United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
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IN REPLY REFER TO:
9043.1
ER16/0652

February 24, 2017

Lisa Padgett, EA-18G EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508
Attn: Code EV21/SS

Dear Ms. Padgett:

The U.S. Department of the Interior (Department) has reviewed the Department of the Navy's Draft Environmental Impact Statement (DEIS) of the EA-18G Growler Airfield Operations at Naval Air Station Whidbey Island (NASWI) Complex. We are concerned about the potential impacts of the proposed action on natural and cultural resources and visitor experience at Ebey's Landing National Historical Reserve. We also have concerns about potential increased noise impacts in Olympic National Park's congressionally designated wilderness. Such noise impacts are reasonably foreseeable consequences of the proposed action, which would result in an increase in training operations within the Olympic Military Operations Area (OLYM MOA).

The National Park Service (NPS), a component bureau of the Department, has provided the general comments below. In addition, NPS has provided the following three attachments:

1. "NPS Detailed Comments_Growler DEIS_24Feb2017" – This spreadsheet contains detailed NPS comments on the DEIS.
2. "NPS Letter RE NOI for EA-1 SG Growler Airfield Operations at Naval Air Station. Whidbey Island. Washington_03Jan2014" - On January 3, 2014, the NPS provided this comment letter regarding a Notice of Intent to create the DEIS. Please refer to this document as part of our comment record. We note that some, but not all, of the recommendations in the letter were addressed in the DEIS.
3. "NPS Comment to Navy RE Growler APE_03Jan2017" – This is a copy of an NPS letter dated January 3, 2017, regarding the Area of Potential Effects related to National Historic Preservation Act requirements.

The NPS's mission is to preserve and protect park resources while providing for public enjoyment of those resources. The natural soundscape is an essential resource critical to public enjoyment at Ebey's Landing National Historical Reserve (Reserve) and Olympic National Park (NP). Extreme noise from military overflights in the Reserve and Olympic NP significantly impacts the natural soundscape. These operations present significant mitigation challenges for the NPS because we do not have direct authority over the airspace. To protect the public interest in preserving the natural soundscape, we rely on science, advocacy, and cooperation with federal partners such as the Navy to help us achieve our mission. To that

1.a. Thank You
1.b. Best Available Science and Data
1.d. General Project Concerns
10.b. Biological Resources Impacts
10.c. Wildlife Sensory Disturbance and Habituation
10.d. Construction Impacts on Wildlife
10.f. Endangered Species Impact Analysis Adequacy
10.i. Additional Special Status Species
10.m. Impacts to Marine Species and Habitat
11.a. Groundwater
11.d. Per- and Polyfluoroalkyl Substances
12.f. Economic Hardship and Impacts
12.h. Tourism
19.b. Revised Cumulative Impacts Analysis
19.c. Olympic Peninsula, Olympic National Park, and at-Sea Training
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.f. Use of Public Comments
2.k. Range of Alternatives
2.l. No Action Alternative
3.a. Aircraft Operations
3.d. Arrivals and Departures
3.e. Field Carrier Landing Practice Patterns
3.f. Field Carrier Landing Practice Operation Totals
3.g. Field Carrier Landing Practice Evolutions and High Tempo
4.a. General Noise Modeling
4.b. NOISEMAP Model, Modeling Methodology, and Noise Sources
4.d. Day-Night Average Sound Level Metric
4.e. Day-Night Average Sound Level Contours and Noise
4.f. Noise Measurements/Modeling/On-Site Validation
4.g. Average Annual Day/Average Busy Day Noise Levels
4.h. C-Weighted Noise, Low Frequency Noise, and Vibrations
4.i. Other Noise Metrics Not Currently in Analysis
4.j. Other Reports
4.k. Comparison of the Prowler to the Growler
4.l. Points of Interest
4.m. Supplemental Metrics
4.n. Speech Interference (Indoor and Outdoor)
4.o. Classroom Learning Interference
4.q. Potential Hearing Loss
4.r. Nonauditory Health Effects
4.t. Noise Mitigation
4.v. Impacts to Domestic Pets, Livestock, or Wildlife
7.d. Recreation and Wilderness Analysis and Study Area
7.f. Impacts to Wilderness Areas
7.g. Ebey's Landing National Historical Reserve

end, we look forward to working with the Navy to reduce noise impacts to the maximum extent possible from Growler operations that occur over Ebey's Landing National Historical Reserve and Olympic NP.

Ebey's Landing National Historical Reserve
Congress established Ebey's Landing National Historical Reserve in 1978 to "preserve and protect a rural community which provides an unbroken historical record from nineteenth century exploration and settlement in Puget Sound to the present time…" (National Parks and Recreation Act, 1978, P.L. 95-625). The 17,400-acre Reserve commemorates a period of historic significance for Euro-American settlement of the Pacific Northwest that began with Captain George Vancouver's exploration of Puget Sound in 1792 and concluded at the end of World War II. The Reserve is managed cooperatively by the NPS in coordination with Island County, the Town of Coupeville, and Washington State Parks. The NPS owns 413 acres of land in fee, along with scenic easements covering several thousand acres of land. The federal law that created the Reserve formally acknowledged the national historical significance of the area, and it directed the Secretary of the Interior to cooperate with state and local officials to protect, preserve, and interpret its national significance. This legislative mandate underscores the national significance of the Reserve and the importance of the NPS mission to safeguard and advocate for the resources and values of the Reserve.

The cultural landscape within the Reserve enables visitors and residents to experience patterns of settlement, historic homes, pastoral farmsteads, forests, and marine settings. The cultural landscape includes historic settlement, development patterns, and natural features that reflect human history and the unique Pacific Northwest character of the area. Views and perceptual qualities, including the natural soundscape, contribute to the authenticity of the cultural landscape and enable one to imagine what it was like to be there hundreds if not thousands of years ago.

The Reserve provides a wide range of recreational amenities. The tourism generated by this unit of the NPS plays a key part in sustaining the economy of the area. The NPS estimated the Reserve contributes approximately $21.3 million to the local economy (NPS 2006, p. 71); however, this estimate is in 2005 U.S. dollars and based on 1995 visitation data, which does not reflect the continued increases in population and visitation the area is currently experiencing. The actual economic impact of the Reserve is likely much higher than $21.3 million, and the non-market benefits are significant as well.

Field carrier landing practices (FCLPs) at the Outlying Field Coupeville (OLF Coupeville) generate the most extreme noise in the Reserve (NPS 2016). Higher elevation overflights also generate significant noise over the entire Reserve. In 2006, the NPS prepared the first General Management Plan (GMP)/Environmental Impact Statement for the Reserve, which included a qualitative discussion of soundscape conditions and sources of noise pollution specifically including military overflights (NPS 2006, p. 37). The GMP highlighted FCLP operations at OLF Coupeville as a regularly occurring significant impact to the soundscape. The GMP was written prior to implementing the transition from EA-6 Prowlers to EA-18G Growlers, which are widely experienced as a louder and more intrusive aircraft. This DEIS proposes to substantially expand the number of Growlers stationed at NASWI, increase the number of FCLPs at OLF Coupeville, and expand the overall presence of Growlers in the regional airspace. These proposed actions are of concern to the NPS because existing noise caused by military overflights already cause significant adverse impacts on a regular basis. Therefore, NPS concurs with the Navy's conclusion in the DEIS (p. 4-111) that noise associated with additional Growler aircraft will cause significant impacts under all of the action alternatives. The increased noise will significantly impact soundscapes throughout the Reserve.

The Ebey's Reserve General Management Plan includes an analysis of the current boundary of the Reserve, which is a congressional mandate when GMPs are developed. The reason for the boundary modification analysis is to evaluate significant resources, values, and visitor experience related to the purpose of the Reserve and to address operational and management issues. The current boundary of the Reserve includes the parcel boundary of the 1850 Donation Land Claims Act and is the same as the

7.h. San Juan Islands National Monument
8.a. Cultural Resources Area of Potential Effect
8.b. Section 106 Process
8.c. Noise and Vibration Impacts to Cultural Resources
8.f. Cultural Landscape and Impacts to Ebey's Landing National Historical Reserve
8.g. Mapping and location of Ebey's Landing National Historical Reserve and Central Whidbey Island Historic District
8.h. Ebey's Landing National Historical Reserve, Military Association

boundaries of the National Register Historic District that was established in 1973. However, some large agricultural tracts and scenic open space parcels were left out, including the OLF. The OLF includes approximately 468 acres of land immediately adjacent to the Reserve Boundary and occupies a substantial portion of Smith Prairie, one of the three main prairies on Central Whidbey Island. The Boundary Analysis concluded that acquisition of the OLF would improve maintenance of the rural landscape and historic scene, and protect open space for plant and animal habitat. Including the remainder of the OLF in the Reserve boundary and its subsequent retention in public ownership would also assist in protecting the aquifer recharge area in this portion of Smith Prairie and central Whidbey Island, which provides drinking water for the Town of Coupeville. We understand that the Navy desires to expand use of the OLF, but we wish to underscore the NPS's documented interest in acquiring the property in order to protect the resources and values of the Reserve.

Olympic National Park Wilderness

Wilderness areas are rare, wild places where one can retreat from civilization, reconnect with the Earth, and find healing and meaning in nature. In 1988, Congress designated 95% of Olympic National Park as wilderness, the highest level of conservation protection for federal lands. Only Congress may designate wilderness or change the status of wilderness areas. Through the 1964 Wilderness Act, Congress recognized the intrinsic value of wild lands. The qualities that define wilderness character were identified in Section 2.(c) of the Wilderness Act, they include the following: untrammeled, undeveloped, natural, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. Olympic NP wilderness is mandated to protect wildlands, watersheds, biodiversity, and natural soundscapes. We request that impacts to wilderness character at Olympic NP be addressed in the Final EIS, given the magnitude of additional training proposed in the OLYM MOA, one of three primary Growler training areas identified in the DEIS (p. 2-14).

Noise Reduction Measures

The DEIS includes noise reduction measures which include avoiding noise-sensitive and wilderness areas by flying at altitudes of no less than 3,000 feet above ground level (AGL), except when in compliance with an approved traffic or approach pattern, military training route, or within Special Use Airspace (DEIS pp. 3-30 – 31). Given the sensitivity to noise at the otherwise nearly pristine Olympic wilderness and significant noise and cultural landscape impacts at Ebey's Landing, we request the following additional noise monitoring and reduction measures be implemented as part of the Final EIS:

- Growlers entering, utilizing, and exiting the OLYM MOA fly at or above 3,000 feet AGL.
- Electronic emitter trucks used in training maneuvers on United States Forest Service logging roads are parked as far as possible from Olympic NP wilderness boundaries.
- Pilots minimize throttling up or down while flying over Olympic NP wilderness.
- Growlers should be outfitted with Chevrons (ceramic strips placed in the exhaust nozzle of a jet engine for sound reduction) or other noise reduction technologies prior to their training in the OLYM MOA.
- If possible, expedite the implementation of the Magic Carpet (Maritime Augmented Guidance with Integrated Controls for Carrier Approach and Recovery Precision Enabling Technologies), which automates some pilot controls for landing on aircraft carriers. This would ultimately make the process easier and reduce the training required for pilots to develop and maintain proficiency for shipboard landings.
- Noise monitoring at NPS offices at Ebey's Landing and periodic noise monitoring in the Reserve.

Accomplishing the missions of the Navy and the NPS on Whidbey Island and the surrounding area is a challenging and complex task. The Department recognizes that some of the noise impacts are unavoidable. Therefore, we request the Navy work with the NPS to develop a long-term action plan for collaboration and coordination in order to facilitate better communication and local interaction between the agencies. The NPS looks forward to working with the Navy to develop this plan.

We appreciate the opportunity to review and offer comments on the DEIS. For additional information, clarification, or consultation regarding these comments or the attached documents, please contact Judy Rocchio, Regional Natural Sounds Program Coordinator, at (415) 623-2203.

If you have any other questions or concerns, please feel free to contact me at (503) 326-2489.

Sincerely,

Allison O'Brien
Regional Environmental Officer

Attachments (3):

1. NPS Detailed Comments_Growler DEIS_24Feb2017
2. NPS Letter RE NOI for EA-1 SG Growler Airfield Operations at Naval Air Station. Whidbey Island. Washington_03Jan2014
3. NPS Comment to Navy RE Growler APE_03Jan2017

References

NPS 2006: Ebey's Landing National Historical Reserve Final General Management Plan and Environmental Impact Statement. NPS-WA-20060407-F. Coupeville, WA. https://parkplanning.nps.gov/document.cfm?parkID=298&projectID=11188&documentID=16988

NPS 2016: Pipkin A. 2016. Ebey's Landing National Historical Reserve: Acoustical monitoring report. Natural Resource Report. NPS/ELBA/NRR—2016/1299. National Park Service. Fort Collins, Colorado. https://irma.nps.gov/DataStore/Reference/Profile/2233340

Attachment 1

National Park Service EA 18-G Growler Draft Environmental Impact Statement Comments

Page	Sentence	Comment	Source
ES-5	The U.S. Department of Defense recommends land use controls beginning at the 65 decibel (dB) day-night average sound level (DNL). Research has indicated that about **87 percent** of the population is not highly annoyed by outdoor sound levels below 65 dB DNL (FICUN [Federal Interagency Committee on Urban Noise], 1980). ... the 65 dB DNL contour is used to help determine compatibility of local land use with military aircraft operations, particularly for land use associated with airfields, and is the lower analysis range for this analysis.	Additional research suggests the 65 dB limit should be reconsidered when analyzing impacts. Fidell, 2003 states; "It is readily apparent that the FICUN relationship underestimates the prevalence of field measurements of aircraft noise-induced annoyance and that the aircraft annoyance data themselves do not compel identification of a DNL value of 65 dB as a self-evidently justifiable or data-driven policy point." The sensitivity of the protected historic community within the boundary of Ebey's Reserve would warrant more stringent natural sounds protection. Research conducted by the Environmental Protection Agency shows decibel levels greater than 60 dB will disrupt speech during normal conversation; "For outdoor voice communication, the outdoor Leq of 60 dB allows normal conversation at distances up to 2 meters with 95% sentence intelligibility." (Information on Levels of Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety, USEPA 1974.). NPS believes a DNL of 60dB would be a more appropriate metric for determining land use compatibility at the Reserve. We ask that you use a DNL of 60 dB for the lower range of analysis. In addition, it would help the reader better understand noise impacts associated with the proposal if additional information were referenced from the FICUN report. Table D-1 in the report states "very few people (on average three to four percent) will be highly annoyed by noise at or below a level of about Ldn = 55 dB. However, about 15 percent of the population will be highly annoyed by noise at about a level of Ldn = 65 dB; 25 percent of the population will be highly annoyed at Ldn = 70 dB; and 37 percent of the population will be highly annoyed as the noise level reaches Ldn = 75 dB. Twenty to 30 percent of the population is apparently imperturbable and not bothered even by high noise levels. " Please include this information in the Final EIS. In the reference cited the level of noise that exceeds 65 dB is defined as "Significant Exposure" (Table 1) i.e., 15% of the population will be highly annoyed. The DEIS incorrectly uses 13%. Please correct the discrepancy and also state that 15% is considered "significant exposure". (FICUN [Federal Interagency Committee on Urban Noise], 1980).	Fidell, Sanford. "The Schultz curve 25 years later: A research perspective." The Journal of the Acoustical Society of America 114.6 (2003): 3007-3015. http://www.vlieghinder.nl/images/knipsels/25_years_Schultz_Curve_2003_.pdf http://www.rosemonteis.us/files/references/usepa-1974.pdf www.nonoise.org/epa/Roll7/roll7doc20.pdf (FICUN [Federal Interagency Committee on Urban Noise], 1980). http://www.rosemonteis.us/files/references/federal-interagency-committee-1980.pdf

ES-5	...would therefore result in additional people living within the 65 dB DNL…	Please include "living, working, attending school, and recreating" within…	
1-11	Relevant Laws and Regulations	The Wilderness Act of 1964 should be included as increased military training in the Olympic Military Operating Area is a reasonably foreseeable consequence of the proposed action and will impact the wilderness area in Olympic National Park. Wilderness character including solitude, an essential quality of wilderness, will be adversely affected. The proposed project may also impact the BLM wilderness located within the San Juan Islands. (3.5.2.4)	Wilderness Act of 1964
1-20	The Navy is also considering other noise reduction measures, such as construction and operation of a noise suppression facility for engine maintenance (also known as a “hush house”) and actively researching engine design solutions to reduce overall sound emissions from the engines of the FA-18E/F “Super Hornet” and Growler in addition to other measures that may reduce the number of FCLPs required.	NPS supports the use of additional noise reduction measures like a noise suppression facility, engine redesign, and a reduction in FLCPs.	
2-14	Olympic, Okanagan, and Roosevelt MOAs, including associated Air Traffic Control Assigned Airspace, ..represent the primary area for Growler training.	NPS is using the opportunity of commenting on this DEIS to request information on the impacts associated with additional Growler training on the wilderness character at Olympic NP. Section 2.(c) of the 1964 Wilderness Act identifies four qualities of wilderness character that unify all wilderness areas. These four qualities are untrammeled, undeveloped, natural, and outstanding opportunities for solitude or a primitive and unconfined type of recreation.	

3-17	Studies of community annoyance in response to numerous types of environmental noise show that DNL correlates well with impact assessments (Schultz, 1978); a consistent relationship exists between DNL and the level of annoyance experienced (refer to Appendix A, Draft Aircraft Noise Study). DoD recommends land use controls beginning at the 65 dB DNL level. Research has indicated that about 87 percent of the population is not highly annoyed by outdoor sound levels below 65 dB DNL (FICUN [Federal Interagency Committee on Urban Noise],	See also comments on page ES-5 above. Refer to the "updated Schultz curve" not the "Schultz, 1978" that is mentioned here, the mark on this curve is actually above 15% according to the paper although hard to estimate exactly because there is no single value for 65 given on the graph. One source that cites this work states the number as 16. The paper cited actually states that 15% percent of people will be highly annoyed (not 13%), this metric can be found in table D-1 on page D-2 in the original reference. Please insert a sentence stating: The 65 dB level is also the level at which the community impact is expected to be "Significant." As this reference states.	ftp://public-ftp.agl.faa.gov/Materials%20Released%20Related%20to%20the%20OM%20EIS/3-31-2005%20World%20Gateway%20Related%20Documents/1856_29.pdf
3-21	This analysis assumes that individuals are outdoors at the location of their residence for at least 8 hours per day, every day, for 40 years.	Change everyday to 5 days a week, as found further in this document and in the original citation.	
3-25	The Growler aircraft replaced the EA-6B Prowler aircraft (as discussed in Section 1.4), with a full transition timeframe of 2016. Therefore, the noise modeled within this analysis assumes the EA-6B Prowler has been fully replaced, thereby isolating the noise to that from the changes in the operational environment for this Proposed Action.	With the transition from the Prowler to the Growler there came an increase in noise, especially noise at the low frequencies. The introduction of this aircraft at the FCLP around Ebey's Landing has made many residents unhappy about the proposed increases in number of Growlers. To provide a clear understanding of what is happening to the acoustic environment at the Reserve, please include information about how the noise signature will change compared to when Prowlers where operating at the base.	

3-30	Each aircrew must be familiar with the noise profiles of its aircraft and is expected to minimize noise impacts without compromising operational and safety requirements…..Additionally, aircrews are directed, to the maximum extent practicable, to employ prudent airmanship techniques to reduce aircraft noise impacts and to avoid sensitive areas except when operational safety dictates otherwise. ...Avoiding noise-sensitive and wilderness areas by flying at altitudes of no less than 3,000 feet AGL, except when in compliance with an approved traffic or approach pattern, military training route, or within Special Use Airspace.	Please address the following questions in the FEIS: What is the range of noise reduction achieved using these measures? How are these types of noise abatement measures enforced? How well are they adhered to?	
3-34	Table 3.2-4: Maximum Sound Exposure Level (dB) and Maximum Sound Level (dB) for representative Points of Interest in the Vicinity of the NAS Whidbey Island Complex (CY 21)	This data is not consistent with data the NPS collected on the Reserve. NPS site 001 (Reuble Farmstead) is similar to Navy site P04 (Rhododendron Park) and NPS site 002 (Ferry House) is similar to Navy site P05 (Ebey's Prairie). The model and definition suggest a "fast" MaxSPL (but does not specifically define this) which would have a higher SPL than NPS "slow" MaxSPL which would have underestimated these values Data the NPS type 1 systems collected in the field and the Navy modeled data are inconsistent. Please provide the margin of error for the values calculated and explain the differences in the two datasets. Table 3.2-4 shows 267 events for an entire year, whereas just for one month NPS monitoring documented 281 aircraft events exceeding LAmax 70 dBA at the Reuble Farmstead. It is unclear how there can be 267 annual events predicted for Rhododendron park. Please clarify and discuss your margin of error. See also the comment on page 4-36 below.	

3-38	Table3.2-8: Average Number of Events per Hour of Outdoor Speech Interference for Representative Points of Interest in the Vicinity of the NAS Whidbey Island Complex (CY 21)	Please consider the use of EPA Guidelines for Speech Interference at 60 dB. Refer to Information on Levels of Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety, EPA 1974 : "For outdoor voice communication, the outdoor Leq of 60 dB allows normal conversation at distances up to 2 meters with 95% sentence intelligibility."	http://www.rosemonteis.us/files/references/usepa-1974.pdf
3-45	The initial response focuses on rescue, evacuation, fire suppression, safety, elimination of explosive devices, ensuring security of the area, and other actions immediately necessary to prevent loss of life or further property damage.	NPS has concern for groundwater contamination resulting from emergency fire suppression at OLF. Residences rely on potable well water, and in the case of Coupeville, potable community well water. This is especially important given that; (a) Central Whidbey Island is a "sole source" aquifer with limited capacity; (b) the surficial geology is composed of deep glacial deposits in the area of the OLF (Smith Prairie) and these gravels are highly permeable; (c) the presence of fire suppressing foam, such as perfluorooctanoic acid (PFOAs) in water supplies substantiates the potential for groundwater contamination and raises a reasonable question about future risks. For these reasons there needs to be a risk analysis that evaluates how continued use of PFOAs in the event of a crash would potentially affect groundwater in the area. The risk analysis should include Best Management Practices used to contain and clean up fire suppressing foam.	
3-77	3-6 Cultural Resources General Comment	The NPS defines cultural resources as an aspect of a cultural system that is valued by or significantly representative of a culture, or that contains significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register of Historic Places, and as archeological resources, cultural landscapes, structures museum objects, and ethnographic resources.	

3-79	3.6.1.2. The Area of Potential Effect (APE) must be defined in order to assess the effects of a proposed action on a historic property. An APE is defined as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist (36 C.F.R. 800.16[d]).	The proposed Area of Potential Effect (APE) for the proposed action is presented as the 65dB DNL that would exist in 2021 as represented by the No Action Alternative. The rationale provided is that the 65 dBA DNL is a standard accepted for the evaluation of historic properties near airports and is consistent with environmental documentation previously completed for Navy operations. In addition, noise levels below 65 dBA DNL are considered to be equivalent to background noise or conversational speech. NPS disagrees with this rationale for APE delineation in part based on the results of NPS monitoring at the NPS Ferry House near Ebey's Landing. The Ferry House would be excluded from the 65-DNL-delineated APE, yet monitoring results have documented noise levels as high as 85 dB Lmax, an SEL of 96.6. This demonstrates that Growler aircraft have a uniquely intrusive noise signature that impacts the cultural landscape well beyond the 65 dBA DNL. We also note that the Reserve is a nationally significant cultural landscape and an important unit of the NPS system. We request the APE be delineated more broadly by using the 60 dBA DNL contour for Growler aircraft. Research demonstrates noise at this level interrupts speech for normal conversations. Therefore, it is an appropriate surrogate metric for gauging impacts to the sights, sounds, feelings and associations of place that are essential qualities of the cultural landscape and will be adversely impacted by this undertaking.	
4-3	Growler training within the Olympic MOAs was analyzed in the 2010 NWTRC EIS/OEIS. The 2015 NWTT EIS/OEIS analyzed a small increase in Growler training in the Olympic MOAs…. ...Under all alternatives, the number of transits to all training areas would increase by approximately two or three flights per day. Proposed Growler operations would transit between Ault Field and military training areas (Olympic, Okanogan, Roosevelt, and NWSTF Boardman) in a similar manner as existing Growlers (at altitudes between 14,000 feet and 16,000 feet above MSL) and would generate similar sound levels.	Training addressed in the 2010 and 2015 NWTT EIS/OEIS did not assess 35-36 additional Growler jets. Therefore the impacts disclosed in those reports do not adequately reflect impacts associated with this proposed action. Please analyze the additional impacts to Olympic NP Wilderness from the reasonably foreseeable consequence of increased operations in and around the Olympic MOA. The proposed additional operations will add to existing impacts from fighter jet noise in the park and on wilderness qualities including; untrammeled, undeveloped, natural, and outstanding opportunities for solitude or a primitive and unconfined type of recreation.	

4	General Comment	Although Scenario C has the highest population increase affected by the 65 dBA contour the most land area is impacted by Scenario A. If more personnel move to the island because of the alternatives in this DEIS, then population dynamics will change. We suggest using land area, as opposed to population impacted, as a more reasonable metric.	
4	General Comment	The Scenarios describe areas that will be under the 65 dBA contour but do not explain the increase in areas under the 70, 75, and 80 dBA contours. Communities under these levels have the likelihood of being much more "highly annoyed" than communities at 65 dBA. Please provide a more detailed explanation regarding the increase in areas under the 70, 75 and 80 dBA contours. In addition please provide as assessment of moderately annoyed communities under the 60 dB contour.	
4-12	4.1-3	The No Action alternative will have the least impact overall. Alternative 3C has the least impact of the action alternatives on the Reserve.	

4	Scenario 1 Table 4.1-2, 4.1-3, 4.1-4	It would be extremely detrimental to the soundscape of the Reserve to add 35,500-33,900 annual airfield operations to OLF. This is the case for scenario A under all alternatives. The annual FCLP that currently exists at OLF (6,100) harms the visitor experience at the Reserve and inhibits our ability to preserve the natural sound resources and cultural landscape. The loudest FCLP operation recorded at Ebey's Landing was 113 dBA recorded by NPS ANSI Type 1 Sound Level Meters.	
4-16	Overall, Alternative 3 would not result in significant adverse impacts to airspace at Ault Field from proposed Growler operations.	The No Action Alternative would have the least impact on the Reserve. Alternative 3C would have the least impact from the action alternatives, but there would still be significant adverse noise impacts on the Reserve.	
4-17	Implementation of Alternative 3 would increase total airfield operations by up to 46 percent above the No Action Alternative.	This would make carrying out the Reserve mission very difficult. From the three alternatives provided, 3C is the least impacting to the Reserve. Part of the Reserve's Congressional Mandate is to preserve a rural community. In Appendix A (A-157) of this report, it mentions the average DNL of a rural community is expected to be less than 45 dB. These actions would increase the DNL well beyond this figure which would degrade the ability of the National Park Service to carry out its mission. In a reference used in this report (CHABA, 1977) Table IV-1 states that a Rural (developed) area should have an DNL of 40, while a Very Noisy Urban Community should expect a DNL of 65. The operations that occur at NAS Whidbey Island cause the DNL to be raised to a level not appropriate for the designation of the property. All action alternatives would increase the existing DNL.	
4-36	Table 4.2-3 Maximum Sound Exposure Level (dB) and Maximum Sound Level (dB) for Representative Points of Interest in the Vicinity of the NAS Whidbey Island Complex.	In summer 2015 the NPS conducted acoustic monitoring at the Reuble Farmstead and the Ferry House to clarify baseline conditions in accordance with NPS policies and in preparation for evaluating this proposal (NPS, 2016). NPS collected data from a 31-day monitoring period. We compared this data with two Points of Interest in the DEIS (Rhododendron Park, Ebey's Landing State Park) in similar areas. Rhododendron Park is slightly closer to the OLF than the Reuble Farmstead, and existing DNL maps depict the area as having a higher noise exposure than the Reuble Farmstead, yet NPS monitoring results document a 7dBA difference in Lmax (113 dB at Reuble Farmstead versus 106 at Rhododendron Park), and a 5.2 difference in SEL (117 dB at the Farmstead versus 112 dB at Rhododendron Park). The differences between levels at the Ferry House and Ebey's Prairie are 8 dBA Lmax and 8.6 SEL. In both instances, the DEIS modeling data projected for Calendar Year 21 (full implementation of the proposed action) significantly under represent the noise derived from NPS monitoring of current conditions. Please explain this discrepancy.	

4-44	Potential Noise Effects on Recreation: General Comments	The section on Potential Noise Effects on Recreation incorrectly concludes that the proposed actions would have no direct impact on management plans for the Reserve. Expanded operations at OLF Coupeville would adversely affect current operations and several longstanding NPS proposals as follows: 1. OLF Coupeville is adjacent to the southern gateway to the Reserve along State Route 20. This gateway is geographically notable for management of the Reserve because each year hundreds of thousands of visitors pass through this gateway and there are plans to install a South Gateway kiosk and wayside area to orient visitors to the Reserve. Expanding operations at OLF Coupeville would diminish the quality of the visitor experience at the southern gateway and impact the NPS ability to orient visitors to the Reserve. 2. The historic Reuble Farmstead is the base of NPS Operations for the Reserve, which includes offices, workshops, transient quarters, a conference room, and 100-acres of agricultural land farmed under permit. When FCLPs occur, Growler aircraft fly directly over NPS offices at approximately 500 feet and noise levels outside routinely exceed 110 dB. Voice communication is not possible. All staffs must wear ear protection inside structures. This extreme noise substantially affects the NPS' ability to achieve its operational mission. 3. The DEIS provides Conceptual Accident Zones that include significant portions of NPS land at the Reuble Farmstead. This land is currently being used as an operational base for the NPS, but several management options including a land exchange are envisioned for this property. Current uses, and future potential alternative uses, for this property would not be compatible with DoD Land use compatibility guidelines for APZs. For example, residential uses, cultural activities, public assembly, and educational services would not be recommended (Dept. of Defense, 2011).	Department of Defense, 2011. "DoD Instruction 6055.07, Mishap Notification, Investigation, Reporting, and Record Keeping"
4-45	General Comment	The format of using number of events per hour instead of events over a day (7:00 - 22:00) makes total daily impacts less clear to the reader. Using the total number of events over the course of the day would provide better clarity. NPS suggests using an Lmax of 60 dBA as cited by the USEPA 1974 referenced elsewhere in this report. There is no reference that the commenter can find about the 65 dBA standard, although there is a comment about the DOD suggesting this level. Please provide a reference for using 65 dBA. The 60 dBA level is also referenced in the 1996 DOD document titled "Department of Defense Methodologies for Assessing Airborne Noise from Military Operations, Testing and Training Activities" in section A.3.2.	Department of Defense, 1996, "Department of Defense Methodologies for Assessing Airborne Noise from Military Operations, Testing and Training Activities"

4-50	Research has demonstrated that these factors have a larger and more direct effect on a person's health than aircraft noise.	Please provide references and cite examples from the peer-reviewed literature.	
4-50	for the representative POIs analyzed, the highest Lmax value was 118 dB, and therefore sound levels damaging to structural components of buildings are not likely to occur.	Vibration from sound occurs in low frequencies. This 118 dB value was calculated using A-Weighted decibels which disproportionally reduces low frequency impacts. For acoustic research using dBA is fine but for the vibration study please consider dBZ or another metric that does not skew low frequency data.	
4-82	Table 4.2-17 Estimated Acreage and Population within the DNL Contour Ranges1 for the NAS Whidbey Island Complex, Alternative 3 (Average Year)	As a land management agency the NPS is concerned with the number of acres disturbed not just the number of people disturbed, as the latter will change through time and the previous will stay the same. Protecting and enhancing the health and enjoyment of our visitors and employees and the community that surrounds them is a very important part of the mission of the Reserve. In addition to aircraft, the proposed actions call for increases in personnel on the island to fulfill these actions. This would result in unknown future populations being impacted. Scenario C has the fewest increase in acres. While Scenario C has the highest overall increase in population impacted by 65 dB contour, Scenario A and B have higher impacts on the population overall because of the increased population under the greater than 75 dB DNL. This metric is much more important because at this DNL 37% of the population will be highly annoyed. Scenario 3C does the best job at mitigating noise based on number of people impacted out of the 3 scenarios.	

4-107	According to the USEPA, changes in hearing level of less than 5 dB are generally not considered noticeable (USEPA, 1974). Therefore, using the data provided in Table 4.2-24, for the population with average sensitivity to noise, the level at which there may be a noticeable NIPTS would be at the 84 to 85 dB Leq(24) range and above.	Hearing loss that is not noticeable is still important. The citation is correct but the noise-induced permanent threshold shift, which is based on hearing level, is not based on what is noticeable. It is based on how much hearing loss occurs. Note that the USEPA indicates the majority of the population will not suffer hearing impairment at 70 dBA, which suggests that some individuals will suffer impairment at that level. To more fully disclose the potential for hearing loss we recommend adding rows to the table that quantify the impacts that would occur between 70 and 75 dBA Leq(24). Consider amending this section to indicate; "Human hearing loss of ?? dB would occur from the proposed actions at the 70-71 Leq(24) band. According to USEPA, individuals will not notice hearing loss until the 84-85 dB Leq(24). This is because humans cannot perceive hearing loss below 5 dB, although it still occurs."	http://www.nonoise.org/epa/Roll1/roll1doc11.pdf
4-120	As stated in Section 3.2.3, a review of the scientific literature (see Appendix A, Draft Aircraft Noise Study) indicated that there has been limited research in the area of aircraft noise effects on children and classroom/learning interference.	It is more realistic to discuss all noise and not just aircraft noise in this section. Appendix A provides more details. We know a lot about how noise impacts classroom learning. There is actually an ANSI standard and a lot of research. This standard states that classrooms should have a background sound level not exceeding 35 dB including all noise sources.	ANSI/ASA S12.60-2010
4-144	Table 4.4-16 Total Change in Criteria Pollutants and GHG Emissions	Criteria pollutant and GHG emissions generated from the proposed action are the lowest for Scenario C for all alternatives.	
4-166	Depending on the alternative and scenario selected, annual aircraft operations would increase approximately 46 percent to 47 percent over affected environment conditions. These operational conditions would be similar to historic operational levels in the 1970s, 1980s, and 1990s for the NAS Whidbey Island complex and, thus, similar to operational conditions that would have occurred at the time the Ebey's Landing National Historical Reserve was created in 1978 and over most of the reserve's existence.	The majority of noise-related impacts at the Reserve arise from operations at OLF Coupeville, and these operations are proposed to expand from 6,100 FCLPs per year (current conditions), to a range between 8,300-35,100. This range greatly exceeds the 46-47 percent increase over affected environment conditions reported. In addition, comparing these future scenarios to past conditions contradicts the wide-ranging perception that Growler aircraft are significantly louder and more intrusive than Prowlers.	

4-167	Table 4.5-8: Number of Events per Hour of Outdoor Speech Interference for Representative Points of Interest at Ebey's Landing National Historical Reserve (Average Year)	Table 4.5-8 presents unclear metrics and it is difficult to understand this analysis. The three POI's within the Reserve would all continue to be exposed to loud or extremely loud noise, and the overall number of events would increase from a minimum of a 36% (Alternative 3C C, 8,300 FCLP/year) to a maximum of 482% (Alternative 1A, 35,500 FCLP/year from Table 2.3-1). Current impacts to visitor experience vary depending upon location in the Reserve, but generally speaking the extreme noise is causing intermittent, significant impacts as noted in the Reserve's GMP, and all scenarios envisioned would increase the frequency of these impacts. We disagree that scenario C would have a long-term, slightly beneficial impact on recreation. In all instances impacts would be more adverse compared to current conditions.	
4-167	Table 4.5-8: Number of Events per Hour of Outdoor Speech Interference for Representative Points of Interest at Ebey's Landing National Historical Reserve (Average Year)	Although the No Action alternative has the least impact, this table confirms that Alternative 3C has the least impact of the Action alternatives on the Reserve.	
4-168	This statement from the NPS, 2005 report that was used in this DEIS "are short-term, highly variable in their frequency, and range from minor to moderate in their intensity" was before Growler operations and at this point we can say operations are moderate to extreme.	This document (NPS, 2005) was written before Growler Operations on Ebey's landing which significantly increased the acoustic disturbance to staff and visitors at the Reserve. We agree operations can have extreme impacts at Ebey's Landing NHP.	
4-168	Scenario C under Alternatives 1, 2, and 3 would have no impact on management of the national historical reserve because these alternatives would not increase the numbers of noise events over 65 dB DNL compared to the No Action Alternative.	While this modeled data shows there would not be an increase in events over 65 dB with Scenario C, that does not preclude the possibility that DNL and/or Leq might be elevated as a result of increased aircraft activity. This would continue to impact management and the visitor experience at the park. Appendix A states that a common DNL for rural areas is 45 DNL (A-157). The explicit intent of founding legislation for Ebey's Reserve is to protect a rural community. As DNL increases with more overflight activity, the Reserve can expect to see its ability to carry out its mission more difficult. Impacts would increase with increased aircraft operations at OLF Coupeville. The total area of the park under the 75 DNL contour would also increase under this scenario, which would have large direct impacts on Reserve operations.	

