EAST SIDE COASTAL RESILIENCY

SANDRESM1 | PROJECT AREA 1

AIR QUALITY MONITORING REPORT

Q2 | 2024

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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).

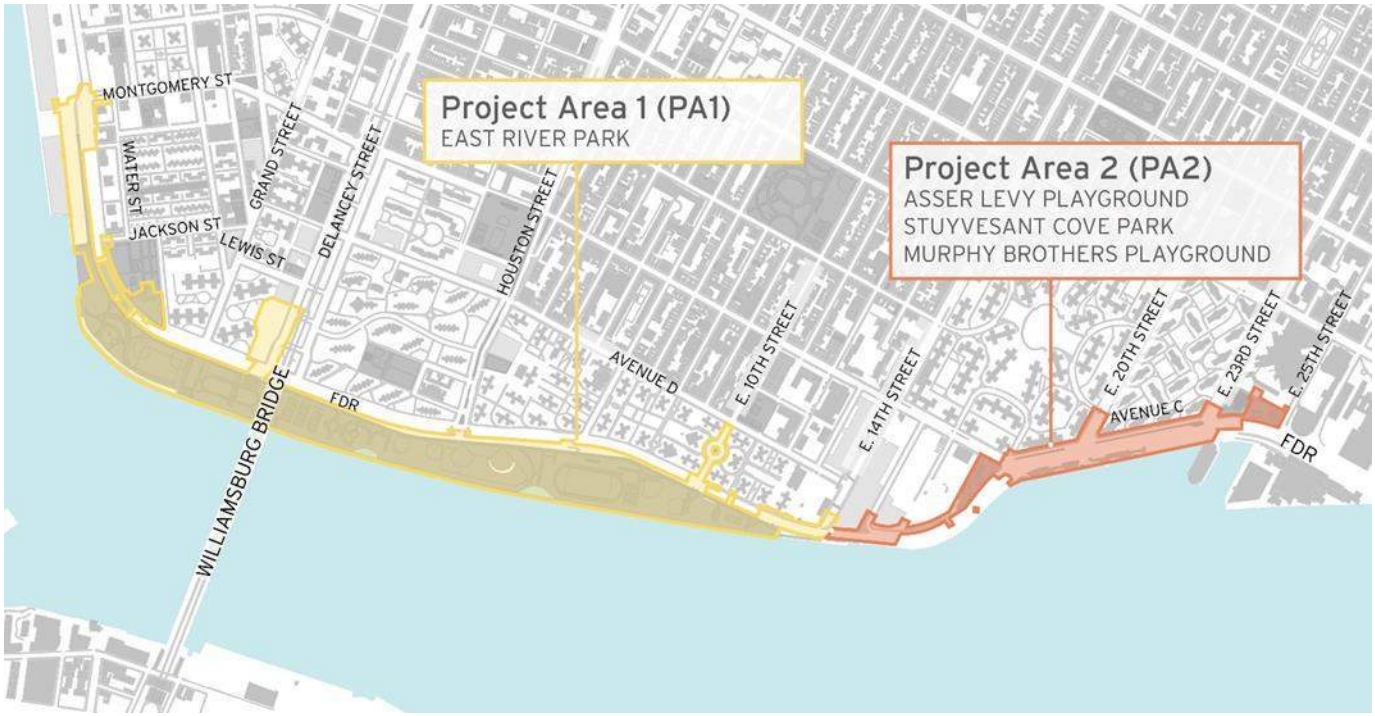


Fig.1 East Side Coastal Resiliency Project Areas

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.

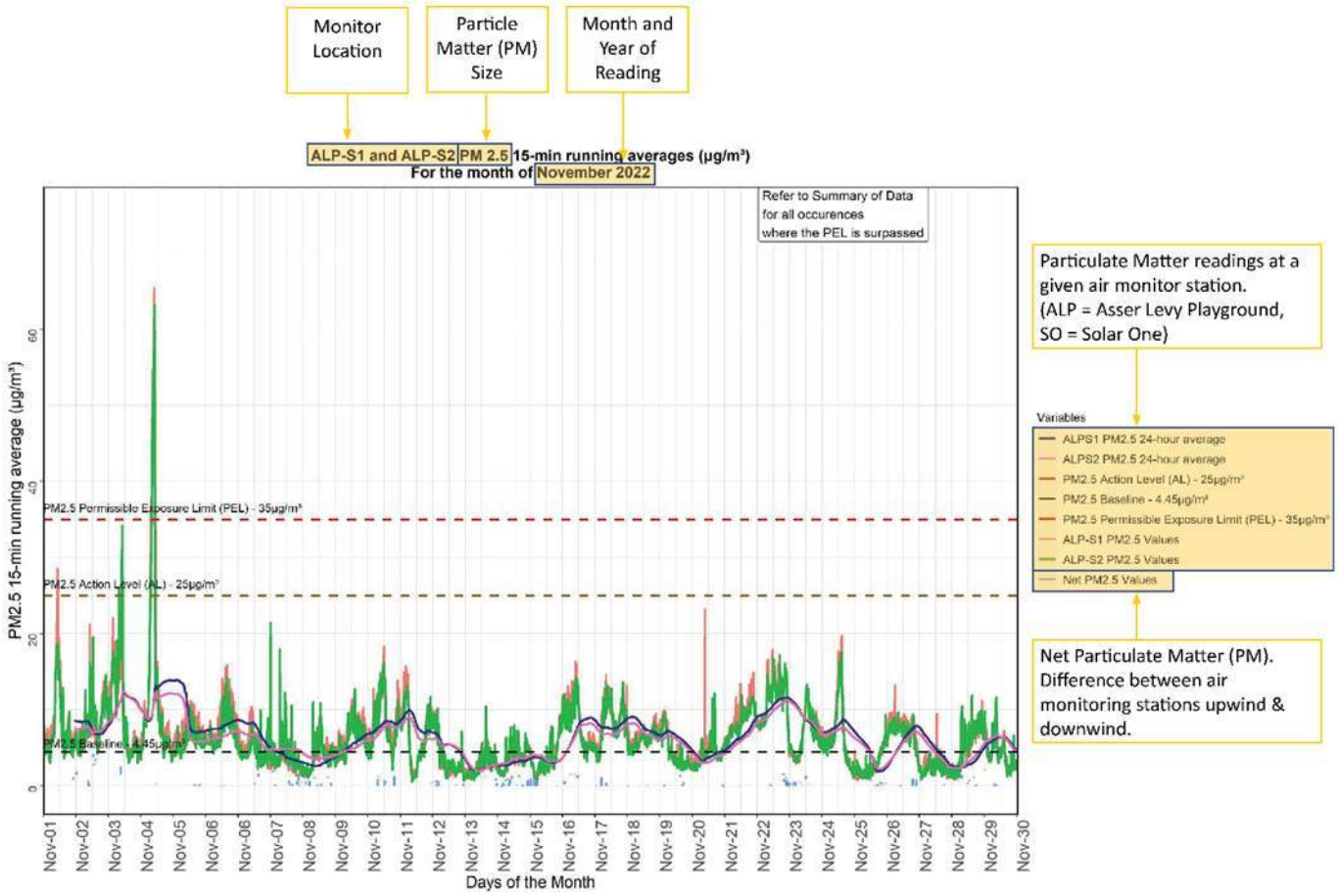


Fig.2 Sample Air Quality Data Plot

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 G and Reach F (respectively) at the locations shown above; the monitors began recording upon installation (Figure 3D).

Work Activities from April to June 2024:

Reach A:

- Excavate, drill, and grout micropiles;
- Re-mobilize construction equipment;
- Tree removal at Gouverneur Gardens; and
- Backfill and pave FDR on-ramp after micropile installation.

Reach B:

- Install manhole at carbon fiber vault (Saturday, 4/20, 7am - 3:30pm);
- ConEd steam excavation (M – F, Saturday 6/1 and Saturday - Sunday, 6/29 - 6/30; 7 AM - 3:30 PM); and
- Install temporary fencing at Pier 42 (Saturday 6/22, 7 AM - 3:30 PM).

Reach C:

- Unload and place fill (7 AM - 3:30 PM, Saturday 5/4);
- Construct and erect Delancey Street Bridge;
- Install precast for esplanade;
- Remove graffiti from Corlears Hook Bridge abutments;
- Form and pour esplanade decks (7 AM - 3:30 PM; M - F and Saturday, 5/4);
- Excavate and form for amphitheater footings (M - F and Saturday, 6/22; 7 AM - 3:30 PM); and
- Install FDR full closure signs in Corlears Hook Park (Saturday 6/1, 7 AM - 3:30 PM).

Reach D:

- Install precast esplanade sections;
- Form and pour esplanade decks, walls, and parks structures around Fireboat House (Monday - Friday and Saturday, 4/27 and 5/4, 7 AM - 3:30 PM);
- Install drainage structures and pipes;
- Install conduit around Fields 1/2;
- Install sheet waterproofing and drain board on esplanade;
- Grade and place stones for nature exploration area around Fireboat House;
- Sawcut cutoff cap for armored joint boxout;
- Form and pour Parks curbs and sidewalks (M - F, 7 AM - 3:30 PM); and
- Rub and patch parks concrete structures (M - F and Saturday, 6/1, 7 AM - 3:30 PM).

Reach E:

- Unload and place fill;
- Form and pour bridge structures at Delancey Street west;
- Mix, pour, and scarify Ultra High-Performance Concrete (UHPC) joints on esplanade;
- Install drain board and structural styrofoam on esplanade;
- Tree removal and transplanting at Delancey Street West;
- Unload and place fill;
- Excavate for utilities;
- Sawcut and remove FDR Drive barrier (9 PM - 5:30 AM; Monday - Saturday, 5/6 - 5/11);
- Install sheet waterproofing and drain board on esplanade;
- Mobilize equipment for Delancey Street bridge installation;
- Install Delancey Street bridge (9 PM Saturday 6/8 - 8:30 AM Sunday 6/9);

- Demobilize equipment from Delancey Street bridge installation;
- Backfill and grade multi-use field;
- Form and pour parks curbs and sidewalks and Williamsburg Bridge security wall;
- Weld and paint bearings for Delancey Street Bridge; and
- Install stones at Delancey Street east abutment and nature exploration area.

Reach F:

- Install cathodic protection on piers;
- Install precast beams and retaining walls on esplanade;
- Form and pour retaining wall curbs and cutoff caps;
- Remove pavement from old tennis courts;
- Unload and place fill;
- Install tie rods and walers;
- Demolish existing waterfront bulkhead;
- Form and pour cradle and set pipe for 36" interceptor;
- Pour UHPC on esplanade and prepare waterproofing;
- Install sheet waterproofing and drain board on esplanade; and
- Install temporary lighting on FDR Drive (9 PM Friday 5/31 - 5:30 AM Saturday 6/1).

Reach G:

- Screen and load out excavated material in Fields 3/4/5;
- Mass excavation for ground improvements;
- Work overnight 4/22 to pump out sewer after damaging regulator chamber (9 PM Monday 4/22 - 5:30 AM Tuesday 4/23);
- Install floodwall sheets;
- Demolish existing waterfront bulkhead;
- Form M-32 sewer;
- Form and pour M-32 chamber (M - F and Saturday, 6/22; 7 AM - 3:30 PM);
- Demolish and remove existing esplanade; and
- Drive piles for 36" sewer.

Reach J:

- Con Ed test pits at floodwall crossing; and
- Install pits for microtunneling across FDR Drive at 10th Street.

10th Street: (7:00 AM – 3:30 PM; M-F)

- Excavate and install sewer; and
- Watermain work on FDR service road.

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

Summary of Air Quality Monitoring Reports

For the months of April to June 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.

April 2024:

- PM2.5 levels surpassed the PEL (15-minute TWA) at AQM on April 19th and April 25th; AQM-GS on April 24th and April 26th; AQM-AT on April 1st; AQM-FB on April 1st and April 9th; AQM-3 on April 22nd; AQM-WB April 23rd, April 25th, April 26th, and April 30th; AQM-WBN on April 23rd; AQM-HS on April 23rd; AQM-5 on April 23rd and April 29th; AQM-4 on April 30th; AQM-TH on April 26th and April 29th; and AQM-10S on April 29th.

- PM10 levels surpassed the PEL (15-minute TWA) at AQM-6 on April 19th and April 25th; AQM-AT on April 1st; AQM-3 on April 22nd; AQM-WB on April 23rd; AQM-WBN on April 23rd; AQM-5 on April 23rd and April 29th; AQM-TH on April 29th; and AQM-10S on April 29th.

May 2024:

- PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-1 on May 22nd; AQM-GS on May 1st and May 2nd; AQM-6 on May 2nd; AQM-CHR on May 9th; AQM-CH on May 11th; AQM-FB on May 6th, May 8th, and May 29th; AQM-WB on May 15th and May 21st; AQM-3 on May 31st; AQM-4 on May 2nd, May 3rd, May 7th, May 9th, and May 31st; AQM-WBN on May 29th; AQM-TH on May 1st and May 2nd; AQM-5 on May 2nd, May 3rd, May 4th, May 22nd, and May 29th; and AQM-HS on May 8th and May 19th.

- PM10 levels surpassed the PEL (15-minute TWA) at AQM-1 on May 22nd; AQM-GS on May 2nd; AQM-6 on May 2nd; AQM-FB on May 6th and May 29th; AQM-WB on May 15th and May 21st; AQM-3 on May 31st; AQM-4 on May 3rd; AQM-5 on May 2nd, May 3rd, May 4th, May 22nd, and May 29th; and AQM-HS on May 19th.

June 2024:

- PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-1 on June 4th, June 26th, June 28th, and June 30th; AQM-GS on June 27th; AQM-CHR on June 14th, June 3rd, and June 9th; AQM-AT on June 1st; AQM-3 on June 10th; AQM-2 on June 19th and June 22nd; AQM-FB on June 1st, June 3rd, and June 26th; AQM-WB on June 3rd, June 5th, June 11th, and June 12th; AQM-5 on June 3rd, June 4th, June 5th, June 6th, and June 22nd; AQM-TH on June 3rd, June 4th, June 5th, June 12th, June 13th, June 14th, June 19th, June 20th, and June 21st; AQM-HS on June 22nd; and AQM-10SR on June 22nd, June 24th, and June 28th.

- PM10 levels surpassed the PEL (15-minute TWA) at AQM-1 on June 26th and June 30th; AQM-GS on June 27th AQM-6 on June 28th; AQM-FB on June 1st and June 26th; AQM-WB on June 5th; AQM-3 on June 10th; AQM-AT on June 19th; AQM-2 on June 19th; AQM-4 on June 1st; AQM-5 on June 3rd, June 4th, June 5th, June 6th, June 10th, and June 22nd; AQM-TH on June 4th, June 12th, June 13th, June 19th, and June 20th; AQM-HS on June 29th; and AQM-10SR on June 24th and June 28th.

Baselines:

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

Notes

- AQM-4 was disconnected from power and not monitoring from February 14th to April 22nd
- AQM-WB was disconnected from power and not monitoring from March 31st to April 22nd
- AQM-TH was disconnected from power and not monitoring from March 16th to April 15th

PART 2

Summary of Data April 2024

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

- AQM-6 on 4/19 for 17 minutes and 4/25 for 18 minutes;
- AQM-GS on 4/24 for 23 minutes and 4/26 for 27 minutes;
- AQM-AT on 4/1 for 116 minutes;
- AQM-FB on 4/1 for 20 minutes and 4/9 for 15 minutes;
- AQM-3 on 4/22 for 24 and 18 minutes;
- AQM-WB on 4/23 for 21 minutes, 4/25 for 29 minutes, 4/26 for 16 minutes, and 4/30 for 17 minutes;
- AQM-WBN on 4/23 for 62 minutes;
- AQM-4 on 4/30 for 25 minutes;
- AQM-HS on 4/23 for 27 minutes;
- AQM-5 on 4/23 for 26 minutes and 4/29 for 62 and 27 minutes;
- AQM-TH on 4/26 for 24 minutes and 4/29 for 53 minutes; and
- AQM-10S on 4/29 for 16 minutes.

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

- AQM-6 on 4/19 for 14 minutes and 4/25 for 12 minutes;
- AQM-AT on 4/1 for 116 minutes;
- AQM-3 on 4/22 for 30 minutes and 23 minutes;
- AQM-WB on 4/23 for 15 minutes;
- AQM-WBN on 4/23 for 80 minutes;
- AQM-5 on 4/23 for 53 minutes and 4/29 for 62 and 29 minutes;
- AQM-TH on 4/29 for 30 minutes; and
- AQM-10S on 4/29 for 16 minutes.

<u>For the month of April 2024, PM net 2.5 levels were surpassed on 4/1, 4/9, 4/19, 4/22, 4/23, 4/24, 4/25, 4/26, 4/29, and 4/30. PM net 10 were exceeded on 4/1, 4/19, 4/22, 4/23, and 4/25.</u>

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

PM 2.5 µg/m^3

- PM 2.5 µg/m^3 levels surpassed the PEL (15-minute TWA) on 22 occasions (4/1, 4/9, 4/19, 4/22, 4/23, 4/24, 4/25, 4/26, 4/29, and 4/30) for between 16 and 116 minutes.
    - AQM-6 is located on the corner of South Street and Gouverneur's Slip East; elevated readings on 4/19 and 4/25 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-GS is located on the corner of South Street and Gouverneur's Slip East; elevated readings on 4/24 and 4/26 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 4/1 were related to onsite construction activity. A water truck was deployed to mitigate airborne dust.

