Date: September 16, 2005

To: Lisa Grueter, Jones & Stokes

From: Jim Wilder, Jones & Stokes

Subject: Conformance with Airport Land Use Compatibility Guidance
Snohomish County 10-Year Comprehensive Plan Update
(Updated to Reflect Planning Commission and County Council Alternatives)

BACKGROUND

This revised memo updates the previous versions dated December 29, 2004 and May 3, 2005 to reflect analysis of the Planning Commission alternative and the County Council alternative.

Some of the public and agency comments to the DEIS for the Snohomish County GMA Comprehensive Plan 10-Year Update requested additional information on whether the Comp Plan would conform to existing land use compatibility plans for airports within the county. This memo describes our assessment of how the Comprehensive Plan update will conform to the existing airport plans.

There are five airports within the County:

- Paine Field (Snohomish County Airport)
- City of Arlington Airport
- Harvey Field, just south of the City of Snohomish
- Darington Municipal Airport
- Firstair Field, Monroe

Of these airports, only Paine Field and the City of Arlington Airport have developed land use compatibility plans. Therefore, this memo focuses on those two airports, and evaluates how the proposed changes to local zoning near those airports (as proposed by the Comp Plan update) would conform to the airports' existing land use compatibility plans.
ARLINGTON AIRPORT

Land use compatibility guidelines at Arlington Airport are described in the document Arlington Municipal Airport: Airport Layout Plan Update, dated June 2002. It recommends land use restrictions in several safety zones beyond airport property near the northern and southern ends of the main runway. Arlington's recommended safety zones are identical to those described in the WSDOT guidance document Airports and Compatible Land Use, dated February 1999. In addition, the Airport Layout Plan Update recommends height restrictions for structures within 20,000 feet of the end of each runway to conform to the FAA Part 77 safety guidelines. Four safety zones that affect land use restrictions within County land south of the airport are recommended by the Airport Layout Plan. The Comp Plan update proposes to re-zone 671 acres of County land at the south end of the airport to Urban Industrial zoning. The four airport safety zones would affect the entirety of the 671 acres of the County's proposed Urban Industrial area. The safety zones and the proposed Urban Industrial area for the Preferred Alternative are shown in Figure 1, and are described below:

Zone 2, Inner Safety Zone. Roughly 45 acres of the proposed Urban Industrial County land are within this safety zone. Employment density within this safety zone is recommended to be less than 5 employees per acre. The FAA Part 77 requirements specify structural height restrictions within this zone of no more than 50 - 100 feet above the southern end of the runway. The 50-foot height restriction applies at the far northern end of the safety zone, while the 100-foot height limit applies at the southern end of the safety zone (near the center of the proposed Urban Industrial area).

Zone 3, Inner Turning Zone. Roughly 130 acres of the proposed Urban Industrial County land are within this safety zone. Employment density within this safety zone is recommended to be less than 25 employees per acre. The FAA Part 77 requirements specify structural height restrictions within this zone of no more than 50 - 100 feet above the southern end of the runway. The 50-foot height restriction applies at the far northern end of the safety zone, while the 100-foot height limit applies at the southern end of the safety zone (near the center of the proposed Urban Industrial area).

Zone 4, Outer Safety Zone. Roughly 90 acres of County land are within this safety zone. Employment density within this safety zone is recommended to be less than 5 employees per acre. The FAA Part 77 requirements specify structural height restrictions within this zone of no more than 100 - 175 feet above the southern end of the runway. The 100-foot height restriction applies at the far northern end of the safety zone (near the center of the proposed Urban Industrial area), while the 170-foot height limit applies at the southern end of the zone.

Zone 6, Traffic Pattern Zone. Roughly 406 acres of County land are within this zone. Employment density within this safety zone is recommended to be less than 100 employees per...
The FAA Part 77 requirements specify structural height restrictions within this safety zone of no more than 150 feet above the southern end of the runway.