4-168	Alternatives 1, Scenarios A and B; Alternative 2, Scenarios A and B; and Alternative 3, Scenarios A and B would have a long-term, moderate indirect impact on management of Ebey's Landing National Historical Reserve as a result of the potential increase in the numbers of noise events over 65 dB DNL to degrade visitor experience.	Putting a large portion of our managed land in a DNL contour that is higher than 75 DNL would not result in intermittent or moderate impacts. Levels this high may result in hearing loss for individuals that work outdoors for 8 hours a day. Speech would be disturbed. A higher percentage of the rural community that the Reserve is supposed to protect would be highly annoyed. We would suggest replacing the text with Long-term, intermittent, significant impacts. Putting a large portion of our managed land in a DNL contour that is higher than 75 DNL would not result in intermittent or moderate impacts. Levels this high may result in hearing loss for individuals that work outdoors for 8 hours a day. Speech would be disturbed. A higher percentage of the rural community that the Reserve is supposed to protect would be highly annoyed. We would suggest replacing the text with Long-term, intermittent, significant impacts.	
4-177	Table 4.5-14 (1a, 1b) (2a, 2b) (3a, 3b) Long-term, intermittent, moderate impacts on Ebey's Landing National Historical Reserve.	See comment number 4-168.	
4-178	Table 4.5-14 (1c, 2c, 3c) Long-term, slightly beneficial impact on recreation at Ebey's Landing National Historical Reserve. No impact on management of the national historical reserve for recreation.	This proposed action would not result in a slightly beneficial impact to Ebey's Landing. Increasing the number of Growler aircraft at Ebey's Landing will increase air traffic over the park that will continue to have detrimental impacts to the natural soundscape, wildlife and the community that this park was mandated to preserve. Furthermore, while the models in the EIS show a decrease of land impacted by 60 dB contour the 75 dB contour appears to increase with this alternative and that increase would directly impact Ebey's Landing. Table 2.3-2 in this report shows that under Scenario C there would be anywhere between a 2,700 to 2,200 annual FCLP increase under scenario C at OLF Coupeville, which would certainly not have a beneficial impact on Ebey's Landing.	
4-179	Table 4.5-14. No impacts to Congressionally designated wilderness areas or BLM-owned lands with wilderness characteristics.	There will be additional impacts to Olympic NP wilderness due to the increase in number of training flights to, from and inside the Olympic Military Operations Area. Please analyze the impacts to Olympic NP from the proposed additional operations.	

4-183	The Proposed Action would not directly impact management of parks or recreation areas by federal, state, or local agencies or departments but may indirectly affect recreation management as a result of long-term changes in noise exposure that would affect the recreational experiences of visitors when aircraft are operating in the area.	Federal land managers at Ebey's Landing would be directly impacted from the increased operations at OLF with decibel levels commonly exceeding 100 dB.	
4-183	No Congressionally designated wilderness areas or BLM-owned lands with wilderness characteristics would be located within the greater than 65 dB DNL contours, regardless of alternative or operational scenario chosen.	This does not mean there will be no impacts to wilderness. See comment #39 above.	
4-184	4-6 Cultural Resources - General Comment	The scope of the DEIS cultural resource analysis is limited to archeological site and historic structures and we generally concur with the DEIS findings regarding those resources. The DEIS, however, does not evaluate impacts to the cultural landscape, which is a resource that is fundamental to the integrity of the Reserve. The extreme noise and related effects of low and high elevation Growler aircraft overflights significantly impact the cultural landscape by intermittently degrading the authenticity of the area, including views, auditory and perceptual values of place. These impacts need to be considered and disclosed in the DEIS, and also evaluated as part of the Section 106 analysis for this undertaking.	
4-189	The Navy is evaluating the potential impacts of the Proposed Action to historic architectural resources under NEPA and under Section 106 of the NHPA	According to Federal Law under the NHPA, before any action is taken or an EIS is put out for public review, Section 106 should be completed. Without providing information about Section 106, the NPS and the community are not fully informed to comment on any of the alternatives.	

4-193	Per the guidelines, sounds lasting more than 1 second with a peak unweighted sound level greater than or equal to 130 dB (in the 1 hertz (Hz) to 1,000 Hz frequency range) are considered potentially damaging to structural components (NRC/NAS, 1977). This is a conservative standard for assessing all sound (NRC/NAS, 1977).	Please also discuss "frequency resonance" which can break glass at lower decibel levels.	
4-195	Under Scenario A of each alternative, approximately 80 percent of the FCLPs would be conducted at OLF Coupeville. As compared to the other scenarios, impacts may be experienced with greater frequency under this scenario to Ebey's Landing National Historical Reserve due to its proximity to OLF Coupeville.	Although the No Action alternative has the least impact, this statement confirms that scenario A would have the most significant impact for the Reserve.	
4-198	Under each of the three action alternatives, no direct impacts are anticipated to occur to terrestrial or marine wildlife during construction or operation. Impacts to specific wildlife species from habitat loss, sensory disturbance, and aircraft operations are discussed in Section 4.8.2.1 for terrestrial wildlife. Under each of the three alternatives, the Proposed Action would not directly impact marine wildlife (fish and marine mammals) during construction or operation. Impacts to specific marine wildlife from habitat loss, sensory disturbance, and aircraft operations are discussed in Section 4.8.2.2 for marine	It is very likely that sensory disturbance due to implementation of any of the proposed alternatives would harm wildlife during operations. Not enough evidence is provided to support the claim that under each of the action alternatives there would be no direct impacts to terrestrial or marine wildlife during construction or operation.	

4-200	Animals in the study area would be not significantly impacted by noise; there would be an increase in noise in the study area but wildlife are already exposed to a high level of long-term aircraft operations and other humanmade disturbances and have presumably habituated. / Habitat loss will be limited to the construction of proposed facilities under each of the three action alternatives and would occur in developed or previously disturbed areas of Ault Field.	The Migratory Bird Act requires consideration of species that move into the area and have not yet habituated to high levels of noise. The term "habituation" is frequently discussed in the DEIS without going into detail about how the Navy defines that term in reference to the response of wildlife with respect to habitat fragmentation or loss of hearing. This report does not give enough information about how or why habituation would take place to draw conclusion about impacts. There has been ample evidence in the literature that wildlife populations, while they may remain in a location, do not remain as viable when impacted by high levels of noise. Increases in sound can change wildlife behavior and result in a degraded habitat. These impacts have been shown to increase individual mortality.	
4-201	Therefore, the previously disturbed areas likely provide only marginal, temporary habitat for species that are adapted to human-modified environments (e.g., raccoons).	This report mentions many other species that are likely to be found on the island or that surveys or public sourced data have shown are on the island. The actions suggested in this EIS could harm many of them. The suggestion that raccoons would be the most impacted is not substantiated.	
4-202	Although impacts on wildlife habitat under each of the three action alternatives are limited, an increase in human activity and noise and vibrations associated with equipment use during construction and operation of the proposed facilities could disturb wildlife.	While we agree that impacts from construction will disturb wildlife, it is important to not understate the magnitude of impacts to wildlife during aircraft operations.	
4-203	In general, aircraft disturbances are not likely to disrupt major behavior patterns, and impacts are not expected to have an adverse impact at the population level.	Please provide evidence for this statement. Rearing young is a major behavior pattern as is communication. In addition migrating birds may no longer find this area suitable due to the high levels of noise. These are all major behavior patterns. The research cited reflects that aircraft disturbances do disrupt major behavior patterns.	(Grubb and Bowerman, 1997; Goudie, 2006)

4-207	Potential impacts on passerines at Skagit Bay IBA would be similar under Alternatives 1 through 3; however impacts would vary by scenario. Impacts at Skagit Bay IBA would increase with increased aircraft operations at Ault Field, with Scenario C having the highest potential for impacts (refer to Table 4.1-5). However, passerines in the study area are already exposed to a high level of long-term military operations and other human-made disturbances, and they are presumably habituated to the high levels of disturbance. The Proposed Action is not expected to have significant impacts on passerines using the study area.	No evidence of the presumption of bird habituation is provided. This may be a critical stopover point for many species protected under the MBTA and heavily impacted by anthropogenic noise. There is a study by Ware et. Al (2015) that studied the impacts of noise on migrating passerines. The study removed influencing factors associated with noise such as aircraft, roads , cars and used speakers in a forested area to just examine the impacts from noise. The passerines exposed to higher levels of noise were unable to consume enough food stressing them during their long migrations. Migrating birds and the increase in noise is not taken into consideration. The paper also shows that although wildlife may stay in an area impacted by noise, they can suffer significant costs. The paper is titled, "A Phantom Road Experiment Reveals Traffic Noise Is An Invisible Source of Habitat Degradation".	Ware et. Al (2015). A Phantom Road Experiment Reveals Traffic Noise Is An Invisible Source of Habitat Degradation
4-238	General Comment on Socioeconomic Effects	The Reserve is a critical asset for sustaining tourism-based businesses and economic interests, but the DEIS does not evaluate the potential impacts to sectors of the economy that depend upon tourism and tourism-related goods and services and would be affected by expanding operations at OLF Coupeville. Given the significant adverse impacts that occur when Growlers are conducting FCLPs at OLF Coupeville, the document should include an analysis of these impacts.	

4-307	Increase in aircraft operations would occur, but since local terrestrial wildlife are already exposed to a high level of long-term air operations and other human-made disturbances, they have presumably habituated to the very high level of noise and visual disturbances at NAS Whidbey Island. Therefore, there would be no significant impacts to terrestrial mammals, fish, and/or reptiles and amphibians with respect to visual and noise disturbances from construction and operation.	This section makes a point that wildlife living in the area are already significantly disturbed. The fact that wildlife remains in the area does not mean it does so without suffering harm. See also comment on page 4-207.	Ware et. Al (2015). A Phantom Road Experiment Reveals Traffic Noise Is An Invisible Source of Habitat Degradation
5-13	The Proposed Action and alternatives would have a significant impact on the noise environment as it relates to aircraft operations at Ault Field and OLF Coupeville. There would be an increase in population within the 65 decibel (dB) DNL noise contour under all alternatives and scenarios.	Significant impact is disclosed here and should be used consistently throughout the document. The document only focuses on increases in 65dB. Please also state the increases in population disturbed at 70dB and 75dB.	
5-22	Birds in the study area are already exposed to high levels of long-term aircraft operations and other human-made disturbances and are presumably habituated.	Ware 2016 mentioned above shows that while birds may stay in a place where noise is present they do suffer significant costs. Habituation does not mean that there are no impacts, only that the impacts are common. Habituation to an unhealthy ecosystem should not be an acceptable standard.	
5-23	For these reasons, the Proposed Action under each of the three action alternatives would not result in significant aircraft-related, sensory disturbance impacts on marbled murrelets.	In 2006 the USFWS produced a document titled "Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California" One of the specific points of disturbance that this paper provides is that project generated sound that exceeds 90 dB could impact these species and cause disturbance. In this report there are Lmax values which exceed this level and which will disturb birds especially during nesting.	USFWS (2006). Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California.

6-13	This Environmental Impact Statement (EIS) has determined that the alternatives considered may result in significant impacts with respect to noise and education from implementation of the action alternatives. ...Significant adverse impacts may not always be completely avoided, as with impacts to education and impacts on the community from noise from implementation of the action alternatives	The No Action Alternative has the least impact on NPS resources.	
	Appendix A	**Draft Aircraft Noise Study**	
Page	Sentence	Comment	
A-15	The purpose of this study is to present the noise exposure associated with the additional EA-18G aircraft operations in the vicinity of the Complex. The primary noise metric for quantifying noise exposure is the Day-Night Average Sound Level (DNL), presented in A-weighted decibels (dB) and is based on annual average daily aircraft events.	Given that A-weighted decibels skews low-frequency sound that Growler aircraft are most recognized for, please consider an analysis using Z or C weighted decibels. Or explain how low frequency data is not being considered in this analysis. Appendix A on page A-153 states "C-weighting is nearly flat throughout the audible frequency range, and includes low frequencies that may not be heard but cause shaking or rattling. C-weighting approximates the human ear's sensitivity to higher intensity sounds." Yet in the analysis of Growler impacts, C-weighting is not used. Using C-weighting would be helpful for the public to fully understand the impacts of each of the alternatives. Due to the highly intermittent nature of the training at OLF Coupeville, using a yearly average dilutes the noise impact. A better basis would be the average busy day.	
A-15	Noise exposure is primarily presented in terms of estimated off-station population affected in 5-dB bands of DNL, starting at 65 dB.	We understand that the DOD typically uses the 65 dB level for its analysis, however sensitive areas should be considered under a lower sound pressure level. The federally designated Ebey's Landing noise exposure should be considered starting at a level of 60 dB.	

A-17	1. Change in overall population exposed to at least 65 dB DNL (in %)…. In terms of increases in affected population (item #1), at 15-16%, the A-series of scenarios would have the least amount of percentage increase. The B-series of scenarios would have 19-21% increases in population, whereas the C-series would have 21-23% increases in population.	It would also be helpful to reference how many people and how much land area is exposed to increases within the 70 dB and 75 dB contours since population annoyance increases at these levels.	
A-17	In terms of an Average NIPTS of at least 5 dB (item #4), the affected population would increase by a factor of 2 under the B-series of scenarios up to a factor 5 under the A-series of scenarios.	Alternative 3C has the least impact on the Reserve of the action alternatives.	
A-21	General Comment	Describe the margin of error for each of the results and discuss the sampling rate for this model.	
A-24	Points of Interest	Please provide the coordinates for each of the POI in this document.	
A-27	outdoor speech interference is measured by the number of average daily daytime events per hour subject to outdoor Lmax of at least 65 dB. Thus, NMAP is used to compute the NA 65 dB Lmax for AAD for the DNL daytime hours only.	The NPS uses the metric percent time above 60 dB for outdoor speech interference. An Lmax of 60 dB would be preferable to the 65 dB Lmax.	
A-75	General Comment	It is hard to understand how an increase of 2,700 FCLP at OLF Coupeville for Alternative 1C could have a decrease in DNL according to Figure 6-9 PO4. Please explain how this is possible.	
A-100	General Comment	2C has an increase in FCLP of 2,300 at OLF Coupeville. This would have the potential to greatly increase the DNL at both P04 and P05, yet they appear to both have a decrease in noise with this increase in aircraft operations. Please explain this anomaly and provide information on the margin of error. All models are predictive and therefore have error associated with them.	

A-126	General comment	3C has an increase in FCLP of 2,200 at OLF Coupeville. This would have the potential to greatly increase the DNL at P04, yet there is a decrease in noise with an increase in aircraft operations. Please explain this anomaly and provide information on your margin of error. This POI is incredibly close to the runway so it is hard to understand how an operations increase would result in reduced noise.	
A-131	General Comment	All of the alternatives negatively impact the features of the rural community that the Reserve has been congressionally designated to protect.	
A-158	Clearly, the averaging of noise over a 24-hour period does not ignore the louder single events and tends to emphasize both the sound levels and number of those events.	While over the course of a day the increase in DNL may be substantial, over the course of the month these results get watered down. In the DEIS the modeled results represent a year. To better understand daily impacts, we request you provide the DNL for days with Growler aircraft operations and days without Growler Aircraft Operations. It would also be useful to provide the current number of days per year that Growler Operations take place at each field and the projected number of days operations will take place under each action alternative. This is of special interest to the Reserve so they can determine how many additional days in the year FCLP will be taking place at OLF Coupeville.	
A-164	Recalling that Leq is dominated by louder noise events, the USEPA Leq(24) goal of 45 dB generally ensures that sentence intelligibility will be high most of the time.	Yet 65 is used in the report, please explain why.	
A-178	Possibility of damage depends on the peak sound pressures and the resonances of the building. While certain frequencies (such as 30 Hertz for window breakage) may be of more concern than other frequencies	These frequencies are present in the data set. What are the resonant frequencies of the buildings? Please include them in the Section 106 process.	

A-182	Other primary effects, such as ear drum rupture or temporary and permanent hearing threshold shifts, are not as likely given the subsonic noise levels produced by aircraft overflights.	Please provide references for this statement. While these aircraft are subsonic, they still produce sounds loud enough that they have the potential to harm hearing. The reference to Dufour 1980 states "Studies of terrestrial mammals have shown that noise levels of 120 dB can damage mammals' ears, and levels at 95 dB can cause temporary loss of hearing acuity." Noise levels above 95 dB are commonly reached by Growlers operating in the study area.	
A-183	Manci et al. (1988) reported that the literature indicated that avian species may be more sensitive to aircraft noise than mammals.	This is a very important point. Please expand on how aircraft noise impacts migrating birds that use the study area and that are protected under the MBT.	
A-188	However, the long-term significance of noise-related impacts is less clear. Several studies on nesting raptors have indicated that birds become habituated to aircraft overflights and that long-term reproductive success is not affected (Ellis et al. 1991; Grubb and King 1991). Threshold noise levels for significant responses range from 62 dB for Pacific black brant to 85 dB for crested tern (Brown 1990; Ward and Stehn 1990).	See: McClure, Christopher JW, et al. "An experimental investigation into the effects of traffic noise on distributions of birds: avoiding the phantom road." Proceedings of the Royal Society of London B: Biological Sciences 280.1773 (2013): 20132290. This paper shows that noise can impact migrating birds and even increase mortality.	McClure, Christopher JW, et al. "An experimental investigation into the effects of traffic noise on distributions of birds: avoiding the phantom road." Proceedings of the Royal Society of London B: Biological Sciences 280.1773 (2013): 20132290.
A-193	Manci et al. (1988) found that most raptors did not show a negative response to overflights. When negative responses were observed they were predominantly associated with rotor-winged aircraft or jet aircraft that were repeatedly passing within 0.5 mile of a nest.	Please provide information on nearest raptor nests in FEIS.	
A-314	Figure E-16	Figure E-16, Point B, why would 200 ft. MSL be the estimated height of Point B if the aircraft is touching down at this point? Shouldn't the estimated height be closer to ground level? This should be under 100 feet (at least).	
A-341	Model input…	What are the specific inputs in the model. Please provide a discussion of how actual speed, altitude, slant range or other parameters affecting noise deviate from the modeled input.	

A-341	Modeled data…	The NPS collected on-the-ground monitoring data at sites very close to PO4 and P05 which does not compare well with the modeled data for Lmax. During this period of data collection, the day with the most FCLP had data recorded using an ANSI Type 1 Sound Level Meter. The MaxSPL at site P04 was 113 dB (6/29/15). The model suggests an Lmax of 106 dB. The monitoring data recorded a MaxSPL value of 85.4 dB (7/6/2015) at site P05. The model suggests a MaxSPL of 77 for this site. These results question the model's accuracy.	

United States Department of the Interior

NATIONAL PARK SERVICE
Pacific West Region
333 Bush Street, Suite 500
San Francisco, California 94104-2828

IN REPLY REFER TO
L7619 (PWR)

0 3 JAN 2014

EA-18G EIS Project Manager
(Code EV21/SS)
Naval Facilities Engineering Command Atlantic
6506 Hampton Blvd.
Norfolk, VA 23508

Re: ER-13/0596 Notice of Intent for EA-18G Growler Airfield Operations at Naval Air Station, Whidbey Island, Washington

Dear Sir or Madam:

The National Park Service appreciates the opportunity to respond to the subject Notice of Intent, and to provide information which should help to inform preparation of a Draft Environmental Impact Statement (Draft EIS) for EA-18G Growler Airfield Operations at Naval Air Station (NAS), Whidbey Island, Washington. The NAS is adjacent to Ebey's Landing National Historic Reserve, and is located 16 miles from San Juan Island National Historic Park, 25 miles from Olympic National Park, 95 miles from Mt. Rainier National Park, and 65 miles from North Cascades National Park Service Complex. The National Park Service (NPS) is concerned about the potential of the proposed actions to have unacceptable impacts on soundscapes and visitor experiences at each of these units of the National Park System.

Background

The Department of the Navy (DoN) is preparing an EIS to evaluate the effects of expanding the fleet of electronic attack aircraft at Whidbey NAS (Notice of Intent, Federal Register, September 5, 2013). The purpose of the DoN proposed action is: "*to sustain electronic attack aircraft capabilities at NAS Whidbey Island. This is needed to maintain electronic attack operational readiness to support national defense requirements*." The DoN proposes to:

- Continue and increase the existing VAQ airfield operations at NAS Whidbey Island complex, which includes Ault Field and OLF Coupeville;
- Add two new Expeditionary VAQ squadrons (10 additional aircraft) and augment the VAQ FRS (3 additional aircraft) to support an expanded expeditionary Department of Defense (DoD) mission (total increase of 13 aircraft);
- Construct and renovate facilities at Ault Field over a three-year period to accommodate additional aircraft; and
- Station up to 860 additional personnel at and relocate approximately 2,150 family members to NAS Whidbey Island and surrounding community.

The scope of the EIS is expected to include analysis of (a) aircraft operations at Ault Field and OLF Coupeville; (b) facility construction; and (c) personnel changes. Proposed impact topics include, but should not be limited to: Air quality, noise, land use, socioeconomics, natural resources, biological resources, cultural resources, and safety and environmental hazards. The analysis will evaluate direct and

The scope of the EIS is expected to include analysis of (a) aircraft operations at Ault Field and OLF Coupeville; (b) facility construction; and (c) personnel changes. Proposed impact topics include, but should not be limited to: Air quality, noise, land use, socioeconomics, natural resources, biological resources, cultural resources, and safety and environmental hazards. The analysis will evaluate direct and indirect impacts, and will account for cumulative impacts from other relevant activities near the installation. Relevant and reasonable measures that could avoid or mitigate environmental effects will also be analyzed.

Whidbey NAS Environmental Policy has four broad goals referred to by the acronym "CARE": (http://www.cnic.navy.mil/regions/cnrnw/om/environmental_support.html)

- Continual Improvement
- Awareness
- Resource Conservation
- Environmental Compliance

More specific policy is not readily found online via DoN websites, but is available via other sources (http://www.globalsecurity.org/military/facility/pacnorwest.htm). This source indicates "*It is Whidbey NAS policy to conduct required training and operational flights with a minimum impact on surrounding communities. All aircrew are responsible for the safe conduct of their mission while complying with published course rules, noise abatement procedures, and good common sense. Each aircrew must be familiar with the noise profiles of their aircraft and must be committed to minimizing noise impacts without compromising operational and safety requirements.*"

Protection of National Park Soundscapes

Natural and cultural sounds are integral components of the suite of resources and values that NPS managers are charged with preserving and restoring. NPS evaluates federal actions which may impact the human and natural environment within our Parks with respect to our Organic Act mandates, including "*to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations.*"

The "*scenery*," includes natural soundscapes (NPS Management Policies 2006). NPS Director's Order #47 delegates to parks the responsibility to preserve natural soundscapes and eliminate or mitigate inappropriate noise sources. A soundscape refers to the total acoustic environment of an area. The soundscape of a national park, like air, water or wildlife, is a valuable resource that can easily be degraded or destroyed by inappropriate sound levels and frequencies. Intrusive sounds are of concern to the management of national parks because they can impede the ability to accomplish the NPS mission of resource protection. Visitors at many NPS units come with expectations of seeing, hearing, and experiencing phenomena associated with a specific natural or cultural environment, yet in many cases these environments are being increasingly impacted by artificial sounds due to noise associated with aircraft overflights.

The NPS offers the following suggestions for soundscape analysis necessary to inform preparation of the Draft EIS:

1. **Describe existing aviation traffic and changes in aviation traffic that would occur as part of the increase in airfield operations**. Information of interest to NPS includes the location of flight routes with respect to NPS units, the number of operations, the timing of operations (daily and seasonally), elevations, and type of aircraft.

2. **Describe and analyze any connected actions or indirect effects** that might occur as a result of the proposed action and the resultant impacts to NPS units. Examples of connected actions or indirect

effects might include increases in aviation traffic at other airports in the vicinity/region, within Special Use Airspace, Military Operations Areas, or on Military Training Routes throughout the western United States.

3. **Foreseeable impacts to the acoustic environment at NPS units**. The NPS does understand that in this phase of the EIS process DoN would not include information in the Notice of Intent regarding how the environmental impact analysis would be conducted. However, its noted that typically the DoN uses the day-night average sound level (DNL) metric in environmental impact assessments. DNL is an energy-based noise averaging metric widely used by the Federal Aviation Administration (FAA) and the Department of Defense as the primary means for determining noise impacts from aviation activities. Since DNL is an averaging metric and assumptions regarding impacts from DNL levels are based on community response data, the DNL metric alone is not adequate to capture other characteristics of noise exposure and the impacts to park resources, values, and visitor experience.

   NPS requests the use of "*time audible*" and "*time above*" metrics to take into account the duration of aircraft noise events, the number of aircraft noise events, and the absolute sound level of events. These metrics correlate better with flight operations than day-night average metrics, which obscure the dynamic range of acoustic events. Other metrics include maximum A-weighted sound levels (L_{max}), sound exposure level (SEL), equivalent sound level (L_{eq}), and number-of-events-above a specified sound level (NA) as described in the Department of Defense Noise Working Group publication *Improving Aviation Noise Planning, Analysis and Public Communication with Supplemental Metrics*[1]. Other analytical tools include the incorporation of DNL maps with color shading and flight track maps. These metrics and analyses would also better satisfy the requirements under the National Environmental Policy Act to characterize impacts to the environment in terms of intensity, context and duration (40 CFR 1508.27).

   The NPS Natural Sounds and Night Skies Division (NSNSD) conducted acoustic monitoring at Olympic NP in the winter of 2010 to characterize existing sound levels and estimate natural ambient sound levels in these areas, as well as identify audible sound sources (report and associated data are available upon request). While NPS has not yet completed acoustic monitoring at Ebey's Landing NHR San Juan Island NHP, Mount Rainier NP, or North Cascades National Park, NSNSD has developed a geospatial sound model to estimate existing ambient and existing natural sound levels[2]. Model results for Ebey's Landing NHR, San Juan Island NHP, and Olympic NP are shown in the following table; these metrics may be of use in your analysis. Additional examples of geospatial sound model graphical output can be provided on request.

Modeled Existing Sound Level (dBA)						
Park	**Minimum**	**1st Quartile**	**Median**	**Mean**	**3rd Quartile**	**Maximum**
EBLA	35.2	38.1	39.5	39.3	40.8	43.9
OLYM	28.8	33.2	34.1	34.1	34.5	44.6
SAJH	34.3	35.6	37.4	37.0	38.2	40.2

4. **Analyze the impacts of each alternative on wildlife**, including any federally listed species that reside in NPS units, and discuss the impacts in the context of relevant laws such as the Marine Mammal Protection Act, the Migratory Bird Treaty Act, and the Endangered Species Act. Relevant

[1] http://www.denix.osd.mil/dnwg/upload/DNWG_Supplemental-Metrics-Report_December-2009.pdf
[2] D. J. Mennitt, K. Fristrup, K. Sherrill, and L. Nelson, "Mapping sound pressure levels on continental scales using a geospatial sound model," Proceedings of INTER-NOISE 2013, Innsbruck, Austria (2013).

peer reviewed, published literature and data available on this subject (for all vertebrate taxa) should be consulted and referenced in the Draft EIS.

5. **Identify consider an alternative that minimizes noise impacts** at NPS units through aircraft technology/design or modifications to flight routes, timing, or number of operations.

Ebey's Landing National Historical Reserve (NHR)

The NPS has long been cognizant of the Navy's operations at Whidbey Naval Air Station, Whidbey Island, Washington, and has strives for opportunities to collaborate on management of aircraft operations in a manner sensitive to effects on visitor experience at Ebey's Landing NHR. The 2006 General Management Plan acknowledged US Navy aircraft operations would continue in the future; the Existing Conditions section stated: "*Related US Navy Plans - The US Navy plans to continue to use the Outlying Landing Field in Coupeville to practice simulated aircraft carrier landings as long as the EA-6B is stationed at the Naval Air Station (NAS) Whidbey Island, and may continue its use beyond that if the Navy decides to base the EA-18G at NAS Whidbey Island.*" (GMP, page 91).

NAS Whidbey Island is a FAA Class C airport comparable in size to Paine Field in Everett. The airspace management has been delegated to the US Navy from the FAA. This Class C airspace area includes parts of Ebey's Landing NHR. A component of the NAS-Whidbey Island is an FAA designated Special Use Airspace --Alert Area – for military pilot training immediately adjacent to the Reserve's eastern boundary. This designated training area, the Outlying Landing Field (OLF), is located a few short miles southeast of the town of Coupeville and allows for aircraft fighter jets to practice simulated aircraft carrier landings. When the fighter jets are in their practice mode and doing the touchdown landings south to north, they circle over Crockett Prairie with the landing gear down flying low and slow approximately 200 to 300 feet above ground level. When the jet passes over park visitor locations in Crockett Prairie, the decibel level is extraordinarily high--much higher than, say, a chain saw in your grasp. The duration of the extremely high decibel level is short in duration, lasting a few seconds.

When pilots are practicing, one to five aircraft may be flying at once (anecdotally visitors experience is that it is usually three at a time). Within several seconds of one aircraft passing by, another aircraft flies over. This routine lasts for usually about 20 minutes, but sometimes much longer. To add perspective, when the obsolete and soon-to-be-grounded and discontinued EA-6B is flying overhead, a person literally cannot hear is being said by a person next to her or him. One is tempted to cover one's ears because the decibel level is so high. Yet when an EA-18G flies over, it is even louder – its thunderous even with ears covered, and can be felt in one's chest. Birds can be seen flying frenetically during and after the fly over.

Applicable FAA or US Navy management plan for this training area should be identified and analyzed in the Draft EIS, so as to disclose the parameters of acceptable decibel levels for use of this area, and what flying elevations above ground level was the acceptable minimum.

As can be determined from the NPS Hearing Conservation Program training developed with OSHA, potential impacts derive from more than decibel levels. Our concerns also stem from the duration of exposure as well. At Keystone Spit in the Fort Casey State Park and Island County's Driftwood Park, located within the Reserve, there is considerable visitor use, especially with August and September fishermen. Parking lots are over flowing. Crocket Lake, adjacent to Keystone, is one of the 10 most desirable bird watching areas of Washington State. Twenty years ago, the NPS installed multiple wayside interpretive exhibits on Keystone Spit, and more are planned as part of the Integrated Trail System. New trails are currently being planned in Crockett Prairie and adjacent to Keystone Spit. The Draft EIS should identify and analyze the prospect of more visitors being exposed to extremely high decibel levels, and with more aircraft and thus increased duration. Also, are the decibel levels and decibel duration for the training fighter jet flights over EBLA safe for NPS visitors and Reserve residents? Is it desirable to

differentiate between youth and adults, as children's hearing is more susceptible to damage? And what are the cumulative minimums per hour, per day, etc?

Ebey's Landing NHR is the nation's first national historical reserve. It is a non-traditional unit of the National Park System cooperatively managed by a trust board representing local, state, and federal interests. The Reserve provides the nation a vivid and continuous record of Pacific Northwest history. The national significance of this historical landscape is that it appears much as it did more than a century ago. Historic homes, pastoral farmsteads, and commercial buildings are still within their original farm, forest, and marine settings. Within the fast growing Puget Sound region the Reserve has quickly become the only remaining area where a broad spectrum of Northwest history is still clearly visible within a large-scale landscape. Within the Reserve the visitor can experience a variety of diverse physical and visual landscapes within a small geographical area. To protect and provide this experience to Reserve visitors is the core value of Ebey's Landing National Historical Reserve. Consequently, we urge that the Draft EIS address the degree to which aircraft circling through the prairie (and ancillary operations) may diminish cultural landscape values and public enjoyment of the historic viewshed.

Lastly, the established practice of installing "ecology blocks" on the airfield perimeter detracts from the integrity of the cultural landscape and historic viewshed. Should this be proposed for implementation of the subject proposal, consultation with the State Historic Preservation Office should be undertaken in order to develop mitigations to ameliorate the potential adverse effects.

Mount Rainier National Park (Mount Rainier)

Visitors to Mount Rainier, at both developed facilities as well in Wilderness and backcountry, do comment about disturbances from overflights; accordingly park staff regularly documents this information. Three years of data collected by climbing rangers indicates that roughly one third to one half of overflights observed by rangers during the summer months (2011-2013) were military flights (either Chinook or Blackhawk-type helicopters or fighter jets), and approximately one-third to two-thirds of the observed non-park flights were fighter jets (this and additional information is available on request). The preparation of the Draft EIS affords an opportunity for the NPS to collaborate with Whidbey NAS in identifying the degree to which EA-18G Growlers may fly over or near Mount Rainier. The NPS is concerned about current flights of any kind, and is sensitive to any potential additional flights that may impact park resources and diminish visitor experience. It seems feasible for the Draft EIS to disclose current known flight activities from Whidbey NAS over Mount Rainier (and other National Parks), and to address the anticipated increases due to the addition of two new squadrons (and three aircraft added to an existing squadron).

North Cascades National Park Service Complex (North Cascades)

Similarly as at Mount Rainier, records maintained by North Cascades ranger staff demonstrate that military aircraft do operate within park airspace. Expansion of E-18 Growler aircraft at Whidbey NAS may cause an increased number of military overflights through the park and wilderness, because North Cascades lies within a large portion of the Darrington Military Operating Area (MOA), and to a lesser extent the Okanogan MOA. These MOAs are immediately proximate to Whidbey NAS and frequently used for training.

Information obtained online (http://www.globalsecurity.org/military/facility/pacnorwest.htm) indicates NAS Whidbey Island manages several inland Military Operating Areas (MOA), including the Darrington MOA (used for Functional Flight checks) and the Okanogan MOA, used for various training purposes including combat maneuvers. Both MOA's overlay portions of the North Cascades NPS Complex, including the Stephen Mather Wilderness. Military Operating Areas (MOA's) contain airspace intended to separate certain nonhazardous military activities from Instrument Flight Rule (IFR) Traffic, and to make it known to Visual Flight Rule (VFR) traffic where these activities are conducted so precautions can be taken to avoid tragedy. MOA's are designed for routine training or testing maneuvers. MOA's are

often positioned over isolated, rural areas to provide ground separation for any noise nuisance or potential accident debris. Military pilots on occasion under-fly the prescribed MOA at lower altitudes without warning. (http://en.wikipedia.org/wiki/Military_Operations_Area).

Previous consultations between North Cascades staff, Seattle Air Traffic Control and the military indicate Stehekin lies along a military Instrument Rules (IR) flight path (IR 348), and that military aircraft are authorized to fly as low as 500' above ground; however, military aircraft need to be 1500 feet agl within 3 miles of the Stehekin Airstrip. NPS records indicate that on multiple occasions these restrictions have not been followed (information available on request). This history suggests public safety risks could be avoided through adherence to established rules, policies and common sense.

Other issues and concerns we believe should be addressed in preparing the Draft EIS include adverse effects to soundscapes, wilderness character and wildlife including federally listed species. In addition, increased low level flights may threaten public and employee safety.

Increased aircraft operations at Whidbey NAS have the potential to cause long-term, adverse impacts to North Cascades and the Stephen Mather Wilderness. Based on our experience with military overflights in the park and wilderness, the Navy should address the following issues in the Draft EIS:

- Military aircraft, most commonly smaller jets (but also larger jets and occasionally helicopters), frequently fly over the park and wilderness areas during all seasons, typically during daylight hours. Unfortunately some of these under-fly their authorized altitudes without warning. Many of these flights are low-level flights with aircraft maneuvers suggestive of sightseeing; preventative measures would limit the disruptive effects on the peace and solitude that park visitors typically seek during their visits. The subject EIS process affords the opportunity to determine the degree to which any of these flights originate at Whidbey NAS.

