

3.7 ENVIRONMENTAL HEALTH

Sources of information for this section include: *Everett Growth Management Comprehensive Plan DEIS; Master Development Plan for the Boeing Commercial Airplane Group DEIS 1991, Paine Field Master Plan and Noise Study Update - Volumes One and Two, Hazardous Materials Handling, City of Everett and Snohomish County Emergency Operation Plans.*

3.7.1 NOISE

Noise impacts generated by increased vehicular traffic are also discussed in Section 3.2 Transportation.

3.7.1.1 Background

The human ear responds to a wide range of sound intensities. The decibel scale used to describe sound is a logarithmic rating system that accounts for the large differences in audible sound intensities. This scale accounts for the human perception of a doubling of loudness for each increase of 10 decibels. Therefore, a 70 decibel sound level is twice as loud as a 60 decibel sound level. In the outside environment, such as near roads, a change of 2 or 3 decibels would not be noticeable to most people, while a 5 decibel change would be perceived under most listening conditions.

When addressing the effects of noise on people, it is necessary to consider the frequency response of the human ear. Sound measurement instruments are designed to respond to, or ignore, certain frequencies. The frequency rating most often used in evaluating environmental noise is A-weighting, and measurements from instruments using this system are reported in "A-weighted decibels" or dBA. Other measurements include:

- The equivalent sound level (Leq) which is the level of a constant sound that has the same sound energy as the actual fluctuating sound.
- Day-night sound level (Ldn or DNL) which adds a 10 decibel penalty to sound levels between 10 p.m. and 7 a.m. to account for sleep interference.
- The 24-hour period sound level [Leq(24)].

For a given noise source, factors affecting the sound transmission from the source, and therefore the potential noise impacts, include distance from the source, frequency of the sound, absorbency of the ground surface, the presence or absence of obstructions, and the duration of the sound. Typical sound levels of some familiar noise sources are presented in Table 3.7-1.

Everett's main sources of noise are derived from vehicle activity, public transportation, railroad and airport activity; construction activity; industrial, manufacturing and commercial operations; public services; entertainment; normal residential activities including yard equipment, and animals; and natural sounds. A typical suburban neighborhood will have a noise level of 55 dBA, and a loud urban neighborhood may have a noise level of 70 dBA. Commercial and

industrial areas may range from 75 dBA to 80 dBA. Noise levels above 65 - 75 dBA are generally considered unacceptable for residential use, unless special noise insulation is provided for noise reduction.

**Table 3.7-1
Typical Sound Levels (dBA)**

Effects on Human Ear	dBA	Comparison
continuous exposure can cause hearing loss	140	threshold of pain
	130	
	120	jet takeoff at 200', auto horn at 300'
	110	chain-saw, noisy snowmobile
	100	lawn-mower, power tool at 3', noisy motorcycle at 50'
	90	heavy truck at 50'
	80	busy urban street, daytime, quiet motorcycle at 50'
speech interference	70	normal automobile, commercial area
	60	conversation at 3'
sleep interference	50	quiet residential area
	40	quiet home, library
	30	bedroom at night, concert hall (background)
	20	
	10	broadcasting studio
	0	threshold of hearing

Source: McCulley, Frick & Gilman, Inc., 1993

Federal, state and county agencies have established limits on the levels and duration of noise crossing property boundaries. Allowable maximum sound levels depend on the land use of the noise source and the land use of the receiving property. See Section 3.6.1.3 for a discussion of specific noise regulations. Normally, industrial areas are permitted to create and receive a higher level of noise than property zoned residential.

3.7.1.2 Existing Conditions

While noise levels are not known for most existing uses in the Subarea, specific information is provided below for Associated Sand & Gravel, Boeing, and Paine Field Airport.

Associated Sand & Gravel

Typical noise sources at the Associated site include heavy trucks, processing of sand and gravel (crushing, sorting, screening, etc.), and reclamation activities. Other sources of noise on the site are the hot mix asphalt and concrete batch plants. Noise levels for processing plants, asphalt plants, and concrete batch plants have been estimated to be up to 82 dBA at 100 feet from the source (Snohomish County Dept. of Community Development 1994). The most noticeable noise over long distances from the site is typically the warning back-up beepers from the trucks.

Paine Field Airport

Paine Field Airport is the primary general aviation and industrial aviation airport serving Snohomish County and the northern portion of the Seattle Metropolitan area. Paine Field is currently operated by Snohomish County under the 1978 Role Determination and Mediated Agreement, updated in 1987. These documents limit the airport to activities that generally produce moderate amounts of noise. Despite maintaining moderate noise levels, noise from aviation activity does affect surrounding properties. The sound level depends on flight schedules, location, time, and model and variety of aircraft. Improvements in aircraft engine design and operations have helped to mitigate noise produced by aircraft and aircraft testing.

Paine Field noise abatement procedures include flight directions for different types of aircraft, including details for approaches, departures, go-arounds, use of specific runways, altitude and turning movements. However, it is understood that Air Traffic Control instructions, weather, and safety considerations may at times require deviations from suggested procedures.

Paine Field operates a 24-hour telephone hotline for citizens to phone in noise complaints and concerns. A record of all the calls is maintained in order to send out quarterly noise reports to those who have phoned in. Often times, the airport's noise technician will return calls personally if the situation warrants.

Technical details of Paine Field's Noise Abatement Procedures can be found in Volume Two of the Paine Field Master Plan and Noise Study Update, 1994. The following types of aircraft operations occur at the airport:

Manufacturing/Maintenance Large Transport Activity. Two aviation manufacturing/maintenance organizations are currently located at Paine Field. These two organizations operate the same aircraft types that are used for "air carrier" passenger and freight activity (however, the operations are not related to commercial passenger service).

- *Boeing:* Production of airplanes necessitates engine testing and flight operations on a regular basis. Significant noise is generated from these tests, as discussed above. Types of aircraft operated by Boeing at Paine Field are B-737, B-747, B-757, B-767, and B-777.
- *Tramco:* Tramco, a tenant of Paine Field, refurbishes airplanes. This process involves engine testing and aircraft operations which are significant noise generators. Types of aircraft operated by Tramco at Paine Field are B-727, MD-80, DC-10 and other narrow and wide-body commercial jet aircraft. Mitigating measures included in the 1991 DEIS for the Tramco facility expansion for reduction of aircraft noise impacts included noise abatement barriers placed around test locations and the possibility of reducing hours for engine testing.

According to the Paine Field Master Plan, in 1992 there were 3,096 large transport aircraft produced or maintained at airport facilities. This number is expected to grow to 6,000 large transport aircraft by the year 2014.

Military Operations. The U.S. Army Reserve maintains 19 helicopters at the Army Aviation Support Facility on Paine Field. Noise from military helicopters has been a significant source of noise complaints in the area. There may be a small increase in military logistics support when the Navy's first nuclear aircraft carrier arrives in late 1996; however the demand for military operational activity is expected to remain the same through at least 2014. The Paine Field Master Plan projects no increase in the number of military helicopters operated at Paine Field through 2014.

General Aviation Operations. The amount of general aviation activity has been heavily influenced by fluctuations in the regional and national economy. Training and private use of aircraft generally decline during times of economic downturns, and increase during times of prosperity. Growth in aviation operations has been recently hampered by the high operating and ownership costs of aircraft. The latest census taken by airport management in 1992 found 478 general aviation based aircraft operating at Paine Field. Types of aircraft falling into this category include single-engine (83%), multi-engine and turboprops (12%), business jets (3%), helicopters (1%), and gliders (1%). The Paine Field Master Plan projects that the number of general aviation aircraft will increase to 560 by 2014.

Air Cargo Activity. Air mail and freight activity have not taken place at the airport since the air-mail route from Everett to the San Juan Islands was abandoned in 1992.

Air Carrier/Commuter Service. The airport does not provide scheduled passenger service.

Data from existing and supplementary noise monitors at Paine Field were used to generate existing noise contours. The noise contours do not measure single-event noise levels, rather, single-event noise levels are combined with average annual operations and the time of day which the noise occurs. This combination of data generates an Ldn noise level number. (Ldn is a 24-hour annual average, weighted noise level - noises occurring between 10 p.m. and 7 a.m. are penalized for occurring at this time.) The Integrated Noise Model is then used to generate existing noise contours based on existing operational assumptions at the airport. 1992 (existing) noise contours are shown in Figure 3.7-1. Note that short-term noise levels can be much higher.

Several land use categories are found within the five noise contours. Table 3.7-2 summarizes the acreage of land uses within each noise contour by land use. Noise sensitive uses are not found within noise contours of 65 DNL (Ldn) or greater. Therefore, according to federal guidelines, the airport is not considered to have an existing land use compatibility problem (Paine Field Master Plan 1995).