The Preferred Alternative for the proposed Comp Plan update would create 671 acres of Urban Industrial zoning south of the main Arlington Airport runway (Figure 1). It appears that the both the employment density and the structural height limitations within that proposed Urban Industrial area will conform to the recommended airport safety zone recommendations described below:

- County building code restrictions would limit building heights within the subject Urban Industrial area to no more than 50-65 feet above ground level depending on the implementing zones. FAA's recommended height limit is 50 feet at the far north end of the proposed Urban Industrial area, and increases to 100 feet at the center of the proposed Urban Industrial area. Thus, the County building code conforms to FAA's height restrictions. However, the County building code allows other objects (e.g., trees, antennae, radio towers) to be taller than buildings, so conformance to FAA's height restrictions could be of concern with regard to those structures. Therefore, the County will implement additional building code restrictions for that specific Urban Industrial Area to limit the height of any additional objects (e.g., trees, antennae, radio towers) to below the FAA safety guidelines.

- Employment densities within the proposed Urban Industrial area were estimated using both MAZ utilization factors and previous North Marysville Subarea Plan forecasts. The most restrictive airport safety zones would affect MAZ 382. The forecasted employment density for MAZ 382 (under DEIS Alternative 3 or the Preferred Alternative) is only 1.35 employees/acre (based on 675 employees in the 500 acre non-agricultural portion of the 787 acre MAZ). Thus, the MAZ employment density is well within the allowable density of 5 employees/acre for Safety Zone 2. Similar results occur if the previous North Marysville Subarea Plan forecasts are used. That subarea plan forecasted an employment density of 0.9 employees/acre (592 employees on 662 acres) by 2012. If that forecast is quadrupled to account for differences in Urban Industrial land use and to extrapolate to the horizon year, the resulting employment density in Safety Zones 2, 3, and 6 be roughly 3.6 employees/acre. That extrapolated density is well within the most restrictive guideline value of 5 employees/acre for Safety Zone 2.

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The proposed new alternatives do not revise any zoning of County land within the Zone 6 safety zone shown on Figure 1. The only change within that area is the 152nd Street Soccer Field parcel roughly 8,000 feet south-southwest of the airport runway. Previously that parcel had been County land with Public Use/Institutional zoning. However, recently the City annexed that parcel, so it is no longer County land. Based on the lack of any revisions to zoning for County
Paine Field

Proposed zoning changes under the Preferred Alternative for the Comp Plan update would affect County land south of and adjacent to Paine Field (Figure 2). The County proposes to re-zone certain parcels that are not adjacent to the airport to Urban Medium Density Residential and Urban High Density Residential (Urban Village). The county would also re-zone other parcels immediately adjacent to the airport to Public/Institutional.

Recommended land use compatibility guidelines for the Paine Field area are described in the Snohomish County Airport/Paine Field Master Plan Update. Unlike the Arlington Airport plan, the Paine Field Master Plan Update does not recommend any safety zones or land use restrictions beyond airport property. The Master Plan Update does describe Runway Protection Zones, but those are within airport property.

Paine Field participates in the FAA Part 150 Noise and Land Use Compatibility program. The most recent noise exposure maps for Paine Field were published in 2003. Noise exposure maps for both 2002 (Existing) and 2008 (Forecasted) show the 24-hour average 65 DNL contours to be entirely within airport property, while the 55 DNL contour extends offsite into the County land to be re-zoned according to the Comp Plan Update. FAA regulations define the 65 DNL noise level as the lowest value that would trigger non-compatibility issues related to off-site land uses, so FAA would consider there to be no unacceptable noise impacts at the County land south of Paine Field based solely on the 24-hour DNL. However, Mr. Bill Dolan (Deputy Airport Director) has expressed concern that annoyingly high noise levels at the County land would likely be caused by single-event noise from general aviation aircraft departing to the south during daytime hours, even though those daytime single events are not enough to cause the 24-hour average DNL to exceed 65 dBA.

