

**BIRKENHEAD ANNUAL STACK  
MONITORING REPORT**

**Oct 2016 – Sept 2017**

**Version: 1**

**Submitted: 31<sup>st</sup> October 2017**

**EPA LICENCE NO: 1126**

**Report Prepared By: Craig Mackenzie**



# Annual Report Oct 2016 –Sept 2017

## Monitoring Objective

The aim of the Quarterly Stack Monitoring Report is to identify and report on emissions to compare actual emissions from Adelaide Brighton Cement Birkenhead Works against the Authorisation 1126 and Exemption Authorisation 12368. Furthermore, the aim of the report is to continuously monitor and provide reasons for the particulate emissions exceeding reporting limits in order to establish key areas where opportunities lie for process and mechanical improvements to reduce the level of stack dust emissions from the site.

## Monitoring Plan

Monitoring of stacks 4A and 4B on the Birkenhead site is performed using Durag Dust and Opacity Meters. These meters provide continuous % opacity and this is converted to  $\text{mg}/\text{Nm}^3$  using a calibration curve. The results are then summarized as one hourly averages based on 10 minute averages for the purpose of this report.

The license that Adelaide Brighton Cement operates under in regard to stack emissions is summarized below.

- Schedule 1 (1) - limit of  $250\text{mg}/\text{Nm}^3$  stack 4A and 4B
- Exemptions under schedule 6
  - Kiln or calciner light up &/or purge – max 10 minutes
  - Level 3 combustibles trip – max 5 minutes
  - Power failure – duration of emergency situation
  - Stack emissions testing for calibration of opacity meter – provided that an EPA authorised officer is on site

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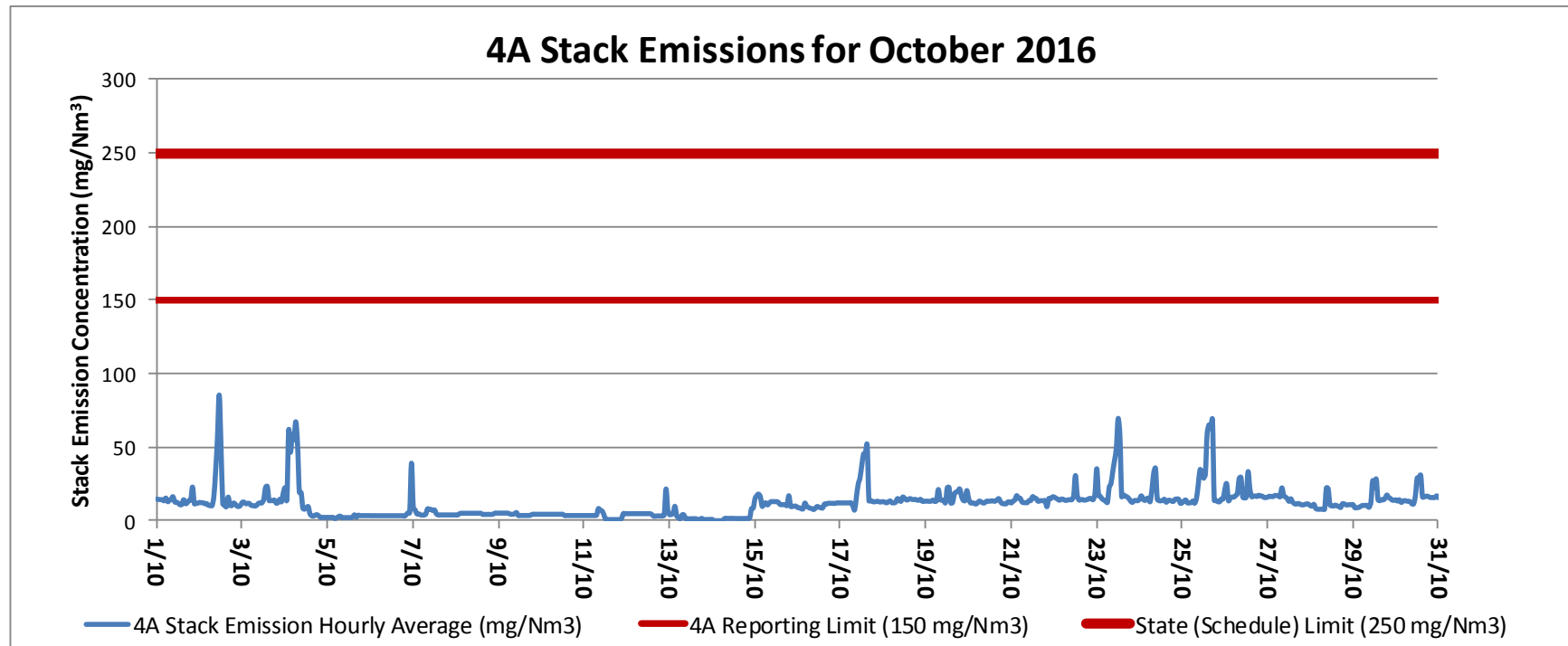
- Reporting Levels
  - All emissions in excess of 80 mg/m<sup>3</sup> (Stack 4B) and 150 mg/m<sup>3</sup> (Stack 4A)

The Environmental Protection Authority (EPA) must be notified as soon as practicably possible of all emissions in excess of the Schedule 1 (1) limit or reporting limit and cause as well as remedial actions must be communicated. Where particulate emissions exceed the Schedule 1(1) limit and the cause is not explicitly covered by the Schedule 6 exemptions an investigation will be carried out by the EPA to ensure that ABC Birkenhead has taken all reasonable and practicable measures to reduce the emissions.

## Monitoring Results

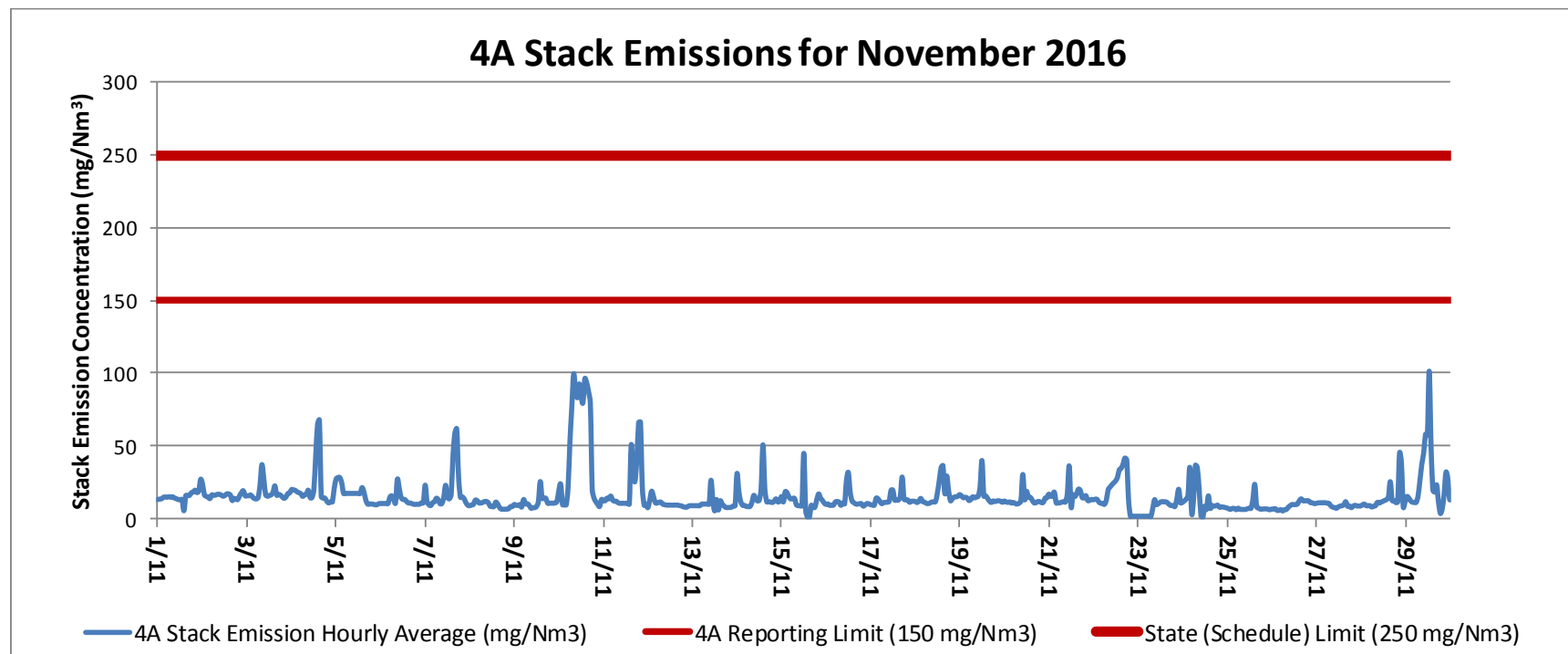
### Presentation of Results

The graphs below detail, the hourly averages of 10 minute averages of stack emissions from 4A and 4B stacks. For each month there is a graph for 4A stack and 4B stack. The thin red line indicates the ABC Birkenhead license reporting level and the heavy red line indicated the Air Quality Policy Schedule 1 limit. The tables below each chart show the results of RCA (root cause analysis) that was undertaken for hourly average particulate emissions above the Air Quality Policy Schedule 1 limit or the ABC Birkenhead license reporting levels. RCA on particulate emissions above the ABC Birkenhead license reporting levels are also conducted.