- The Stephen Mather Wilderness overlays some 94% of the North Cascades National Park Complex. Solitude and natural quiet are critical elements of the wilderness experience in the park Complex, and as such park managers are required to manage for those wilderness values, as directed by the 1964 Wilderness Act. The low-level military overflights cause a significant negative impact to these wilderness values due to the extreme noise and shock they cause when they pass through designated wilderness.

- Lake Chelan NRA (LACH) experiences the greatest number of documented military overflight incidents in the North Cascades NPS Complex. LACH includes the small, private hamlet community of Stehekin, and an unimproved airport open seasonally for recreational purposes and emergencies. Low level flights in this area have the potential to create hazardous conditions for NPS aircraft operations, commercial and personal aircraft visiting the park for recreational purposes and/or to serve the Stehekin community. Some flights over Lake Chelan have been so low they left a wake on the lake. In addition to scaring park visitors and community residents, the flights have also disturbed wildlife, including nesting birds such as ospreys. The park provides habitat for several federally listed species, including spotted owls. Low level flights may potentially adversely affect listed species, most especially spotted owls during nesting season.

The Department of Homeland Security, US Customs and Border Patrol (CBP) recently stepped up border patrol activities along the U.S. Canada border, including within North Cascades NP (http://nemo.cbp.gov/oa/Ch2_Proposed_Action_and_Alternatives.pdf). CBP will be installing tactical infrastructure, increasing aerial and land-based surveillance and patrols, among other activities. Recent news reports also indicate that the U.S. is undergoing a policy shift to place greater military emphasis on Asia (http://www.csmonitor.com/USA/Foreign-Policy/2013/0218/How-US-military-plans-to-carry-out-Obama-s-pivot-to-Asia); these reports indicate a greater role for the U.S. Navy. Increased activities by

CPB, coupled with reasonably foreseeable increased military overflight activity as U.S. forces pivot toward Asia, create the potential for cumulatively significant adverse impacts to the wilderness character of North Cascades NP. These cumulative impacts should be addressed in the Draft EIS.

Olympic National Park

Olympic NP includes of 876,447 acres of Congressionally designated wilderness (95% of the park's total acreage). Currently, there are three Military Operational Areas (MOA) that allow military aircraft to fly down to 1200' above ground level (AGL) within the park. There is concern that with additional aircraft, there will be an increase in the number training flights within the MOAs. Olympic National Park has a soundscape monitoring program and it does include military overflight recordings. Maintaining or enhancing the natural soundscape is significant in providing for the enjoyment of visitors, and is vital to the natural functioning of ecosystems. Additional flights would increase the potential for impacts to threatened and endangered species as well as to visitor experience. Park management would appreciate the opportunity to provide input on flight patterns for routine training flights, and collaboration between the Park and DoN in preparing the Draft EIS would afford the opportunity to document the proportion of park overflights which emanate from Whidbey NAS operations.

Conclusion

The National Park Service is very appreciative of the early opportunity to provide information pertinent to the preparation of the Draft EIS for the proposed EA-18G Growler Airfield Operations. The NPS seeks mutually beneficial solutions related to potential impacts associated with the proposal. Consequently we look forward to working with the Navy during the development of the Draft EIS to develop alternatives, and mitigation strategies, that both ensure realistic training and operations and safeguards natural and cultural resource values, healthy ecosystems, and public enjoyment of these superlative parks. In that vein, the NPS is willing to explore cooperating agency support options if that would be expedient for Project development.

For clarification regarding any of our concerns regarding effects of overflights on our parks, or if we can be of any further assistance in providing maps, acoustical data, accumulated overflight records, or other information, please communicate directly with any of the NPS contacts listed below.

Sincerely,

Christine S. Lehnertz
Regional Director, Pacific West Region

Cc:
NPS - Craig Holmquist, Superintendent, Ebey's Landing National Historic Reserve (360) 678-5787
NPS - Randy King, Superintendent, Mt. Rainier National Park (360)569-6503
NPS - Karen Taylor-Goodrich, Superintendent, North Cascades National Park Service Complex (360) 854-7310
NPS - Lee Taylor, Superintendent, San Juan Island National Historic Park (360) 378-2240
NPS - Sarah Creachbaum, Superintendent, Olympic National Park (360) 565-3003
NPS - Brent Lignell, Natural Sounds and Night Skies Division (970) 225-3580
OEPC - Alison O'Brien, REC, Portland
WASO ERTS

United States Department of the Interior

NATIONAL PARK SERVICE
Ebey's Landing National Historical Reserve
Reuble Farmstead
593 Fort Casey Road
Coupeville, Washington 98239

IN REPLY REFER TO:

January 3, 2017

Department of the Navy
Whidbey Naval Air Station
Attention: Kendall Campbell, Cultural Resources
3730 North Charles Porter Avenue
Oak Harbor, WA 98278-5000

RE: Area of Potential Affect for proposed increase of EA-18G Growler aircraft operations

Dear Ms Campbell: Kendall

As you know we are concerned about the proposed expansion of Growler operations at Outlying Field Coupeville (OLF) given the extreme noise from current conditions, and the understanding that circumstances would worsen significantly if Growler operations are increased as proposed. We are specifically concerned about the impacts to the nationally significant historic resources of the Reserve, especially the Reserve's cultural landscape, and we do not believe the proposal to delineate the APE using the 65dB Day-Night Average Sound Level (DNL) captures the spatial extent of historic resources that would be affected by this undertaking.

Growlers produce intense noise, across broad geographic areas, that is often louder than thunder. This extreme noise permeates the atmosphere of the Reserve well beyond the proposed 65dB DNL Area of Potential Affect (APE). For example, at the historic Ferry House near Ebey's Landing, acoustic monitoring conducted by NPS in summer 2015 documented 1,436 Growler overflight events that were audible for more than 28 hours over the one month monitoring timeframe. These events produced Sound Pressure Levels (SPL) up to 85 dB, and Sound Exposure Levels (SEL) as high as 96 dB (https://irma.nps.gov/DataStore/Reference/Profile/2233340). In spite of these findings, the Ferry House and adjacent historic resources would be excluded from the APE as presently proposed.

The Reserve's cultural landscape is a fundamental resource, as documented in the July 7, 1998 amendment to National Register Nomination for the Central Whidbey Island Historic District. As the lead federal preservation agency, the NPS has established cultural resource management policy and guidance for cultural landscapes that has been adopted by other agencies and preservation organizations. The Reserve was one of the first cultural landscapes recognized by the NPS, and the early 1980's research conducted here influenced the development of policy and professional procedures for the analysis and evaluation of the historic integrity of cultural landscapes throughout the United States (Susan Dolan, NPS Cultural Landscapes Program Manager, personal communication).

The cultural landscape within the Reserve enables visitors and residents to experience patterns of settlement, historic homes, and pastoral farmsteads that are still within their original farm, forest and marine settings. The cultural landscape includes prehistoric and historic settlement patterns and natural features that reflect human history and the unique northwest character of the area. Views and perceptual qualities, including the soundscape, contribute to the authenticity of the cultural landscape and enable one

to imagine what it was like to be here hundreds if not thousands of years ago. The Reserve is a nationally significant cultural landscape and unit of the NPS system. A more conservative metric for delineating the APE should be applied in deference to the nationally significant historical resources within the Reserve.

The Department of Defense Noise Working Group has identified supplemental metrics to the DNL, which averages noise and does not mirror the actual magnitude of individual noise events or the human experience of those events in real time. Research conducted by the U.S. Environmental Protection Agency (EPA) demonstrates that noise greater than 60 dB Sound Pressure Level (SPL) disrupts speech during normal conversation. In light of this EPA research and our monitoring results, we believe the APE should be delineated by modeling and mapping the 60 dB SPL contour line for Growler aircraft and using that polygon as the basis for the APE. This would be a much more appropriate surrogate metric for analyzing impacts to the sights, sounds, feelings and associations of place that are essential qualities of the cultural landscape and will be adversely impacted by this undertaking.

Thank you for the opportunity to comment on the proposed APE. I can be reached at 360-678-5787, or roy_zipp@nps.gov, if you have any further questions.

Sincerely,

Roy M. Zipp
Superintendent, NPS Operation

cc: Kristen Griffin, Reserve Manager, Trust Board for Ebey's Landing
Greg Griffith, Deputy State Historic Preservation Officer

1.a. Thank You
11.d. Per- and Polyfluoroalkyl Substances
2.c. Compliance with the National Environmental Policy Act
4.f. Noise Measurements/Modeling/On-Site Validation
4.r. Nonauditory Health Effects
4.s. Health Impact Assessment and Long-term Health Study Requests
6.b. National Ambient Air Quality Standards Compliance
6.c. Hazardous Air Pollutant Compliance
6.d. Air Operating Permit

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

March 8, 2017

Ms. Lisa Padgett
EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, Virginia 23508
Attn: Code EV21/SS

Dear Ms. Padgett:

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the U.S. Department of the Navy EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex (EPA Region 10 Project Number 13-0030-DOD). We are submitting comments on the DEIS in accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act. We sincerely appreciate the Navy's efforts to prepare this NEPA analysis, conduct outreach and encourage public and agency participation, and facilitate the document review with briefings and an extended review period. We honor the courage and commitment of our armed forces and respect the Navy's mission and responsibilities in support of our Nation's defense.

The DEIS discusses the Navy's proposal to expand the existing EA-18G Growler fleet operations at NASWI complex by adding 35 or 36 aircraft to augment the current electronic warfare capabilities. Pilot training exercises include field carrier landing practices at Ault Field and Outlying Landing Field Coupeville. In support of the Growler fleet expansion, the Navy would also construct and renovate facilities at Ault Field in order to accommodate additional Growler aircraft and station additional military personnel and their families at NASWI and/or in the surrounding communities. The different alternatives would vary the assignment of additional aircraft among the expeditionary, carrier, and/or Fleet Replacement squadrons. Scenarios A, B, and C can be paired with any of 3 Action Alternatives. Scenario A would conduct 80% of FCLPs at OLF Coupeville and 20% at Ault Field; Scenario B would conduct 50% at OLF Coupeville and 50% at Ault Field; and Scenario C would conduct 20% at OLF Coupeville and 80% at Ault Field. Per Alternative 1, 2, or 3 respectively, the Navy would station 371, 664, or 377 additional personnel and 509, 910, or 894 family members at NASWI and in the surrounding communities.

Based on the information provided, the EPA is rating the DEIS as EC-2 (Environmental Concerns) with insufficient information. An explanation of the EPA Rating System for the DEIS is enclosed. The EPA acknowledges the use of best management practices referenced in the DEIS for the management of noise and appreciates the Navy's efforts to inform members of the public of the upcoming FCLPs and the procedures the community can follow for noise complaints. However, the DEIS does not contain sufficient information to fully assess the environmental impacts that should be avoided to fully protect the environment and nearby communities and we recommend that additional information and discussion be included in the final EIS as described below. Our recommendations are offered to assist the Navy in

completing its environmental review and to help ensure that the overall analysis fully assesses potential environmental impacts and available mitigation measures to protect human health and the environment as required by NEPA, while also meeting the Navy's need to run FCLP drills with an expanded fleet.

The EPA recommends that the Navy establish a monitoring program to verify that actual noise impacts are similar to those projected in this EIS. As part of this monitoring program, a protocol should be established that outlines when or if adaptive management measures are required. The EPA believes this on-the-ground validation would help provide an assessment of actual noise impacts projected to be experienced by Whidbey Island and surrounding area residents and wildlife due to the proposed expansion. For example, monitoring sensitive receptor sites within each projected DNL noise contour of 65dB and greater may help characterize more fully the actual duration, frequency, and intensity of exposures to noise-related impacts within these loudest projected contour zones.

We recommend that the noise monitoring discussed above be accompanied by a supplemental health assessment[1] of the affected population to characterize baseline conditions and projected health impacts of the proposed action to inform a pathway forward. We would be happy to help convene agencies and organizations for this assessment.

In addition, according to the EIS, "these [mobile source air pollutant] emissions contribute to regional emission totals and can affect compliance with the NAAQS." The final EIS should clarify how this will or will not affect the attainment status for this region. The EPA also recommends that the final EIS include an assessment of the hazardous air pollutants and as appropriate, a discussion of the Navy's plans to mitigate for the additional emissions. It may also be helpful to include in Table 3.4-3 the permit requirement thresholds for each criteria pollutant.

The EPA appreciates the information about the ongoing investigation to remove, dispose, and replace legacy aqueous film forming foam that contains perfluorooctane sulfonate and/or perfluorooctanoic acid. As part of the final EIS, the EPA requests that the Navy identify measures being taken to prevent further contamination to the sole source aquifer from legacy or new firefighting chemicals.

We have provided a list of studies on health effects and wildlife impacts that may be useful in the analysis of impacts associated with noise.[2] The EPA recommends that these studies be considered and

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[1] EPA's Health Impacts Assessment page (https://www.epa.gov/healthresearch/health-impact-assessments) and *Minimum Elements and Practice Standards for Health Impact Assessment*, September 2014 (http://advance.captus.com/planning/hia2xx/pdf/Minimum%20Elements%20and%20Practice%20Standards%20for%20HIA%203.0.pdf) each contain helpful best practices and information about conducting such assessments.

[2] Noise Studies:

- Goines, Lisa, RN and Hagler, Louis, MD. *Noise Pollution: A Modern Plague.* Southern Medical Journal, Volume 100: March 2007, pages 287-294.
- WHO (2010), *Burden of Disease from Environmental Noise: Quantification of Healthy Life Years Lost in Europe,* The World Health Organization (www.euro.who.int); at www.euro.who.int/_data/assets/pdf_file/0008/136466/e94888.pdf.
- Ising H, Kruppa B. *Health effects caused by noise: Evidence in the literature from the past 25 years.* Noise Health, 2004; 6: 5-13.
- Stansfeld, Stephen A. and Matheson, Mark P. *Noise pollution: non-auditory effects on health.* British Medical Bulletin, 2003; 68: 243-257.
- C.D. Francis, J.R. Barber. *A Framework for Understanding Noise Impacts on Wildlife: An urgent Conservation Priority.* August 1, 2013. Boise State University Scholar Works, Department of Biological Sciences.

included in the EIS as appropriate. If the Navy becomes aware of new relevant information that can augment the existing EIS analyses, the EPA requests that the new information be included and discussed in the final EIS. Furthermore, it may also be helpful if the information related to health effects from noise is consolidated into one section in the EIS in order to provide the complete context of the issue.

The EPA appreciates the opportunity to review this DEIS. We would welcome the opportunity to meet with the Navy to discuss our comments in greater detail. If you would like to schedule such a meeting or have questions regarding our comments, please contact Elaine Somers of my staff at 206-553-2966, by email at somers.elaine@epa.gov; or you may contact me at 206-553-2581, or by email at allnutt.david@epa.gov.

Sincerely,

R. David Allnutt, Director
Office of Environmental Review and Assessment

Enclosure: Summary of EPA Rating Definitions

- Shannon, Graeme, et al. *A synthesis of two decades of research documenting the effects of noise on wildlife.* Biological Reviews 91 (2016) 982-1005.

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow-Up Action*

Environmental Impact of the Action

LO – Lack of Objections

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

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EU – Environmentally Unsatisfactory

EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

March 8, 2017

Ms. Lisa Padgett
EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, Virginia 23508
Attn: Code EV21/SS

Dear Ms. Padgett:

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the U.S. Department of the Navy EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex (EPA Region 10 Project Number 13-0030-DOD). We are submitting comments on the DEIS in accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act. We sincerely appreciate the Navy's efforts to prepare this NEPA analysis, conduct outreach and encourage public and agency participation, and facilitate the document review with briefings and an extended review period. We honor the courage and commitment of our armed forces and respect the Navy's mission and responsibilities in support of our Nation's defense.

The DEIS discusses the Navy's proposal to expand the existing EA-18G Growler fleet operations at NASWI complex by adding 35 or 36 aircraft to augment the current electronic warfare capabilities. Pilot training exercises include field carrier landing practices at Ault Field and Outlying Landing Field Coupeville. In support of the Growler fleet expansion, the Navy would also construct and renovate facilities at Ault Field in order to accommodate additional Growler aircraft and station additional military personnel and their families at NASWI and/or in the surrounding communities. The different alternatives would vary the assignment of additional aircraft among the expeditionary, carrier, and/or Fleet Replacement squadrons. Scenarios A, B, and C can be paired with any of 3 Action Alternatives. Scenario A would conduct 80% of FCLPs at OLF Coupeville and 20% at Ault Field; Scenario B would conduct 50% at OLF Coupeville and 50% at Ault Field; and Scenario C would conduct 20% at OLF Coupeville and 80% at Ault Field. Per Alternative 1, 2, or 3 respectively, the Navy would station 371, 664, or 377 additional personnel and 509, 910, or 894 family members at NASWI and in the surrounding communities.

Based on the information provided, the EPA is rating the DEIS as EC-2 (Environmental Concerns) with insufficient information. An explanation of the EPA Rating System for the DEIS is enclosed. The EPA acknowledges the use of best management practices referenced in the DEIS for the management of noise and appreciates the Navy's efforts to inform members of the public of the upcoming FCLPs and the procedures the community can follow for noise complaints. However, the DEIS does not contain sufficient information to fully assess the environmental impacts that should be avoided to fully protect the environment and nearby communities and we recommend that additional information and discussion be included in the final EIS as described below. Our recommendations are offered to assist the Navy in

1.a. Thank You
11.d. Per- and Polyfluoroalkyl Substances
2.c. Compliance with the National Environmental Policy Act
4.f. Noise Measurements/Modeling/On-Site Validation
4.r. Nonauditory Health Effects
4.s. Health Impact Assessment and Long-term Health Study Requests
6.b. National Ambient Air Quality Standards Compliance
6.c. Hazardous Air Pollutant Compliance
6.d. Air Operating Permit

completing its environmental review and to help ensure that the overall analysis fully assesses potential environmental impacts and available mitigation measures to protect human health and the environment as required by NEPA, while also meeting the Navy's need to run FCLP drills with an expanded fleet.

The EPA recommends that the Navy establish a monitoring program to verify that actual noise impacts are similar to those projected in this EIS. As part of this monitoring program, a protocol should be established that outlines when or if adaptive management measures are required. The EPA believes this on-the-ground validation would help provide an assessment of actual noise impacts projected to be experienced by Whidbey Island and surrounding area residents and wildlife due to the proposed expansion. For example, monitoring sensitive receptor sites within each projected DNL noise contour of 65dB and greater may help characterize more fully the actual duration, frequency, and intensity of exposures to noise-related impacts within these loudest projected contour zones.

We recommend that the noise monitoring discussed above be accompanied by a supplemental health assessment[1] of the affected population to characterize baseline conditions and projected health impacts of the proposed action to inform a pathway forward. We would be happy to help convene agencies and organizations for this assessment.

In addition, according to the EIS, "these [mobile source air pollutant] emissions contribute to regional emission totals and can affect compliance with the NAAQS." The final EIS should clarify how this will or will not affect the attainment status for this region. The EPA also recommends that the final EIS include an assessment of the hazardous air pollutants and as appropriate, a discussion of the Navy's plans to mitigate for the additional emissions. It may also be helpful to include in Table 3.4-3 the permit requirement thresholds for each criteria pollutant.

The EPA appreciates the information about the ongoing investigation to remove, dispose, and replace legacy aqueous film forming foam that contains perfluorooctane sulfonate and/or perfluorooctanoic acid. As part of the final EIS, the EPA requests that the Navy identify measures being taken to prevent further contamination to the sole source aquifer from legacy or new firefighting chemicals.

We have provided a list of studies on health effects and wildlife impacts that may be useful in the analysis of impacts associated with noise.[2] The EPA recommends that these studies be considered and

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[1] EPA's Health Impacts Assessment page (https://www.epa.gov/healthresearch/health-impact-assessments) and *Minimum Elements and Practice Standards for Health Impact Assessment*, September 2014 (http://advance.captus.com/planning/hia2xx/pdf/Minimum%20Elements%20and%20Practice%20Standards%20for%20HIA%203.0.pdf) each contain helpful best practices and information about conducting such assessments.

[2] Noise Studies:

- Goines, Lisa, RN and Hagler, Louis, MD. *Noise Pollution: A Modern Plague.* Southern Medical Journal, Volume 100: March 2007, pages 287-294.
- WHO (2010), *Burden of Disease from Environmental Noise: Quantification of Healthy Life Years Lost in Europe,* The World Health Organization (www.euro.who.int); at www.euro.who.int/_data/assets/pdf_file/0008/136466/e94888.pdf.
- Ising H, Kruppa B. *Health effects caused by noise: Evidence in the literature from the past 25 years.* Noise Health, 2004; 6: 5-13.
- Stansfeld, Stephen A. and Matheson, Mark P. *Noise pollution: non-auditory effects on health.* British Medical Bulletin, 2003; 68: 243-257.
- C.D. Francis, J.R. Barber. *A Framework for Understanding Noise Impacts on Wildlife: An urgent Conservation Priority.* August 1, 2013. Boise State University Scholar Works, Department of Biological Sciences.

included in the EIS as appropriate. If the Navy becomes aware of new relevant information that can augment the existing EIS analyses, the EPA requests that the new information be included and discussed in the final EIS. Furthermore, it may also be helpful if the information related to health effects from noise is consolidated into one section in the EIS in order to provide the complete context of the issue.

The EPA appreciates the opportunity to review this DEIS. We would welcome the opportunity to meet with the Navy to discuss our comments in greater detail. If you would like to schedule such a meeting or have questions regarding our comments, please contact Elaine Somers of my staff at 206-553-2966, by email at somers.elaine@epa.gov; or you may contact me at 206-553-2581, or by email at allnutt.david@epa.gov.

Sincerely,

R. David Allnutt, Director
Office of Environmental Review and Assessment

Enclosure: Summary of EPA Rating Definitions

- Shannon, Graeme, et al. *A synthesis of two decades of research documenting the effects of noise on wildlife.* Biological Reviews 91 (2016) 982-1005.

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow-Up Action*

Environmental Impact of the Action

LO – Lack of Objections

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

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1.a. Thank You
2.e. Public Involvement Process
2.f. Use of Public Comments

Congress of the United States
Washington, DC 20515

January 3, 2017

The Honorable Dennis V. McGinn
Assistant Secretary of the Navy
Energy, Installations and Environment
1000 Navy Pentagon
Washington, DC 20350

Dear Assistant Secretary McGinn:

We urge you to extend the ongoing public comment period for the *Draft EIS of EA-18G "Growler" Airfield Operations at Naval Air Station (NAS) Whidbey Island Complex*. Given the range of scenarios under consideration, the variety of impacts analyzed, and the resulting length of the Draft EIS, we believe an extension would give the public a greater opportunity to share comments with the Navy.

NAS Whidbey Island is the home of the Navy's electronic attack squadrons and is one of the Navy's premier installations, as recognized by its receipt of the 2016 Commander in Chief's Award for Installation Excellence. We are steadfast supporters of the base, the sailors there, and the critical missions they perform to keep our nation secure.

Congress, recognizing the importance of electronic warfare, has appropriated funding in recent years for additional Growler aircraft beyond those requested in the budget. The Draft EIS reflects three different force structures for incorporating these aircraft into the fleet and demonstrates the Navy's commitment to NAS Whidbey Island.

On November 10, 2016, the Navy published the Draft EIS in the Federal Register, triggering the start of a public comment period which is scheduled to conclude on January 25, 2017. We are greatly appreciative that this period was set at 75 days, a month longer that the legal minimum duration of 45 days.

Our constituents are reading the text of the Draft EIS and appendices, which total over 1500 pages. Many have told us that an extension would allow them to be more thorough in their review and comment with a better understanding of the scenarios and projected impacts on their communities. In addition, some public entities with scheduled meeting dates may be unable to comment given the current timeline. We therefore request a 30 day extension of the public comment period, to Friday, February 24, 2017.

Thank you for your consideration of this request.

Sincerely,

Rick Larsen
Member of Congress

Patty Murray
United States Senator

Maria Cantwell
United States Senator

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

January 25, 2017

Gary A. Mayes
Rear Admiral
U.S. Navy
Commander, Navy Region Northwest
1100 Hunley Road
Silverdale, Washington 98315-1100

In future correspondence please refer to:
Project Tracking Code: 102214-23-USN
Re: Draft Environmental Impact Statement for Proposed Increase of EA-18G Growler Aircraft and Aircraft Operations and Development of Support Facilities, NASWI

Dear Rear Admiral Mayes:

Thank you for contacting the Washington State Historic Preservation Officer (SHPO) with notification of the availability of the Draft Environmental Impact Statement (DEIS) for the above referenced action proposed for Naval Air Station Whidbey Island (NASWI). The DEIS analyzes the potential environmental effects that may result from the addition of up to 36 Growler aircraft at NASWI. As a result of our review, we provide the following comments and recommendations for your consideration:

1) Based upon our review of the DEIS, we reach the opinion that cultural and historic resources within the area of potential effect (APE) will be adversely affected by implementation of the action as proposed. In reaching this opinion, we note the Criteria of Adverse Effect from 36 CFR 800.5 and cited in Table 4.6-1 is:

> *…found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register [of Historic Places]in a manner that would diminish the integrity of the property's location, setting, design, materials, workmanship, feeling, or association, Consideration shall be given to all qualifying characteristics of a historic property , including those that may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or cumulative.*

In addition, examples of adverse effect that are relevant to this proposal from 36 CFR 800.5 and Table 4.6-1 include, but not limited to:

- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features

1.a. Thank You
8.a. Cultural Resources Area of Potential Effect
8.b. Section 106 Process
8.c. Noise and Vibration Impacts to Cultural Resources
8.e. Outlying Landing Field Coupeville and Coupeville History
8.f. Cultural Landscape and Impacts to Ebey's Landing National Historical Reserve

2) We reiterate our concerns that the project APE defined as "...the area encompassed by the 65 dBA DNL noise contour that would exist in 2021 as represented by the No Action Alternative" (and drawn on Figure 3.6.1) is too restrictive and does not include portions of the region that will face comparable effects from "visual, atmospheric, or audible elements" as those areas within the 65 dBA lines as drawn in Figure 3.6-1. We note that the DEIS states that "…APE boundaries will be updated as consultation continues between the SHPO, consulting parties, American Indian tribes and nations, and other interested parties." Therefore, we recommend including in an expanded APE additional portions of Whidbey Island, Camano Island, Port Townsend vicinity, and San Juan Islands.
3) In addition, we are not convinced that the 65 dBA serves as the best or most appropriate measure for quantifying and assessing harmful levels of sound and vibrations from Growler activities. Our concern is based upon what appears to be an averaging of sound levels over long time periods that does not adequately capture the real time experience of brief but more numerous exposures to higher decibel levels, as well as the cumulative effect of these events.
4) Further, we note that the U.S. Department of Housing and Urban Development has posted on HUD Exchange (https://www.hudexchange.info/programs/environmental-review/noise-abatement-and-control/) standards that classify 65 dB as "normally unacceptable" and above 75 as being "unacceptable." Given discussion on page 4-194 of the Kester and Czech 2012 study at NSAWI finding takeoff sounds levels greater than 110 dBC, fosters additional concern of noise levels of historic properties receiving exposure to 75 dB and the need for further, perhaps ongoing, site specific sound testing, data gathering, analysis and a commensurate level of mitigation measures.
5) In a related comment, discussion in Chapter 4 on operational impacts of vibration on historic properties states "No significant physical damage as a result of aircraft operations has been reported to these structures as a result of continuous operation of aircraft for over 70 years" (p. 4-195) and "…sound levels damaging to structural components of buildings are not likely to occur." (p. 4-50) Again, our concerns are not allayed by these statement about the cumulative impacts of vibration and sound waves on the structural integrity of historic buildings/structures in the APE and beyond in communities such as Coupeville and Port Townsend.
6) Furthermore and even if a consensus were reached that the sound waves and vibration associated with flight operations have only minor impact on structural integrity, there is a concern that historic building owners will take steps to remedy rattling windows and replace cracking walls and ceilings with inappropriate replacement materials and methods, if not total replacement or abandonment, of the structure.
7) Overall, our larger concern about this proposal is the long-term and cumulative effects of increased flight operations on the character and qualities of historic places and communities that will experience increased levels and frequencies of noise. We do not see firm evidence in the DEIS that the characteristics and qualities that have drawn generations to the region to live, work, and recreate will not be significantly diminished, if not eventually lost, as a result of increased flight operations.

In summary, our review of the DEIS leads us to the opinion that the project implementation will adversely affect historic properties in the APE. We look forward to further consultation with the SHPO, Tribes, and other affected parties to avoid, minimize, or mitigate the adverse effect.

Thank you for the opportunity to review and comment. If you have any questions, please feel free to contact me.

Sincerely,

Allyson Brooks
State Historic Preservation Officer
Allyson.Brooks@dahp.wa.gov
360-586-3066

C: Jim Baumgart, Governor's Office
Kristin Griffin, Trust Board of Ebey's Landing NHR
Deborah S. Stinson, Mayor, City of Port Townsend

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

January 25, 2017

Gary A. Mayes
Rear Admiral
U.S. Navy
Commander, Navy Region Northwest
1100 Hunley Road
Silverdale, Washington 98315-1100

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02_WADAH-02

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C: Jim Baumgart, Governor's Office
Kendall Campbell, NASWI Cultural Resources Program
Kristin Griffin, Trust Board of Ebey's Landing NHR
Deborah S. Stinson, Mayor, City of Port Townsend

Paul Marczin Ruth Milner and Doug Thompson, Biologists
Washington Department of Fish and Wildlife

Mill Creek, WA 98012

February21, 2017 Comments on Draft Environmental Impact Statement or the EA-18G “Growler” Airfield Operations at NAS Whidbey Island Complex We have reviewed the Draft Environmental Impact Statement with particular emphasis on Chapter 4, Environmental Consequences. We are dismayed by the lack of best available science used to assess impacts to fish and wildlife and strongly disagree with the unsubstantiated, repeated assertions that all wildlife will simply habituate and remain unaffected by any and all increases in growler traffic proposed in the DEIS. We believe the Affected Environment defined in Chapter 3 underestimates the area that will actually affect wildlife through increased growler activities as described in the three alternatives and their associated scenarios. The modelled aircraft levels presented in the DEIS are based on estimated flight path geometry and do not account for noise impacts outside of the prescribed flight paths. No noise data outside of the defined affected environment are presented or discussed. The noise levels used to describe the affected environment are based on human hearing and consider noise abatement mechanisms such as access to indoor spaces that do not apply to wildlife. The DEIS does not account for the different ear structures and potentially more sensitive hearing that many animal species possess (see Beason 2004; Pater et al. 2009; Federal Highway Commission; Noise Quest). Thus, the affected environment should be reconsidered and expanded to include more of the San Juan Archipelago, which supports large populations of wildlife, as well as points east and west of the affected environment analyzed in the DEIS. Our remaining comments are specifically related to the Biological Resources Section 4.8, especially Sensory Disturbances, beginning on page 4-201. In general, although we agree that scientific research focused specifically on noise impacts to fish and wildlife caused by military aircraft is limited, we disagree with the general conclusions for all alternatives relative to fish and wildlife that all species will be unaffected or will be minimally impacted. The basic tenet of the DEIS is that wildlife are habituated to current conditions and therefore will habituate to increased noise and thus remain unaffected. This assumption is repeated throughout the DEIS for most of the species or species groups covered in the analysis. We believe the DEIS relies heavily on assumptions of habituation that are not justified or supported by scientific studies. For example, page 4-201, paragraph 3 states “Terrestrial wildlife that live at or near the proposed construction site are presumed to be habituated to high levels of noise….because they continue to be present despite the history of anthropogenic noise in the area.” The DEIS offers no scientific explanation for this presumption and we believe that conclusions such as this are erroneous. See Francis and Barber 2013: "An organism might show little to no response to noise in terms of habitat occupancy or foraging rate, for example, but may experience strong negative impacts in terms of pairing success, number of offspring, physiological stress, or other measures of fitness." Fitness is defined as an organism’s ability to survive to reproductive age, find a mate and produce offspring. The more offspring produced over a lifetime the greater an individual’s biological fitness. Fitness cannot be equated to observations of individual animals seen in a specific location at a particular time as the DEIS implies and therefore, habituation in the context of the DEIS is not a sound presumption. The

1.a. Thank You
1.b. Best Available Science and Data
10.c. Wildlife Sensory Disturbance and Habituation
10.e. A-Weighted Noise Analysis and Scale of Hearing on Wildlife
10.f. Endangered Species Impact Analysis Adequacy
10.h. Species-Specific Discussions
10.i. Additional Special Status Species
10.k. Aircraft-Wildlife Strike and Hazing/Lethal Control of Wildlife
10.m. Impacts to Marine Species and Habitat
4.d. Day-Night Average Sound Level Metric
4.l. Points of Interest

