SUMMARY

In order to relieve congestion, WSDOT is proposing to construct the I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 – Phase 2), referred to in this document as the Tukwila to Renton Project. The I-405 Team noise specialists considered the project's effect on noise to understand the potential effect of traffic and construction noise on public health and welfare.

Study Approach

Noise levels were measured at 18 locations in the study area, during the loudest hours of the day when traffic volumes are high but not congested. These measurements were used to validate the Existing Conditions (year 2005) computer model generated with the Federal Highway Administration (FHWA)'s Traffic Noise Model (TNM) Version 2.5.

Noise levels for the 18 measured locations and 46 modeled-only locations, which were chosen to represent noise sensitive sites in the study area, were predicted for the Baseline Conditions (year 2014), No Build Alternative (year 2030), and Build Alternative (design year 2030) computer models using TNM. I-405 noise specialists also used relevant design files, traffic volumes, and vehicle mixes based on the *Tukwila to Renton Project Transportation Discipline Report* (WSDOT, 2007) to create the noise models for this project. The results of the No Build and Build Alternatives models were compared to the Baseline Conditions model in order to determine project effects.

All noise-sensitive locations within the Tukwila to Renton Project study area are residential and public use buildings or outdoor recreational areas, which fall under the noise abatement criterion (NAC) of 67 A-weighted decibels (dBA). Noise specialists evaluated mitigation measures at receptors where noise levels were modeled to approach within 1 dBA of or exceed the NAC. They used WSDOT feasibility and reasonability criteria to determine whether the reduction in traffic noise will be substantial enough to warrant the cost of constructing or replacing noise barriers.

Baseline Conditions

Baseline conditions (year 2014) incorporate the effects of the Renton Nickel Improvement Project. Under these conditions,

some study area locations already approach, meet, or exceed the NAC for sensitive receptors. Locations that currently approach, meet, or exceed 67 dBA include approximately 98 residences, 2 hotels, 6 parks, and 3 trails. Eleven of these residences and the 2 hotels exceed the NAC because of noise from local traffic on Main Avenue S, S Grady Way, Benson Road S, N 3rd Avenue, the SR 169/N 3rd Avenue connector, and/or SR 169.

Baseline conditions include a noise wall called Noise Barrier East 5. This noise wall was constructed as part of the Renton Nickel Improvement Project, which is assumed to be included in the baseline condition for the Tukwila to Renton Project. Retaining walls, limited jersey barriers, and topography also shield some residential areas.

Project Effects

The Tukwila to Renton Project will increase noise levels throughout the entire study area, primarily affecting residences in the Renton Hill and Talbot Hill neighborhoods. Noise levels will grow over time, with an increase of 0 to 12 dBA by the year 2030.

If this project is built, WSDOT will acquire 30 noise-affected residences and one park as right-of-way for the roadway project. With the project in place, 92 residences, 1 library, and 1 park will go from being below the NAC to being at or above the NAC. Added to the 98 residences, 2 hotels, 5 parks, and 3 trails that are already at or above the NAC, a total of 190 residences, 2 hotels, 1 library, 6 parks, and 3 trails are predicted to experience noise levels at or above the NAC of 66 dBA set for residences in 2030.

If this project is not built, no additional receptors will approach, meet, or exceed the NAC. Under the No Build Alternative, the 98 residences, 2 hotels, 6 parks, and 3 trails that already approach, meet, or exceed the NAC will continue to experience noise levels that approach, meet or exceed the NAC in 2030.

Construction activities will generate noise during this project's construction period. Construction will usually be carried out in several steps, each with its own mix of equipment and its own noise characteristics. Adverse effects may result from construction noise levels generated by heavy equipment,

including heavy trucks, excavators, jackhammers, and pile drivers. However, this noise will be temporary, occurring only in specific areas of the construction zone during specific times of the construction.

Measures to Avoid or Minimize Effects

Noise Barrier East 5 was built under the Renton Nickel Improvement Project and will be relocated to a new location with the Tukwila to Renton Project. In its new location, Noise Barrier East 5 will not provide noise level reductions over baseline conditions for the five receptors that represent 32 residences in the Talbot Hill area. These residences will actually experience an increased noise level due to the Tukwila to Renton Project, although the magnitude of this increase will be minimized by the shielding effects of the replacement noise barrier. Upgraded noise barrier designs were evaluated in an attempt to reduce noise in the area of Noise Barrier East 5. However, additional noise barrier height and length did not noticeably reduce noise levels and did not meet WSDOT criteria for feasibility.

Two new noise barriers meet WSDOT criteria for placement along the Tukwila to Renton Project. Noise Barrier 8 is planned for construction along the WSDOT right-of-way line east of Benson Road S and southeast of I-405, near the Berkshire Apartments. At a height of 20 feet, Noise Barrier 8 would reduce the number of residences that experience noise levels that approach, meet, or exceed the NAC from 27 to 5 residences in the area behind Noise Barrier 8.

Noise Barriers 10A and 10B were evaluated together as a system. The barrier system is planned for construction atop a retaining wall from Renton Avenue S to the end of Mill Avenue S. At a height of 14 to 20 feet and 20 feet respectively, Noise Barriers 10A and 10B would reduce the number of residences that experience noise levels that approach, meet, or exceed the NAC from 76 to 29 residences in the area behind the two barriers.

As for construction, noise will be reduced where practicable by using enclosures or walls to surround noisy equipment, installing mufflers on engines, using quiet equipment and/or construction methods, minimizing operation time, and locating stationary equipment far from sensitive receptors such as residences.

Unavoidable Adverse Effects

For the Build Alternative, noise levels will approach, meet, or exceed the NAC at 36 locations (representing 121 residences, 2 hotels, 1 library, 6 parks, and 3 trails) with the relocated Noise Barrier East 5, and new Noise Barrier 8 and Noise Barrier 10. Noise Receptor Sites 22, 25, 26, 30, 31, 34, and Freeway Park are planned for acquisition by the I-405, Tukwila to Renton Improvement Project. The Tukwila to Renton Project will not cause any substantial increases in noise.

Construction of the Tukwila to Renton Project will not cause any substantial unavoidable adverse noise impacts, per the FHWA guidance stipulating that temporary construction noise effects are not substantial.