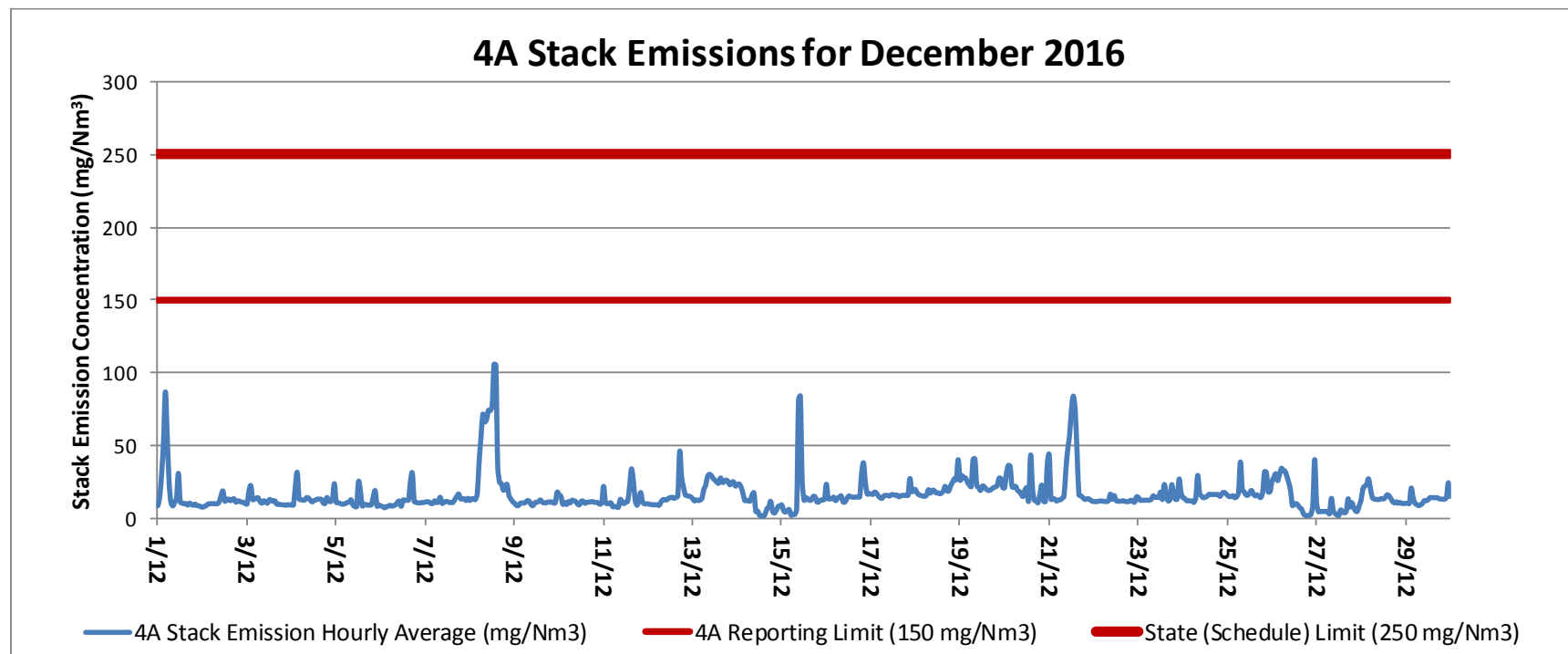
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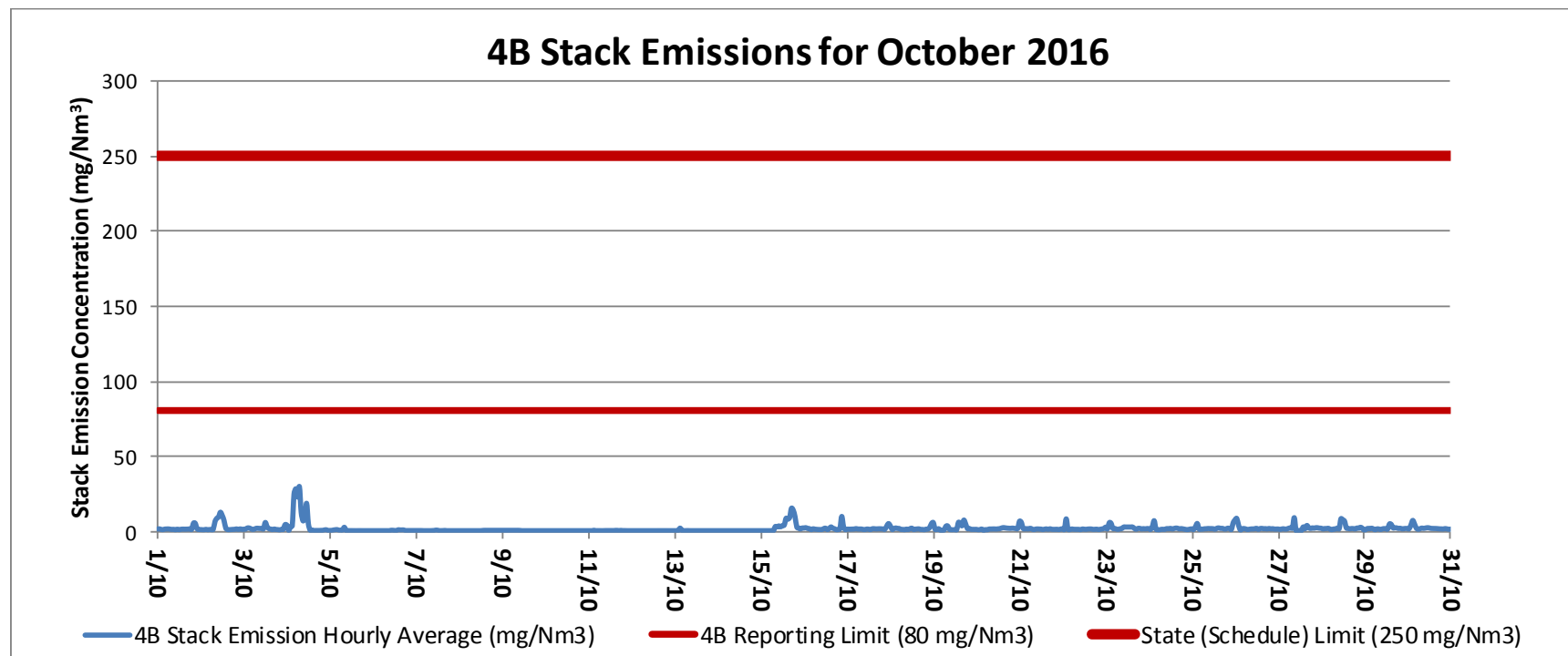
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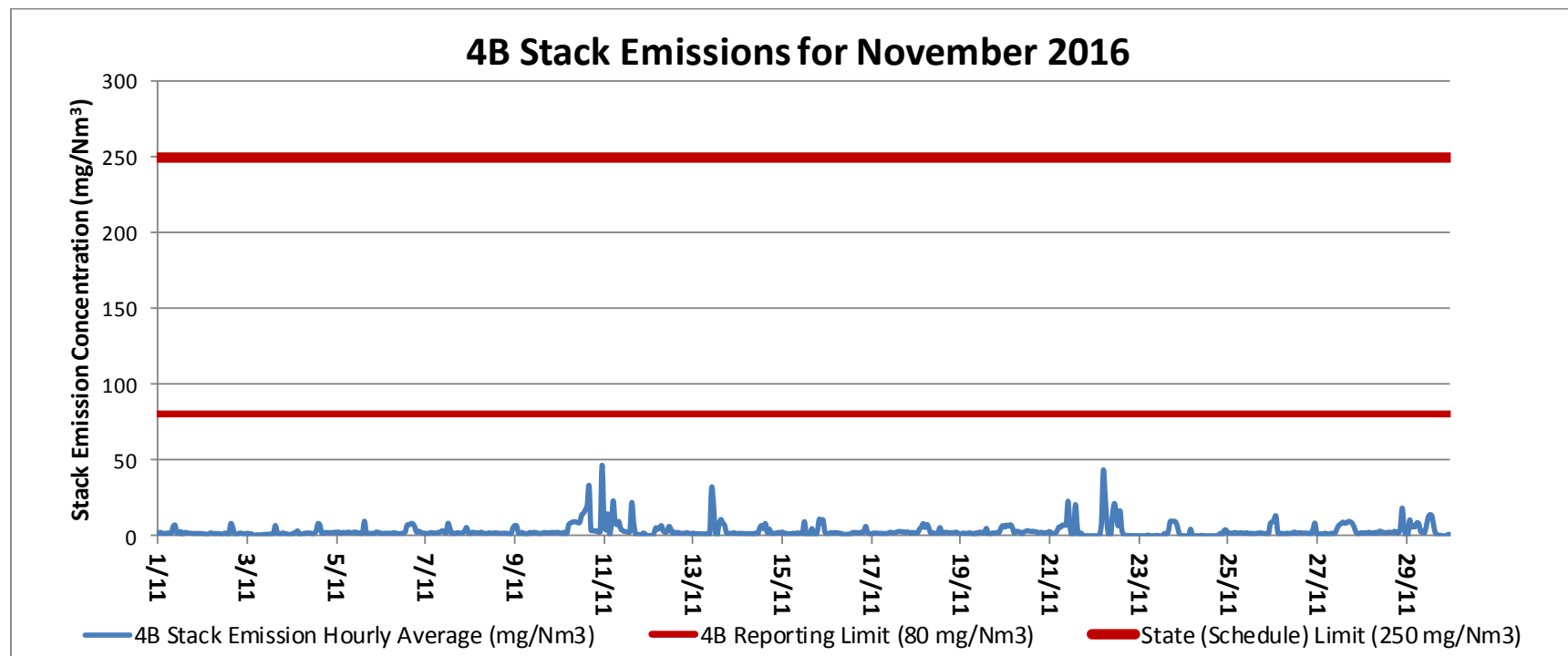
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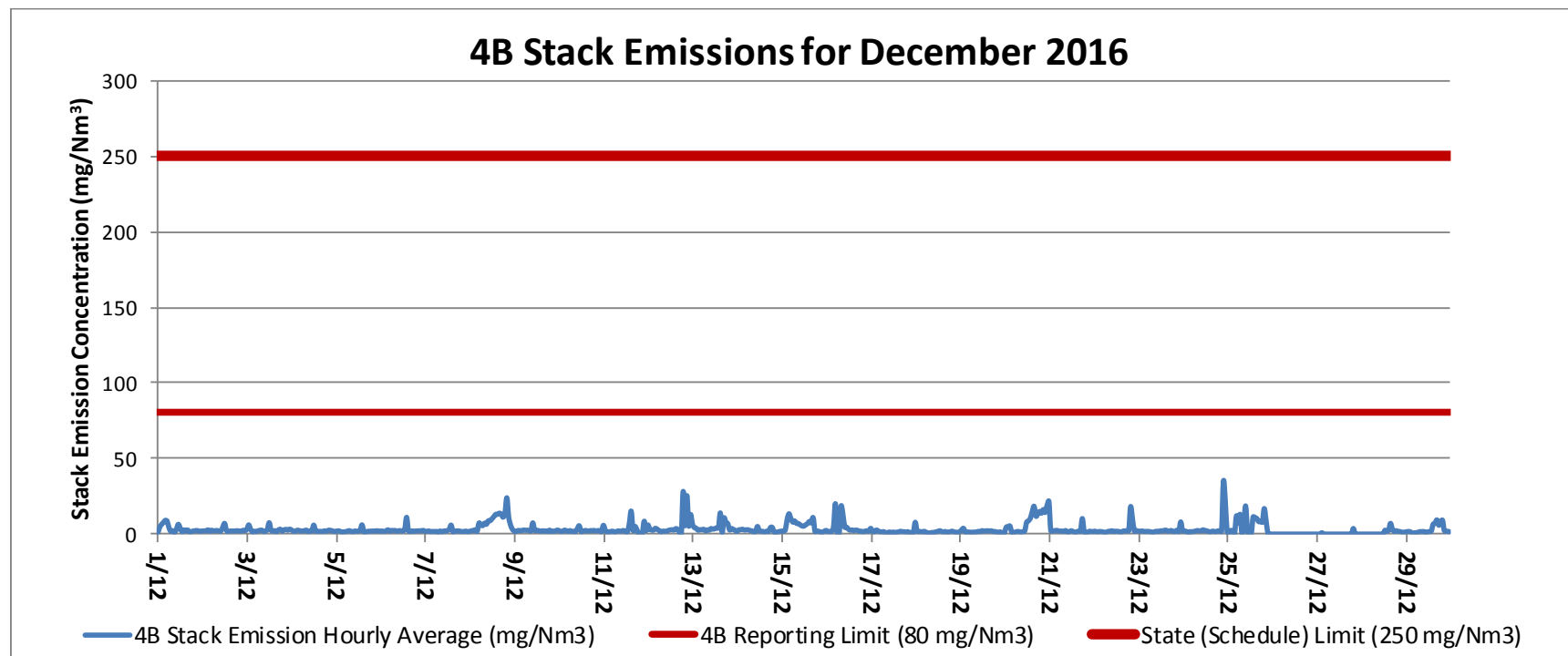
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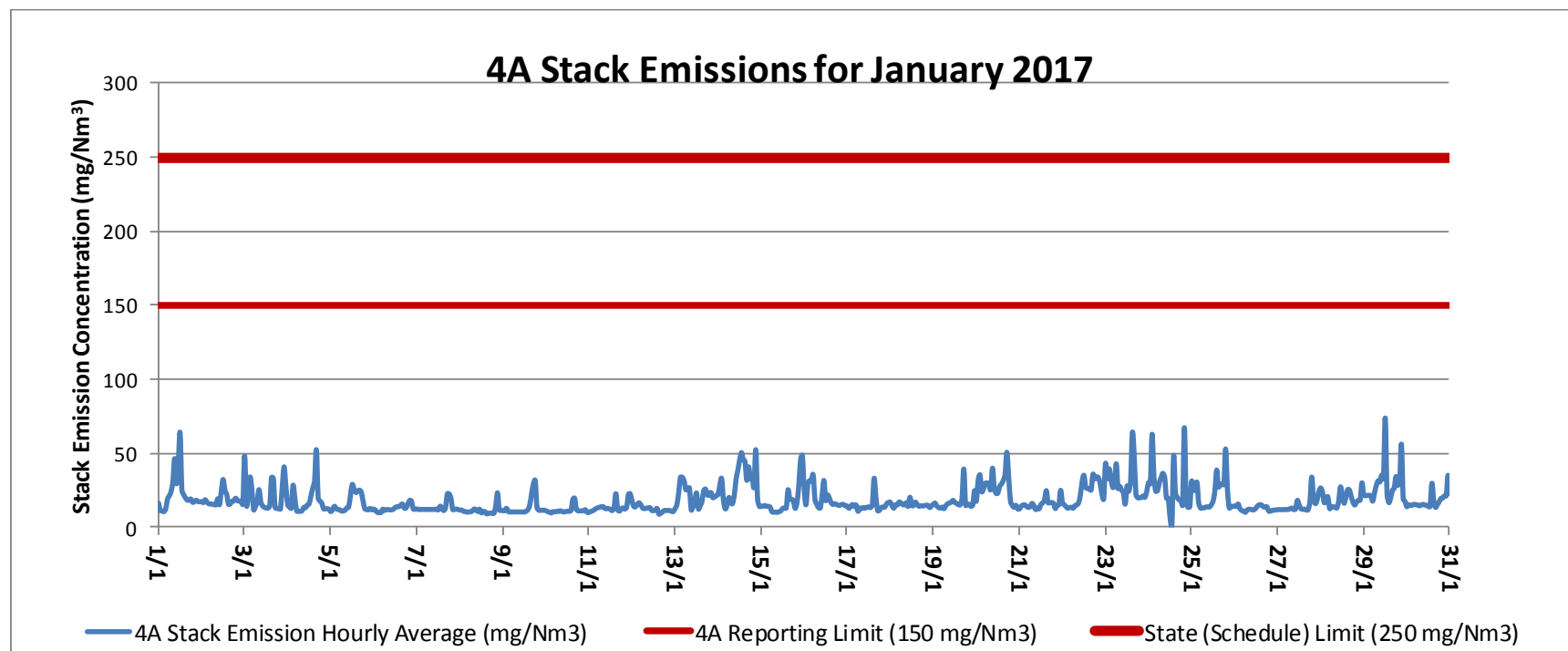