Regardless of the lack of written land use compatibility restrictions in the Master Plan, Paine Field staff have rigorously worked with adjacent municipalities (City of Everett, City of Mukilteo, Snohomish County) to address ongoing noise complaints and to discourage non-compatible development near the airport. On April 26, 2004 Mr. Bill Dolan (Deputy Airport Director) sent a memorandum to Mark Beardsley (Snohomish County PDS) requesting a series of actions to modify the Comp Plan Update to restrict land use development near Paine Field. Those recommended actions included the following:

A. Change the Comp plan designation of the areas north of 119th Street S.W. and west of Airport Road to urban industrial. 119th Street SW is 3000 south of the runway 34R threshold and aircraft will often be in a noisy climbing configuration in the upwind and crosswind legs of the pattern in these areas.  [JMW Note: Figure 2 shows these subject parcels]
B. Consider adding the following policies in the Comp plan:

1. Protect the viability of the airport as an essential public facility and a significant economic resource to the community by encouraging compatible land uses, and reducing hazards that may endanger aviation users.

2. Within the Airport Influence Area (see attached draft-note old city boundaries) a notice to title/disclosure statement should be required for new or substantial redevelopment of lots, buildings, structures, and activities. The notice similar to the attached draft should indicate that the property is located adjacent to the airport and may experience low overhead flights, odor, vibrations, noise and other similar aviation impacts.

3. Discourage the siting of uses within the Airport Influence Area that attract birds, create visual hazards, discharge any particulate matter in the air that could alter atmospheric conditions, emit transmissions that would interfere with aviation communications and/or instrument landing systems, or otherwise obstruct or conflict with aircraft patterns, or result in potential hazards to aviation.

4. Require proof of an airspace analysis before issuing permits for projects within the filing criteria (within 20,000’ of the airports runways) of Federal Aviation Regulation (FAR) Part 77.

5. Identify, preserve, and enhance, through interjurisdictional planning, goals, policies and development regulations that promote significant regional transportation linkages and multimodal connections to and from aviation facilities and employment centers.

6. Encourage economic development opportunities and aviation related uses adjacent to airports and promote the efficient mobility of goods and services region-wide consistent with the economic development element and the regional transportation strategy.

7. Evaluate all proposed amendments to the comprehensive plan, capital facilities plan and/or urban growth area (UGA) that will increase incompatible land uses or potential of incompatible development adjacent to the airport through inappropriate land use or zoning designations and/or inadvertent land use policies.

Most of Mr. Dolan's recommendations were later enacted by the County as Amended Ordinance No. 04-125, "An Ordinance Relating to Airport Compatibility...". However, the County did not take action to fully satisfy Mr. Dolan's first requested item: maintain zoning adjacent to the airport at Urban Industrial to avoid short-term noise impacts. Therefore, at the County's request I contacted Mr. Dolan to discuss the issue and to solicit his ideas on how future noise impacts could be minimized at future developments within that parcel. The conclusions of our discussions were as follows:
1. Mr. Dolan acknowledged it might be impractical to zone the entirety of the subject parcels shown on Figure 2 for Urban Industrial, because most new residential development likely to ever occur there has already been completed. However, as shown in Figure 2 the County proposes to re-zone one parcel immediately adjacent to the airport from Urban Medium Density Residential to Public/Institutional.

2. He emphasized his belief that daytime overflights by aircraft departing to the south could cause annoyingly high short-term noise levels inside new and existing homes. He expressed concern that the existing elementary school in the subject parcel (Fairmont Grade School) should be discouraged from constructing any new buildings unless they are fitted with suitable soundproofing.

3. He thinks soundproofing should be encouraged for all new buildings or redevelopment. He supports the idea of attaching a notice of title/disclosure statement for all new or substantial redevelopment of buildings, recommending options for soundproofing. He did not believe the County should require soundproofing, but the owner should be advised of readily-available soundproofing methods. Mr. Dolan said the City of Mukilteo has attached similar title/disclosure statements for City parcels near Paine Field. He sent me a copy of the City of Mukilteo document "Noise Abatement for New Construction", with set of recommended soundproofing methods. A copy of the City of Mukilteo recommendations is attached to this memo. Mr. Dolan believes the City of Mukilteo's recommended soundproofing methods would provide at least 25-30 dBA of indoor noise reduction, which is an attenuation level he believes is appropriate for the homes south of Paine Field.