**Table 3.7-2
Land Uses within Existing Paine Field Noise Contours, by acre**

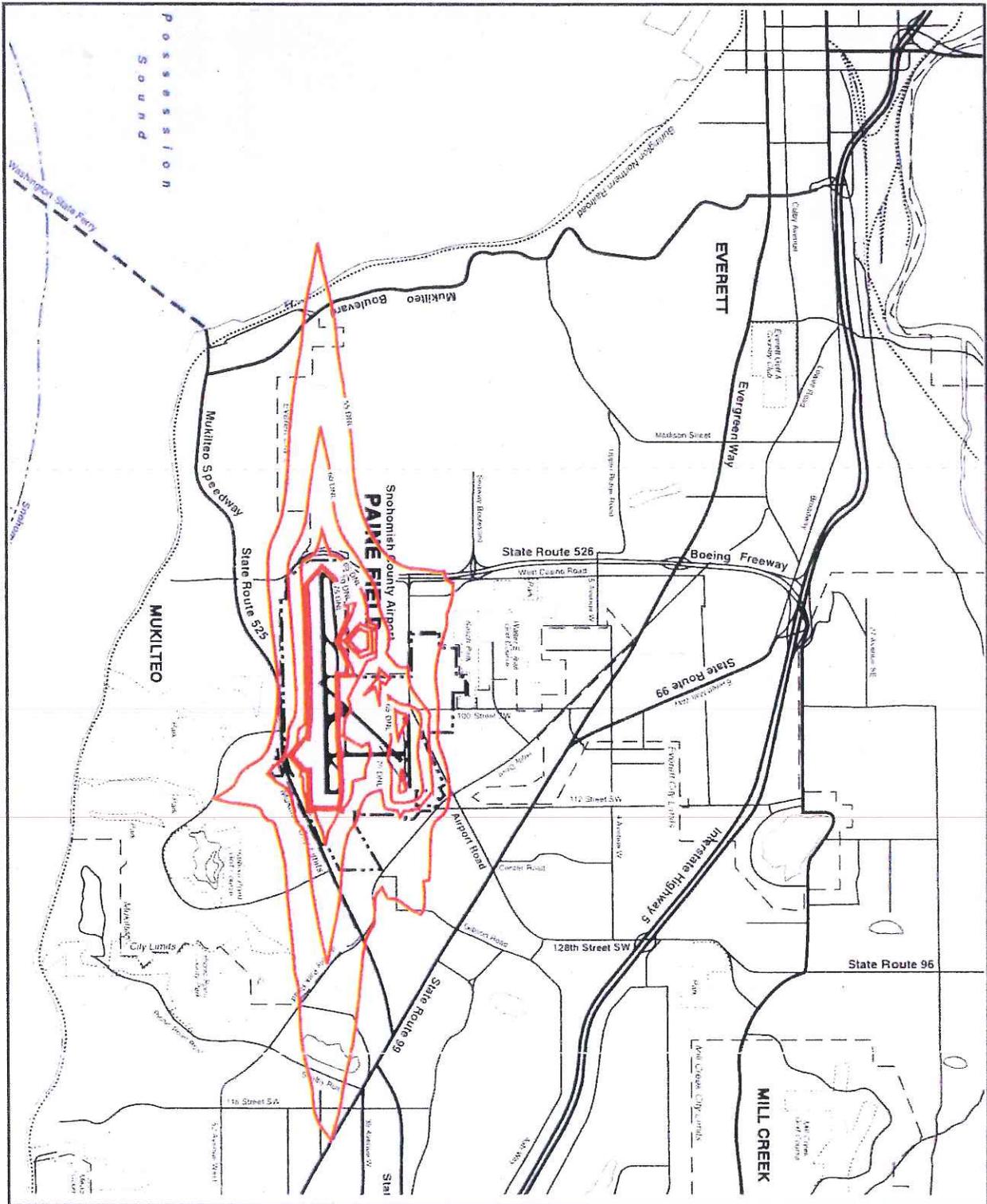
Land Use	55 Ldn Contour	60 Ldn Contour	65 Ldn Contour	70 Ldn Contour	75 Ldn Contour
Residential	572	4	0	0	0
# Schools	2	0	0	0	0
Com/Ofc	213	69	2	0	0
Industrial	873	374	114	36	10
Undeveloped	508	36	0	0	0
Water	22	0	0	0	0
Airport	1,141	925	524	284	246
Total Area	3,328	1,408	640	320	256

Source: Paine Field Master Plan & Noise Study Update, 1994

Boeing

Major noise sources from Boeing operations include manufacturing activities, aircraft test flights, engine testing at run-up stations, railroad noise, and traffic. Background noise at the manufacturing plant has been measured at 57 dBA (Boeing EIS). Boeing has taken steps to

Figure 3.7-1
Paine Field Existing Noise Exposure Map, 1992



Source of Map: Snohomish County Planning Department Mapping, Aerial Photography, and United States Geological Survey (USGS) Quadrangle Sheets. Field Surveys. *Paine Field Master Plan & Noise Study Update*.

quiet noise from specific facilities, including the Fatigue Test Facility and the Pneumatic Pump Room.

Production of each aircraft requires test flights and ground run-up tests to "trim" the engine operations to its controls. Ground run-up tests are conducted at three different thrust settings (idle, 87% takeoff, and 100% takeoff) each for varying periods of time. Boeing operates 18 engine run-up stations and engine trims can only be performed at these designated stations. Noise from the engine run-ups are reduced by on-site blast fences and earth berms; however, noise levels can still be significant. During a "worst case" 747 four-engine run-up at 100% takeoff thrust, residential properties to the west and east are impacted by noise levels of approximately 70 dBA and noise levels in the majority of the Edge Shed are at least 60 dBA. See Figure 3.7-2.

Although short-term noise levels can be very high, existing and forecasted noise contours above 65 DNL (Day-Night Level) are located entirely on airport and Boeing property. Figure 3.7-1 which shows the existing condition DNL noise contours for Paine Field includes noise from both Tramco's and Boeing's ground run-up operations.

3.7.1.3 Regulatory Framework

Environmental Protection Agency (EPA)

The EPA has no regulations governing environmental noise, but has conducted studies of the effect of certain sound levels on public health and welfare. The EPA has specified an Ldn of 55 dBA for outdoor areas where quiet is a basis for use. The EPA evaluates impacts based on the relative change in sound due to a project. It classifies an increase of 0 to 5 dBA as a slight impact, an increase of 5 to 10 dBA as a significant impact, and an increase of more than 10 dBA as a serious impact.

U.S. Federal Highway Administration (FHWA)

The FHWA has identified noise criteria and established procedures for evaluating road improvement projects in its Federal-Aid Highway Manual (U.S. DOT, 1982). The FHWA defines a traffic noise impact to have occurred when the predicted traffic noise levels approach or exceed 67 dBA in residential areas or 72 dBA in commercial areas, or when the predicted traffic noise levels substantially exceed the existing noise levels.

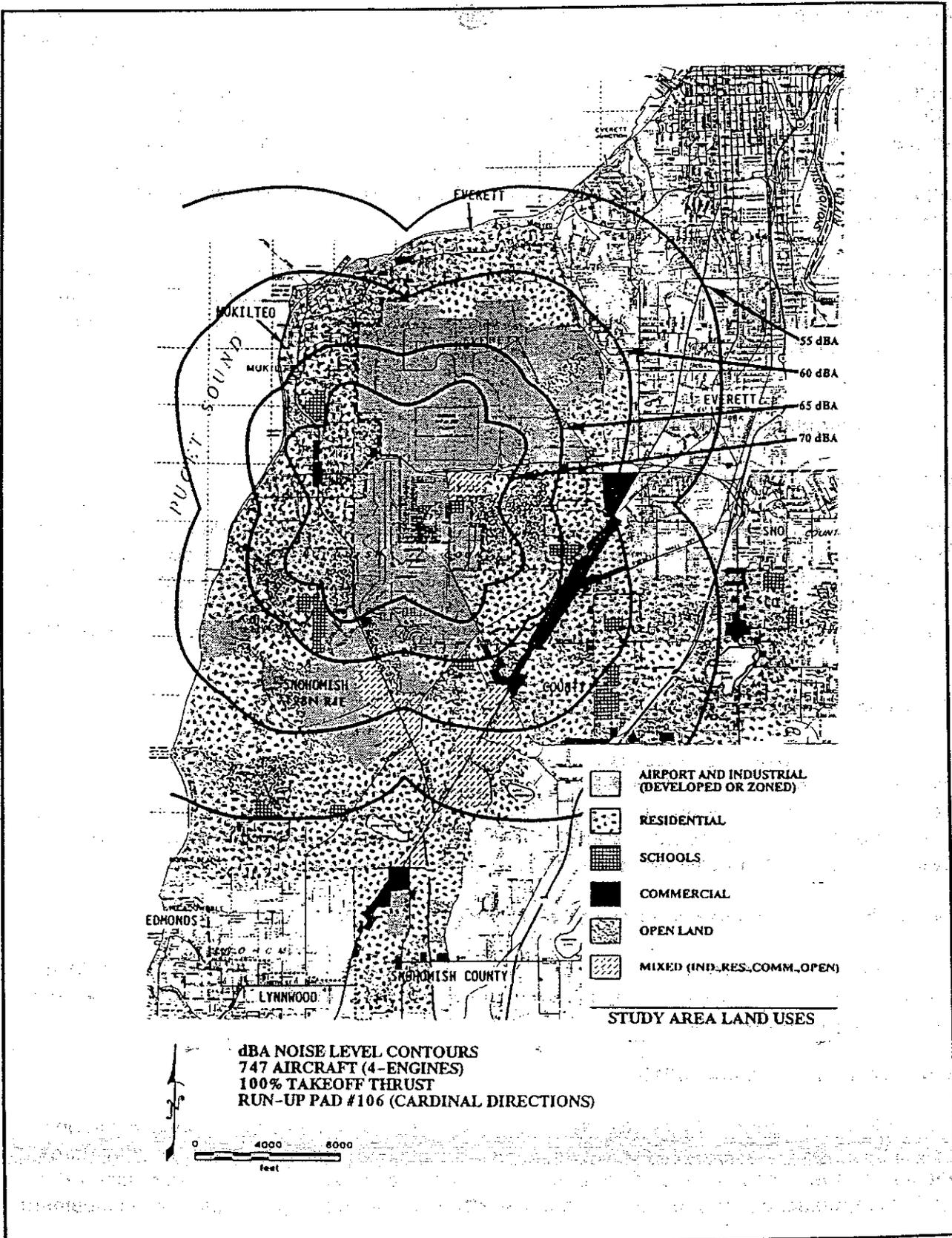
Department of Housing and Urban Development