- AQM-FB is located in the vicinity of the Fire Boat House; elevated readings on 4/1 and 4/9 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 4/22 were related to unknown off-site activities.
- AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; elevated readings on 4/23, 4/25, 4/26, and 4/30 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-WBN is north of the Williamsburg Bridge; the elevated readings on 4/23 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-4 is located adjacent to the shared use path/construction access road in Reach F; elevated readings on 4/30 were related to on-site construction activity. 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 4/23 were related to on-site construction activity. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-5 is located between Houston Street and East 6th Street.
    - Elevated readings on 4/23 were related to on-site construction activity. Dust mitigation measures were deployed to mitigate airborne dust.
    - Elevated readings on 4/29 were related to construction vehicle traffic. 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; the elevated readings on 4/26 and 4/29 were related to construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-10S is located west of the FDR on East 10th Street; the elevated readings on 4/29 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) 12 occasions (4/1, 4/19, 4/22, 4/23, and 4/25) for between 12 and 116 minutes.
    - AQM-6 is located on the corner of South Street and Gouverneur's Slip East; elevated readings on 4/19 and 4/25 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 4/1 were related to onsite construction activity. A water truck was deployed to mitigate airborne dust.
    - AQM-3 is located is located west of the FDR on Delancey Street; elevated readings on 4/22 were related to unknown off-site activities.
    - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; elevated readings on 4/23 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-WBN is north of the Williamsburg Bridge; the elevated readings on 4/23 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-5 is located between Houston Street and East 6th Street.
        - Elevated readings on 4/23 were related to on-site construction activity. Dust mitigation measures were deployed to mitigate airborne dust.

        - Elevated readings on 4/29 were related to construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-10S is located west of the FDR on East 10th Street; the elevated readings on 4/29 were related to on-site construction activity. Dust mitigation measures were deployed to mitigate airborne dust.

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.

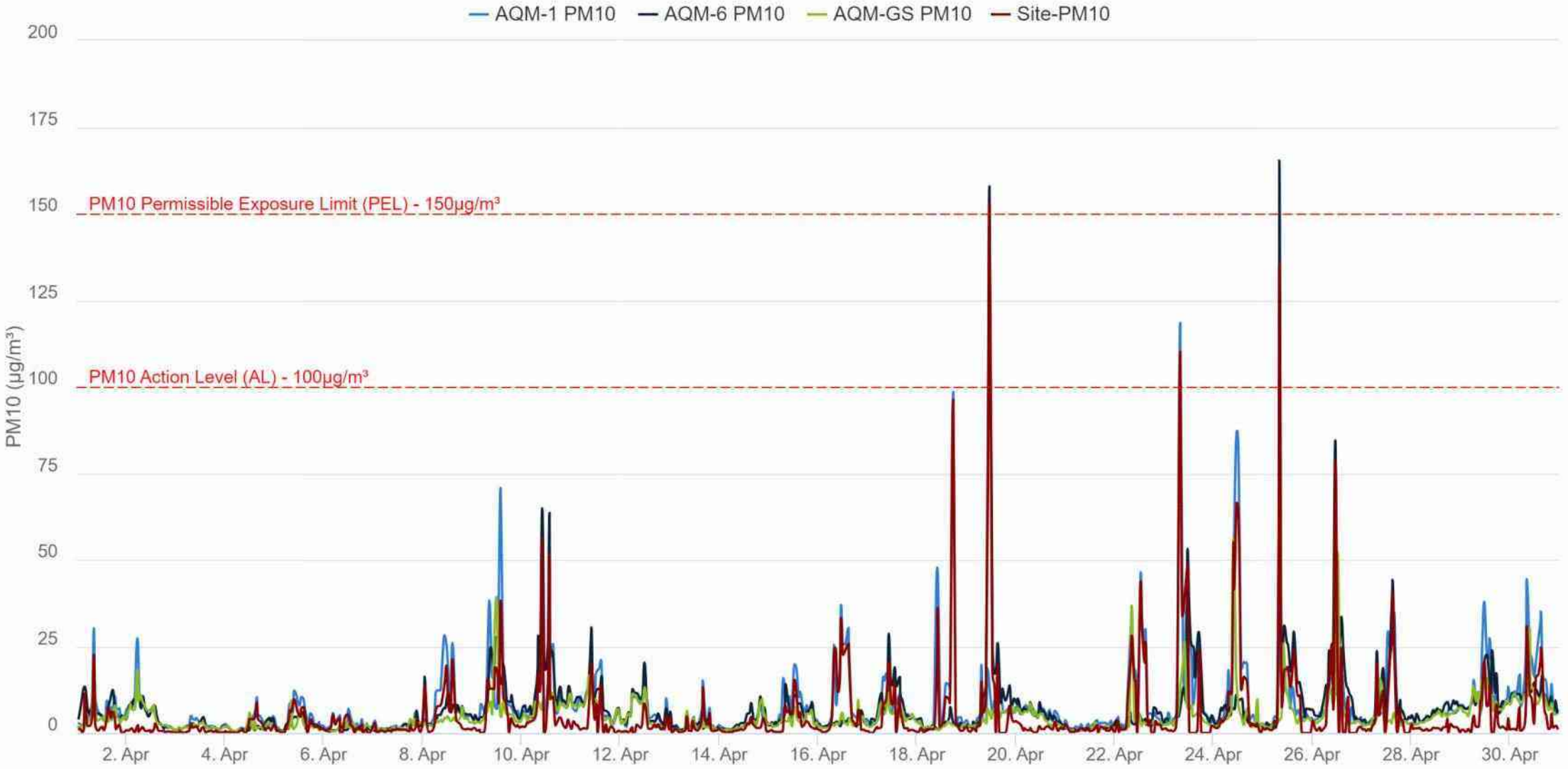
Notes

- AQM-4 was disconnected from power and not monitoring from February 14th to April 22nd
- AQM-WB was disconnected from power and not monitoring from March 31st to April 22nd
- AQM-TH was disconnected from power and not monitoring from March 16th to April 15th

APRIL 2024 DATA PLOTS

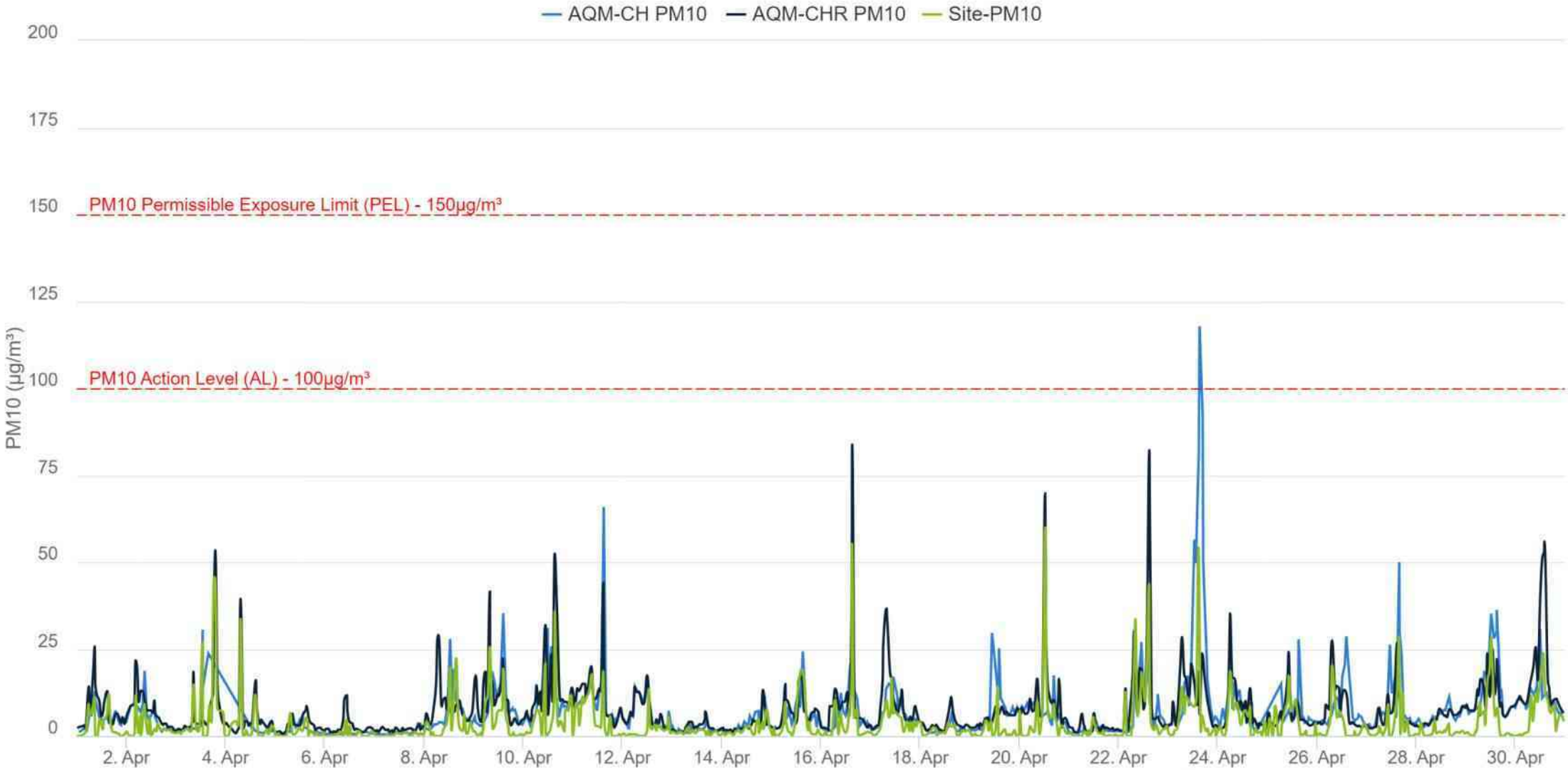
Reach A - PM2.5 - 15 min Running avg. (April 2024)

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

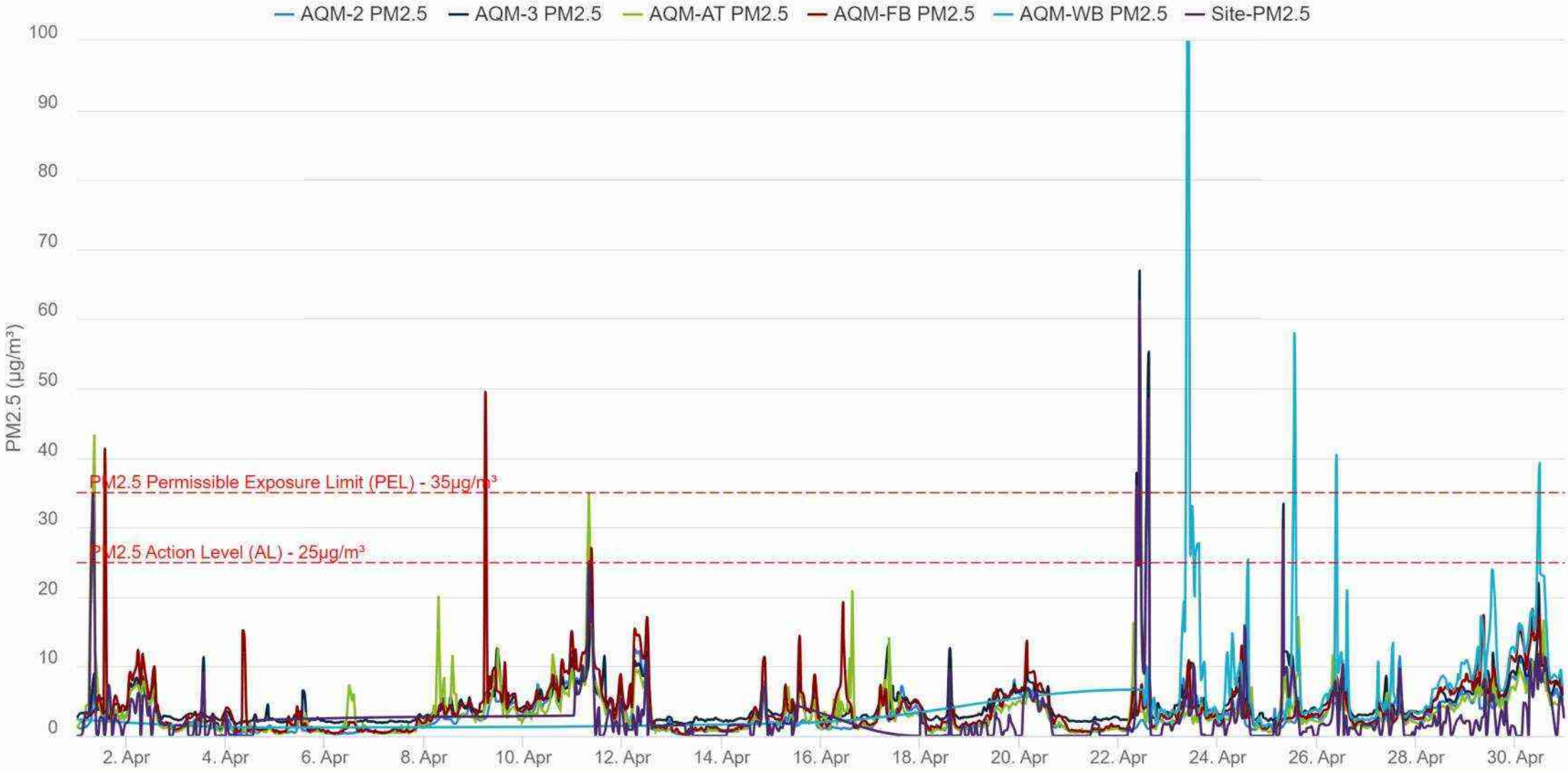


Reach B - PM2.5 - 15 min Running Avg. (April 2024)

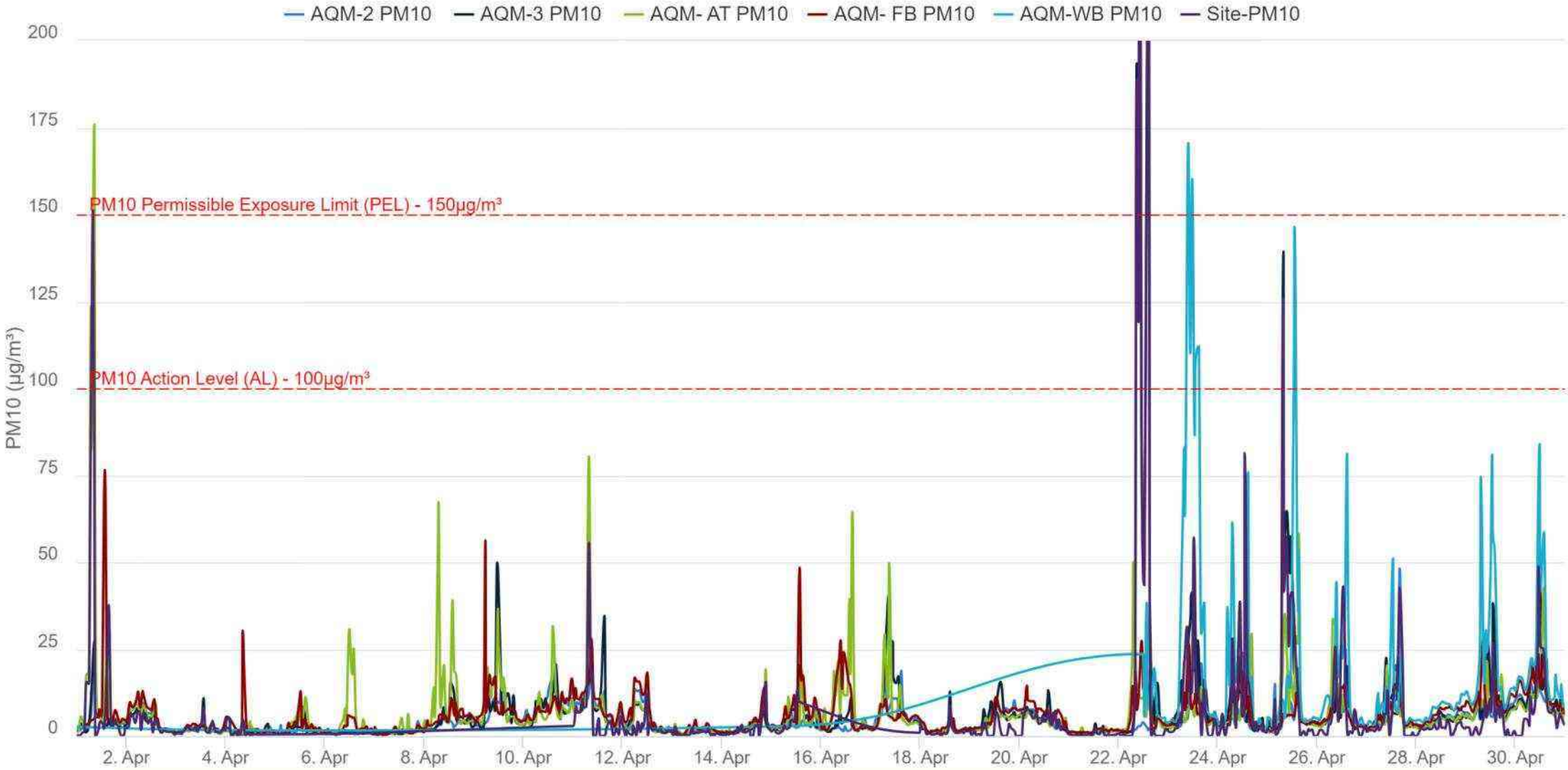
Reach B - PM10 - 15 min Running avg. (April 2024)



