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Supplemental Material

Multiple Sources of the Outbreak of Legionnaires' Disease in Genesee County, Michigan, in 2014 and 2015

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Independent review panel

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Table S3. Clinical *Legionella pneumophila* isolates ID, hospital A exposure status, Sequence type, NCBI SAMN number.

Table S4. Environmental *Legionella pneumophila* isolates from hospital A: ID, site, NCBI number.

Table S5. Incidence rate ratio (IRR) of LD in Census block groups with a centroid >2 miles, 1-2 miles and <1 mile from aerosol sources (AS) in 2014 and 2015 using Genesee County population data (Census.gov 2015). Cases with onset between Dec 1, 2014 and Mar 1, 2015 were excluded as, generally, cooling towers are not operational in winter. A multilevel Poisson model was nested in Census block groups and adjusted for age group, sex, interaction factor for proximity and year. An interaction factor for City of Flint water at the residence and year was included to test for the sensitivity of the model to this exposure variable.

Figure S1. Crude incidence of Legionnaires' disease per 100.000 over the years 2009 – 2017 in the United State of America (USA, blue (National Notifiable Diseases Surveillance System)), in Michigan (without Genesee County MI-GC, green) and in Genesee County, MI (Genesee County, orange) based on recorded LD cases in the Michigan Disease Surveillance System and United States Census Bureau population data.

Figure S2. Results of free chlorine monitoring at eight fixed monitoring sites (1-8) in the distribution network throughout Flint. These sites were shops, businesses or community service centers where a City of Flint official went to take measurements and samples. X-axes show months in 2014 and 2015 (m-yy); y-axes show free chlorine concentration in mg per L. Red line is 0.2 mg/l, recommended best practice (American Water Works Association, 2007).

Figure S3. Results of the Gaussian plume model: spatial distribution of the highest impact aerosol sources (shown as squares), and the number of cases that are potentially impacted by each aerosol source (shown as color/shade) evaluated with intermediate aerosol concentration threshold ($>0.0001\text{g/m}^2$). Aerosol exposure during hospital stays and visits were excluded.

References