Jones & Stokes has reviewed the City of Mukilteo recommendations and we believe they are all relevant for reducing interior noise levels caused by aircraft overflights (the only exception is the final item on the recommended list (Item 8 under "Ventilation"), which is designed to control noise from mechanical equipment noise. We suggest that final item should be deleted from the Snohomish County list of recommendations).

At the County's request I called Randy Sleight of PDS to discuss whether some of the County's current building code requirements might provide soundproofing approaching the levels provided by the City of Mukilteo soundproofing methods. Mr. Slate indicated the County generally follows the 2000 International Building Code, the International Fire Code, and the Uniform Plumbing Code, with cross-reference to the State Energy Code. He was not aware of how well the thermal insulation requirements under the current County building code would provide soundproofing.

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Neither the Planning Commission Alternative nor the County Council Alternative would change any of the zoning of the potentially noise-impacted parcels of concern to Mr. Dolan (shown on
Figure 2). Therefore, it is concluded that both of those alternatives would conform to Mr. Dolan's recommendations for the Paine Field area.
Attachment
City of Mukilteo, Noise Abatement for New Construction
NOISE ABATEMENT FOR NEW CONSTRUCTION

City of Mukilteo
4480 Chennault Beach Road
Mukilteo, WA 98275

Background:

In general, construction industry standards start regulating noise impacts on residential and commercial structures at the 65 Ldn noise level. The general construction performance standards listed in this brochure are intended to provide for the insulation of the interior of buildings to an Ldn 45 or less from outside noise levels.

Even though the City of Mukilteo has very little property within the 65 Ldn noise contour of Paine Field’s operations, these standards can be used to help reduce the overall noise impact on new construction in the City.

Are these standards required on new development?

No; The standards contained in this brochure are optional and are intended to be used only as a guide to help property owners reduce noise impacts on their new homes or businesses.

Noise Abatement Guidelines for New Construction:

General
1. Brick veneer, masonry blocks, or stucco exterior walls should be constructed airtight. All joints should be grouted or caulked airtight.
2. At the penetration of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits should be caulked or filled with mortar.
3. Window and/or through-the-wall HVAC type units should not be used.
4. Operational, vented fireplaces should not be used.
5. All sleeping spaces should be provided with a sound-absorbing ceiling and carpeted floor.
6. Through-the-wall/door mailboxes should not be used.
Exterior Walls
1. Masonry walls having a surface weight of at least 40 pounds per square foot do not require a furred interior wall. In areas over 70 Ldn, masonry walls having a surface weight of at least 75 pounds per square foot do not require a furred interior wall. At least one surface of concrete block wall should be plastered or painted with heavy "bridging" paint.
2. Stud walls should be at least four inches in nominal depth and should be finished on the outside with siding on sheathing, stucco, or brick veneer.
   a. Interior surface of the exterior stud walls should be of gypsum board or plaster at least 1/2-inch thick, installed on the studs. The gypsum board or plaster may be fastened rigidly to the studs if the exterior is brick veneer or stucco. If the exterior is siding-on-sheathing, the interior gypsum board or plaster must be fastened resiliently to the studs.
   b. Continuous composition board, plywood, or gypsum board sheathing should cover the exterior side of the wall studs behind wood or metal siding. The sheathing and facing should weigh at least four pounds per square foot.
   c. All edges of the sheathing should be sealed with resilient caulking.
   d. Insulation material at least two inches thick should be installed continuously throughout the cavity space behind the exterior sheathing and between wall studs. Insulation should be glass fiber or mineral wool.

Windows
1. Glass of double-glazed windows should be used and at least 1/8-inch thick.
2. Double-glazed windows should employ fixed sash or efficiently weather-stripped operable sash. The sash should be rigid and weather-stripped with material that is compressed airtight when the window is closed.
3. Glass of fixed-sash windows should be sealed in an airtight manner with a nonhardening sealant, or a soft elastomeric gasket or glazing tape.
4. The perimeter of the window frame should be sealed airtight to the exterior wall construction with a resilient sealant.
5. The total area of glass of both windows and exterior doors in sleeping spaces should not exceed 20 percent of the floor area.