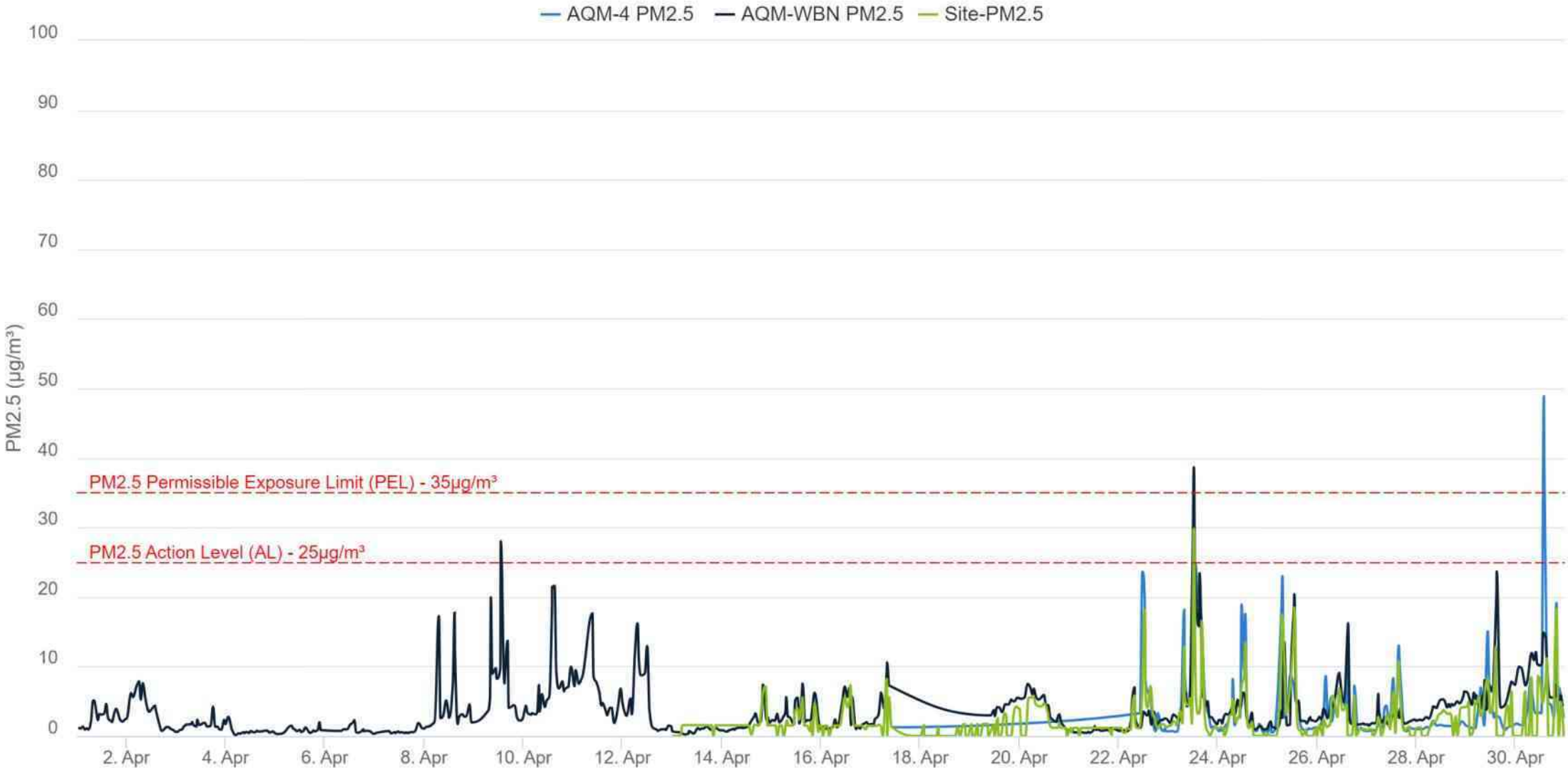
Reach C,D,E - PM2.5 - 15 min Running avg. (April 2024)



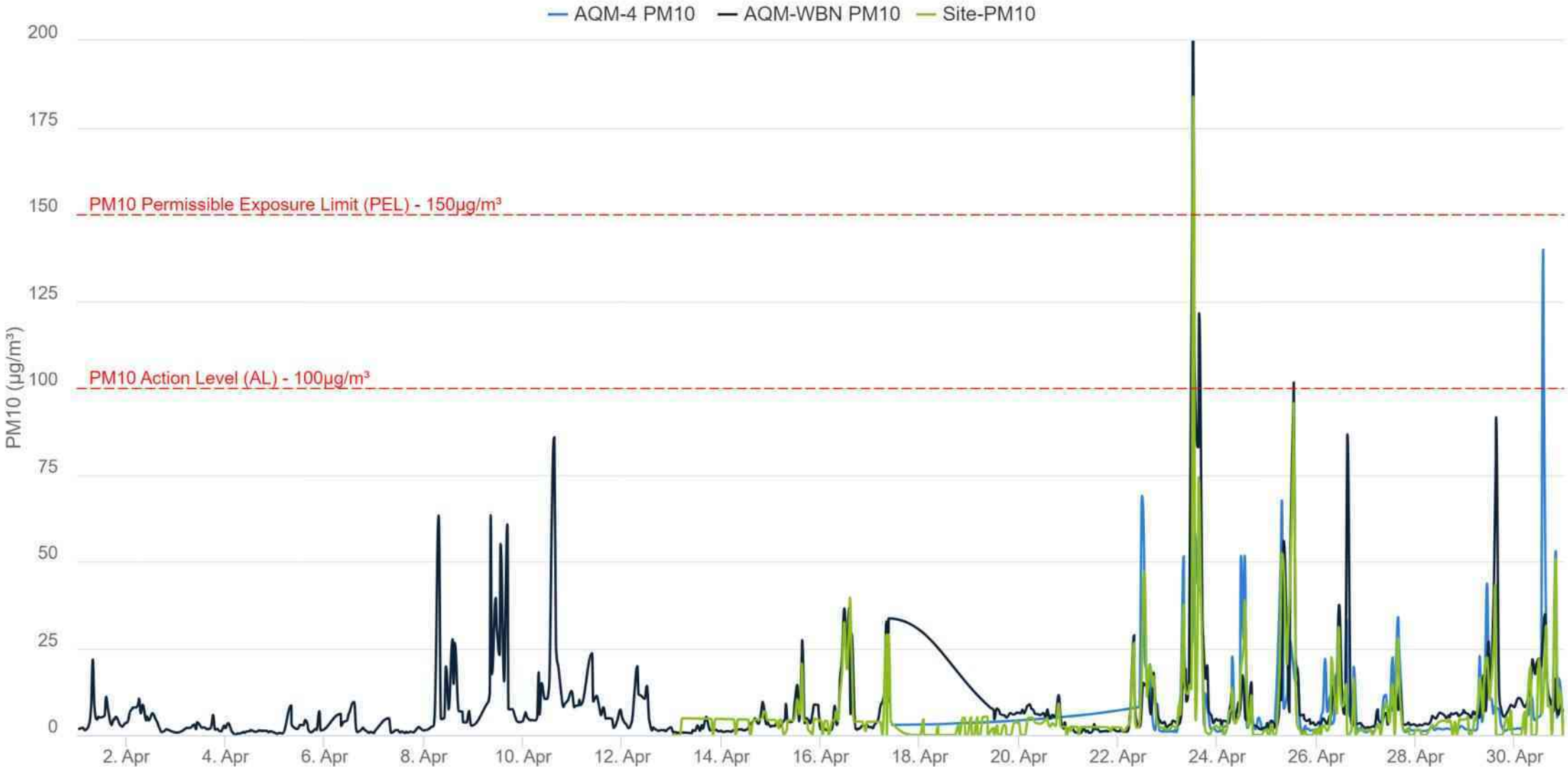
Reach C,D,E - PM10 - 15 min Running avg. (April 2024)



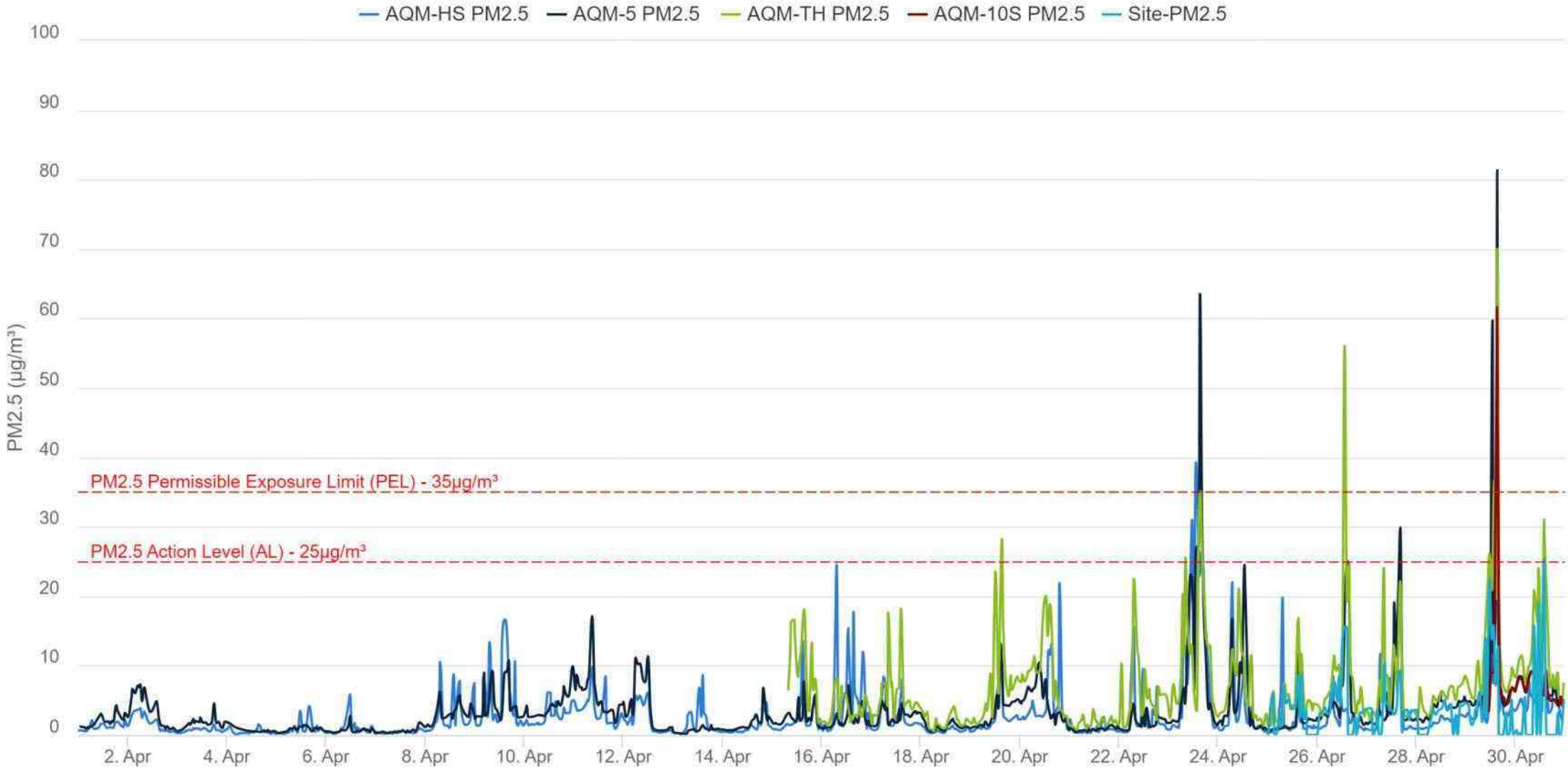
Reach F - PM2.5 - 15 min Running avg. (April 2024)



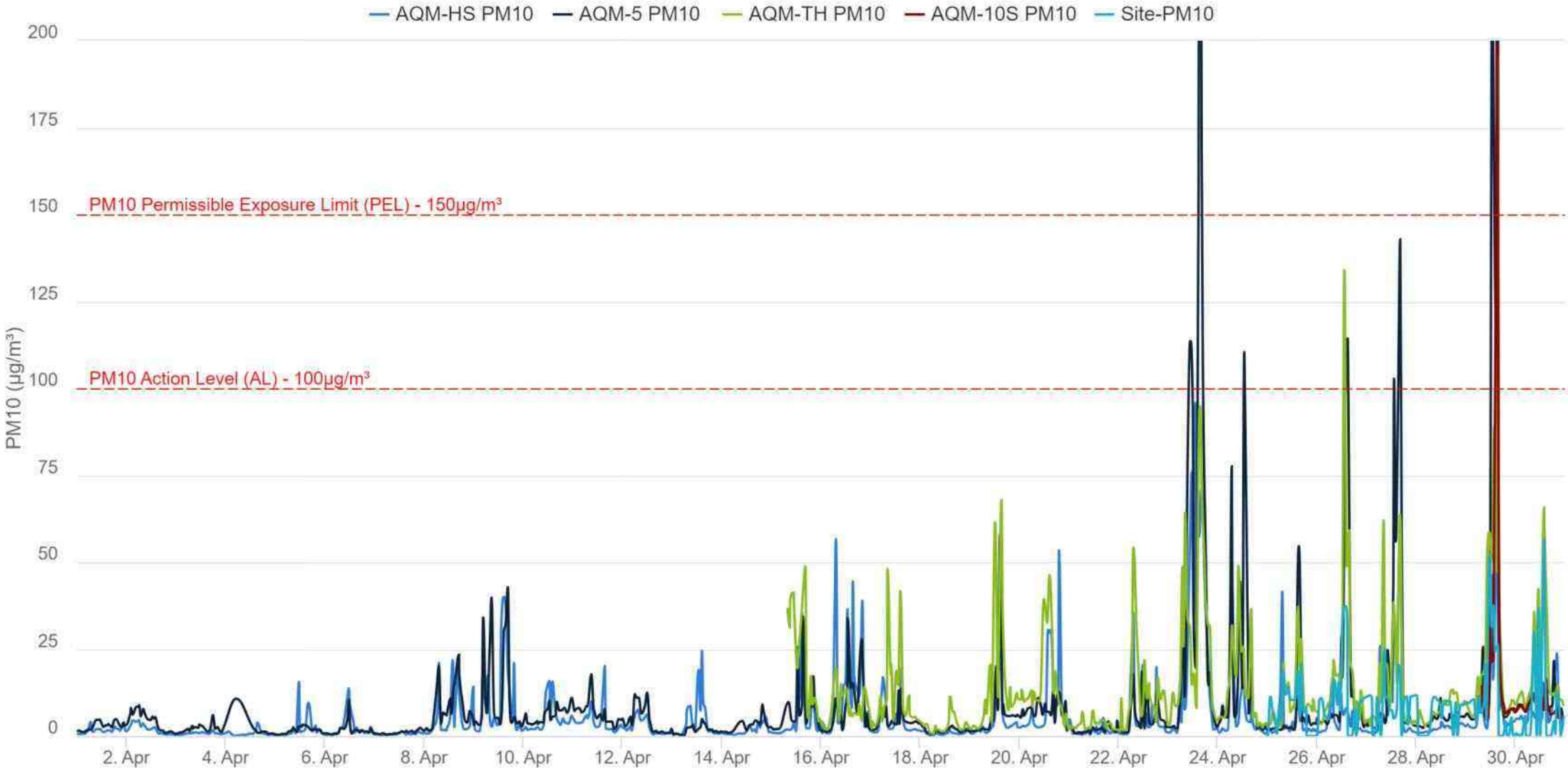
Reach F - PM10 - 15 min Running avg. (April 2024)



Reach G,H & I - PM2.5 - 15 min Running avg. (April 2024)



Reach G, H & I - PM10 - 15 min Running avg. (April 2024)



Summary of Data May 2024

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

- AQM-1 on 5/22 for 14 minutes and 11 minutes;
- AQM-GS on 5/1 for 18 minutes and 5/2 for 54 minutes;
- AQM-6 on 5/2 for 27 minutes;
- AQM-CHR on 5/9 for 16 minutes;
- AQM-CH on 5/11 for 22 minutes;
- AQM-FB on 5/6 for 99 minutes, 5/8 for 22 minutes, and 5/29 for 21 minutes;
- AQM-WB on 5/15 for 17 minutes and 16 minutes and 5/21 for 16 minutes and 32 minutes;
- AQM-3 on 5/31 for 32 minutes;
- AQM-4 on 5/2 for 16 minutes, 5/3 for 18 minutes, 5/7 for 29 minutes, 5/9 for 17 minutes, and 5/31 for 15 minutes;
- AQM-WBN on 5/29 for 14 minutes;
- AQM-TH on 5/1 for 25 minutes and 68 minutes and 5/2 for 35 minutes and 38 minutes;
- AQM-5 on 5/2 for 16 minutes, 5/3 for 42 minutes and 5/4 for 16 minutes, 5/22 for 71 minutes, and 5/29 for 19 minutes; and
- AQM-HS on 5/8 for 19 minutes and 5/19 for 2 minutes.