This agency recommends a maximum outdoor day-night sound level of 65 dBA in residential areas. Federal funding for housing projects in areas that exceed 65 dBA is normally withheld unless there is special approval.

Federal Aviation Administration

14 CFR Ch. 1 Part 36 - Noise Standards: Aircraft Type and Airworthiness Certification and Part 150 - Airport Noise Compatibility Planning. These regulations provide noise standards for different types of aircraft including take-offs, fly-overs, and helicopters. The purpose of Part 150 is to "prescribe the procedures, standards, and methodology governing the development,

Figure 3.7-2
 "Worst Case" Short term Spike for Boeing's Engine Run-ups



Source of Map: 1991 EIS for Boeing Master Development Plan.

submission, and review of airport noise exposure maps and airport compatibility programs, including the process for evaluating and approving or disapproving those programs." The section also identifies those land uses which are normally compatible with various levels of exposure to noise by individuals. Residential land use is deemed acceptable for noise exposures up to 65 Ldn.

City of Everett

Noise Control Ordinance (EMC 20.08). The City's Noise Control Ordinance is based upon State noise control regulations (Chapter 173-60 WAC), and sets limits for allowable noise within the City. Section 20.08.010A states:

It is hereby declared to be the policy of the City to minimize the exposure of citizens to the harmful physiological and psychological effects of excessive noise. It is the express intent of the City Council to control the level of noise in a manner which promotes commerce; the use, value, and enjoyment of property; sleep and repose; and the quality of the environment.

Noise control districts have been established based on land use zones. District I includes all residentially zoned districts; District II includes business and commercially zoned areas; and District III includes agricultural and manufacturing uses as well as other non-residential, non-business and non-commercially zoned areas. Maximum permissible noise levels by District (source and receiver) are listed in Table 3.7-3 below. Noise levels are measured in dBA.

**Table 3.7-3
Maximum Permissible Noise Levels**

Sound Source	Receiving Property:		
	I	II	III
I	55	57	60
II	57	60	65
III	60	65	70

(Ord. 534-78 3(b), 1978)

Modifications apply to permissible noise levels under the following circumstances:

- Between 10 p.m. and 7 a.m. on weekdays, and between 10 p.m. and 9 a.m. on weekends, the maximum allowable noise levels are reduced by 10 dBA where the receiving property lies within District I (residential).
- For any sound which is of short duration, the maximum dBA is increased by 5 dBA for 15 minutes per hour, 10 dBA for five minutes per hour; or 15 dBA for 1.5 minutes per hour. This provision applies any time, day or night.

The following noises as exempt or partially exempt from the provisions of the Noise Ordinance:

exempt at all times:

- airport noise - including aircraft in flight and airport/flight operations;
- safety and protective noise devices;
- fire alarms;
- emergency equipment;
- auxiliary equipment on motor vehicles used for highway maintenance;
- officially sanctioned parades, sporting events, or other public events;
- warning devices not operated continuously for more than 30 minutes per incident;

- motor vehicles when regulated by Sections 20.08.060 - 20.08.080;
- natural phenomena;
- motor vehicles operated off-road (except within District I); and
- natural gas transmission facilities.

exempt/partially exempt:

- operation of railroad equipment or facilities;
- temporary construction sites - except between 10 p.m. and 7 a.m. weekdays and 6 p.m. and 8 a.m. on weekends;
- marine-oriented construction sites - except between 10 p.m. and 7 a.m. in District I;
- aircraft-engine testing and maintenance not related to flight operations - except between 10 p.m. and 7 a.m.; and
- motor vehicle racing events at authorized facilities.

exempt during daytime hours (20.08.110):

- powered equipment used in periodic or temporary repair of residential property (i.e. lawnmowers, power hand tools, composters, etc.);
- discharge of firearms on authorized shooting ranges;
- installation or repair of utilities;
- blasting;
- bells, chimes, or carillons not operating more than five minutes in any one hour; and
- noise originating from forestry or silvicultural activity.

noise exempt from nighttime reduction (20.08.120):

- stationery equipment used for conveyance of water by a utility and electrical substations; and
- noise from industrial districts which exceed the standards, and over the past three years have operated over 15 hours per day as a routine or as a processing necessity - no changes in these noise levels can occur without prior approval from DOE.

City of Everett Zoning Code. The M-1 Office and Industrial Park Zone and M-M Business Park Zone standards require that equipment or vents which generate noise be located on the opposite side of the building from adjoining residentially zoned properties.

The M-1 zone also requires that parking areas and truck loading and maneuvering areas be setback at least 75 feet from residential areas.

Environmental Policy (SEPA) Ordinance. The City has used its SEPA substantive authority to place more stringent requirements on projects than required by the City's Noise Control Ordinance. For example, aircraft-engine testing and maintenance not related to flight operations is exempt from noise standards, except between 10 p.m. and 7 a.m. However, in the Decision Document for the Boeing Expansion, the City required that Boeing provide mitigation for engine run-up testing, including:

- Submittal of a detailed professional engineering design to fill in gaps, raise the height, or otherwise modify berms or provide new berms. Approved improvements were required to be in place prior to commencement of 777 engine run-up testing.
- Location and selection of stations for testing to minimize noise impacts.
- Submittal of a noise assessment after one year of engine run-up testing for 777s.

Snohomish County

Noise Control Ordinance (Chapter 10.01 SCC). Snohomish County's noise control regulation is also based upon the State regulations and is very similar to Everett's ordinance.

Snohomish County Zoning Code. In the BP Zone, noise levels shall not exceed those established in chapter 10.01 SCC noise control, or violate other laws or regulations relating to noise. Noise of machines and operations shall be muffled so as to not become objectionable due to intermittence or beat frequency, or shrillness (18.60.100).

3.7.1.4 Impacts of Development

All alternatives will result in increased employment growth in the Subarea and thus increases in ambient noise levels in the area.

Several factors can create changes in noise levels and patterns:

- extent of urban development and construction activity;
- extent and design of new transportation facilities;
- increases in traffic volumes;
- nature of employment-related activities; and
- airport capacity, activity, and technology.

See the Transportation Section of this DEIS for a discussion of noise impacts related to vehicular traffic.

Short-term Noise Impacts (Construction)

Temporary noise from construction activity will result from clearing; excavation and earth moving; grading and compacting; paving; landscaping; and operation of miscellaneous heavy equipment. Noise levels for each site will vary based on such factors as topography, atmosphere, location of trees, and surrounding structures. Noise levels are generally reduced by about 6 dBA for every 50 feet beyond the noise source. Typical maximum noise levels for construction equipment are summarized in Table 3.7-4.

Construction noise can create annoyance and speech interference during the day. Noise will particularly affect residential and office uses, as well as schools (Sno-Isles Skill Center, Applied Technology Center, etc.).

Long-term Noise Impacts

General Activity. Increase in development of the Subarea will cause the ambient noise level of the area to rise. The surrounding residential areas, schools and office buildings will be particularly vulnerable to increases in industrial noise. Major sources of noise will be increased traffic, manufacturing processes, and airport activities. Typical noises from new development will include car doors opening and shutting, noise of employees outside as they start or leave a work shift, refrigeration trucks, truck maneuvering for loading/unloading, and air conditioning equipment. These are low-level noises that will primarily be noticed by Edge Shed residents. Noise from nighttime manufacturing operations will be more obvious because the ambient noise level during nighttime hours is lower than during the day.

