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ATMOSPHERIC DYNAMICS, INC
Meteorological & Air Quality Modeling

Memorandum

Date: January 24, 2024

To: Chad Mendell, Stantec

From: Greg Darvin, ADI

Subject: SJC04 Revised Building Placement and its Impact on Air Quality and Public Health

This memorandum is supplementary to Air Quality Analysis Appendix A of the SPPE Application and describes the findings of our technical analysis of the potential air quality and health risk impacts related to minor refinements that have occurred in the project design since our initial analysis. Those refinements are described below, and, as we explain in more detail below, they do not result in reduced compliance with ambient air quality standards or new health risk impacts.

The two (2) four story buildings associated with the proposed Microsoft SJC04 data center will be rotated on the center point axis by four (4) degrees in a counterclockwise direction in comparison to the original design. The georeferenced stack locations of the emergency generators and rooftop chillers will also be rotated four (4) degrees from their previous position. The revised rotations and new placement of the four-story buildings and generator stacks are depicted in Figure 1.

The dispersion modeling assessment was updated to reflect this revised site layout. The project fence line boundary did not change, so the previous receptor grid(s) were used in the updated AERMOD dispersion analyses. Using the same modeling methodology presented in the SPPE AQ Submittal, Table 4.3-16 presents the updated modeled concentrations for all criteria pollutants. Overall, there were only insignificant concentration increases or decreases as compared to the original modeling assessments and the project, as revised, will still comply with the applicable ambient air quality standards.

The revised annual PM10 concentration decreased slightly from analysis in the SPPE AQ Submittal. As the diesel particulate matter (DPM) emission rate is identical to the PM10 emission rate (PM10 serves as the surrogate to DPM emissions), the health risk assessment (HRA) did not need to be revised as the annual concentration has decreased. Thus, the project, as revised, will still comply with the HRA significance criteria and will not create a health risk impact.



Our analysis of the revised rotation angle of the buildings and the revised modeling assessment concludes that the project will continue to comply with the applicable standards and significance criteria and will continue to remain well below the applicable limits.



Table 4.3-16: Modeled Operational Concentrations and Ambient Air Quality Standards (Revised)

Pollutant	Averaging Period	Maximum Concentration (µg/m ³)	Background (µg/m ³)	Total (µg/m ³)	Ambient Air Quality Standards (µg/m ³)	
					CAAQS	NAAQS
<i>3-/8-/24-Hour Maxima shown for one engine operating up to 10 hours/day (7AM-5PM)</i>						
NO ₂ *	1-hour maximum (CAAQS)	113.36	112.9	226.3	339	-
	3-year average of 1-hour yearly 98th % (NAAQS)**	2.12	85.3	87.4	-	188
	Annual maximum	2.47	20.0	22.5	57	100
CO	1-hour maximum	392.97	2,061	2454.0	23,000	40,000
	8-hour maximum	176.03	1,680	1856.0	10,000	10,000
SO ₂	1-hour maximum (CAAQS)	0.76	38.0	38.8	655	-
	3-year average of 1-hour yearly 99th % (NAAQS)**	0.0096	5.2	5.2	-	196
	24-hour maximum	0.108	3.9	4.0	105	365
	Annual maximum	0.075	0.44	0.5	-	80
PM10	24-hour maximum (CAAQS)	1.65	134	135.7	50	-
	24-hour 6 th highest over 5 years (NAAQS)	1.43	74.8	76.2	-	150
	Annual maximum (CAAQS)	0.42	24.8	25.2	20	-
PM2.5	3-year average of 24-hour yearly 98th %	1.28	33.3	34.6	-	35
	Annual maximum (CAAQS)	0.42	11.5	11.9	12	-
	3-year average of annual concentrations (NAAQS)	0.39	9.8	10.2	-	12.0

*1-hour NO₂ impacts evaluated with Ambient Ratio Method #2 (ARM2), with the maximum hourly background added in separately. Annual NO₂ impacts evaluated with ARM2. Modeling utilized USEPA-default minimum/maximum NO₂/NO_x ambient ratios of 0.5/0.9.

** Impacts for the 1-hour statistical-based NO₂ and SO₂ NAAQS are based on the annual average emissions per USEPA guidance documents for intermittent sources like emergency generators. Impacts for the 1-hour NO₂ and SO₂ CAAQS are based on the 1-hour emission rate since these CAAQS are “values that are not to be exceeded”.



Figure 1
Revised Building Placement