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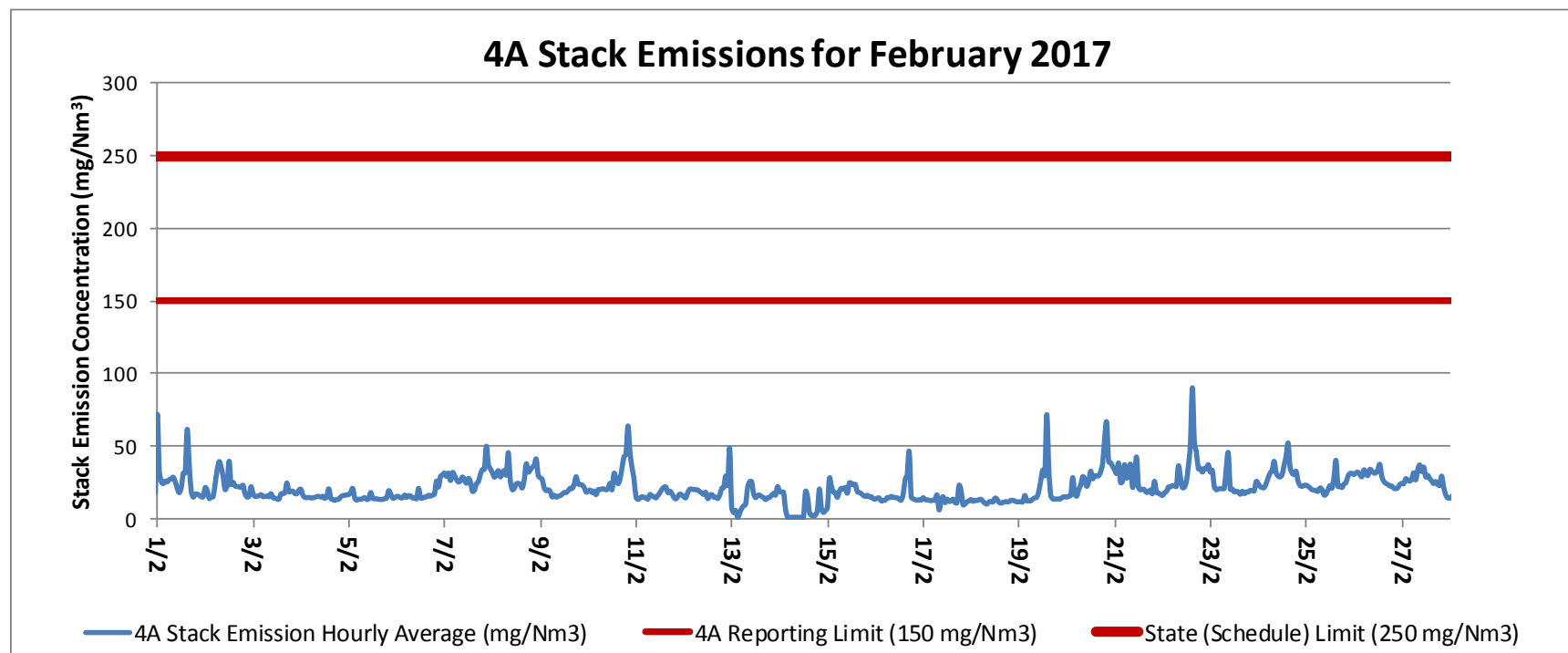
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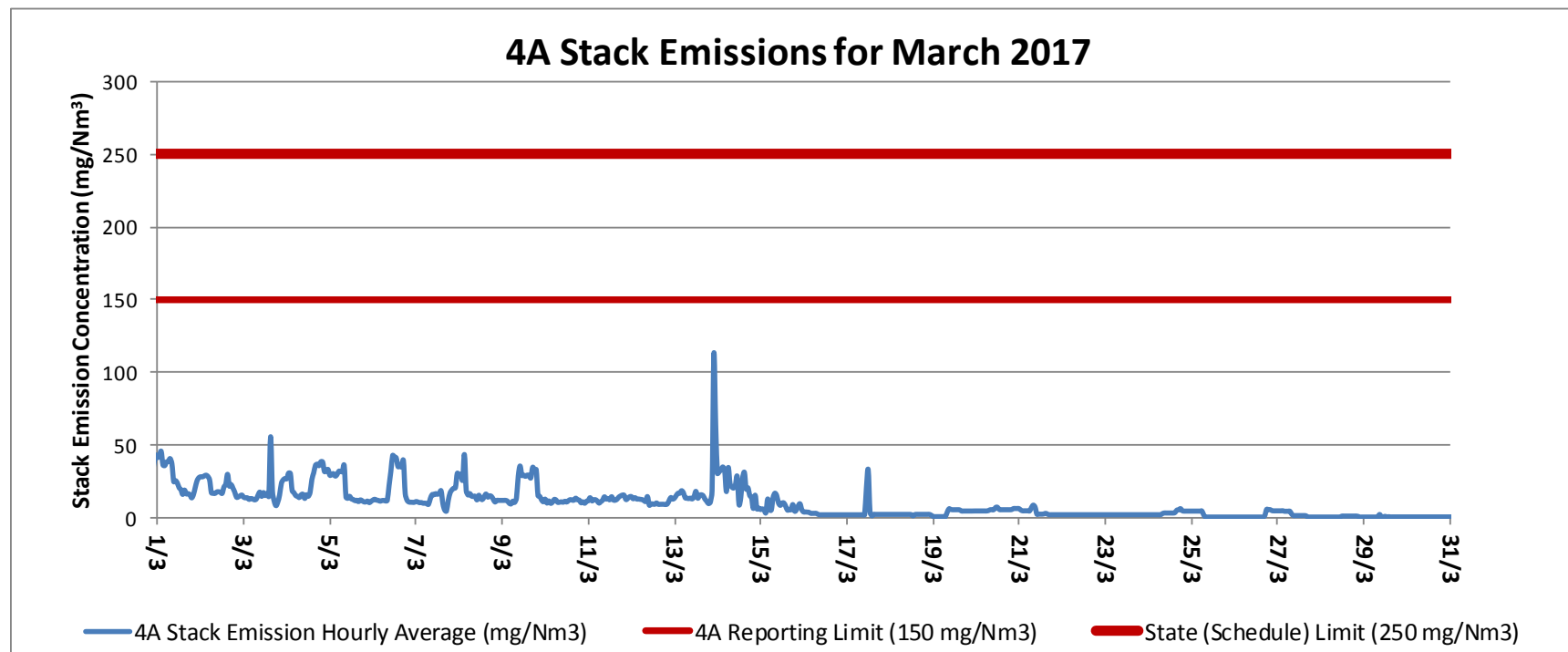
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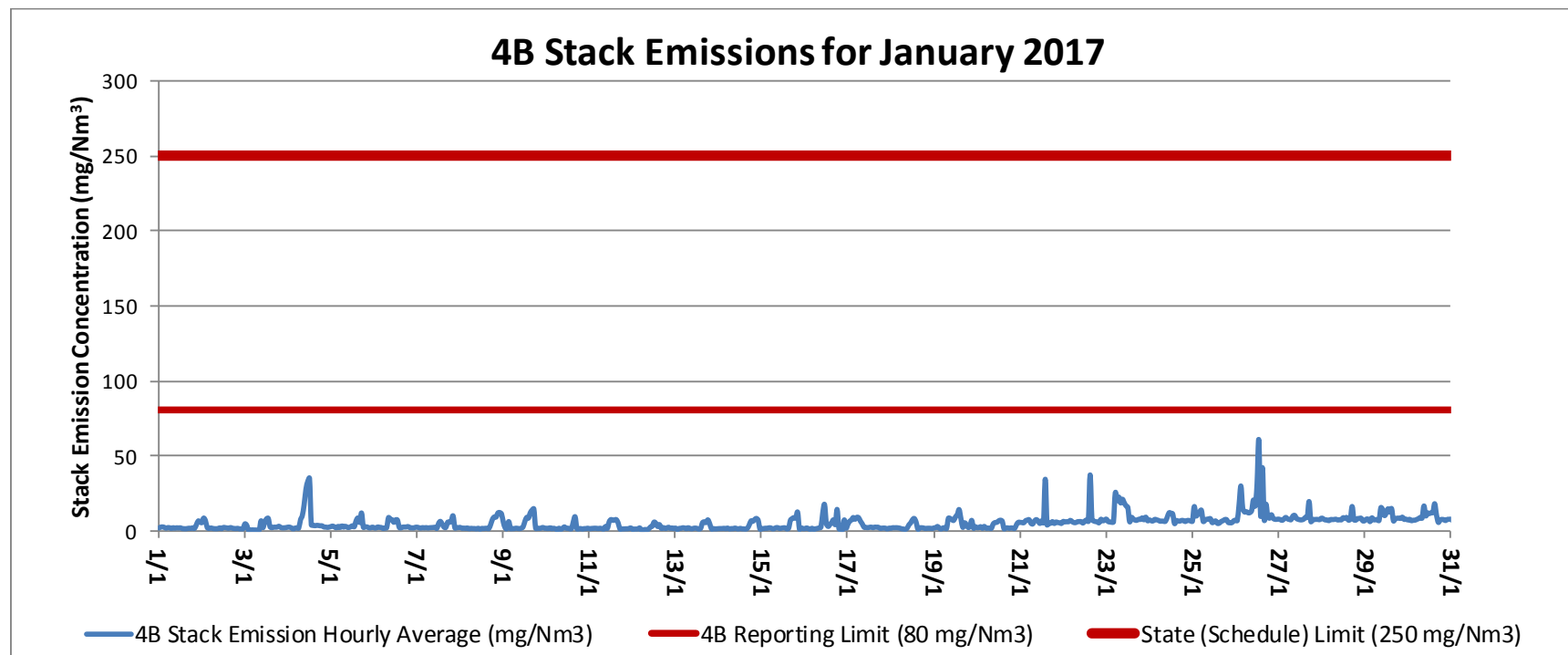
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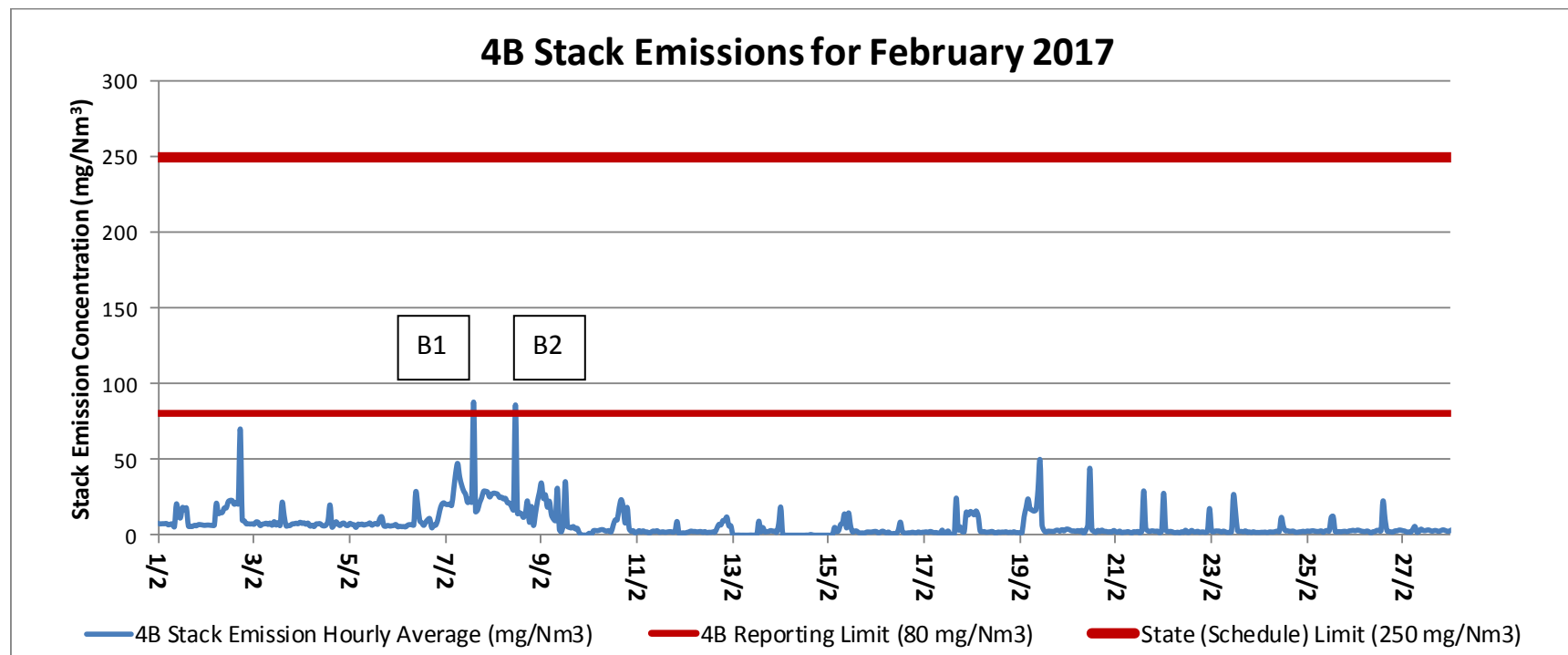
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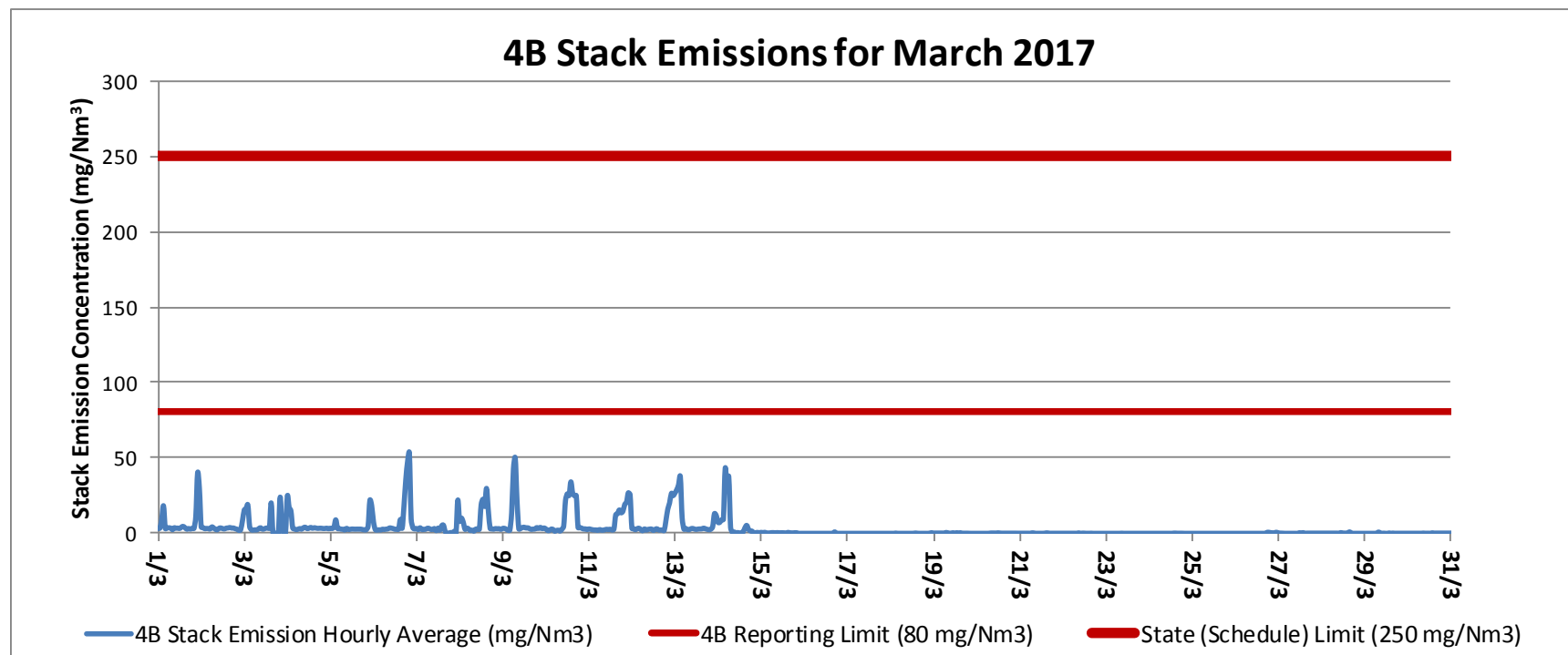
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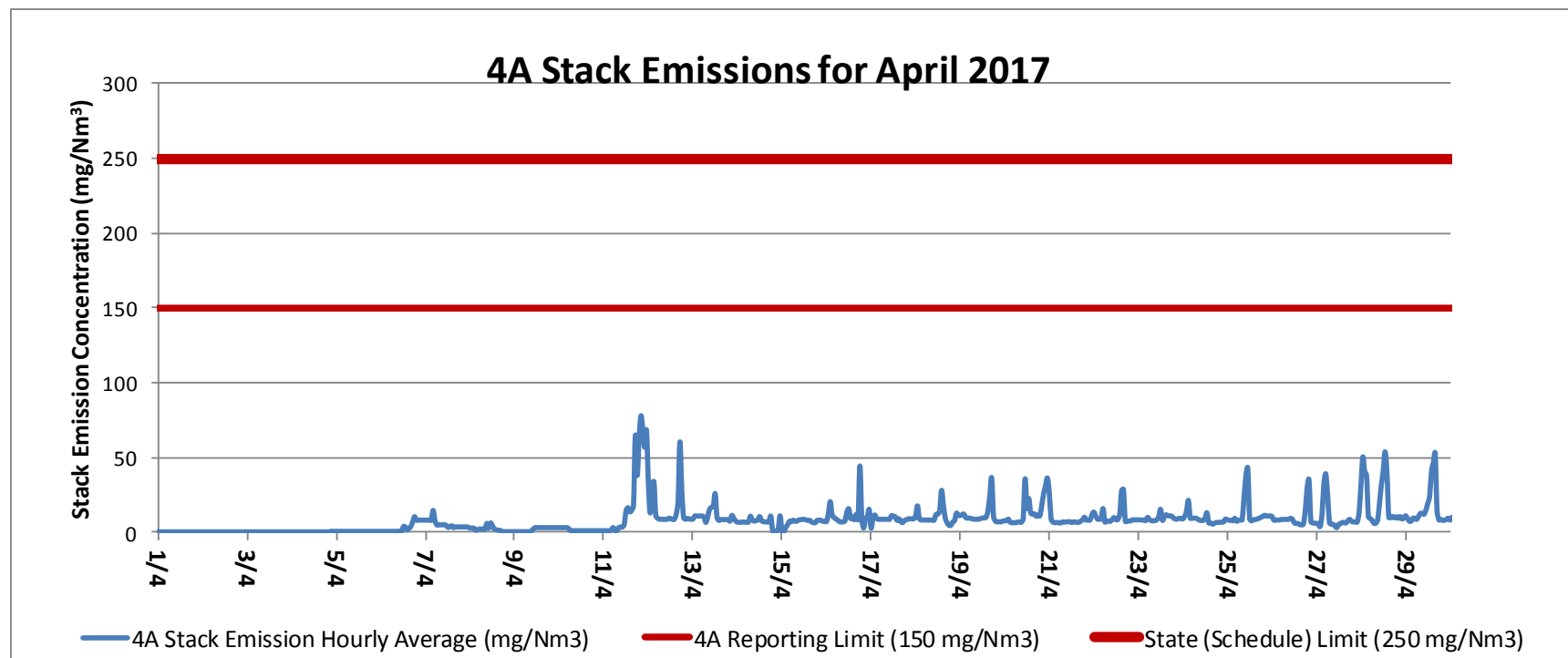
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B1 & B2	Field instability in 4B Electrostatic Precipitator. Repaired 8/2.	