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increased noise without presenting any substantiating data to support that position. Lastly, we appreciate exactness in quoting WDFW staff; notably on Page 3-115, when discussing Marbled Murrelet breeding in Island County, the DEIS attributes to WDFW District Wildlife Biologist Milner: “Small amounts of suitable habitat occur in Deception Pass State Park; however, the winds in the area largely prevent the moss-covered defective limbs that create platforms for nesting murrelets.” On 17 October 2016 in a letter to Mr. Bianchi, Milner wrote: “No surveys have been done since the 1990's to my knowledge. No nesting birds have been found on Whidbey...There are small amounts of suitable habitat in Deception Pass Park, but the general conclusion was (in the 1990's) that although there are old growth trees there, the winds prevent the moss covered defective limbs that create platforms from developing to any large extent.” Although the discrepancy between what Milner wrote and what is cited in the DEIS appears relatively minor, the DEIS omits the twice stated fact that nesting surveys and habitat evaluations have not been conducted since the 1990’s. Survey techniques, habitat evaluations and definitions have changed in the last 25 years and this should be acknowledged and stated clearly in the DEIS. Page 4-205; Shorebirds and Page 4-205; Passerines: The DEIS again relies on a presumption of habituation, with no supporting evidence, to assert minimal effects on shorebirds or songbirds as a result of increased growler activities under all alternatives and scenarios. We believe this analysis, like those for other species in the DEIS, is an over simplification that ignores the concept of human induced stress and its implications to fitness. Kight et al. (2012) document fitness impacts to Eastern Bluebirds (a passerine species) from noise; Francis et al. (2009) demonstrate that noise reduced avian nesting species richness and altered avian community structure; Francis et al. (2011) evaluate the role of noise in altering ecological processes and services. None of these impacts are discussed in the DEIS and this is a major oversight that biases the conclusions stated within the document. The DEIS states that only one reference was available to assess potential impacts of noise on shorebirds. We agree that focused studies that concentrate on military aircraft are lacking, however, Smit and Visser (1993) discuss variability in shorebird species response to aircraft and other anthropogenic disturbances, suggesting that individual shorebird species will react differently and therefore must be considered on a species by species basis. Burger (1981), concluded that shorebirds were the most sensitive species group in their study to react to disturbance. This paper is cited earlier in the DEIS under the Seabirds section, yet the finding of shorebird sensitivity is omitted in this section. In the absence of specific aircraft-shorebird studies, inferences regarding disturbance and stress on shorebirds are possible, but this analysis is absent in the DEIS. The DEIS ignores all potential behavioral or physiological costs to shorebirds from disturbance and instead states: “Shorebirds in the study area are already exposed to a high level of long-term aircraft operations and other human disturbances, and they are presumably habituated to the high levels of disturbance.” We challenge this conclusion for two reasons: 1) several studies discuss the behavioral and physiological impacts to shorebirds from flushing and disturbance. For examples, Lillleyman et al. (2016) suggest that increased disturbance may affect survival and reproductive success of migrating shorebirds; Gill (2007) points out that disturbance measures are more appropriately measured on population effects rather than observed behavior (as implied by the DEIS reliance upon unsubstantiated assumptions of habituation); Goss-Custard et al. (2002) regard individual survival in the non-breeding season and a shorebird’s ability to store fat for migration and breeding as the correct measure of disturbance impacts. Page 4-207; Mammals: The DEIS cites one

reference (Efroymson et al. 2000), and concludes that no terrestrial mammal will be significantly affected “by disturbances from aircraft operations” because “terrestrial mammals inhabiting the study area are already exposed to a high level of long-term aircraft operations…and have presumably habituated to the very high level of noise and visual disturbances, as has been reported for some mammals (i.e., ungulates) in other areas of repeated exposure.” We found one line in Efroymson et al. (2000) that supports this conclusion. It says: “Habituation of bighorn sheep and mule deer has been observed (Weisenberger et al. 1996).” This is not an adequate analysis of the effects of growler noise on ungulates or other mammals. We find it curious that this section omits some additional points made in Efroymson et al.(2000). Notably, the DEIS is silent on impact to small mammals although the reference states: “Most of the effects models for small mammals relate to sound rather than slant distance…It is not clear whether or not all small mammals should be grouped together because acoustic thresholds may be largely different…Hearing thresholds of some rodent species are likely to be impacted by low-altitude military overflights”. The authors provide several references regarding the impact of noise on small mammals, but none are discussed in the DEIS. The DEIS states that the Columbian black-tailed deer, the species found in the study area, is a sub-species of mule deer, implying that the behavior of the two sub-species will be the same. In fact, behavior is quite different between the two sub-species. Unlike mule deer, Columbian black-tail deer are associated with forest habitats, do not migrate between summer and winter ranges, and are resident, inhabiting small home ranges from which they rarely stray. From Efroymson et al. (2000): “Effects of overflights on several ungulates have been studied, with an emphasis on caribou. Most ungulates are highly exposed to overflights, engaging in feeding and other activities in the open. Because these animals can typically see the aircraft approach, slant distance is probably a better measure of exposure than sound. In contrast, ungulates such as deer in the eastern or northwestern forests may be surrounded by tree cover, aircraft may not be visible to them. For these populations, sound pressure level is an equally appropriate measure…”. The DEIS fails to analyze the effects of growler noise on black-tailed deer or any other terrestrial mammal. This section is not complete or credible. Page 4-218: Pinnipeds: Assumptions of habituation are not substantiated. Two citations (Bejder et al. 2006; Stockin et al. 2008) discuss dolphins and have nothing to do with pinniped biology or behavior. The DEIS ignores local research on pinnipeds such as Acevedo-Guilerrez and Cendejas-Zarekku (2001) who suggest harbor seals actually alter their haul out behavior in response to noise and human disturbance. The analysis in this section is inadequate. Kastak and Reichmuth Kastak (2006) assessed the effects of intense noise on three species of pinnipeds, all of which occur in the affected area for the Office of Naval Research. We are concerned that none of the information presented or citations listed in this document are considered in the DEIS. Page 4-19-4-20; Cetaceans: Assumptions of habituation are not substantiated. The DEIS assumes the zone of potential aircraft disturbance to cetaceans is limited to the nearshore waters of Whidbey Island and fails to analyze impacts that might occur within the entire affected environment. Page 4-216; Effects on Marine Species: The DEIS states that sound waves propagating from low flying jets reach sound levels of 152 dB re 1 µPa at 6.6 feet below the surface. Dugualla Bay, on the flight path for jets landing and taking off from Ault field, is a significant nearshore nursery habitat for ESA listed Puget Sound Chinook salmon migrating from the Skagit River. In addition to ESA listed chinook, Dugualla Bay also provides rearing and nursery habitat for ESA listed summer chum salmon, ESA listed steelhead, and ESA

listed bull trout. This level of sound possesses a threat to these sensitive juvenile fish species by potentially interfering with their ability to find prey and avoid predators. Page 4-217; Fish, paragraph 2: The DEIS states that aircraft overflights have the potential to affect surface eaters and therefore expose fish in the upper water column to sound and general disturbance, which could potentially result in short-term behavioral or physiological responses. These impacts would likely include behavioral changes and auditory masking. We disagree with the paragraph's conclusion that these impacts would be short-term and minimal. Behavioral changes that may force fish out of their normal migratory pathway, e.g. to deeper water to avoid sound, predisposes these juvenile fish populations to greater risk of predation. Auditory masking of these juvenile salmonid species may affect their ability to capture prey or to avoid predators. Forage fish such as sand lance and surf smelt, which prefer to spawn in the mid- and upper-intertidal range, may be forced into deeper water and off their preferred spawning habitat because of behavioral response to sound. There are no current or past studies to document how these important forage fish species may respond to these sound levels. Page 4-217; Behavioral: The DEIS states that the current guideline for a behavioral impact to fish is 150 dB re 1 µPa, which would be surpassed near the surface. The behavioral effects to fish could include disruption or changes in natural activities, such as swimming, schooling feeding, breeding, and migration. The DEIS states there is a lack of studies demonstrating the behavioral response of fish to man-made sound. The DEIS goes on to say that sound can induce generalized stress responses in fish, including a startle response and behavioral changes. These response changes in forage fish or juvenile salmonids may potentially alter spawning success or lead to interruption of prey capture and predator avoidance respectively. We disagree with the conclusion in this section that long term impacts for individual fish are unlikely in most cases. 4.8.3 Biological Resource Conclusions: Bullet #3, Bird Strikes: This section presents data that indicate minimal mortality to birds from direct aircraft strikes. However, the document is silent regarding any additional mortality resulting from hazing or lethal removal of birds and mammals around runways to prevent strikes. Because these data are omitted from the DEIS, we are unable to assess any potential population impacts to species that might be affected by increasing numbers of aircraft on and around the runways. This omission should be corrected. Concluding Remarks: As stated above, we do not accept the assumption of habituation of all species to increased growler noise as represented in the DEIS. We do not agree that a 46% to 47% increase in aircraft operations at the NAS Whidbey Island complex will not significantly impact terrestrial and marine wildlife because "terrestrial and marine wildlife in the study area are already exposed to a high level of long-term aircraft operations and other human-made disturbance and have presumably habituated." The DEIS offers no science to support this presumption and relies on limited, potentially outdated science to support the Navy's apparently biased assertions. We believe this document is highly inadequate and provide herein a list of scientific literature that should form the basis of a new analysis that looks at, but is not limited to, the physiological and behavioral responses of wildlife to increased noise and disturbance. This list is far from complete, but presents objective information that is lacking in the current DEIS. A broader review of available science, with appropriate inferences related to impacts of anthropogenic disturbance on wildlife is lacking in the DEIS. Therefore we disagree with the assertions applied to impacts of the proposed alternatives and associated scenarios in the document. Priority Habitats and Species (PHS) within the Operational Areas The following PHS species may occur within the two operational areas of Ault Field and OLF

Coupeville. Those not specifically addressed above should receive additional consideration in the DEIS (WDFW 2008): Western toad Common Murre Marbled Murrelet Tufted Puffin Nonbreeding concentrations of loons, grebes, cormorants and alcids Breeding concentrations of cormorants Great Blue Heron Breeding cavity nesting ducks Nonbreeding concentrations of Goldeneye and Bufflehead Harlequin Duck Swans Waterfowl concentrations Bald Eagle Merlin Peregrine Falcon Nonbreeding shorebird concentrations Band-tailed Pigeon Pileated Woodpecker Roosting concentrations of Big brown and Myotis species bats Townsends big-eared bat Columbian black-tailed deer Mink Dall's porpoise Harbor seal Killer whale Pacific harbor porpoise California sea lion Steller sea lion Surf smelt Pacific herring Species of Greatest Conservation Need (SCGN) within the Operational Areas: The following SCGN, in addition to PHS species may occur within the two operational areas of Ault Field and OLF Coupeville. Those not specifically addressed above should receive additional consideration in the DEIS. See WDFW (2015) as some species not listed below are also PHS. Hoary bat Silver-haired bat Keen's myotis Black Scoter Surf Scoter White-winged Scoter Long-tailed Duck Western Bluebird Leatherback sea turtle Pacific sand lance Citations and Suggested References Acevedo-Gutierrez, A and S Cendehas-Zarelli. 2011. Nocturnal haul-out patterns of harbor seals (Phoca vitulina) related to airborne noise levels in Bellingham, Washington, USA. Aquatic Mammals 37(2):167-174. Barber J, C Burdett, S Reed, et al. 2011. Anthropogenic noise exposure in protected natural areas: estimating the scale of ecological consequences. Landscape Ecology 26:1281-1295. Barber JR, KR Crooks, and KM Fristrup. 2010. The costs of chronic noise exposure for terrestrial organisms. Trends in Ecology and Evolution. 25:180-189. Beason, RC. 2004. What can birds hear? Pages 92-96 In Proceedings of the 21st Vertebrate Pest Conference, RM Timm and WP Gorenzel, Editors. University of California Davis. Bishop, E, G Rosling, P Kind, and F. Wood. 2016. Pigeon Guillemots on Whidbey Island, Washington: a six-year monitoring study. Northwestern Naturalist 97(3):237-245. Borgmann, KL. 2012. A review of human disturbance impacts on waterbirds. Audubon California, Tiburon, CA. Dooling, RJ and A Popper. 2007. The effects of highway noise on birds. California Department of Transportation Division of Environmental Analysis. Sacramento, CA. Ellison WT, BL Southall, CW Clark and AS Frankel. 2012. A new context-based approach to assess marine mammal behavioral responses to anthropogenic sounds. Conservation Biology 26:21-28. Erbe, C. 2002. Underwater noise of whale-watching boats and potential effects on killer whales (Orcinus orca), based on an acoustic impact model. Marine Mammal Science 18(2):394-418. Evenson, JR, DR Nysewander, M Mahaffy, BL Murphie, and TA Cyra. 2004. Status, abundance, and colony distribution of breeding pigeon guillemots (Cepphus Columba) from the inland marine waters of Washington state, as documented by PSAMP efforts, 2000-2002. TW Droscher and DA Fraser, Editors. In Proceedings of the 2003 Georgia Basin/Puget Sound Research Conference. Francis CD and Barber. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. Frontiers in Ecology and the Environment 11(6): 305-313. Francis CD, NJ Kleist, CP Ortega, and A Cruz. 2012. Noise pollution alters ecological services: enhanced pollination and disrupted seed dispersal. Proceedings of the Royal Society of Biological Sciences 270:2727-2735. Francis CD, CP Ortega, and A. Cruz. 2009. Noise pollution changes avian communities and species interactions. Current Biology 19:1415-1419. Francis CD, J Paritsis, CP Ortega and A. Cruz. 2011. Landscape patterns of avian habitat use and nest success are affected by chronic gas well compressor noise. Landscape Ecology 26:1269-1280. Frid, A. and LM Dill. 2002. Human-caused

disturbance stimuli as a form of predation risk. Conservation Biology 6(1):11. Kastak, D and C Reichmuth Kastak. 2006. Noise impacts on pinniped hearing. Final Technical Report to the Office of Naval Research. Grant #N00014-04-1-0284. Kight CR, MS Saha and JP Swaddle. 2012. Anthropogenic noise is associated with reductions in the productivity of breeding eastern bluebirds (Sialia sialis) Ecological Applications 22: 1989-1996. Federal Highway Commission. https://www.fhwa.dot.gov/Environment/noise/noise_effect_on_wildlife/effects/wild09.cfm Gill. JA. 2007. Approaches to measuring the effects of human disturbance on birds. Ibis 140 (Suppl. 1): 9-14. Gill, JA, K Norris and WJ Sutherland. 2001. Why behavioral responses may not reflect the population consequences of human disturbance. Biological Conservation 97:265-268. Goss-Custard, JD, RA Stillman, AD West, RWG Caldow and S McGrorty. 2002. Carrying capacity in overwintering migratory birds. Biological Conservation 105:27-41. Goss-Custard, JD, P Triplet, F Sueur, and AD West. 2006. Critical thresholds of disturbance by people and raptors in foraging wading birds. Biological Conservation 127: 88-97. Hanson, T and GJ Wiles. 2015. Washington state status report for the Tufted Puffin. Washington Department of Fish and Wildlife, Olympia, Washington. 66 pp. Hoang, T. 2013. A literature review of the effects of aircraft disturbances on seabirds, shorebirds and marine mammals. Presented to NOAA, Greater Farallones National Marine Sanctuary and the Seabird Protection Network. Lilleyman, A. DC Franklin, JK Szabo, and MJ Lawes. Behavioral responses of migratory shorebirds to disturbance at a high-tide roost. Emu 116:111-118. Noise Quest. http://www.noisequest.psu.edu/noiseeffects.html Pater LL, TG Grubb and DK Delaney. 2009. Recommendations for improved assessment of noise impacts on wildlife. Journal of Wildlife Management 73:788-795. Smit, CJ and GJM Visser. 1993. Effects of disturbance on shorebirds: a summary of existing knowledge from the Dutch Wadden Sea and Delta area. Wader Study Group Bulletin 68: 6-19. Southall, BL, AE Bowles, WT Ellison, JJ Fineran, RL Gentry, CR Greene Jr., et al. Marine mammal noise exposure criteria: initial scientific recommendations. Journal of Aquatic Mammals 33:411-521. Stillman, RA, AD West, RWG Caldow, and SEA LE V. Dit Durrell. 2007. Predicting the effect of disturbance on coastal birds. Ibis 149 (Suppl. 1):73-81. Stone, E. 2000. Separating the noise from the noise: A finding in support of the “niche hypothesis,” that birds are influenced by human-induced noise in natural habitats. Anthrozoos 13(4) 225-231. Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. Washington Department of Fish and Wildlife. 2015. Washington’s State Wildlife Action Plan: 2015 Update. Washington Department of Fish and Wildlife, Olympia, Washington USA> Yasue, M. 2006. Environmental factors and spatial scale influence shorebirds’ responses to human disturbance. Biological Conservation 128:47-54.

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February 21, 2017

Comments on Draft Environmental Impact Statement or the EA-18G "Growler" Airfield Operations at NAS Whidbey Island Complex

Submitted by
Paul Marczin, Doug Thompson, Area Habitat Biologists; Ruth Milner District Wildlife Biologist

We have reviewed the Draft Environmental Impact Statement with particular emphasis on Chapter 4, Environmental Consequences. We are dismayed by the lack of best available science used to assess impacts to fish and wildlife and strongly disagree with the unsubstantiated, repeated assertions that all wildlife will simply habituate and remain unaffected by any and all increases in growler traffic proposed in the DEIS.

We believe the Affected Environment defined in Chapter 3 underestimates the area that will actually affect wildlife through increased growler activities as described in the three alternatives and their associated scenarios. The modelled aircraft levels presented in the DEIS are based on estimated flight path geometry and do not account for noise impacts outside of the prescribed flight paths. No noise data outside of the defined affected environment are presented or discussed. The noise levels used to describe the affected environment are based on human hearing and consider noise abatement mechanisms such as access to indoor spaces that do not apply to wildlife. The DEIS does not account for the different ear structures and potentially more sensitive hearing that many animal species possess (see Beason 2004; Pater et al. 2009; Federal Highway Commission; Noise Quest). Thus, the affected environment should be reconsidered and expanded to include more of the San Juan Archipelago, which supports large populations of wildlife, as well as points east and west of the affected environment analyzed in the DEIS.

Our remaining comments are specifically related to the Biological Resources Section 4.8, especially Sensory Disturbances, beginning on page 4-201. In general, although we agree that scientific research focused specifically on noise impacts to fish and wildlife caused by military aircraft is limited, we disagree with the general conclusions for all alternatives relative to fish and wildlife that all species will be unaffected or will be minimally impacted.

The basic tenet of the DEIS is that wildlife are habituated to current conditions and therefore will habituate to increased noise and thus remain unaffected. This assumption is repeated throughout the DEIS for most of the species or species groups covered in the analysis. We believe the DEIS relies heavily on assumptions of habituation that are not justified or supported by scientific studies. For example, page 4-201, paragraph 3 states "Terrestrial wildlife that live at or near the proposed construction site are presumed to be habituated to high levels of noise....because they continue to be present despite the

1.a. Thank You
1.b. Best Available Science and Data
10.c. Wildlife Sensory Disturbance and Habituation
10.e. A-Weighted Noise Analysis and Scale of Hearing on Wildlife
10.f. Endangered Species Impact Analysis Adequacy
10.h. Species-Specific Discussions
10.i. Additional Special Status Species
10.k. Aircraft-Wildlife Strike and Hazing/Lethal Control of Wildlife
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history of anthropogenic noise in the area." The DEIS offers no scientific explanation for this presumption and we believe that conclusions such as this are erroneous. See Francis and Barber 2013: "An organism might show little to no response to noise in terms of habitat occupancy or foraging rate, for example, but may experience strong negative impacts in terms of pairing success, number of offspring, physiological stress, or other measures of fitness." Fitness is defined as an organism's ability to survive to reproductive age, find a mate and produce offspring. The more offspring produced over a lifetime the greater an individual's biological fitness. Fitness cannot be equated to observations of individual animals seen in a specific location at a particular time as the DEIS implies and therefore, habituation in the context of the DEIS is not a sound presumption.

The literature reviewed in the DEIS relies largely on relatively old references and the studies cited appear to have been selected to advance a no impact conclusion, versus providing an unbiased review of potential impacts. While not every citation regarding noise impacts to fish and wildlife was written over 20 years ago, we estimate the mean year of publication of the cited references to be 1998. Since that time, a large body of more recent work provides a more informed basis for assessing noise impacts to wildlife (eg, Francis and Barber 2013; Barber et al 2012; Francis et al. 2012; Barber et al. 2011; Francis et al 2011; Francis et al. 2009; Frid and Dill 2002). These studies provide thoughtful inference relative to subtle and detrimental impacts to wildlife from noise, but none are referenced in the DEIS.

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Concluding Remarks: As stated above, we do not accept the assumption of habituation of all species to increased growler noise as represented in the DEIS. We do not agree that a 46% to 47% increase in aircraft operations at the NAS Whidbey Island complex will not significantly impact terrestrial and marine wildlife because "terrestrial and marine wildlife in the study area are already exposed to a high level of long-term aircraft operations and other human-made disturbance and have presumably habituated." The DEIS offers no science to support this presumption and relies on limited, potentially outdated science to support the Navy's apparently biased assertions. We believe this document is highly inadequate and provide herein a list of scientific literature that should form the basis of a new analysis that looks at, but is not limited to, the physiological and behavioral responses of wildlife to increased noise and disturbance. This list is far from complete, but presents objective information that is lacking in the current DEIS. A broader review of available science, with appropriate inferences related to impacts of anthropogenic disturbance on wildlife is lacking in the DEIS. Therefore we disagree with the assertions applied to impacts of the proposed alternatives and associated scenarios in the document.

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Great Blue Heron	Mink
Breeding cavity nesting ducks	Dall's porpoise
Nonbreeding concentrations of Goldeneye and Bufflehead	Harbor seal
Harlequin Duck	Killer whale
Swans	Pacific harbor porpoise
Waterfowl concentrations	California sea lion
Bald Eagle	Steller sea lion
Merlin	Surf smelt
Peregrine Falcon	Pacific herring

Species of Greatest Conservation Need (SCGN) within the Operational Areas:

The following SCGN, in addition to PHS species may occur within the two operational areas of Ault Field and OLF Coupeville. Those not specifically addressed above should receive additional consideration in the DEIS. See WDFW (2015) as some species not listed below are also PHS.

Hoary bat	White-winged Scoter
Silver-haired bat	Long-tailed Duck
Keen's myotis	Western Bluebird
Black Scoter	Leatherback sea turtle
Surf Scoter	Pacific sand lance

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1.a. Thank You
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10.f. Endangered Species Impact Analysis Adequacy
10.h. Species-Specific Discussions
10.i. Additional Special Status Species
10.k. Aircraft-Wildlife Strike and Hazing/Lethal Control of Wildlife
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4.d. Day-Night Average Sound Level Metric
4.l. Points of Interest

State of Washington
Department of Fish and Wildlife

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February 21, 2017

Comments on Draft Environmental Impact Statement or the EA-18G "Growler" Airfield Operations at NAS Whidbey Island Complex

Submitted by
Paul Marczin, Doug Thompson, Area Habitat Biologists; Ruth Milner District Wildlife Biologist

We have reviewed the Draft Environmental Impact Statement with particular emphasis on Chapter 4, Environmental Consequences. We are dismayed by the lack of best available science used to assess impacts to fish and wildlife and strongly disagree with the unsubstantiated, repeated assertions that all wildlife will simply habituate and remain unaffected by any and all increases in growler traffic proposed in the DEIS.

We believe the Affected Environment defined in Chapter 3 underestimates the area that will actually affect wildlife through increased growler activities as described in the three alternatives and their associated scenarios. The modelled aircraft levels presented in the DEIS are based on estimated flight path geometry and do not account for noise impacts outside of the prescribed flight paths. No noise data outside of the defined affected environment are presented or discussed. The noise levels used to describe the affected environment are based on human hearing and consider noise abatement mechanisms such as access to indoor spaces that do not apply to wildlife. The DEIS does not account for the different ear structures and potentially more sensitive hearing that many animal species possess (see Beason 2004; Pater et al. 2009; Federal Highway Commission; Noise Quest). Thus, the affected environment should be reconsidered and expanded to include more of the San Juan Archipelago, which supports large populations of wildlife, as well as points east and west of the affected environment analyzed in the DEIS.

Our remaining comments are specifically related to the Biological Resources Section 4.8, especially Sensory Disturbances, beginning on page 4-201. In general, although we agree that scientific research focused specifically on noise impacts to fish and wildlife caused by military aircraft is limited, we disagree with the general conclusions for all alternatives relative to fish and wildlife that all species will be unaffected or will be minimally impacted.

The basic tenet of the DEIS is that wildlife are habituated to current conditions and therefore will habituate to increased noise and thus remain unaffected. This assumption is repeated throughout the DEIS for most of the species or species groups covered in the analysis. We believe the DEIS relies heavily on assumptions of habituation that are not justified or supported by scientific studies. For example, page 4-201, paragraph 3 states "Terrestrial wildlife that live at or near the proposed construction site are presumed to be habituated to high levels of noise....because they continue to be present despite the

history of anthropogenic noise in the area." The DEIS offers no scientific explanation for this presumption and we believe that conclusions such as this are erroneous. See Francis and Barber 2013: "An organism might show little to no response to noise in terms of habitat occupancy or foraging rate, for example, but may experience strong negative impacts in terms of pairing success, number of offspring, physiological stress, or other measures of fitness." Fitness is defined as an organism's ability to survive to reproductive age, find a mate and produce offspring. The more offspring produced over a lifetime the greater an individual's biological fitness. Fitness cannot be equated to observations of individual animals seen in a specific location at a particular time as the DEIS implies and therefore, habituation in the context of the DEIS is not a sound presumption.

The literature reviewed in the DEIS relies largely on relatively old references and the studies cited appear to have been selected to advance a no impact conclusion, versus providing an unbiased review of potential impacts. While not every citation regarding noise impacts to fish and wildlife was written over 20 years ago, we estimate the mean year of publication of the cited references to be 1998. Since that time, a large body of more recent work provides a more informed basis for assessing noise impacts to wildlife (eg, Francis and Barber 2013; Barber et al 2012; Francis et al. 2012; Barber et al. 2011; Francis et al 2011; Francis et al. 2009; Frid and Dill 2002). These studies provide thoughtful inference relative to subtle and detrimental impacts to wildlife from noise, but none are referenced in the DEIS.

The individual species sections of the DEIS repeatedly assert that various species will experience increased disturbance but will habituate to increased levels of disturbance caused by increased growler activity. We disagree with the analysis and conclusions the DEIS makes relative to specific species as follows:

Page 4-202-203; Waterfowl: Only four publications written between 1998 and 2004 are cited. Each documents some level of disturbance caused by noise. There is no discussion, or consideration of, the energetic costs of the various reactions birds exhibited in the studies relative to individual fitness. From these sources, the DEIS concludes that there will be no *population* affect from the disturbance. However, the draft provides no clear rationale for this conclusion other than surmising habituation by affected animals. Choice of literature cited in the waterfowl section appears biased as the DEIS in this section cites Goudie and Jones (2004), but omits Goudie (2006), which asserts that military aircraft noise "may be the primary stressor in aircraft disturbance" to Harlequin Ducks and calls for more research directed "towards population consequences of military aircraft disturbance."

Page 4-203-204; Wading Birds: Only a single source (Black et al. 1984), which summarizes studies conducted on various species in Florida, is cited. We cannot tell from the DEIS whether this study considered Great Blue Herons, which is the common breeding species in the affected environment covered by the DEIS. The DEIS again concludes that wading birds will habituate to increased growler noise, with no supporting evidence provided. Further, the DEIS fails to mention, or speculate upon impacts to the existing Great Blue Heron breeding colonies that occur on Whidbey Island, within the affected environment.

Page 4-204-205; Seabirds: The DEIS does not address the impacts to the Pigeon Guillemot, which is the most common seabird in the affected area. Bishop et al. (2016) documented over 900 individuals breeding on Whidbey Island alone; additional breeding sites are found within the affected area. The DEIS states that the Deception Pass area is the only IBA known to contain breeding seabirds. This is incorrect; Pigeon Guillemot breeding sites are found throughout the affected area: see Evenson et al.

(2004) and Washington Department of Fish and Wildlife Priority Habitats and Species Data Base (wdfw.wa.gov/phsontheweb/).

The Tufted Puffin is a State endangered species. It breeds on Smith Island and has been seen in the waters of south Lopez Island (Hanson and Wiles 2015). The DEIs omits any discussion of impacts to this species, and is therefore inadequate.

We do not agree that the Common Murre and Herring Gulls are appropriate proxies for Pigeon Guillemots and especially not for Marbled Murrelets. The proxie species identified in the DEIS are colonial nesters that breed on islands. This life history strategy in no way resembles that of the Marbled Murrelet, which nests in forests, flies up to 50 miles inland to reach the nest, and must make at least one round trip daily to feed its young. Again, the DEIS does not address energetic costs to seabirds, especially Marbled Murrelets, from the physiological impacts of disturbance and again concludes that all birds will habituate to increased noise without presenting any substantiating data to support that position.

Lastly, we appreciate exactness in quoting WDFW staff; notably on Page 3-115, when discussing Marbled Murrelet breeding in Island County, the DEIS attributes to WDFW District Wildlife Biologist Milner: "Small amounts of suitable habitat occur in Deception Pass State Park; however, the winds in the area largely prevent the moss-covered defective limbs that create platforms for nesting murrelets."

On 17 October 2016 in a letter to Mr. Bianchi, Milner wrote: "No surveys have been done since the 1990's to my knowledge. No nesting birds have been found on Whidbey...There are small amounts of suitable habitat in Deception Pass Park, but the general conclusion was (in the 1990's) that although there are old growth trees there, the winds prevent the moss covered defective limbs that create platforms from developing to any large extent."

Although the discrepancy between what Milner wrote and what is cited in the DEIS appears relatively minor, the DEIS omits the twice stated fact that nesting surveys and habitat evaluations have not been conducted since the 1990's. Survey techniques, habitat evaluations and definitions have changed in the last 25 years and this should be acknowledged and stated clearly in the DEIS.

Page 4-205; Shorebirds and Page 4-205; Passerines: The DEIS again relies on a presumption of habituation, with no supporting evidence, to assert minimal effects on shorebirds or songbirds as a result of increased growler activities under all alternatives and scenarios. We believe this analysis, like those for other species in the DEIS, is an over simplification that ignores the concept of human induced stress and its implications to fitness. Kight et al. (2012) document fitness impacts to Eastern Bluebirds (a passerine species) from noise; Francis et al. (2009) demonstrate that noise reduced avian nesting species richness and altered avian community structure; Francis et al. (2011) evaluate the role of noise in altering ecological processes and services. None of these impacts are discussed in the DEIS and this is a major oversight that biases the conclusions stated within the document.

The DEIS states that only one reference was available to assess potential impacts of noise on shorebirds. We agree that focused studies that concentrate on military aircraft are lacking, however, Smit and Visser (1993) discuss variability in shorebird species response to aircraft and other anthropogenic disturbances, suggesting that individual shorebird species will react differently and therefore must be considered on a

species by species basis. Burger (1981), concluded that shorebirds were the most sensitive species group in their study to react to disturbance. This paper is cited earlier in the DEIS under the Seabirds section, yet the finding of shorebird sensitivity is omitted in this section.

In the absence of specific aircraft-shorebird studies, inferences regarding disturbance and stress on shorebirds are possible, but this analysis is absent in the DEIS. The DEIS ignores all potential behavioral or physiological costs to shorebirds from disturbance and instead states: "Shorebirds in the study area are already exposed to a high level of long-term aircraft operations and other human disturbances, and they are presumably habituated to the high levels of disturbance." We challenge this conclusion for two reasons: 1) several studies discuss the behavioral and physiological impacts to shorebirds from flushing and disturbance. For examples, Lillleyman et al. (2016) suggest that increased disturbance may affect survival and reproductive success of migrating shorebirds; Gill (2007) points out that disturbance measures are more appropriately measured on population effects rather than observed behavior (as implied by the DEIS reliance upon unsubstantiated assumptions of habituation); Goss-Custard et al. (2002) regard individual survival in the non-breeding season and a shorebird's ability to store fat for migration and breeding as the correct measure of disturbance impacts.

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Breeding cavity nesting ducks	Dall's porpoise
Nonbreeding concentrations of Goldeneye and Bufflehead	Harbor seal
Harlequin Duck	Killer whale
Swans	Pacific harbor porpoise
Waterfowl concentrations	California sea lion
Bald Eagle	Steller sea lion
Merlin	Surf smelt
Peregrine Falcon	Pacific herring

Species of Greatest Conservation Need (SCGN) within the Operational Areas:

The following SCGN, in addition to PHS species may occur within the two operational areas of Ault Field and OLF Coupeville. Those not specifically addressed above should receive additional consideration in the DEIS. See WDFW (2015) as some species not listed below are also PHS.

Hoary bat	White-winged Scoter
Silver-haired bat	Long-tailed Duck
Keen's myotis	Western Bluebird
Black Scoter	Leatherback sea turtle
Surf Scoter	Pacific sand lance

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Sean Lundblad
Department of Ecology

Bellevue, WA 98008

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18.c. Other Greenhouse Gases (Beyond Carbon Dioxide)
18.d. Washington State Greenhouse Gas Goals
6.b. National Ambient Air Quality Standards Compliance
6.d. Air Operating Permit
6.e. Jet Engine Test Cells

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

Sent Electronically

February 23rd, 2017

EA-18G EIS Project Manager
Naval Facilities Engineering Command (NAVFAC)
Atlantic, Attn: Code EV21/SS
6506 Hampton Blvd., Norfolk, VA 23508

RE: Lead Agency File#: EA-18G, EV21/SS
Ecology File#: 201606165
Applicant: US Navy

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Thank you for considering these comments from the Department of Ecology. If you have any questions or would like to respond to these comments please contact Sean Lundblad at 360-407-6843 or by email at slun461@ecy.wa.gov.

Sincerely,

Department of Ecology
Northwest Regional Office
(Yvonne Kicken: 201606165)
Cc: Sean Lundblad, Air Quality Program, Ecology

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Northwest Regional Office
(Yvonne Kicken: 201606165)
Cc: Sean Lundblad, Air Quality Program, Ecology

Clark Halvorson
WA State Department of Health

Olympia, WA 98504

Thank you for the opportunity to comment on the draft environmental impact statement (DEIS) for the proposed expansion of EA-18G Growler airfield operations at the Naval Air Station Whidbey Island complex. As the state health department, we are interested in the impact this project will have on the health and well-being of people in Washington State. As noted in the DEIS, this project may result in negative impacts to the public's health from changes in noise, air quality, use of hazardous materials, and increasing greenhouse gases. This project may also impact social determinants of health such as employment, education, and transportation. Though these potential impacts are all important to the overall health of the public, our comments will focus on the potential for non-auditory community health impacts from noise associated with the aircraft. We have chosen this focus for our comments because we have received multiple inquiries, complaints, and requests for assistance from local community groups concerned about potential health impacts from aircraft noise. Current scientific literature suggests that noise at levels similar to those reported on Whidbey Island is associated with annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes (see Appendix A). We have provided recommendations for better understanding the potential impact of the planned activities on the health of this community. They are summarized here and explained in more detail below. Please contact us if you have any questions or if you would like to collaborate on solutions. Summary of Recommendations 1. Provide evidence to assure NOISEMAP model estimates are applicable for use at Naval Air Station Whidbey. Although the NOISEMAP model has been previously validated based on information obtained from other locations, evidence was not provided to indicate that the model accurately predicts actual exposure to noise under conditions at Naval Air Station Whidbey. It is also not clear how NOISEMAP has been updated to reflect recent research findings. 2. Improve description of current state of science around noise and public health; specifically non-auditory health effects. a. Describe and conduct a comprehensive review of the literature. At the request of the Washington State Board of Health and Island County Public Health Department, we prepared a summary of recently published epidemiological literature about the health effects of noise exposure. We have attached this review (Appendix A), which references a significant number of directly relevant articles that were not included in the DEIS. b. Do not require a "definitive causal and significant relationship" between aircraft noise and health prior to including the health outcome in the model. This standard is unreasonably high and resulted in non-auditory health effects being excluded from the model. c. Expand review to include studies examining the health effects of noise from sources other than aircraft. It is unclear why literature from other noise sources which can result in similar effects were not considered, especially since there are limited data on effects from noise originating with non-commercial aircraft. 3. Conduct a Health Impact Assessment. Current scientific literature suggests that noise at levels similar to those reported on Whidbey Island is associated with annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes. However, whether people on Whidbey Island are actually experiencing these outcomes as a result of their exposure to aircraft noise is a question

1.a. Thank You
1.d. General Project Concerns
12.n. Quality of Life
2.g. Agency Participation
4.b. NOISEMAP Model, Modeling Methodology, and Noise Sources
4.c. Advanced Acoustic Model
4.d. Day-Night Average Sound Level Metric
4.f. Noise Measurements/Modeling/On-Site Validation
4.h. C-Weighted Noise, Low Frequency Noise, and Vibrations
4.j. Other Reports
4.m. Supplemental Metrics
4.o. Classroom Learning Interference
4.p. Sleep Disturbance
4.q. Potential Hearing Loss
4.r. Nonauditory Health Effects
4.s. Health Impact Assessment and Long-term Health Study Requests

beyond the scope of a literature review. Therefore, we recommend that the Navy conducts a Health Impact Assessment to better understand the potential impact of the planned activities on the health of the community. Recommendation One: Provide evidence to assure NOISEMAP model estimates are applicable for use at Naval Air Station Whidbey. Estimates of noise exposure, from noise associated with aircraft operations, to the residents within the surrounding communities were derived from Department of Defense computer modeling software entitled NOISEMAP. The major metric for estimating noise exposure was the Day-Night Average Sound Level (DNL), but depending on outcome being investigated other metrics were used. For example, to investigate noise effects on recreation, a metric which estimates the number of noise events per daytime hour above a maximum A-weighted sound level of 65 dB was used (NA65 Lmax). For sleep disturbance, the metric was a sound exposure level (SEL) that combines the intensity of a sound with its duration. The SEL was estimated for an outdoor environment and converted to an indoor level. A third example is the use of an Lmax for indoor speech interference as this metric used within the model identifies the estimated number of events per daytime hour that exceed an instantaneous maximum sound level of 50 dB (50 dB Lmax). There are several additional metrics used to evaluate various effects from noise (e.g., annoyance, classroom/learning interference, etc.). The NOISEMAP model has been previously validated based on information obtained from other locations but has not been validated for this naval air station. Due to the complexities involved in validating this model along with the cost and time requirements, there is no expectation of efforts to validate this model at the locations addressed in this DEIS. However, there is an expectation that evidence be provided to determine if the model is predictive by comparing the modeled estimates to observed measurements at locations of concern. While the authors of the DEIS dismissed the very limited sound pressure data that have been provided by outside sources for select locations within the area to be impacted, no effort was made to indicate that their modeling efforts are predictive of estimates provided. It is unclear why efforts were not made to test the multiple estimates provided for the various metrics. Each metric for exposure used for an outcome should be measured under appropriate conditions (scenarios) and the model estimates need to be compared against these actual values to identify the model's predictive nature. If there are shortcomings, these need to be identified and addressed. With many models, such as those attempting to identify pollutant dissemination characteristics within ground water, surface water, or air, this can be a difficult, costly, and frequently impossible task. However, in this case, there are ongoing operations so these metrics can be measured in a timely manner that is not cost-prohibitive. Without such data there is no means by which to suggest that the model is reflective of actual exposures and accordingly brings the predicted outcomes into question. In addition, the DEIS should provide greater detail on how this modeling software has been updated to address ongoing findings, such as within the health outcomes arena, as the text indicates the most recent citation for this frequently updated model to be 1992. Also, in 1980 it was determined that 87 percent of the population was not annoyed by sound pressure levels (A weighted) below 65dB. Detail needs to be provided to indicate that no information has been identified in the last 35 years to support or question the use of 65dB within the model as the lowest range when investigating impacts from noise. A discussion also needs to be included pertaining to the remaining (not insignificant) 13 percent of the population that do find these levels annoying and how this portion of the population was addressed within the model. Recommendation Two: Improve description of current state

of science around noise and public health; specifically non-auditory health effects. In addressing the effects from noise on those impacted, the document divided effects into the categories: annoyance, speech interference, sleep disturbance, noise-induced hearing impairment, non-auditory health effects, performance effects, and noise effects on children. The model attempts to address these endpoints directly (annoyance, speech interference, sleep disturbance, noise-induced hearing impairment) through the DNL or other exposure metrics, indirectly (performance effects and noise effects on children) by using a metric for classroom/learning interference, or excludes them from the model (non-auditory health effects) based on the reasoning that no studies have shown a definitive causal and significant relationship between aircraft noise and health. Requiring that “definitive causal and significant relationship” between aircraft noise and health is demonstrated prior to including health outcomes within the model is an unreasonably high standard that resulted in non-auditory health effects being excluded from the model. In our summary of the literature (attached), we found evidence of multiple non-auditory effects that may be attributed to noise exposure, including: annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes. Biological mechanisms of the non-auditory effects of noise exposure require further study. Research to date indicates that adverse health effects are initiated by chronic stress and/or sleep disturbance. Recent studies also suggest that noise-induced annoyance is associated with a stress response, which can affect cardiovascular health. In the review of the literature provided in the DEIS, odds ratio values are provided without confidence intervals, which are critical to understanding the precision of the estimate and whether the null is overlapped. To provide context of the odds ratios (OR), the DEIS indicates (through citation) that an OR of 9.0 is needed for a strong relationship to exist between an exposure and outcome. As such, an OR of 3.5 provides for a moderate relationship and the OR values of 1.5 are weak. If an odds ratio is shown to be statistically significant, it needs to be considered further. Once determined that an odds ratio is statistically significant, the strength of association can be discussed in terms of the percentage of the population that could be affected. In addition, even if the effect size is small, a statistically significant odds ratio from a well-defined study that has adjusted for possible confounding may indicate that a sensitive population is being affected and this would need to be evaluated and discussed. A multitude of examples exist within the literature in which an odds ratio has a small effect size but is found to be statistically significant, and because of the size of the at-risk population this represents an exposure of considerable public health consequence. Another issue of note is that this short review was confined to effects from noise originating with aircraft. There is increasing evidence that noise exposure, as defined from multiple sources including commercial aircraft, is associated with numerous adverse health effects. There are likely nuances associated with noise exposures specific to military aircraft that are not thoroughly understood. However, noise levels similar to those reported from NAS Whidbey Island Complex described in all recent reports pose a threat to public health. It would seem prudent to include the effects from other noise sources as there are limited data on effects from noise originating with non-commercial aircraft. Recommendation Three: Conduct a Health Impact Assessment. Current scientific literature suggests that noise at levels similar to those reported on Whidbey Island is associated with annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes. However, whether people on Whidbey Island are actually experiencing these outcomes as a result of their exposure to aircraft noise is a question beyond the scope of a literature review. Therefore, we recommend that the