Doors
1. All exterior side-hinged doors should be side-hinged wood or insulated or hollow metal at least 1.75 inches thick and should be fully weather-stripped.
2. The glass of double-glazed sliding doors should be at least 3/16 of an inch thick and separated by a minimum 1/2-inch airspace. The frame should be provided with an efficiently airtight weather-stripping material.
3. The perimeter of door frames should be sealed airtight to the exterior wall construction.
4. Glass in doors should be set and sealed in an airtight nonhardening sealant, or a soft elastomeric gasket or glazing tape.
Roofs
1. With an attic or rafter space at least six inches deep, and with a ceiling below, the roof should consist of 1/2-inch composition board, plywood, or gypsum board sheathing topped by roofing as required.
2. If the underside of the roof is exposed, or if the attic or rafter space is less than six inches, the roof construction should have a surface weight of at least six pounds per square foot, except that, in areas over 70 Ldn, the roof construction should have a surface weight of at least nine pounds per square foot. Rafters, joists, or other framing may not be included in the surface weight calculation.
3. Window or dome skylights should be double glazed and separated by minimum 1/2-inch airspace. In areas over 70 Ldn, skylights are not permitted.

Ceilings
1. Gypsum board or plaster ceilings at least 1/2-inch thick should be provided where required by Section 5.0(A)(5). Ceilings should be substantially airtight, with minimum number of penetrations.
2. Glass fiber or mineral wood insulation at least six inches thick shall be provided above the ceiling between joists.

Floors
The floor of the lowest occupied rooms should be slab on grade, below grade, or over a fully enclosed basement. All door and window openings in the fully enclosed basement should be tightly fitted.

Ventilation
1. A mechanical ventilation system should be installed that will provide the minimum air circulation and fresh air-supply requirements for various uses in occupied rooms, without need to open any windows, doors, or other openings to the exterior.
2. Gravity vent openings in the attic should not exceed code minimum in number and size. The openings should be fitted with transfer ducts at least three feet in length, containing approved internal sound-absorbing duct lining. Each duct should have a line 90-degree bend in the duct such that there is no direct line of sight from the exterior through the duct into the attic.
3. If a fan is used for forced ventilation, the attic inlet and discharge openings should be fitted with sheet metal transfer ducts of at least 20-gauge steel, which should be lined with, one inch thick approved duct liner, and should be at least five-feet long with one 90-degree bend. In areas over 70 Ldn, the duct lining should be at least 10 feet long.
4. All vent ducts connecting the interior space to the outdoors, excepting domestic range and dryer, exhaust ducts, should contain at least a 10-foot length of approved internal sound absorbing duct lining. Each duct should be provided with a line 90-degree bend in the duct such that there is no direct line of sight through the duct.
5. Duct lining should be a coated glass fiber duct liner at least one-inch thick, approved and suitable for the intended use.
6. Domestic range and dryer exhaust ducts connecting the interior space to the outdoors should contain a baffle plate across the exterior termination that allows proper ventilation. The dimensions of the baffle plate should extend at least one diameter beyond the line of sight into the vent duct. The baffle plate should be of the same material and thickness as the vent duct material and should have the same free area as the vent duct.

7. Building heating units with flues or combustion air vents should be located in a closet or room closed off from the occupied space by doors.

8. Doors between occupied space and mechanical equipment areas should be solid-core wood or 20-gauge steel hollow metal at least 1.75 inches thick and should be fully weather-stripped.

If You Have Questions....???

Call...
City of Mukilteo
Planning Department
(425) 355-4141 Ext. 251
Fax (425) 347-4544

Location...
4480 Chennault Beach Rd.
Mukilteo, Washington 98275

Hours...
Monday - Thursday
7:30 a.m. to 5:00 p.m.
Friday
7:30 a.m. to 4:30 p.m.