

## Introduction

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The Seattle-Tacoma International Airport (Sea-Tac) FAR (Federal Aviation Regulation) Part 150 Study is an update of an existing program adopted by the Port of Seattle in 1994. That Study recommended specific noise abatement and mitigation measures, and resulted in the continuation of several measures developed through a mediation agreement, to reduce noise impacts along with the introduction of new measures. An FAR Part 150 Study is a voluntary aircraft noise and land use compatibility study that an airport Sponsor undertakes in an effort to reduce the number of people affected by noise. The purpose of an FAR Part 150 Program is very simple: to assess the noise environment, to prepare forecasts of aviation operations, to identify land uses within the airport environs and to explore ways to mitigate land use compatibility conflicts. In other words, to reduce the number of people affected by noise, consistent with airport operations.

FAR Part 150 requires the development of Noise Exposure Maps that depict the existing aircraft noise levels, expressed in terms of the Day-Night Noise Level (DNL) metric, and the five year future noise levels in terms of DNL. Thus the Study has a five year planning horizon. The threshold DNL used for compatibility purposes is the 65 DNL noise contour. In addition to the Noise Exposure Maps, a Noise Compatibility Program (NCP) is also required. The NCP contains the recommendations for noise mitigation and abatement that the Sponsor is recommending for implementation. A schedule for implementation, along with the parties responsible for implementation are also presented in the NCP.

This FAR Part 150 Study is intended to "go beyond" the traditional FAR Part 150 Study criteria. In other words, this Study will not only comply with and follow the traditional Part 150 criteria but it will also evaluate aircraft noise levels beyond the five year time frame and will present DNL noise contours beyond the 65 DNL noise contour.

The result of this Study will be two fold, the traditional FAR Part 150 Study elements consisting of Noise Exposure Maps and a Noise Compatibility Program for the five year planning horizon, and a longer term aircraft noise analysis evaluating effects beyond the 65 DNL noise contour.

This first Working Paper contains the Inventory Chapter of the document. It is a Working Paper, not a final Chapter, and is intended for review purposes. It is anticipated that changes, corrections, deletions and additions will be made to not only this Working Paper, as will be true with subsequent Working Papers. An Appendix to the Working Paper contains detailed information on the existing noise abatement program, community sound attenuation standards and a glossary of terms.

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## Inventory

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### Introduction

Seattle-Tacoma International Airport (Sea-Tac) is the primary air transportation hub of Washington State and the Northwest United States. The Airport is located within King County and the City of SeaTac, approximately twelve miles south of downtown Seattle and approximately twenty miles north of the City of Tacoma. In 1997, the Airport was served by fifty-four airlines, with scheduled passenger service provided by ten major carriers. There are fourteen scheduled all-cargo carriers serving the Airport. The Airport provides non-stop air service to sixty-seven (67) cities within the United States and fifteen (15) additional cities worldwide, with direct flights to an additional six international cities. Sea-Tac Airport is the eighteenth busiest airport, in terms of passengers, in the United States, and is the primary commercial service airport for the Pacific Northwest. In terms of operations, it is the twenty-third busiest airport in the United States. It is the only airport which provides primary scheduled commercial service in the Puget Sound Region. The generalized airport location is illustrated on Figure A1, *AIRPORT LOCATION MAP*.

Sea-Tac Airport is owned and operated by the Port of Seattle, which is composed of a five member governing body, the Port of Seattle Commission. The Commission is elected at large to direct Port policy. The port district boundaries are contiguous with those of King County. The Managing Director of the Aviation Division is responsible for the day-to-day operations of the Airport. While state enabling legislation provides the Port with a broad range of municipal powers over the Airport property and operations, the Port does not have jurisdiction over land use and zoning requirements to ensure compatible development in the noise affected areas around the Airport. The Port of Seattle, as operator of the Airport, has enacted through Port Commission Resolutions a comprehensive program of noise abatement and mitigation measures. These are outlined in subsequent sections of this chapter.

In 1997 the Port of Seattle completed and adopted an Airport Master Plan for Seattle-Tacoma International Airport. That Master Plan contained many recommendations, including the construction of a third parallel runway. The new runway is to be constructed approximately 1,700 feet west of the existing west runway, is to be 8,500 feet in length, 150 feet in width, and will include precision instrument approaches on both ends. During the preparation of the Airport Master Plan, an Environmental Impact Statement (EIS) was initiated to address the environmental impacts of the new runway, along with other Master Plan recommendations. Subsequent to the EIS and prior to a Record of Decision, a Supplemental EIS was prepared to address the projects contained in the Airport Master Plan. The Federal Aviation Administration issued a favorable Record of Decision on the environmental documentation on July 5, 1997.

In addition to these airport planning projects, the Puget Sound Regional Council conditionally approved the addition of a third runway at Sea-Tac Airport as an element of the area's Metropolitan Transportation Plan. The PSRC conditioned this approval with requirements to study additional noise reduction measures. Due to the regional nature of this process, areas beyond traditional Part 150 neighborhoods have an interest in this Part 150 Study. This FAR Part 150 Study will evaluate traditional FAR Part 150 elements and time frames, which generally means evaluating aircraft operations and noise measures within the five-year time frame dictated by Part 150. However, this Study will also evaluate the noise affects, in general, that result from the addition of the third runway. These elements will not be evaluated or illustrated on the Noise Exposure Maps or the Noise Compatibility Program, but will be addressed on a more general basis for the long-term time frame. Noise contours will be presented that not only are associated with aircraft operations beyond the five-year time frame but that also present DNL levels lower than the traditional 65 DNL contour.





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## Airport Physical Facilities

The Airport currently consists of two parallel runways, Runway 16L/34R and Runway 16R/34L. Runway 16L/34R is the longest runway, 11,900 feet in length and 150 feet in width. Runway 16R/34L is 800 feet to the west and is 9,425 feet in length and 150 feet in width. Runway 16L/34R has an instrument approach to Runway 34R, while Runway 16R/34L has instrument approaches to both Runway 16R and 34L. There is an existing parallel taxiway on the east side of the east runway (Runway 16L/34R) with high speed connecting taxiways connecting the east runway to the west runway (Runway 16R/34L). The west runway has a partial parallel taxiway on the west side of the north end of the runway. Aircraft using Runway 16R/34L must cross Runway 16L/34R in either an approach or departure operation. Most ancillary landside facilities are located on the east side of the Airport, with the passenger terminal complex located approximately in the center of the Airport east of Runway 16L/34R. Existing cargo and other support facilities are located north of the terminal. The terminal itself consists of one main terminal building with two satellite terminals, the north satellite and the south satellite. Major ground access is provided by International Boulevard (Highway 99) or State Highway 518 from the north. State Highway 518 connects to Interstates 5 and 405.

The Airport Layout Plan (ALP) indicates the construction of a third parallel runway approximately 1,700 feet west of Runway 16R/34L. This runway would be 8,500 feet long with a full parallel taxiway, with high speed connecting taxiways, on the east side of the runway. The runway would have precision instrument approaches to both ends. The ALP also indicates both terminal and parking structure expansion, with long-term satellite terminal development occurring north of the existing terminal, along with associated parking structure. The South Aviation Support Area is shown south of the terminal complex, south of 188<sup>th</sup> Street. This is an area adjacent to the southeast end of the airfield which will be developed for aviation uses requiring aircraft and airfield access, such as aircraft maintenance, air cargo handling, etc. The Airport operates in a south flow configuration (arrivals from the north and departures to the south) approximately seventy (70) percent of the time. This is graphically presented in Figure A2, *SCHEMATIC AIRPORT LAYOUT PLAN*.

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## Air Traffic Operations Activity

Seattle-Tacoma International Airport has shown steady growth in operations, as a trend, over the past several years. As shown in the following table, overall operations (an operation is either a take-off or a landing) have increased from approximately 260,000 in 1986 to approximately 385,000 in 1997. As can be seen, a significant increase in air taxi (commuter) operations occurred in 1987 and 1988, and then leveled off, resulting in continued high levels of air taxi operations.

Table A1  
SUMMARY OF HISTORICAL OPERATIONS, 1986-1996  
*Sea-Tac International Airport FAR Part 150 Study*

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Year	Air Carrier	Air Taxi	General Aviation	Military	Total
1986	187,870	54,977	16,806	286	259,939
1987	178,682	95,337	17,671	355	292,045
1988	176,732	124,245	14,520	447	315,944
1989	182,460	139,215	12,865	384	334,924
1990	193,482	150,376	10,844	305	355,007
1991	186,717	142,828	8,773	289	338,607
1992	196,141	140,744	8,800	310	345,995
1993	200,000	131,046	7,929	444	339,459
1994	212,016	132,160	8,358	518	353,052
1995	226,190	149,444	10,244	658	386,536
1996	239,063	149,882	6,077	194	395,216
1997	235,447	143,513	6,180	158	385,298

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Source: 1997 Airport Activity Report

In terms of overall operations, Seattle-Tacoma International Airport was the twenty-third busiest airport in the United States in 1997. The airlines with the largest percentage of overall operations at Sea-Tac during 1997 were Alaska (29.2%), United (15%), Horizon (10.3%), Northwest (9.3%), Delta (7.2%), Southwest (7.0%), and American (4.6%). The remainder of the airlines had less than three percent.

The aircraft with the greatest number of operations in 1997 were Boeing 737 models (22.8%), Douglas MD-80 (18.9%), de Havilland Dash 8 (16.7%), Beech 1900 (8.1%), Boeing 757 (6.7%), Fokker F-28 (5.9%), Piper PA31 (3.2%), the DC-10 (2.4%), Airbus A-310 (2.3%) and Boeing 727 (2.3%). All other aircraft types generated the remaining 10.7% of operations.

Operations are further broken down by time-of-day when they occurred. Based on the recently completed Airport Master Plan, the majority of operations occur between 7:00 am and 10:00 pm, as shown in the following table.

Table A2  
SUMMARY OF OPERATIONS BY TIME OF DAY, In Percent  
*Sea-Tac International Airport FAR Part 150 Study*

Type of Operation	Day	Night
	7:00 am to 10:00 pm	10:00 pm to 7:00 am
Air Carrier	85.6	14.4
Air Taxi/Commuter	89.7	10.3
Air Cargo		
Under 60,000 lbs.	72.2	27.8
Over 60,000 lbs.	53.1	46.9
Military	100	00.0
General Aviation	90.6	09.4

Source: 1997 Airport Master Plan Revised Unconstrained Aviation Forecast Update

These time-of-day allocations will be verified and updated as necessary prior to generating the DNL noise contours for this Study.

In 1997, approximately 24,738,476 passengers were accommodated at the Airport. This compares to approximately 24,324,596 passengers in 1996. The 1997 passenger figures represent 22,887,340 domestic passengers and 1,851,136 international passengers. Passengers have been increasing steadily since 1986 when there were 13,642,666 total passengers. Seattle-Tacoma International airport was ranked the eighteenth busiest airport in the United States for total passengers in 1997.

The domestic passenger market was dominated by the contiguous United States, which accounted for eighty-four (84) percent of the domestic passengers. Alaska passengers accounted for almost seven (6.6) percent and Hawaii for the remaining two (2.1) percent of the domestic passengers. The top five domestic destination markets were the Bay Area in California (12.7%), Los Angeles (11.5%), Spokane (4.1%), Las Vegas (3.8%) and Phoenix (3.2%).

The international passenger market was almost evenly split between Asia (2.9%) and Canada (2.6%). Europe accounted for over one (1.4) percent with Mexico accounting for less than one (0.6) percent of the market. The top five international markets were London (11.3%), Vancouver (10.6%), Tokyo (6.4%), Taipei (5.5%) and Seoul (5.1%).

In 1997 the Airport accounted for the transportation of 393,786 metric tons of cargo. Approximately fifty (53.0) percent of this was domestic freight, 208,828 metric tons, and approximately eighteen (18.4) percent was international freight, 72,319 metric tons. The remaining twenty-nine (28.6) percent was air mail, 112,639 metric tons. Federal Express accounted for almost thirty percent (29.3) of all the air freight, with Alaska accounting for twelve percent (11.6), Northwest for nine percent (8.9), United for six percent (5.7), Cargolux for six percent (5.6) and Emery for five percent (5.2). The remaining airlines all account for less than five percent each.

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### **Airspace/Air Traffic Control**

The Federal Aviation Administration is responsible for the safe and efficient use of the national air space. This airspace is divided into three specific types; enroute, terminal and tower. When an aircraft departs an airport it is located in the airspace being handled by air traffic controllers working in an air traffic control tower. When the aircraft is approximately one mile away from the Airport, the aircraft is handed off to controllers working the Terminal Radar Approach Control Facility (TRACON). These controllers are responsible for the airspace extending out twenty-five to thirty miles from the Airport in all directions. The aircraft then enters the third type of airspace and becomes the responsibility of enroute controllers working in an Air Route Traffic Control Center (ARTCC). The enroute controllers retain control until the aircraft nears its intended destination. The process is then reversed for landings. For aircraft operating at Sea-Tac Airport, the controlling facilities responsible for the terminal and tower airspace are located in the main terminal building.

There are several airports located in the Seattle area and under the control of Seattle TRACON. Although Sea-Tac accounts for a significant percentage of all area aircraft operations, the cumulative number of aircraft operations at the other airports also adds a significant workload for controllers in the Seattle TRACON. There are also other general aviation airports without operational control towers or published instrument procedures that contribute to the total number of area wide aircraft operations. While aircraft using these other general aviation airports operate under visual flight rules (VFR), they utilize the terminal airspace and aircraft using Sea-Tac must be separated from them. Seattle TRACON provides full arrival and departure services for Sea-Tac airport, as well as for King County International Airport/Boeing Field, Gray Army Air Field, McChord Air Force Base, Olympia Airport, Renton Municipal, Tacoma Narrows, Bremerton National Airport and Shelton/Sanderson Field.

Sea-Tac Airport has a twenty-four hour, continuously operating Air Traffic Control Tower (ATCT) that has a designated Airport Traffic Area (ATA). Aircraft which operate within an ATA must be in contact, at all times, with the tower controllers, especially to receive approval for take-offs and landings. Standard ATAs are designated to include all airspace within five miles of the Airport from the surface of the ground up to (but not including ) 3,000 feet. Because of the close proximity to other airports in the area, especially the King County International Airport, the Sea-Tac ATA is not completely circular. Airspace operational activities are explained in greater detail in the following paragraphs.

**The following information concerning airspace and air traffic control is taken from the Airport Master Plan, Technical Report Four, *FACILITIES INVENTORY*.**

This includes an explanation of the existing airspace configuration, airspace usage, visual and instrument flight rule (VFR and IFR) operations, flow control procedures, and existing interactions under north and south flow conditions.

**Air Space Configuration** The Seattle-Tacoma Terminal area airspace is shown in Figure A3. This airspace has been delegated to the Sea-Tac TRACON facility by the Seattle ARTCC or Center. The Center provides Air Traffic Control (ATC) services to aircraft between terminal areas. The Seattle TRACON provides approach/departure control services within its delegated airspace. Eight of the busiest airports within the Seattle TRACON's airspace have Air Traffic Control Towers (ATCT) or "towers". These towers provide control within the TRACON's airspace. Airports that have control towers are listed below:

Boeing Field/King County International  
Gray Army Air Field  
McChord Air Force Base  
Olympia Airport  
Renton Municipal  
Seattle-Tacoma International  
Tacoma Narrows  
Paine Field

The Center and TRACON provide control primarily to aircraft operating under instrument flight rules (IFR). In addition, TRACON provides control or service to aircraft operating under visual flight rules (VFR) within the Seattle Class B Airspace, (Formerly TCA). An ATC clearance and control is mandatory for VFR aircraft operating within Class B airspace. The Seattle Class B Airspace Area is depicted on Figure A3.