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

- AQM-1 on 5/22 for 15 minutes;
- AQM-GS on 5/2 for 36 minutes;
- AQM-6 on 5/2 for 17 minutes;
- AQM-FB on 5/6 for 67 minutes and 5/29 for 12 minutes;
- AQM-WB on 5/15 for 15 minutes and 5/21 for 32 minutes;
- AQM-3 on 5/31 for 32 minutes;
- AQM-4 on 5/3 for 18 minutes;
- AQM-5 on 5/2 for 17 minutes, 5/3 for 48 minutes, 5/4 for 19 minutes, 5/22 for 72 minutes, and 5/29 for 20 minutes; and
- AQM-HS on 5/19 for 2 minutes.

For the month of May 2024, PM net 2.5 levels were exceeded on 5/2, 5/3, 5/4, 5/6, 5/7, 5/8, 5/9, 5/11, 5/15, 5/19, 5/21, 5/22, 5/29, 5/30, and 5/31. PM net 10 levels were exceeded on 5/2, 5/3, 5/7, 5/9, 5/19, 5/22, 5/29, and 5/31.

For the month of May 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 33 occasions (5/1, 5/2, 5/3, 5/4, 5/6, 5/7, 5/8, 5/9, 5/11, 5/15, 5/19, 5/21, 5/22, 5/29, and 5/31) for between 2 and 99 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 5/22 were related to on-site construction vehicle traffic. 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 5/2 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-GS is located on the corner of South Street and Gouverneur's Slip East; elevated readings on 5/1 and 5/2 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 5/9 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-CH is located on Jackson Street adjacent to the FDR; elevated readings on 5/11 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; elevated readings on 5/6, 5/8, and 5/29 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 5/15 and 5/21 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-WBN is north of the Williamsburg Bridge; the elevated readings on 5/29 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 5/31 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
- AQM-4 is located adjacent to the shared use path/construction access road in Reach F.
    - Elevated readings on 5/2, 5/3, and 5/9 were related to on-site construction activity. Dust mitigation measures were deployed to mitigate airborne dust.
    - Elevated readings on 5/31 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
    - Elevated readings on 5/7 were related to unknown off-site activities.
- 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 5/1 and 5/2 were related to on-site construction vehicle traffic. 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 5/8 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
    - Elevated readings on 5/19 were related to anomalous readings during instrument maintenance.
- AQM-5 is located between Houston Street and East 6th Street.
    - Elevated readings on 5/4 and 5/22 were related to on-site construction activity. Dust mitigation measures were deployed to mitigate airborne dust.
    - Elevated readings on 5/2, 5/3, and 5/29 were related to construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.

PM 10 µg/m^3

- PM 10 µg/m^3 levels surpassed the PEL on 15 occasions (5/2, 5/3, 5/4, 5/6, 5/15, 5/19, 5/21, 5/22, 5/29, and 5/31) for between 2 and 72 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 5/22 were related to on-site construction vehicle traffic. 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 5/2 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-GS is located on the corner of South Street and Gouverneur's Slip East; elevated readings on 5/2 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; elevated readings on 5/6 and 5/29 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 5/15 and 5/291were 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 5/31 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-4 is located adjacent to the shared use path/construction access road in Reach F; elevated readings on 5/3 were related to on-site construction activity. 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 5/19 were related to anomalous readings during instrument maintenance.
    - AQM-5 is located between Houston Street and East 6th Street.
        - Elevated readings on 5/4 and 5/22 were related to on-site construction activity. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 5/2, 5/3, and 5/29 were related to construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.

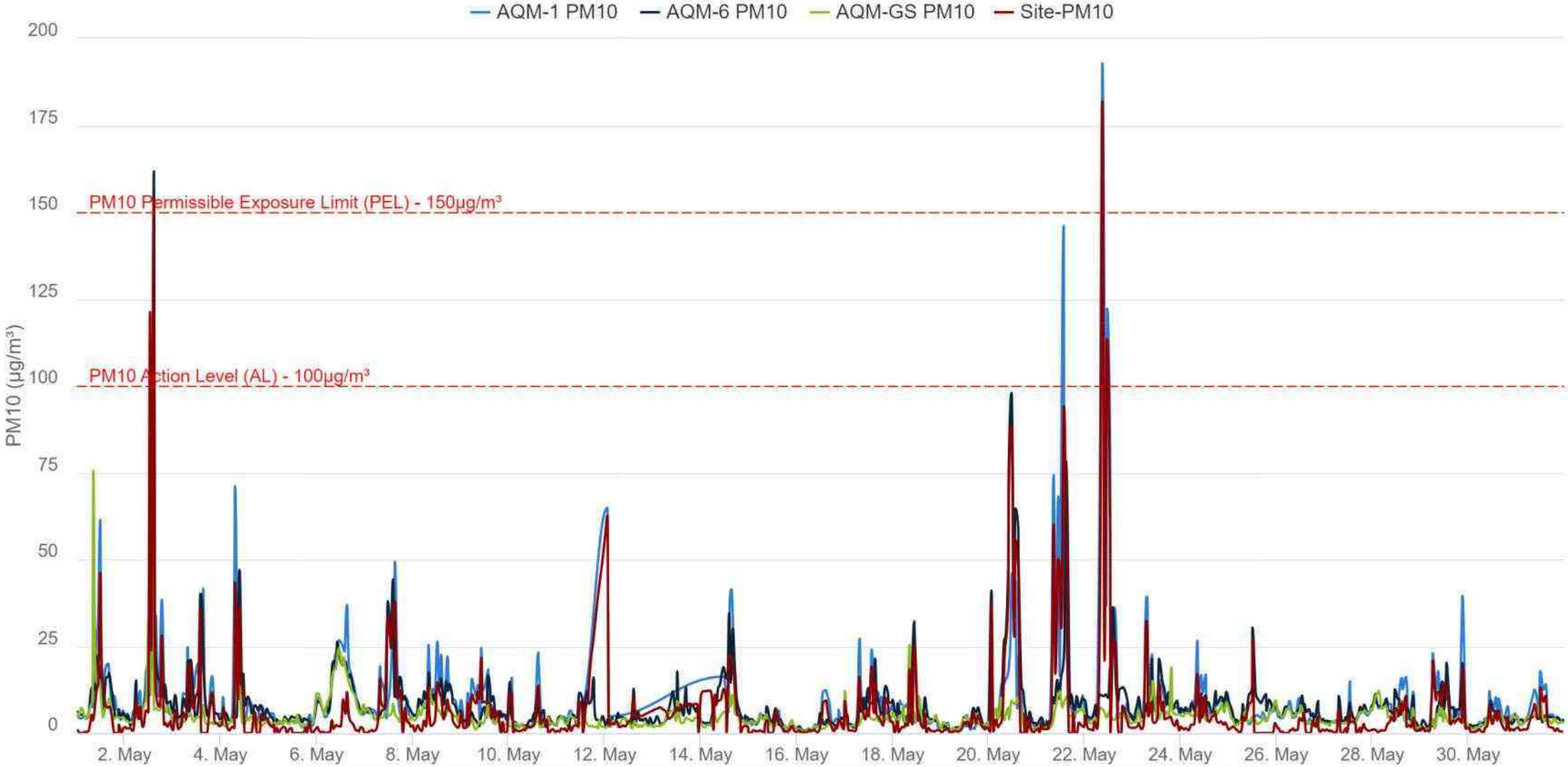
Mitigation Measures:

- 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.

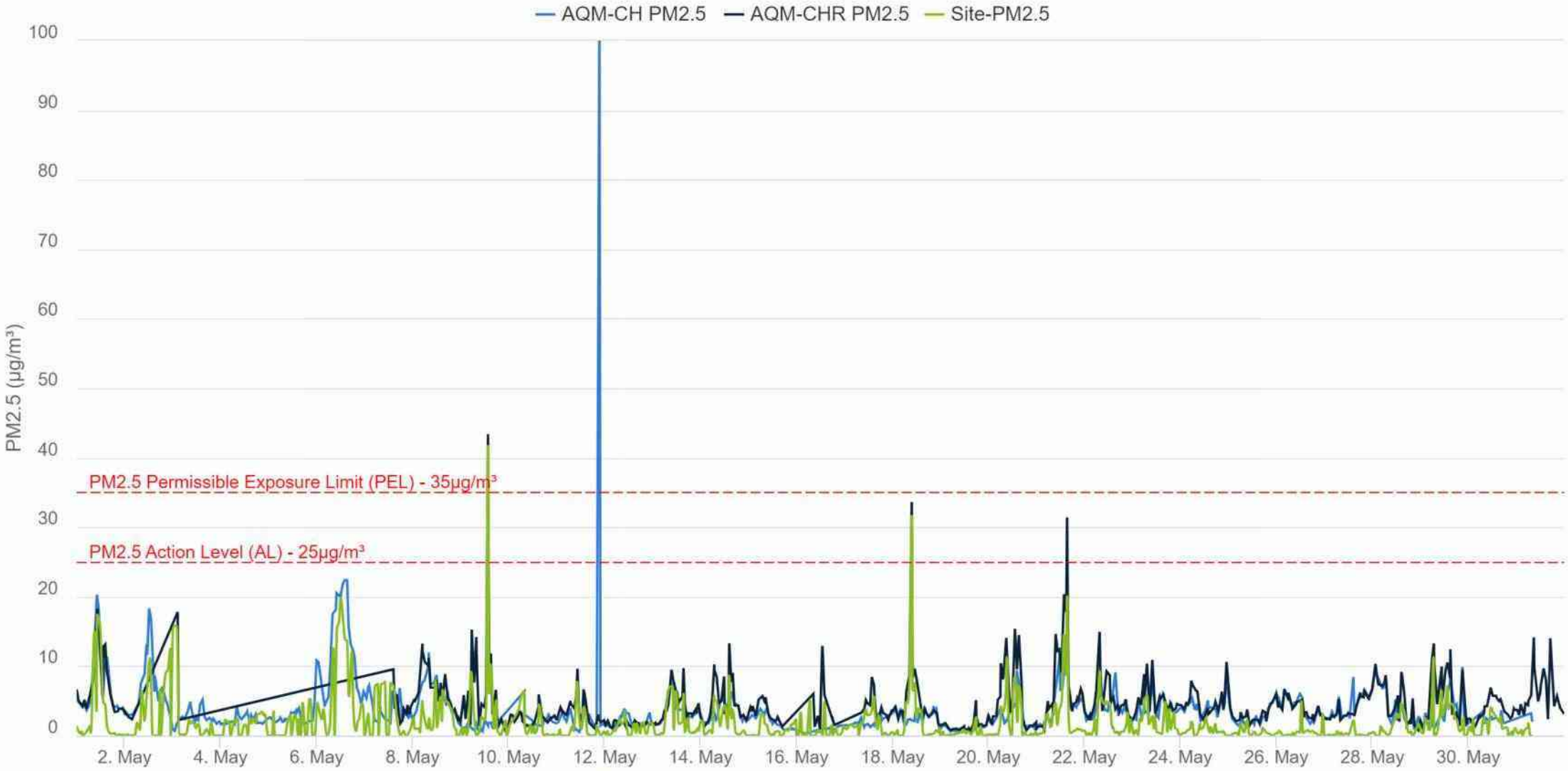
MAY 2024 DATA PLOTS

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

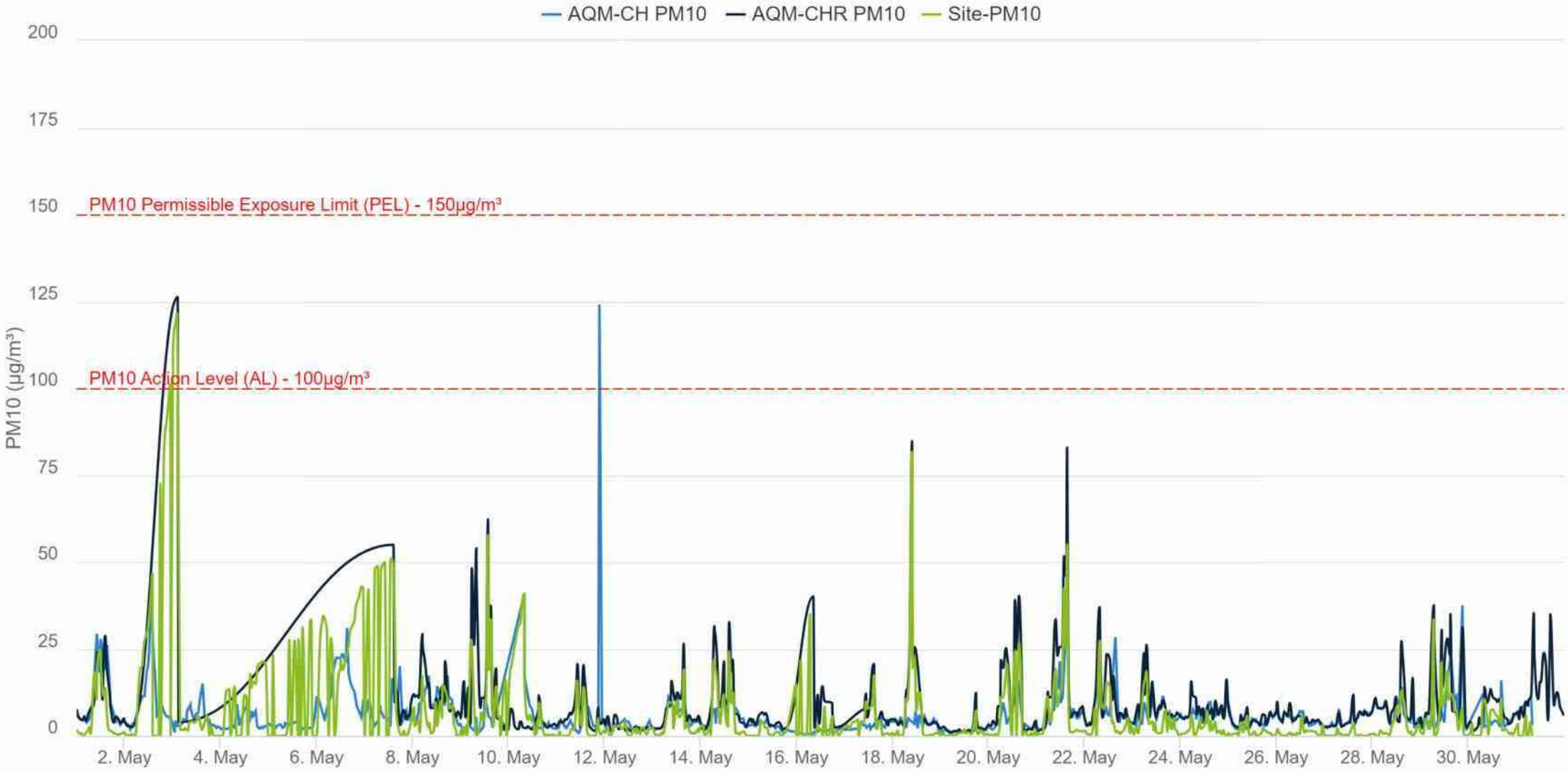
Reach A - PM10 - 15 min Running Avg. (May 2024)



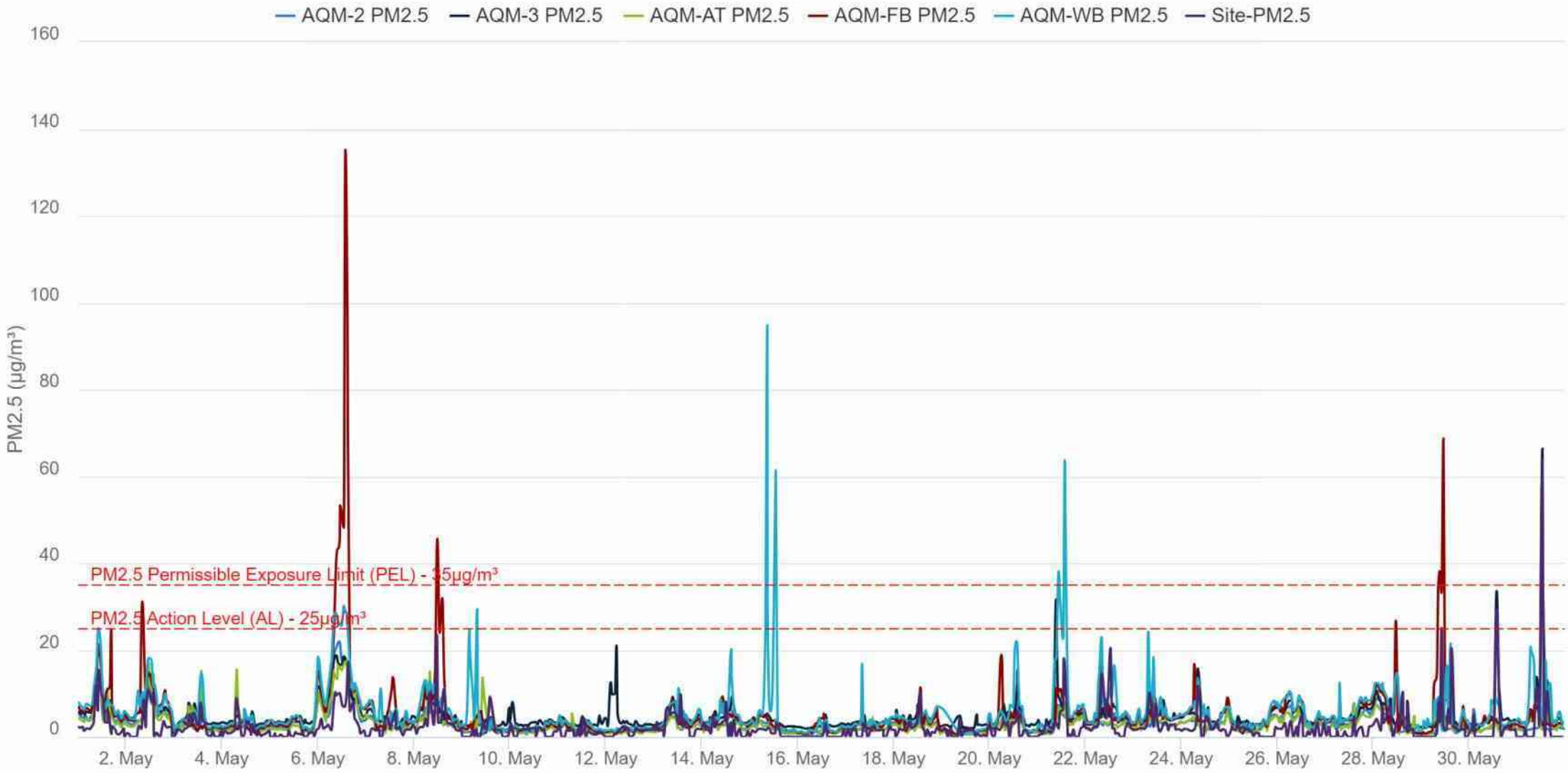
Reach B - PM2.5 - 15 min Running Avg. (May 2024)