According to the Everett Municipal Code (EMC), the maximum amount of noise a residential property should receive from commercial and industrial activities is 60 dBA. Between the hours of 10 p.m. and 7 a.m., the maximum noise level should be 50 dBA. However, some activities such as aircraft operations are exempt from the Noise Ordinance, so noise levels in residential areas could be higher. Construction of additional engine run-up stations (over that approved in Boeings 1991 Expansion), which are partially exempt from the noise ordinance, could result in significant impacts on nearby residential areas.

**Table 3.7-4
Typical Maximum Noise Levels for Construction**

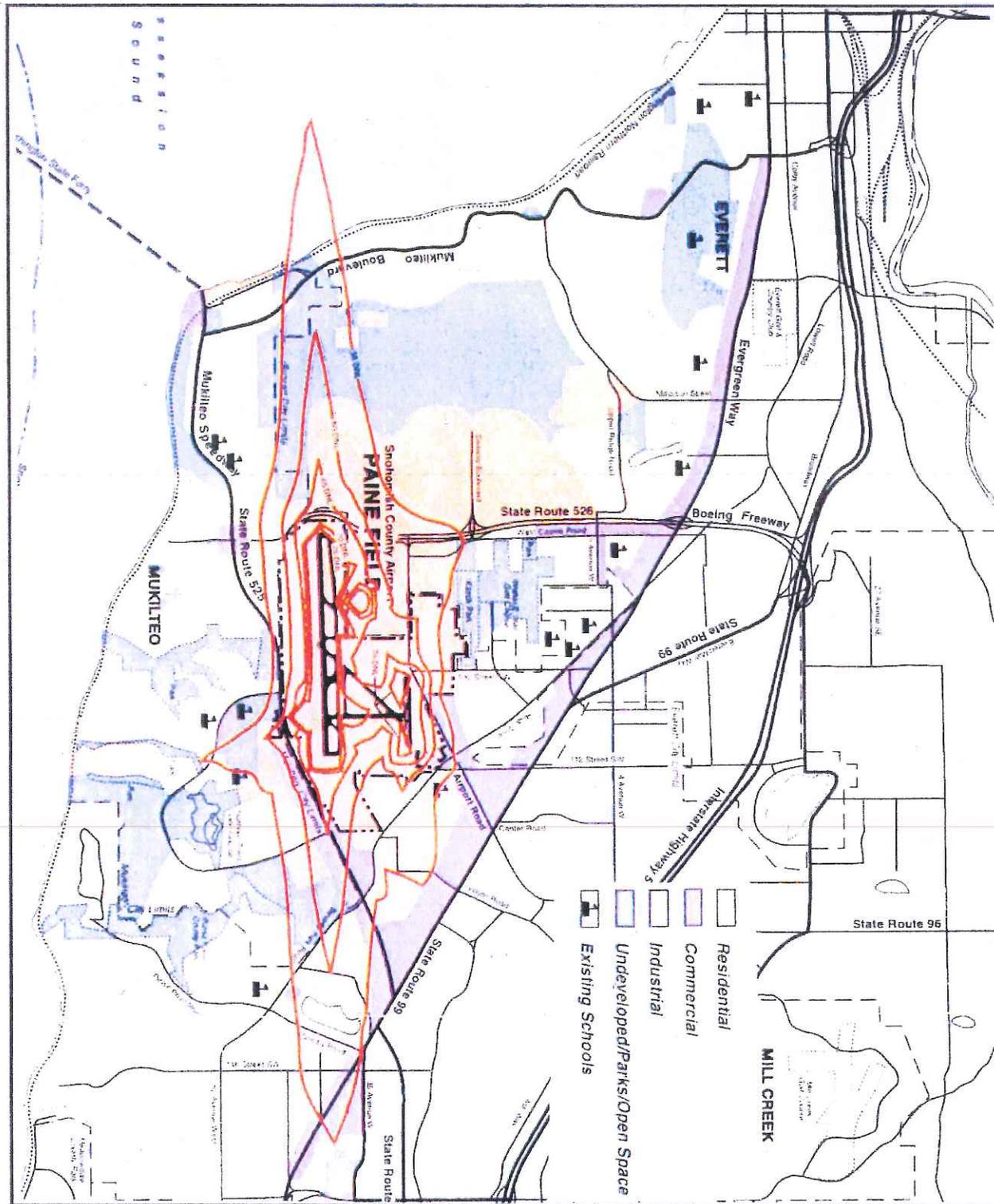
Activity/Equipment	dBA	Activity/Equipment	dBA
Clearing:		Paving:	
bulldozer	80	paver	86-88
front loader	72-84	truck	83-94
dump truck	83-94	tamper	74-77
jack hammer	81-98	Landscaping:	
crane w/ ball	75-87	bulldozer	80
Excavation/Earth Moving:		backhoe	72-93
bulldozer	80	truck	83-94
backhoe	72-93	front loader	72-84
front loader	72-84	dump truck	83-94
dump truck	83-94	paver	86-88
jack hammer	81-98	Materials Handling:	
scraper	80-93	concrete mixer	75-85
Grading/Compacting:		cranes	75-85
grader	80-93	Stationary:	
roller	73-75	pumps	68-73
Impact Equipment:		generators	72-82
wrenches	80-90	Other:	
compressors	75-85	vibrators	70-80
		saws	73-83

USEPA, Noise from Construction Equipment and Operations; Building Equipment, and Home Appliances, December 1971.

Safety and protective devices, emergency equipment, and motor vehicles are also exempt from noise control requirements. These can generate noises that are generally short term, but can be annoying. Vehicle back-up beepers may not be hazardous to human health, but are an irritating background noise. In addition, low frequency noises, including those of a "rumbling" nature, may not exceed standards, but can still be disturbing or startling.

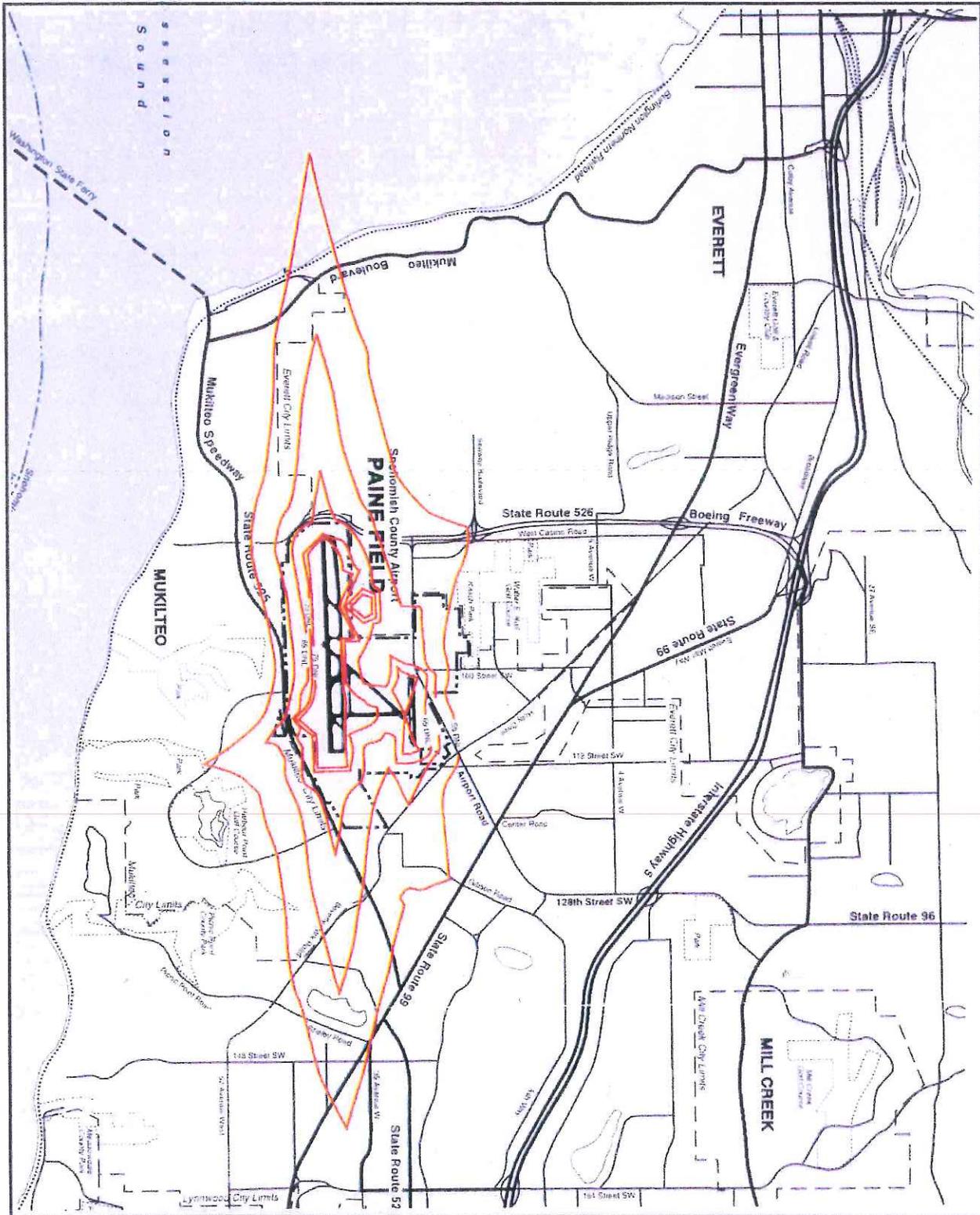
Paine Field: Using the Integrated Noise Model, Paine Field projected noise contours for 1999 and 2014. See Figures 3.7-3 and 3.7-4. Both projections include ground activities for Boeing and Tramco in noise levels, including engine run-ups (Dolan, 1996). The projections are based on operational assumptions outlined in Scenario 3 in the Paine Field Master Plan, which assumes a 17% increase in general aviation operations by 2014.