Published instrument approach procedures exist for nine airports within the Seattle TRACON airspace as listed in Table A3.

Table A3 differentiates between precision and non-precision approaches. A precision approach, by definition, provides electronic vertical guidance to the pilot as well as horizontal (azimuth) guidance. A non-precision approach provides horizontal guidance only. Generally the azimuth guidance for a precision approach is more precise. For an Instrument Landing System (ILS) approach procedure, a localizer transmitter provides the azimuth guidance and a glide slope transmitter provides the vertical guidance.



Figure A3 Airspace/NAVAIDS Summary

# Seattle-Tacoma International Airport

## Far Part 150 Study Update

Table A3  
**PUBLISHED IFR APPROACH PROCEDURES**  
*Sea-Tac International Airport FAR Part 150 Study*

<b>Airport Name</b>	<b>Runway</b>	<b>Procedure</b>
King County Int./Boeing Field	13R	ILS (CAT I)
	31L	LOC BC
Bremerton National	1	NDB
	19	ILS (CAT I)
Gray Army Field	15	ILS, NDB
	33	VOR, NDB
McChord Air Force Base	34	ILS, HI-TACAN
	16	ILS, TACAN
Olympia	17	ILS (CAT I)
	34	VOR/DME
Renton Municipal	To airport	VOR-A
	15	NDB
Seattle-Tacoma International	16R	ILS (CAT IIIB), NDB
	34L	ILS (CAT I)
	34R	ILS (CAT I), NDB
	16L/R	VOR
	34L/R	VOR
Shelton/Sanderson Field	To airport	NDB-A
Tacoma Narrows	17	ILS (CAT I)
	35	NDB

Abbreviations: DME-Distance Measuring Equipment; ILS-Instrument Landing System; LOC BC-Localizer Back Course; NDB-Nondirectional (radio) Beacon; TACAN-Tactical Air Navigation; VOR-Very High Frequency Omnidirectional Range.

### **Air Space Usage**

All aircraft flights are governed by either visual flight rules (VFR) or instrument flight rules (IFR). Definitions are contained in FAR Part 91 and summarized below. The basic difference between VFR and IFR is that the pilot maintains spatial orientation of an aircraft by reference to the earth's surface for VFR and



by reference to aircraft instruments for IFR. Under IFR rules, the pilot can operate in poor visibility conditions when operating in controlled airspace. Flight under VFR rules requires good visibility and maintenance of specified distances from clouds.

During poor weather conditions, Sea-Tac Airport is restricted to a single arrival stream. This is because of the closeness of the existing parallel runways. Sea-Tac Airport operates with a single arrival stream approximately forty-four (44) percent of the time.

The Seattle Terminal Airspace area includes nine IFR airports and approximately thirty VFR airports. Two of the IFR airports are military, McChord AFB and Gray AAF and ten of the VFR airports are private or restricted and generally not available to the public.

### **IFR Operations**

Air carrier and many turbojet general aviation and military aircraft operating to or from the Airport under IFR, are reassigned coded flight routes and procedures referred to as Standard Instrument Departures (SIDs) and Standard Arrival Routes (STARs). These SID and STAR routes are depicted on Figure A4 for north flow and on Figure A5 for south flow. These figures also depict arrival and departure gates. Navigation of IFR aircraft within the Seattle TRACON airspace is generally provided by radar vectors to achieve efficient sequencing, spacing, and separation between aircraft. Therefore, actual aircraft flight tracks, particularly closer in to the Airport, will not conform exactly with the gates, SIDS, and STARS depicted.

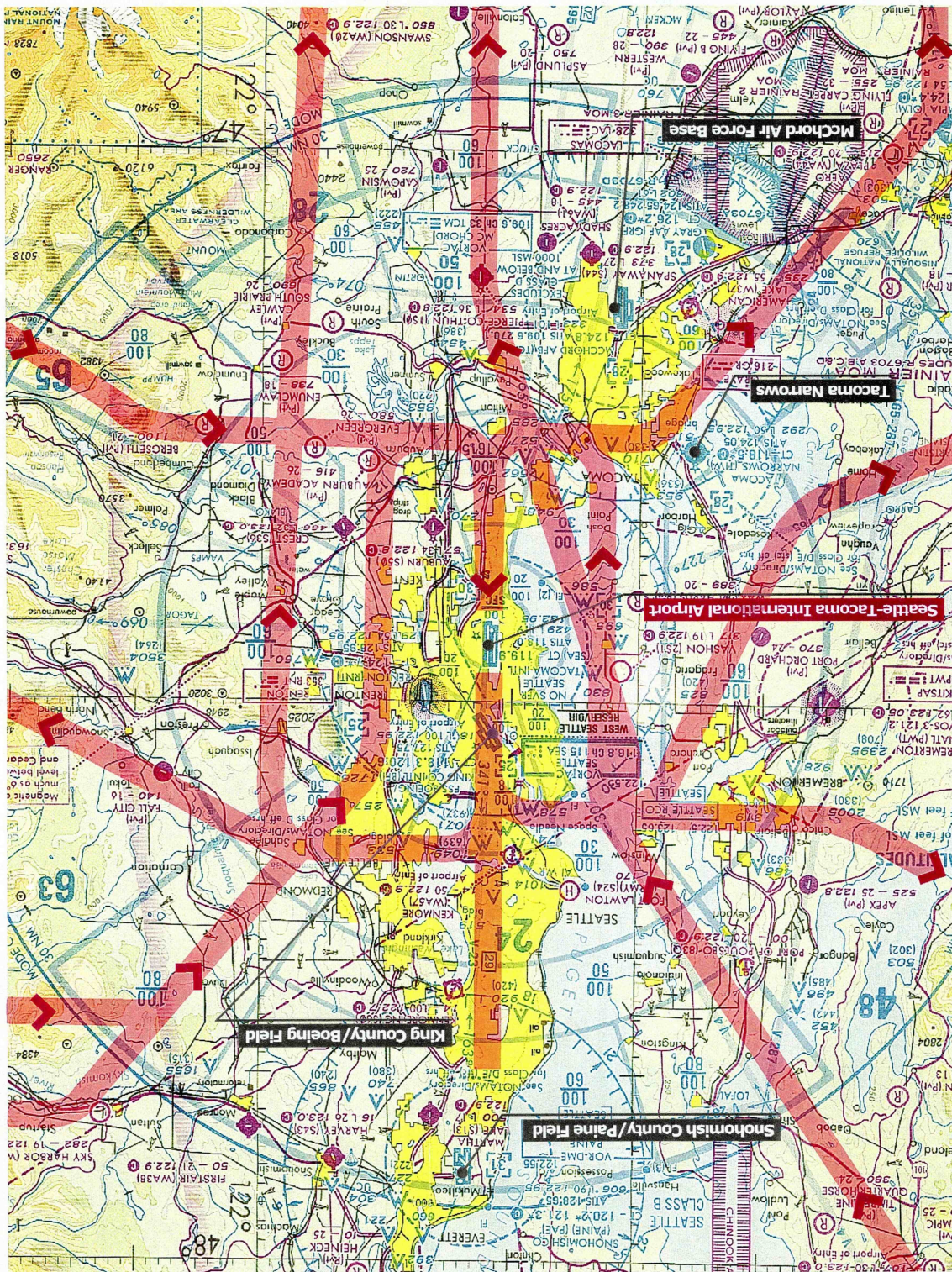


Figure A4 Standard Instrument Departure and Arrival Routes, North Flow

# Seattle-Tacoma International Airport

Far Part 150 Study Update

Source: Seattle Sectional Aeronautical Chart, January 1998. Not Intended for Navigational Purposes.

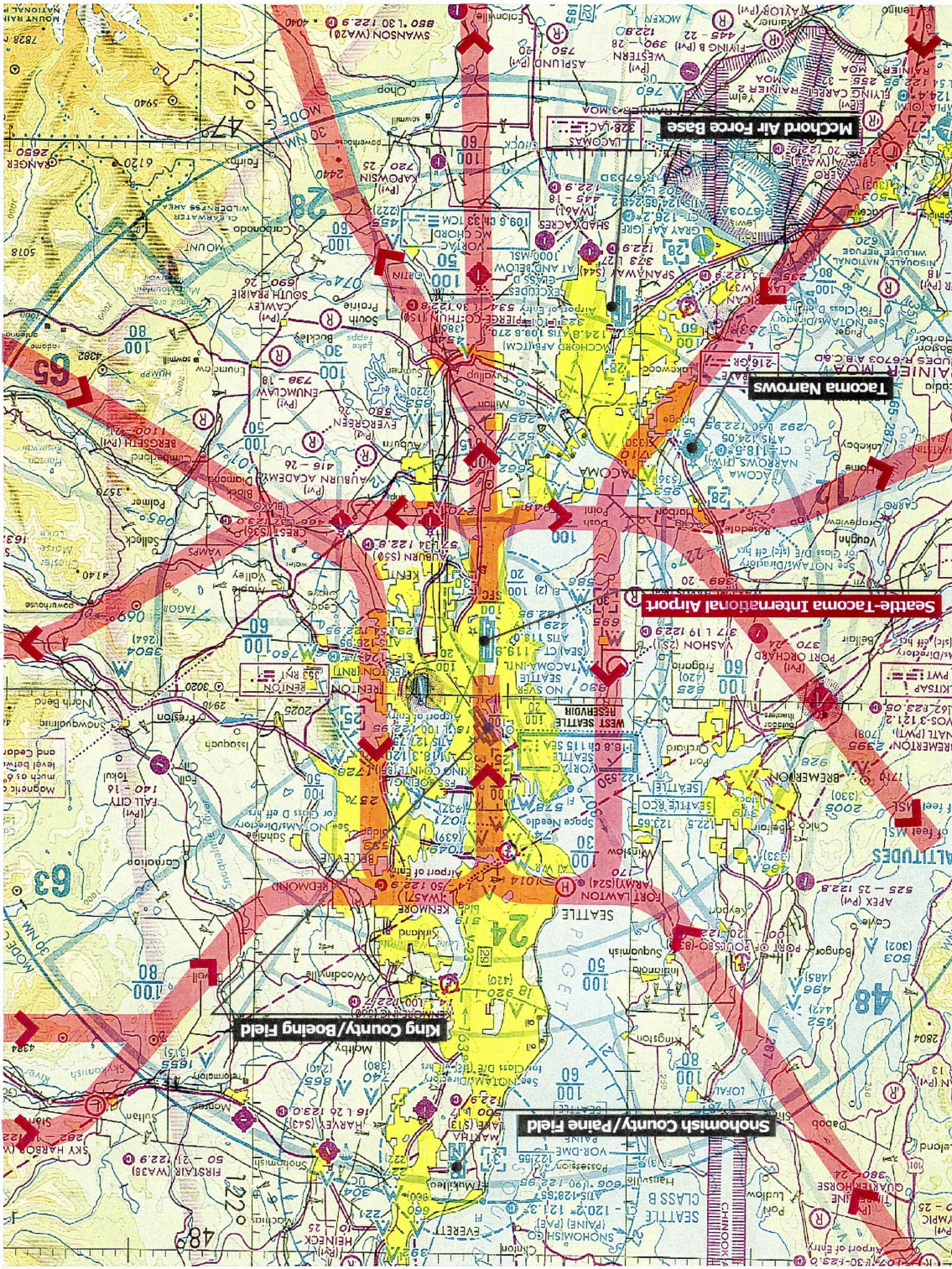


Figure A5 Standard Instrument Departure and Arrival Routes, South Flow

# Seattle-Tacoma International Airport

Far Part 150 Study Update

Source: Seattle Sectional Aeronautical Chart, January 1998. Not Intended for Navigational Purposes.

In general, however, IFR arrival aircraft are cleared to the Airport by the Seattle Center via these STARs while descending from enroute altitudes. These aircraft arrivals are "handed off" via radar from the Seattle Center to the Seattle TRACON at various entry points referred to as "gates". In other words, there are established arrival routes that aircraft utilize and the pilots are in contact with different controllers as they approach the Airport.

In April, 1990 the Federal Aviation Administration standardized the air traffic patterns for jet aircraft flying in and out of Sea-Tac. The new air traffic plan referred to as the "4-Post Plan", changed the arrival and departure procedures used by the air traffic controllers to transfer the aircraft from the enroute to the terminal environment. The FAA determined that safety and efficiency could be improved if the procedures used to route air traffic to the terminal airspace area were designed to be the same regardless of the direction of traffic flow. Depending on the city of origin, aircraft enter the terminal airspace from one of the four "posts", or corners of the terminal airspace area. These procedures helped to alleviate difficulties associated with having two different sets of patterns that were wind dependent.

The TRACON assumes responsibility for guiding the arrival aircraft to the final approach course at the destination airport and separating it from other aircraft. Lower performance aircraft, and some commuter/air taxi aircraft, operate at lower altitudes below or clear of the jet aircraft routes. The lower performance aircraft are "laced" into the arrival routes closer in to the Airport to minimize the effects of the speed differentials.

When arrival aircraft are in the vicinity of their destination airport they are given descent instructions by TRACON until they are approximately 1,500 feet above the Airport and approximately five nautical miles from the runway threshold on the final approach. TRACON then clears them for the approach and instructs the pilot to contact the destination airports tower.

Similarly, departing IFR aircraft are guided by the Seattle TRACON through its delegated airspace and separated from other aircraft. Shortly after departure aircraft are airborne, the tower clears the aircraft to contact the TRACON for departure control. The TRACON then directs departing aircraft toward the departure gates. Similar to arrivals, departing low performance aircraft are turned immediately after take-off to separate them from the jet departure stream and are kept at lower altitudes. As soon as departing aircraft either pass the departure gate or climb out of the TRACON airspace, they are transferred to ARTCC for enroute control.

Unless visual separation is applied, TRACON provides all IFR aircraft with a radar separation of at least three nautical miles longitudinally or 1,000 feet of vertical separation throughout their terminal airspace. Additional longitudinal separation to avoid wake turbulence is provided for various combinations of aircraft sizes. The minimum longitudinal separation in terminal airspace is listed below:

Aircraft Longitudinal Separations [1]

<u>Lead Aircraft Classification</u>	<u>Aircraft Classification</u>	<u>Separation (Nautical Miles)</u>
Heavy	Heavy	4
Heavy	Large	5
Large	Small	4
Heavy	Small	6

[1] Source: FAA Handbook 7110.65L, "Air Traffic Control" with changes.

For the purpose of wake turbulence separation minima, FAA classifies aircraft as Heavy, Large and Small as follows:

**Heavy** Aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are operating at this weight during a particular phase of flight (Ex. B-747, B-777, DC-10).

**Large** Aircraft of more than 12,500 pounds, maximum certified takeoff weight, up to 300,000 pounds (Ex. B-737, MD-80, Business jets).

**Small** Aircraft of 12,500 pounds or less maximum certified takeoff weight (Twin and single piston/turboprops).

Within the Seattle Class B airspace, the Seattle TRACON provides all VFR aircraft a radar separation of 1/2 nautical mile longitudinally or 500 feet of vertical separation from all IFR and VFR aircraft.

## VFR Operations

Flights conducted under VFR, unlike IFR flights, are not always under ATC jurisdiction. Under VFR, pilots may normally operate without an ATC clearance except when operating within Class B airspace. When operating in visual meteorological conditions, all pilots, regardless of type of airspace flight plan or ATC clearance, are ultimately responsible to see and avoid other aircraft.