Navy conduct a Health Impact Assessment to better understand the potential impact of the planned activities on the health of the community. Groups that have been described as potentially susceptible to the effects of noise include smokers, children, the elderly, shift-workers, and individuals with sleep disorders, mental disorders, and physical illnesses. In our summary of the literature, we see increasing evidence that noise exposure, as defined from multiple sources including commercial aircraft, is associated with numerous adverse health effects. There are likely nuances associated with noise exposures specific to military aircraft that are not thoroughly understood. However, noise levels similar to those reported from NAS Whidbey Island Complex pose the following threats to public health: • Annoyance: The scientific literature provides evidence that noise exposure leads to annoyance, which causes a decrease in quality of life. While definitively quantifying annoyance and its effect on the population is challenging, there is strong evidence that feeling annoyed has negative impacts on mental health and cardiovascular endpoints. • Sleep Disturbance: A variety of measurement techniques have been used to study sleep disturbance. There is general agreement that noise is associated with sleep disturbance and if the disturbance is severe and frequent, it can lead to negative health consequences. • Cognitive Impairment: Studies of noise effects on children's cognition reveal an increasing trend that noise exposure results in impaired reading skills. One of the largest studies to date found that reading comprehension falls below average when children are exposed to aircraft noise that is above 55 dB LAeq16 at school. • Cardiovascular Disease: The extent and underlying mechanisms for the relationship between noise exposure and cardiovascular health are still poorly understood. However, the scientific literature has provided increasing evidence of a positive association. Health Impact Assessment is a rapidly emerging practice among local, state, and federal jurisdictions that helps assess how a proposed decision will affect the health of a population and whether vulnerable populations are more likely to be impacted. The goal of a Health Impact Assessment is to provide recommendations during the decision-making process that will protect health and reduce health inequities. A Health Impact Assessment brings potential positive and negative public health impacts and considerations to the decision-making process for plans, projects, and policies that fall outside traditional public health arenas, such as military aircraft use and associated noise. A Health Impact Assessment can engage community members and stakeholders to provide practical recommendations to increase positive health effects while minimizing negative ones. If you have any questions, please contact Lauren Jenks at (360) 236-3325 or lauren.jenks@doh.wa.gov. Sincerely, Clark Halvorson Assistant Secretary Attachment Attachment A A Summary of the Association Between Noise and Health Authors: Julie Fox, PhD, MHS, Environmental Epidemiologist, Washington State Department of Health Lillian Morris, PhD, Spatial Epidemiologist, Washington State Department of Health EXECUTIVE SUMMARY The objective of this document is to summarize recent literature exploring the health effects of noise exposure, and compare our findings to reported noise levels originating from the Naval Air Station (NAS) Whidbey Island Complex. The relationship between noise exposure and health has been studied extensively, and the body of knowledge on this topic is rapidly increasing. We described noise measurements taken on Whidbey Island and summarized literature on five of the most studied health outcomes associated with noise: noise induced hearing loss and tinnitus, annoyance, sleep disturbance, cognitive impairment, and cardiovascular disease, in addition to a discussion of susceptible populations. While we found that noise-induced hearing loss is typically not associated with aircraft noise, there is

increasing evidence that noise exposure is associated with annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes. Groups that have been described as particularly susceptible to the effects of noise include: smokers, children, the elderly, shift-workers, and individuals with sleep disorders, mental disorders, and physical illnesses. There were limitations associated with this summary including gaps of knowledge related to exact exposure-response relationships and underlying pathways for some health endpoints. In addition, there have been minimal studies specific to health effects associated with military aircraft noise exposure. More research is needed to understand differences in risk attributed to susceptible groups compared to the general population. Despite these limitations, the current body of scientific literature suggests that noise levels similar to those reported from the NAS Whidbey Island Complex pose a threat to public health. INTRODUCTION This report was written by the Washington State Department of Health at the request of the Washington State Board of Health and Island County Public Health Department to summarize recently published epidemiological literature about the health effects of noise exposure. Noise is being evaluated in response to community concerns on Whidbey Island and the surrounding area over air traffic noise levels originating from the NAS Whidbey Island Complex. These concerns are related to historical and current noise in addition to proposed increases in naval air traffic. Our specific objectives were to summarize recent literature on the most pertinent health effects of noise exposure and relate our findings to noise exposure on Whidbey Island. Noise and Health Noise is generally defined as unwanted sound. This definition of noise recognizes the psychological role of the impact of noise. Auditory effects of noise exposure, specifically noise-induced hearing loss and tinnitus, have been well-established for decades.1 Multiple non-auditory effects may be attributed to noise exposure, including: hypertension, cardiovascular disease and events, diabetes, obesity, reduced cognitive functioning, declines in performance, and birth defects.1–5 Biological mechanisms of the non-auditory effects of noise exposure require further study. Research to date indicates that adverse health effects are initiated by chronic stress and/or sleep disturbance.1,6,7 Recent studies also suggest that noise-induced annoyance is associated with a stress response, which can affect cardiovascular health.6,8,9 Noise Measurements Sound is the fluctuation of pressure through a medium, such as air or water. Sound level is measured in decibels (dB) on a scale that is based on human hearing, where 0 dB is barely audible and a turbojet engine is approximately 160 dB.10 Because decibels are based on a logarithmic scale, when two sounds are combined the total sound level is much less than simply adding the two sound levels together. For example, if there are two sources that each produce 80 dB of noise at a single location, the resulting sound level is 83 dB (not 160 dB). In addition to pressure differences that determine sound level, sound has varying frequencies measured in hertz (Hz) that are heard as pitch. The human ear is less sensitive to hearing extremely low and high frequencies. One way of adjusting sound levels to incorporate the varying sensitivity and perceived loudness across frequencies is to apply an A-, B-, or C-weighted scale. The A-weighted scale was derived from an equal-loudness contour for pure tones.11 Studies indicate that the A-weighted scale provides a better estimate of human hearing threat than the other weightings and it is the most commonly used among human noise impact studies.10 However, there is some concern that the A-weighted scale underestimates the perceived loudness of low frequency noise.11,12 While there are over 20 different metrics of sound, a few are typically used in studies of health effects. The highest sound level measured is often reported as an A-weighted Maximum

Sound Level (LAmax) or a Peak Sound Pressure Level (Lpk), both of which may occur in less than a second. The sound exposure level (SEL) is the total energy of noise measured over a specified time period, often one second or a single noise event. Longer term measurement of noise is often reported as the Equivalent Sound Level-A-Weighted (LAeq), which is the A-weighted average sound level based on the equivalent-continuous sound level over a specified time period. The Day-Night Average Sound Level (Ldn or DNL) is an average sound level over a 24-hour period that incorporates a 10-dB penalty for sound events at night. In studies that focus on sound only during the night, Lnight is typically used, and similarly Lday is typically used for only daytime noise. Thus, the duration of sound exposure measurements can range from an instantaneous event to a year. The selection of the sound metric used in studies depends on characteristics of the noise and the type of health effect being studied. Uncertainty remains in terms of understanding the measurement of noise, such as the number of events or the peak sound level, that is most relevant for health.13 Noise from Military and Commercial Aircraft The majority of literature investigating the relationship between health effects and noise from aircraft is based on commercial aircraft rather than military aircraft.14–21 The main factors that affect ground-level noise from aircraft are: (1) the type of aircraft and engine including the thrust, flap, and airspeed management procedures, and (2) factors that affect sound propagation, such as distance to the point of concern (e.g., the receptor), topography, and weather.22 Noise from aircraft is predominately low frequency (approximately 10 to 250 Hz).11,23 High frequency is generally defined as up to 5,000 or 10,000 Hz.11 People may perceive low frequency sounds either with their ears or by sensing vibrations.24 Different types of aircraft have different acoustic signatures, which makes it possible to distinguish noise measured from military and commercial aircraft.25 It is likely that different flight activities (e.g., takeoffs, field carrier landing practice, low-flying) and aircraft types alter noise in ways that are determinants of health outcomes. However, these distinctions are not evaluated in this summary because of the paucity of published research on military aircraft noise. METHODS We described noise measurements from three publications to understand the noise levels on Whidbey Island. These data included recent measurements by JGL Acoustics Inc.26,27 and the National Park Service Natural Resource Stewardship and Science Office, 25 and modeled noise levels presented in the draft Environmental Impact Statement (EIS) prepared by the United States Department of the Navy.28 There is an extensive body of scientific literature on noise-related health effects. We summarized literature about commercial aircraft noise, as well as noise from other sources, because of the limited peer-reviewed literature on noise from military aircraft. Due to time constraints we primarily focused on peer-reviewed literature reviews with an emphasis on articles published since 2012. This summary includes a detailed description of noise-induced hearing loss and tinnitus, annoyance, sleep disturbance, cognitive impairment, and cardiovascular disease. These effects impact welfare, social, mental and physical health, and have been the most thoroughly investigated to date.2 RESULTS AND DISCUSSION Naval Air Station Whidbey Island Complex Noise Noise levels originating from the NAS Whidbey Island Complex have recently been measured by JGL Acoustics Inc.26,27 and the National Park Service Natural Resource Stewardship and Science Office.25 Modeled noise levels are presented in the draft Environmental Impact Statement (EIS) prepared by the United States Department of the Navy.28 There are discrepancies in reported noise levels across these three reports due, at least in part, to differences in measurement methods and sample locations. There are limitations to each approach and challenges to directly

comparing the reported measurements that will not be addressed in this summary. The objective here is not to comprehensively evaluate the three existing reports, but to provide a useful reference for gauging possible noise exposure levels under various conditions on Whidbey Island. JGL Acoustics Inc. measured noise originating from military aircraft operations on May 7, 2013, at five locations in close proximity to one of two landing strips at NAS Whidbey Island Complex.26,27 Among other measures, they reported 24-hr LAeq noise measurements ranging from 64.1 dBA to 75.0 dBA, and Max LAeq ranging from 81.1 dBA to 119.2 dBA across the sampled sites. The National Park Service took noise measurements at Ebey's Landing National Historical Reserve, which is located five miles south of NAS Whidbey Island Complex.25 They took multiple measurements for ~735 continuous hours from two locations. For example, they reported Ldn levels of 73.6 dBA and 54.7 dBA at the two locations with LAmax levels of ~114 dBA and ~85 dBA. They also found that levels of LAmax 70 dBA were exceeded by 281 and 125 military aircraft events at the two locations over 31 days. The EIS estimated noise levels for the area surrounding NAS Whidbey Island Complex using NOISEMAP modeling software.28 Their models were based on multiple scenarios of predicted flight activity in the year 2021, which accounts for the proposed increases in flight activity and estimated changes in population. They estimated that in an average year 3,875 people across 7,299 acres will live within a 65 to 75 dBA Ldn noise contour. In addition, they estimated LAmax levels at multiple points of interest. The highest LAmax at a residential point of interest was 114 dBA with 267 annual events. The highest LAmax at a school point of interest was 94 dBA with 178 annual events. The highest LAmax at a park point of interest was 106 dBA with 267 annual events. Noise Induced Hearing Loss & Tinnitus Noise-Induced hearing loss is defined as an increase in hearing threshold level sufficient to affect daily living.4 Hearing loss has more specifically been defined as a 10 dB shift from baseline hearing involving multiple frequencies in the same ear.29 Noise-induced hearing loss can be caused by long-term exposure to steady state sound, or one-time exposure to an intense impulse sound.2 Long-term exposures cause ongoing degeneration of sensory cells in the inner ear, which are irreversible and progressive.2,30 The progression of hearing loss is also affected by the frequency, intensity, and duration of the noise exposure.31 There is some debate about the sound pressure range that can cause hearing loss. The permissible exposure limit set by the United States Occupational Safety and Health Administration (OSHA) is 90 dBA over 8 hours as a time-weighted average. The National Institute of Occupational Safety and Health (NIOSH) recommends an exposure limit of 85 dBA for 8 hours31,32 as a time-weighted average. Research suggests that an exposure limit of >70 dBA LAeq over a 24 hour period from environmental and leisure noise could pose a risk of hearing impairment.4 Instantaneous peak sound pressure levels of 140 dBA can cause mechanical damage to the middle and inner ear, and this level of exposure is likely applicable to occupational and environmental exposures.4 Noise-induced hearing loss is generally from exposures to higher noise frequencies ranging from 3,000 to 6,000 Hz,4,33 which are above frequencies normally associated with aircraft. However, there is potentially a risk of adverse auditory effects from exposure to low flying aircraft noise characterized by rapid noise level increases at noise levels exceeding 115 dBA.34 Hearing loss can affect cognitive performance, attention, and social interactions, and has been associated with accidents and falls.2 Tinnitus has broadly been defined as the inability to perceive silence,35 its expression, etiology, and effect on patients is highly variable.36 Tinnitus can be caused by excessive noise exposure and is sometimes associated with

noise-induced hearing loss, but it may also be experienced in the absence of measureable hearing loss.35 An observed adverse effect level for noise-induced tinnitus has not been established in the literature, but protective levels for noise-induced hearing loss have been applied to tinnitus.35 Tinnitus can have a significant impact on quality of life and can cause sleep disturbance, cognitive effects, anxiety, hearing problems, irritability, and an inability to work.2 Annoyance Exposure to environmental noise causes subjective discomfort, which is referred to as noise annoyance. 8,37 The relationship between noise exposure and annoyance is generally quantified by linking the results of noise annoyance surveys, summarized by the percentage of the population highly annoyed, and Ldn noise exposure estimates. Measuring a subjective outcome is complex and individual annoyance reactions to the same noise exposure can be highly variable.38 The specific wording in a questionnaire and how the study is administered can influence how participants rate annoyance.39,40 Documented non-acoustic factors that affect how individuals report noise annoyance include demographics, personal, social, and situational conditions.39,41 For example, attitudes towards the noise source or perceived malfeasance related to the noise source can strongly influence survey results.42 Despite these complexities, exposure response curves have increasingly found that the degree of annoyance rises with increasing noise levels from transportation noise.35,43 Noise annoyance is one of the most prevalent effects of environmental noise and can cause feelings of anger, exhaustion, and displeasure.35,37,44 There is also evidence of a link between noise annoyance and neurologic symptoms such as headaches and difficulties concentrating.24 Multiple studies have recently analyzed the association between noise annoyance and depression. While the statistical significance of the associations reported in these studies have been inconsistent,45 there is growing evidence that noise annoyance could increase the risk of depression.45–48 There is also evidence that individuals with higher noise sensitivity are at greater risk of noise-related psychological disorders.37 Noise annoyance, and specifically the associated stress response, is frequently cited as a modifier in the association between noise and cardiovascular health.6,8,9 Sleep Disturbance Sleep disturbance is a deviation, either measured or perceived, from an individual's habitual or desired sleep behavior.49 It is characterized in several different ways including: awakenings, sleep quality, medication to control sleep, total sleep time, time spent in slow wave sleep, sleep stage changes, and arousals.49 Sleep disturbance measurement techniques include: polysomnography (the gold standard that measures brain, eye, and muscle activity), seismosomnography or actigraphy (both measure body movement), questionnaires, and push button responses.50 The effects of noise on sleep are commonly measured using field studies where participants sleep in their homes with natural noise exposures, and laboratory studies where noise is controlled and participant noise exposures are consistent.51,52 In field studies, another layer of complexity is added by the need to distinguish indoor noises from outdoor noises.51 On the other hand, typical habituation to noise may not be reflected in studies where participants sleep in a laboratory51–53 or where sleep disturbance is predicted from exposure-response models.54 A limitation that affects both field and laboratory studies is the difficulty of distinguishing sleep disturbances that would have occurred without the noise event, referred to as spontaneous awakenings.50 Sleep is generally thought to play a role in recuperation and restoration of the body.50,55,56 There is increasing evidence that chronic sleep loss is associated with obesity, hypertension, diabetes, psychological changes, and increased mortality, as well as impairment in immune, endocrine, and cardiovascular function.49,55,57 Low levels of

noise lead to minor sleep fragmentation, such as shifts to lighter sleep and movement.58 There is broad agreement that noise exposure, and specifically noise from aircraft, is related to sleep disturbance and can lead to serious impacts on physical and mental health if the disturbance is severe and frequent enough.50,58 All nine moderate to high quality studies considered in a recent review found that sleep disturbance was linked to aircraft noise events.49 The estimated degree of sleep disturbance that occurs with different levels of sound is not certain.54 For example, the indoor sound exposure level—at which 5 percent of the population is estimated to awaken—ranged between approximately 55 and 85 dB across four different studies that estimated exposure-response curves.50 One study estimated the effect level well above 85 dB.50 Cognitive Impairment Cognitive impairment is typically measured as the ability to perform a task that is assessed with neurobehavioral tests, written questionnaires, or interviews. Daytime studies of children and adults performing the same tasks have found that the relative impact of acute noise on performance is similar between adults and children.59 In adults, there is evidence of chronic noise being associated with impaired attention and short-term memory.60,61 However, there is particular concern about impairment in children because of the importance of early learning and development, and the effects these have on subsequent adult health.13,62,63 With respect to noise exposure, more information exists for cognitive impairment in children than for other health effects. Recent research focused on cognitive impairment from chronic noise exposures in children indicates that noise does not affect all aspects of cognitive function.13 An increasing trend has emerged for an association between noise exposure in children and impaired reading skills and memory, and a less consistent association with attention.13,61 It has been postulated that noise exposure leads to communication difficulties, impaired attention, increased arousal, learned helplessness, frustration, noise annoyance, sleep disturbance, and/or psychological stress, all of which can result in impaired cognition.44 In the Road-traffic and Aircraft Noise Exposure and Children's Cognition and Health (RANCH) Study, the most comprehensive study of noise and cognitive impairment in children to date, a linear exposure-effect relationship was established between aircraft noise and decreased reading comprehension.61 Findings of the RANCH study, which incorporated adjustment for several confounding factors, indicate that reading comprehension falls below average with aircraft noise above 55 dB LAeq16.13 Further, an increase of 5 dB LAeq16 noise exposure to aircraft at school was associated with a 2-month delay in reading age in the United Kingdom and a 1-month delay in reading age in the Netherlands.13 Cardiovascular Disease There is a growing body of literature describing the association between cardiovascular disease and noise exposure. Environmental epidemiological studies are most commonly used to investigate the relationship between environmental noise and cardiovascular health effects, and include retrospective, cohort, cross sectional, case-control, and meta-analyses. The relationship between environmental noise and cardiovascular disease is complex. This complexity has contributed to epidemiological studies reaching inconsistent conclusions related to the strength and significance of associations. There are a number of variables that potentially influence study outcomes such as source of noise,44 selection of noise metric,64 time of day,35,65 characteristics of the study population,66 and study design. The relationship between noise exposure and cardiovascular health is also often confounded by air pollution, and adjusting for this poses a challenge.67,68 Despite these complexities, recent studies have presented increasing evidence of a positive association between noise exposure and cardiovascular health effects.35,44,65,69,70 Acute noise

exposure is associated with increased systolic and diastolic blood pressure, changes in heart rate, and stress hormone release.44 Long-term environmental noise exposure can affect the cardiovascular system and manifest diseases including hypertension, ischemic heart diseases, and stroke.44,64,65 For example, recent meta analyses assessing exposure-response relationships between transportation noise (road traffic and aircraft) and cardiovascular effects (hypertension and ischemic heart diseases) revealed a 6–8 percent increase in risk per increase Ldn, with effects starting at noise levels as low as 50 dB.69,71 The Hypertension and Exposure to Noise near Airports (HYENA) cohort study72–77 found a general positive association between aircraft noise and hypertension, but the significance of their findings varied by day verses night noise, country, and gender.66 There is also increasing evidence that nighttime noise is more relevant to cardiovascular effects than daytime noise,65 and men might be at greater risk than women from noise-related cardiovascular disease.66 Susceptible Populations Some population groups within the general public are likely at greater risk of developing health effects from noise exposure. However, there are few published studies designed to compare noise susceptibility of a particular subgroup to the general population.63 More often, studies report effects of varying noise exposure within a population that is thought to be at greater risk without comparison to another population, or cite that a group is more susceptible based on plausibility. Susceptibility may be impacted by numerous traits including behavior, individual circumstances (e.g., location of residence), physical and mental characteristics, and developmental phase. For auditory effects, smokers may represent a more susceptible population.78 Children, the elderly, shift-workers, and individuals with sleep disorders, mental disorders, and physical illnesses are often cited as being more susceptible to non-auditory effects of noise.55,56,63 • There is evidence of an association between cigarette smoking and hearing loss.78,79 Co-exposures to cigarette smoke have been found to increase the risk of noise-induced hearing loss in occupational settings.1 • Children are thought to be at greater risk from the effects of noise exposure because they are still developing both physically and mentally.13,63 There is substantial evidence that noise impairs children's cognitive function.13 There are inconsistent findings reported for an association between prenatal noise exposures and low birthweight in two systematic reviews,5,80 and there is some indication that children exposed in utero to elevated noise have elevated systolic blood pressure and stress hormone levels.80 • The proposed vulnerability to noise in shift-workers, the elderly, and people with sleep disorders may occur through sleep disturbance.55,56 In shift-workers both daytime and nighttime noise pose a problem.55 Sleep patterns also change with age, and the elderly are generally more prone to waking up.81 • There is evidence that mental health status and personality traits are determinants of noise perception, which is potentially linked to sleep disturbance and subsequent health effects. For example, neuroticism has been associated with increased noise sensitivity and annoyance.60 More generally, attitude toward noise, sleep sensitivity, and personality traits seem to modify noise impacts on sleep disturbance.52 • Individuals with physical illness have been cited as a population potentially more susceptible to noise exposure.41,59,63 For instance, people with a prevalent chronic disease could be at an increased risk of heart diseases associated with noise exposure.82 Pre-existing disease has also been described as a potential effect modifier in the association between noise annoyance and ischemic heart disease, as individuals with chronic illness were more likely to report higher annoyance levels.70 More research is needed to compare particularly susceptible population groups to the general population, and the degree to which these groups are more at-risk to

harmful effects of noise exposure. CONCLUSION The primary findings considered in this review are summarized below. • Noise-Induced Hearing Loss and Tinnitus: There is a risk of hearing impairment from long-term exposure to steady state noise levels greater than 85 dBA for an 8-hour period, and greater than 70 dBA LAeq for a 24-hour period at frequencies ranging from 3,000 Hz to 6,000 Hz. This type of noise exposure is generally not associated with aircraft noise. • Annoyance: The scientific literature provides evidence that noise exposure leads to annoyance, which causes a decrease in quality of life. While definitively quantifying annoyance and its effect on the population is challenging, there is strong evidence that feeling annoyed has negative impacts on mental health and cardiovascular endpoints. • Sleep Disturbance: A variety of measurement techniques have been used to study sleep disturbance. There is general agreement that noise is associated with sleep disturbance and if the disturbance is severe and frequent, it can lead to negative health consequences. • Cognitive Impairment: Studies of noise effects on children's cognition reveal an increasing trend that noise exposure results in impaired reading skills. One of the largest studies to date found that reading comprehension falls below average when children are exposed to aircraft noise that is above 55 dB LAeq. • Cardiovascular Disease: The extent and underlying mechanisms for the relationship between noise exposure and cardiovascular health are still poorly understood. However, the scientific literature has provided increasing evidence of a positive association. • Susceptible Populations: Groups that have been described as potentially more susceptible to the effects of noise include smokers, children, the elderly, shift-workers, and individuals with sleep disorders, mental disorders, and physical illnesses. However, more research is needed to understand differences in risk in these groups compared to the general population. The relationship between noise exposure and health has been studied extensively, and the body of knowledge on this topic is rapidly increasing. However, there are gaps of knowledge to consider. For instance, additional research is needed to thoroughly understand the specific exposure-response relationship and underlying pathways for some health endpoints. There are also complexities related to selecting the most appropriate noise measurement for assessing health outcomes. For example, the Ldn metric is commonly used to quantify aircraft noise exposure levels, yet this metric does not account for infrequent loud events, which could have impacts on health effects such as sleep disturbance.23 Different measurements might be more appropriate for specific noise sources or health outcomes, and future work parsing out these relationships will greatly enhance our understanding of the association between specific noise characteristics and health. In general, there is increasing evidence that noise exposure, as defined from multiple sources including commercial aircraft, is associated with numerous adverse health effects. There are likely nuances associated with noise exposures specific to military aircraft that are not thoroughly understood. However, noise levels similar to those reported from NAS Whidbey Island Complex described in all recent reports25,26,28 pose a threat to public health. REFERENCES 1. Basner M, Brink M, Bristow A, et al. ICBEN review of research on the biological effects of noise 2011-2014. Noise Health. 2015;17(75):57-82. doi:10.4103/1463-1741.153373. 2. Basner M, Babisch W, Davis A, et al. Auditory and non-auditory effects of noise on health. Lancet Lond Engl. 2014;383(9925):1325-1332. doi:10.1016/S0140-6736(13)61613-X. 3. Pyko A, Eriksson C, Oftedal B, et al. Exposure to traffic noise and markers of obesity. Occup Environ Med. 2015;72(8):594-601. doi:10.1136/oemed-2014-102516. 4. Passchier-Vermeer W, Passchier WF. Noise exposure and public health. Environ Health Perspect. 2000;108

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February 24, 2017

EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508
Attn: Code EV21/SS

Subject: Comments on the Environmental Impact Statement for EA-18G Growler Airfield Operations at Naval Air Station Whidbey Island

Thank you for the opportunity to comment on the draft environmental impact statement (DEIS) for the proposed expansion of EA-18G Growler airfield operations at the Naval Air Station Whidbey Island complex. As the state health department, we are interested in the impact this project will have on the health and well-being of people in Washington State.

As noted in the DEIS, this project may result in negative impacts to the public's health from changes in noise, air quality, use of hazardous materials, and increasing greenhouse gases. This project may also impact social determinants of health such as employment, education, and transportation. Though these potential impacts are all important to the overall health of the public, our comments will focus on the potential for non-auditory community health impacts from noise associated with the aircraft. We have chosen this focus for our comments because we have received multiple inquiries, complaints, and requests for assistance from local community groups concerned about potential health impacts from aircraft noise. Current scientific literature suggests that noise at levels similar to those reported on Whidbey Island is associated with annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes (see Appendix A). We have provided recommendations for better understanding the potential impact of the planned activities on the health of this community. They are summarized here and explained in more detail below. Please contact us if you have any questions or if you would like to collaborate on solutions.

Summary of Recommendations

1. **Provide evidence to assure NOISEMAP model estimates are applicable for use at Naval Air Station Whidbey.** Although the NOISEMAP model has been previously validated based on information obtained from other locations, evidence was not provided to indicate that the model accurately predicts actual exposure to noise under conditions at Naval Air Station Whidbey. It is also not clear how NOISEMAP has been updated to reflect recent research findings.

02_WADOH-05

1.a. Thank You
1.d. General Project Concerns
12.n. Quality of Life
2.g. Agency Participation
4.b. NOISEMAP Model, Modeling Methodology, and Noise Sources
4.c. Advanced Acoustic Model
4.d. Day-Night Average Sound Level Metric
4.f. Noise Measurements/Modeling/On-Site Validation
4.h. C-Weighted Noise, Low Frequency Noise, and Vibrations
4.j. Other Reports
4.m. Supplemental Metrics
4.o. Classroom Learning Interference
4.p. Sleep Disturbance
4.q. Potential Hearing Loss
4.r. Nonauditory Health Effects
4.s. Health Impact Assessment and Long-term Health Study Requests

2. **Improve description of current state of science around noise and public health; specifically non-auditory health effects.**
    a. **Describe and conduct a comprehensive review of the literature.** At the request of the Washington State Board of Health and Island County Public Health Department, we prepared a summary of recently published epidemiological literature about the health effects of noise exposure. We have attached this review (Appendix A), which references a significant number of directly relevant articles that were not included in the DEIS.
    b. **Do not require a "definitive causal and significant relationship" between aircraft noise and health prior to including the health outcome in the model.** This standard is unreasonably high and resulted in non-auditory health effects being excluded from the model.
    c. **Expand review to include studies examining the health effects of noise from sources other than aircraft.** It is unclear why literature from other noise sources which can result in similar effects were not considered, especially since there are limited data on effects from noise originating with non-commercial aircraft.
3. **Conduct a Health Impact Assessment.** Current scientific literature suggests that noise at levels similar to those reported on Whidbey Island is associated with annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes. However, whether people on Whidbey Island are *actually experiencing* these outcomes as a result of their exposure to aircraft noise is a question beyond the scope of a literature review. Therefore, we recommend that the Navy conducts a Health Impact Assessment to better understand the potential impact of the planned activities on the health of the community.

Recommendation One: Provide evidence to assure NOISEMAP model estimates are applicable for use at Naval Air Station Whidbey.

Estimates of noise exposure, from noise associated with aircraft operations, to the residents within the surrounding communities were derived from Department of Defense computer modeling software entitled NOISEMAP. The major metric for estimating noise exposure was the Day-Night Average Sound Level (DNL), but depending on outcome being investigated other metrics were used. For example, to investigate noise effects on recreation, a metric which estimates the number of noise events per daytime hour above a maximum A-weighted sound level of 65 dB was used (NA65 L_{max}). For sleep disturbance, the metric was a sound exposure level (SEL) that combines the intensity of a sound with its duration. The SEL was estimated for an outdoor environment and converted to an indoor level. A third example is the use of an L_{max} for indoor speech interference as this metric used within the model identifies the estimated number of events per daytime hour that exceed an instantaneous maximum sound level of 50 dB (50 dB L_{max}). There are several additional metrics used to evaluate various effects from noise (e.g., annoyance, classroom/learning interference, etc.).

The NOISEMAP model has been previously validated based on information obtained from other locations but has not been validated for this naval air station. Due to the complexities involved in validating this model along with the cost and time requirements, there is no expectation of efforts to validate this model at the locations addressed in this DEIS. However, there is an expectation that evidence be provided to determine if the model is predictive by comparing the modeled estimates to observed measurements at locations of concern. While the authors of the DEIS dismissed the very limited sound pressure data that have been provided by outside sources for select locations within the area to be impacted, no effort was made to indicate that their modeling efforts are predictive of estimates provided. It is unclear why efforts were not made to test the multiple estimates provided for the various metrics.

Each metric for exposure used for an outcome should be measured under appropriate conditions (scenarios) and the model estimates need to be compared against these actual values to identify the model's predictive nature. If there are shortcomings, these need to be identified and addressed. With many models, such as those attempting to identify pollutant dissemination characteristics within ground water, surface water, or air, this can be a difficult, costly, and frequently impossible task. However, in this case, there are ongoing operations so these metrics can be measured in a timely manner that is not cost-prohibitive. Without such data there is no means by which to suggest that the model is reflective of actual exposures and accordingly brings the predicted outcomes into question.

In addition, the DEIS should provide greater detail on how this modeling software has been updated to address ongoing findings, such as within the health outcomes arena, as the text indicates the most recent citation for this frequently updated model to be 1992. Also, in 1980 it was determined that 87 percent of the population was not annoyed by sound pressure levels (A weighted) below 65dB. Detail needs to be provided to indicate that no information has been identified in the last 35 years to support or question the use of 65dB within the model as the lowest range when investigating impacts from noise. A discussion also needs to be included pertaining to the remaining (not insignificant) 13 percent of the population that do find these levels annoying and how this portion of the population was addressed within the model.

Recommendation Two: Improve description of current state of science around noise and public health; specifically non-auditory health effects.
In addressing the effects from noise on those impacted, the document divided effects into the categories: annoyance, speech interference, sleep disturbance, noise-induced hearing impairment, non-auditory health effects, performance effects, and noise effects on children. The model attempts to address these endpoints directly (annoyance, speech interference, sleep disturbance, noise-induced hearing impairment) through the DNL or other exposure metrics, indirectly (performance effects and noise effects on children) by using a metric for classroom/learning interference, or excludes them from the model (non-auditory health effects) based on the reasoning that no studies have shown a definitive causal and significant relationship between aircraft noise and health.

Requiring that "definitive causal and significant relationship" between aircraft noise and health is demonstrated prior to including health outcomes within the model is an unreasonably high standard that resulted in non-auditory health effects being excluded from the model.

In our summary of the literature (attached), we found evidence of multiple non-auditory effects that may be attributed to noise exposure, including: annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes. Biological mechanisms of the non-auditory effects of noise exposure require further study. Research to date indicates that adverse health effects are initiated by chronic stress and/or sleep disturbance. Recent studies also suggest that noise-induced annoyance is associated with a stress response, which can affect cardiovascular health.

In the review of the literature provided in the DEIS, odds ratio values are provided without confidence intervals, which are critical to understanding the precision of the estimate and whether the null is overlapped. To provide context of the odds ratios (OR), the DEIS indicates (through citation) that an OR of 9.0 is needed for a strong relationship to exist between an exposure and outcome. As such, an OR of 3.5 provides for a moderate relationship and the OR values of 1.5 are weak. If an odds ratio is shown to be statistically significant, it needs to be considered further. Once determined that an odds ratio is statistically significant, the strength of association can be discussed in terms of the percentage of the

population that could be affected. In addition, even if the effect size is small, a statistically significant odds ratio from a well-defined study that has adjusted for possible confounding may indicate that a sensitive population is being affected and this would need to be evaluated and discussed. A multitude of examples exist within the literature in which an odds ratio has a small effect size but is found to be statistically significant, and because of the size of the at-risk population this represents an exposure of considerable public health consequence.

Another issue of note is that this short review was confined to effects from noise originating with aircraft. There is increasing evidence that noise exposure, as defined from multiple sources including commercial aircraft, is associated with numerous adverse health effects. There are likely nuances associated with noise exposures specific to military aircraft that are not thoroughly understood. However, noise levels similar to those reported from NAS Whidbey Island Complex described in all recent reports pose a threat to public health. It would seem prudent to include the effects from other noise sources as there are limited data on effects from noise originating with non-commercial aircraft.