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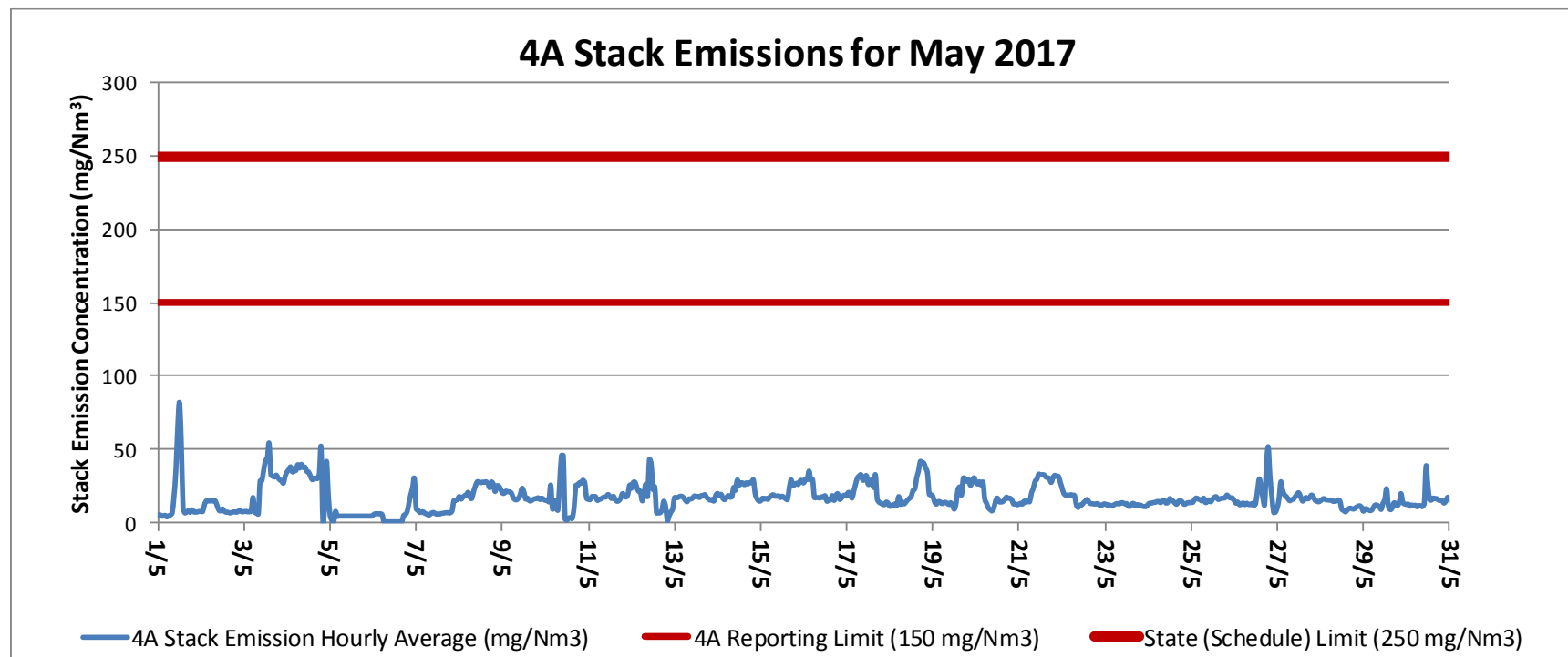
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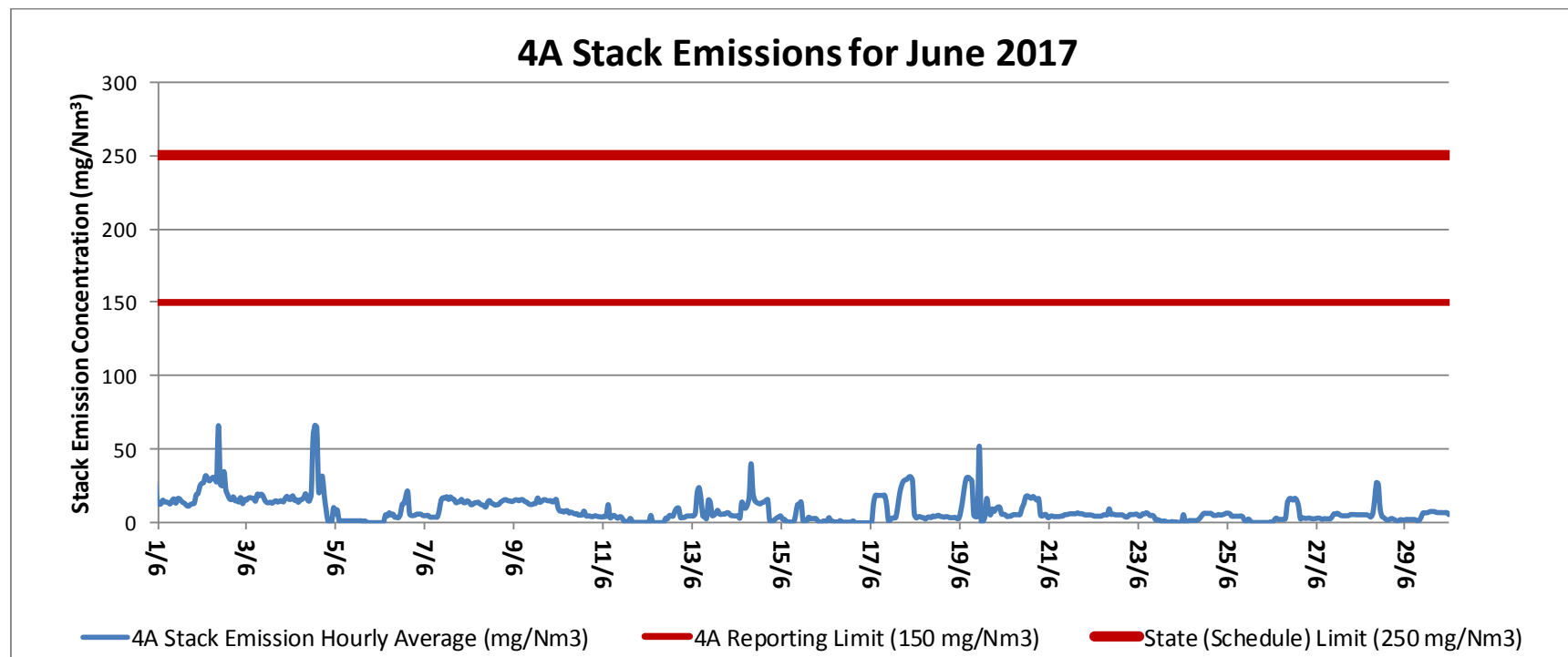