Figure 3.7-3
Paine Field Projected Noise Contours, 1999



Source of Map: Snohomish County Planning Department Mapping, Aerial Photography, and United States Geological Survey (USGS) Quadrangle Sheets. Field Surveys. *Paine Field Master Plan & Noise Study Update*.

**Figure 3.7-4
Paine Field Projected Noise Contours, 2014**



Source of Map: Snohomish County Planning Department Mapping, Aerial Photography, and United States Geological Survey (USGS) Quadrangle Sheets. Field Surveys. Paine Field Master Plan & Noise Study Update.

Noise projections for 1999 and 2014 are very similar to existing (1992) conditions. By 1999, despite increases in aviation operations, the airport does not expect to have an existing land use compatibility problem (this assumes no changes in existing land uses). No noise sensitive land uses are expected to be located within a noise contour of 65 Ldn or greater. Table 3.7-5 shows the acreage of land uses within projected noise contours in 1999.

**Table 3.7-5
Land Uses within Projected Paine Field Noise Contours, by acre**

Land Use	55 Ldn Contour	60 Ldn Contour	65 Ldn Contour	70 Ldn Contour	75 Ldn Contour
Residential	834	29	0	0	0
# Schools	2	0	0	0	0
Com/Ofc	282	86	4	0	0
Industrial	987	445	149	36	14
Undeveloped	691	129	0	0	0
Water	148	0	0	0	0
Airport	1,148	976	679	348	242
Total Area	4,090	1,664	832	384	256

Source: Paine Field Master Plan & Noise Study Update, 1994

Increases in aviation technologies and noise abatement procedures will continue to decrease the levels of noise generated by aircraft on the ground, during takeoffs, and in the air. Noise levels will increase, both in the short-run from construction activity, and in the long-run from increased traffic volumes and manufacturing noise.

3.7.1.5 Potential Thresholds

All development in Everett must be in conformance with the requirements of EMC 20.08. All development in Snohomish County must be in conformance with the requirements of Chapter 10.01 SCC.

3.7.1.6 Potential Measures to Reduce the Impacts of Development

1. All development must comply with EMC 20.08 or Chapter 10.01 SCC. Noise studies may be required at the time of application to confirm compliance with the applicable ordinance. The applicant must incorporate into the development all recommendations of the study necessary to bring the development into conformance with adopted standards.
2. Airport noise, including aircraft in flight and airport/flight operations is exempt from the City of Everett and Snohomish County noise ordinances. Mitigation for airport related noise at Paine Field shall be per the adopted Paine Field Master Plan and Noise Study update.

Airport noise could be reduced through implementation or continuance of the following mitigation measures (as outlined in Paine Field Master Plan):

- Noise Barriers (shielding) and Earthen Berms - a noise wall is proposed to be constructed along the west boundary of the airport property. Portable noise

- suppression units could also be used during engine run-ups. Note: this would be an expensive mitigation measure.
- Runway Threshold Relocation.
 - Voluntary Touch and Go Restrictions - discourages repetitive training flights by jets, turboprop and large propeller aircraft, as well as discouraging aircraft with engines greater than 250 horsepower using certain runways for training.
 - Noise Monitoring Program.
 - Noise Concern/Citizen Liaison Program.
 - Voluntary Preferential Runways.
3. Additional methods for ensuring compatibility with aircraft-noise impacted areas (as listed by the Paine Field Master Plan) include:
- Fee Simple Land Acquisition - through negotiations and purchase from landowners or through condemnation proceedings (land for airports can be acquired by eminent domain - RCWA 14.08.030).
 - Subdivision Regulations - aviation easements could be assured as part of the building permit process, as well as placing a notification on the face of a plat that the subdivision is located in the vicinity of an airport.
 - Easements - through grant, gift, devise, acquisition or condemnation.
 - Building Codes - should provide specifications for suitable noise attenuation of new construction.
 - Capital Improvements Program - capital improvements should be programmed so as to encourage compatible development and discourage incompatible development.
4. In 1995, the Everett City Council adopted a resolution supporting Paine Field's proposal to require that a formal Buyer Notification/Disclosure Statement be required prior to closing real estate transactions in an area identified by Paine Field as the "Airport Influence Area." The resolution recommended that Paine Field Airport provide information to all residents and property owners in the "Airport Influence Area," at least on an annual basis. This information should include at a minimum a discussion of the following: where its noise impacts are in the community, ongoing studies, and the airport's community outreach programs. This information should also be given to local Realtors, local Chamber of Commerces, and visitor centers for distribution to new residents and citizens in the area.
5. Engine run-up noise is exempt during daytime hours from the City and County noise regulations, but can result in significant short-term noise levels in residential areas. In order to reduce impacts on residential areas from engine run-up activities, the following options could be considered.
- EMC 20.08 could be revised to require additional analysis for activities that are exempt from the ordinance, but are expected to exceed standard noise levels. These activities could be required to implement "reasonable" measures to reduce exceedances of standard noise levels as approved by the Administrator as established in EMC 20.08.
 - The threshold for the analysis of impacts in this Subarea Plan could be set to require any use that exceeds the standards in EMC 20.08 to submit additional SEPA analysis of noise impacts, even if exempt from the standards of EMC 20.08. This would allow the City's Responsible Official to require additional noise analysis and impose conditions to mitigate impacts beyond that required in the noise ordinance. (This was the process used to require additional mitigation for Boeing's engine run-up stations.)

6. Warning devices on vehicles (back up beepers) are exempt from the City's noise ordinance, but are perceived as irritating by most people. Developments that abut residential zones should be designed to shield vehicle maneuvering and loading areas from residential areas by placement of buildings, berms, etc.
7. The City of Everett, Snohomish County and City of Mukilteo should ensure that zoning and land use designations around the airport do not allow uses that would be incompatible with airport operations.
8. Preservation of buffers between uses can minimize noise in abutting residential areas by increasing distance between the noise source and receivers. Dense vegetation composed of a mix of trees and shrubs and fencing can also reduce noise levels.
9. Measures to reduce the impacts of traffic include the following: (These are discussed in more detail in Section 3.2 Transportation)
 - Design transportation facilities to reduce noise impacts through measures such as depressed roadways and noise barriers.
 - Provide and encourage use of public transit, vanpools, carpools, telecommuting, and flextime.
 - Reduce and enforce neighborhood street and arterial speed limits.
10. Reduction in construction noise could be achieved by the following practices:
 - Requiring heavy equipment to have exhaust mufflers.
 - Minimizing outdoor construction during evening and nighttime hours beyond that required by noise regulations.
 - Turning off unused or idle equipment.
 - Minimizing metallic impacts.
11. Encourage development of low noise vehicles and equipment by making that a criteria for City purchases.
12. Through the use of new technologies, the amount of noise generated from manufacturing and processing could be reduced.

3.7.2 TOXIC OR HAZARDOUS MATERIALS AND EXPLOSIVES

3.7.2.1 Existing Conditions

Explosives

Some manufacturing and industrial uses in the Subarea may use and store explosive materials.

Associated Sand & Gravel. Associated does not store explosives at its Everett site. At no time in the mine's history has blasting been used as a method of excavation.

Boeing. Boeing stores some minor explosives stored on-site (bullets, blanks, etc.) for ancillary functions. The possibility of an explosion from mixing incompatible materials is minimized through separate storage and handling according to hazardous material guidelines.

Toxic or Hazardous Materials

Many manufacturing and industrial uses in the Subarea will use and store hazardous materials on-site. These materials are generally used in manufacturing processes and facility operations. Typical hazardous materials used include solvents, paints, and petroleum hydrocarbon fuels. Hazardous materials can also be generated as a byproduct of manufacturing processes. The following discussion describes the type of hazardous materials used by Boeing and Paine Field and handling methods for the materials. While these businesses may not be typical of uses that will locate in the Subarea in the future, many businesses will use or generate one or more hazardous material(s) and will be required to use the same type of storage, handling, and treatment methods.