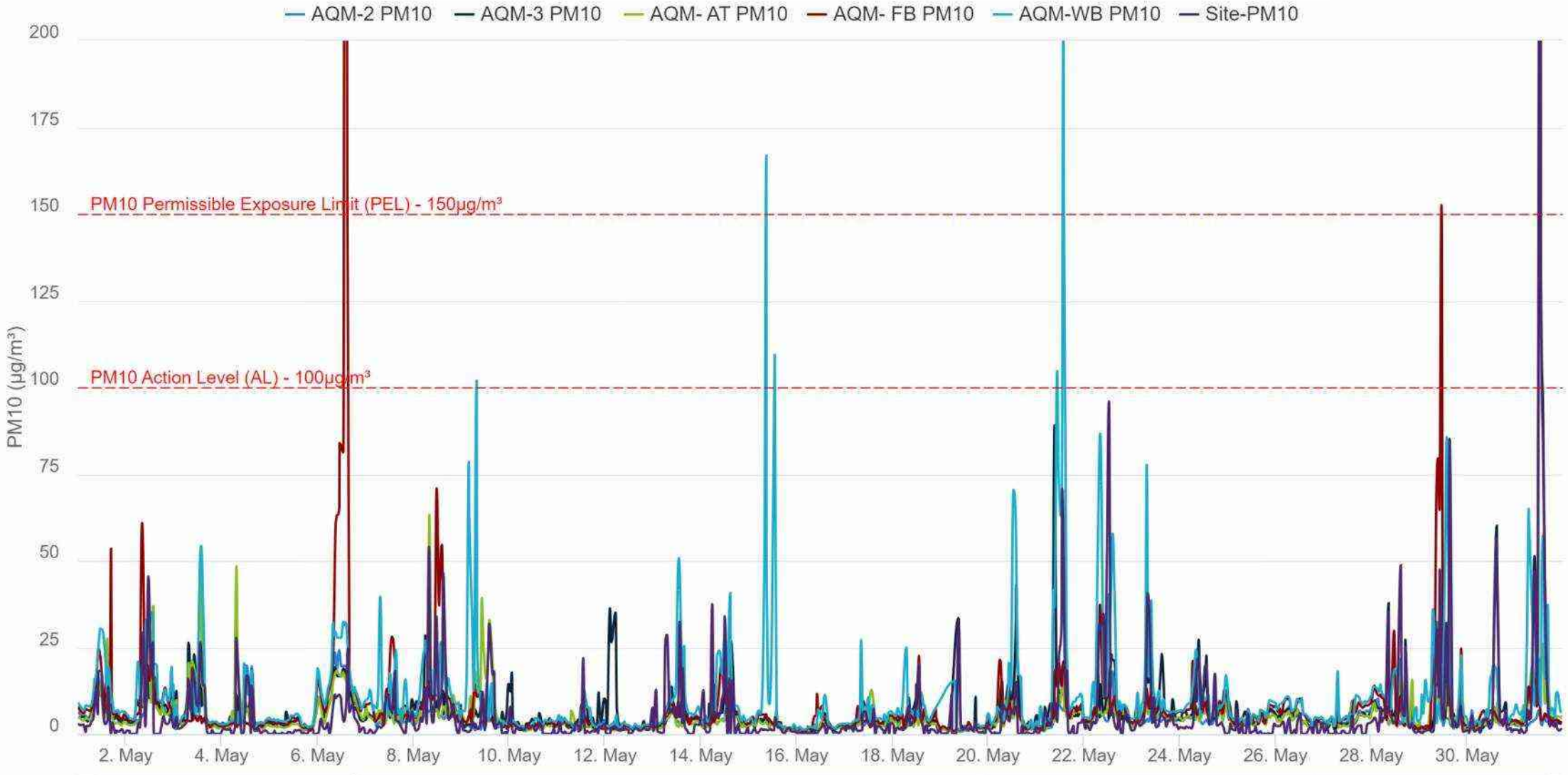
Reach B - PM10 - 15 min Running avg. (May 2024)



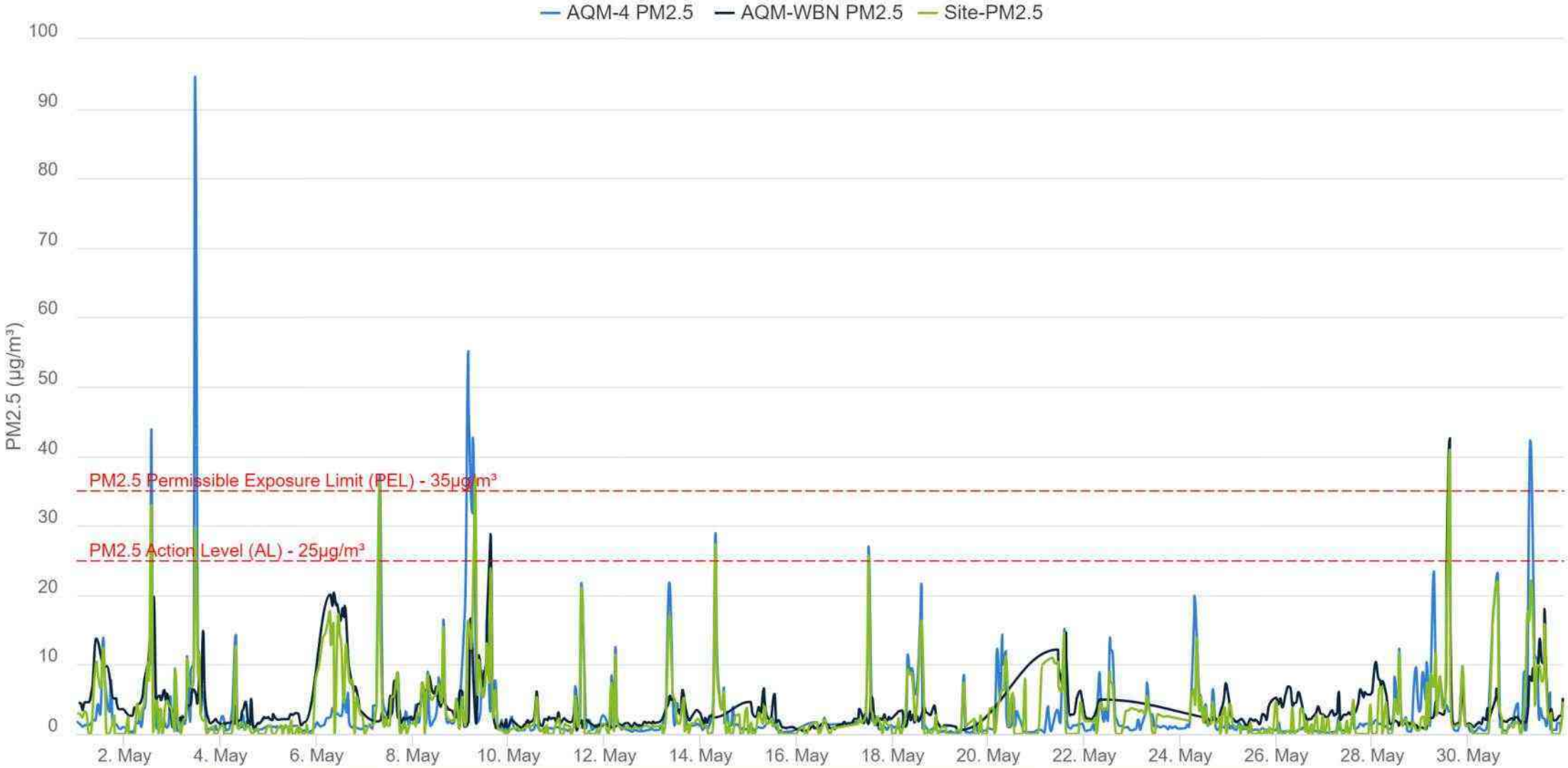
Reach C,D,& E - PM2.5 - 15 min Running Avg. (May 2024)



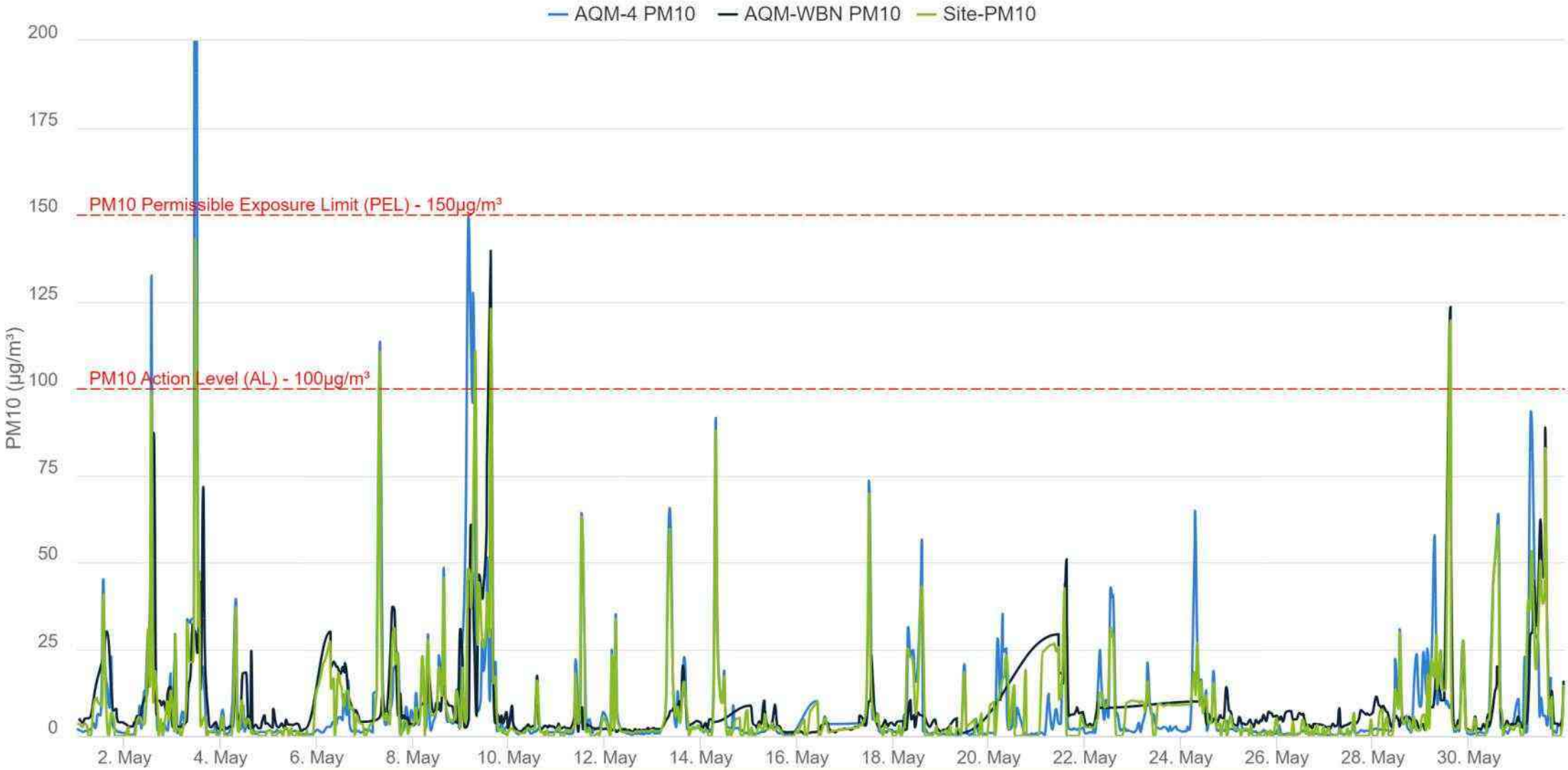
Reach C,D,& E - PM10 - 15 min Running avg. (May 2024)



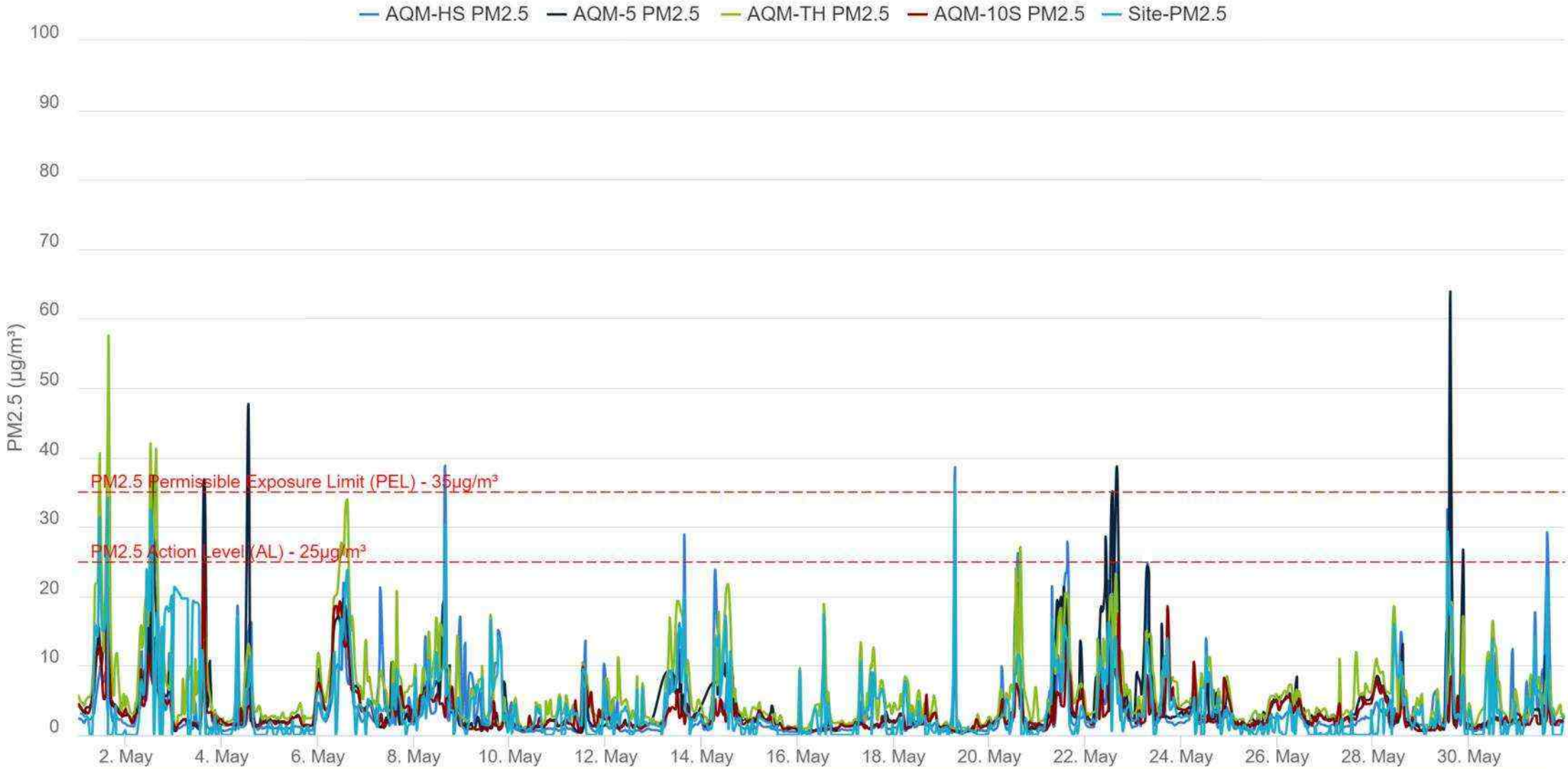
Reach F - PM2.5 - 15 min Running avg. (May 2024)