The lower altitudes of airspace to the east and west of the Seattle area are restricted by the Cascade and Olympic Mountains. These mountains and the Class B Airspace tend to channel north/south VFR traffic. One north/south channel or VFR flyway exists at approximately five to six miles east of the Sea-Tac Airport and below 4,000 or 5,000 feet above mean sea level (MSL). The other north/south VFR flyway is somewhat wider and close to the Olympic Mountains. Those transiting under Class B Airspace in the vicinity of Sea-Tac and over the Puget Sound are below 3,000 feet. Some VFR aircraft fly over the tops of Class B Airspace. The top of the Class B Airspace is at 10,000 feet above MSL.

**Flow Control.** During peak air traffic periods of the day, especially during bad weather, arrival aircraft traffic demand exceeds the arrival capacity of Sea-Tac Airport. In the past, when this occurred, TRACON would advise ARTCC to place arrivals in holding patterns at the edge of TRACON airspace. Because it is more efficient for delays to be absorbed enroute, a procedure called Flow Control has been developed. In extreme conditions, aircraft destined for Sea-Tac may be held on the ground at the departure airport prior to takeoff.

In general, Flow Control refers to a procedure allowing TRACON to determine the maximum hourly rate of arrivals to Sea-Tac. The TRACON advises Seattle Center so that adjustments can be made to the rate of entries into TRACON airspace. This hourly rate of arrivals is known as the Airport Acceptance Rate (AAR). The AAR varies according to several conditions including number of runways available for landings, weather conditions, direction of traffic flow, types of approach in use, and runway operational conditions.

**Existing Conditions.** The term interaction as used in this section refers to a situation requiring special controller and/or pilot attention to ensure adequate separation or sequencing is accomplished. Although this broad definition could include random occurrences that do not affect capacity, there are two interactions which affect Sea-Tac capacity that occur regularly during IFR weather conditions and one that occurs regularly when visual approaches are in progress.

These three interactions occur during: (1) IFR south flow conditions; (2) IFR north flow conditions; and (3) visual approaches in south flow conditions.

### **IFR Weather Conditions-South Flow**

During IFR weather conditions, when Sea-Tac and KCIA (King County International Airport/Boeing Field) are operating with south flows, interactions exist between the arrivals to the two airports. Although a minimum of 1,000 feet of altitude separation exists between the published Instrument Landing System (ILS) approaches, a need exists to protect KCIA missed approach possibility. In weather conditions which allow KCIA Tower controllers to see the Sea-Tac arriving aircraft, visual separation is provided by the controllers and no loss in capacity is experienced. This operating arrangement is known as Plan Alpha. Cloud ceilings at KCIA must be at least 2,500 feet for KCIA Tower personnel to see Sea-Tac arrivals. The yearly frequency of occurrence of south flow conditions, with ceilings below 2,500 (no Plan Alpha) feet is approximately 17 percent. Based on observations, this is estimated to drop to about 16 percent during the busiest part of the day, 7:00 a.m. to 9:00 p.m. Additionally, weather conditions below minimums (closed conditions) at Sea-Tac would reduce the occurrence of the interaction by another 1 or 2 percent.

Weather statistics indicate this interaction should occur approximately 15 percent of the time. However, the actual time of this impact on capacity is less because of special ATC procedures. Under these procedures, during certain weather conditions and with pilots familiar with KCIA, aircraft approaching Sea-Tac will be advised to maintain 3,000 feet MSL until KCIA Tower advises TRACON that the landing of the other aircraft at KCIA is assured. At this point the Sea-Tac approaching aircraft pilot is given his final approach clearance and authorization to land. If the KCIA approaching pilot executes a missed approach, TRACON will vector the Sea-Tac approach back into the arrival stream and one arrival interval or slot is lost in arrival capacity at Sea-Tac. However, this situation occurs very rarely.

### **IFR Weather Conditions - North Flow**

During north flow IFR conditions, interactions exist between the arrivals to KCIA and departures from Sea-Tac. Sea-Tac departures are held on the ground from the time a KCIA arrival nears the final approach fix located just east of Sea-Tac until KCIA Tower reports the landing is assured or until visual separation can be provided. This situation can result in affecting the Sea-Tac departure capacity. If a Sea-Tac arrival is within two nautical miles of the Runway 34R threshold, a departure from Sea-Tac, in certain IFR conditions, cannot be released. As a result one to three intervals could be lost.

## **Visual Approaches - South Flow**

Visual approaches can normally be conducted to Sea-Tac Airport when the cloud ceiling is at least 5,000 feet over the Puget Sound and pilots have visual contact with the preceding aircraft or airport.

When visual approaches are being conducted, the TRACON will radar vector aircraft on three arrival routes and sequence them into a common arrival stream over Elliott Bay. This activity takes place over the top of straight-in arrivals to KCIA.

During peak periods, both Runways 16L and 16R at Sea-Tac Airport are used if visual approach conditions exist. Two common arrival streams are formed over Elliott Bay. This situation requires special attention on the part of both controllers and pilots. When pilots are making the turns into Elliott Bay from the north and south, visibility from the cockpit is reduced. If two aircraft are about to make the turn at about the same time onto different arrival streams, one pilot often tends to reduce speed and fall back in order to keep the other aircraft in sight. This will increase the longitudinal spacing in the arrival stream and reduce the arrival rate.

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## **ANOMS Radar Data**

The Port of Seattle Noise Abatement Office has a flight track data collection and analysis program called ANOMS (Airport Noise and Operational Monitoring System). This program collects and processes radar data from the FAA's ARTS (Aircraft Radar Tracking System). Once collected, the ANOMS program performs a number of processes, including determining if the track is a departure or arrival and assigning a runway to the track. With this system, the Port is able to analyze compliance with the Port's noise abatement program and investigate particular incidents concerning aircraft operations.

The ANOMS program exports a file that consists of flight information about the aircraft that is operating on each track and position information as to the location of the flight. The flight information includes data such as the ARTS aircraft type, ARTS airline code, flight number, and type of operation and runway. The position information includes the X and Y position of each radar strike for the flight track for every four seconds of the flight as well as the



altitude of the aircraft at each point and the time that the aircraft was at that point. The position information is given in distance relative to the ARTS radar antenna that is on the Airport property.

These files have been successfully exported to the Bridge Reports programs for analysis in the FAR Part 150 Study. Note that the data used is based upon the information from ANOMS, which is derived from the FAA's radar system. There is always the possibility that some loss of data in these radar systems; however, every step possible is taken to insure this does not occur. Where there may be lost data or gaps in the data, this information is typically not recoverable.

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### **Current Noise Abatement Program**

Seattle-Tacoma International Airport (Sea-Tac) has a long history of implementing noise abatement programs. These programs include both physical and operational programs. In 1976 the Port prepared the Sea-Tac Community Plan, which addressed for the first time the relationship of aircraft noise to land use development and contained recommendations for land use compatibility. This Plan was updated in 1985 when the Port completed its first FAR Part 150 Study. This Study recommended many of the existing noise mitigation programs currently adopted by the Port and established the Noise Remedy Program Boundaries. That FAR Part 150 Study was updated in 1993. The Updated FAR Part 150 Study contained measures which amended some of the programs adopted in the first study and produced an updated set of Noise Exposure Maps. This FAR Part 150 Study Update is the third Part 150 Study that the Port has voluntarily undertaken.

Subsequent to the first FAR Part 150 Study, in 1989 the Port undertook a new and innovative process to address the aircraft noise issue at the Airport. This was called the Sea-Tac Noise Mediation process, which was a consensus-based approach that was used to address aircraft noise issues. Through that process several measures for noise abatement and noise mitigation were recommended and adopted, resulting in a package of noise reduction measures for the Airport. Many diverse interests were represented in this process, including airport users, tenants, citizens from many varied sectors of the area, the Federal Aviation Administration and pilots. The package contained both short-term and long-term measures whose goals were to reduce aircraft noise by at least fifty percent by the year 2001. The recommendations were adopted in 1990 by the Port Commission.

The "package" contains many elements for noise reduction. These include:

A "noise budget" or allocation of noise for the Airport and airlines that will decrease over time. The budget limits and controls aircraft noise and accelerates the use of the new Stage III aircraft.

Nighttime restrictions on the use of Stage II aircraft. For the first two years of the program, no new Stage II aircraft flights were introduced between midnight and 6:00 am. On October 1, 1995 the restriction became fully implemented with no Stage II flights between 10:00 pm and 7:00 am.

Doubling the rate of the Port's existing sound insulation program (The Noise Remedy Program) and changing the "cost-share" insulation area to one hundred percent Port paid.

Control of aircraft ground noise by restricting use of engine power for backing aircraft away from gates, improving run-up regulations, investigating the reduction of reverse thrusts, limiting use of auxiliary power units and erecting a "hush" facility if a maintenance base is built at the Airport.

Implementation of a state-of-the-art flight track monitoring system to better monitor compliance with noise abatement flight track procedures.

Improvement of flight procedures through the Elliott Bay corridor and over Puget Sound to minimize jet noise to adjacent residential areas, with special attention to nighttime flights.

Control of noise from "single-event" aircraft operations that are particularly annoying by improving the Port's complaint hot line and monitoring system.

Establishment of a Noise Abatement Committee to ensure implementation of the agreement.

Since the adoption of the Noise Mediation recommendations and the last FAR Part 150 Update, the Noise Acquisition Program, now completed, has resulted in approximately 1,328 homes and 103 vacant lots acquired at a cost of approximately 119 million dollars. The Noise Remedy Program offers soundproofing to the 10,000 homes within the existing program boundaries. There have been approximately 6,228 homes insulated for a cost of approximately 125 million dollars. The Noise Remedy Boundary Map is shown on the following illustration, Figure A6, *NOISE REMEDY BOUNDARY MAP*.

**More detailed information concerning these programs is found in the Appendix.** Based on the programs developed through the Noise Mediation Project, various airlines have been fined for violating the Agreement. These fines have generally been a result of two types of violations, run-ups and nighttime Stage II limitations.

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## Noise Complaint History

The Port of Seattle Noise Abatement Office has been operating a noise complaint hotline since 1987. The purpose of the complaint hotline is to provide the public with a means of contacting the Port concerning aircraft noise and giving Port staff insight into the issues that are important to the community. Citizens may call concerning particular incidents or about aircraft noise in general.

A recent sampling of the noise complaint data, which has been collected since 1987, has been reviewed in order to help identify current issues that are important to citizens that have contacted the hotline. The noise complaint hotline calls between January 1<sup>st</sup>, 1996 and March 30<sup>th</sup>, 1998 were obtained from the Port in electronic format. The complaint data were then processed in order to GEO code each complaint address for mapping purposes, to categorize the complaints and to correlate the complaint data with flight track data during the time period that flight track data is being analyzed.

The complaint data have been analyzed according to several variable; location, primary reason, time of day, and the day of week for each call. The hotline calls between January 1<sup>st</sup>, 1996 and March 30<sup>th</sup>, 1998 are summarized in the following tables and figure.

Table A4 presents the total calls received per community as well as the number of individual callers during this 27-month time frame. It is interesting to note that many of the complaints come from areas not directly under the approach/departure paths of the Airport. The graph at the bottom of the page illustrates the general nature of the disturbance that the caller identified. As can be seen, most complaints (42%) complained of aircraft being too loud, complaints of low flying aircraft accounted for twenty-three (23) percent, complaints of aircraft being off track accounted for eleven (11) percent, with the remaining complaints concerning nighttime operations, run-ups, frequency of operations and other. For that same period, Figure A7 presents a plot of the location of the noise complaints. Please note that not all callers provide an address, or sufficient information for which an exact position can be determined. This map displays only those calls for which the location can be determined.

Table A5 presents the number of calls by hour of the day. The hour with the highest number of calls is at 7 am, the second highest hours are 8 am and 9 pm. These hours correspond to times that most people are at home.

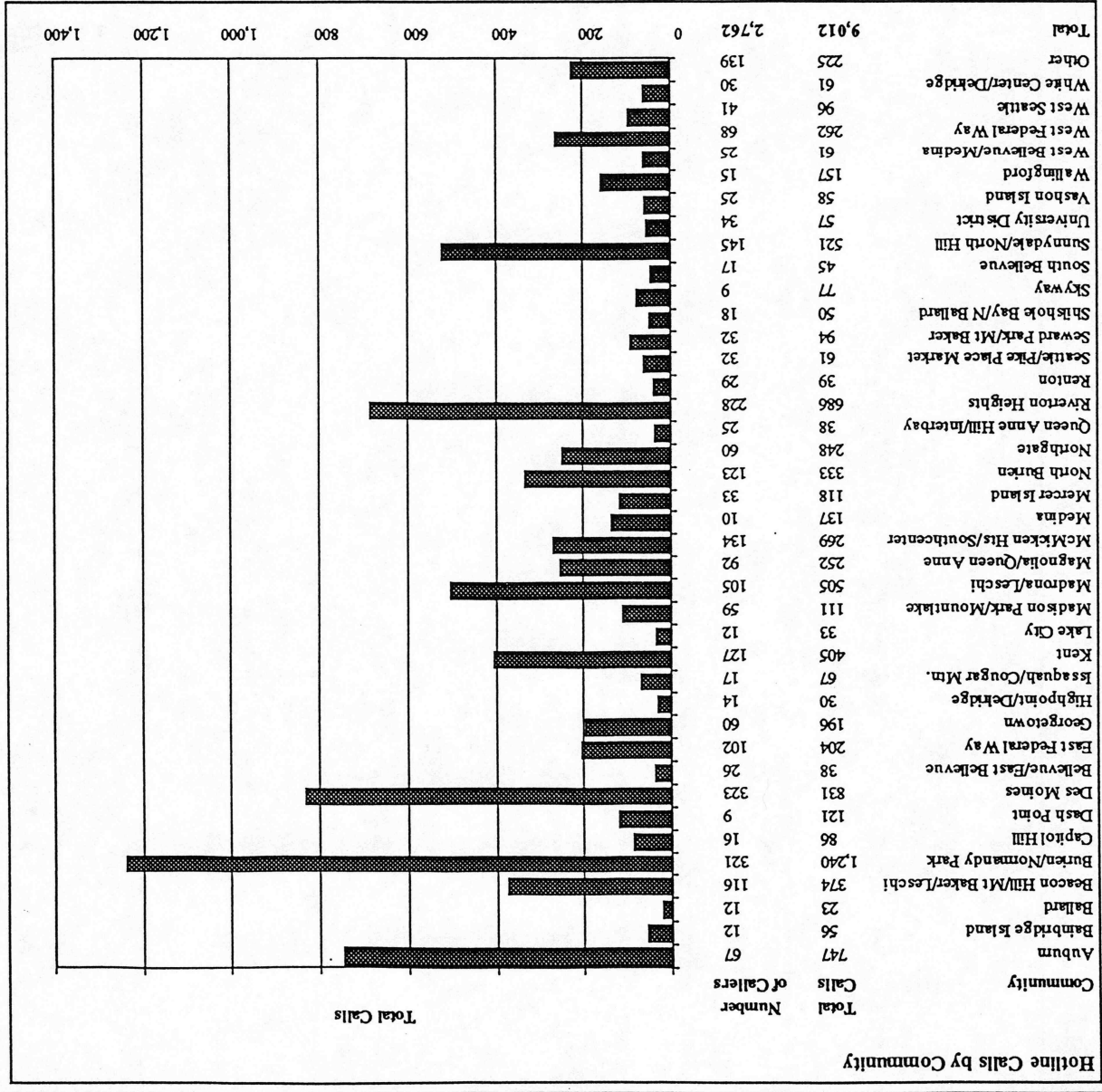
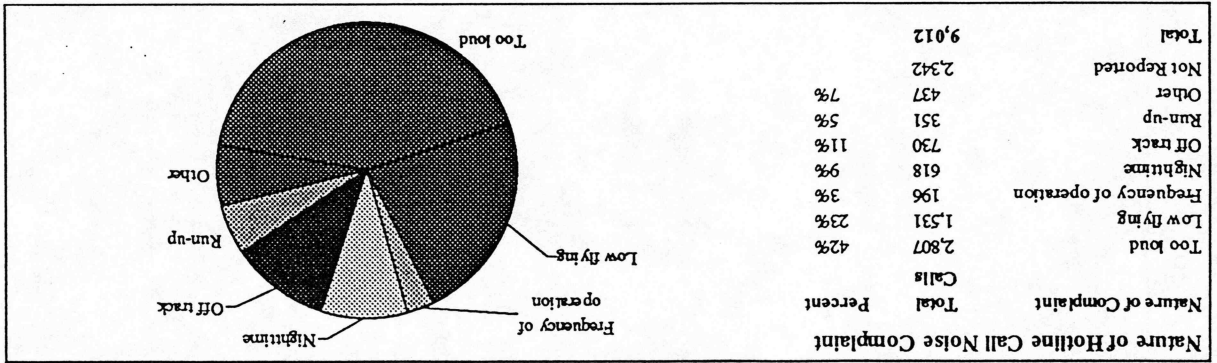