Recommendation Three: Conduct a Health Impact Assessment.
Current scientific literature suggests that noise at levels similar to those reported on Whidbey Island is associated with annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes. However, whether people on Whidbey Island are *actually experiencing* these outcomes as a result of their exposure to aircraft noise is a question beyond the scope of a literature review. Therefore, we recommend that the Navy conduct a Health Impact Assessment to better understand the potential impact of the planned activities on the health of the community. Groups that have been described as potentially susceptible to the effects of noise include smokers, children, the elderly, shift-workers, and individuals with sleep disorders, mental disorders, and physical illnesses.

In our summary of the literature, we see increasing evidence that noise exposure, as defined from multiple sources including commercial aircraft, is associated with numerous adverse health effects. There are likely nuances associated with noise exposures specific to military aircraft that are not thoroughly understood. However, noise levels similar to those reported from NAS Whidbey Island Complex pose the following threats to public health:

- **Annoyance:** The scientific literature provides evidence that noise exposure leads to annoyance, which causes a decrease in quality of life. While definitively quantifying annoyance and its effect on the population is challenging, there is strong evidence that feeling annoyed has negative impacts on mental health and cardiovascular endpoints.
- **Sleep Disturbance:** A variety of measurement techniques have been used to study sleep disturbance. There is general agreement that noise is associated with sleep disturbance and if the disturbance is severe and frequent, it can lead to negative health consequences.
- **Cognitive Impairment:** Studies of noise effects on children's cognition reveal an increasing trend that noise exposure results in impaired reading skills. One of the largest studies to date found that reading comprehension falls below average when children are exposed to aircraft noise that is above 55 dB L_{Aeq16} at school.
- **Cardiovascular Disease:** The extent and underlying mechanisms for the relationship between noise exposure and cardiovascular health are still poorly understood. However, the scientific literature has provided increasing evidence of a positive association.

Health Impact Assessment is a rapidly emerging practice among local, state, and federal jurisdictions that helps assess how a proposed decision will affect the health of a population and whether vulnerable populations are more likely to be impacted. The goal of a Health Impact Assessment is to provide

recommendations during the decision-making process that will protect health and reduce health inequities. A Health Impact Assessment brings potential positive and negative public health impacts and considerations to the decision-making process for plans, projects, and policies that fall outside traditional public health arenas, such as military aircraft use and associated noise. A Health Impact Assessment can engage community members and stakeholders to provide practical recommendations to increase positive health effects while minimizing negative ones.

If you have any questions, please contact Lauren Jenks at (360) 236-3325 or lauren.jenks@doh.wa.gov.

Sincerely,

Clark Halvorson
Assistant Secretary

Attachment

Attachment A

A Summary of the Association Between Noise and Health

Authors: Julie Fox, PhD, MHS, Environmental Epidemiologist, Washington State Department of Health
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EXECUTIVE SUMMARY

The objective of this document is to summarize recent literature exploring the health effects of noise exposure, and compare our findings to reported noise levels originating from the Naval Air Station (NAS) Whidbey Island Complex. The relationship between noise exposure and health has been studied extensively, and the body of knowledge on this topic is rapidly increasing. We described noise measurements taken on Whidbey Island and summarized literature on five of the most studied health outcomes associated with noise: noise induced hearing loss and tinnitus, annoyance, sleep disturbance, cognitive impairment, and cardiovascular disease, in addition to a discussion of susceptible populations. While we found that noise-induced hearing loss is typically not associated with aircraft noise, there is increasing evidence that noise exposure is associated with annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes. Groups that have been described as particularly susceptible to the effects of noise include: smokers, children, the elderly, shift-workers, and individuals with sleep disorders, mental disorders, and physical illnesses. There were limitations associated with this summary including gaps of knowledge related to exact exposure-response relationships and underlying pathways for some health endpoints. In addition, there have been minimal studies specific to health effects associated with military aircraft noise exposure. More research is needed to understand differences in risk attributed to susceptible groups compared to the general population. Despite these limitations, the current body of scientific literature suggests that noise levels similar to those reported from the NAS Whidbey Island Complex pose a threat to public health.

INTRODUCTION

This report was written by the Washington State Department of Health at the request of the Washington State Board of Health and Island County Public Health Department to summarize recently published epidemiological literature about the health effects of noise exposure. Noise is being evaluated in response to community concerns on Whidbey Island and the surrounding area over air traffic noise levels originating from the NAS Whidbey Island Complex. These concerns are related to historical and current noise in addition to proposed increases in naval air traffic. Our specific objectives were to summarize recent literature on the most pertinent health effects of noise exposure and relate our findings to noise exposure on Whidbey Island.

Noise and Health

Noise is generally defined as unwanted sound. This definition of noise recognizes the psychological role of the impact of noise. Auditory effects of noise exposure, specifically noise-induced hearing loss and tinnitus, have been well-established for decades.[1] Multiple non-auditory effects may be attributed to noise exposure, including: hypertension, cardiovascular disease and events, diabetes, obesity, reduced cognitive functioning, declines in performance, and birth defects.[1-5]

Biological mechanisms of the non-auditory effects of noise exposure require further study. Research to date indicates that adverse health effects are initiated by chronic stress and/or sleep disturbance.[1,6,7] Recent studies also suggest that noise-induced annoyance is associated with a stress response, which can affect cardiovascular health.[6,8,9]

Noise Measurements

Sound is the fluctuation of pressure through a medium, such as air or water. Sound level is measured in decibels (dB) on a scale that is based on human hearing, where 0 dB is barely audible and a turbojet engine is approximately 160 dB.[10] Because decibels are based on a logarithmic scale, when two sounds are combined the total sound level is much less than simply adding the two sound levels together. For example, if there are two sources that each produce 80 dB of noise at a single location, the resulting sound level is 83 dB (*not* 160 dB).

In addition to pressure differences that determine sound level, sound has varying frequencies measured in hertz (Hz) that are heard as pitch. The human ear is less sensitive to hearing extremely low and high frequencies. One way of adjusting sound levels to incorporate the varying sensitivity and perceived loudness across frequencies is to apply an A-, B-, or C-weighted scale. The A-weighted scale was derived from an equal-loudness contour for pure tones.[11] Studies indicate that the A-weighted scale provides a better estimate of human hearing threat than the other weightings and it is the most commonly used among human noise impact studies.[10] However, there is some concern that the A-weighted scale underestimates the perceived loudness of low frequency noise.[11,12]

While there are over 20 different metrics of sound, a few are typically used in studies of health effects. The highest sound level measured is often reported as an A-weighted Maximum Sound Level (L_{Amax}) or a Peak Sound Pressure Level (L_{pk}), both of which may occur in less than a second. The sound exposure level (SEL) is the total energy of noise measured over a specified time period, often one second or a single noise event. Longer term measurement of noise is often reported as the Equivalent Sound Level-A-Weighted (L_{Aeq}), which is the A-weighted average sound level based on the equivalent-continuous sound level over a specified time period. The Day-Night Average Sound Level (L_{dn} or DNL) is an average sound level over a 24-hour period that incorporates a 10-dB penalty for sound events at night. In studies that focus on sound only during the night, L_{night} is typically used, and similarly L_{day} is typically used for only daytime noise. Thus, the duration of sound exposure measurements can range from an instantaneous event to a year.

The selection of the sound metric used in studies depends on characteristics of the noise and the type of health effect being studied. Uncertainty remains in terms of understanding the measurement of noise, such as the number of events or the peak sound level, that is most relevant for health.[13]

Noise from Military and Commercial Aircraft

The majority of literature investigating the relationship between health effects and noise from aircraft is based on commercial aircraft rather than military aircraft.[14–21] The main factors that affect ground-level noise from aircraft are: (1) the type of aircraft and engine including the thrust, flap, and airspeed

management procedures, and (2) factors that affect sound propagation, such as distance to the point of concern (e.g., the receptor), topography, and weather.[22]

Noise from aircraft is predominately low frequency (approximately 10 to 250 Hz).[11,23] High frequency is generally defined as up to 5,000 or 10,000 Hz.[11] People may perceive low frequency sounds either with their ears or by sensing vibrations.[24]

Different types of aircraft have different acoustic signatures, which makes it possible to distinguish noise measured from military and commercial aircraft.[25] It is likely that different flight activities (e.g., takeoffs, field carrier landing practice, low-flying) and aircraft types alter noise in ways that are determinants of health outcomes. However, these distinctions are not evaluated in this summary because of the paucity of published research on military aircraft noise.

METHODS

We described noise measurements from three publications to understand the noise levels on Whidbey Island. These data included recent measurements by JGL Acoustics Inc.[26,27] and the National Park Service Natural Resource Stewardship and Science Office,[25] and modeled noise levels presented in the draft Environmental Impact Statement (EIS) prepared by the United States Department of the Navy.[28]

There is an extensive body of scientific literature on noise-related health effects. We summarized literature about commercial aircraft noise, as well as noise from other sources, because of the limited peer-reviewed literature on noise from military aircraft. Due to time constraints we primarily focused on peer-reviewed literature reviews with an emphasis on articles published since 2012. This summary includes a detailed description of noise-induced hearing loss and tinnitus, annoyance, sleep disturbance, cognitive impairment, and cardiovascular disease. These effects impact welfare, social, mental and physical health, and have been the most thoroughly investigated to date.[2]

RESULTS AND DISCUSSION

Naval Air Station Whidbey Island Complex Noise

Noise levels originating from the NAS Whidbey Island Complex have recently been measured by JGL Acoustics Inc.[26,27] and the National Park Service Natural Resource Stewardship and Science Office.[25] Modeled noise levels are presented in the draft Environmental Impact Statement (EIS) prepared by the United States Department of the Navy.[28] There are discrepancies in reported noise levels across these three reports due, at least in part, to differences in measurement methods and sample locations. There are limitations to each approach and challenges to directly comparing the reported measurements that will not be addressed in this summary. The objective here is not to comprehensively evaluate the three existing reports, but to provide a useful reference for gauging possible noise exposure levels under various conditions on Whidbey Island.

JGL Acoustics Inc. measured noise originating from military aircraft operations on May 7, 2013, at five locations in close proximity to one of two landing strips at NAS Whidbey Island Complex.[26,27] Among

other measures, they reported 24-hr L_{Aeq} noise measurements ranging from 64.1 dBA to 75.0 dBA, and Max L_{Aeq} ranging from 81.1 dBA to 119.2 dBA across the sampled sites.

The National Park Service took noise measurements at Ebey's Landing National Historical Reserve, which is located five miles south of NAS Whidbey Island Complex.[25] They took multiple measurements for ~735 continuous hours from two locations. For example, they reported L_{dn} levels of 73.6 dBA and 54.7 dBA at the two locations with L_{Amax} levels of ~114 dBA and ~85 dBA. They also found that levels of L_{Amax} 70 dBA were exceeded by 281 and 125 military aircraft events at the two locations over 31 days.

The EIS estimated noise levels for the area surrounding NAS Whidbey Island Complex using NOISEMAP modeling software.[28] Their models were based on multiple scenarios of predicted flight activity in the year 2021, which accounts for the proposed increases in flight activity and estimated changes in population. They estimated that in an average year 3,875 people across 7,299 acres will live within a 65 to <70 dBA L_{dn} noise contour, 3,165 people across 6,211 acres will live within a 70 to <75 dBA L_{dn} noise contour, and 3,993 people across 6,423 acres will live within a >75 dBA L_{dn} noise contour. In addition, they estimated L_{Amax} levels at multiple points of interest. The highest L_{Amax} at a residential point of interest was 114 dBA with 267 annual events. The highest L_{Amax} at a school point of interest was 94 dBA with 178 annual events. The highest L_{Amax} at a park point of interest was 106 dBA with 267 annual events.

Noise Induced Hearing Loss & Tinnitus

Noise-Induced hearing loss is defined as an increase in hearing threshold level sufficient to affect daily living.[4] Hearing loss has more specifically been defined as a 10 dB shift from baseline hearing involving multiple frequencies in the same ear.[29] Noise-induced hearing loss can be caused by long-term exposure to steady state sound, or one-time exposure to an intense impulse sound.[2] Long-term exposures cause ongoing degeneration of sensory cells in the inner ear, which are irreversible and progressive.[2,30] The progression of hearing loss is also affected by the frequency, intensity, and duration of the noise exposure.[31]

There is some debate about the sound pressure range that can cause hearing loss. The permissible exposure limit set by the United States Occupational Safety and Health Administration (OSHA) is 90 dBA over 8 hours as a time-weighted average. The National Institute of Occupational Safety and Health (NIOSH) recommends an exposure limit of 85 dBA for 8 hours[31,32] as a time-weighted average. Research suggests that an exposure limit of >70 dBA L_{Aeq} over a 24 hour period from environmental and leisure noise could pose a risk of hearing impairment.[4] Instantaneous peak sound pressure levels of 140 dBA can cause mechanical damage to the middle and inner ear, and this level of exposure is likely applicable to occupational and environmental exposures.[4]

Noise-induced hearing loss is generally from exposures to higher noise frequencies ranging from 3,000 to 6,000 Hz,[4,33] which are above frequencies normally associated with aircraft. However, there is potentially a risk of adverse auditory effects from exposure to low flying aircraft noise characterized by rapid noise level increases at noise levels exceeding 115 dBA.[34] Hearing loss can affect cognitive performance, attention, and social interactions, and has been associated with accidents and falls.[2]

Tinnitus has broadly been defined as the inability to perceive silence,[35] its expression, etiology, and effect on patients is highly variable.[36] Tinnitus can be caused by excessive noise exposure and is sometimes associated with noise-induced hearing loss, but it may also be experienced in the absence of measureable hearing loss.[35] An observed adverse effect level for noise-induced tinnitus has not been established in the literature, but protective levels for noise-induced hearing loss have been applied to tinnitus.[35] Tinnitus can have a significant impact on quality of life and can cause sleep disturbance, cognitive effects, anxiety, hearing problems, irritability, and an inability to work.[2]

Annoyance

Exposure to environmental noise causes subjective discomfort, which is referred to as noise annoyance.[8,37] The relationship between noise exposure and annoyance is generally quantified by linking the results of noise annoyance surveys, summarized by the percentage of the population highly annoyed, and L_{dn} noise exposure estimates. Measuring a subjective outcome is complex and individual annoyance reactions to the same noise exposure can be highly variable.[38] The specific wording in a questionnaire and how the study is administered can influence how participants rate annoyance.[39,40] Documented non-acoustic factors that affect how individuals report noise annoyance include demographics, personal, social, and situational conditions.[39,41] For example, attitudes towards the noise source or perceived malfeasance related to the noise source can strongly influence survey results.[42] Despite these complexities, exposure response curves have increasingly found that the degree of annoyance rises with increasing noise levels from transportation noise.[35,43]

Noise annoyance is one of the most prevalent effects of environmental noise and can cause feelings of anger, exhaustion, and displeasure.[35,37,44] There is also evidence of a link between noise annoyance and neurologic symptoms such as headaches and difficulties concentrating.[24] Multiple studies have recently analyzed the association between noise annoyance and depression. While the statistical significance of the associations reported in these studies have been inconsistent,[45] there is growing evidence that noise annoyance could increase the risk of depression.[45–48] There is also evidence that individuals with higher noise sensitivity are at greater risk of noise-related psychological disorders.[37] Noise annoyance, and specifically the associated stress response, is frequently cited as a modifier in the association between noise and cardiovascular health.[6,8,9]

Sleep Disturbance

Sleep disturbance is a deviation, either measured or perceived, from an individual's habitual or desired sleep behavior.[49] It is characterized in several different ways including: awakenings, sleep quality, medication to control sleep, total sleep time, time spent in slow wave sleep, sleep stage changes, and arousals.[49] Sleep disturbance measurement techniques include: polysomnography (the gold standard that measures brain, eye, and muscle activity), seismosomnography or actigraphy (both measure body movement), questionnaires, and push button responses.[50] The effects of noise on sleep are commonly measured using field studies where participants sleep in their homes with natural noise exposures, and laboratory studies where noise is controlled and participant noise exposures are consistent.[51,52] In field studies, another layer of complexity is added by the need to distinguish indoor noises from outdoor noises.[51] On the other hand, typical habituation to noise may not be reflected in studies where

participants sleep in a laboratory[51–53] or where sleep disturbance is predicted from exposure-response models.[54] A limitation that affects both field and laboratory studies is the difficulty of distinguishing sleep disturbances that would have occurred without the noise event, referred to as spontaneous awakenings.[50]

Sleep is generally thought to play a role in recuperation and restoration of the body.[50,55,56] There is increasing evidence that chronic sleep loss is associated with obesity, hypertension, diabetes, psychological changes, and increased mortality, as well as impairment in immune, endocrine, and cardiovascular function.[49,55,57] Low levels of noise lead to minor sleep fragmentation, such as shifts to lighter sleep and movement.[58] There is broad agreement that noise exposure, and specifically noise from aircraft, is related to sleep disturbance and can lead to serious impacts on physical and mental health if the disturbance is severe and frequent enough.[50,58] All nine moderate to high quality studies considered in a recent review found that sleep disturbance was linked to aircraft noise events.[49] The estimated degree of sleep disturbance that occurs with different levels of sound is not certain.[54] For example, the indoor sound exposure level—at which 5 percent of the population is estimated to awaken—ranged between approximately 55 and 85 dB across four different studies that estimated exposure-response curves.[50] One study estimated the effect level well above 85 dB.[50]

Cognitive Impairment

Cognitive impairment is typically measured as the ability to perform a task that is assessed with neurobehavioral tests, written questionnaires, or interviews. Daytime studies of children and adults performing the same tasks have found that the relative impact of acute noise on performance is similar between adults and children.[59] In adults, there is evidence of chronic noise being associated with impaired attention and short-term memory.[60,61] However, there is particular concern about impairment in children because of the importance of early learning and development, and the effects these have on subsequent adult health.[13,62,63]

With respect to noise exposure, more information exists for cognitive impairment in children than for other health effects. Recent research focused on cognitive impairment from chronic noise exposures in children indicates that noise does not affect all aspects of cognitive function.[13] An increasing trend has emerged for an association between noise exposure in children and impaired reading skills and memory, and a less consistent association with attention.[13,61] It has been postulated that noise exposure leads to communication difficulties, impaired attention, increased arousal, learned helplessness, frustration, noise annoyance, sleep disturbance, and/or psychological stress, all of which can result in impaired cognition.[44]

In the Road-traffic and Aircraft Noise Exposure and Children's Cognition and Health (RANCH) Study, the most comprehensive study of noise and cognitive impairment in children to date, a linear exposure-effect relationship was established between aircraft noise and decreased reading comprehension.[61] Findings of the RANCH study, which incorporated adjustment for several confounding factors, indicate that reading comprehension falls below average with aircraft noise above 55 dB L_{Aeq16}.[13] Further, an increase of 5 dB L_{Aeq16} noise exposure to aircraft at school was associated with a 2-month delay in reading age in the United Kingdom and a 1-month delay in reading age in the Netherlands.[13]

Cardiovascular Disease

There is a growing body of literature describing the association between cardiovascular disease and noise exposure. Environmental epidemiological studies are most commonly used to investigate the relationship between environmental noise and cardiovascular health effects, and include retrospective, cohort, cross sectional, case-control, and meta-analyses. The relationship between environmental noise and cardiovascular disease is complex. This complexity has contributed to epidemiological studies reaching inconsistent conclusions related to the strength and significance of associations. There are a number of variables that potentially influence study outcomes such as source of noise,[44] selection of noise metric,[64] time of day,[35,65] characteristics of the study population,[66] and study design. The relationship between noise exposure and cardiovascular health is also often confounded by air pollution, and adjusting for this poses a challenge.[67,68]

Despite these complexities, recent studies have presented increasing evidence of a positive association between noise exposure and cardiovascular health effects.[35,44,65,69,70] Acute noise exposure is associated with increased systolic and diastolic blood pressure, changes in heart rate, and stress hormone release.[44] Long-term environmental noise exposure can affect the cardiovascular system and manifest diseases including hypertension, ischemic heart diseases, and stroke.[44,64,65] For example, recent meta analyses assessing exposure-response relationships between transportation noise (road traffic and aircraft) and cardiovascular effects (hypertension and ischemic heart diseases) revealed a 6–8 percent increase in risk per increase L_{dn}, with effects starting at noise levels as low as 50 dB.[69,71] The Hypertension and Exposure to Noise near Airports (HYENA) cohort study[72–77] found a general positive association between aircraft noise and hypertension, but the significance of their findings varied by day verses night noise, country, and gender.[66] There is also increasing evidence that nighttime noise is more relevant to cardiovascular effects than daytime noise,[65] and men might be at greater risk than women from noise-related cardiovascular disease.[66]

Susceptible Populations

Some population groups within the general public are likely at greater risk of developing health effects from noise exposure. However, there are few published studies designed to compare noise susceptibility of a particular subgroup to the general population.[63] More often, studies report effects of varying noise exposure within a population that is thought to be at greater risk without comparison to another population, or cite that a group is more susceptible based on plausibility. Susceptibility may be impacted by numerous traits including behavior, individual circumstances (e.g., location of residence), physical and mental characteristics, and developmental phase. For auditory effects, smokers may represent a more susceptible population.[78] Children, the elderly, shift-workers, and individuals with sleep disorders, mental disorders, and physical illnesses are often cited as being more susceptible to non-auditory effects of noise.[55,56,63]

- There is evidence of an association between cigarette smoking and hearing loss.[78,79] Co-exposures to cigarette smoke have been found to increase the risk of noise-induced hearing loss in occupational settings.[1]

- Children are thought to be at greater risk from the effects of noise exposure because they are still developing both physically and mentally.[13,63] There is substantial evidence that noise impairs children's cognitive function.[13] There are inconsistent findings reported for an association between prenatal noise exposures and low birthweight in two systematic reviews,[5,80] and there is some indication that children exposed in utero to elevated noise have elevated systolic blood pressure and stress hormone levels.[80]
- The proposed vulnerability to noise in shift-workers, the elderly, and people with sleep disorders may occur through sleep disturbance.[55,56] In shift-workers both daytime and nighttime noise pose a problem.[55] Sleep patterns also change with age, and the elderly are generally more prone to waking up.[81]
- There is evidence that mental health status and personality traits are determinants of noise perception, which is potentially linked to sleep disturbance and subsequent health effects. For example, neuroticism has been associated with increased noise sensitivity and annoyance.[60] More generally, attitude toward noise, sleep sensitivity, and personality traits seem to modify noise impacts on sleep disturbance.[52]
- Individuals with physical illness have been cited as a population potentially more susceptible to noise exposure.[41,59,63] For instance, people with a prevalent chronic disease could be at an increased risk of heart diseases associated with noise exposure.[82] Pre-existing disease has also been described as a potential effect modifier in the association between noise annoyance and ischemic heart disease, as individuals with chronic illness were more likely to report higher annoyance levels.[70]

More research is needed to compare particularly susceptible population groups to the general population, and the degree to which these groups are more at-risk to harmful effects of noise exposure.

CONCLUSION

The primary findings considered in this review are summarized below.

- **Noise-Induced Hearing Loss and Tinnitus:** There is a risk of hearing impairment from long-term exposure to steady state noise levels greater than 85 dBA for an 8-hour period, and greater than 70 dBA L_{Aeq} for a 24-hour period at frequencies ranging from 3,000 Hz to 6,000 Hz. This type of noise exposure is generally not associated with aircraft noise.
- **Annoyance:** The scientific literature provides evidence that noise exposure leads to annoyance, which causes a decrease in quality of life. While definitively quantifying annoyance and its effect on the population is challenging, there is strong evidence that feeling annoyed has negative impacts on mental health and cardiovascular endpoints.
- **Sleep Disturbance:** A variety of measurement techniques have been used to study sleep disturbance. There is general agreement that noise is associated with sleep disturbance and if the disturbance is severe and frequent, it can lead to negative health consequences.
- **Cognitive Impairment:** Studies of noise effects on children's cognition reveal an increasing trend that noise exposure results in impaired reading skills. One of the largest studies to date found that reading comprehension falls below average when children are exposed to aircraft noise that is above 55 dB L_{Aeq}.

- **Cardiovascular Disease:** The extent and underlying mechanisms for the relationship between noise exposure and cardiovascular health are still poorly understood. However, the scientific literature has provided increasing evidence of a positive association.
- **Susceptible Populations:** Groups that have been described as potentially more susceptible to the effects of noise include smokers, children, the elderly, shift-workers, and individuals with sleep disorders, mental disorders, and physical illnesses. However, more research is needed to understand differences in risk in these groups compared to the general population.

The relationship between noise exposure and health has been studied extensively, and the body of knowledge on this topic is rapidly increasing. However, there are gaps of knowledge to consider. For instance, additional research is needed to thoroughly understand the specific exposure-response relationship and underlying pathways for some health endpoints. There are also complexities related to selecting the most appropriate noise measurement for assessing health outcomes. For example, the L_{dn} metric is commonly used to quantify aircraft noise exposure levels, yet this metric does not account for infrequent loud events, which could have impacts on health effects such as sleep disturbance.[23] Different measurements might be more appropriate for specific noise sources or health outcomes, and future work parsing out these relationships will greatly enhance our understanding of the association between specific noise characteristics and health.

In general, there is increasing evidence that noise exposure, as defined from multiple sources including commercial aircraft, is associated with numerous adverse health effects. There are likely nuances associated with noise exposures specific to military aircraft that are not thoroughly understood. However, noise levels similar to those reported from NAS Whidbey Island Complex described in all recent reports[25,26,28] pose a threat to public health.

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1.a. Thank You
2.e. Public Involvement Process
2.f. Use of Public Comments

Jay Inslee
Governor
State of Washington

January 3, 2017

Lisa Padgett
EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508
ATTN: Code EV21/SS

Dear Ms. Padgett:

There is a great deal of interest in the Navy's proposed expansion of Growler Airfield Operations at Naval Air Station (NAS) Whidbey Island. The draft Environmental Impact Statement (EIS) for the EA-18G Growler Airfield Operations at NAS Whidbey Island was released November 10, 2016. Thank you for providing such a comprehensive and thorough document.

Given the volume of the document, at more than 700 pages, and the technical nature of its content, some local jurisdictions and citizens have expressed concerns about comprehending the document and providing a response within the current public comment period. While the Navy established an extended public comment period of 75 days, given the complex nature of the topic, additional time is necessary to prepare a response. Thus, I ask that you please extend the public comment period an additional 45 days to provide sufficient time for citizens and local jurisdictions to provide comment.

I will provide further comment on the draft EIS for the EA-18G Growler Airfield Operations at NAS Whidbey Island Complex in subsequent correspondence.

Very truly yours,

Jay Inslee
Governor

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JAY INSLEE
Governor

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February 23, 2017

Ms. Lisa Padgett
EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508
ATTN: Code EV21/SS

Dear Ms. Padgett:

Thank you for the opportunity to review and provide comment on the draft Environmental Impact Statement (EIS) for EA-18G Growler Airfield Operations at Naval Air Station Whidbey Island Complex. This letter contains my response to the potential impacts of the proposed actions. Detailed comments from several state agencies under the authority of the governor will be submitted through separate correspondence.

The capabilities provided by the aircraft stationed at Naval Air Station Whidbey Island (NASWI) are an integral component of our national defense strategy. We recognize that the United States Navy requires additional EA-18G Growler aircraft and that any of the proposed alternatives would bring an additional 35 or 36 aircraft to NASWI. These proposed alternatives will result in a predicted 30 percent increase in activity along training routes and a 45 percent increase in activity at Ault Field and Outlying Landing Field (OLF) Coupeville. The increase from 82 Growlers to a possible 117 or 118 aircraft will have an impact on the surrounding community and necessitates comment:

1. We commend the Department of Defense for evaluating thirty off-station points of interest to assess the aircraft noise impact to residential areas, schools, parks and recreational areas in the surrounding community. The potential effects of noise on sleep, classroom learning, and recreation is one of the principal concerns of the proposed action.

   The noise exposure analysis presented in the draft EIS was computed with the Department of Defense (DOD) NOISEMAP suite of computer programs that can account for the effect of ground elevation and impedance on the propagation of sound. While computer modeling is a viable method of determining noise impacts, actual sampling with acoustic measuring devices at the 30 points of interest measuring sound over an extended period of time to better understand the effects of routine flight operations on the community is preferred. Please conduct a more thorough sound study using actual acoustic measuring devices.

2. Washington is experiencing a tremendous rate of growth, both to our economy and to our population. By Office of Financial Management (OFM) estimates, Island County experienced a

02_WAGOV-02

1.a. Thank You
14.a. Transportation Impacts
15.a. Infrastructure
15.b. Potable Water and Wastewater Capacity
4.f. Noise Measurements/Modeling/On-Site Validation
4.l. Points of Interest
4.t. Noise Mitigation

2.87 percent population growth between 2015 and 2016. NASWI has been a part of this growth with the arrival of six squadrons of the P8 Poseidon aircraft. The proposed action to increase the number of EA-18G Growlers would continue this growth trend. This growth necessitates planning and capital investments to expand infrastructure.

We request the Navy through the Office of Economic Adjustment provide technical assistance to counties and local jurisdictions to analyze the full impact to affordable housing, public education, emergency services, transportation, and sewer and water systems. Any decision to proceed with the proposed alternatives must include the requisite federal funding for capital investment and ongoing operating costs.

3. As identified in the draft EIS, the proposed action will have an effect on the surrounding community. A principal concern is that the proposed action will result in both an increase in the frequency of flight operations as well as an expansion of the area exposed to noise. We request the Navy consult with local officials and subject matter experts on sound mitigation to develop and implement a strategy to alleviate the impact of airfield operations based on associated levels of risk.

I appreciate your consideration of these comments and those from state agencies and members of the surrounding community as part of the public comment period for the draft EIS. My staff and our state agencies are available should you require any further assistance on these items of concern. Our state is proud of and looks forward to continuing to host installations for our Armed Forces. Washington is honored to support our military communities and the nation's defense.

Very truly yours,

Jay Inslee
Governor

Don Measamer
City of Anacortes

Anacortes, WA 98221

Thank you for the opportunity to comment, the City of Anacortes has reviewed the alternatives related to the Growler EIS, alternative 1, 2 and 3 and determined that Alternative 1, would have the least impact on the community. Again, thank you for the opportunity to comment and if you have any questions please feel free to contact me at 360-293-1942. Best regards, Don Measamer

1.a. Thank You
2.m. Record of Decision/Preferred Alternative

Edward Hartin
Central Whidbey Island Fire & Rescue

Coupeville, WA 98239

1.a. Thank You
5.a. Accident Potential Zones

Establishment of an APZ1 for Runway 14 as illustrated Figure 4.3-2 Existing 2005 AICUZ Clear Zones and Conceptual APZs for OLF Coupeville, Option 2 placed Central Whidbey Island Fire & Rescue Station 53 at (and within) the boundary of the APZ1. The District has concern that this change, if it occurs, may negatively impact the District's ability to serve the needs of the District from this station due to changes in zoning restrictions related to fire and rescue service facilities.

1.a. Thank You
1.b. Best Available Science and Data
1.d. General Project Concerns
12.n. Quality of Life
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
4.d. Day-Night Average Sound Level Metric
4.f. Noise Measurements/Modeling/On-Site Validation
4.h. C-Weighted Noise, Low Frequency Noise, and Vibrations
4.j. Other Reports
4.t. Noise Mitigation

January 3, 2017

EA-18G EIS Project Manager
Naval Facilities Engineering Command (NAVFAC) Atlantic
Attn: Code EV21/SS
6506 Hampton Blvd.
Norfolk, VA 23508

RE: Navy EIS comments

To whom it may concern,

We are elected community leaders in the region impacted by operations at NAS-WI who have come together to respond to the request for comments about the proposed increased number of Growler EA-18 jets. Our primary purpose is to work with the Navy and use accurate, useful data so that adequate mitigation can be implemented for the current and future noise impacts of Growler flights. The importance of the Navy's presence in our region is well understood. The base brings jobs, economic stability, emergency response resources and a multitude of assets to our communities. We support the strategic mission of the base, its importance to national security, and understand the critical need for safe and proper training for new pilots heading into harm's way to defend our country around the world.

Our region is one of the most beautiful and scenic in the world. People are drawn here for the high quality of life offered here. It is important to acknowledge that a fundamental change began with the Navy base's platform shift from Prowlers to Growlers, and then the subsequent consolidation of these planes on Whidbey Island. For many years the practice flights necessary for fleet preparedness could be described as an annoyance to community members. With the change of platform, and the number of FCLPs significantly increased, the local experience changed under the low-level flight paths from both Whidbey Island air fields. The noise generated from these FCLPs currently impact our neighborhoods, our businesses and overall quality of life across the region.

The draft Environmental Impact Statement does not accurately reflect the noise impacts to the regional quality of life with existing operations in the No-Action Alternative, and thus cannot reflect the proposed impacts and overall measurements for dramatically increased air traffic. For example, the noise contour maps of current operations impact a broader area than shown. Data collected in Jefferson and San Juan Counties depict a larger population experiencing frequent disturbance caused by low level aircraft flights over their neighborhoods.

Also of concern, the measurement of the noise created by the FCLP's depends upon computer modeling and not the reverberations caused by these low level flights, as well as the frequency, unpredictability and the intense nature of the sound created by the Growlers. By using the industry standard of a daily average, the community impacts are not adequately reflected in the report. The recent National Park Service sound study in Ebey's Reserve includes pictures of the differences between sound waves generated by commercial aircraft (which is what the standard

protocols were designed to measure) and the sound waves generated by the Growlers. The contrast is clearly significant.

For these reasons, we the undersigned are concerned that the Navy's EIS does not adequately reflect the current and potential local community noise impacts of the five-fold proposed increase in low-level Growler flights. Good data is needed for good decisions to be made about dramatically increasing FCLPs in our area.

Thank you for your consideration.

Sincerely,

Kathleen Kler

The Honorable Jefferson County Commissioner Kathleen Kler

Jamie Stephens

The Honorable San Juan County Commissioner Jamie Stephens

Ron Wesen

The Honorable Skagit County Commissioner Ron Wesen

Helen Price Johnson

The Honorable Island County Commissioner Helen Price Johnson

Kathleen Kler
Board of County Commissioners, Chair

Jefferson County, WA 98368

In response to the Naval Air Station Whidbey Island's request for comments regarding the Environmental Impact Statement (EIS) on Growler Operations, the Jefferson County Board of County Commissioners submits the following for your consideration. In our weekly public meetings, as well as via email, phone calls and conversations with constituents, there are many East and West Jefferson County residents expressing concern about the impacts to their well-being as a result of Growler noise. These impacts include (but are not limited to): • loss of sleep; • inability to hold a conversation uninterrupted; • complaints from customers at hospitality businesses; • concern for well-being of domestic and farm animals as well as marine mammals; • loss of quality of life benefits from time spent recreating outdoors; • fear of declining property values from increased Growler activity. These residents have also expressed their dissatisfaction in the EIS to adequately address the severity of those impacts at current levels of operation. For example, the lack of data collected locally versus projections generated from noise modelling leads many of us to ask whether these projections are accurate, whether they account for the variability in how noise and reverberations affect a diverse population, and whether the Navy is a concerned enough neighbor to invest in collecting data locally. Similarly, the use of daily averages does not capture the full effect of noise that occurs in short, intense periods. This way of measuring sound is not relevant to analyzing impacts to our residents. There is also concern that flight paths and elevations are not accurately represented in the EIS or in the Navy's responses to complaints. A Navy veteran reports seeing jets flying as low as 1000' over Marrowstone Island. Cape George residents report increased noise from the Growler's "afterburner" technology. Neither of these impacts are acknowledged in the noise contour maps in the EIS, again causing concerns that impacts are not being measured or accurately reflected. We are also hearing significant concern in the public process. Residents are confused by needing to submit separate comments for Growlers than for Electromagnetic Warfare, and that comments on the latter may only submitted by those who submitted them previously. Similarly, cumulative impacts of land and water-based operations should be considered to assess the full impact to our County. Having a clear process, with a long timeline (particularly around the holidays) seems essential to build trust in the transparency of any public agency. While we recognize the Navy as an important and beneficial neighbor and partner to Jefferson County in myriad ways (Emergency Preparedness efforts, the Hood Canal Joint Land Use Study and REPI funds for land conservation, for example), we are concerned that the EIS is not accurately reflecting the impacts to the quality of life of some Jefferson County residents. An increase in growler activity will create further negative impacts here, and as such we request that more localized study be completed and data be assessed before any decisions on expansion are made. We appreciate the opportunity to work with you in maintaining this as one of the most beautiful, serene and safe corners of the world. We encourage continued, transparent dialogue with the many neighboring jurisdictions and residents to find solutions that meet the needs of our rural region.