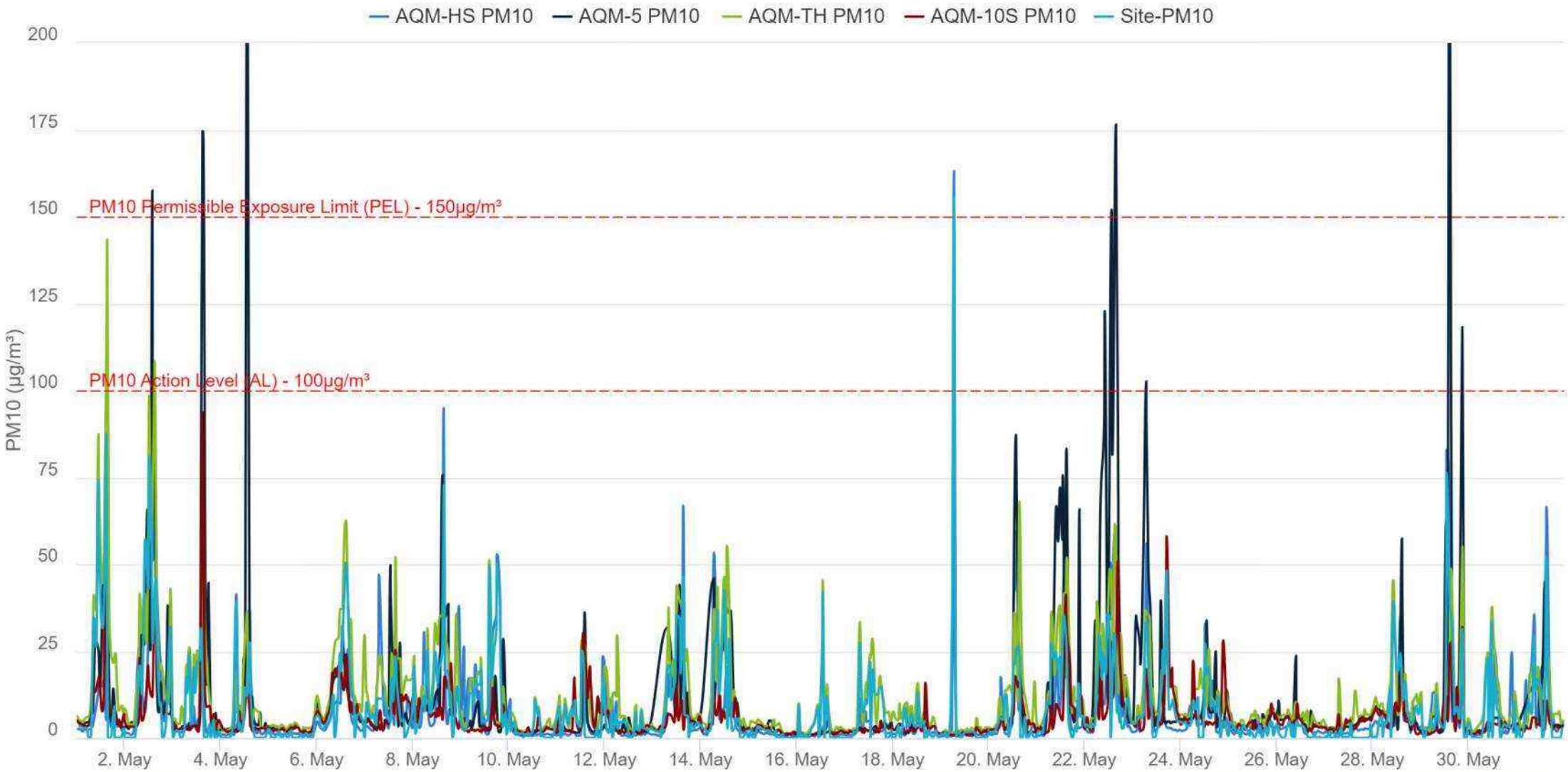
Reach F - PM10 - 15 min Running avg. (May 2024)



Reach G,H & I - PM2.5 - 15 min Running avg. (May 2024)



Reach G, H & I - PM10 - 15 min Running avg. (May 2024)



Summary of Data June 2024

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

- AQM-1 on 6/4 for 15 minutes and 6/26 for 16 minutes and 15 minutes, 6/28 for 31 minutes, and 6/30 for 15 minutes;
- AQM-GS on 6/27 for 4 minutes;
- AQM-CHR on 6/1 for 15 minutes, 16 minutes, and 29 minutes, 6/3 for 77 minutes, and 6/9 for 6 minutes;
- AQM-AT on 6/1 for 15 minutes;
- AQM-3 on 6/10 for 15 minutes;
- AQM-2 on 6/19 for 10 minutes and 6/22 for 14 minutes;
- AQM-FB on 6/1 for 30 minutes, 6/3 for 15 minutes, and 6/26 for 16 minutes;
- AQM-WB on 6/3 for 22 minutes, 6/5 for 16 minutes, 6/11 for 15 minutes, and 6/12 for 15 minutes.
- AQM-5 on 6/3 for 23 minutes, 6/4 for 22 minutes and 15 minutes, 6/5 for 25 minutes, 6/6 for 29 minutes, 6/22 for 27 minutes and 15 minutes;
- AQM-TH on 6/3 for 32 minutes and 28 minutes, 6/4 for 26 minutes and 30 minutes, 6/5 for 36 minutes, 6/12 for 35 minutes, 6/13 for 35 minutes and 77 minutes, 6/14 for 65 minutes, 6/19 for 23 minutes, 6/20 for 35 minutes, and 6/21 for 47 minutes;
- AQM-HS on 6/22 for 15 minutes; and
- AQM-10SR on 6/22 for 14 minutes, 6/24 for 15 minutes, and 6/28 for 19 minutes.

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

- AQM-1 on 6/26 for 17 minutes and 16 minutes and 6/30 for 15 minutes;
- AQM-GS on 6/27 for 12 minutes;
- AQM-6 on 6/28 for 30 minutes;
- AQM-FB on 6/1 for 15 minutes and 6/26 for 16 minutes;
- AQM-WB on 6/5 for 15 minutes;
- AQM-3 on 6/10 for 15 minutes;
- AQM-AT on 6/19 for 10 minutes and 22 minutes;
- AQM-2 on 6/19 for 11 minutes;
- AQM-4 on 6/1 for 11 minutes;
- AQM-5 on 6/3 for 22 minutes, 6/4 for 20 minutes and 15 minutes, 6/5 for 23 minutes, 6/6 for 17 minutes, 6/10 for 16 minutes, and 6/22 for 15 minutes;
- AQM-TH on 6/4 for 30 minutes, 6/12 for 16 minutes, 6/13 for 58 minutes, 6/19 for 18 minutes, and 6/20 for 18 minutes;
- AQM-HS on 6/29 for 12 minutes; and
- AQM-10SR on 6/24 for 15 minutes and 6/28 for 19 minutes.

For the month of June 2024, PM net 2.5 levels were exceeded on 6/1, 6/3, 6/4, 6/10, 6/12, 6/13, 6/14, 6/17, 6/19, 6/20, 6/21, 6/22, 6/26, 6/27, 6/28, and 6/30. PM net 10 levels were exceeded on 6/4, 6/12, 6/13, 6/19, 6/22, 6/26, 6/27, 6/28, 6/29, and 6/30.

For the month of June 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 45 occasions (6/1, 6/3, 6/4, 6/5, 6/9, 6/10, 6/11, 6/12, 6/13, 6/14, 6/19, 6/20, 6/21, 6/22, 6/24, 6/26, 6/27, 6/28, and 6/30) for between 6 and 107 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 6/26 and 6/28 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 6/4 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 6/30 were related to unknown off-site activity.
    - AQM-GS is located on the corner of South Street and Gouverneur's Slip East; elevated readings on 6/27 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 6/9 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 6/1 and 6/3 were related to on-site 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 6/1 were related to unknown off-site activity.
    - AQM-3 is located is located west of the FDR on Delancey Street; elevated readings on 6/10 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 6/19 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 6/22 were related to unknown off-site activity.
    - AQM-FB is located in the vicinity of the Fire Boat House; the elevated readings on 6/1, 6/3, and 6/26 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 6/3 and 6/5 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 6/11 and 6/12 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-5 is located between Houston Street and East 6th Street.
        - Elevated readings on 6/3 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 6/4, 6/5, 6/6, and 6/22 were related to 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; the elevated readings on 6/3, 6/4, 6/5, 6/12, 6/13, 6/14, 6/19, 6/20, and 6/21 were related to on-site construction vehicle traffic. 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 6/22 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.

- AQM-10SR is located on the east side of the 10th Avenue bridge.
    - Elevated readings on 6/22 were related to unknown off-site activity.
    - Elevated readings on 6/24 and 6/28 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.

PM 10 µg/m³

- PM 10 µg/m³ levels surpassed the PEL (15-minute TWA) on 28 occasions (6/1, 6/5, 6/3, 6/4, 6/6, 6/10, 6/12, 6/13, 6/19, 6/20, 6/22, 6/24,6/26, 6/27, 6/28, 6/29, and 6/30) for between 10 and 58 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 6/26 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 6/30 were related to unknown off-site activity.
    - AQM-GS is located on the corner of South Street and Gouverneur's Slip East; elevated readings on 6/27 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 6/28 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 6/1 and 6/26 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 6/5 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 6/19 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 6/10 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 6/19 were related to unknown off-site activity.
    - AQM-4 is located adjacent to the shared use path/construction access road in Reach F; elevated readings on 6/1 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
    - AQM-5 is located between Houston Street and East 6th Street.
        - Elevated readings on 6/3 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.
        - Elevated readings on 6/4, 6/5, 6/6, 6/10, and 6/22 were related to 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; the elevated readings on 6/4, 6/12, 6/13, 6/19, and 6/20 were related to on-site construction vehicle traffic. 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 6/29 were related to on-site construction vehicle traffic. Dust mitigation measures were deployed to mitigate airborne dust.

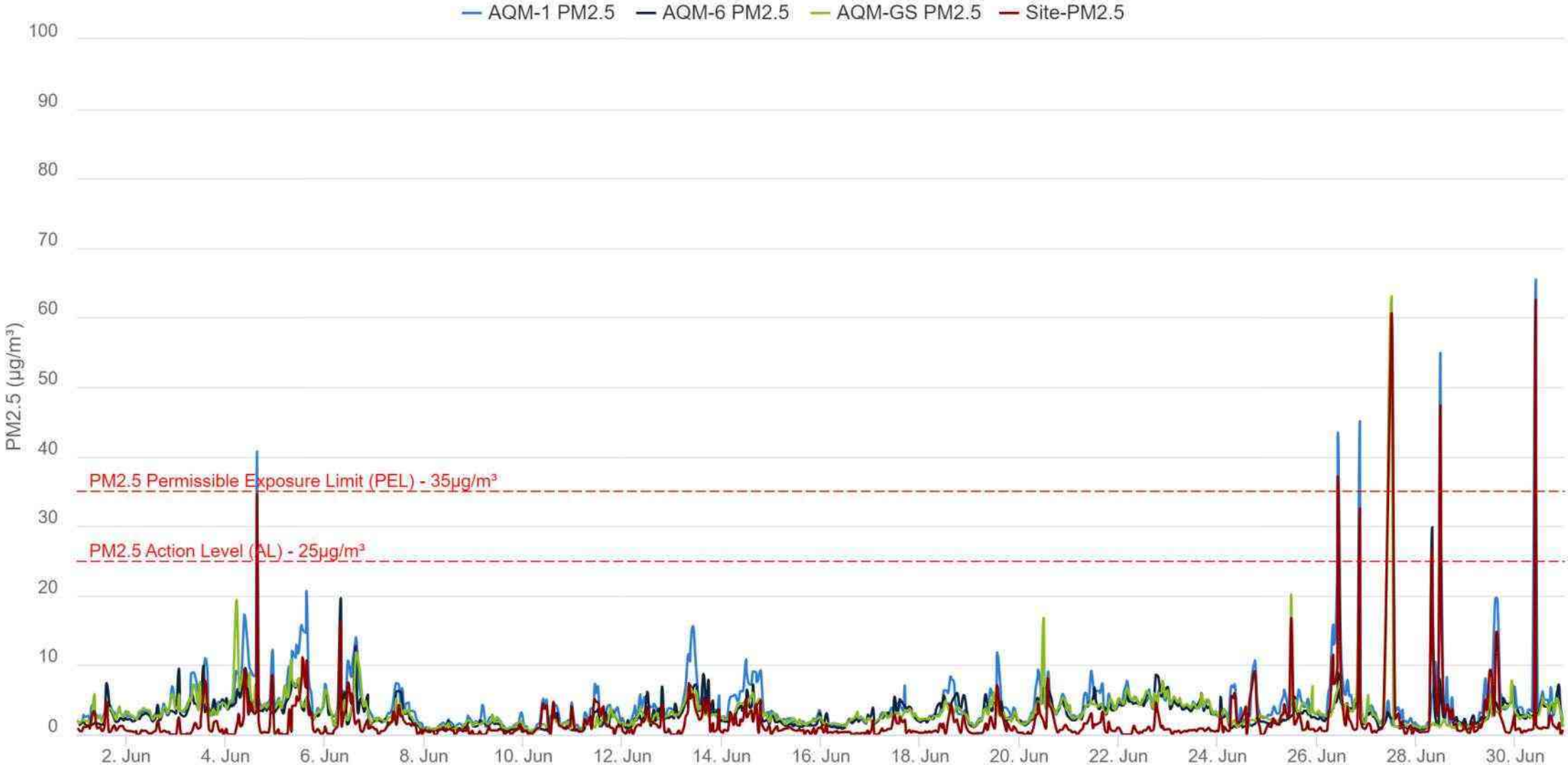
- AQM-10SR is located on the east side of the 10th Avenue bridge; elevated readings on 6/24 and 6/28 were related to on-site construction activities. Dust mitigation measures were deployed to mitigate airborne dust.

Mitigation Measures

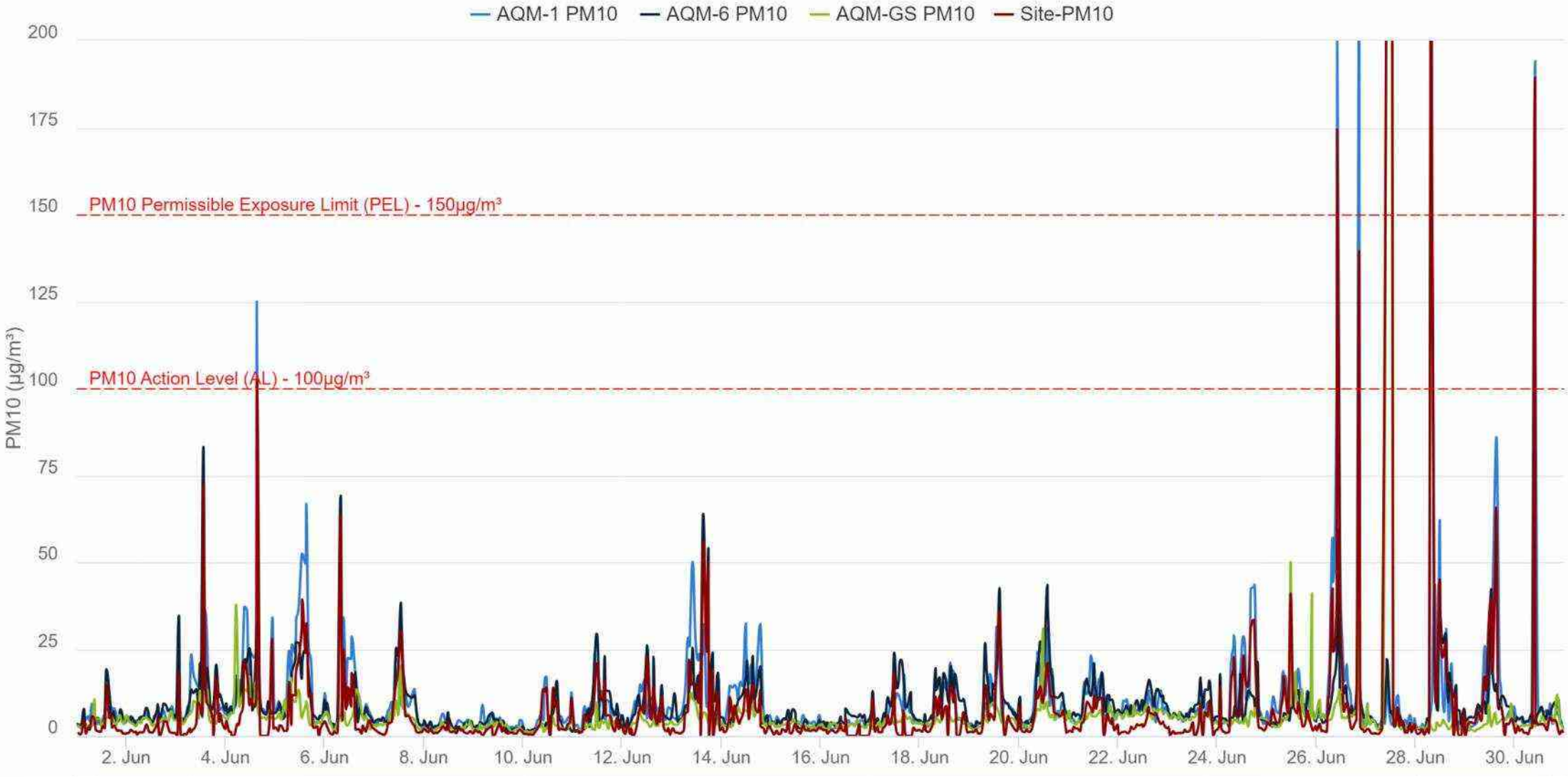
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