Table A-4  
Noise Complaint Summary  
Seattle-Tacoma International Airport  
January 1996 through March 1998



◀ N Scale 1"=12,000' Approximately

Figure A7 **Noise Complaint Map**

◀ Noise Complaint Location

Table A5  
**TOTAL HOTLINE CALLS, per hour of the day**  
*Sea-Tac International Airport FAR Part 150 Study*

Hour of Day	Total Calls	Percent of Total
12 am	277	3.1%
1 am	144	1.6%
2 am	185	2.1%
3 am	238	2.6%
4 am	244	2.7%
5 am	246	2.7%
6 am	349	3.9%
7 am	799	8.9%
8 am	600	6.7%
9 am	429	4.8%
10 am	422	4.7%
11 am	430	4.8%
12 pm	334	3.7%
1 pm	413	4.6%
2 pm	372	4.1%
3 pm	407	4.5%
4 pm	260	2.9%
5 pm	257	2.9%
6 pm	397	4.4%
7 pm	408	4.5%
8 pm	477	5.3%
9 pm	604	6.7%
10 pm	398	4.4%
11 pm	322	3.6%
<b>Total</b>	<b>9,012</b>	

Table A6 presents the number of calls per day of the week. Typically one expects more calls during weekends, but that is not the case for Sea-Tac. All days are about equal, with Monday having the highest number of calls and Saturday the lowest.

Table A6  
**TOTAL HOTLINE CALLS PER DAY OF THE WEEK**  
*Sea-Tac International Airport FAR Part 150 Study*

Day of Week	Total Calls	Percent of Total
Sunday	1,287	14
Monday	1,393	15
Tuesday	1,203	13
Wednesday	1,315	15
Thursday	1,344	15
Friday	1,314	15
Saturday	1,159	13
<b>Total</b>	<b>9,012</b>	<b>100</b>

Table A7 presents an analysis of how often individual people call. The data shows that 1,727 people called once, while there was one person who called 349 times. This information helps illustrate that 63% of the individuals that called the hotline during that time period called once. Based on the data analysis, it appears that a small number of individuals call repeatedly.

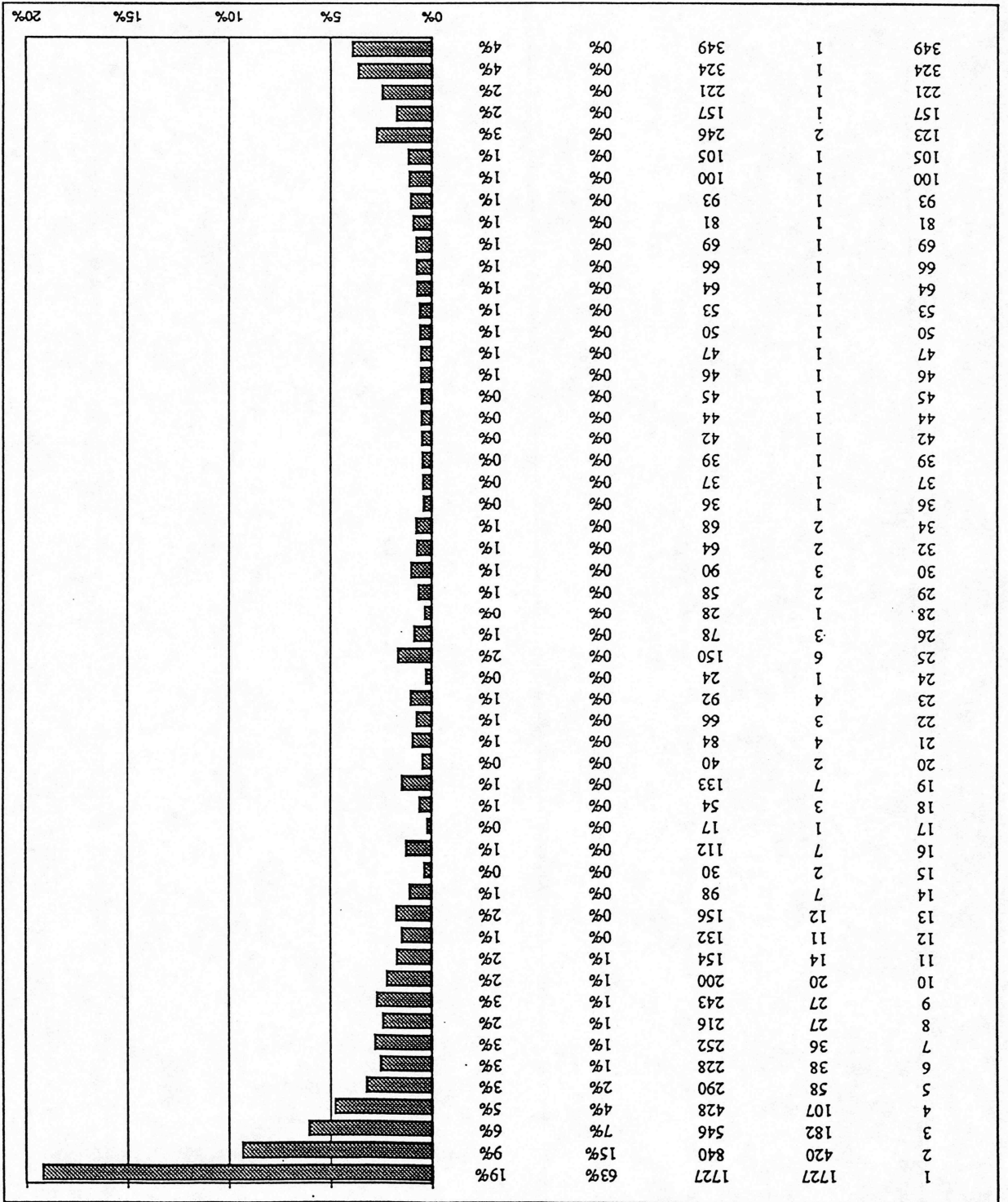
### **Airport Environs**

Seattle-Tacoma International Airport (Sea-Tac) is within the city limits of the City of SeaTac. Several other incorporated communities adjoin the City of SeaTac or are, or could be, within the 65 DNL noise contour associated with aircraft operations at Sea-Tac Airport. These include Seattle, Tukwila, Des Moines, Normandy Park, Federal Way, Burien and Kent, along with portions of unincorporated King County. This Study will utilize a variety of graphics to present information, and two different base maps will be used. The Study Area presents the entire region on an aerial photo at a small scale and the Detailed



Table A-7  
 Noise Complaint Statistics Report  
 Seatac International Airport  
 Period: January 1, 1996 to March 31, 1998

Complaints per Caller	Number of Callers	Total Number of Complaints	% of All Callers	% of All Complaints
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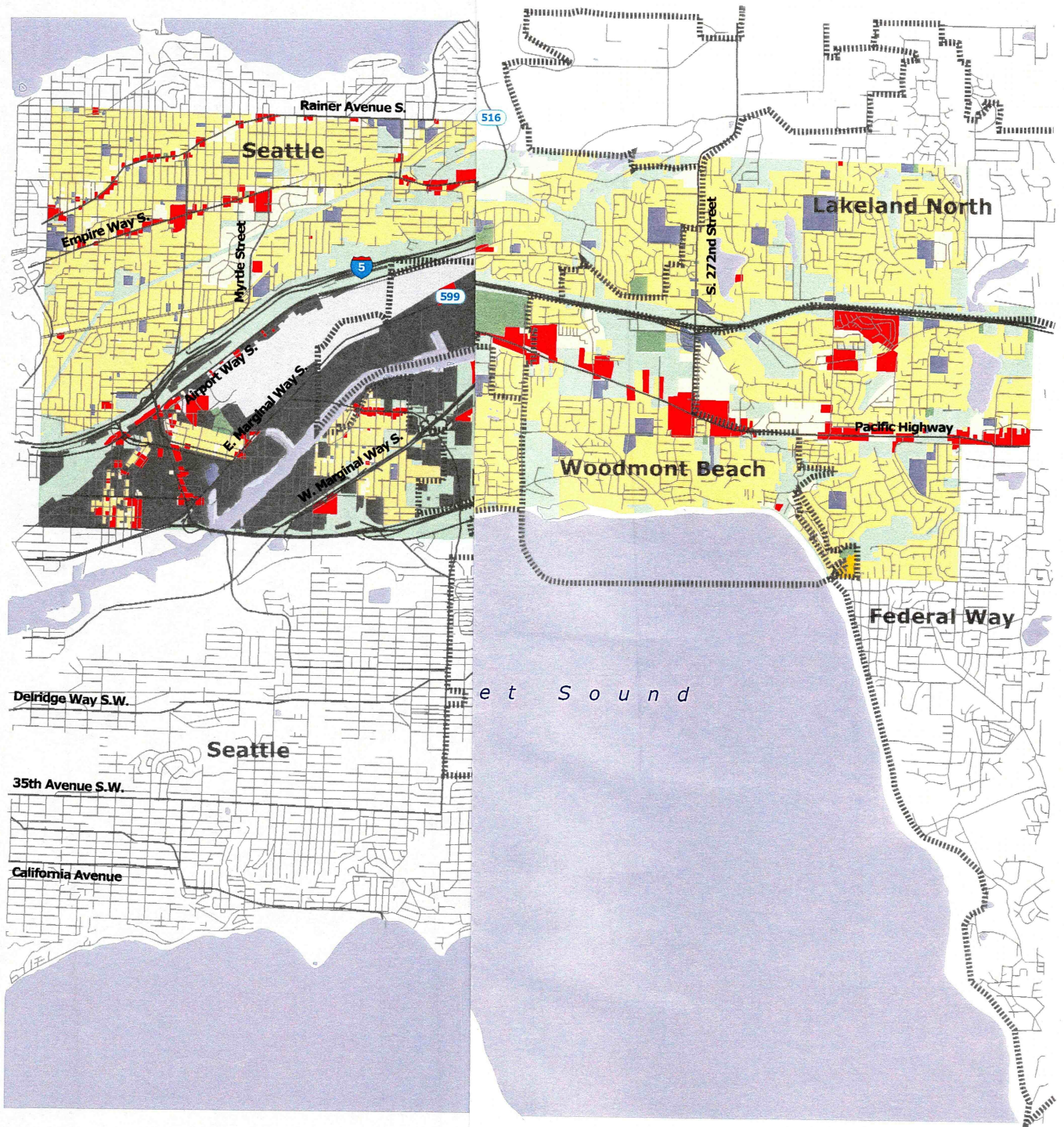
3rd  
thru  
Sept

Study Area presents land use information at a larger scale for more detailed analysis. The Detailed Area will be used for detailed analysis within the 65 DNL noise contour. The Study Area map will be used for larger contour and supplementary noise metric analysis, and is presented at the conclusion of this Chapter, as Figure A12.

**Existing Land Use.** The recently completed Environmental Impact Statement for the proposed new runway presented existing land uses for the area surrounding the Airport. This information will be used for this Part 150 Update, however, generalized land use information will be presented and evaluated within a larger area for this Study. Within the detailed study area, there are significant numbers of residential developments (single family, multi-family and mobile home units), in addition to other noise sensitive land uses including schools, churches, hospitals, nursing homes and libraries. Preliminary existing land use is presented in Figure A8, *GENERALIZED EXISTING LAND USE, DETAILED STUDY AREA*. The area beyond the 65 DNL contour will be evaluated to a more generalized extent.

Existing land use to the north of the Airport is a mixture of airport related development, some commercial and some residential development. To the south of the Airport, there is open space, single family residential, a large number of multi-family residential, public facilities uses. To the east of the Airport, especially along International Boulevard, there is intensive commercial development with residential, both single and multi-family, development east of the commercial strip on International Boulevard. To the west of the Airport is primarily single family residential development with commercial and public facility uses to the southwest. A more detailed evaluation of land use and population will be presented as they relate to the noise contours once the contours are developed.

In summary, there are significant areas of existing, and some potential, non-compatible land uses within the immediate airport environs. These include, for the most part, residential development and occur off the ends of the existing runways. Many of these residential structures are being addressed by the existing Noise Remedy Program.



◀ N — Approximate Scale 1" = 6,000'

Figure A8 **Generalized Existing Land Use I**

<span style="display:inline-block; width:15px; height:10px; background-color:yellow; border:1px solid black;"></span> Single-Family Residential	<span style="display:inline-block; width:15px; height:10px; background-color:blue; border:1px solid black;"></span> F
<span style="display:inline-block; width:15px; height:10px; background-color:lightyellow; border:1px solid black;"></span> Multi-Family residential	<span style="display:inline-block; width:15px; height:10px; background-color:green; border:1px solid black;"></span> C
<span style="display:inline-block; width:15px; height:10px; background-color:orange; border:1px solid black;"></span> Mobile Home Park	<span style="display:inline-block; width:15px; height:10px; background-color:lightblue; border:1px solid black;"></span> V
<span style="display:inline-block; width:15px; height:10px; background-color:red; border:1px solid black;"></span> Commercial	<span style="display:inline-block; width:15px; height:10px; background-color:white; border:1px solid black;"></span> A

Source: Basemap compiled from Tiger Line Data, 1994.  
Generalized Existing Land Use, Gambrell Urban, Ir

Seattle-  
Tacoma International Airport  
Far Part 150 Study Update

**Future Land Use.** Each of the jurisdictions within the vicinity of Sea-Tac have adopted future land use plans or guidelines, pursuant to the Washington State Growth Management Act.

### **City of SeaTac**

The City of SeaTac adopted its Comprehensive Plan in December 1994, with subsequent amendments in December 1995 and December 1996. The existing Plan has been in effect since December 1996 and contains land use and transportation policies for the area immediately surrounding Sea-Tac Airport. It also identifies the Airport as an essential public facility. The Plan also contains the following Goal and Policy language related to the Airport

**Goal:** To achieve a reasonable level of compatibility between airport activities and adjacent land uses.

**Policy:** Encourage land uses adjacent to Sea-Tac International Airport that are compatible with airport operations.

The Plan includes a set of noise contours associated with aircraft operations at Sea-Tac Airport which have been used to guide the future land use plan. The adopted Future Land Use Plan is illustrated in Figure A9, *GENERALIZED FUTURE LAND USE*.