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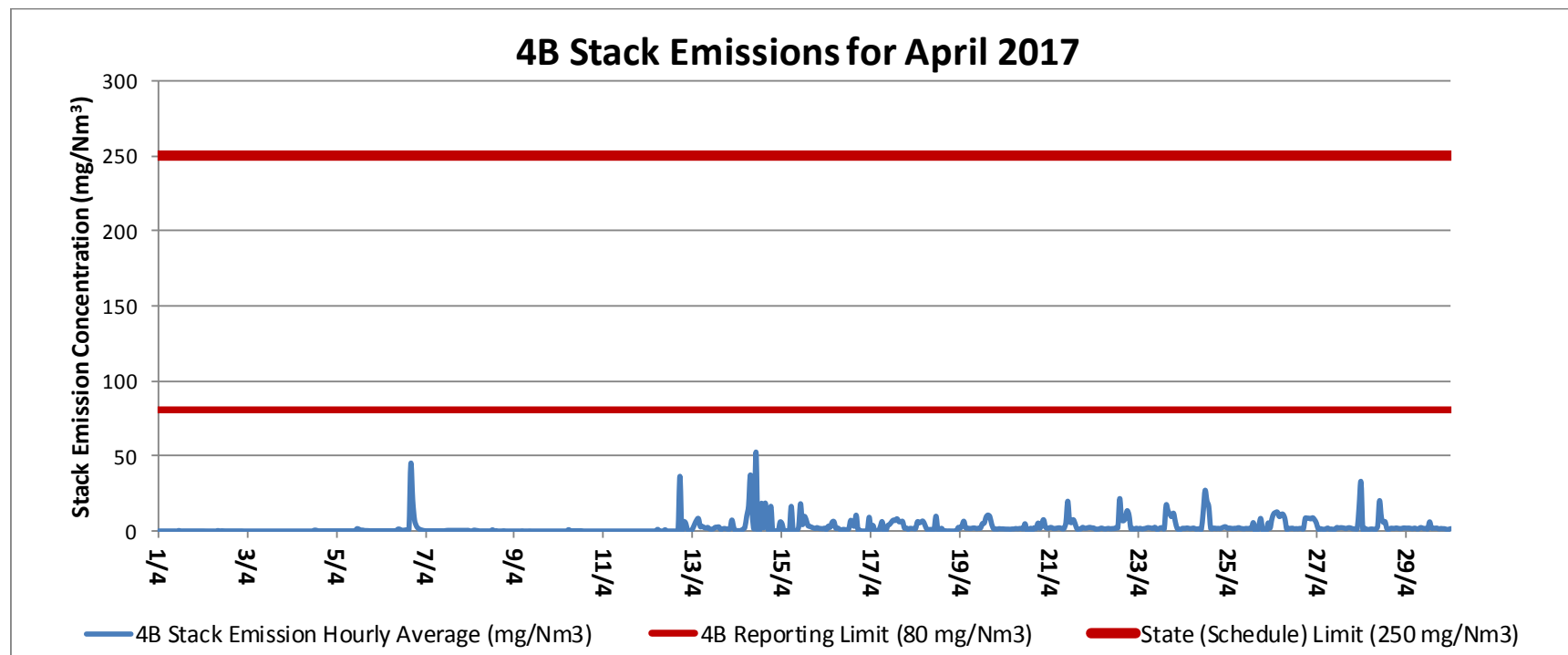
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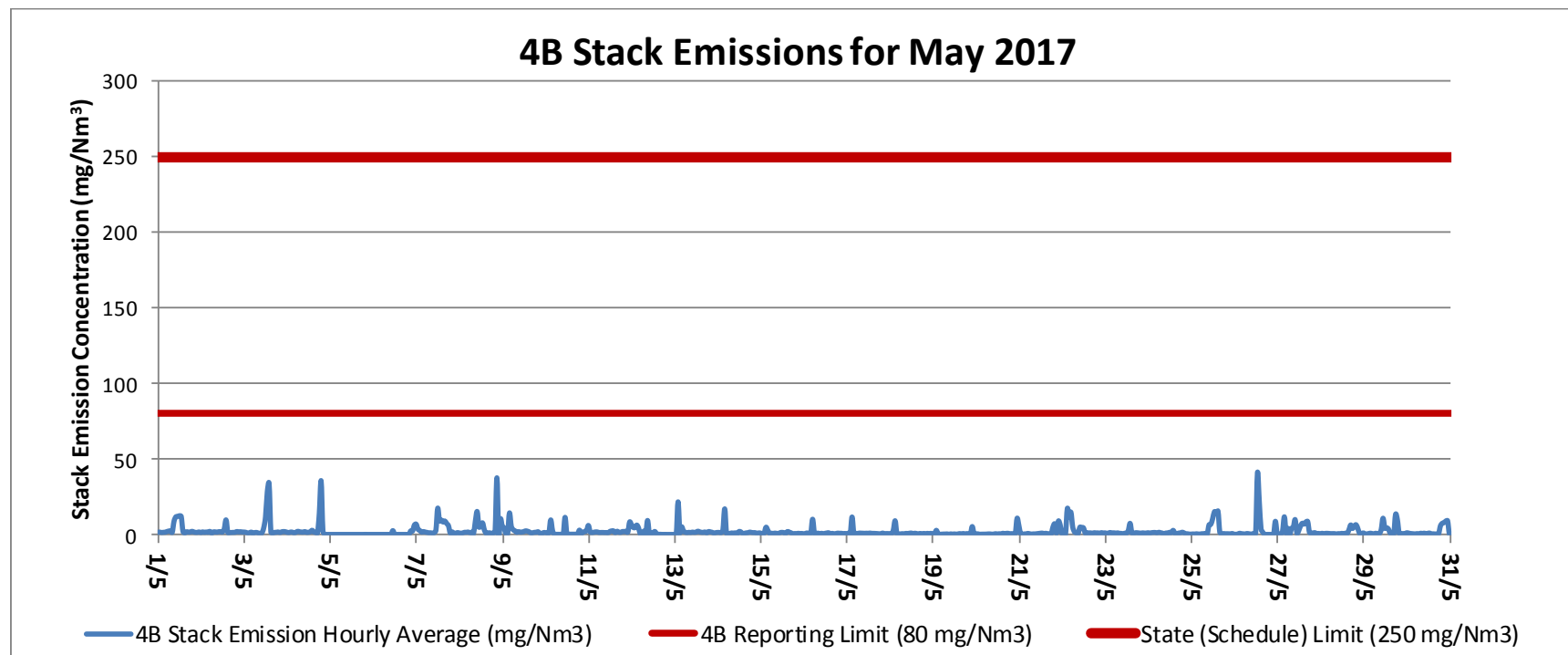
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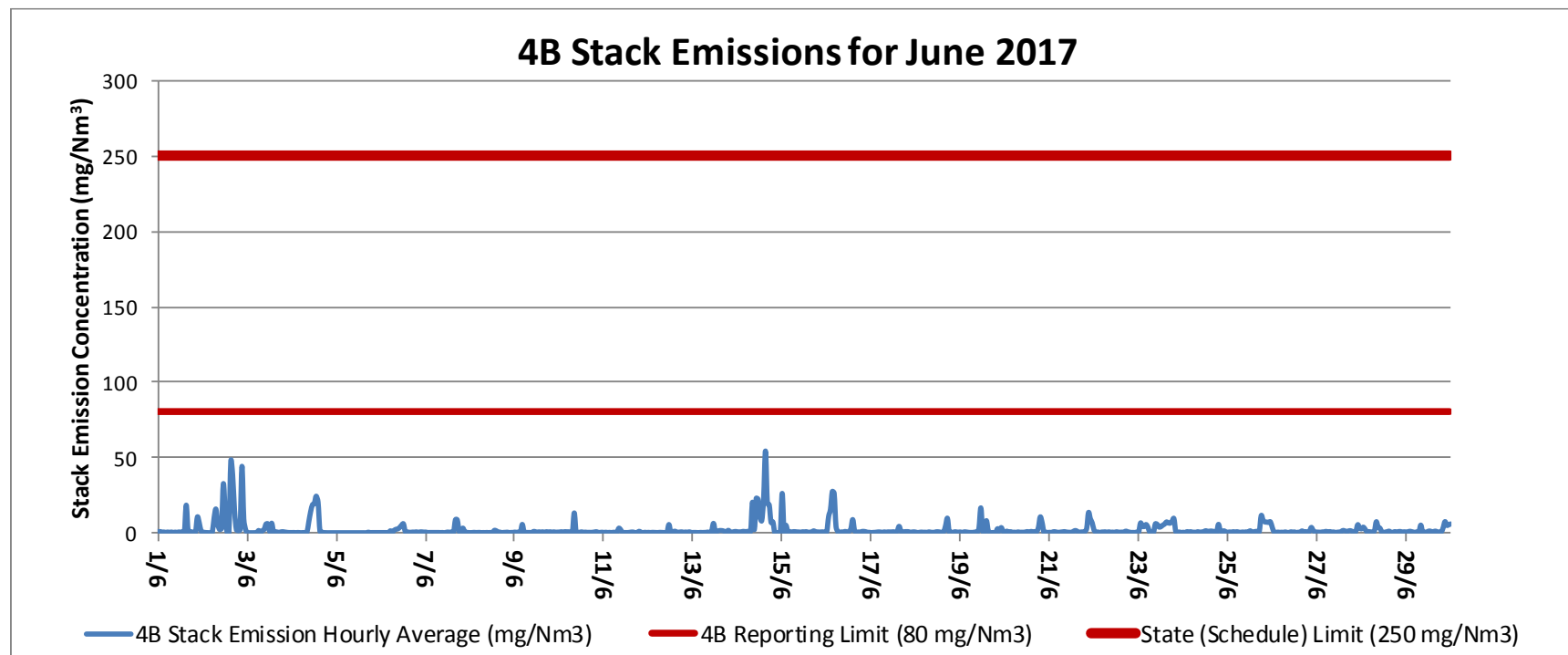
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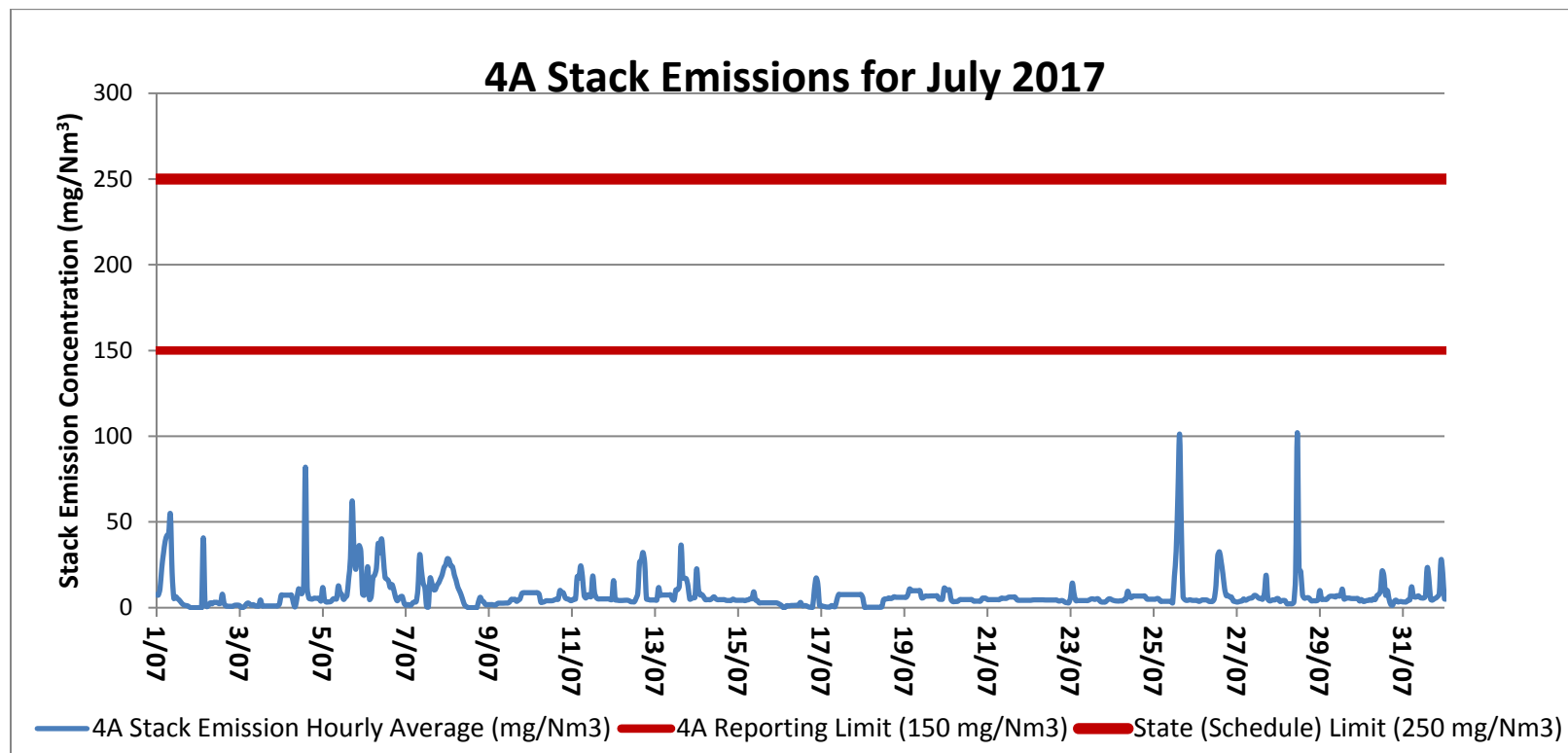
