Appendix J ENDANGERED SPECIES ACT COMPLIANCE

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Memorandum of No Effect Determination for Federally Listed Threatened and Endangered Species for the Greener Skies Project

PREPARED FOR	Federal Aviation Administration U.S. Fish and Wildlife Service, Lacey Field Office
COPY TO:	Harris Miller Miller & Hanson, Inc.
PREPARED BY:	CH2M HILL
DATE:	July 13, 2012
PROJECT NUMBER:	428632.A1.04

Introduction

This memorandum provides the rationale for concluding that the Federal Aviation Administration's (FAA) "Greener Skies over Seattle" Project (the Proposed Action) would have "no effect" on listed species, their habitats, or proposed or designated critical habitat.

Section 7 of the Endangered Species Act (ESA) requires that federal actions do not jeopardize the continued existence of any threatened, endangered, or proposed species or result in the destruction or adverse modification of critical habitat. In meeting this requirement, the responsible federal official must consult with the U. S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS), as appropriate, "if the applicant has reason to believe that an endangered species or a threatened species may be present in the area affected by his project and that implementation of such action will likely affect such species" [16 USC §1536 (a) (3)].

Section 7 is implemented through the USFWS and NMFS joint consultation rules (50 CFR Part 402, subpart B). The rules establish an optional informal consultation process and a mandatory formal consultation process. Formal consultation between an action agency and the service(s) is required if a proposed action "may affect listed species or critical habitat" [50 CFR §402.14(a)]. As described in the Endangered Species Consultation Handbook, the first step in the consultation process is a determination by the action agency that a proposed action might affect listed species or designated habitat (USFWS/NMFS, 1998). In the absence of circumstances indicating that an action might affect listed species or critical habitat, consultation is not required. For reasons explained in the following sections, the Proposed Action is expected to have no effects on listed plant, wildlife, and fish species or proposed species or designated or proposed critical habitat. In the absence of any effect, consultation under Section 7 is not required.

Project Description

Seattle-Tacoma International Airport (Sea-Tac) serves the cities of Seattle and Tacoma, Washington, as well as the western portion of Washington state. The Sea-Tac Airport is the primary hub for Alaska Airlines, whose headquarters are located in the immediate vicinity, and also for its low-cost sister company Horizon Air. The airport has service to destinations throughout North America, Europe, and East Asia.

In 2009, Alaska Air Group (AAG, the holding company for Alaska Airlines and Horizon Air) and Sea-Tac staff, in cooperation with the Boeing Company and the FAA, developed a plan to evaluate new flight procedures that would use the latest navigational technologies and allow all appropriately equipped operators, which included Alaska Airlines and Horizon Air, to fly optimal descent paths, while reducing their environmental impact during approaches to land at Sea-Tac.

The purpose of the Proposed Action is to enhance the efficiency of the existing air traffic control system serving Sea-Tac. Greener Skies seeks to achieve this purpose by leveraging the FAA's existing Next Generation Air Transportation System (NextGen) performance-based technology enhancements to reduce controller and pilot workloads, reduce the complexity of operations within the Seattle airspace, and increase system flexibility and predictability. Through Greener Skies, FAA intends to accomplish the following:

- Implement standard instrument arrival procedures to improve the predictability and repeatability of flight routes and more efficiently serve Sea-Tac's three runways.
- Redesign the supporting airspace management structure to enable the efficient use of optimized standard instrument procedures..

The Proposed Action, to be implemented in phases, would not increase the number of aircraft operations at Sea-Tac, but would increase efficiency with which the aircraft are controlled and reduce fuel burn, thereby reducing carbon emissions.