### **City of Des Moines**

The City of Des Moines adopted the Greater Des Moines Comprehensive Plan in December 1995 by Ordinance 1160, with portions amended by Ordinance 1176. The Plan contains several policies addressing Sea-Tac Airport and presents several Preferred Land Use Plans for specific areas within the City of Des Moines.

**Policy 8-03-01 (3):** Adopt appropriate plans, zoning, development and building regulations and review procedures to ensure that designated residential neighborhoods will not be exposed to environmental noise levels that exceed an Ldn of 55 dBA, or existing noise levels as of April 20, 1995, whichever is greater. A reduction in the environmental noise level (greater than 55 Ldn) that existed as of April 20, 1995 should become the new maximum environmental level.

**Policy 8-03-02 (3):** In order to minimize adverse impacts related to noise, protect historic properties and archeological sites of local significance from environmental noise exposure levels that exceed an Ldn of 55 dBA, or existing levels as of April 20, 1995, whichever is greater. A reduction in the environmental noise level (greater than 55 Ldn) that existed as of April 20, 1995 should become the new maximum environmental level.

**Policy 6-03-23:** In order to minimize adverse impacts related to noise, Des Moines' parks and recreation areas of local significance should be protected from exterior noise exposure levels that exceed an Ldn of 55 dBA, or the Ldn in existence on the effective date of this Element, whichever is higher; except that golf courses, ball fields, outdoor spectator sports areas, amusement areas, riding stables, nature trails, and wildlife refuges should be protected from exterior noise exposure levels that exceed an Ldn of 60 dBA, or the Ldn in existence on the effective date of this Element, whichever is higher. A reduction in the exterior noise level (greater than 55 dBA or 60 dBA as applicable) that existed as of April 20, 1995 shall become the new maximum exterior noise level.

**Policy 8-03-04:**

- (1) Discourage the introduction of noise levels that are incompatible with current or planned land uses. Encourage the reduction incompatible noise levels, and discourage the introduction of new land uses into areas where existing noise levels are incompatible with such land uses.
- (2) Encourage the reduction of noise from Seattle-Tacoma International Airport.
- (3) Campaign aggressively for the development of new and quieter aircraft engines as well as modifications and/or retrofitting programs that promote the greatest reductions possible in aircraft noise emission levels.
- (4) Require that noise levels generated from all land uses be restricted to the most stringent of federal, state and local standards.
- (5) Require buffering of noise and cleansing of air from land uses that are highly noise generating and air polluting through substantial berming, landscaping, setbacks, tree planting, and building construction and siting methods.
- (7) Within the North Central Neighborhood, encourage land uses and construction techniques that are tolerant of and compatible with the high noise and vibration levels generated by aircraft.

As an integral part of these Policies, the City has adopted various Strategies to help implement the Policies. In addition, the City has also adopted a specific set of Policies and Strategies for the North Central Neighborhood, which contains part of the Port's home acquisition area. The City does not directly identify Sea-Tac Airport as a Essential Public Facility, but addresses the Airport in Policy 5-03-05.

**Policy 5-03-05:** City plans and development regulations should identify, and provide a process for consideration of, the siting of essential public facilities. Essential public facilities should include: A) domestic water, sanitary sewer, public schools, and fire protection; B) difficult-to-site facilities such as those identified by RCW 36.70A.200 and County-wide Planning Policies; and C) essential state facilities specified by the office of financial management. Des Moines should not accept a disproportionate share of the adverse impacts resulting from air transportation.

### **City of Normandy Park**

The City of Normandy Park adopted the City of Normandy Park Comprehensive Plan in December 1995 by Ordinance 623. The Plan contains Policies that address Sea-Tac Airport and presents a Future Land Use Map, which is illustrated on Figure A4. The Policies presented in the Normandy Park Plan are very similar to those of the City of Des Moines Policies.

**Policy 1.6.3:** The city shall adopt appropriate plans, zoning, development and building regulations and review procedures to ensure that designated residential neighborhoods will not be exposed to exterior noise levels which exceed an Ldn of 55 dBA, or existing noise levels as of the date of adoption, whichever is greater.

**Policy 1.7.3:** In order to minimize adverse impacts related to noise, historic properties and sites of local significance shall be protected from exterior noise exposure levels which exceed an Ldn of 55 dBA, or existing levels as of the date of adoption, whichever is greater.

**Policy 1.9.1:** Discourage the introduction of noise levels which are incompatible with current or planned land uses, encourage the reduction incompatible noise levels, and discourage the introduction of new land uses into areas where existing noise levels are incompatible with such land uses.

**Policy 1.9.2:** Encourage the reduction of noise from Seattle-Tacoma International Airport.

**Policy 1.9.3:** Aggressively campaign for the development of new and quieter aircraft engines as well as modifications and/or retrofitting programs which promote the greatest reductions possible in aircraft noise emission levels.

**Policy 1.9.4:** Take advantage of every opportunity to work with the Port of Seattle and the Federal Aviation Administration to promote the development and implementation of airport operational procedures that will decrease the adverse noise effects of airport operations on the city and its residents.

**Policy 1.9.5:** Enact city-wide land use compatibility guidelines and criteria for the consideration of noise impacts in all planning and zoning decisions.

**Policy 1.9.6:** Take appropriate legislative and regulatory action to require noise levels generated from all sources be restricted to the most stringent of federal, state and local standards.

**Policy 1.9.7:** Take appropriate legislative and regulatory action to require buffering of noise generating land uses through substantial berming, landscaping, setbacks, tree planting, and building construction and siting methods.

**Policy 1.9.9:** Aggressively seek the support of Congressional representatives to secure Federal Aviation Administration agreement to develop and implement airport operational procedures that will decrease the adverse noise effects of airport operations on the city and its residents.

**Policy 1.10.4:** In order to minimize adverse impacts related to noise, Normandy Park's park and recreation areas of local significance shall be protected from exterior noise exposure levels which exceed an Ldn of 55 dBA, or the Ldn in existence as of the date of adoption, whichever is higher; except that golf courses, ball fields, outdoor spectator sports areas, amusement areas, riding stables, nature trails, and wildlife refuges shall be protected from exterior noise exposure levels which exceed an Ldn of 60 dBA, or the Ldn in existence as of the date of adoption, whichever is higher.

## City of Burien

The City of Burien adopted The Burien Plan in November 1997. The Plan contains Policies that address Sea-Tac Airport and presents a Future Land Use Map, which is illustrated on Figure A9. Some of the Policies presented in the Burien Plan are very similar to, if not exactly like, the City of Des Moines and the City of Normandy Park Policies. In addition, the Burien Plan is based on the forecast that the third runway at Sea-Tac would not be built. The Policies are presented below.

**Policy LU 1.9:** The City is aware that under the Growth Management Act the City may not preclude through its comprehensive plan the siting of the third runway if a runway (as opposed to an existing airport) is determined to be an "essential public facility". The City also notes that the Growth Management Act, the Central Puget Sound Growth Management Hearings Board, the Countywide Planning Policies, and the State Environmental Policy Act require that there be appropriate and reasonable mitigation for communities adversely impacted by the siting of an essential public facility. Consequently, this plan may need to be amended if the legal issues raised by the City are resolved in favor of construction of the third runway, and provided that appropriate and reasonable mitigation for the adverse impacts of the project on the community are furnished. Such an amendment should only be considered as part of a program by the Port of Seattle to appropriately and reasonably mitigate the impacts of the project on the community. The Sea-Tac International Airport Impact Mitigation Study shall be used as the primary starting point for this mitigation program. In addition, the City will adopt development regulations which will incorporate appropriate and reasonable mitigation requirements to assure that, if the proposed third runway is constructed, it will be consistent with the policies of the Burien Plan..

**Policy NO 1.1:** The City shall;

- a. discourage the introduction of noise levels which are incompatible with current or planned land uses;
- b. encourage the reduction incompatible noise levels; and
- c. discourage the introduction of new land uses into areas where existing noise levels are incompatible with such land uses.

**Policy NO 1.2:** The City shall work with other jurisdictions and agencies to encourage the reduction of noise from Seattle-Tacoma International Airport.



**Policy NO 1.3:** The City shall aggressively campaign for the development of new and quieter aircraft engines as well as modifications and/or retrofitting programs which promote the greatest reductions possible in aircraft noise emission levels.

**Policy NO 1.4:** The City shall take advantage of every opportunity to work with the Port of Seattle and the Federal Aviation Administration to promote the development and implementation of airport operational procedures that will decrease the adverse noise effects of airport operations on the City and its residents.

**Policy HT 1.5:** In order to minimize adverse impacts related to noise, historic properties and sites of local significance shall be protected from exterior noise exposure levels that exceed a Ldn of 55 dBA.

### **City of Tukwila**

The City of Tukwila adopted a Comprehensive Land Use Plan in December 1995. The Plan contains a Comprehensive Land Use Plan that depicts future land uses, which is illustrated on Figure A4. The City has adopted several Policies addressing aircraft noise, very similar to other communities.

**Policy 7.2.5:** Encourage the reduction of noise from Seattle-Tacoma International Airport and King County Airport, by promoting the development of new or the retrofit and modification of existing aircraft engines which are quieter, and operational procedures that help reduce aircraft noise emission levels.

**Policy 7.2.6:** Work with the Port of Seattle, King County Airport and the Federal Aviation Administration to promote the development and implementation of airport operational procedures that will decrease the adverse noise effects of airport operations on Tukwila and its residents.

### **City of Federal Way**

The City of Federal Way adopted the City of Federal Way Comprehensive Plan Draft in November 1995. The Plan contains a Comprehensive Plan Land Use Map reflecting future land use designations and is reflected on Figure A4. The Plan contains an Aviation section of the Transportation Element. However, it pertains mostly to helicopters and placement of heliports in the City. There is one policy that addresses the regional airport.

**Policy TP76:** Continue to represent the community in matters pertaining to the regional airport(s).

### **City of Kent**

The City of Kent adopted the City of Kent Comprehensive Plan in April, 1995 by Ordinance Number 3222. The Plan contains goals and policies for community development, and a Land Use Plan Map which depicts generalized future land uses. The Plan does not contain any goals or policies addressing Sea-Tac or any noise contours associated with the Airport. The Plan does not address the Airport as an essential public facility.

### **King County**

King County adopted the King County Comprehensive Plan in November 1994 and updated in 1997. The Plan contains several policies pertaining to new essential public facilities or the expansion of existing essential public facilities. However, the Plan does not address aircraft related noise issues or how such noise affects land use development in the county. The Plan contains one policy addressing aviation under Chapter Nine, Transportation, Section H Aviation, Freight, and Ferries;

**Policy T-540:** Regional aviation facilities play a foundational role in promoting a strong regional economy as well as providing significant direct and indirect employment opportunities to residents of the County and Puget Sound region. Consistent with this plan's policies concerning the siting of essential public facilities, King County should work with the Puget Sound Regional Council and its members to ensure that any regional projected capacity problems, and the air transportation needs of the region's residents and economy are addressed in a timely manner. Siting decisions must be consistent with the Regional Airport System Plan, the Countywide Planning Policies and this Plan.

### **City of Seattle**

The City of Seattle has adopted a comprehensive plan; Seattle's Comprehensive Plan, Toward a Sustainable Seattle in July 1994 and amended it in November 1997. The Plan contains a future land use plan (which is currently being reprinted due to street name errors). The Plan is a goals and policy plan. The Transportation Element contains a Policy on air transportation:

**Policy T5:** Work with the state Department of Transportation, public transportation providers, and the public to identify, design, and incorporate noise mitigation measures into existing and planned traffic and transit operations and capital improvements. Encourage air and rail transport operations to reduce and mitigate their noise impact.

**Zoning.** All of the jurisdictions in the vicinity of Sea-Tac Airport have adopted traditional land use zoning ordinances to control the types of land uses on specific parcels. The ordinances divide a jurisdiction into districts and prescribe certain requirements for allowable uses within those districts. The various zoning codes pertaining to airport related activities, are presented in the following paragraphs. Figure A10, *GENERALIZED EXISTING ZONING*, presents the zoning districts for the various jurisdictions.

The area immediately surrounding the Airport within the jurisdiction of the City of SeaTac is generally zoned Industrial, Commercial along SR 99, Urban High to Medium Density adjacent to SR 99 and Airport Use and Aviation Business Center in areas adjacent to the Airport. Single family development is currently zoned as Urban Low, and is mostly west of the Airport.

Burien has generally zoned the majority of its jurisdiction as single and multi-family residential, with Commercial zoning along First Avenue South.

Des Moines is generally zoned for single family housing except for the downtown and marina areas, and along Pacific Highway South, I-5, and arterial streets where commercial and multi-family development is permitted.

Tukwila permits a variety of business, industrial and residential development at various densities.

### **City of SeaTac**

The City of SeaTac has an adopted zoning ordinance revised in October 1996 that controls the type of land uses allowed on specific parcels. The ordinance contains two use zones that address the Airport directly, Airport Use Zone and Aviation Business Center Zone.

**Airport Use Zone.** The purpose of this zoning designation is to provide for the Seattle-Tacoma International Airport, and for various airport-related facilities, operations, businesses and activities that support airport operations.

**Aviation Business Center Zone.** The purpose of this zone is to promote a major commercial center supporting high concentrations of customers, visitors, employees, and pedestrian activity; to create a quality development in which people can work, shop and access child care; and to create a market geared toward a business orientation to the Airport which is compatible with airport operations.

These purposes are accomplished by encouraging flexible development programs to improve the design, character, and quality of new development; facilitating the provisions of streets and utilities; preserving natural and scenic features; establishing minimum lot sizes to encourage projects of sufficient scale to increase the viability of high capacity transit and encourage ride-share alternatives; and promoting a balanced multi-modal transportation network consisting of motor vehicle transportation, public transportation, pedestrian circulation, and integrated parking.

The Code also contains the following General Performance Standard provision addressing Noise.

**15.18.020:** Due to the proximity of the Airport facilities, residential construction shall have sound attenuated or limited as consistent with adopted Port of Seattle/FAA noise remedy programs within significant LDN contours.

In addition to the above provisions, the City of SeaTac and the Port of Seattle entered into an Interlocal Agreement concerning several issues of importance to both entities, one of which was land use and zoning. The Port and the City adopted the planning, land use and zoning provisions set forth in the Agreement in Exhibit A. The Agreement was dated September 4, 1997. The following Zoning/Land use/Development Regulations statement is included in the Agreement:

**2.1 Land Use/Zoning Map.** The Port Commission and City Council each shall adopt a coordinated land use map that (a) shall be implemented by the City's zoning map; (b) is updated to recognize the Port's Master Plan; (c) resolves any discrepancies on the permitted uses of Port-owned property on the perimeter of the Airport; and (d) reflects the City land use decisions that affect the Airport. Both the City Council and the Port Commission shall adopt the coordinated land use map on or before December 31, 1997.

**2.2 Zoning Uses.** The Port and City agree upon the two zones and uses for Port-owned Property as set forth in Attachment A-2: "Aviation Operation" and "Aviation Commercial".

The Agreement contains many other land use and development standards and procedures, along with many other areas of shared concerns, including Surface Water Management, Critical Areas, Transportation, State Environmental Policy Act, Police, Material Haul and Master Plan Community Relief.

### **City of Des Moines**

The City of Des Moines has an adopted zoning ordinance, with the latest revision being in February 1997. The code contains a Noise Levels Chapter, 18.38 with two sections dealing with noise levels in residential neighborhoods.

**18.38.020:** Residential neighborhoods shall not be subject to adverse land uses, activities or traffic that generate exterior noise exposure levels exceeding 55 Ldn dBA, or existing levels as of April 20, 1995, whichever is greater. A reduction in the exterior noise level (greater than 55 Ldn) that existed as of April 20, 1995 shall become the new maximum exterior noise level.