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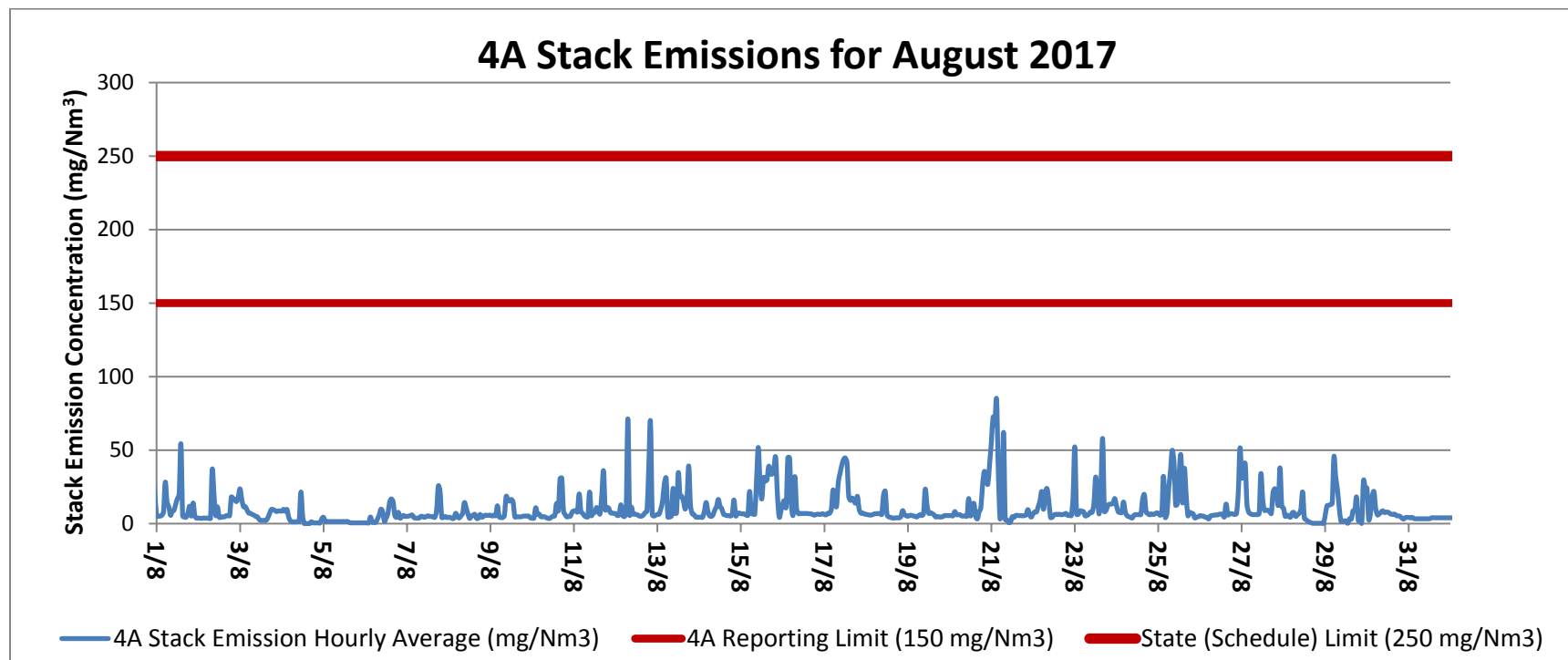
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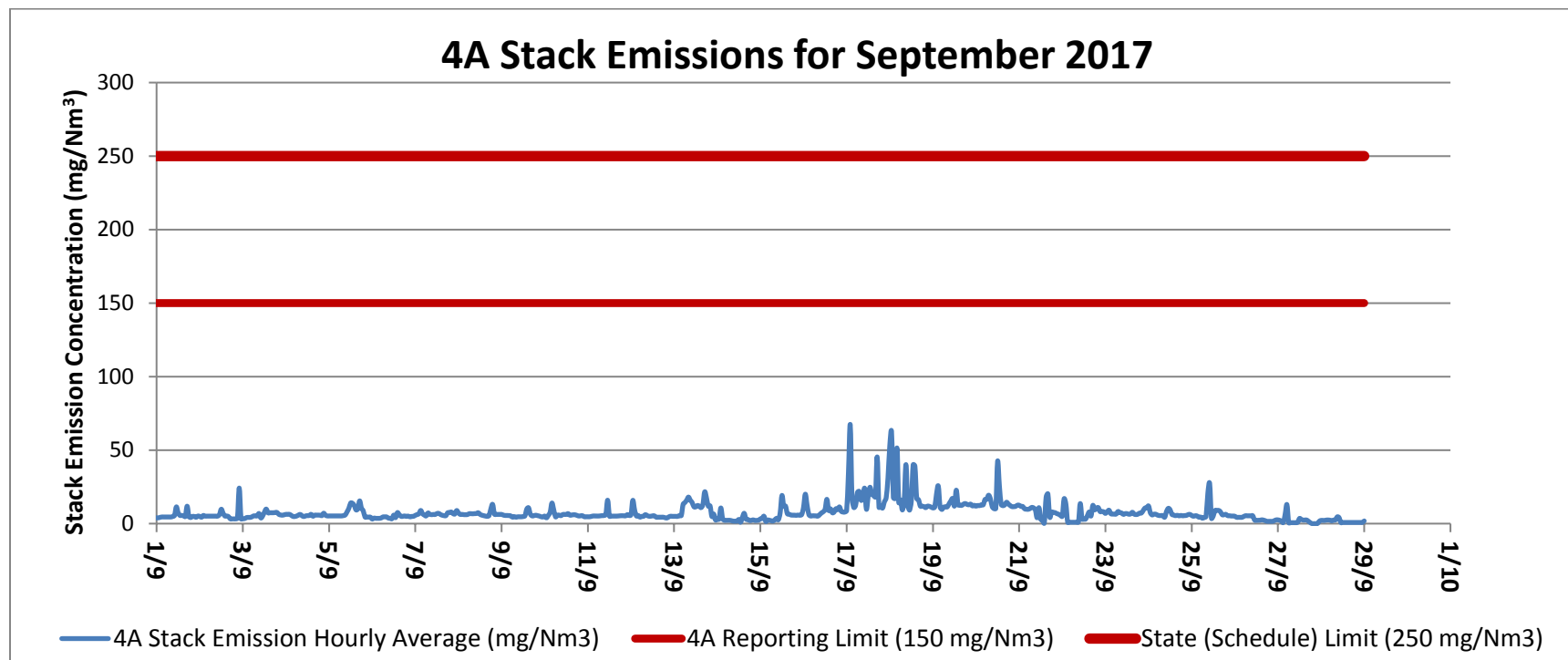
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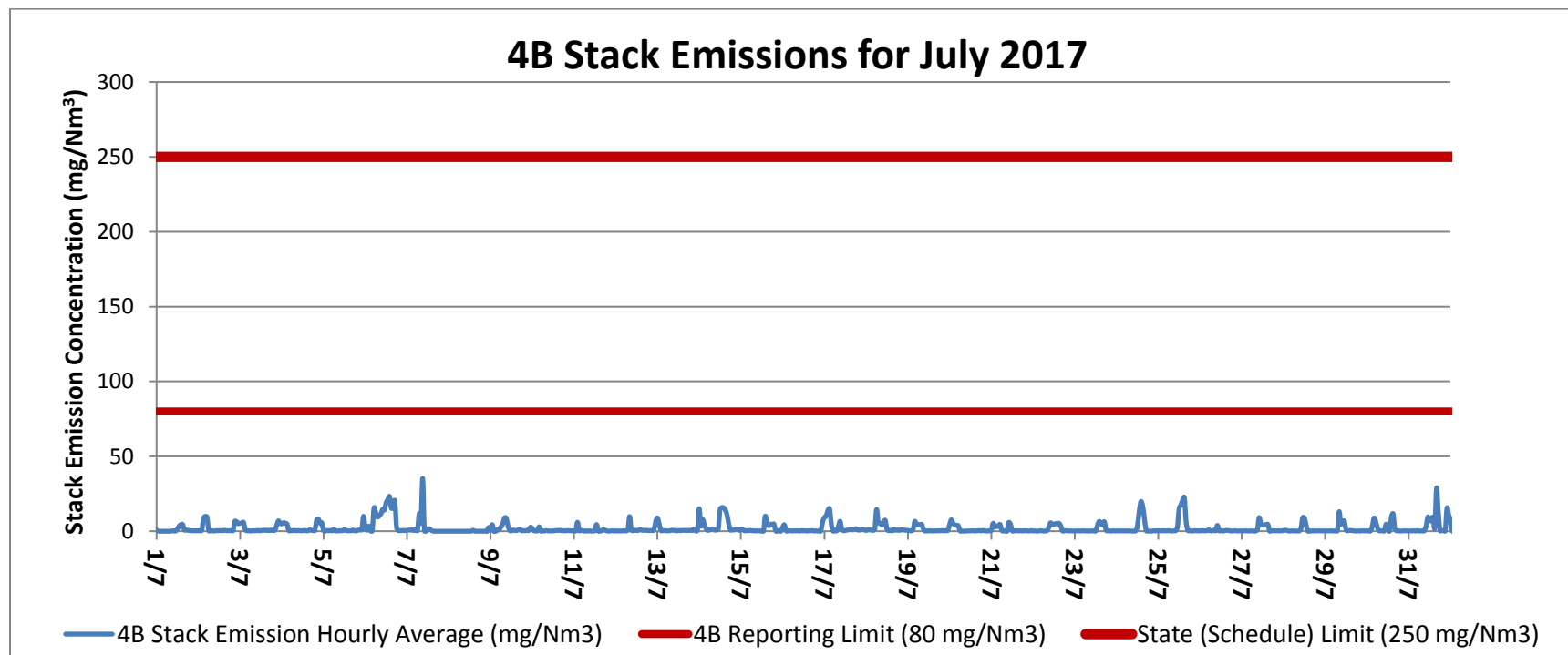
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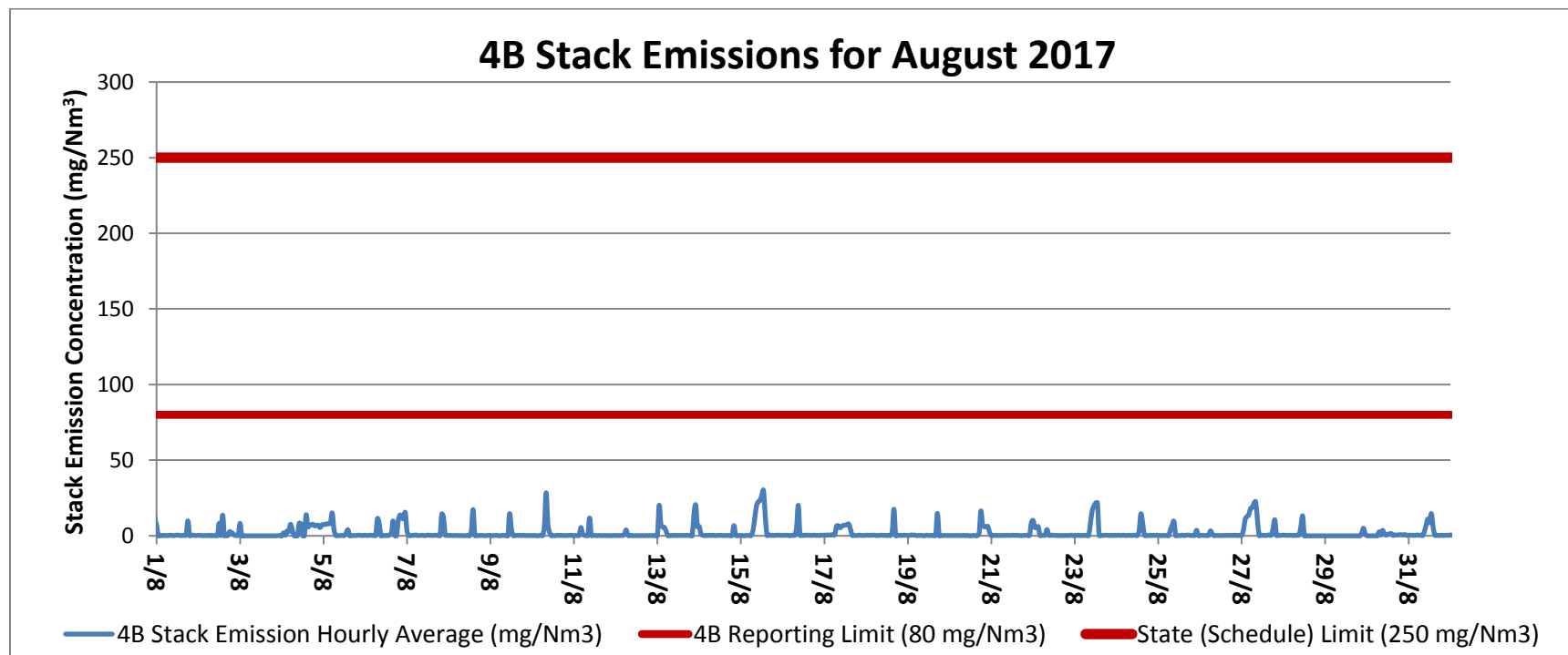