JUNE 2024 DATA PLOTS

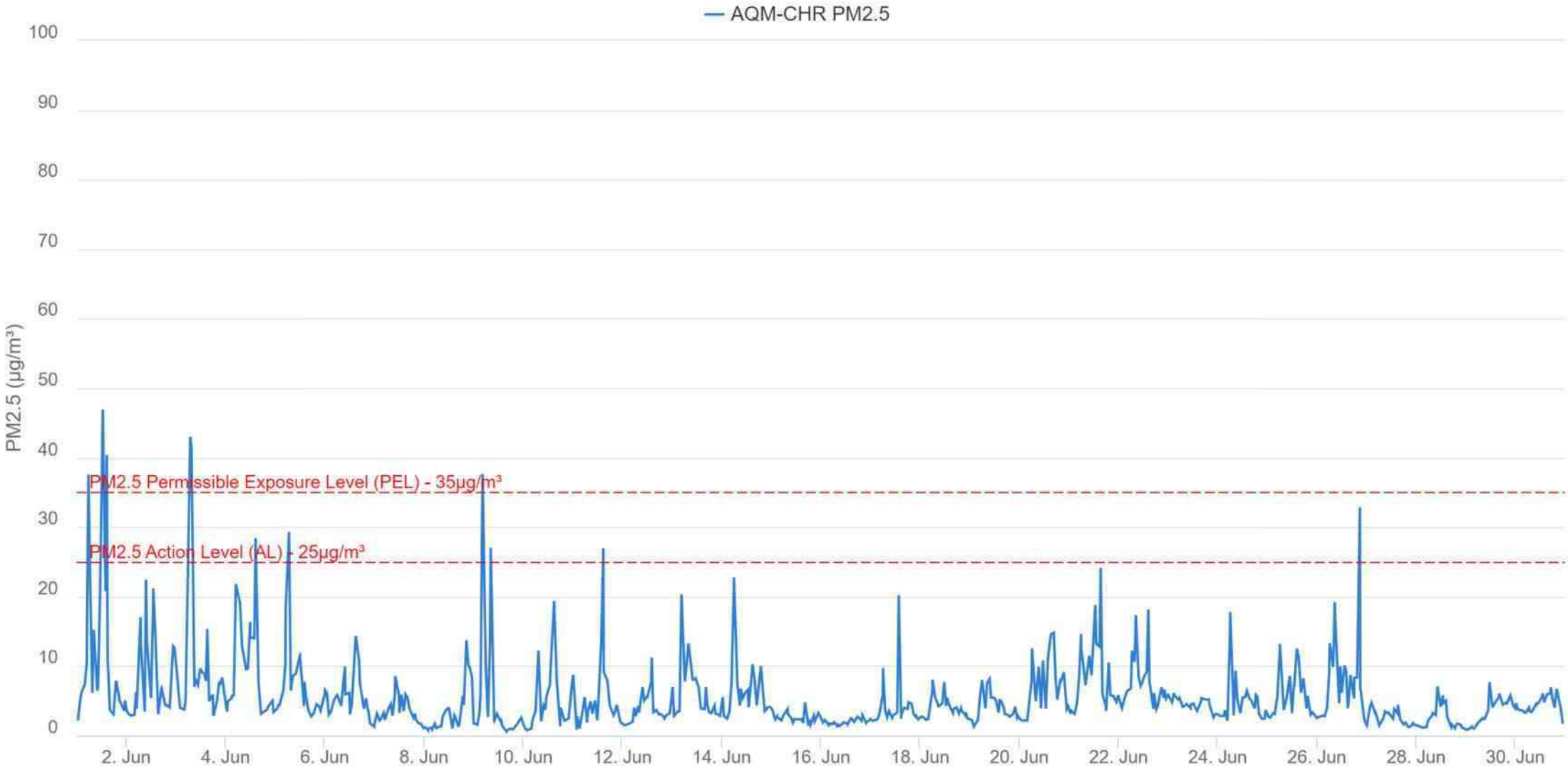
Reach A - PM2.5 - 15 min Running avg. (June 2024)



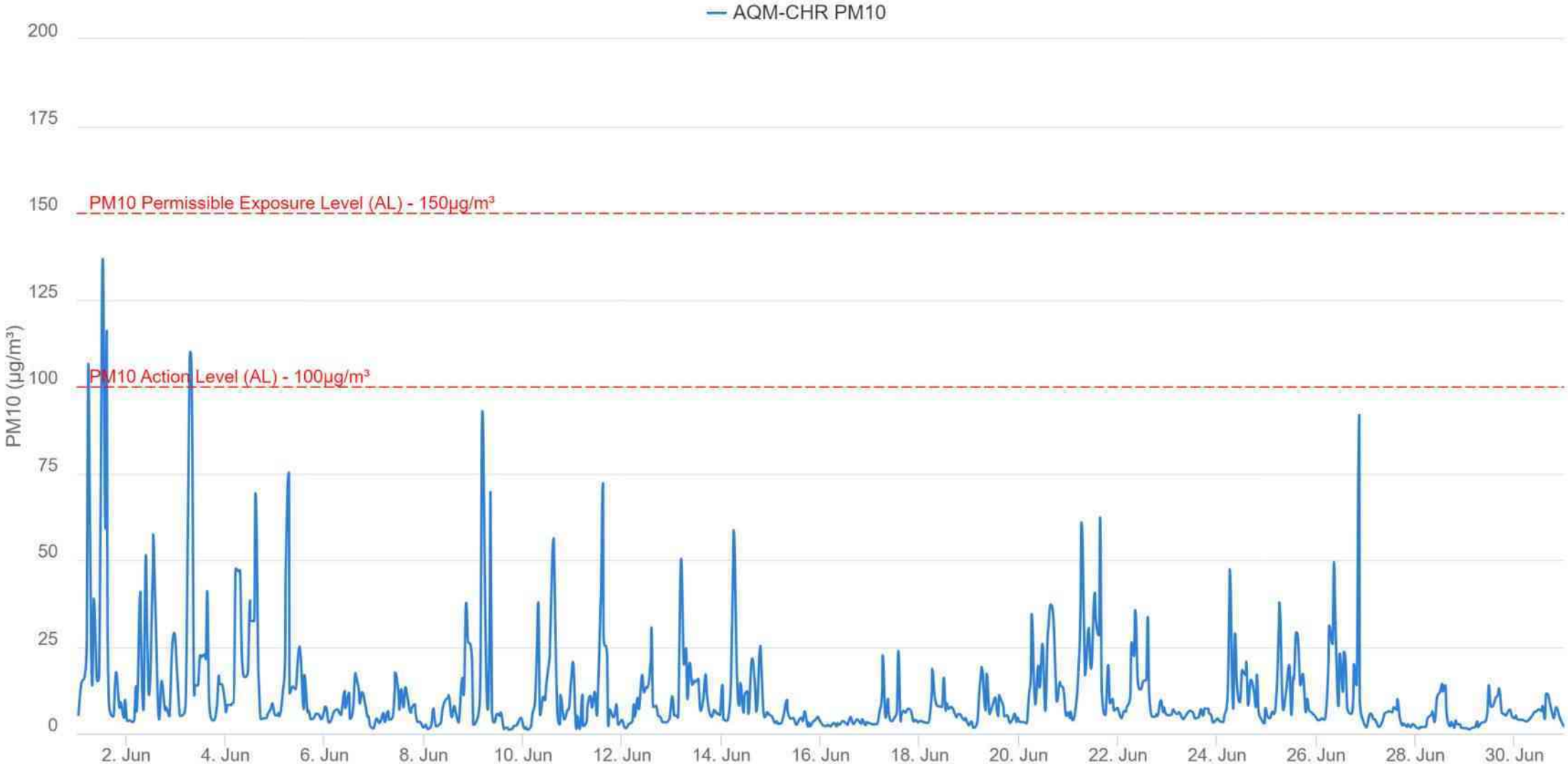
Reach A - PM10 - 15 min Running Avg. (June 2024)



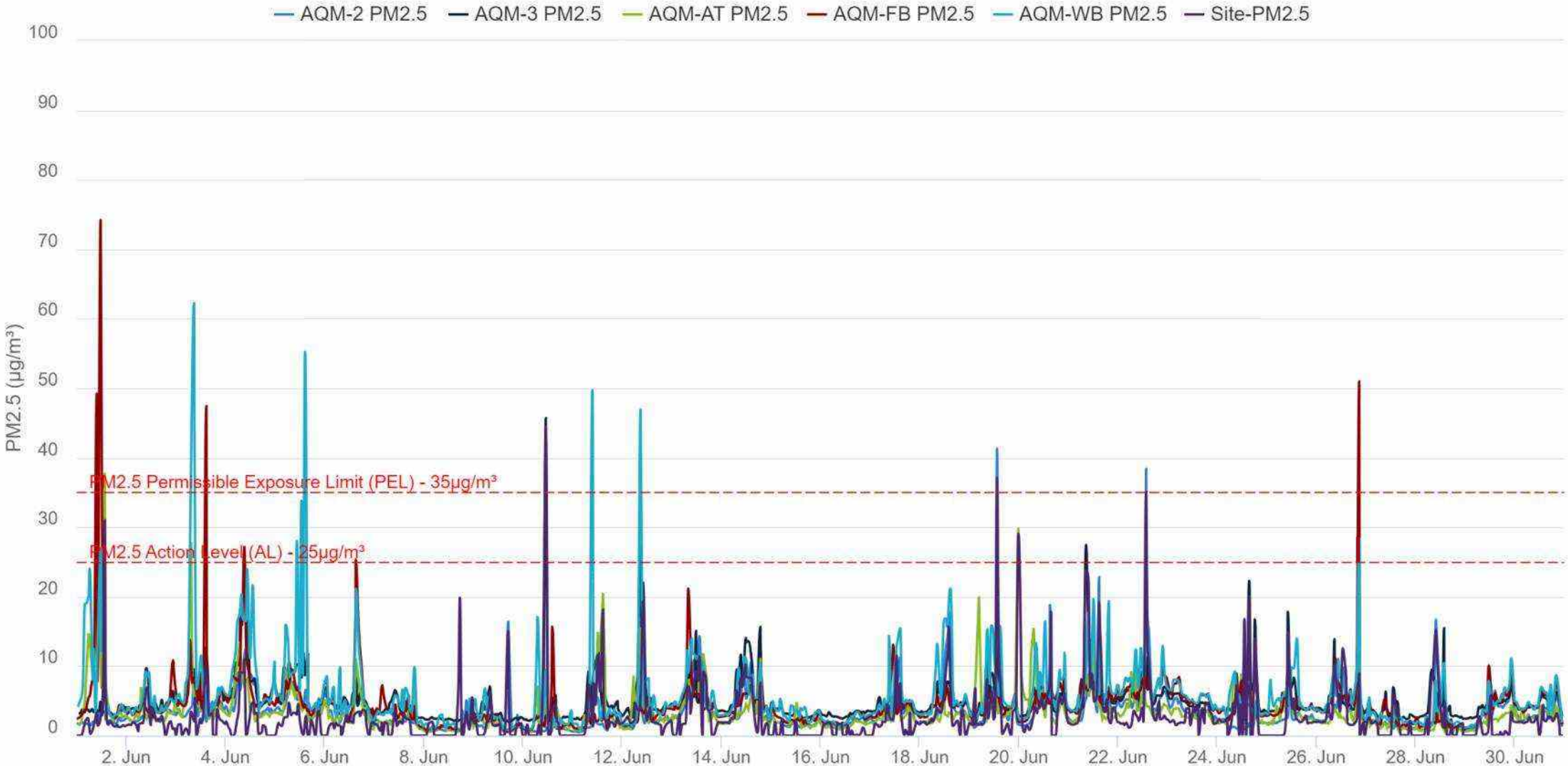
Reach B - PM2.5 - 15 min Running Avg. (June 2024)



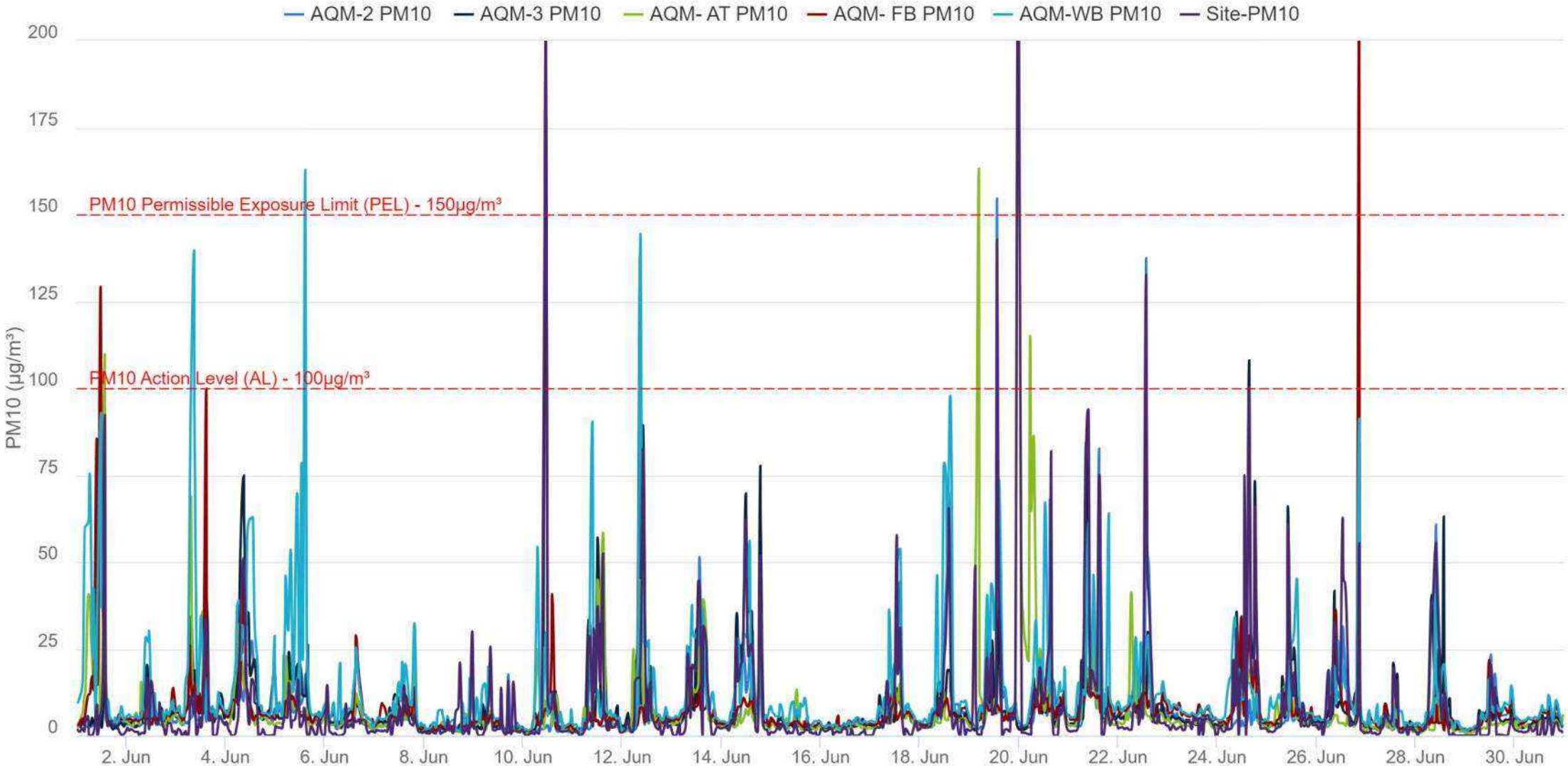
Reach B - PM10 - 15 min Running avg. (June 2024)



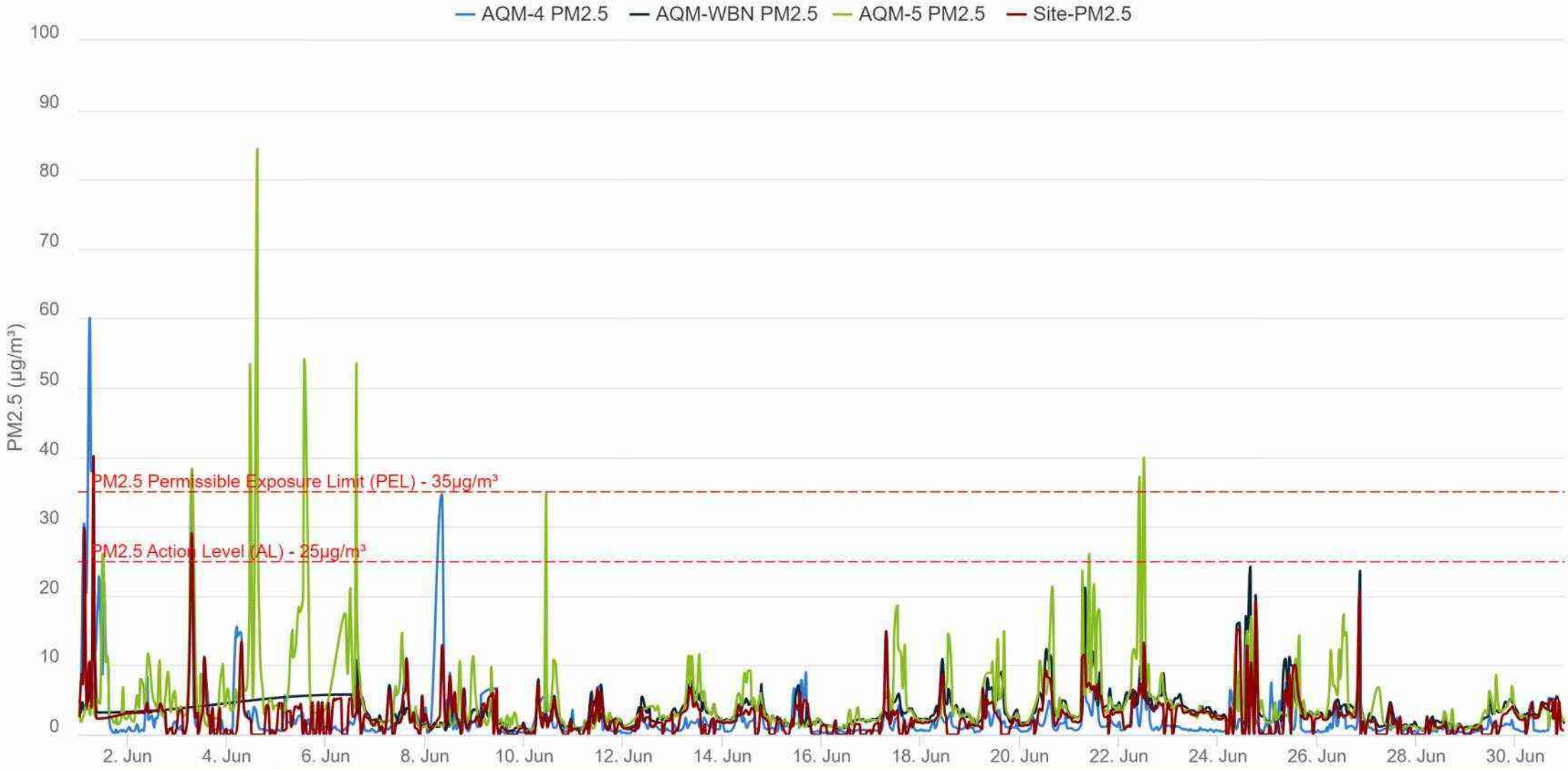
Reach C,D,& E - PM2.5 - 15 min Running Avg. (June 2024)