**18.38.030:** Proponents of projects that will increase exterior noise levels to which residential areas are exposed to levels exceeding those existing on April 20, 1995, or to levels exceeding an Ldn of 55 dBA, which ever is greater, must submit a noise mitigation plan to the community development department of the city for review and approval before required permits are issued to allow the project to proceed.

### **City of Normandy Park**

The City of Normandy Park has an adopted zoning ordinance which addresses noise levels in three chapters; Chapter 18.68 Residential Neighborhoods-Noise Protection, Chapter 18.72 Landmark Protection and Preservation, and Chapter 18.76 Parks of Local Significance.

**18.68.030:** Residential neighborhoods shall not be subject to adverse land uses, activities or traffic that generate exterior noise exposure levels exceeding 55 Ldn dBA, or existing levels as of the effective date of the ordinance codified in this chapter, whichever is greater.

**18.68.040:** Proponents of projects that will increase exterior noise levels to which residential areas are exposed to levels exceeding those existing on the effective date of the ordinance codified in this chapter, or above an Ldn of 55 dBA, which ever is higher, must submit a noise mitigation plan to the city planning department for review and approval before required permits are issued to allow the project to proceed.

**18.72.040:** Significant sites, districts, buildings, structures and objects shall not be subject to adverse land uses which generate exterior noise exposure levels exceeding an Ldn of 55dbA, or existing levels as of the effective date of the ordinance codified in this chapter, whichever is greater.

**18.72.050:** Proponents of projects that will increase exterior noise levels to which significant sites, districts, buildings, structures are exposed to levels exceeding those existing on the effective date of the ordinance codified in this chapter, or above an Ldn of 55 dBA, which ever is higher, must submit a noise mitigation plan to the city planning department for review and approval before required permits are issued to allow the project to proceed.

### **City of Tukwila**

The City of Tukwila has adopted a zoning ordinance that does not address aircraft related noise issues in relationship to land uses.

### **City of Federal Way**

The City of Federal Way has adopted a zoning ordinance with various updates and amendments. The ordinance addresses noise in two sections.

#### **Section 22-956. Maximum environmental noise levels.**

The city adopts by reference the maximum environmental noise levels established pursuant to the Noise Control Act of 1974.

#### **Section 22-957. Noise Level Bonds.**

The city may require a bond under section 22-146 et seq. to insure compliance with the provisions of section 22-956.

## City of Kent

The City of Kent has an adopted zoning ordinance which addresses noise in general but does not specifically address aircraft noise levels.

### Section 15.08.050. Performance Standards.

#### D. Restrictions on dangerous and objectionable elements.

1. *Noise.* At the points of measurement specified in Subsection C. of this section, the maximum sound pressure level radiated in each standard octave band by any use or facility, other than transportation facilities or temporary construction work, shall not exceed the values for octave bands lying within the several frequency limits given in table I after applying the corrections shown in table II...

The section goes on to identify certain noise levels that cannot be emitted by land uses and specific functions within those uses. Aircraft and airports are not mentioned and appear to be exempt.

## King County

King County has an adopted zoning ordinance that addresses land use development within King County, the King County Zoning Code, Title 21A. The Code was last amended in March 1998. The Code contains provisions for Special District Overlay Zones.

**21A.38.160. Special District Overlay-Aviation Facilities.** A. The purpose of the aviation facilities special district overlay is to protect existing non-commercial airports from encroaching residential development. Aviation facilities special district overlay shall only be established in the area up to ¼ mile around airports and shall be zoned UR or RA.

B. The following development standards shall apply to uses locating in aviation facilities special overlay districts: On the title of all properties within pending short subdivisions or subdivisions and binding site plans, the following statement shall be recorded and be shown to all prospective buyers of lots or homes: "This property is located near the (name of airport) which is recognized as a legitimate land use by King County. Air traffic in this area, whether at current or increased levels, is consistent with King County land use policies provided it conforms to all applicable state and federal laws."

**Sound Attenuation Requirements.** The Cities of Des Moines and SeaTac have building code provisions for sound attenuation of new structures within noise contours. King County also has sound attenuation requirements for new construction within the noise contours. **Copies are in the Appendix.**

The City of Des Moines has two different sound transmission control areas. Area 1 is all portions of the city north of South 252<sup>nd</sup> Street or its extension and Area 2 is all of the city south of South 252<sup>nd</sup> Street. Area 1 requires a 35 decibel reduction and Area 2 requires a 30 decibel reduction. The City has adopted specific requirements to achieve these reductions. The City of SeaTac refers to the Port's Noise Remedy Area Boundaries to define areas of sound attenuation. The requirements are for new construction and additions to structures. The requirements in the Neighborhood Reinforcement Area are for bedrooms to achieve a 35 dB reduction and all other areas must achieve a 30 dB reduction. In the Standard Insulation Area bedrooms must achieve a 30 dB reduction and all other areas must achieve a 25 dB reduction. King County requirements are the same as the City of SeaTac and reference the same Noise Remedy Boundaries.

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## Land Use Controls Evaluation

Land use planning and development controls offer ways through which the county, cities, and the Airport may achieve certain objectives. These measures involve the various opportunities and options that are available for influencing, directing, managing, and controlling the type and sequence of development within the Airport environs. The various techniques and mechanisms range from fee simple land acquisition programs to more advanced regulatory mechanisms and advisory programs. Each different mechanism is useful in accomplishing desired objectives and can be used separately or in concert with others as the situation dictates. The following is a discussion of the land use planning and control measures available for consideration.

**Fee Simple Land Acquisition.** Fee simple land acquisition is often the most effective means that is available to an airport or community for controlling land use development and ensuring compatibility; it is also the most expensive. Land acquisition can be accomplished through negotiation and purchase from the owner or through condemnation proceedings. Although it is the most expensive, resale for a compatible use or joint purchase with another government agency for a compatible public use may help reduce the net cost of the property.



Condemnation of property is available to the Port as a means of acquiring property. Condemnation is subject to the legal finding that it is for a public purpose, although this has traditionally been broadly defined by the courts. In fact, the acquisition of airspace by eminent domain is a proper use (*Port of Olympia v. Deschutes Animal Clinic, Inc.*, 1978, 19 Wash. App. 317). Washington Statutes specifically state that land for airports can be acquired by eminent domain (RCWA 14.08.030). If condemnation is used or outright purchase is made with the assistance of federal funds, provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (URARPAPA, P.L. 91-646) would apply. The Act stipulates that homeowners be granted a payment of up to \$22,500 to compensate for any differential between the value of the condemnation unit and the cost of comparable replacement housing. Renters are granted up to 3-1/2 years of rent differential. Renters and owners alike are eligible for moving expenses. The federal assistance portion of relocation costs is in the same proportion as whatever grant is involved with the condemnation procedure.

The acquisition of property affected or potentially affected by airport operations is the most effective and efficient means of controlling land use in noise impacted areas. It is possible that compatible public use could compensate for the direct expenditure of purchasing the property. It should be noted that the acquisition of property is used more often than not in circumstances where the noise situation is critical for the continuation of existing uses or where such preventive measures as comprehensive planning and zoning are not working.

**Zoning.** Zoning is the most traditional approach, and the most common and widely used legal device to control land use development. It can be defined as "the division of a city (*or county*) by legislative regulation into districts and the prescription and application in each district of regulations having to do with structural and architectural design of buildings and of regulations prescribing use to which buildings within designated districts may be put." This is accomplished through the adoption of a zoning ordinance, which specifies the use, size, height, and bulk of structures within each district. The regulation of land through a zoning ordinance is premised as part of the police power inherent in the state and delegated to the local jurisdiction through state enabling legislation. The county and various communities surrounding the Airport do have the statutory authority to adopt zoning ordinances and maps (RCWA 36.70.010, 36.70A.040 and 35.63.080, and Washington State Constitution, Article 11, §11). As stated earlier, the communities surrounding

Sea-Tac have adopted such zoning ordinances, and do control land use within their respective boundaries.

Zoning is a useful tool for controlling land use development and promoting compatibility while supporting private land ownership. Zoning cannot be relied upon as a "corrective measure" as it can only be applied prospectively and not retroactively. Also, since zoning is a creature of a political body and subject to changing conditions and situations, the zoning classification of any particular tract of land is always subject to change.

Zoning can also be used to regulate the height of objects around airports to prevent hazards to navigation. Washington Statutes specifically allow airport sponsors to implement height hazard zoning in certain designated areas within an airport's environs to prevent the establishment of hazards (RCWA 14.12) and the Attorney General has stated that zoning of building heights near an airport is a proper use of police power (Op. Att. Gen. 1953-55, No. 298). The State of Washington has no specific enabling legislation to allow airports or airport sponsors to enact zoning ordinances based on aircraft noise or noise contours. Several states have enacted such enabling legislation, which prevents the encroachment of noncompatible land uses within the Airport environs.

In summary, zoning is the most widely used land use control mechanism and offers an acceptable tool for implementing a land use compatibility plan. There are several state statutes that grant zoning authority, which can have an effect on the area around Seattle-Tacoma International Airport, RCWA 36.70.10, 36.70A.040, 14.12 and 35.63.060. Zoning can be a time consuming effort in that the designation of zoning classifications and their implementation must be closely monitored to ensure continuing compatibility.

**Comprehensive Planning.** A comprehensive plan is an expression of the community's policies and goals toward land use and development, and serves as a guide for policy implementation. As stated earlier, the county and the communities surrounding the Airport have adopted future land use plans to guide development based on Washington Statutes.

In 1990, Washington State enacted the Growth Management Act to address problems caused by rapid population growth and uncoordinated planning efforts throughout the state. The legislation seeks to ensure that population growth and planning for transportation, housing open space and other essential services and infrastructure make sense and are compatible. The Act provides a process for siting "Essential Public Facilities" such as an airport. Two principles of the Act are "consistency" and "concurrency". This means that not only consistent planning

policies are required among various county and regional jurisdictions, but that the timing of such planning must occur in a manner that promotes the policies. The legislation currently does not address port authorities and their planning efforts but does require coordinated comprehensive plans for the jurisdictions surrounding Sea-Tac Airport. The Port of Seattle has participated as an ex-officio member of the King County Growth Management Policy Council to facilitate coordination of land use and transportation planning.

A comprehensive plan by itself does little good and cannot control development or relieve noise impacts/incompatibilities without implementing a development plan, but there are other tools available, which will be discussed subsequently.

**Subdivision Regulations.** The county and various communities have adopted subdivision regulations pursuant to the statutes outlined above, which govern the process of changing raw undeveloped land into subdivisions. This is an exercise of the police power by the local unit of government, as is the enactment of a zoning ordinance. To be most effective, subdivision regulations must be coordinated with the comprehensive plan and the zoning ordinance for proper implementation and goal achievement. Subdivision regulations can be used to ensure the granting of an aviation easement as part of the building permit process. In addition, the regulations can be utilized to control utility size and placement, street design, and the timing of the installation of these facilities when coupled with a capital improvements program. It appears that the subdividing of land must be in conformance with the adopted comprehensive plan of a jurisdiction.

Subdivision regulations for the various jurisdictions within the Airport environs were examined. None of the jurisdictions requires notice of any kind on subdivision plats that the subdivision is within the vicinity of an airport and may experience aircraft noise. In addition, there is no requirement to grant an aviation easement to the jurisdiction for aircraft over flights in any of the subdivision regulations.

**Easements.** An easement is the right of the owner of land to make lawful and beneficial use of the land of another. It is a limited right, not an estate, or fee, in the land of another. Easements are probably the second most desirable, after the fee simple acquisition, as a means of land use control. Easements can be classified as one of two types, depending on what type of interest is involved. A *positive* easement is one in which the owner of the easement has the right to do something with the land, where a *negative* easement is one where the landowner gives up his right to do something. The right to construct an access road across someone's property is an example of a positive easement, compared to a landowner who gives up his right to build a tower, which is a negative easement. Many times both positive and negative easements are acquired in the same piece of property.

Easements may be acquired through grant, gift, devise, acquisition, or condemnation. The purchase of an easement in some cases can be as expensive as outright fee simple purchase. Easement acquisition by condemnation is usually restricted to certain types outlined in state enabling legislation and many times noise easements are not specifically mentioned in the legislation. Washington State case law specifically mentions that the acquisition of airspace by eminent domain is a proper use (*Port of Olympia v. Deschutes Animal Clinic, Inc.*, 1978, 19 Wash. App. 317).

Avigation easements are a prime and common example of the type of easement commonly required within the Airport environs. An avigation easement allows aircraft to fly over the property, make noise, and may limit the height of objects on the burdened property within approach areas.

**Building Codes.** Building codes are regulations that govern the construction practices in any given jurisdiction and which must be followed in order to obtain a building permit from the governing body. Adoption of a building code can provide suitable noise attenuation of new construction throughout the city or county, but sound attenuation for *site-specific* noise exposure areas is not easily accomplished through the building code. However, certain sound attenuation measures can be included in the building code and referred to for specific areas through the zoning ordinance and subdivision regulations. The code is most easily enforced through the building permit procedure. As stated previously, SeaTac, Des Moines and King County have specific building code provisions addressing sound attenuation.

**Capital Improvements Program.** The implementation of capital improvements often encourages growth and development in those areas. To avoid incompatible land uses, capital improvements should be programmed to encourage compatible development and discourage incompatible development. Any programs, which might discourage noise sensitive uses, should be undertaken in the identified noise zone. This can be particularly effective in directing industrial/commercial development to areas, which would be incompatible for residential development.

**Decision Matrix.** Figure A11, entitled *LAND USE MANAGEMENT DECISION MATRIX*, shows the land use control techniques evaluated and the evaluation criteria used. The modes of comparison are shown as “positive”, “negative”, or “neutral” and are used to show the outcome of an activity (shown on the left) when compared with the evaluation criteria (across the top). A positive comparison denotes a favorable control technique, while a negative comparison denotes an unfavorable control technique. The matrix is intended to aid the city and county administrators in deciding which control techniques are viable.

**State Legislation.** The following are State of Washington statutes that may effect land use planning and compatibility with aircraft operations and airports.

**State of Washington, Chapter 173-60 WAC**

Maximum Permissible Environmental Noise Levels

Land use Noise Source	Land Use of Receiving Property		
	Residential	Commercial	Industrial
Residential	55 dBA	57 dBA	60 dBA
Commercial	57	60	65
Industrial	60	65	70



Figure A11 **Land Use Management Decision Matrix**

- Positive
- ▲ Negative
- Neutral

The maximum permissible levels are:

Reduced by 10 decibels at night (10 pm to 7 am) when the receiving land use is residential.

Increased by 15 dBA for up to 1.5 minutes, 10 dBA for up to 5 minutes and 5 dBA for up to 15 minutes.

Sounds created by aircraft in flight are exempt.

Sounds from engine testing and maintenance are exempt between the hours of 7 am and 10 pm, PROVIDED that aircraft testing and maintenance shall be conducted at remote sites whenever possible.

#### **State of Washington WAC 248-64-240 "Site Approval (Schools)"**

This administrative code establishes noise level conditions for proposed new or expanded school sites. It is a Permanent Rule of the Board of Health.

The Rule established an hourly LEQ limit of 55 dBA, and an hourly AL limit of 75 dBA during hours when school is in session, except sites exceeding these sound levels are acceptable if a plan for sound reduction has been submitted and approved. Also, interior levels are not to exceed 45 dBA.