Boeing. Boeing estimates that it uses approximately 17,524,620 pounds of chemicals and hazardous materials each year. According to state and federal hazardous waste regulations, Boeing's Everett plant is a dangerous waste generator and is also permitted as a treatment, storage, and disposal (TSD) facility.

Boeing's Materials Management Center (MMC) serves as the storage facilities for hazardous materials and hazardous waste. The MMC was built in 1987 in accordance with the 1985 Uniform Fire Code and with generally accepted engineering design criteria for hazardous waste storage facilities (WAC 173-303). Different areas within the MMC are separated by containment trenches covered with steel grating to prevent any spills from leaving the area as runoff. The floors are sloped to direct spills into the trenches. Additionally, there is an emergency shutoff valve in the storm sewer system located near the MMC.

Chemicals and hazardous materials in the MMC are stored and transported separately by the following categories:

- nitric acid
- oxidizers
- caustics
- cyanides
- halogenated solvents
- paints - flammable/combustible
- oil
- combustible

The Everett Plant operates a wastewater pretreatment plant for process waters generated at the Everett site and at other Boeing facilities (generally 90% or more of the waste is generated in Everett, while 10% or less comes from other facilities). The principal sources of waste at the Everett site are paint hangars and booths, wing lines, and plating tanks (plating wastes contain chromium, cadmium, and other metals). At a maximum production rate, the wastewater pretreatment plant would be processing 139,950 gallons per day (well below the permit limitation of 194,000 gpd).

Boeing maintains a Fire/Security Department and a Hazardous Materials Response Team which are available on a 24-hour basis 365 days a year. The teams respond to emergency situations and track accidental hazardous spills. Additionally, Boeing employees receive on-the-job-training to minimize occurrence of accidents and emergency incidents.

Boeing has prepared three plans that address the environmental and occupational health and safety aspects of emergency and spill prevention, preparedness, and response:

- SPCC/Contingency Plan - Boeing Document No. D-180-14310-2C, August 1990
- SARA Title II Site Emergency Response Plan, February 1990
- Safety and Health Program for Hazardous Waste Storage Areas, March 1990

Paine Field Airport. The majority of hazardous materials stored at the airport are for fire fighting purposes. The airport maintains 500 pounds of Halon (an ozone depletor) and uses aqueous film forming foam (AFFF) for extinguishing fires. Other hazardous materials include airplane fuel which must be stored in approved, labeled containers (regulated through the Fire Marshal). According to Paine Field staff, airport operations generate minimal levels of hazardous waste with the primary waste generators being the airplane hangar tenants.

Paine Field's Fire Department is on call 24 hours per day to respond to hazardous materials spills. The response is defensive only and has the capability of identifying areas of potential environmental hazards, diking the hazardous material, and diverting the material from entering any surfacewater features. The Fire Department also oversees clean-up of hazardous spills to ensure that the violator follows proper procedures. For any large-scale hazardous spills, the City of Everett Fire Department's HazMat team is called.

Known Site Contamination

Some contaminated soils remain at Paine Field from its historical use as a military base. Currently 2-3,000 cubic yards of soil are undergoing on-site remediation to reduce levels of contaminants in the soil. Soil remediation is expected to be completed by the end of 1995, with any remaining contaminated soil being shipped to a proper disposal facility via a state-approved carrier. Only one contaminated soil site remains without complete remediation. The airport removed the source of the contamination but has not finished with remediation of the soil. Benzene levels in the soil remain slightly above regulatory levels at this location.

Additional confirmed contaminated sites within the Subarea (under the Model Toxics Control Act, Chapter 173-340 WAC), including Boeing Everett (3003 W. Casino Road, Everett 98204), and Western Hydroblaster (7924 40th Ave. West, Mukilteo 98275).

DOE
#3

Leaking underground fuel storage tanks have been a frequent cause of soil and water contamination throughout the United States. Sites in the Subarea with contamination from leaking underground fuel tanks (known as of August 1995) include:

GTE Everett Construction Facility	2510 W. Casino Road
Snohomish County Maintenance Yard	2600 100th St. SW
Boeing Everett Bldg. 40-56	3003 W. Casino Road
Boeing Everett Bldg. 45-52	3003 W. Casino Road
Paine Field Bldg. C-51 Central	3220 100th St. SW
Paine Field Bldg. 212	3220 100th St. SW
Paine Field	3220 100th St. SW
Community Transit Central Operations	8905 Airport Road
Sno-Isle Vocational Skills Center	9001 Airport Road
Everett Community College Paine Field Aviation	9711 31st Pl. W, Bldg C80
Paine Field Army Corps Job F	Paine Field
Paine Field Army Corps Job E	Paine Field
Jamco America, Inc.	1122 80th St. SW
Associated Sand and Gravel	6300 Glenwood Ave.

In most cases, only the soil is known to be contaminated, but contaminated ground water has also been found at several sites. Clean-up work and/or monitoring was in progress on some of these sites in 1995. Additional sites in the Subarea that were contaminated by leaking tanks were cleaned-up in the past.

3.7.2.2 Regulatory Framework

Storage, handling and disposal of hazardous materials and hazardous wastes are regulated by a number of federal, state and local laws.

Federal Regulations

The Resource Conservation and Recovery Act of 1976 (RCRA), 40 CFR 262-264. This establishes operating, maintenance and safety standards applicable to generators of hazardous wastes and to owners and operators of hazardous waste treatment, storage and disposal facilities.

The Hazardous Materials Transportation Act, 40 CFR 171-177, Subchapter C. This Act governs the transportation of hazardous materials. The Act lists and classifies hazardous materials for purposes of transportation; provides requirements for labeling and otherwise identifying transported materials; and provides packaging requirements.

The Occupational Safety & Health Act (OSHA), 29 CFR 1910. OSHA establishes safety and health standards for the workplace.

The Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III, 40 CFR 355-372. SARA establishes procedures whereby communities (a) receive information on hazardous materials used in those communities to minimize danger of major releases that might be caused in the event of an emergency and (b) receive information about chemical releases into the environment.

Facilities storing or disposing of hazardous materials are required to maintain Hazardous Materials Incident "on-site" Spill Response Plans which must be periodically reviewed and updated, and copies made available to all first responder agencies (i.e., fire departments). The plans must include the following items:

- Designated facility coordinator.
- Alternative 24-hour emergency facility contact (with decision-making authority).
- Site plans, including locations of hazardous materials.
- Methods for determining the occurrence of a release.
- Notification procedures.
- Description and location of available emergency equipment.
- Site evacuation plans.

Under Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), municipalities are required to develop operational plans for responding to hazardous materials incidents. Both the City of Everett and Snohomish County have developed Emergency Operations Plans:

DOE
#6

City of Everett Emergency Operations Plan. Annex O, Appendix 1 of Everett's Emergency Plan identifies local responsibilities for hazardous material incident response and management to include preparation for and response to any incident involving hazardous substances or materials, which, when uncontrolled, can be harmful to persons or the environment of Everett. The plan also outlines vulnerability to hazardous materials and waste, hazardous materials incident response levels and action classification, personal protection of citizens and responses, training and exercises, facility notification and response planning.

DOE
#6

Snohomish County Emergency Operations Plan (SCEOP). Appendix 1 to Annex O of the SCEOP pertains specifically to hazardous materials and covers notification and response, emergency planning, and notification procedures adopted by the County. Responsible agencies include Snohomish Department of Emergency Management, Snohomish County Sheriff's Office, Fire Districts/Department/Agencies, and the Local Emergency Planning Committee.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund). Superfund is the nation's hazardous waste cleanup program.

The Toxic Substances Control Act, 40 CFR 763. This Act regulates the use and exposure to raw industrial chemicals (such as asbestos) that fall outside the jurisdiction of other environmental laws.

The Clean Water Act, 40 CFR 100-143. The Clean Water Act establishes health-based standards for protection of aquatic life and establishes acceptance methods and materials for sampling and testing waters.

Underground Storage Tanks, 40 CFR Part 280. This regulates underground storage tanks containing petroleum or substances defined as hazardous under CERCLA. It establishes requirements for leak detection, leak prevention, financial responsibility and corrective action for all underground tanks containing regulated substances.

DOE
#4

State Regulations

The Hazardous Waste Management Act, 70.95 RCW, and Dangerous Waste Regulations, Chapter 173-303 WAC. These laws implement the federal RCRA, and in some respects are more stringent than the federal regulations.

The Model Toxics Control Act (MTCA), 70.105 RCW, and regulations in Chapter 173-340 WAC. These laws establish the state's authority to direct or perform cleanup of hazardous waste sites. The laws apply to contaminated sites or to spills or releases of hazardous substances which result in contamination of the environment.

The Underground Storage Tank Regulations, Chapter 173-360. This directs the Department of Ecology to establish an underground storage tank program that at a minimum meets the requirements for delegation of the Federal Underground Storage Tank Program of RCRA. It includes notification, reporting and recordkeeping requirements; performance standards and operating and closure requirements; financial responsibility requirements; local programs; and registration and licensing requirements for underground storage tank service providers and service supervisors.