Study Area

FAA Order 1050.1E identifies the maximum altitude for environmental consideration of airspace actions as 10,000 feet above ground level (AGL). Additionally, FAA recommends considering proposed changes up to 18,000 feet AGL when the proposed changes are over a National Park, Wilderness Area, or Tribal Lands where natural quiet may be an attribute of the land use. Because of the proximity of Olympic National Park to the northwest and Mount Rainier National Park to the southeast, and the presence of tribal lands in the region, the study area examined in this environmental assessment (EA) (FAA, 2012) was conservatively created to encompass the geographic areas anywhere that the proposed changes to aircraft routes would occur below 18,000 feet AGL so as to assure that any areas of natural quiet were included.

The proposed airspace changes for the project occur northwest and southwest of Sea-Tac; no changes are being planned or proposed for areas east of the airport. A rectangular study area was, therefore, created, oriented in a north-south direction with Sea-Tac towards the eastern edge. This area includes all areas in which proposed new procedures diverge from existing procedures at altitudes of 18,000 feet AGL or less. The northern and western boundaries of the study area are positioned approximately 5 nautical miles (NM) beyond the navigational points at which the proposed new traffic procedures would begin to diverge from existing procedures. The southern boundary of the study area reflects the locations where aircraft would be descending below the 18,000-foot AGL altitude limit as they are sequenced on their approach to land; this location is closer to Sea-Tac than the common navigational points from which the existing and proposed procedures diverge. To the east and west, the study area extends to boundaries that are approximately 5 NM beyond any procedural changes proposed; the width of the area is approximately 33 NM. The entire rectangle covers slightly less than 3,200 square miles and is shown in Figure 1.

Methods

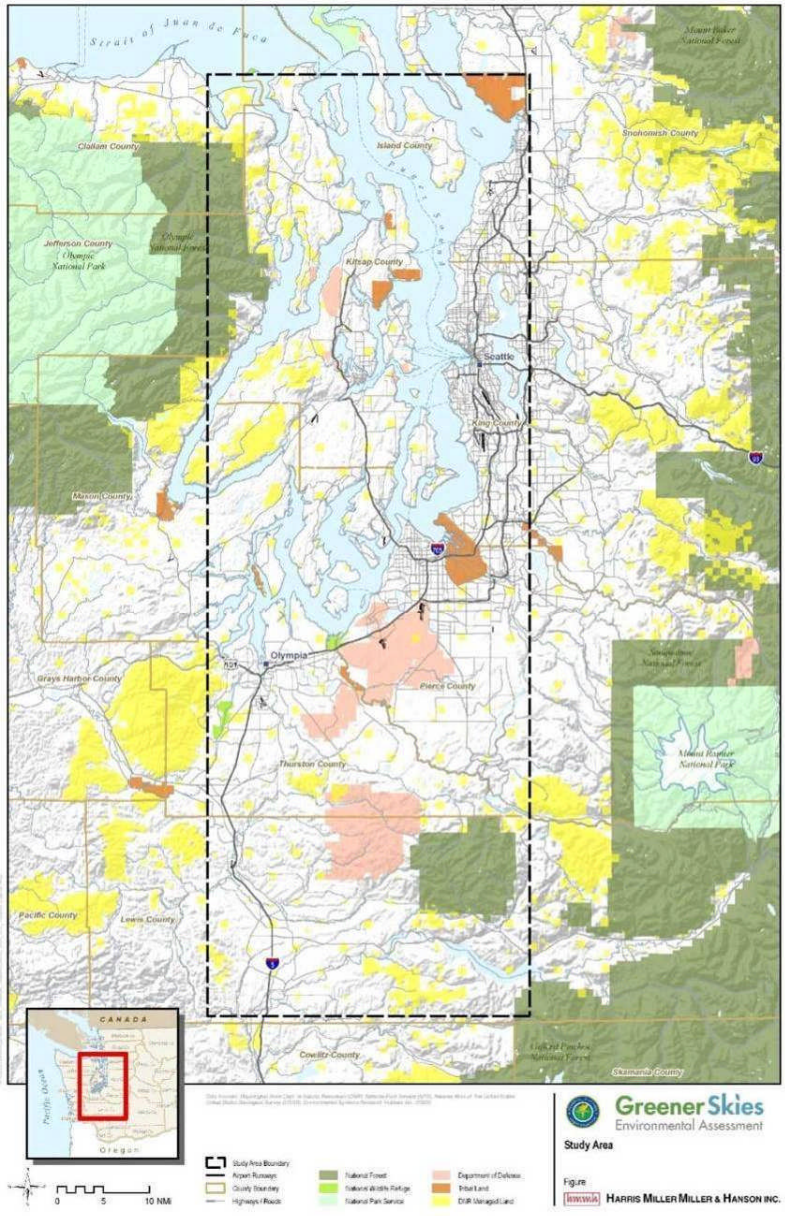
Information on bird usage and ESA species in the study area was obtained from USFWS during a conference call with Martha Jensen and Karen Myers of the Washington Department of Fish and Wildlife (WDFW), Augustin Moses of FAA, and Alisa Swank and Bill Willkie of CH2M HILL on April 3, 2012; summary items from the call are included as Attachment A. In addition, WDFW data for Priority Habitats and Species (PHS), Wildlife Survey Data Management Point/Polygon (including Marbled Murrelet points), Spotted Owl and Bald Eagle Buffer Management Zone Databases and Seabird Colonies were reviewed (WDFW 2012).