## **Appendix**

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**Noise Abatement Program**  
**Community Sound Attenuation Requirements**  
    **City of SeaTac**  
    **City of Des Moines**  
    **King County**  
**Glossary**

**Appendix One**  
**Appendix Two**



# **Noise Abatement Program**

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**FINAL PACKAGE  
OF MEDIATED NOISE  
ABATEMENT ACTIONS  
FOR  
SEATTLE-TACOMA INTERNATIONAL AIRPORT  
AGREED TO BY THE  
MEDIATION COMMITTEE  
ON MARCH 31, 1990**

**PREPARED BY THE  
PORT OF SEATTLE  
AND  
MESTRE GREVE ASSOCIATES  
ON BEHALF OF THE  
MEDIATION COMMITTEE**

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*According to the technical consultant, this agreement represents the most comprehensive noise control program of any major international airport in the country. Full implementation of all these agreements could result in an overall noise reduction of approximately 50% in terms of the Ldn noise levels in the communities surrounding the airport.*

*NOTES:*

*Italics indicate changes to the Draft Package resulting from the Mediation Committee meeting on 3/31/90.*

*Symbol "R" on pages eight and nine indicate that some language was modified after March 31, 1990 as the result of comments received from the Mediator, based upon the Mediator's notes.*

## SECTION I: NOISE BUDGET

### GOAL

The goal of a noise budget is to reduce the overall amount of noise at Seattle-Tacoma International Airport by encouraging an increased percentage of Stage 3 aircraft at Sea-Tac and the acquisition of Stage 3 aircraft system wide. Appendix A presents the framework for this draft noise budget.

- AGREEMENT 1:** The Average Noise Energy Level (ANEL), as defined in Appendix A, will be established as the formula to be used in the noise budget.
- AGREEMENT 2:** The noise reference data used in the formula is based upon the *most up to date version of the* Integrated Noise Model (INM) data base as presented in Appendix A.
- AGREEMENT 3:** The year 2001 will be the target year for reaching the noise reduction goal.
- AGREEMENT 4:** The base period will be developed relative to the average daily operations for the month of August, 1989.
- AGREEMENT 5:** The Noise Bank will be 10% to 15% of the August, 1989 *allocated* base level and is subject to the same reduction formula consistent with Proposal 8.
- AGREEMENT 6:** Airlines whose operations generate less than 55 TCNEL (as defined in Appendix 1) and international operations will be considered non-allocated and not factored into the equation. *Note: A TCNEL noise level of 55 is equivalent to four landing and takeoff cycles of the B727-200/D15QN aircraft during the daytime hours and represents approximately 1% of the total noise as measured in ANEL. Over time, efforts will be made to reduce the 55 TCNEL limit.*
- AGREEMENT 7:** An individual airline will not require a noise certificate if its operations at Sea-Tac exceed a specified level of Stage 3 aircraft. Initially, this level will be set between 60% and 80% and will increase 2.5% every year to the ultimate percentage of 95%.
- AGREEMENT 8:** The year 2001 annual ANEL noise energy will be reduced by more than 50% from the base reference ANEL. \* *As illustrated in Appendix A, interim goals for maximum permissible ANEL will be established.*
- AGREEMENT 9:** A finalized draft agreement will be presented to the airlines by April 21, 1990.
- AGREEMENT 10:** The development of administrative and implementation details will be completed by October 1, 1990.
- AGREEMENT 11:** *If the noise reduction goal is not met for two consecutive enforcement periods, new procedures will be examined to achieve the 2001 noise reduction goal.*

IMPLEMENTING AUTHORITY: Port of Seattle

\* (Note: This represents a commitment to at least 35% to 45% reduction from the 1988 annual ANEL.)

## SECTION II: NIGHTTIME LIMITATIONS

### GOAL

The goal of the nighttime limitations program is to reduce the noise levels from nighttime turbojet operations by phasing out the operations of Stage 2 aircraft as set forth in Appendix B.

**AGREEMENT 1:** The initial hours of the nighttime limitation program will be set from midnight to 6:00 a.m. with further expansion of these hours over time until the ultimate goal is reached of 10:00 p.m. to 7 a.m. *It is the intent of this agreement to provide for shifts of aircraft operations from nighttime to daytime that are meaningful and made in good faith.*

**AGREEMENT 2:** A grandfather period will allow existing Stage 2 operations for the first two years of the program.\* *The grandfather period will commence on the date the nighttime limitations agreement becomes effective.*

**AGREEMENT 3:** Operations with aircraft for which there are no Stage 3 equivalent or retrofits available can receive a variance until such aircraft or retrofits become available. *The Noise Abatement Committee will conduct periodic and regular examination of the availability of retrofits.*

**AGREEMENT 4:** The development of administrative and implementation details will be completed by October 1, 1990.

**AGREEMENT 5:** *This agreement will become effective on or before October 1, 1990.*

**AGREEMENT 6:** *Reducing nighttime noise is a high priority. Efforts to reduce nighttime noise will continue as possible.*

IMPLEMENTING AUTHORITY: Port of Seattle

## SECTION III: NOISE REMEDY/MITIGATION PROGRAM

### GOAL

This program will increase the efficiency and availability of the noise insulation program so that it will better serve the needs of a greater number of homeowners within the Part 150 Noise Remedy Program area. It will not reduce noise, but rather will provide additional efforts to mitigate the effects of noise on the community by providing for a more usable indoor living environment. Success of this program is therefore measured in terms of reduced population adversely affected by aircraft noise.

*Note - All costs of the Noise Remedy Program will be shared 80/20 by the Federal Aviation Administration and the Port of Seattle, respectively.*

\*Grandfather operations are defined as Stage 2 flights that have been operated on a regular schedule during a time period between March 31, 1989 and March 31, 1990.

## A. INCREASE IN ANNUAL RATE OF INSULATION

**AGREEMENT 1:** Contingent upon continued FAA funding of the program, increase the rate of home insulation from the present 175 per year to 350 per year. This will require hiring approximately six additional staff. With completion of the acquisition program in 1992, the Port of Seattle will consider phasing in a higher rate of insulation and staffing.

IMPLEMENTING AUTHORITY: Port of Seattle, Federal Aviation Administration

## B. AUDIT PROCEDURE

### BACKGROUND

High program costs and the lengthy processing time for noise audits currently limit the availability of the Noise Remedy Program. Current FAA policy requires that each house in the program be noise audited both before and after the house has been insulated. Each audit costs \$250 and requires not only appropriate weather conditions, but also homeowner availability. Each audit process takes about two months to complete. Currently, approximately fifteen audits are being completed each month. A reasonably accurate measure of noise intrusion can be estimated using a representative audit sample and a computer simulation model.

**AGREEMENT 1:** The Port of Seattle and the Federal Aviation Administration will work together to reduce the number of audits in the Noise Remedy Program area by approximately two-thirds. Accuracy of noise attenuation measures will be ensured using a computer model that simulates the actual audit.

**AGREEMENT 2:** If the method for computer simulated audits described in *Agreement 1* is found to be accurate and successful, the Port of Seattle will explore reducing the percentage of homes audited further, with an ultimate goal of ten percent. [Any funds saved as a result of this audit procedure would revert directly back to the Noise Remedy Program.]

IMPLEMENTING AUTHORITY: Port of Seattle, Federal Aviation Administration

## C. ENHANCE NOISE REMEDY "COST SHARE" PROGRAM AREA

### BACKGROUND

Citizens are reluctant to pay half the costs for a program designed to mitigate a problem they did not directly cause; there is, therefore little community interest in the noise remedy Cost-Share program.

**AGREEMENT 1:** Implement standardized insulation package for all houses in the Cost Share area.

IMPLEMENTING AUTHORITY: Port of Seattle, Federal Aviation Administration

**AGREEMENT 2:** Contingent on standardization of the insulation package (see *Agreement 1*), the Port of Seattle will pay all of the insulation costs in the current Cost Share Noise Remedy Program area. (Currently a homeowner is responsible for providing half of the funds.)

IMPLEMENTING AUTHORITY: Port of Seattle, Federal Aviation Administration

## D. MOBILE HOMES

### BACKGROUND

Residents within the Part 150 area who live in mobile homes experience extreme amounts of aircraft noise. A 1985 Demonstration Program of the Port's Noise Remedy Program tested the effectiveness of acoustical insulation on mobile homes, and found that it is neither a physically nor aesthetically acceptable method of mitigating the noise problem.

**AGREEMENT 1:** During the next year the Port of Seattle will continue to explore ways to deal effectively with mobile homes, especially in cooperation with other governmental entities, and will produce a report on possible mitigation actions.

IMPLEMENTING AUTHORITY: Port of Seattle and other governmental agencies

## E. HARDSHIP COMMITTEE

**AGREEMENT 1:** A hardship committee will be initiated for the insulation program. This committee will evaluate requests from applicants for special consideration due to hardship (medical, financial, etc.). This committee will decide priority issues only (including criteria), and will not address policy or budgeting. Cases will be evaluated individually. The committee will be comprised of both citizens from the Noise Remedy area and Port staff.

IMPLEMENTING AUTHORITY: Port of Seattle, citizen committee

## F. PRIORITY LISTING

### BACKGROUND

The current priority system, initiated in 1985 based on recommendations of a citizen advisory committee, gives priority to applicants in the noisiest areas and those who have owned their homes the longest. Additional consideration is given to owners of homes that are adjacent to clear-zone or acquisition areas.

Applicants have complained that *the continually evolving insulation schedule, based on the current priority system, makes home improvement planning difficult.*

**AGREEMENT 1:** The Port will amend the current priority system in conjunction with other Noise Remedy



improvements to minimize the homeowner's sense of uncertainty concerning when the applicant will be accepted. Consideration will be given to the homeowners' date of application to the program. *Care will be taken to ensure that homeowners who are already on the application list for Noise Remedy will not be dropped from the list as a result of any modifications to the priority system.*

IMPLEMENTING AUTHORITY: Port of Seattle

## G. TRANSACTION ASSISTANCE

**AGREEMENT 1:** Develop a limited program for enhanced transaction assistance for homeowners who live adjacent\* to buy-out areas. The Port of Seattle will purchase, insulate, and then resell these homes. If successful, the program may be expanded.

IMPLEMENTING AUTHORITY: Port of Seattle, Federal Aviation Administration

## H. PUBLIC BUILDINGS

### BACKGROUND

Current FAA regulations and the language in the FAA's Part 150 document limit public building eligibility for insulation to public schools and hospitals.

**AGREEMENT 1:** Expand existing program to provide insulation for additional types of public buildings (eg. auditoriums, private schools, churches, day care centers, libraries, etc.). Pursue amendment to current Part 150 document. *Port of Seattle will inventory and examine the feasibility of noise monitoring public buildings that border on the 65 Ldn contour, and will investigate the possibility of insulating these buildings if noise levels so warrant.*

IMPLEMENTING AUTHORITY: Port of Seattle, Federal Aviation Administration, citizen advisory group

## SECTION IV: IMPROVE DUWAMISH/ELLIOTT BAY CORRIDOR NOISE ABATEMENT PROCEDURES

### GOAL

The goal of this action is to minimize jet overflight noise for residential areas adjacent to the Duwamish /Elliott Bay Corridor.

*\*For the purposes of this program a house is adjacent if the property line abuts or is directly across the street from any Sea-Tac Airport property or property owned (or to be acquired by) the Port of Seattle. See Noise Remedy Program Procedural Guidelines for diagrammatic example.*

## A. DUWAMISH/ELLIOTT BAY CORRIDOR PROCEDURES

### BACKGROUND

The Duwamish/Elliott Bay Corridor is an essential noise mitigation measure for north flow departure procedures. Currently, the air traffic controllers provide departure instructions to a pilot and, in most cases, observe the aircraft on radar to ensure they remain on assigned paths. Controllers frequently provide radar vectors for separation of departures. The following actions will improve the Duwamish/Elliott Bay procedures.

- AGREEMENT 1:** To provide controllers with *better* means of guidance, *the outlines of Elliott Bay, Bainbridge and Vashon Islands will be depicted on the Seattle TRACON video map.*
- AGREEMENT 2:** *FAA tower directives will direct the controller to vector north departures over Boeing Field and Elliott Bay to the maximum extent possible consistent with workload and safety.*
- AGREEMENT 3:** During periods of low activity, special procedures will be in place for aircraft using the Duwamish Corridor. See SECTION V: NIGHTTIME FLIGHT CORRIDORS.
- AGREEMENT 4:** Accuracy in the use of the Duwamish/Elliott Bay Corridor will be monitored by the improved Noise Management System. See SECTION VII: NOISE MANAGEMENT SYSTEM.

**IMPLEMENTING AUTHORITY:** The Federal Aviation Administration will implement *agreements 1 - 3.* The Port of Seattle in cooperation with the Federal Aviation Administration will implement the Noise Management System. See SECTION VII: NOISE MANAGEMENT SYSTEM.

## B. MICROWAVE LANDING SYSTEM

### BACKGROUND

Existing navigational technology cannot provide more accurate use of the Duwamish/Elliott Bay Corridor. A Microwave Landing System (MLS) can offer possibilities for noise relief measures, especially in regard to the Duwamish/Elliott Bay Corridor. The MLS is so precise and flexible that pilots and controllers would be able to contain flight tracks within the Duwamish/Elliott Bay Corridor virtually all the time.

At this time, the FAA plans to transition from the Instrument Landing System (ILS) to the international standard MLS by January 1, 1998. In order for the MLS to operate, instrumentation will need to be installed in each aircraft.

- AGREEMENT 1:** Request that the FAA designate Sea-Tac as a demonstration project for the Microwave Landing System.
- AGREEMENT 2:** When federal progress on this issue occurs, the Port will work with the FAA to establish a program and target dates for phase-in. The program would include a schedule for phase-in of navigational aids and air traffic control procedures. The Port will consider a program of incentives to carriers that accelerate implementation.

**IMPLEMENTING AUTHORITY:** Port of Seattle and Federal Aviation Administration

## SECTION V: NIGHTTIME FLIGHT CORRIDORS

### GOAL

The goal of these actions is to minimize the noise impacts from aircraft operations during the most noise sensitive periods (nighttime) by optimizing the use of areas of less noise sensitive land use. Specifically, the goal is to reduce the single-event disturbances from nighttime operations in the communities north of Boeing Field and surrounding Elliott Bay.

*It is the intent of this section to sharpen departure tracks through the Duwamish Corridor during nighttime hours. Any changes made are conditional upon assurance that the goal of reducing noise can be achieved. This section is not intended to address the nighttime curfew on north flow east turn departures.*

### BACKGROUND

This program of actions consists of specific nighttime procedures that can be implemented due to the low traffic volumes from Boeing Field at night. The NOISE MANAGEMENT SYSTEM as described in SECTION VII, will be used to monitor compliance with these procedures.

**AGREEMENT 1:** During those nighttime hours when traffic is light enough to permit (currently 10 PM to 6 AM) aircraft using the Duwamish Corridor and Elliott Bay will be turned at Boeing Field. Traffic using Boeing Field during these nighttime hours is minimal and can be more easily coordinated with Sea-Tac to ensure a safe and efficient operation.

**AGREEMENT 2:** During those nighttime hours when traffic is light enough to permit, turbojet aircraft depart north through Elliott Bay and proceed on course utilizing the following routes out of the terminal area. Note, these represent approximate tracks, as different aircraft will reach 10,000 feet at different distances from the airport.