1.a. Thank You
1.c. Segmentation and Connected Actions
19.a. Scope of Cumulative Analysis
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.e. Public Involvement Process
3.b. Flight Tracks and Federal Aviation Administration Regulations
3.h. Runway Usage, Flight Tracks, and Altitudes
4.a. General Noise Modeling
4.f. Noise Measurements/Modeling/On-Site Validation

Town of Coupeville

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EA-18G Project Manager
Naval Facilities Engineering Command Atlantic
Attn: Code EV21/SS
6506 Hampton Blvd
Norfolk, VA 23508

February 22, 2017

RE: Draft Environmental Impact Statement for increased EA-18G Growler Airfield Operations at Naval Air Station Whidbey Island.

Dear EA-18G Project Manager,

Thank you for the opportunity to comment on the draft Environmental Impact Statement (DEIS) regarding increased Growler operations at OLF Coupeville. The Town's comments are conveyed along with our sincere appreciation for the mission of Navy Air Station Whidbey Island (NASWI) and our respect for the dedicated service men and women who work and train every day to protect our country. We acknowledge achieving preparedness for duty comes with consequences we all must share—and we expect to continue to share—and the importance of Outlying Field Coupeville (OLF) in the training of flight crews. *It is not our desire to close OLF Coupeville.* At the same time, however, we must speak for the residents, property owners, and businesses of Coupeville whose lives, investments, and incomes may be significantly affected by the outcome of this process. For our constituents, as well as for the validity of the process, our comments are offered in the spirit of promoting a rigorous environmental analysis and an informed decision that takes reasonable consideration of local impacts.

That said, we are very concerned by language in the DEIS that suggests a policy decision on where such consequences will fall has already been made, and that much of the extensive environmental work is intended to provide justification for the formal decision. As a community whose quality of life and economy appear to be under threat, we aspire to have faith in the system established to provide a full accounting of the impacts. We also hope that the analysis will allow a conclusion that one community not receive most of the advantages while another is disproportionately burdened with the negative effects. Based on a sincere desire to balance the operational needs of Naval Air Station Whidbey Island (NASWI) with the quality of life needs of our local residents who have called Coupeville home for generations, we respectfully submit the following comments on the DEIS for the EA-18G "Growler" Airfield Operations at NASWI for your careful consideration.

03_COUPEVILLE_TOWN-01

1.a. Thank You
1.b. Best Available Science and Data
11.d. Per- and Polyfluoroalkyl Substances
12.c. Socioeconomic Impacts
12.i. Housing Access and Affordability
12.j. Property Values
12.p. Local Differences in Economy
2.a. Purpose and Need
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.c. Compliance with the National Environmental Policy Act
2.d. Program of Record for Buying Growler Aircraft
2.h. Next Steps
2.k. Range of Alternatives
2.m. Record of Decision/Preferred Alternative
2.n. Alternatives Considered But Eliminated
3.a. Aircraft Operations
3.b. Flight Tracks and Federal Aviation Administration Regulations
3.e. Field Carrier Landing Practice Patterns
3.f. Field Carrier Landing Practice Operation Totals
3.g. Field Carrier Landing Practice Evolutions and High Tempo
3.h. Runway Usage, Flight Tracks, and Altitudes
4.a. General Noise Modeling
4.e. Day-Night Average Sound Level Contours and Noise
4.l. Points of Interest
4.o. Classroom Learning Interference
4.p. Sleep Disturbance
4.q. Potential Hearing Loss
4.t. Noise Mitigation
5.d. Environmental Health Risks and Safety Risks to Children
7.a. Regional Land Use and Community Character
7.b. Land Use Compatibility and Air Installations Compatible Use Zones
8.f. Cultural Landscape and Impacts to Ebey's Landing National Historical Reserve

Island Communities of Oak Harbor and Coupeville

Oak Harbor has been home to NASWI and Ault Field since the base was built in 1942. Although its residents bear the negative impacts of the majority of NASWI flight operations, Oak Harbor also enjoys the lion's share of economic benefits of being home to a large number of military personnel and civilian support staff. Such benefits include jobs, school funding, sales tax, real estate value, large-scale retail, and public amenities built by, and for, their military families as well as their residents. The economy and culture of Oak Harbor has been and continues to be significantly linked to the presence of Ault Field.

Coupeville and central Whidbey's economy, history, environment, and culture are different. Together with the military families who choose to live in and around Coupeville, we are a community of fifth generation farmers, active retirees, and many families who have been here for several generations and are happy to be raising their children here. Our economy is heavily dependent on tourism and small-farm agriculture. Our historic commercial district includes retail, arts, restaurants, and lodging. As the second oldest town in Washington State, we promote our maritime and agricultural history, our historic buildings, the shoreline, outdoor recreation, and our place at the heart of Ebey's Landing National Historical Reserve. We depend on pristine Penn Cove and the open fields, forests, and waterfront when promoting event venues, outdoor cultural activities, vacations, and local cuisine. The whole of central Whidbey contributes to both our residents' quality of life and our visitors' experiences.

The residents and businesses in the Town and central Whidbey Island overall have endured and proudly accepted a wide range of aircraft equipment and an inconsistent number of flight operations at OLF for the past 70 years. As indicated on DEIS Page 1-6, for almost 20 years—evidently since delivery of the last Prowler—flight operations have generally stayed similar to the level experienced today (6,200). For a generation, financial and locational decisions by residents and businesses have been based on the expectation that this level of impact will continue but not increase. A 250 percent to almost 500 percent increase to the number of currently approved Growler operations is inconsistent with and clearly adverse to everything we have worked for in Coupeville and central Whidbey. It is incompatible with our economy, history, and culture.

Ebey's Landing National Historical Reserve

Ebey's Landing National Historical Reserve was created by Congress in 1978 as the first reserve of its kind in the nation. The purpose of the Reserve is to "preserve and protect a rural community which provides an unbroken historical record from nineteenth century exploration and settlement in Puget Sound to the present time." The Town of Coupeville, Island County, State Parks and the National Park Service have all worked together to assure growth and land use in the Reserve is appropriate and deliberate. Individual land owners, especially our pioneer farming families, have demonstrated their commitment to preservation and protection by selling their development rights to ensure the agricultural land is protected for farming for generations to come. The State of Washington recognized Town of Coupeville's commitment to preserving a landscape and cultural fabric by granting an exclusive exemption to mandated urban growth under the Growth Management Act. *We now find it sadly ironic that the characteristics we have worked so hard to protect and preserve (farm land, forests, shoreline, low density residential development and small populations) are the very same characteristics being used to justify increased flight operations at OLF Coupeville.*

Cumulative Siting Actions

We are concerned about the Department of Defense's (DOD) decision to site all EA-18G Growlers at NASWI, and how this decision has been made. It is not clear whether all of the steps had the benefit of environmental review and the attendant public process. Continuing today, this apparent ramp-up is unveiled in increments that don't seem to convey a complete and transparent plan for NASWI. In 2006 the Growlers were introduced to NASWI. However, the Navy contended there would be no impact because they were replacing 82 Prowlers with 57 Growlers. A 2010 EIS reaffirmed the level at 57 Growlers. In 2012, that number was raised back up to 82 Growlers. During the 2013 scoping process for this EIS, when we were being asked to consider the alternatives for adding between 18 and 35 new Growlers, DOD made the decision to single-site all Growlers at NASWI, and we were informed that 35-36 new jets would be stationed here. Now, as the decision of the number of jets and the number of operations needed to support this level of inventory has already been made, we are given three alternatives whose main focus is the split of FCLP operations between OLF Coupeville and Ault Field. As we try to work our way through this seemingly predestined decision, we discover the DOD has already ordered 42 additional Growlers for a total of 160. We do not second-guess Congress's and the DOD's decisions on materiel allocations necessary for the Navy's mission. However, we are concerned that, as soon as the Navy gets through this EIS process, additional jets and new squadrons may be brought online.

General Comments

1. Sections 1.3 and 1.4 of the DEIS provides detailed information in support of the Navy's need to increase the electronic attack capabilities and provide more aircraft per squadron to enable the Navy to meet Title 10, USC Section 5062. However, the purpose statement makes the project a self-fulfilling action (the purpose is to take the action at NASWI specifically, rather than to generically take the action, with NASWI being found through an alternatives analysis to be the most effective and efficient location). The Final Environmental Impact Statement (FEIS) should remove "NAS Whidbey Island" from the purpose statement.

2. Section 2.2 identifies the approach used to develop the range of prudent and feasible alternatives considered in the EIS process. Page 2-2 identifies the key considerations that framed the consideration of alternatives. Such considerations effectively serve as screening criteria for the development and consideration of alternatives. The first consideration states, "The NAS Whidbey Island complex is home to the Navy's Growler mission, including the training squadron, all U.S.-based squadrons, and substantial infrastructure and training ranges that have been established during the past 40-plus years and as supported by previous NEPA analysis regarding Growler operations." This consideration, combined with the purpose statement, could be viewed as prejudicial and self-fulfilling as drafted, as it ensures that all prudent and feasible alternatives are associated with NAS Whidbey Island. The need statement addressed above does not require the need to be satisfied at NAS Whidbey Island but the purpose statement drives the alternatives to NAS Whidbey Island. In the FEIS, the first screening criterion on Page 2-2 of the DEIS should be removed from the text and from consideration.

3. Three factors required in the formulation of the alternatives are inadequately addressed in the DEIS and should be corrected in the FEIS, including: a) the description of the criteria for selecting alternatives, b) sufficient details in describing alternatives, and c) the identification of mitigation measures either within alternatives or in addition to them.

4. While a few alternative sites are described as unsuitable on pages 2-15 to 2-19 in response to comments, there is no systematic demonstration that all Naval Air Stations or installations on the west coast and Alaska, or elsewhere in the US, were evaluated according to the criteria in Section 2.2. The semi-qualitative statements on the referenced pages identify some of the criteria such as mean sea level but often address other factors not listed in the criteria, such as costs. There is no comparative chart against the criteria in the DEIS nor a comparison of other implicit criteria on pages 2-15 to 2-19, such as the costs of the proposed alternatives at the Whidbey NAS in relation to costs of relocation elsewhere. For example, are there other sites that meet a majority of criteria except for one or two – and could those criteria that are unmet be addressed reasonably since NEPA indicates the Navy should "[r]igorously explore and objectively evaluate the environmental impacts of all reasonable alternatives, particularly those that might enhance environmental quality or avoid some or all adverse environmental effects" including those "not within the existing authority of the agency"? The Town requests that the FEIS show its work in comparing other sites to the criteria in Section 2.2 in the subsection "Alternatives Considered but Not Carried Forward for Further Analysis."

5. The DEIS appears to state that OLF Coupeville is the most physically suitable for the Field Carrier Landing Practice (FCLP) operations (Page 2-6), but because of potential noise impacts to the community the Navy chose to study up to 80% of FCLP operations maximum at OLF Coupeville. Apart from describing that 100% was desired but less is being studied, there is no discussion of why 80%, 50%, and 20% were selected as scenario thresholds. The DEIS seems to be implicitly identifying that their preferred alternative would be Scenario A, a 449 to 475 percent increase in operations at OLF, without stating such. Additionally, the Navy is not committing to a particular split, and operations may fall within that range. The FEIS should clarify the text regarding the rationale for the percentage splits in FCLP operations.

6. Several statements in the DEIS indicate that alternatives would return airfield operation levels to levels observed between the 1970s and 1990s per the graph on Page 1-6. This may be true for FCLP levels in total between Ault Field and OLF Coupeville, but considering OLF Coupeville alone, Scenario A, under all three scenarios, appears to exceed the maximum years on record for FCLP operations, Scenario B appears to exceed all ten years of the past 40, and Scenario C is more similar to, but in excess of, annual FCLPs over the last 20 years. The relevance of circumstances of past decades relative to the existing condition and whether such operational increases were subject to prior NEPA review should be clarified in the FEIS. The FEIS should clearly identify the magnitude of the change of operations at OLF in relation to today's condition in order to create an accurate understanding of impacts and needed mitigation.

7. The DEIS discusses increasing FCLPs during a "high tempo FCLP year." The term is only generally defined. To allow stakeholders to better understand its implications, "high tempo FCLP year" should be defined in terms of how often it may occur and under what circumstances. If a high tempo year can be declared to be operationally necessary in consecutive years or on an ongoing basis, the flight operation assumptions in Scenarios A, B, and C are essentially meaningless.

Housing

1. The Town understands that NAS Whidbey Island has recently finished an updated housing survey and that a new housing report is anticipated to be issued within the next several months. According to the data cited on page 4-232, the DEIS housing analysis is evidently based, at least in part, on outdated information. The FEIS housing section should incorporate the more current data that will be available in the updated housing study and should clarify the assumptions used in the analysis, including the forecast conditions in 2021.
2. The FEIS should correct the housing analysis to identify the impacts without the supply of Navy housing, since the DEIS states that new personnel will live in non-Navy housing.
3. The analysis should identify how the new personnel and dependents' housing needs, incomes, and housing allowances would match the forecast housing supply and costs, with rental and ownership housing disaggregated.
4. The DEIS appears to consider all units within the study area as equal in meeting the demand, irrespective of distance and travel time from Ault Field. The FEIS should address the basis of the assumptions in the 2015 Study (or its successor) and match unit supply to expected locations.
5. The FEIS should provide an accurate accounting of the stock of adequate units forecast for the target year, with consideration of the effect of rental units committed to seasonal rentals and the potential change in the supply of housing units due to changes in noise contours.
6. The FEIS should evaluate the potential impacts of the alternatives on rental costs and property values in the study area from the standpoint of increased demand. Page 4-232 states, ". . . if recent real estate market trends continue and fewer housing units are offered for sale or lease, Navy personnel may find it more difficult to acquire or lease housing." Similarly, existing residents, particularly those at the lower end of the economic spectrum, may find it difficult to find housing with the influx of personnel and dependents in the Action Alternatives. The analysis should address potential for displacement and affordability impacts to existing residents in the study area due to competition for rental units in the private market and the housing market's response to increased demand. The analysis should be based on updated current and forecast conditions and the assumption that 77 percent of new NASWI households (DEIS Page 4-229) will reside in Island County.
7. With a revised analysis containing the elements described above, the conclusion of no impact should be re-evaluated and a discussion of reasonable mitigation measures provided, as applicable.

8. Current housing capacity and other baseline information was not available during the comment period for the DEIS. Per Environmental Readiness Program Manual, Page 10-63 and 10-64, section (2)(a)1, the Navy is required to ensure there is sufficient information and baseline data to support the conclusions reached. The Town requests a 60-day comment period following issuance of the FEIS to evaluate the information on which the conclusions of the DEIS are based. The ability to ascertain that the supply of housing available to Navy personnel is currently adequate and will remain so in the future is crucial to the conclusion that there is no impact.

Noise

1. The results of the noise analysis should be presented in the FEIS by political jurisdiction, rather than aggregated, to make them more meaningful to stakeholders.
2. The noise contour maps in the DEIS are impossible to read and interpret at their printed scale in the document. For legibility, contour maps in the FEIS should be prepared following the presentation style adopted by the Federal Aviation Administration for noise exposure maps.
3. Figure 3.1-4, *Interfacility and FCLP Flight Tracks*, appears to show a flight route to enter the OLF pattern that crosses over or near the northeast portion of the town. This appears to be represented in the noise contours in Figure 3.2-5, No Action Environment for OLF Coupeville, but is not shown on the noise contour figures for the Action Alternatives. The Town is quite aware of noise complaints from property owners under this approach path. An explanation of the operational changes resulting in the distinctions between the No Action and Action Alternative noise contour maps, apart from those changes based entirely on the volume of operations, would be valuable for stakeholders in understanding the changes proposed under the Action Alternatives.
4. In the supplemental noise analysis in the DEIS, action-related noise effects were evaluated at only one noise sensitive use or area in the Town, the elementary school (S03). The Town requests that the FEIS include the high school/middle school as a point of interest and other points of interest on the north side of HWY 20, including the hospital, the Town Green, the NE Pennington Loop neighborhood, and the NE Burnham Place neighborhood.
5. Substitution of year 2021 conditions for existing conditions in the Affected Environment Chapter does not allow a clear identification of how conditions would change in the future with or without the proposed action. Rather, the use of the 2021 scenario is more appropriate to the cumulative impact discussion and the Future No Action. Since the 2021 condition has been approved in a prior NEPA document, it is reasonable to assume the Future No Action for purposes of identifying action-related effects. Its use as the existing condition in the Affected Environment is not appropriate unless the full transition has occurred five years ahead of schedule. The FEIS should provide a description of the true existing conditions or clarify how this 2021 condition evaluated in a prior NEPA decision document differs from actual current year conditions.

6. Section 4.2.1 *Noise, No Action Alternative,* states, "Under the No Action Alternative, the Proposed Action would not occur, and the Navy would not operate additional Growler aircraft (see Section 2.4.2.4) [sic]. Consequently, implementing the No Action Alternative, or taking no action, means the annual Growler airfield operations would be consistent with levels identified in the 2005 and 2012 transition Environmental Assessments (EAs). The transition of the P-3 to the P-8A aircraft would still take place as it is a separate, ongoing action. Therefore, the DNL noise contours presented in Section 3.2.4, Noise Affected Environment, were modeled based upon the anticipated aircraft operating levels for Calendar Year 2021 (CY21). "Implementation of the No Action Alternative would, by default, result in the same acreage and population coverage as noted under the affected environment (see Table 3.2.2)." As the affected environment is described as the same as the year 2021 No Action Alternative, it is not possible to determine whether "no significant impacts to the noise environment would occur with implementation of the No Action Alternative" as stated in this section. In fact, this conclusion seems highly unlikely.

7. Page 4-1 states, "The year 2021 is the end-state used in this analysis, which represents full implementation of the Proposed Action." While the end-state is a standard evaluation, NEPA documents often identify impacts in subsequent years that are deemed reasonably foreseeable. The end-state plus five years is often evaluated. The FEIS should explain effects in the years beyond the end-state that are reasonably foreseeable.

8. Tables presenting the area and population within the noise contours, e.g., Table 4.2-1, assume an average density of population throughout a reference census block. This unsupported assumption of homogeneity within census blocks calls into question the validity of the conclusions for determining relative impacts to populations. The Town encourages the Navy to use easily available aerial photography or windshield surveys to confirm the data in these tables.

9. Given the importance of housing in evaluating noise and land use compatibility of actions, the Town encourages the FEIS to include the number of dwellings/houses by political jurisdiction and the noise contour bands,

10. The Town encourages that the FEIS note the noise sensitive uses (schools, hospitals, nursing homes, libraries, etc.) that are located within each contour, in addition to the dwellings noted above.

11. While the DEIS notes that all action alternatives and scenarios would have a significant noise effect, the criteria for what changes make these effects significant are not defined. Thus, it is not clear how or if the various mitigation measures discussed would alleviate the significant effects. The FEIS should clarify the criteria applied to reach the conclusion of significant effect.

12. The FEIS should identify specific mitigation measures that would reduce the significant effects acknowledged by the DEIS. A connection between the effects and how and where the mitigation measures would reduce action-related effects should be made for the decision maker's consideration. Otherwise, the benefits of the mitigation individually and collectively cannot be understood. Mitigation measures should be considered as operational measures of the Navy and its aircraft as well as preventive and corrective land use measures for residual noise effects.

13. The DEIS uses aircraft noise exposure for purposes of considering effects to public health and to the socio-economic fabric of the action area. Although the DEIS identifies a significant action-related noise effect, the effects on public health and safety and various socio-economic conditions are determined to be not significant. The FEIS should explain how this determination was made.

14. The DEIS discusses the results of research concerning the effect of noise impacts on property values. However, there is no quantification of project-related effect or determination as to significance. The FEIS should explain how a significant noise effect of the action would translate into property value effects considering the report's summary of research showing a noise effect on property values.

15. While sleep disturbance is evaluated at 19 points of interest, the DEIS is not clear about the methodology used. Reference is made to the DNWG guidance document, but not to the SEL or number of events used to identify the percentage of the public likely awakened. The FEIS should explain the methodology used to reach the conclusions.

16. All the alternatives would increase potential hearing loss due to the number of additional people that would reside within higher noise exposure areas that might have the potential to experience a noise induced permanent threshold shift. However, given the quality of the maps and summary nature of the tables, the portion of the population within the town who may be so affected is not identified. As noted for other metrics, this metric should be specific to each political jurisdiction.

17. In the evaluation of *Environmental and Safety Risks to Children*, the focus is on identifying the number of children who reside in the 65 DNL and greater contour. All alternatives/scenarios would increase the number of children in the 65 DNL relative to the No Action Alternative. The DEIS does not deem these increases significant, despite the significant increase in noise. The FEIS should clarify why the significant noise effects do not translate into significant effects to children.

18. The analysis of Classroom/Learning Interference at nine points of interest is the principal tool used to consider action effects on education. Two metrics were used to evaluate effects on classrooms. First, the Leq during school hours was calculated. Then the number of events that could interfere with hearing classroom lessons (events with noise exceeding Lmax of 50 dB) was identified. The FEIS should provide an additional metric showing the number of minutes each day that speech communications would experience interference.

19. The DNL maps appear to show Scenario A DNL contours of 65 and 70 dB extending well into the corporate limits of the Town and into established residential neighborhoods. (DEIS Volume II, Page A-67, e.g.) DOD document number 4165.57, effective March 12, 2015, regarding Air Installations Compatible Use Zones (AICUZ) provides a table (Table 2, Page 23) of land uses suggested for compatibility with DNL zones. Residential uses are listed as not compatible with 65-69 and 70-74 DNL zones. The notes associated with Table 2 state:

    "Although local conditions regarding the need for housing may require residential use in these zones, residential use is discouraged in DNL 65-69 and strongly discouraged in DNL 70-74. The absence of viable alternative development options should be determined and an evaluation should be conducted locally prior to local approvals indicating that a demonstrated community need for the residential use would not be met if development were prohibited in these zones. Existing residential development is considered as pre-existing *incompatible* land uses." (emphasis original) (Page 27)

Where new development is allowed in these zones, the notes provide noise attenuation requirements to be incorporated in building codes. The DEIS evaluates scenarios where the 65 DNL and 70 DNL are expanded into existing neighborhoods within the Town. The FEIS should evaluate the Action Alternatives and associated scenarios in the context of creating circumstances that are "discouraged" and "strongly discouraged" by the DOD's AICUZ guidance. Further, the FEIS should identify mitigation measures to lessen or avoid these impacts.

Accident Potential Zones/Land Use

According to DEIS Table 4.3-1 on Page 4-119, the number of proposed FCLP operations represented by Scenarios A and B would require the delineation of Accident Potential Zones (APZ). The size of these zones could include hundreds of acres in Ebey's Reserve and potentially a portion of the Town of Coupeville. We also understand that once these APZ's are established, Island County and possibly the Town of Coupeville, will be required to establish land use regulations that will limit future use of property and potentially severely reduce the property value of many existing homes. The DEIS does not adequately address the location and size of such APZ's, the economic effect they will have in central Whidbey and the Town of Coupeville, potential land use changes, or related safety issues. We request that the FEIS include all of this information in more detail for each alternative and the steps necessary to mitigate these effects.

Water

The Town understands that existence of PFOA and PFOS as a contaminant in the groundwater, aquifer, and public and private wells is not addressed in the DEIS. The Town and surrounding property owners and water associations depend on a sole source aquifer for potable water. Currently, there are no alternative water sources to wells. The Town also understands that further study is needed on the extent of the contamination before mitigation can be considered and that this issue is being managed by Navy Region Northwest. The Town understands that this contamination happened in the past, likely due to the use of Aqueous Film Forming Foam (AFFF) a firefighting foam, and is not directly related to increased operations proposed in the DEIS. However, the Action Alternatives propose to increase flight operations, which would result in an increased potential for accidents, including fire emergencies on or in the vicinity of the airfields. Therefore, the Town requests that the final EIS include a commitment from the Navy that existing stocks of toxic AFFF's will not be maintained or used at OLF Coupeville and that only firefighting foams approved by the EPA or not containing constituents regulated by the EPA or for which the EPA has not issued advisories will be used at OLF. If the use of available AFFF's remains a potential response to aviation-related fires, the increase in its potential use as related to an increase in aircraft operations should be evaluated as a potential impact and mitigation measures proposed.

Mitigation

After studying all alternatives, we find the mitigation proposals lack relevance and are not commensurate to the multifaceted effects of increasing FCLP operations at OLF Coupeville by as much as 500%. The engineering of chevrons to lower the decibels of the Growlers and the development of Magic Carpet technology to reduce the number of FCLP required for each pilot, while interesting, may or may not come to fruition. Continuing to adhere to the policies and procedures for safe operations of a Growler should be in practice already and in no way mitigates the effects of increased operations at OLF

Coupeville. It seems little effort was put into potential mitigation measures, especially, as we commented at the start of this process, it seemed predestined to site all Growlers at NASWI. The Town requests that the FEIS propose and evaluate mitigation measures on the full range of alternatives that may reasonably meet the need for the proposed action as expressed in the DEIS. As noted elsewhere in this letter, the mitigation measures considered in the FEIS should have a rational nexus to significant impacts, provide a measurable improvement in the level of such impacts, and have a reasonable potential for implementation at the time the impacts will occur. True mitigation alternatives that should have been considered more closely include, but are not limited to, detachment squadrons, off site training, not single-siting all Growlers at NASWI, and increased military housing.

Final Comment Period

We realize a comment period on the FEIS is not required. However, we are asking that the FEIS incorporate and analyze a large quantity of new and more relevant information, examples would be: current housing data, supplemental noise data, APZs and noise zones better defined and mapped, explanations of criteria for alternatives (considered and not considered), a commitment to protect groundwater, and an explanation of noise effects inconsistencies. Because of this, we strongly request that you allow an additional 60-day comment period after publication and before a Notice of Decision is issued.

We would like to end our comments to the DEIS as we began, with great respect and gratitude for all the men and women in our military, specifically those sharing our Island at NASWI. *It is not our desire to close OLF Coupeville, but rather to come to an agreement on the number of operations we can support in proportion to the economic, cultural, and lifestyle hardship that would result. We would like to suggest that OLF Coupeville continue to support approximately 6,200 operations per year as an option within the FEIS.* We fervently believe there is a way to provide the Growler pilots the specialized training they need to do their job safely, without significantly impacting the property owners, residents, business owners, and visitors of Coupeville and central Whidbey Island. Thank you for the opportunity to comment.

Molly Hughes, Mayor

Dianne Binder, Town Council Member

Jackie Henderson, Town Council Member

Pat Powell, Town Council Member

Catherine Ballay, Town Council Member

Lisa Bernhardt, Town Council Member

cc: Senator Patty Murray
Senator Maria Cantwell
Congressman Rick Larsen
Governor Jay Inslee

Helen Price Johnson
District 1 Commissioner

Island County, WA 98239

February 24, 2017 EA-18G Project Manager Naval Facilities Engineering Command Atlantic 6506 Hampton Boulevard, Norfolk, VA 23508 Attn: Code EV21/SS To Whom It May Concern: The EA-18G practice flights are required for the safety of pilots in defense of our nation. The shift of platforms from Prowlers to Growlers and then recent consolidation of EA18G's at NAS-WI has generated a great number of comments from my local constituents concerning military operations and civilian quality of life in our area. Whidbey Island is one of the most beautiful and scenic areas in the world. People are drawn here for the quality of life, rural character, and natural beauty. For years there have consistently been 5000-6000 practice flights in the OLF area to support vital fleet preparedness. This was a tolerable sacrifice for many community members. When the change of platform, and the noise generated by the FCLPs significantly increased, residents under the low-level flight paths from both Whidbey Island air fields, began to voice their concerns to commissioners. They reported negative impacts to neighborhoods, businesses and overall quality of life across the region. The FCLP activity is generally described as loud, intense and unsettling for those under their practice flight path. Many of these same people readily acknowledge their strong support for Navy personnel and the strategic mission of NAS-WI. They confirm that they are willing to make reasonable sacrifices to accommodate necessary FCLP training. However through public testimony, numerous emails and phone calls Island County residents have expressed concern to me about the impacts to their well-being during repeated, intense periods of Growler noise. These impacts include: • loss of sleep; • disruption of agricultural activities; • inability to hold a conversation or conduct business; • complaints and loss of revenue from customers; • disruption of outdoor recreational activities; • vulnerability of children and health-fragile individuals; • degradation of environmental health These residents have also expressed their dissatisfaction that the EIS does not adequately address the severity of these impacts at current levels of operation and that the proposed increase in operations will significantly escalate each of these items. For example, the use of noise modeling versus local data collections has many questioning the accuracy of projections, whether they reflect the intense nature of low-level EA18G flight patterns needed in touch-n -go practice. This is supported by a Department of Defense Technical Bulletin (Dec 2009) which states "supplementing DNL or other long-term total sound energy average metrics with additional noise exposure metrics improves public understanding of noise exposure and decision makers' ability to make better informed decisions as and to maintain compatible land uses around installation." In scoping comments, I requested that the Navy review potential negative health effects of low level EA-18 G Growler aircraft during FCLP's (Versus high altitude, 24/7 flight operations) through local noise monitoring. A recent review of the available literature by the Washington State Department of Health (Feb 2017) is helpful here. They conclude, "…there have been minimal studies specific to health effects associated with military aircraft noise exposure. More research is needed to understand differences in risk attributed to susceptible groups compared to the general population. Despite these limitations, the current body of scientific literature suggests that the noise levels similar to

1.a. Thank You
1.b. Best Available Science and Data
12.e. Agriculture Analysis
12.n. Quality of Life
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.c. Compliance with the National Environmental Policy Act
2.e. Public Involvement Process
2.m. Record of Decision/Preferred Alternative
4.f. Noise Measurements/Modeling/On-Site Validation
4.m. Supplemental Metrics
4.r. Nonauditory Health Effects
7.g. Ebey's Landing National Historical Reserve
8.c. Noise and Vibration Impacts to Cultural Resources
8.f. Cultural Landscape and Impacts to Ebey's Landing National Historical Reserve
8.h. Ebey's Landing National Historical Reserve, Military Association

those reported from the NAS Whidbey Island Complex pose a threat to public health." Further, OLF lies in Ebey's Landing Historic Reserve, an area with a unique heritage and recognized for its national significance. The National Park Service, the State of Washington and the local community have all made substantial investments in the preservation of this cultural landscape. The DEIS falls short in documenting impacts of the noise generated by Growler activity to the agricultural, recreational, and historic resources in the State Parks and Ebey's Landing National Historic Reserve, an area of environmental, cultural, and historical significance and an important wildlife and migratory bird habitat. Further review is needed and adequate mitigation measures should be proposed and evaluated in the Final EIS. Please incorporate and analyze additional information on noise data, better mapping of noise zones, and noise effects on historic resources as well as vulnerable populations. The men and women wearing the Navy uniform, serving our country, deserve our support and respect. It is my goal to seek an appropriate balance in the scheduling of FCLP's which protects their safety as well as the health and wellness of the communities impacted by Growler operations. Thank you for the opportunity to comment. Sincerely, Helen Price Johnson Island County Commissioner, District 1

Helen Price Johnson
Island County

Coupeville, WA 98236

1.a. Thank You
12.c. Socioeconomic Impacts
12.k. Compensation to Citizens for Private Property
4.b. NOISEMAP Model, Modeling Methodology, and Noise Sources
7.b. Land Use Compatibility and Air Installations Compatible Use Zones

As an Island County Commissioner I am grateful for the opportunity to respond to the Navy's request for comments on the Draft Environmental Impact Statement (DEIS) about the proposed increased number of Growler EA-18 jets at NAS-WI. The importance of the Navy's presence in our region is significant, and appreciated. The base brings many jobs, long term economic stability, vital emergency response resources and a multitude of valuable assets to our island communities. We support the strategic mission of the base, its importance to national security, and understand the critical need for safe and proper training for pilots heading into harm's way to defend our country around the world. The primary purpose of our comments is to work with the Navy to obtain accurate, useful data so that adequate local mitigation can be implemented for the current and future impacts of necessary military operations. From the DEIS I understand that all of the alternatives proposed, including the No-Action Alternative, will result in a federal recommendation to Island County to create an Accident Potential Zone (APZ) and Noise Overlay zoning as local mitigation measures in the Central Whidbey area surrounding the Outlying Field (OLF). To understand the scope of this recommendation, some clarification of impacts is needed. The DEIS maps do not align in describing the likely areas impacted by these changes in land use. The Final EIS (FEIS) should include an accurate mapping and description of the physical landscape and land mass affected by both the APZ and the noisescapes of the recommended alternative. • It is unclear that the 1986 NOISEMAP modeling used in the DEIS reflects accurate noise exposure. A Department of Defense Technical Bulletin (Dec 2009) states that "supplementing DNL or other long-term total sound energy average metrics with additional noise exposure metrics improves public understanding of noise exposure and decision makers' ability to make better informed decisions as and to maintain compatible land uses around installation." • To ensure that adequate measures are implemented, a proper delineation of the areas affected by the current activity as defined by validated noise measurements are necessary for local legislative action in mitigating impacts of increased Growler activities. • It is important for us as local decision-makers to better understand any changes to building code requirements and disclosure rules in light of higher levels of noise and reverberation from increased Growler activity. • Island County would appreciate information from the Navy on best practices from other installations for retrofitting existing structures or relocation programs for businesses and residential properties impacted significantly by increased Growler flight operations. • Several Island County facilities – Island County's Solid Waste Transfer Facility, Rhododendron Park, Coupeville Road Shop, Patmore Dog Park, as well as various city, state and federal properties will likely be affected by the adoption of an APZ around OLF. What is the obligation of the local legislative authority for relocation of these facilities should their use be disallowed by following the Navy's recommendation? • What impacts should our community anticipate from the APZ on private businesses and residences existing within its boundaries? Is it likely that the Navy will recommend relocation of private homes and businesses as happened in Oceana? I request that the FEIS include information regarding these issues to aid Island County officials in addressing the increased impacts to our community from the Navy operations on

Whidbey Island. Respectfully submitted, Commissioner Helen Price Johnson Island County, District 1

1.a. Thank You
12.c. Socioeconomic Impacts
12.k. Compensation to Citizens for Private Property
4.b. NOISEMAP Model, Modeling Methodology, and Noise Sources
7.b. Land Use Compatibility and Air Installations Compatible Use Zones

Island County Board of Commissioners

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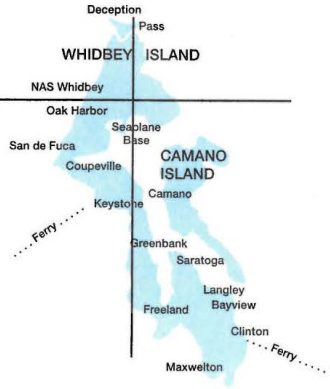


February 15, 2017

EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508

Attn: Code EV21/SS

As an Island County Commissioner I am grateful for the opportunity to respond to the Navy's request for comments on the Draft Environmental Impact Statement (DEIS) about the proposed increased number of Growler EA-18 jets at NAS-WI.

The importance of the Navy's presence in our region is significant, and appreciated. The base brings many jobs, long term economic stability, vital emergency response resources and a multitude of valuable assets to our island communities. I support the strategic mission of the base, its importance to national security, and understand the critical need for safe and proper training for pilots heading into harm's way to defend our country around the world. The primary purpose of my comments is to work with the Navy to obtain accurate, useful data so that adequate local mitigation can be implemented for the current and future impacts of necessary military operations.

From the DEIS I see that all of the alternatives proposed, including the No-Action Alternative, will result in a federal recommendation to Island County to create an Accident Potential Zone (APZ) and Noise Overlay zoning as local mitigation measures in the Central Whidbey area surrounding the Outlying Field (OLF).

To understand the scope of this recommendation, some clarification of impacts is needed. The DEIS maps do not align in describing the likely areas impacted by these changes in land use. The Final EIS (FEIS) should include an accurate mapping and description of the physical landscape and land mass affected by both the APZ and the noisescapes of the recommended alternative.