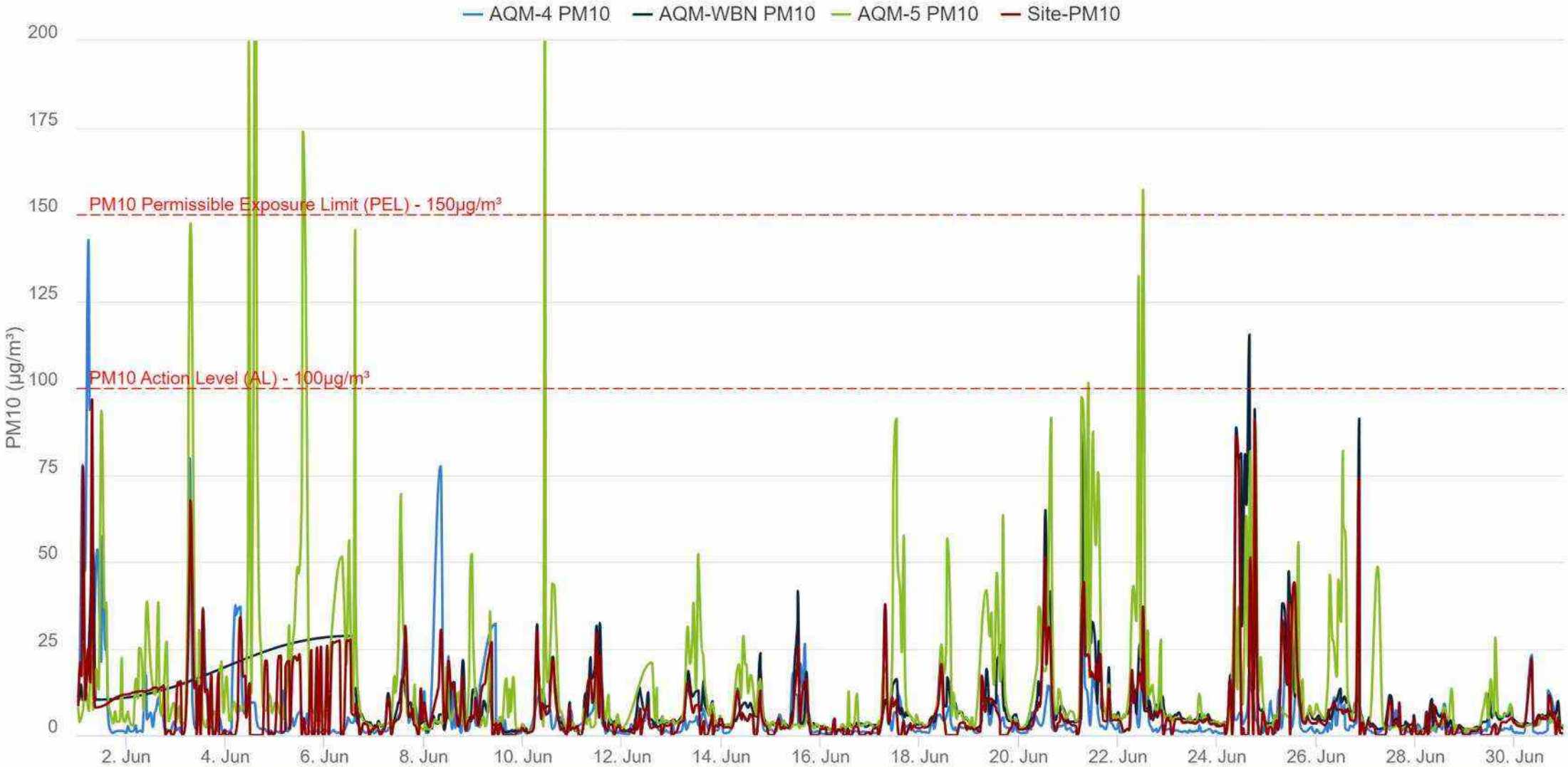
Reach C,D,& E - PM10 - 15 min Running avg. (June 2024)



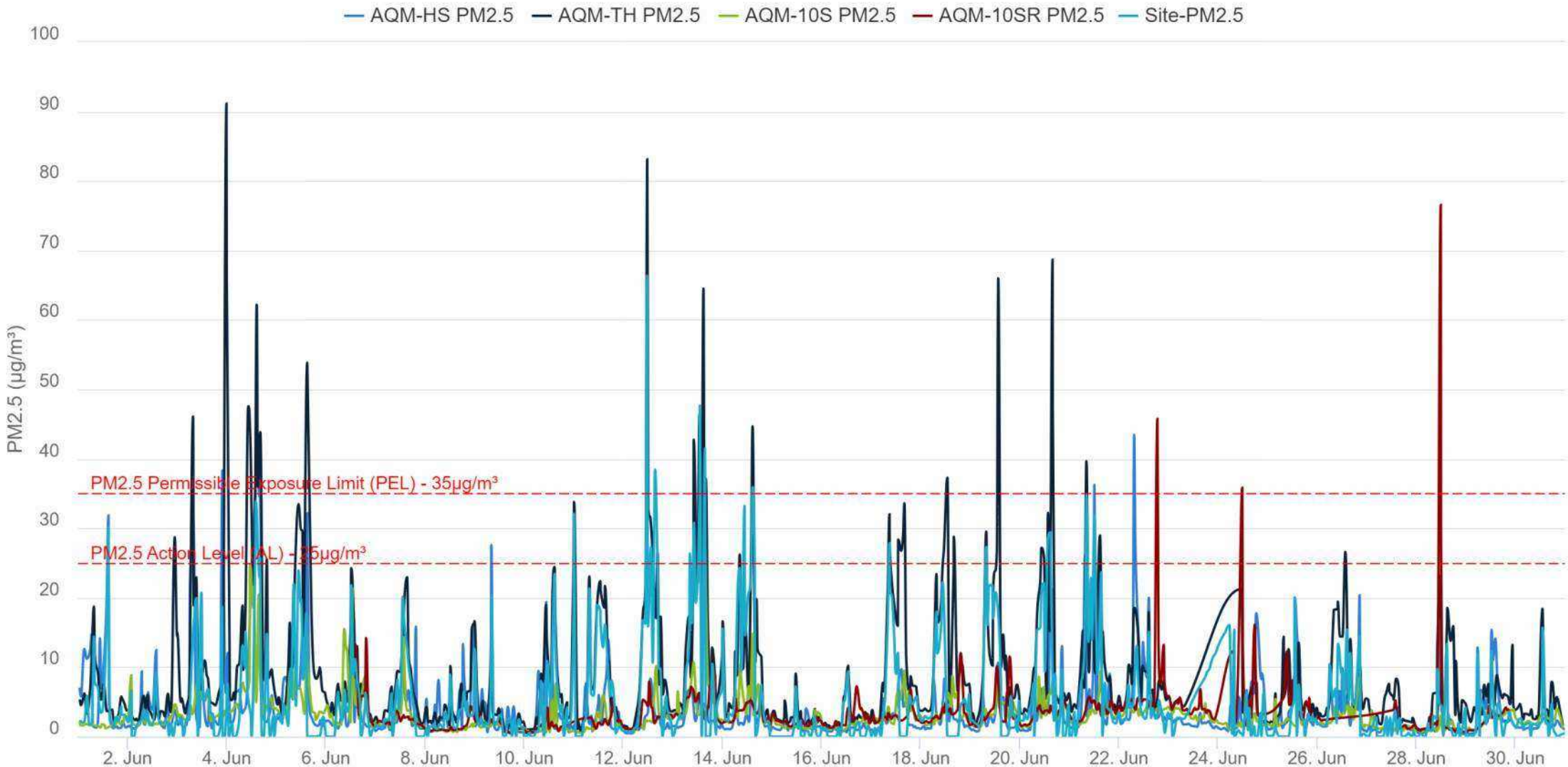
Reach F - PM2.5 - 15 min Running avg. (June 2024)



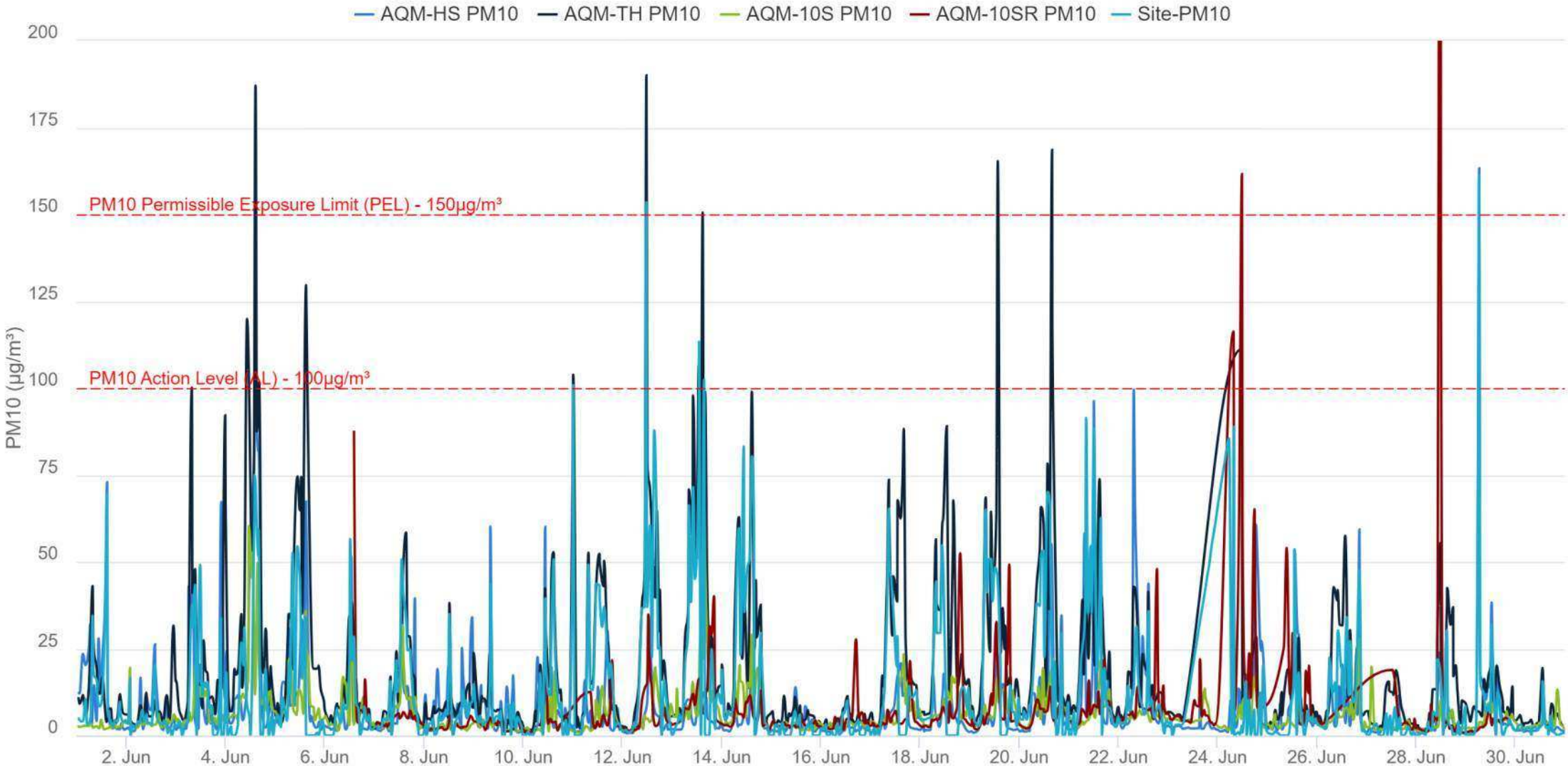
Reach F - PM10 - 15 min Running avg. (June 2024)



Reach G,H & I - PM2.5 - 15 min Running avg. (June 2024)



Reach G, H & I - PM10 - 15 min Running avg. (June 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*

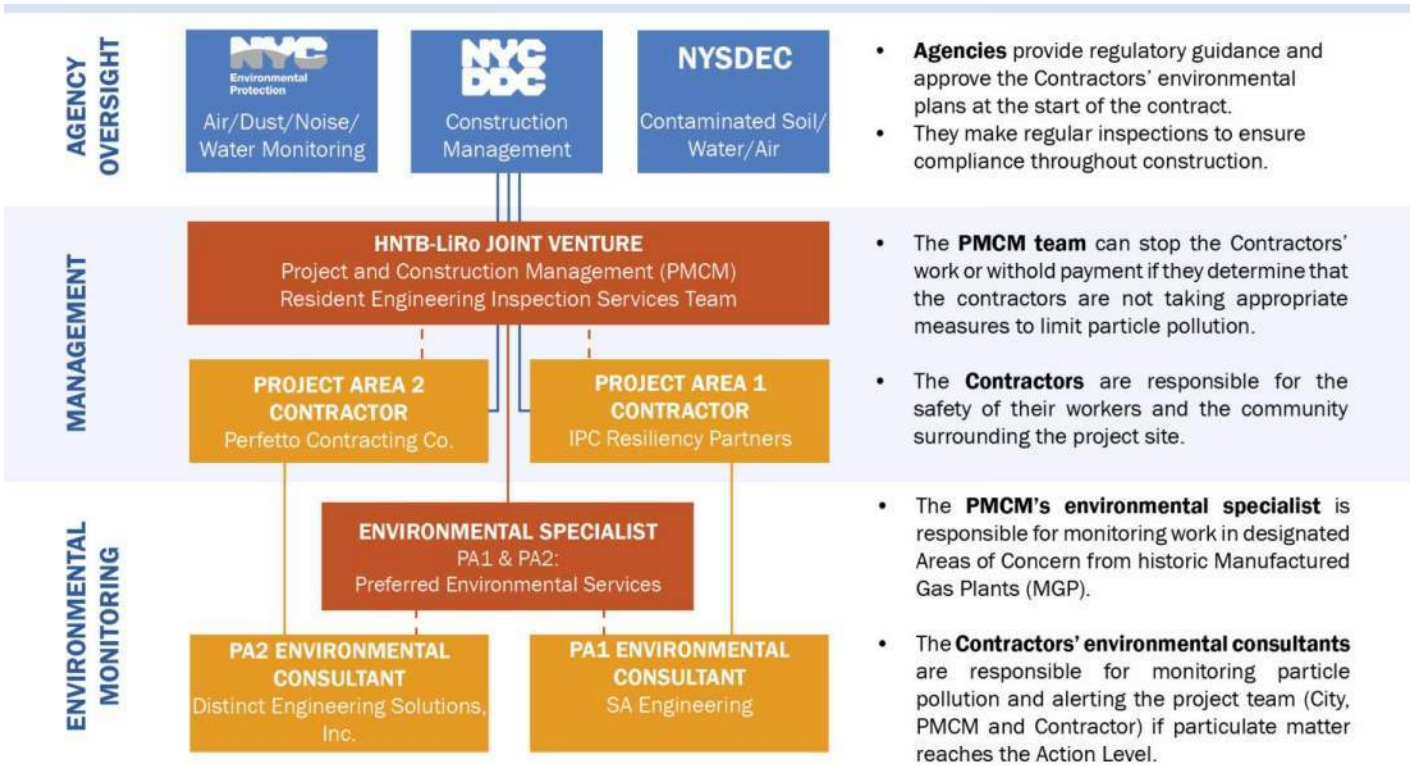


Fig.4 East Side Coastal Resiliency Air Quality Monitoring Flow Chart

II. RESOURCES

- ESCR Website:
- ESCR Environmental Review Process web page: https://www1.nyc.gov/site/escr/about/environmental-review.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