Implementing the Proposed Action would alter the vertical and lateral distribution of some of aircraft using the new procedures. To capture the effects of these changes, two sound metrics were used to evaluate potential noise impacts to listed species, critical habitat, and wildlife refuges: the day-night average sound level (DNL) and the maximum sound level (L_{max}). Both of these metrics are based on the "A-weighted" decibel (dBA), a weighting that most closely approximates the human response to sound. A-weighting also approximates the shapes of hearing threshold curves in birds[1]. A summary of these metrics follows:

FIGURE 1

[1] Barber, Jesse R. Kevin R. Crooks and Kurt M. Fristrup. 2009. "The costs of chronic noise exposure for terrestrial organisms." *Trends in Ecology and Evolution*, Vol. 25, No. 3, p. 180.

Study Area


Strait of Juan de Fuca
Clallam County
Island County
Snohomish County
Jefferson County
Olympic National Park
Kitsap County
Seattle
King County
Mason County
Olympia
Grays Harbor County
Pierce County
Thurston County
Mount Rainier National Park
Pacific County
Lewis County
Cowlitz County
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Greener Skies
Environmental Assessment
Study Area
Figure
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- The DNL noise analysis reflects any change in average daily cumulative sound levels due to implementation of the Proposed Action. DNL reflects the total amount of aircraft activity that is close enough to the site to contribute to cumulative noise levels.
- The L_{max} is the maximum instantaneous noise level. For this project, the type and number of aircraft are the same as in the No Action Alternative; therefore, any change in the L_{max} would reflect an increase or a decrease in the distance from the loudest events to the site in question. Analysis of noise level changes at the Nisqually, Dungeness, and Protection Island National Wildlife Refuges (NWRs) found that implementing the Proposed Action would have essentially no effect on L_{max} values.

As noted above, the changes in noise levels in the study area are caused by changes in the vertical and lateral distribution of aircraft. These changes are evaluated graphically in areas of high bird concentrations to illustrate the reasons for any changes in noise levels and to assess potential changes in bird strike risk. In order to understand the current distribution and altitudes of aircraft in north and south flows, a gate-crossing analysis was conducted. Gates, or cross-sections of the airspace, were created to display the vertical and lateral distribution of aircraft flying through the gate using radar data collected in 2011. Gates were drawn across areas where the Proposed Action would present a change over nearshore areas, which included across Elliott Bay between West Seattle and downtown Seattle in the north and across Commencement Bay between Tacoma and Federal Way in the south (see Figures 2, 3, and 4).

