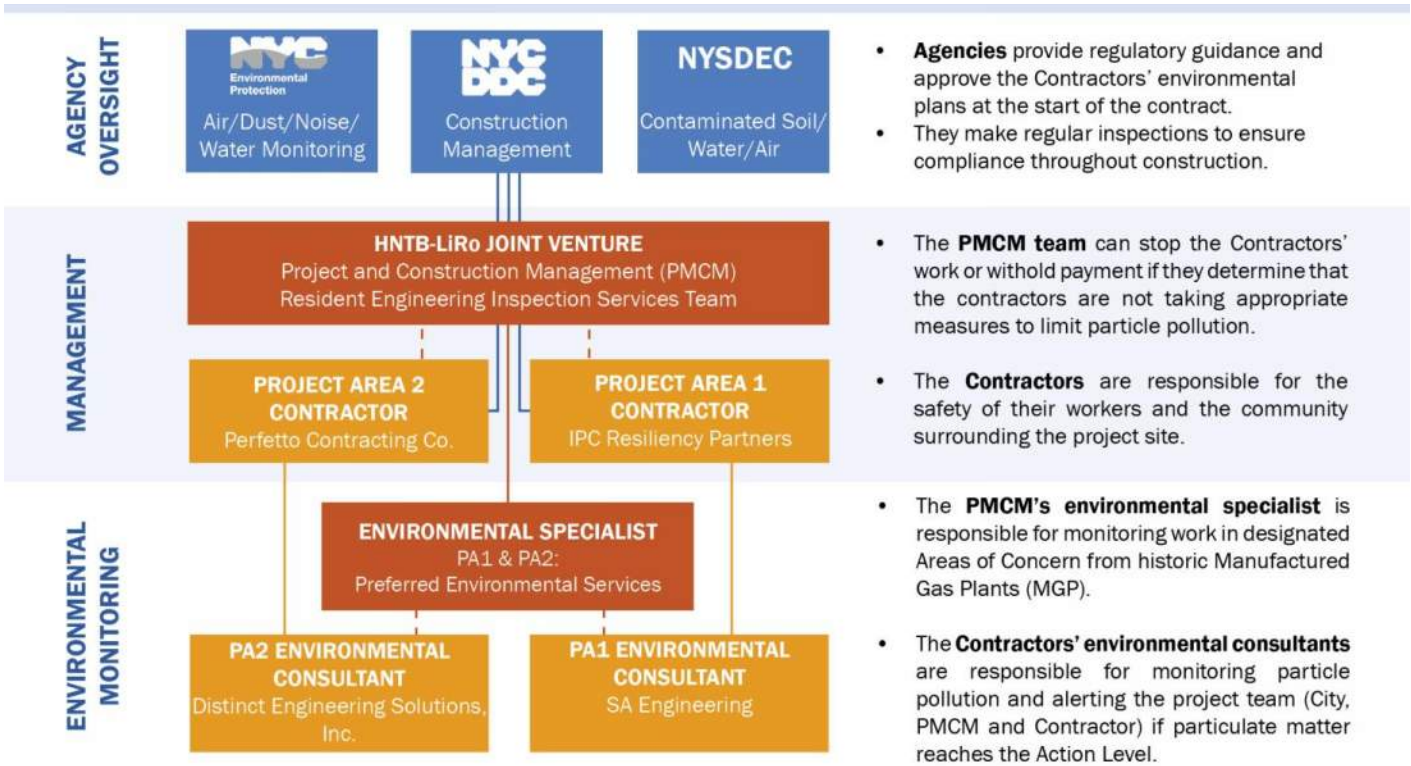


Fig.4 East Side Coastal Resiliency Air Quality Monitoring Flow Chart

II. RESOURCES

- ESCR Website:
- ESCR Environmental Review Process web page:
- FEIS Chapter 5.7 Hazardous Materials: https://www1.nyc.gov/assets/escr/downloads/pdf/FEIS/ESCR-EIS-Chapter-5.7-Hazardous-Materials.pdf
- FEIS Chapter 6.6 Construction Hazardous Materials: https://www1.nyc.gov/assets/escr/downloads/pdf/FEIS/ESCR-EIS-Chapter-6.6-Construction-Hazardous-Materials.pdf
- EPA Particulate Matter (PM) Pollution - Particulate Matter (PM) Basics: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM
- EPA Particulate Matter (PM) Pollution - Setting and Reviewing Standards to Control Particulate Matter (PM) Pollution: https://www.epa.gov/pm-pollution/setting-and-reviewing-standards-control-particulate-matter-pm-pollution
- EPA Particulate Matter (PM) Pollution - National Ambient Air Quality Standards (NAAQS) for PM: https://www.epa.gov/pm-pollution/national-ambient-air-quality-standards-naaqs-pm
- EPA Particulate Matter (PM) Pollution - Applying or Implementing Particulate Matter (PM) Standards: https://www.epa.gov/pm-pollution/applying-or-implementing-particulate-matter-pm-standards