DOE
#4

The Washington Industrial Safety and Health Act (WISHA), Chapter 49.17 RCW. WISHA implements the federal OSHA, and is in some respects more stringent than the federal regulations.

Washington State Water Pollution Control Law, 90.48 RCW. This law establishes the authority for the Department of Ecology to issue wastewater discharge permits and to pursue formal enforcement actions in order to protect surface and groundwater quality of the State.

Chapter 173-201A and 173-200 WAC. These establish Water Quality Standards for Surfacewaters and Groundwaters of the State, respectively:

NPDES and Stormwater Permits. Under RCW 90.48 and Chapter 173-200 WAC, the Department of Ecology implemented a National Pollutant Discharge Elimination System and State Waste Discharge Baseline General Permit for Stormwater Discharges Associated With Industrial Activities (Stormwater Permit). This general permit was issued on November 18, 1993, and is required for a variety of industrial categories which discharge stormwater from their facility to surfacewaters of the State.

Sediment Management Standards, WAC 173-204. Washington state sediment quality standards provide a regulatory and management goal for the quality of sediments throughout the state. The standards provide chemical concentration criteria, biological effects criteria, human health criteria, and other toxic, radioactive, biological or deleterious substances criteria which identify surface sediments that have no adverse effects, including no acute or chronic adverse effects on biological resources and no significant health risk to humans below which no adverse effects on biological resources are predicted.

DOE
#4

Sediment source control standards are used as a basis for controlling the effects of point and nonpoint source discharges to sediments through the National Pollutant Discharge Elimination System (NPDES) federal permit program, and state water quality management permit programs.

The Waste Reduction Act, Chapter 70.95C RCW. The Waste Reduction Act requires companies that generate over 2,640 pounds of hazardous waste per year and companies that use hazardous substances to prepare hazardous substance and waste reduction plans.

Washington State Explosives Act, Chapter 70.74 RCW and Safety Standards for Possession and Handling of Explosives, Chapter 296-52 WAC. This regulates the manufacture, possession, storage, selling, transportation, and the use of explosives or blasting agents.

City of Everett

Zoning Code. Section 39.090(B) of the Everett Zoning Code outlines the requirements for hazardous waste treatment and storage facilities. In industrial zones, on-site and off-site hazardous waste treatment and storage facilities are permitted, provided that these facilities meet the State siting criteria requirements of RCW 70.105.210.

Uniform Building Code and Uniform Fire Code. The City of Everett Building Department and Fire Department regulate hazardous materials through the Uniform Building Code and the Uniform Fire Code. The Uniform Building Code regulates the storage, containment, and type of buildings for hazardous materials storage. At time of application for building permits, the

applicant must submit sheets showing the class of chemicals to be used on the site and the quantity of the chemicals. The Building Department and Fire Department inspect the site to ensure compliance with the permit. A certificate of occupancy is issued after the final inspection when the project has met all requirements of the construction permits.

Following issuance of the certificate of occupancy, the applicant can move into the building and apply for process permits from the Fire Department per Uniform Fire Code requirements. These permits must be issued prior to starting operation of the facility. The permits constitute permission to maintain, store, use or handle materials, or to conduct processes which produce conditions hazardous to life or property, or to install equipment used in connection with such activities. Permits are required for activities such as aircraft repair hangars; asbestos removal; combustible materials storage; dry cleaning plants; flammable or combustible fluids; hazardous materials storage, transportation, dispensing, use or handling; hazardous materials production; installation and removal of fuel tanks; magnesium working; malls; operating industrial baking or drying ovens; radioactive materials; repair garages; tire storage; and welding and cutting operations.

Some facilities are required to submit Hazardous Materials Inventories and Hazardous Materials Management Plans to the Fire Department for review and approval.

The Fire Department also conducts annual or biennial site inspections of facilities for compliance with permits and Uniform Fire Code requirements.

The Fire Department also issues permits for installation and removal of above and below ground fuel storage tanks.

Public Works Design and Construction Standards and Specifications Manual. This manual includes site management standards for "High Risk Land Uses" including fueling sites, auto repair and maintenance shops, retail auto parts stores, car washes, new and used auto dealerships, and businesses that generate soapy or contaminated wash water. The purpose of the standards is to prevent the contamination of stormwater.

Industrial Pretreatment Ordinance. The City of Everett Public Works Department administers the wastewater pretreatment program within the City of Everett. The program implements provisions of state and federal laws, including the federal Clean Water Act (33 USC 1251 et seq.) and General Pretreatment Regulations (40 CFR Part 403).

The City's Pretreatment Ordinance generally requires that non-sanitary domestic discharge be separated from sanitary sewage discharge and be treated prior to discharge into the City's sewer system. The Ordinance provides for the issuance of wastewater discharge permits and discharge authorizations; requires use of all known, available, and reasonable methods of prevention, control, and treatment of wastewater; requires preparation of spill control plans; authorizes monitoring, compliance, and enforcement activities; and requires user reporting. The main objectives of the requirements is to eliminate or reduce the introduction of pollutants into the City's Water Pollution Control Facility (wastewater treatment plant) in order to protect the quality of the receiving waters, maintain the operations of the wastewater treatment plant, maintain the quality of biosolids, and protect the health of employees and the public.

Any development with non-domestic discharge; storage of chemicals or materials; floor drains other than required for restrooms or hot water heaters; or food preparation areas¹ must contact the Public Works Industrial Pretreatment section to determine if a permit is required. Most industrial uses will require a permit. Examples of non-industrial uses that will require permits include coin operated laundries, car washes, filling stations, any business with vehicle washing areas, food preparation businesses, and warehouses with floor drains.

Snohomish County

Zoning Code. Snohomish County allows on-site hazardous waste storage and treatment in the LI and BP zones. Off-site storage and treatment is a conditional use in the LI and BP zones.

Uniform Fire Code. Snohomish County's Fire Marshal is responsible for ensuring compliance with Uniform Fire Code requirements, similar to Everett's Fire Department as discussed above. The Fire Marshal's Office conducts annual inspections of facilities storing hazardous materials for compliance with Uniform Fire Code requirements.

Industrial Pretreatment. For sites in the Mukilteo Water District where sewage is eventually treated at Everett's Water Pollution Control Facility, the City regulates industrial pretreatment of non-sanitary sewage. For sites where sewage is eventually treated by Olympus Terrace Sewer District, the Department of Ecology regulates industrial pretreatment.

3.7.2.3 Impacts of Development

As a result of increased industrial and commercial development, more hazardous materials will be used for and generated by manufacturing processes. Increases in the use of hazardous materials could cause an increase in the number of emergency incidents, including the potential for accidental explosions, and releases of toxic or hazardous materials. Spills or releases of hazardous materials can contaminate soils, surfacewater, groundwater, and the air. See Section 3.4 Surfacewater, Plants and Animals for additional information regarding impacts to surfacewaters.

3.7.2.4 Potential Thresholds

This DEIS does not address the impacts associated with clean-up of contaminated sites.

3.7.2.5 Potential Measures to Reduce the Impacts of Development

1. Developments must comply with all applicable federal, state and local regulations relating to the use and generation of explosives and hazardous materials.
2. If the future use of the site will result in the potential for accidental spills of chemicals, including oils or fuels, to the City's sanitary sewer, an Accidental Spill Prevention Plan will

¹ Grease removal and treatment systems must be provided.

need to be prepared per the direction of the City of Everett's Industrial Pretreatment Program.

3. Future uses of the site must comply with all City policies and regulations preventing contamination of surfacewaters, including Ordinance 1750-90, the Surfacewater System Ordinance, and subsequent updates to the Ordinance.
4. See the list of potential mitigation measures listed under Water Quality in Section 3.4.5.5.
5. Implementation of chemical and hazardous waste reduction programs should be encouraged through modified manufacturing processes, improved management practices, and product substitution.
6. Construction equipment and vehicles should be maintained so they do not leak fuels or lubricants. During construction, a staging area should be specified for all vehicle maintenance activities. The staging area should be located well away from all drainage courses. All stormwater from related maintenance areas should be directed to the sanitary sewer, rather than the stormwater system.
7. During construction activities, all spills of fuel and hazardous materials must be contained and removed in such a manner as to prevent their entering the waters and soils of the State. Cleanup of spills should take precedence over other work on site.
8. During construction, all petroleum products, chemicals, and building materials that could contaminate runoff should be stored in a lined covered area. An impervious berm should be constructed around the perimeter of the storage area. The storage area should be located away from environmentally sensitive areas.
9. Dumpsters should be covered and maintained, so that stormwater runoff from refuse does not enter storm drains or infiltrate into soil.
10. Procedures to use in case of spills should be posted.
11. The following landscape practices could minimize contamination of surface and ground waters:
 - Properly maintain landscaped areas while minimizing amount of pesticides, herbicides, fertilizers, and other chemicals.
 - Application of fungicides, herbicides, insecticides, and fertilizers should be minimized or avoided January through April when soils are frequently saturated and storm events generate substantial runoff.
 - Use of phosphorous-containing fertilizers should not be permitted.
12. The City, Snohomish County and Economic Development Council could direct economic development efforts towards attracting "clean" commercial, industrial, and manufacturing uses.
13. Businesses should provide appropriate training to new employees who will be handling hazardous materials as well as providing frequent refresher meetings to increase awareness and the importance of safety procedures.