FIGURE 2
Elliott Bay Gate: Arrival Jets in South Flow

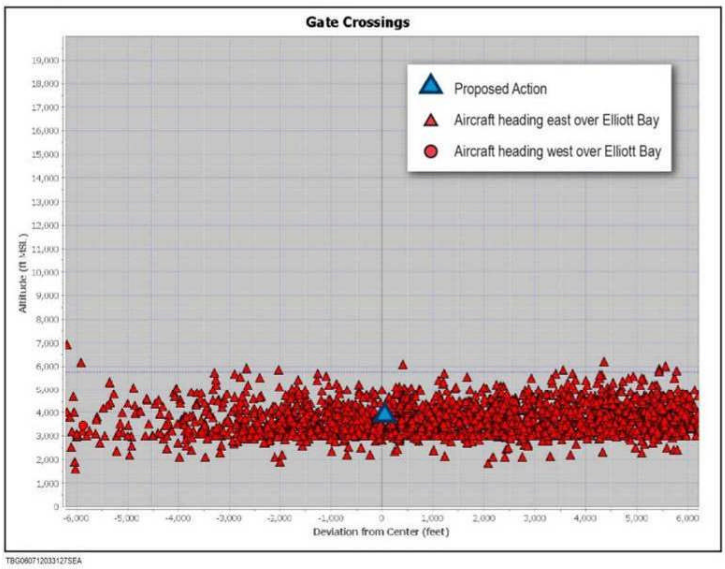


FIGURE 3
Commencement Bay Gate-Arrival Jets in South Flow

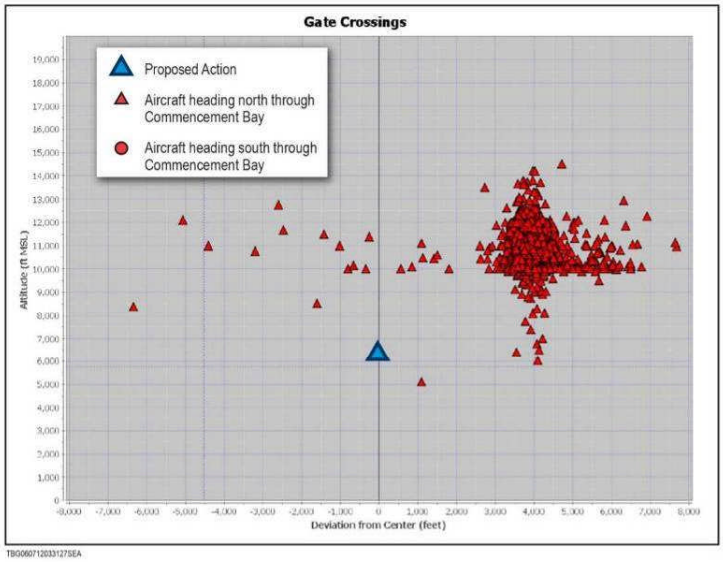
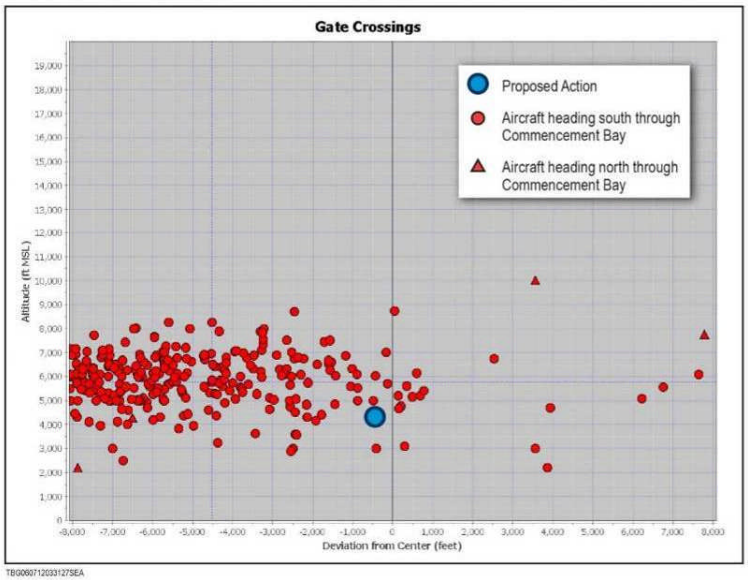