- a. Eastbound and Canada destination aircraft shall proceed westbound over Elliott Bay then northbound over Puget Sound until reaching 10,000 feet or the SEA 20 NM DME Fix / SEA 320 radial, whichever comes first, then turn eastbound or continue north on course.
- b. Aircraft proceeding to Alaska or the Pacific Rim, shall proceed westbound over Elliott Bay then northbound over Puget Sound until reaching the SEA 20 NM DME Fix / SEA 320 radial at or above 10,000 feet before being turned westbound to cross the shoreline on course.
- c. Aircraft with south or southeast bound destinations shall proceed westbound over Elliott Bay then southbound over Puget Sound until crossing the SEA 12 NM DME Fix / SEA 220 radial at or above 10,000 feet before being turned eastbound to cross the shoreline on course.

Note - the SEA 20 NM DME Fix / 320 radial and the SEA 12 NM DME Fix / 220 radial are approximate reference points and could change slightly when final flight track charting is completed.

IMPLEMENTING AUTHORITY: Federal Aviation Administration

## SECTION VI:

## CONTROL OF GROUND NOISE

### GOAL

The goal of this noise abatement action is to control and reduce the amount of ground noise from the airport both in terms of peak sound levels as well as the duration of the noise events. Although the focus of this action is to control nighttime ground noise there will also be some benefits in reducing ground noise during the daytime hours.

### BACKGROUND

This noise abatement goal will be accomplished through implementation of a variety of measures that address the different sources of ground based noise. The potential change in noise from this action will be most effective in the close-in areas, although during certain meteorological conditions these changes will be noticed at more distant locations. The Ldn noise levels at the close-in areas are estimated to be reduced by 0.5 to 2 dBA as a result of these actions. Although the most significant improvements are anticipated to be in terms of reductions in the occasional single event disturbances, these occurrences during nighttime hours can be considerably annoying.

**AGREEMENT 1:** Prohibit the use of powerback procedures from the gates. Only American Airlines and TWA currently conduct powerback procedures. This would be implemented through a voluntary agreement or, if necessary, by amending the airport's rules and regulations to prohibit powerback procedures.

IMPLEMENTING AUTHORITY: Port of Seattle

**AGREEMENT 2:** Turbojet engine maintenance run-up restrictions will be enhanced by developing a mechanism for identifying violators of current rules and regulations governing this activity. This will also include a program of penalties to be applied against violators in a scaled format that will range from a letter of reprimand to fines for continued violations within a specified period of time.

IMPLEMENTING AUTHORITY: Port of Seattle, Airlines

**AGREEMENT 3:** If any additional maintenance base is developed at the airport it will require the provision of an engine "hushing" facility or hush house. The hush house would provide the capacity to abate the noise of the engine maintenance run-ups.

IMPLEMENTING AUTHORITY: Port of Seattle

**AGREEMENT 4:** Evaluate the effectiveness of reduced use of thrust reversers in *conjunction with* the development of additional *exit taxiways under consideration* in the on-going FAA sponsored study on airfield improvements. *Additionally, in conjunction with efforts to examine the possibility of such exit taxiways,* minimize the noise impacts of thrust reversers for braking of turbojet aircraft by publishing and distributing *an* ALPA pilot briefing sheet which provides guidance to pilots for minimizing use of thrust reversals.

IMPLEMENTING AUTHORITY: Port of Seattle

**AGREEMENT 5:** Limit the use of auxiliary power units (APU) particularly during the nighttime hours. Many operators currently have fixed power systems available at their gates. This action addresses those operators who do not have these systems. The Port will negotiate with the operators for installation of fixed power systems or use of ground power units. In the interim, operators will be asked to limit use of APUs to a minimum during the hours between 2400 and 0600.

IMPLEMENTING AUTHORITY: Port of Seattle

**AGREEMENT 6:** At this time it is not practical or feasible to install sound berms or barriers due to the unique meteorological conditions of Seattle, the topography of the local area, the cost effectiveness of this action, as well as the lack of space available on airport property. The Port will continue monitoring advances in this technology to determine if any future action would provide meaningful noise reduction benefits to adjacent communities.

## SECTION VII: NOISE MANAGEMENT SYSTEM

### GOAL

Implementation of a noise management system will make it possible to monitor the effectiveness of and compliance with the noise abatement actions that are developed through mediation, and to produce objective data for use as the airlines, FAA and Port officials work to resolve issues of noncompliance.

### BACKGROUND

Sea-Tac's current flight tracking system was one of the first in the country and does not have the capabilities to be used on a constant basis to track all individual aircraft. The large amounts of flight track data necessary to do this cannot be provided by the existing computer hardware and software system.

The new noise management system will be tailored to meet the requirements of programs that are unique to Seattle. For example, improving the Duwamish Corridor noise abatement procedures can be validated by an updated airport flight track and noise monitoring system and the aircraft identification system can be used to monitor compliance with the Noise Budget or Nighttime Limitations. Because of the long lead times necessary for designing and procuring a fully developed, multi-component system, Tier 1 is presented as an interim monitoring program. Tier 2 is a much more complex, entirely new system that will fully meet the monitoring needs of the noise abatement actions and programs developed through mediation. Work can begin on Tier 2 while Tier 1 is being implemented and used.

The Noise Management System might eventually include the following components: enhanced noise monitoring, enhanced flight tracking, aircraft identification, monitoring of FAA air traffic Tower tapes, and modified noise complaint processing.

## **AGREEMENT 1: TIER 1: EXPAND EXISTING FLIGHT TRACK MONITORING SYSTEM**

After gaining agreement with the FAA for use of the ARTS IIIA data on disk packs, use an outside service to transfer the ARTS data from the disk packs to 9-track tapes that are directly readable by the Port of Seattle computer. This data is then analysed using the Port's existing software.

The program goal is to monitor one 24-hour period (randomly selected) of flight track data, per week. The time estimate for completing processing of a 24-hour sample is two to three weeks.

When the capabilities of the system have been determined, additional days may be added. The maximum amount of data that can be processed with this system is estimated to be 3 days per week.

After testing, the Tier 1 system will be implemented. This program includes:

- a. Establishing criteria for monitoring compliance with procedures included in this agreement.
- b. Develop a regular report on compliance. Distribute reports to the FAA and to each airline.
- c. If an on-going compliance problem is identified for a particular airline, the chief pilot will be contacted directly.
- d. A summary of flight track monitoring results will be published quarterly in the Sea-Tac Forum newsletter and reported to the Noise Abatement Committee.

**IMPLEMENTING AUTHORITY:** The primary responsibility belongs to the Port of Seattle. The FAA's responsibility is to provide prompt transfer of the necessary data and cooperation in system integration and use. Airlines.

## **AGREEMENT 2: TIER 2: DEVELOP NEW COMPREHENSIVE NOISE MANAGEMENT SYSTEM**

Evaluate systems available for reading and processing ARTS data on a daily basis. These systems generally include a disk pack reader, dedicated computer and software programs for tape translation, ARTS processing and compliance reports. In addition, the system must be able to provide information concerning (1) aircraft flight track maps on a daily basis; (2) flight track data for individual aircraft; (3) altitude profile analysis; (4) determine level of aircraft operations by type and airline; and (5) integration of tower voice tapes to determine instructions given to the pilot for actions under investigation. Finally, a system requirement will be expandable capabilities to correlate noise monitoring data.

Identify and implement the new flight track monitoring program. This will include the following:

- a. Prompt evaluation of Hotline complaints regarding compliance problems with noise abatement procedures included in this agreement. Integrate flight track data with noise monitoring and taped Tower instructions.
- b. Short reports will be developed for each incident and accompanied by supporting data. If a problem is discovered, the airline or the FAA will be contacted and the data supplied to the responsible party. Reports and follow-up information will be supplied to the caller.
- c. Publish monthly summary of noncomplying incidents and responsible parties in the Sea-Tac Forum Newsletter and release summaries in the form of a quarterly news release.

IMPLEMENTING AUTHORITY: Port of Seattle has the primary responsibility. The FAA's responsibility is to provide on-going support of this program through an agreement to use the ARTS data and to provide prompt transfer of the data.

### AGREEMENT 3: TIER 3: INTEGRATE NOISE AND FLIGHT TRACK MONITORING

#### BACKGROUND

The Port's current noise monitoring system has been in operation since 1979. It consists of 11 remote sites within the Part 150 area. It's primary capability is to measure daily Ldn noise levels.

In this action, the noise monitoring system will be evaluated for expansion and software will be obtained to correlate single event noise level data with individual aircraft operations related to specific flight procedures.

AGREEMENT 3A: Relocate the noise monitoring central processing information center to a more public area of the airport to provide public viewing.

AGREEMENT 3B: Publish reports of the noise monitoring data on regular basis.

AGREEMENT 3C: Evaluate integration of the noise monitoring data with flight track data.

AGREEMENT 3D: Evaluate the capability of the current system to be expanded for remote sites noted in Tier1.

AGREEMENT 3E: Upgrade or replace the noise monitoring system based on results of Agreements 3C & 3D.

AGREEMENT 3F: Generate annual contour report using the Integrated Noise Model.

IMPLEMENTING AUTHORITY: Port of Seattle

## SECTION VIII: FLIGHT TRACK MANAGEMENT

*The Mediation Committee or its designees will have until April 30, 1990 to reach agreement on east turn flight track modifications. If there is agreement on modifications, the Port will seek the concurrence of affected local jurisdictions within 30 days.*

*All members of the community caucus will have the opportunity to participate in the discussions and to concur in any agreement. The agreement will be forwarded to the Noise Abatement Committee.*

*The Port and FAA will assist in the discussions and the Port will seek to provide necessary technical assistance.*

*If there is no such agreement or if such concurrence is not forthcoming, the remainder of this package agreement shall stand and the following statement shall be appended to the "Statement Regarding Flight Tracks".*

*Whereas certain of the participants including the airlines industry and some communities favor new multiple flight tracks and others favor maintaining existing flight tracks; and,*

*It is understood that the FAA has the legal authority to initiate such changes as it deems appropriate. However, their agreement will be sought to ensure the implementation of any agreed upon modifications*

### STATEMENT REGARDING FLIGHT TRACKS

*Whereas the Mediation Committee has considered the impacts of existing and proposed flight tracks within the context of noise abatement, differential impacts on communities, efficiency and safety; and,*

*Whereas certain of the interests, including the airlines industry, favor and anticipate implementation of the FAA's airspace enhancement plan, and other interests, including certain communities do not favor its implementation; and,*

*Whereas despite their best efforts, participants in the mediation process have been unable to agree upon changes in flight tracks that are acceptable to all participants; and,*

*Whereas it is understood that the FAA has the legal authority to make such changes as it may deem appropriate,*

*Therefore no changes to flight tracks are endorsed by this mediation process and it is further understood that these recommendations stand in the absence of such an agreement.*



## SECTION IX: CONTROL NOISE FROM MOST ANNOYING OPERATIONS

### GOAL

This action is meant to control or eliminate particular single event operations that occur on a continuing basis and that are the object of community complaints. While the Port will be the implementing party, success of this action will depend on the cooperation of both the FAA and the airlines.

The Sea-Tac Aircraft Noise Hotline will be the primary tool for use in identifying which operations are most annoying to the community.

- AGREEMENT 1:** The Hotline complaint form and computer program will be modified to enable staff to crosscheck or sort complaints in a way that will help in associating apparently unrelated complaints with one specific operation or event.
- AGREEMENT 2:** The Noise Management System will be used to assist in identifying the object of the complaint or assistance will be requested from the FAA.
- AGREEMENT 3:** When the airline has been identified, the Port will contact it or the FAA to make the parties aware of the specific noise concern and to attempt to reach a solution.

**IMPLEMENTING AUTHORITY:** The Port of Seattle has the primary responsibility for implementing this measure. Assistance for *Agreement 2* may be required from the FAA if identification is not possible during Tier 1 of the flight track monitoring program. The success of this program depends on the cooperation of the airlines and the FAA in trying to reach solutions.

## SECTION X: INITIATE NOISE ABATEMENT COMMITTEE

### GOAL

The goal of an on-going committee is to insure that implementation of mediated programs is progressing as expected. *It is the intent that this Committee be formed to adequately represent the interests to this agreement in a balanced manner.*

- AGREEMENT 1:** A committee designated by the mediation committee will meet at regularly scheduled intervals to review and comment on reports related to mediated noise abatement programs. Initially, meetings will focus on implementation progress, with the committee advising on the resolution of unanticipated implementation problems. After all programs are successfully implemented, meetings will focus on results of the various airport use regulations such as the noise budget and nighttime limitations and on the results of the monitoring activities. The committee will be considered a standing committee. Original committee members will determine the rules under which the committee will operate. *The purpose, procedures and groundrules for the Noise Abatement Committee are outlined in Appendix C.*

**IMPLEMENT AUTHORITY:** Port of Seattle

## **SECTION XI: CHANGES IN PRESENT CONDITIONS**

*For most parties to this mediation agreement there are one or more issues of fundamental importance which constitute the basis for moving ahead with this overall package. Any significant change in such an issue of fundamental importance to any party to this agreement from the manner in which this issue is treated in these recommendations or in the environment within which these agreements were reached would permit the affected party to reconsider its support for the package and relieve itself from the commitments undertaken in this agreement.*

*Should a party affected by this agreement believe that such significant change has occurred, they shall so inform the Noise Abatement Committee. The Committee shall have 30 days in which to address and seek to resolve this issue.*

## **SECTION XII: PROCESS**

*Airport staff, with the assistance of members of the Options Subcommittee, the technical consultants and the mediators shall prepare a final draft of the recommendations by April 21, 1990. That draft shall be within the spirit of and any specific provisions contained in these draft recommendations.*

*The Airport staff shall prepare, in discussion with appropriate parties and authorities, procedures and agreements to implement and administer this agreement by the dates specified in these recommendations (ie. noise budget and nighttime limitations by October 1, 1990).*

*The Noise Abatement Committee (NAC) shall be established immediately and shall initially be composed of members of the Options Subcommittee. (Procedures and groundrules for the NAC including the change of membership etc. will be included in the April 21 recommendations.) An initial responsibility of the Noise Abatement Committee shall be to focus on the progress in developing the implementation and administrative agreements.*

## APPENDIX C:

### Sea-Tac Noise Abatement Committee

#### PURPOSE

The purpose of the Sea-Tac Noise Abatement Committee (SNAC) is to provide advice, oversight and continuity during the development, implementation, and duration of the Noise Abatement actions agreed to by the Mediation Committee on March 31, 1990.

#### PROCEDURES

Meetings: Meetings will initially be held on every two months, and will be facilitated by Port of Seattle staff. Revisions to the meeting schedule may be requested by the Sea-Tac Noise Abatement Committee. Participation in the discussions will be limited to members of SNAC, although meetings will be open to the public. Meetings will be held at Sea-Tac International Airport unless otherwise stated. Staff support, including provision of agendas and minutes, will be provided by the Port of Seattle.

#### GROUND RULES

##### Membership:

Membership is to be established and maintained in such a manner as to ensure adequate and balanced representation of the Mediation Committee interests. Initially, membership will be composed of members of the Options Subcommittee of the Mediation Committee, who will be appointed by the Port Commission to serve a term not to exceed two years.

As a member's term expires, or in the event that a member needs to be replaced before the conclusion of his or her term, a replacement will be selected based on procedures determined by the full Noise Abatement Committee. Nominations will be confirmed by the Port of Seattle Commission.

##### Establishment of further ground rules:

The first priority of the Airport Noise Abatement Committee will be to establish the ground rules under which the committee will operate. These ground rules will address such issues as procedures for meeting conduct, membership requirements, etc.

##### Agenda:

Initial agendas will focus on establishment of ground rules and implementation progress, with the committee advising on the resolution of unanticipated implementation problems. After all programs are successfully implemented, meetings will focus on results of the various airport use regulations such as the noise budget and nighttime limitations, and on the results of the monitoring activities. The committee will provide continued review and comment on reports related to mediated noise abatement programs.