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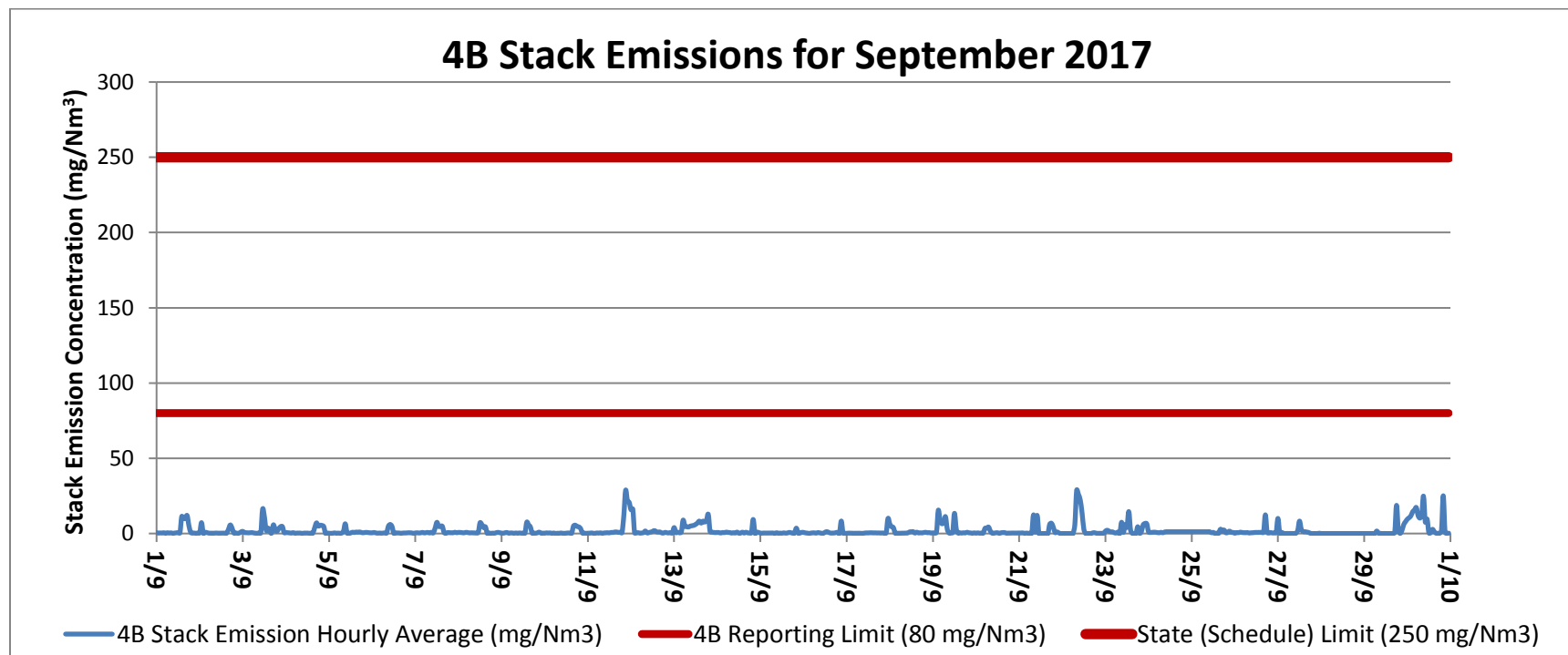
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## **Monitoring Results – Quality Assurance / Quality Control Evaluation**

