

November 11, 2009

Seattle-Tacoma International Airport Air Monitoring

In April 1995 the Federal Aviation Administration (FAA) and the Port of Seattle issued a joint Draft Environmental Impact Statement (EIS) for the proposed Master Plan Update Improvements at the Seattle-Tacoma International Airport. In February 1996 the FAA and the Port issued the Final EIS, which incorporated a draft air quality conformity determination.

The Final EIS considered the available Sea-Tac air quality information from previous studies, updated the baseline and projection year emission inventories for the five criteria pollutants of concern, performed area-wide dispersion screening modeling for volatile organic compounds (VOC) and oxides of nitrogen (NO_x) and conducted localized traffic intersection modeling analyses for carbon monoxide (CO).

Memorandum of Agreement - The modeling found that the proposed project build-out and operational conditions could result in potential exceedences of the NAAQS for CO (9.0 ppm) and near exceedences of the NO₂ NAAQS. However, no monitoring data was available with which to interpret the EIS worst case modeling results. Based on these findings and comments to the EIS a Memorandum of Agreement between the Port, FAA, Ecology, PSAPCA and the EPA was agreed upon to conduct air quality monitoring. The purpose of the monitoring was to more accurately describe existing air pollution levels and interpret the EIS modeling results. The proposed monitoring included:

- Carbon Monoxide measurements at roadway intersection in the airport vicinity.
- Nitrogen Oxides near the ends of the runways.
- Engine Exhaust Residue under the flight paths of aircraft.

Carbon Monoxide - A carbon monoxide saturation study was conducted from December 1, 1996 through February 28, 1997 in the Sea-Tac area. The study area was selected to address local residents concerns about air pollution in the Sea-Tac area pursuant to the construction of the third runway. No exceedences of the National Ambient Air Quality Standard (NAAQS) were observed. The highest concentrations (7.2 ppm) measured occurred on 12/18/96 at site 24 (SR 518 and 1st Avenue). Higher CO levels were measured at other Puget Sound locations.

Oxides of Nitrogen – A comprehensive Oxides of Nitrogen study was conducted between January 1998 and June 1999. This study had two parts. The first was to determine and quantify the spatial and temporal variations of NO₂ concentrations throughout the Sea-Tac area. The second part was designed to provide accurate real-time measurements directly under the primary flight paths. Passive NO₂ samplers were used at 16 locations and Federal Reference Method (FRM) samplers were used at the two primary sites (Sea-Tac North and Tyee Valley Golf Course) under the flight paths. The average annual mean NO₂ concentration for all the sampling sites was 0.017 ppm. The highest annual average concentration (0.021 ppm) was at the South 150th and 24th Avenue South site. All of the results were less than half of the annual NAAQS of 0.053 ppm. It was impossible to determine the impact of the airport on NO₂ concentrations because of the confounding influences of other NO₂ sources, including nearby freeways, heavily

trafficked roads, and numerous industrial sources throughout the area. The study demonstrated that Sea-Tac area NO₂ levels are highly affected by regional concentrations.

Particulate Matter – At the time no reliable method was found to determine engine exhaust residue, consequently PM₁₀ was sampled as a surrogate. With the resources available it was not possible to analyze the composition of the particles. The PM study was conducted between June 1998 and June 1999. Both FRM filter based sampler and continuous correlated Nephelometer were used to determine PM₁₀ concentrations at the Sea-Tac North and Tyee Valley Golf Course sites. These sites were selected to represent maximum PM concentrations directly under the primary flight paths. Neither the 24 hour (150 μ/m³) nor the annual (50 μ/m³) NAAQS for PM₁₀ was exceeded at either site. None of the FRM samples were more than 25% of the NAAQS, and the data from the Nephelometer was less than 60% of the NAAQS.

This study did not answer citizen concerns about deposition of fine mist that they suspect to be jet fuel or emissions. These suspect events may not have occurred during the time of the study or were of short duration or not heavy enough to significantly affect the 24 hour average of PM₁₀ results. Another possibility is that the particles that had been observed were volatile and evaporated before the filters were weighed.

Air Toxics – As part of EPA's National Air Toxics Monitoring Pilot Program air toxics sampling was conducted at the Sea-Tac North site. The Pilot study was designed to evaluate spatial and temporal characteristics of urban air toxics in preparation of the future deployment of the National Air Toxics Trends Sites (NATTS) Program. During the study air toxics were sampled at six sites throughout the Seattle area. Sampling was conducted from February 2001 through February 2002. Volatile organic compounds (VOCs), carbonyls (acetaldehyde & formaldehyde), and total suspended particulate (TSP) metals were sampled at each site. As there are no NAAQS for air toxics, comparing results to other representative sites and calculating risk is typically used to evaluate the results from air toxic studies.

Other than chromium, manganese and nickel, the values from the Sea-Tac North site were similar or lower than those from the other Pilot study sites. The Sea-Tac site had the highest annual average concentrations of chromium (1.65 ng/m³), manganese (7.86 ng/m³), and nickel (1.80 ng/m³). Of these only chromium was higher than EPA's life-time risk-based value (0.08 ng/m³). Crustal sources were most likely responsible for the chromium-manganese-nickel portion of the measured air toxic metals. All of the values were less than the average from all other U.S. air toxics sites.

The graph below depicts cumulative risk for key air toxics for each Seattle Pilot study site, the average of the six sites and the National Air Toxics Assessment (NATA) results for the Seattle area. The risk at the Sea-Tac site was less than the NATA average, six site average, and four of the six individual sites. Only two sites (Lake Sammamish State Park and Maple Leaf Reservoir) had slightly lower risk and these were background urban locations.

Comparing 6 Sites to NATA

Comparing All Sites to NATA