FIGURE 4
Commencement Bay Gate: Arrival Jets in North Flow



Effect on Plants, Fish, or Terrestrial Wildlife

Due to the lack of physical development related to the Proposed Action, there are no potential impacts to plants, fish, and terrestrial wildlife. Fish and essential fish habitat would not be impacted by the Proposed Action. The remaining memorandum, therefore, focuses on threatened and endangered birds and bald eagles.

No Effect on Birds

Noise analyses prepared for the EA identified changes in noise levels for every location in the study area at which either alternative would generate at least DNL 45 decibels (dB). These analyses determined no location would experience a change in exposure that would exceed the 1.5 dB criterion for "significant impact" above DNL 65, the 3.0 dB criterion for "consideration of mitigation" from DNL 60 to 65, or the 5.0 dB criterion for "disclosure" from DNL 45 to 60.

The maximum increase in noise levels caused by implementing the Proposed Action in the years 2014 and 2018 would be DNL 0.9 dB; the maximum decrease would be DNL 0.8 dB for the same periods. The maximum increase in DNL attributable to the Proposed Action would be DNL 1.1 dB in 2023, when higher percentages of aircraft would be following the new procedures. No significant impacts due to noise from the Proposed Action were identified.

Marbled Murrelet: Listed as Threatened

The majority of marbled murrelets (*Brachyramphus marmoratus*) in the WDFW database are clustered in the northwestern and southeastern portions of the study area, with a noticeable gap in the central portion over the populated areas in King County. Only one occurrence is located in the vicinity of the proposed approaches where the change in noise levels is expected to range between DNL 0.1 and 1.5 dB. The WDFW database describes this occurrence as a biotic detection of above-canopy behavior in the Seattle South quadrangle in July 1992 (WDFW 2012).

Proposed flight paths would be redirected further inland, away from Puget Sound and associated aquatic habitat. The resulting flight paths would be more concentrated over urban areas and located further inland where there are fewer foraging opportunities for marbled murelets. The changes in noise levels are not expected to affect marbled murrelets. Although marbled murrelets travel from shorelines to mountains, perpendicular to the flight paths, the study area is already used by existing aircraft on approach or departure from Sea-Tac. The Proposed Action would not increase the number of aircraft operations at Sea-Tac; it would only alter the pattern of the approach from stepped descent to a smooth descent. Therefore, the Proposed Action is not anticipated to affect marbled murrelets.

Streaked-Horned Lark: Candidate

The only occurrence of streaked-horned lark (*Eremophila alpestris strigata*) in the WDFW database that fell within the study area was a breeding occurrence at the Olympia Regional Airport, with a location accuracy to within 1 mile (WDFW 2012). Even with a 1-mile buffer from the Olympia Airport, this occurrence is not located within the vicinity of the proposed new procedures. In regards to potential streaked-horned larks elsewhere in the vicinity of the proposed approaches, the study area is already used by existing aircraft on approach or departure from Sea-Tac, and the Proposed Action would not increase the number of aircraft operations at Sea-Tac; it would only alter the pattern of the approach from stepped descent to a smooth descent. Therefore, the Proposed Action is not anticipated to affect streaked-horned lark.