14. Businesses should minimize overtime hours for employees who handle hazardous materials as part of their job duties.
15. Business should not schedule off-site hazardous materials shipment during major shift changes or during rush hour times.
16. All chemicals or products of a hazardous or toxic nature than may be used or stored on the site must be stored under cover and isolated from the storm drainage system.
17. In order to expedite plan review, a hazardous materials inventory list shall be provided as a part of the submittal for building permits. The storage, handling and use of hazardous materials must be in compliance with Article 80 of the Uniform Fire Code, 1991 Edition.
18. The storage handling and use of flammable or combustible liquids shall comply with Article 79 of the Uniform Fire Code, 1991 Edition.
19. Secondary containment must be provided for storage of fuel and hazardous chemicals. The capacity of the containment/bermed area must equal at least 110% of capacity of the largest tank.

Single wall aboveground storage tanks shall be placed in a bermed, impervious area. The bermed area shall be paved with Portland cement concrete for permanent installations. The bermed area shall be large enough, and the berms high enough, to contain 110% of the largest tank's total volume or 10% of the total tank volume, whichever is largest. (City's Design and Construction Standards)

Hazardous waste generators regulated by WAC 173-303 must provide secondary containment in accumulation or storage areas. This containment must have sufficient capacity to contain ten percent of the volume of all containers or the volume of the largest container, whichever is greater (WAC 173-303-630(7)).

20. The following requirements apply to the installation or removal of underground and/or aboveground fuel storage tanks and fueling activities.

Tank Installation:

- a. Permits are required from the Fire Department for removal and installation of underground fuel tanks. The Fire Department has underground tank installation standards which require that specific information be provided to the Fire Department prior to the issuance of any permit to install tanks and the related dispensing equipment. The contractor must provide the Fire Marshal with specifications for tanks, piping, dispensers and lead leak detection equipment, or any other special equipment prior to installation.
- b. Installation of new underground storage tanks must meet the requirements of the new State Underground Storage Tank regulations (173-360 WAC). (Copies of these regulations and required forms are available from the Department of Ecology by calling (206) 407 7202, or toll-free in state 1-800-826-7716.

DOE
#7

DOE
#5

- c. A notice of intent to install tanks must be filed with the Department of Ecology at least 30 days prior to installation. Within 30 days after coming into service, the tanks must be registered with the Department of Ecology on a state notification form.
- d. ~~All firms providing tank installation services must be registered with the Department of Ecology. The supervisor on site during installation must be licensed by passing a state exam administered by the International Fire Code Institute, or by another state with which Washington has a reciprocity agreement. Within 30 days after coming into service, an installation checklist form must be provided to the Department of Ecology by the company that performed the installation work.~~
- e. ~~Stage II vapor recovery will be required in Western Washington counties in the near future. Applicants may wish to consider installing Stage II equipment during initial construction of new tank systems.~~

A certified Stage II vapor recovery system is required on all new gasoline dispensing facilities with a total gasoline nominal storage capacity greater than 10,000 gallons.

- e.1. New tanks and any connected piping must be protected from corrosion by either a cathodic protection system, or by being constructed or coated with a non-corrosive material such as fiberglass. an acceptable method of leak detection must be employed, and the tanks must be equipped with spill prevention and overflow protection equipment.
- f. Either a spill containment system or an underground storage tank overflow prevention system shall be provided for areas where tanker transport to underground storage tanks occurs as detailed in the City's Design and Construction Standards and Specifications manual.

DOE
5

Fueling Activities:

- g. A 55-gallon drum full of absorbent material shall be kept in a location convenient to the fueling island and tanker transfer areas. The absorbent material shall be used in the clean-up of any spills of gasoline or oil. In addition, an empty 55-gallon drum shall also be kept on the site for disposal of used absorbent. Instructions on responding to an accidental spill shall be made available to all employees and shall be posted in visible locations. (Design and Construction Standards and Specifications Manual)
- h. Signs must be posted noting the location(s) of the pump shut-off switch(es). (Design and Construction Standards and Specifications Manual)
- i. Fueling areas shall be covered to prevent the direct entry of precipitation and shall be graded or bermed to prevent the run-on of stormwater from adjacent areas. (Design and Construction Standards and Specifications Manual)
- j. Fueling areas shall be paved using Portland cement concrete. (Design and Construction Standards and Specifications Manual)
- k. The pavement under covered areas shall be graded, or "trench" or "valley" drains shall be located at the covered area perimeter along the downhill sides to collect runoff or washwater from the fueling areas. All collected runoff shall be rerouted through a spill

containment vault with a 50-gallon (minimum) live capacity prior to discharge to the sanitary sewer. (Design and Construction Standards and Specifications Manual)

- i. An isolation valve shall be installed in the outlet piping from the spill containment vault. Whenever site configuration allows, the valve control shall be an aboveground hand-wheel. If only a below-ground valve control is feasible, the valve shall still be hand-operable and the lid of the valve control box shall be brightly colored to allow for easy identification. Signs indicating the location and purpose of the valve shall be posted at the fueling islands and at the attendant's station. (Design and Construction Standards and Specifications Manual)
- m. The vault lid shall be designed to vent vapors to the atmosphere and shall be constructed of non-sparking material. The pavement around the vault lid shall be graded or bermed to prevent the run-on of stormwater from adjacent areas. (Design and Construction Standards and Specifications Manual)
- n. Concrete-filled, steel pipe posts (see City Standard #510) shall be constructed and located where necessary to prevent vehicles entering the fueling area from striking the gasoline pumps. (Design and Construction Standards and Specifications Manual)

Tank Closure/Removal:

- o. A notice of intent to permanently close tanks must be filed with the Department of Ecology at least 30 days prior to closure. The closure must be completed within 60 days after expiration of the 30-day notice, unless a written request for an extension is approved (Chapter 173-360 WAC).
- p. ~~All firms providing tank closing services must be licensed by the Department of Ecology. The supervisor on-site during closure must be licensed by passing a state exam. The on-site supervisor, providing tank-closing services, must be licensed by passing an exam administered by the International Fire Code Institute, or by another state with which Washington has a reciprocity agreement.~~ Within 30 days after closing, a permanent closure checklist form must be provided to the Department of Ecology by the company that closed the tanks owner. The checklist must be signed by the certified supervisor that was on-site during the closure.
- q. When closing tanks, a site assessment to determine whether contamination has occurred must be completed by a professionally qualified person certified by the International Fire Code Institute, effective January 1, 1995. The Department of Ecology's minimum requirements for sampling for contamination in the excavation area are outlined in a published guidance document. This document, forms and regulations are available from the Department of Ecology by calling 1-800-826-7716. Within 30 days after completion, the person that performed the site assessment must provide Ecology a site assessment checklist and results of the testing.
- q1. If contamination of soil or groundwater is readily visible, or is revealed by sampling, the Department of Ecology must be notified within 24 hours by the owner and within 72 hours by the service providing supervisor. Call the regional office for assistance and information about subsequent cleanup and to identify the type of testing that will be required. Contact the Environmental Report Tracking System Coordinator at the Northwest Regional Office at (206) 649-7148.

DOE
#5

q2. The Department of Ecology requires the results of the site assessment be maintained for five years after completion of permanent closure or change-in-service. Ecology recommends that the records be kept in the property file indefinitely for any future property owners to fulfill liability requirements under the Washington Model Toxics Control Act.

- r. If contamination of the surrounding soils is discovered, and remediation will take place, an erosion control plan must be submitted for approval by the Public Works Department.
- s. The old tanks must be pumped out with fuel properly disposed of prior to removal. No product or rinse water may be disposed of in such a way that it could enter the storm drains system.
- t. If storage tanks contain dangerous or hazardous wastes as defined in Chapter 173-303 WAC, the applicant should contact the Northwest Regional Office, Hazardous Waste and Toxics Reduction Section for tank closure requirements.
- u. Based upon the lists of permitted uses in the Zoning Code, the City has determined that the land farming of petroleum contaminated soils is most similar to "Composting or recycling" activities. These uses are listed as permitted uses in the C-2 (Heavy Commercial - Light Industrial) and M-M (Heavy Manufacturing) zones through a public hearing process before the City's Land Use Hearing Examiner (Review Process IIIB).

The City will also allow the land farming of petroleum contaminated soils as an accessory use on the site where the contamination occurred.

- v. Tank removal should be performed during a period of expected dry weather to minimize potential erosion problems and contamination of runoff waters.

DOE
#5