The data shown in the graphs above was calculated using an opacity curve generated by a number of iterations of spot testing by Axiom Air whom are accredited for compliance with ISO/IEC 17025. The opacity meters are also calibrated daily as per the suppliers standard.

## **Key Process Improvements for the period**

As part of our continuous improvement commitment the emissions reduction team formed last year has continued to work on new and existing projects to mitigate emissions, including:

### **Plant Stack Emissions Improvement Team**

#### **4A Clinker Cooler Baghouse improvement project**

During the March 2017 kiln shutdown, a dynamic Differential pressure control system and particle sensor to detect broken bags were installed on the 4A Clinker Cooler Baghouse. The clinker cooler bag filter takes hot gas from the kiln cooler and dedusts it before being exhausted in 4A stack. The new control system allows for much higher degree of process optimization on the pressure and pulsation cleaning frequency of the bags. The broken bag detection system allows for the rapid detection of holes in bags and their subsequent isolation. This will greatly increase bag life and performance over the campaign.

New bag types were used in the cooler bag filter this campaign based on data from the previous bag samples. This is also expected to increase performance and campaign life of the bags. To date this has been effective in reducing emissions from the cooler baghouse.

#### **Conditioning tower spray project**

As part of the kiln shutdown, the cut-in work was completed for the conditioning tower upgrades on 4A conditioning tower and the bypass system conditioning tower. This upgrade will increase the response rate and effectiveness of the water sprays in the conditioning tower which will increase the performance of the electrostatic precipitators.

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## Conclusion

This is the tenth annual report generated as a result of the current license. There were no incidents with an hourly average particulate concentration above 250mg/Nm<sup>3</sup> on 4B or 4B stack. There were two incidents in February 2017 based on a one hourly average over the reporting limit of 80mg/Nm<sup>3</sup> on 4B stack where the 4B ESP experienced field instability. The kiln was taken offline to repair.