Bald Eagle: Delisted

The majority of nesting bald eagles (*Haliaeetus leucocephalus*) in the WDFW database are clustered in the northwestern portion of the study area and, to a lesser extent, in the central portion of the study area. There are no bald eagle nests within a 1-mile radius of the airport; the closest bald eagle nest is approximately 2.5 miles away from the airport parcel boundary. Proposed flight paths would be redirected further inland, away from Puget Sound and associated shorelines where there is higher quality eagle nesting and foraging habitat. The resulting flight paths would be more concentrated over urban areas located further inland where there are fewer

eagle nests. Therefore, the Proposed Action would result in a decreased number of aircraft flying over eagle nesting and foraging habitat within Puget Sound, thereby benefitting resident and wintering eagles. As discussed during the call with USFWS, bald eagles nesting in Puget Sound near Sea-Tac are already habituated to an urban setting. The study area is already used by existing aircraft on approach or departure from Sea-Tac, and the Proposed Action would not increase the number of aircraft operations at Sea-Tac; it would only alter the pattern of the approach from stepped descent to a smooth descent. Additionally, as mentioned above, the Proposed Action would not result in any significant noise impacts. Therefore, the Proposed Action is not anticipated to affect bald eagles.

Critical Habitat

Critical habitat for the following six species falls within the study area: bull trout (*Salvelinus confluentus*), chum salmon (*Oncorhynchus keta*), Chinook salmon (*Oncorhynchus tshawytscha*), northern spotted owl (*Strix occidentalis caurina*), marbled murrelet, and killer whale (*Orcinus orca*) (Table 1). Of these six critical habitat designations, only three occur within the noise change area: bull trout, Chinook salmon, and killer whale. As previously stated, due to the lack of physical development related to the Proposed Action, there are no potential impacts to plants, fish, and terrestrial wildlife. Therefore, the marine and aquatic species and associated critical habitat would not be impacted by the Proposed Action. Although the expansive study area includes portions of northern spotted owl critical habitat in the Olympic Peninsula in the northwest and forested areas in the southeast, most changes to flight paths and the revised pattern of descent would occur over inland areas of King, Pierce, and Thurston counties and will not affect northern spotted owls or northern spotted owl critical habitat. As discussed above, the Proposed Action is not anticipated to affect marbled murrelets or marbled murrelet critical habitat. Therefore, the Proposed Action is not anticipated to affect designated critical habitat within the study area.

TABLE 1
Critical Habitat Within the Study Area

Common Name	Scientific Name	Status	Listing Date
Bull Trout	*Salvelinus confluentus*	T	6/10/98
Chum salmon	*Oncorhynchus keta*	T	8/2/99
Chinook salmon, Puget Sound ESU	*Oncorhynchus tshawytscha*	T	8/2/99
Northern spotted owl	*Strix occidentalis caurina*	T	6/26/90
Marbled murrelet	*Brachyramphus marmoratus*	T	10/1/92
Killer whale	*Orcinus orca*	E	2/16/06

Source: USFWS Critical Habitat Portal (http://criticalhabitat.fws.gov/crithab/)

Summary of Conclusions

The Proposed Action would have no effect on federally listed species, candidate species, or designated critical habitat. Proposed flight paths would be redirected further inland, away from Puget Sound and associated shorelines and marine habitat. The resulting flight paths would be more concentrated over urban areas where there are fewer foraging opportunities for marbled murrelets and bald eagles and where there are fewer eagle nests. There is no physical development related to the Proposed Action, and it would not increase the number of aircraft operations at Sea-Tac; it would only alter the flight paths and pattern of the stepped descent to a smooth descent approach for some aircraft. Therefore, potential for aircraft collision with streaked-horned lark is not expected to change from the current conditions. Additionally, the Proposed Action would not result in any significant noise impacts. The study area is already used by existing aircraft on approach or departure from Sea-Tac. In consideration of these project characteristics, the Proposed Action is anticipated to result in a determination of "no effect" on listed species and critical habitat.

References

FAA. 2012. *Draft Environmental Assessment for Greener Skies Over Seattle; Proposed Arrival Procedures to Seattle-Tacoma International Airport*. Draft. Internal Deliberative Material. Prepared by the United States Department of Transportation, Federal Aviation Administration with technical support from Harris Miller Miller & Hanson, Inc. April 11.

USFWS. *Critical Habitat Portal*. Available at http://criticalhabitat.fws.gov/crithab/. Accessed July 9, 2012. U.S. Fish and Wildlife Service.

USFWS/NMFS. 1998. *Endangered Species Act Consultation Handbook: Procedures for Conducting Section 7 Consultations and Conferences*. U.S. Fish and Wildlife Service and National Marine Fisheries Service. March.

WDFW. 2012. *Priority Habitats and Species Digital Data for CH2M HILL Project: Environmental Assessment for New Flight Patterns Over Western Washington*. Washington Department of Fish and Wildlife. June 7.

Attachment A

From: Swank, Alisa/SEA
Sent: Wednesday, April 04, 2012 8:09 AM
To: Martha_L_Jensen@fws.gov; karen_myers@fws.gov
Cc: augustin.moses@faa.gov; Willkie, Bill/BAO; Marina.Landis@faa.gov; admin-seattle@hmmh.com
Subject: RE: Agenda and Materials for Conference Call today

Martha and Karen-

Thank you again for participating in our conference call yesterday regarding the Greener Skies project and we appreciate your input at this stage of the project. Below is a summary of the input we heard from you:

Migratory birds:

- Migratory birds in the project area would likely fly at relatively low altitudes to take advantage of the resting and feeding opportunities afforded by the shoreline. Keeping aircraft at higher altitudes might reduce the potential for bird strikes.
- Bird use at higher altitudes may still occur, and can depend on a variety of factors, including species, destination and time of day.
- The proposed shift in jet aircraft away from nearshore areas and wildlife refuges along Puget Sound is likely to be beneficial
- The consolidation of flight paths into a more precise pathway is likely to be beneficial
- The area between Lake Washington and Puget Sound is important to look at because birds travel between these two water bodies

Bald eagles:

- Bald eagles in this area are habituated to urban life
- The EA should identify known eagle nests near the Airport

ESA Species

- Marbled murrelets travel from shorelines to mountains, perpendicular to the flight paths
- Radar data providing altitude information is available for marbled murrelets
- Streaked horned lark is candidate species in the study area
- No impacts to non-avian species are expected

We are interested in obtaining the radar data for marbeled murrelets, and any other unpublished information you may have available regarding altitudes at which migratory birds may commonly be found. If you would like further information on the project at this time, additional scoping materials are available on the project website – http://www.greenerskiesea.com/public-outreach.html. Of particular interest may be the meeting exhibits for the existing Radar Flight Tracks, which show the current dispersion of air traffic. These can be compared with the Proposed RNAV Flight Procedures, which show how these routes would be condensed.

Thanks,
Alisa

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Sent: Tuesday, April 03, 2012 12:58 PM
To: Swank, Alisa/SEA
Cc: augustin.moses@faa.gov; Willkie, Bill/BAO; Marina.Landis@faa.gov; karen_myers@fws.gov
Subject: Re: Agenda and Materials for Conference Call today

All
Thanks for organizing the call today. Let us know if and when you will be wanting or needing anything more from us.

Martha Jensen
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04/03/2012 08:09 AM

To <martha_jensen@fws.gov>, <augustin.moses@faa.gov>, <Bill.Willkie@CH2M.com>, <Marina.Landis@faa.gov>
cc
Subject Agenda and Materials for Conference Call today

Hi everyone-

Here is the agenda for our call at 11 am. I have attached some background material for our discussion.

1) Introductions/roles
2) Greener Skies project background
3) Specific changes planned
4) Potential for interaction with Migratory Birds

Thanks,
Alisa

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[attachment "Greener Skies_Final Agency Letter_USFWS.doc" deleted by Martha L Jensen/WWO/R1/FWS/DOI]