- It is unclear that the 1986 NOISEMAP modeling used in the DEIS reflects accurate noise exposure. A Department of Defense Technical Bulletin (Dec 2009) states that "supplementing DNL or other long-term total sound energy average metrics with additional noise exposure metrics improves public understanding of noise exposure and

decision makers' ability to make better informed decisions as and to maintain compatible land uses around installation."

- To ensure that adequate measures are implemented, a proper delineation of the areas affected by the current activity as defined by validated noise measurements are necessary for local legislative action in mitigating impacts of increased Growler activities.

- It is important for me as a local decision-maker to better understand any changes to building code requirements and disclosure rules in light of higher levels of noise and reverberation from increased Growler activity.

- Information on best practices from other Navy air installations for retrofitting existing structures or relocation programs for businesses and residential properties significantly impacted by increased Growler flight operations is needed.

- Several Island County facilities – Island County's Solid Waste Transfer Facility, Rhododendron Park, Coupeville Road Shop, Patmore Dog Park, as well as various city, state and federal properties will be affected by the adoption of an APZ around OLF. What is the obligation of the local legislative authority for relocation of these facilities should their use be disallowed by following the Navy's recommendation?

- What impacts should the community anticipate from the APZ on private businesses and residences existing within its boundaries? Is it likely that the Navy will recommend relocation of private homes and businesses as happened in Oceana?

I request that the FEIS include information regarding these issues to aid Island County officials in addressing the impacts to the community from the Navy operations on Whidbey Island.

Respectfully submitted,

Helen Price Johnson
Island County Commissioner, District 1

HPJ/vs

Board of County Commissioners
1820 Jefferson Street
PO Box 1220
Port Townsend, WA 98368

Kate Dean, District 1 David Sullivan, District 2 Kathleen Kler, District 3

February 21, 2017

EA-18G EIS Project Manager
Naval Facilities Engineering Command (NAVFAC) Atlantic – Attn: Code EV21/SS
6506 Hampton Blvd.
Norfolk, VA 23508

RE: Growler Operations EIS – Naval Air Station Whidbey Island

Dear EIS Project Manager:

In response to the Naval Air Station Whidbey Island's request for comments regarding the Environmental Impact Statement (EIS) on Growler Operations, the Jefferson County Board of County Commissioners submits the following for your consideration.

In our weekly public meetings, as well as via email, phone calls and conversations with constituents, there are many East and West Jefferson County residents expressing concern about the impacts to their well-being as a result of Growler noise. These impacts include (but are not limited to):

- loss of sleep;
- inability to hold a conversation uninterrupted;
- complaints from customers at hospitality businesses;
- concern for well-being of domestic and farm animals as well as marine mammals;
- loss of quality of life benefits from time spent recreating outdoors;
- fear of declining property values from increased Growler activity.

These residents have also expressed their dissatisfaction in the EIS to adequately address the severity of those impacts at current levels of operation. For example, the lack of data collected locally versus projections generated from noise modelling leads many of us to ask whether these projections are accurate, whether they account for the variability in how noise and reverberations affect a diverse population, and whether the Navy is a concerned enough neighbor to invest in collecting data locally.

Similarly, the use of daily averages does not capture the full effect of noise that occurs in short, intense periods. This way of measuring sound is not relevant to analyzing impacts to our residents.

Phone (360) 385-9100 Fax (360) 385-9382 jeffbocc@co.jefferson.wa.us

03_JEFFERSONCOUNTYCOMMISSIONERS-01

1.a. Thank You
1.c. Segmentation and Connected Actions
19.a. Scope of Cumulative Analysis
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.e. Public Involvement Process
3.b. Flight Tracks and Federal Aviation Administration Regulations
3.h. Runway Usage, Flight Tracks, and Altitudes
4.a. General Noise Modeling
4.f. Noise Measurements/Modeling/On-Site Validation

There is also concern that flight paths and elevations are not accurately represented in the EIS or in the Navy's responses to complaints. A Navy veteran reports seeing jets flying as low as 1000' over Marrowstone Island. Cape George residents report increased noise from the Growler's "afterburner" technology. Neither of these impacts are acknowledged in the noise contour maps in the EIS, again causing concerns that impacts are not being measured or accurately reflected.

We are also hearing significant concern in the public process. Residents are confused by needing to submit separate comments for Growlers than for Electromagnetic Warfare, and that comments on the latter may only submitted by those who submitted them previously. Similarly, cumulative impacts of land and water-based operations should be considered to assess the full impact to our County. Having a clear process, with a long timeline (particularly around the holidays) seems essential to build trust in the transparency of any public agency.

While we recognize the Navy as an important and beneficial neighbor and partner to Jefferson County in myriad ways (Emergency Preparedness efforts, the Hood Canal Joint Land Use Study and REPI funds for land conservation, for example), we are concerned that the EIS is not accurately reflecting the impacts to the quality of life of some Jefferson County residents. An increase in growler activity will create further negative impacts here, and as such we request that more localized study be completed and data be assessed before any decisions on expansion are made.

We appreciate the opportunity to work with you in maintaining this as one of the most beautiful, serene and safe corners of the world. We encourage continued, transparent dialogue with the many neighboring jurisdictions and residents to find solutions that meet the needs of our rural region.

Sincerely,

Kathleen Kler, Chair Kate Dean, Member David Sullivan, Member

2/19/17

To Whom it May Concern,

Please feel free to make this letter a public comment / place us on your email list

jhelding@lopez.k12.wa.us

Thank you

John Helding, President LISD
Board

1.a. Thank You
12.a. Socioeconomic Study Area
12.m. Education Impacts
12.n. Quality of Life
4.b. NOISEMAP Model, Modeling Methodology, and Noise Sources
4.c. Advanced Acoustic Model
4.h. C-Weighted Noise, Low Frequency Noise, and Vibrations
4.m. Supplemental Metrics
4.o. Classroom Learning Interference
4.p. Sleep Disturbance
4.r. Nonauditory Health Effects
7.i. Impacts on Outdoor Sports

Lopez Island School District #144
86 School Road
Lopez Island, WA 98261
Phone 360-468-2202 Fax (360) 468-2212
www.lopezislandschool.org

Brian Auckland, Superintendent/Elementary Principal Dave Sather, Secondary Principal

February 15, 2017

To: EA-18 Growler EIS Project Manager
From: Lopez Island School District, #144
Subject: Draft EIS Comments

To Whom It May Concern:

We have reviewed the draft EIS document and find a number of deficiencies and lack of response to questions we have submitted previously into the EIS process. We have passed a resolution supporting the contents of this letter and instructing that it be submitted as part of this EIS public comment process (LISD Resolution #4, passed February 15, 2017).

Our concerns and requested actions:

1. The modeling of sound impacts on educational institutions "assumed to be indoors" all educational activities (Page 4-37). Lopez Island School has a number of educational activities that occur outside including: our extensive garden and food classes who meet out-of-doors or in plastic sheeting-covered hoop houses and outdoor P.E. activities and sporting teams.

We request that noise impacts on schools be expanded to cover outdoor exposure and disruption of outdoor educational activities. We also ask that the "Advanced Acoustic Model" be used and that this model be validated with actual noise measurements at Lopez School and other locations throughout the region for all the noise measurements being done for our school.

Moreover we ask that the impact of Growler ground rumble, or low frequency noise from Growler engine run-ups and takeoffs be assessed as to its impact on our learning environment and our students at home. The low frequency rumble impacts our school, students, and faculty.

2. The Draft EIS undertakes no analysis of noise event impact on our student's home lives -- in particular their overall health and their sleeping habits. Disruption of sleep can have a negative impact on a student's ability to learn. We ask that the EIS add an analysis of the impact of the Growler noise on student health, sleep patterns, and subsequent learning impacts.

3. The Draft EIS makes no analysis of the potential negative impact of increased Growler activity on enrollment levels at Lopez Island School. The ongoing operation of our school is particular sensitive to drops in student enrollment. The EIS makes statements in the Community Services assessment (page 5-26) regarding the impacts on enrollment in the Oak Harbor,

Anacortes, and Coupeville School Districts. But the Draft EIS fails to assess the potential enrollment impacts on Lopez Island School District.

In particular no assessment is made of the hypothesis that increased noise pollution and degradation of the rural characteristics of Lopez Island will cause fewer families with school-aged dependents to move to Lopez Island, and incrementally cause existing families and students to move away. Even a small change in the school district's student population could have a significant impact on its finances and ability to continue to offer a K-12 educational program. Subsequently such a cutback at Lopez School could have ripple effects across the Lopez Island economy.

We ask that the EIS be expanded to assess the population impacts on Lopez Island and enrollment levels in the Lopez Island School District. As a key part of that assessment, rather than the regional economic assessment as done in the draft EIS (Long-term Employee Earnings and Spending Impacts, page 5-26), we ask that the EIS specifically assess the differential impact of Growler activities on the geographically-isolated economy of Lopez Island. The current assessment without any support implies that there will not be an economic impact to the Lopez Island economy. Only a Lopez-specific analysis can identify the impacts to the Lopez economy as well as the impacts on the viability of the Lopez Island School District.

We appreciate your attention to these concerns and requests on behalf of the Lopez Island School District – our students, faculty, families, and community.

Sincerely,

Lopez Island School Board,

Director Dixie Budke

Director Del Guenther

Director John Helding

Director Clive Prout

Director Carol Steckler

Andrew Weaver
MLA for Oak Bay-Gordon Head

Greater Victoria, British Columbia V8P 5P6

To whom it may concern, I am writing on behalf of a number of constituents who live in Greater Victoria and have approached me with concerns regarding the NAS Whidbey Island complex. They have expressed to me the considerable anxiety that the sounds of the EA-18 Growlers causes them. They are worried about the effects of an expansion in operations. I fully appreciate the importance of the activities which take place at the facility. I recognize the critical role of the training, and the necessity for crews to practice until they can perform from muscle memory alone. Clearly, no action should be taken that would jeopardize this crucial preparation. However, as plans are made to expand operations, I ask that you take the concerns of neighbouring communities into consideration and that every effort is made to mitigate the noise for civilians living in the surrounding area. Sincerely, Andrew Weaver Member of the Legislative Assembly Oak Bay-Gordon Head

1.a. Thank You
4.r. Nonauditory Health Effects
4.t. Noise Mitigation

03_OAKHARBOR_CITY-01

1.a. Thank You
2.m. Record of Decision/Preferred Alternative

Public Meeting Comment Form

Thank you for attending the public meeting on the *Draft Environmental Impact Statement (EIS) for EA-18G Growler Airfield Operations at Naval Air Station Whidbey Island Complex*.

To be most helpful, your comments should be clearly written and describe specific issues or topics. Comments may be submitted in one of the following four ways: ***(1) Provide written comments*** *at today's public meeting;* ***(2) Speak with the stenographer,*** *who will record your comments;* ***(3) Submit your comments on the project website*** *at www.whidbeyeis.com; or* ***(4) Write your comments and mail them*** *to: Naval Facilities Engineering Command Atlantic, 6506 Hampton Boulevard, Norfolk, VA 23508, Attn: Code EV21/SS.*

All comments submitted on the Draft EIS by January 25, 2017, will become part of the public record and will be addressed in the Final EIS. *The names, street addresses, email addresses and screen names, telephone numbers, and other personally identifiable information of individuals who provide comments will be kept confidential and will not be released, unless otherwise specifically indicated by the commenter or as required by law. The city, state, and five-digit zip code of individuals who provide comments may be released.*

1. **Name** Beth Munns
2. **Organization/Affiliation** City of Oak Harbor, Council member
3. **Address** 633 SW Waterloo Ave, Oak Harbor 98277
4. **E-mail** bmunns@oakharbor.org
5. **Please check here** ☐ **if you would NOT like to be on the mailing list**
6. **Please check here** ☐ **if you would like to receive a CD of the Final EIS when available**

Plan A - OLF use 9070 Ault Field 2070 so that they can keep the other aircraft/platforms training which cannot use OLF.
Less population affected in Coupeville.

Please print • Additional room is provided on back
Please drop this form into one of the comment boxes here at the public meeting or mail to:
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard, Norfolk, VA 23508, Attn: Code EV21/SS

YOUR INPUT MATTERS

Robert Hallahan
Oak Harbor School Board

Oak Harbor, WA 98277

1.a. Thank You
12.m. Education Impacts

Regarding the additional E-18s' effects on Oak Harbor Schools, the Navy has understated the impact when it comes to growth and failed to provide any solutions for mitigation. Chapter 4 of the EIS noted that the Growler plus-up may have an impact on our schools based on some disturbance events, but the most significant effect is the large influx of new children beyond those that have already begun arriving with new P-8 squadrons. We in the community and the schools are happy to educate these additional students. With 50% of Oak Harbor connected with the Navy, serving those who serve our nation is a key part of our mission. 90% of the students connected with NAS Whidbey families attend Oak Harbor schools. Furthermore, with 15% of Oak Harbor graduates enlisting in the military, our schools are educating the new generation of military personnel and leaders. However, with a reduced tax base due to the federal presence in our district, we must discuss the local costs of this mission and the federal government's role. The large numbers of incoming military-dependent children require the purchase or construction of additional classroom space, desks, and curricula materials, along with the hiring of new teachers and support staff without a source of revenue to support this. In fact, Oak Harbor schools have added 28 classrooms in the past three years alone to address both civilian and military growth (along with lowered class sizes and full-day kindergarten). The Oak Harbor community has consistently done its part in supporting its schools by passing local levies for operating costs and passing bonds for school construction. However, over half of the assessed value in the Oak Harbor School District is non-taxable federal property. As early as 1821, regulations were passed to address such issues by supporting the costs of schooling military-dependent children in local communities where they are sent. By 1950, these regulations were codified into law and have since become known as Impact Aid. As originally envisioned the program reimbursed local districts for the additional costs borne by them to educate federally-connected students, including both maintenance/operational and capital (classroom construction) costs. Unfortunately, Impact Aid has become an underfunded program, and has been since 1969. Now codified in Title VII of the Every Student Succeeds Act, Impact Aid is currently administered by the Department of Education. The program is annually-appropriated and discretionary, meaning that it is subject to Congressional budgetary pressure and sequester. In 2016 the total Impact Aid approved by Congress was $1.305B. Yet according to the law, the actual measured impact on local districts nationally was approximately $2.0B (Source: National Association of Federally-Impacted Schools), representing an underfunding of 35%. To put this in a local context, Impact Aid in Oak Harbor was 60% higher just eight years ago with fewer military-connected students. The Navy and Department of Defense have the power and obligation to correct this situation on the Whidbey complex first by increasing DoD Supplemental Impact Aid. This program is administered wholly within the DoD and is intended to target Department of Education shortfalls where they occur, which they surely are in the case of this E-18 plus-up. Second, Impact Aid funds for school construction should be increased. The current appropriation for Impact Aid construction grants for the entire nation is not even enough to build one school in one district. And third,

previously-funded DoD programs for school construction and facilities through the DoD's Office of Economic Adjustment (OEA) should be restored and funds appropriated to supply the additional facilities needed in Oak Harbor. Oak Harbor School District quality and funding are matters important to national security. As a single-site community, E-18 crew members use NAS Whidbey Island as their only home base in the world. It is Oak Harbor to which they will continually return during their careers for operational assignments. As mid-career E-18 officers and maintainers consider whether to remain in the service for a career or to leave for lucrative futures in civilian aviation, they will consider the quality of schools that their kids will be attending. Therefore, as a major driver of E-18 retention rates, the Growler community and the DoD have a great deal riding on Oak Harbor schools. We urge the Navy and DoD to do what is fair for local taxpayers and right for the nation as a whole by dramatically increasing DoD Supplemental Impact Aid, supporting increased DoE Impact Aid construction grants, reinstating previously funded DoD programs through OEA for school construction in communities affected by base growth and/or providing new revenue streams and support to address facility needs associated with growth. The Oak Harbor community has been a very big supporter of the Navy over the decades, but the Navy cannot simply take this for granted. As federal funds for schools have decreased, including DoD and DoE Impact Aid in particular, our community has borne an increasingly inequitable share of the costs when compared with neighboring districts. For the sake of our military and civilian children alike, the adverse impact that the E-18 plus-up will have on Oak Harbor School District facilities and finances must be addressed with real dollars. This official comment has been approved unanimously and submitted to the U.S. Navy by the Oak Harbor School Board: Corey Johnson, President Bob Hallahan, Vice President Peter Hunt, Director & Legislative Liaison Christine Abbott, Director Ana Maria Schlect, Director Dr. Lance Gibbon, Superintendent

03_PORTOFCOUPEVILLECOMMISSIONERS-01

1.a. Thank You
12.f. Economic Hardship and Impacts
12.j. Property Values
2.k. Range of Alternatives
2.m. Record of Decision/Preferred Alternative

Port of Coupeville

Post Office Box 128 Greenbank, Washington 98253
Greenbank Farm Office 765 Wonn Road, Greenbank, WA
Telephone 360-222-3151 Fax 360-222-3484

February 8th, 2017

EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508

Subject: Comment on the EIS for EA-18G Airfield Operations at NAS Whidbey Island

To the Department of the Navy,

The Port of Coupeville is a Washington State municipal corporation governed by an elected commission, independent of other local jurisdictions. Port commissions are elected by and responsible to the electorate of their respective port district for economic development and management of port facilities within the district's communities. The Port of Coupeville district stretches from the town of Coupeville to the town of Freeland and includes Navy Outlying Field Coupeville (OLF).

The Port is a strong supporter of all Armed Forces and especially the US Navy and its presence on Whidbey Island. We are grateful to the Sailors who have chosen to serve their country, often far from their homes and families, and are glad to welcome them into our communities. The more than twenty thousand Sailors and family members assigned to NAS Whidbey Island (NASWI) are vital to the Island's work force, schools, volunteer organizations, parishes, and economy. We are proud to host them and the unique EA-18G Growler training mission conducted at NASWI.

The Port appreciates the opportunity to review the proposed expansion of EA-18G Growler operations at NASWI, including the potential increase in activity at Ault Field and OLF Coupeville. We noted the significant difference in the number of additional operations at each field as determined by Scenario, particularly as Scenarios A and B represent more than a five-fold or three-fold increase in Growler operations at the OLF and over the Coupeville residential and business community.

As an organization founded to enhance the economic wellbeing of the Coupeville Port District, we are concerned that increased operations and noise associated with Scenarios A and B may have a harmful effect on business activity and residential values in Coupeville, a small and picturesque town (population less than 2000) whose economy

relies heavily on visitors and tourism. Flight operations at OLF are easily heard in all parts of Coupeville, including the main tourist area on the waterfront. In our estimation, an increase from the current 6100 Growler operations per year to over 21,000 (Scenario B), or potentially over 35,000 (Scenario A), will have a significant impact on the local economy.

In response to the concerns of our constituents, the Port of Coupeville expresses a strong desire for OLF operations not to exceed, and preferably be lower than, the limits established by Scenario C: 20% of all Field Carrier Landing Practices. Regardless of which alternative (1-3) is selected by the Navy to achieve the purpose and need of the proposed action, minimizing the increase in operations at OLF is in the best interests of its host community.

Thank you again for the opportunity to comment on this EIS, and for all that the men and women serving in the Navy are doing to defend our nation in these dangerous and challenging times.

Sincerely,

John S. Mishasek, President
Port of Coupeville Board of Commissioners

1.a. Thank You
1.b. Best Available Science and Data
1.c. Segmentation and Connected Actions
19.a. Scope of Cumulative Analysis
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.c. Compliance with the National Environmental Policy Act
2.d. Program of Record for Buying Growler Aircraft
4.b. NOISEMAP Model, Modeling Methodology, and Noise Sources
4.c. Advanced Acoustic Model
8.a. Cultural Resources Area of Potential Effect
8.j. City of Port Townsend Cultural Resources

City of Port Townsend

Deborah Stinson
Mayor
250 Madison, Suite 2
Port Townsend, WA
98368
360-379-5047
dstinson@cityofpt.us

January 18, 2017

EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
Attn: Code EV21/SS
6506 Hampton Boulevard
Norfolk, VA 23508

Dear Sir or Madam:

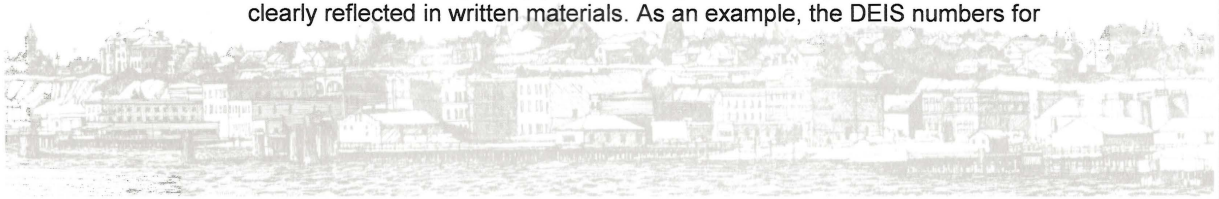
Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) published November 11, 2016 on the addition of 36 EA-18G "Growler" jets to the fleet of 82 existing Growlers at Naval Air Station Whidbey Island (NASWI). The City previously provided scoping comments on the DEIS in its letter dated January 1, 2015. It also submitted comments and a request for Section 106 consultation on August 16, 2016.

The published DEIS does **not** address our previous comments. To summarize, our January 8, 2015 scoping comments addressed:

- The Navy's piecemeal EIS and Environmental Assessment processes for proposed Navy operations in the Military Operations Area in the Olympic National Forest do not comply with NEPA's requirement that the effects of functionally-related activities must be assessed together and the cumulative impacts of those activities addressed.
- The DEIS does not properly reflect the impacts of jet noise, pollution and other stressors to the health and well-being of our community and our neighbors on the Olympic Peninsula.

Since sending this letter, we have discovered other issues that could have direct impact on Port Townsend and our Olympic Peninsula neighbors:

- Verbal statements by Navy personnel in public meetings are still not clearly reflected in written materials. As an example, the DEIS numbers for



Growler operations do not include an additional 42 planes, as was discussed at the Navy's December open house.
- There is no mention of weekend training flights in the DEIS, but the Washington State Forest Services Draft Permit does talk about weekend flights.

Additionally, our Section 106 consultation letter addressed:

- A request that for noise impacts, the Navy expand the area of study, as well as the definition of the indirect effects component of the Area of Potential Effect (APE.)
- A request to consider using a different measure of sound impacts.
- A request to include an evaluation of all the historic areas over which the Growlers fly, not just the much smaller historic areas affected by takeoffs and landings.
- A request to enter into formal consultation with the City of Port Townsend under authority of Section 106 of the National Historic Preservation Act.

We remain concerned that the Navy continues to separate the ground, air, and sea-based activities on and around the Olympic Peninsula into different public processes. This practice of segmentation has resulted in numerous separate comment periods between January 2014 and now. As we have previously stated, we share the view of some of our constituents who do not view these electronic warfare testing, training and flight activities as separate. And, that the Navy's segmentation of impacts into numerous distinct public processes continues to cause confusion and frustration to people who are trying to piece together the full scope of impacts.

While not directly related to this DEIS, we note that this continues a practice that we described in a September 2007 letter to the Navy in relation to proposed actions at Naval Magazine Indian Island.

NEPA requires that all functionally related activities be considered together, and it mandates "…review of cumulative, incremental impacts of actions when following and/or added to other actions regardless of what agency – federal, nonfederal, private – undertakes such other actions." (40 CFR 1508.7) The Navy's persistent and chronic segmentation of impacts and its lack of cumulative effects analyses are cause for serious and long term concerns about public and environmental health in our own community.

<u>Noise Impacts:</u>

We incorporate our August 16, 2016 Section 106 consultation letter into our general comments. As we mentioned in that letter, the DEIS uses an outdated

noise simulation model that a DoD-commissioned study found is not appropriate for Growler engines.

Historic Preservation:

As we stated in our Section 106 consultation letter, we believe that the decision to restrict the APE to areas that immediately surround runways, and to not take into account noise from flight operations beyond that narrow scope, does not accurately measure the effect of those operations on our National Historic Districts.

We appreciate the Navy's extension of the comment period until February 24, 2017. We are aware that many constituent groups have expressed their need for additional time to prepare comments, and believe that granting this extension will result in the Navy having more specific information that they can use to evaluate the comments to the DEIS.

Additionally, while our limited resources constrain our ability to provide you with more detailed suggestions, we commend the detailed analyses and suggestions of our constituent groups, such as the West Coast Action Alliance.

We look forward to the formal Section 106 consultation, as well as seeing your responses to our comments. The City of Port Townsend appreciates the need for military training and is grateful for the sacrifices made by the members of our military and their families.

Sincerely,

Deborah S. Stinson
Mayor

cc: Honorable Patty Murray, U.S. Senator
Honorable Maria Cantwell, U.S. Senator
Honorable Derek Kilmer, U.S. Representative
Honorable Kevin Van de Wege, Washington State Senator
Honorable Steve Tharinger, Washington State Representative
Honorable Mike Chapman, Washington State Representative
Dr. Allyson Brooks, Washington State Historic Preservation Officer
Reid J. Nelson, Advisory Council on Historic Preservation

San Juan County Council

350 Court Street No. 1
Friday Harbor, WA
98250
(360) 378 - 2898

District 1, Bill Watson
District 2, Rick Hughes
District 3, Jamie Stephens

February 24, 2017

EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508
Attn: Code EV21/SS

Re: Comments on the "Environmental Impact Statement for EA-18G "Growler" Airfield Operations at Naval Air Station Whidbey Island Complex"

Dear EIS Project Manager,

The San Juan County Council is the administrative and policy body for San Juan County. Our county line is closer to NAS Whidbey than Anacortes, WA or OLF Coupeville. Since the introduction of the EA-18G, Growlers, our islands have been heavily impacted by excessive noise and flyovers. The draft EIS is incomplete because it fails to address adequately the items requested for review.

Further, placement of any additional Growlers at NAS Whidbey under any alternative should have conditions for adequate mitigation measures that are in place before one new Growler arrives. Conditions were placed on the usage of OLF several years ago.

Why it is not complete:

San Juan County (SJC) requested several items, pertaining to noise, for review and scoping in the EIS and feel that the draft does not address any of our requests.

It does not consider effects on wildlife based on science.

It does not use an economic analysis of impacts in assessment of alternatives.

It does not consider the no change alternative.

Comments:

Noise

San Juan County believes that the noise created by the Growlers is not a one-item fix but a suite of fixes. They are not addressed by the EIS. The main impact from the Growlers on San Juan County is the continuous wall of sound that reverberates throughout the islands when practice operations are in full swing. The effect is different from standing on the tarmac at Whidbey or even under a flyover. We asked that actual testing be done especially in the "C" weighted scale, which is common for industrial projects that cause excessive vibration.

1.a. Thank You
1.b. Best Available Science and Data
10.a. Biological Resources Study Area
10.b. Biological Resources Impacts
10.c. Wildlife Sensory Disturbance and Habituation
10.f. Endangered Species Impact Analysis Adequacy
10.i. Additional Special Status Species
12.c. Socioeconomic Impacts
12.h. Tourism
12.j. Property Values
12.k. Compensation to Citizens for Private Property
12.m. Education Impacts
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.c. Compliance with the National Environmental Policy Act
2.l. No Action Alternative
4.b. NOISEMAP Model, Modeling Methodology, and Noise Sources
4.c. Advanced Acoustic Model
4.f. Noise Measurements/Modeling/On-Site Validation
4.h. C-Weighted Noise, Low Frequency Noise, and Vibrations
4.j. Other Reports
4.t. Noise Mitigation
4.u. Local Noise Ordinances
4.v. Impacts to Domestic Pets, Livestock, or Wildlife
7.i. Deception Pass State Park and Other State Parks

The computer modeled noise measurements do not seem to be representative of the actual experiences of the people in and around Growler operations. Their results now seem questionable based on newer models that are available. The modeling was done using NOISEMAP Version 7.2, software developed in the 1970s and a version that appears to be at least 12 years old.

A Department of Defense Strategic Environmental Research and Development Program determined that "new software was needed to provide legally defensible noise assessments of current and future aircraft operations." The final report found that NOISEMAP's linear acoustics were inadequate for modeling higher thrust engines used in the Growler.

In 2010 a new noise model, the Advanced Acoustic Model (AAM), was developed under DOD contract to address these shortcomings. Why wouldn't this be used?

Further, when actual measurements are performed, they show that under current conditions, the Navy has been violating State Noise Statutes (WAC 173-60-030, 173-60-040) when performing FCLP's after 10:00pm at night. This is reflected in the National Park Services' Ebey's Landing National Historic Reserve Acoustic Monitoring Report. This report is the result of 31 days of actual recorded sound pressure levels at two sites. It shows that on July 6, 2015 the sound levels exceeded the 65 decibel level almost continuously (one 15 minute break) for a two hour period, 10:00pm – 12:00am.

The effectiveness of acoustic mitigation panels and blast deflectors were not considered. This decision was based on a Federal Highway report from some years ago and not included in the EIS. Yet several commercial airports, Air Force, and Naval bases use products from Blast Deflectors Incorporated.

An acoustical mitigation hangar or "hush house" is mentioned as a possibility. This should be installed under current conditions and especially if additional Growlers are located at NASWI. The additional maintenance and engine run-up requirements of additional aircraft fit the purpose and need to be a part of the EIS. It is just as important as a new hangar for maintenance.

Wildlife

Many of the species that are described in the Draft EIS are present in the San Juan Archipelago, yet are not part of the study. The listed species do not use the "A" weighted scale of human hearing to determine the effects on their habitat. Your conclusions do not take into account that some of these species are State "species of concern" and their habitat needs to be addressed when changing use.

We concur with the comments submitted by Paul Marczin and Doug Thompson, Area Habitat Biologists; and Ruth Milner, District Wildlife Biologist of Washington's Department of Fish and Wildlife, that the draft is lacking a scientific basis for its conclusions. Full text attached. Sample below:

We have reviewed the Draft Environmental Impact Statement with particular emphasis on Chapter 4, Environmental Consequences. We are dismayed by the lack of best available science used to assess impacts to fish and wildlife and strongly disagree with the unsubstantiated, repeated assertions that all wildlife will simply habituate and remain unaffected by any and all increases in growler traffic proposed in the DEIS.

Economic Analysis of Impact

The Draft focuses on mitigation for the impacts to the base itself, and leaves the surrounding community to deal with the issues off the base caused by the placement of additional Growlers. There are appropriations for a hangar but not to purchase homes affected by the increase. The Draft

acknowledges the impact to the Oak Harbor School System but does not commit funds to cover the additional children in the system. The School superintendent commented at the Community Leader briefing, that the number of military children attending Oak Harbor Schools had increased during the past five years, however funding has not increased.

It does not acknowledge the documented lost revenue to State Parks during Growler operations and thus does not project the additional losses due to increased operations.

We believe that that a comprehensive economic analysis needs to be done which includes the above (purchasing homes, guaranteeing Federal student reimbursement), and costs associated with decreased land value on the south end of Lopez and San Juan Islands as well as repair and maintenance for historic buildings in Port Angeles. These costs should be borne by the Navy as a condition of additional Growlers.

Draft EIS Executive Summary: From a purely operational perspective, the Navy would prefer to use OLF Coupeville for all FCLPs because it more closely replicates the pattern and conditions at sea and therefore provides superior training. Conceptual APZs at OLF Coupeville would impact 1,301 acres of residential land under Scenario A and 503 acres under Scenario B under all three action alternatives, if developed. If warranted and depending upon the alternative and scenario selected, the APZs could be updated by completing an AICUZ update and coordinating with local communities to provide appropriate new land use recommendations as necessary, which could impact regional land-use controls.

Later: *The increased enrollment at the Oak Harbor School district would further exacerbate the existing overcrowding problem and have a significant adverse impact on the district.*

No Change Alternative

The No Change is a standard to use because it is supposed to be an alternative. It should reflect the analysis of cost savings, etc. for the base not to add 35 new Growlers. Congress appropriated money for 35 more Growlers for the Navy not necessarily for NAS Whidbey.

San Juan County asks that the Navy do the studies necessary to answer these questions and implement measures to minimize the impacts to your personnel and the surrounding communities.

COUNTY COUNCIL
SAN JUAN COUNTY, WASHINGTON

Jamie Stephens, Member
District No. 3

Rick Hughes, Chair
District No. 2

Bill Watson, Vice Chair
District No. 1

San Juan County Council

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(360) 378 - 2898

District 1, Bill Watson
District 2, Rick Hughes
District 3, Jamie Stephens

February 24, 2017

EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508
Attn: Code EV21/SS

Re: Comments on the "Environmental Impact Statement for EA-18G "Growler" Airfield Operations at Naval Air Station Whidbey Island Complex"

Dear EIS Project Manager,

The San Juan County Council is the administrative and policy body for San Juan County. Our county line is closer to NAS Whidbey than Anacortes, WA or OLF Coupeville. Since the introduction of the EA-18G, Growlers, our islands have been heavily impacted by excessive noise and flyovers. The draft EIS is incomplete because it fails to address adequately the items requested for review.

Further, placement of any additional Growlers at NAS Whidbey under any alternative should have conditions for adequate mitigation measures that are in place before one new Growler arrives. Conditions were placed on the usage of OLF several years ago.

Why it is not complete:

San Juan County (SJC) requested several items, pertaining to noise, for review and scoping in the EIS and feel that the draft does not address any of our requests.

It does not consider effects on wildlife based on science.

It does not use an economic analysis of impacts in assessment of alternatives.

It does not consider the no change alternative.

Comments:

Noise

San Juan County believes that the noise created by the Growlers is not a one-item fix but a suite of fixes. They are not addressed by the EIS. The main impact from the Growlers on San Juan County is the continuous wall of sound that reverberates throughout the islands when practice operations are in full swing. The effect is different from standing on the tarmac at Whidbey or even under a flyover. We asked that actual testing be done especially in the "C" weighted scale, which is common for industrial projects that cause excessive vibration.

1.a. Thank You
1.b. Best Available Science and Data
10.a. Biological Resources Study Area
10.b. Biological Resources Impacts
10.c. Wildlife Sensory Disturbance and Habituation
10.f. Endangered Species Impact Analysis Adequacy
10.i. Additional Special Status Species
12.c. Socioeconomic Impacts
12.h. Tourism
12.j. Property Values
12.k. Compensation to Citizens for Private Property
12.m. Education Impacts
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.c. Compliance with the National Environmental Policy Act
2.l. No Action Alternative
4.b. NOISEMAP Model, Modeling Methodology, and Noise Sources
4.c. Advanced Acoustic Model
4.f. Noise Measurements/Modeling/On-Site Validation
4.h. C-Weighted Noise, Low Frequency Noise, and Vibrations
4.j. Other Reports
4.t. Noise Mitigation
4.u. Local Noise Ordinances
4.v. Impacts to Domestic Pets, Livestock, or Wildlife
7.i. Deception Pass State Park and Other State Parks

The computer modeled noise measurements do not seem to be representative of the actual experiences of the people in and around Growler operations. Their results now seem questionable based on newer models that are available. The modeling was done using NOISEMAP Version 7.2, software developed in the 1970s and a version that appears to be at least 12 years old.

A Department of Defense Strategic Environmental Research and Development Program determined that "new software was needed to provide legally defensible noise assessments of current and future aircraft operations." The final report found that NOISEMAP's linear acoustics were inadequate for modeling higher thrust engines used in the Growler.

In 2010 a new noise model, the Advanced Acoustic Model (AAM), was developed under DOD contract to address these shortcomings. Why wouldn't this be used?

Further, when actual measurements are performed, they show that under current conditions, the Navy has been violating State Noise Statutes (WAC 173-60-030, 173-60-040) when performing FCLP's after 10:00pm at night. This is reflected in the National Park Services' Ebey's Landing National Historic Reserve Acoustic Monitoring Report. This report is the result of 31 days of actual recorded sound pressure levels at two sites. It shows that on July 6, 2015 the sound levels exceeded the 65 decibel level almost continuously (one 15 minute break) for a two hour period, 10:00pm – 12:00am.

The effectiveness of acoustic mitigation panels and blast deflectors were not considered. This decision was based on a Federal Highway report from some years ago and not included in the EIS. Yet several commercial airports, Air Force, and Naval bases use products from Blast Deflectors Incorporated.

An acoustical mitigation hangar or "hush house" is mentioned as a possibility. This should be installed under current conditions and especially if additional Growlers are located at NASWI. The additional maintenance and engine run-up requirements of additional aircraft fit the purpose and need to be a part of the EIS. It is just as important as a new hangar for maintenance.

Wildlife

Many of the species that are described in the Draft EIS are present in the San Juan Archipelago, yet are not part of the study. The listed species do not use the "A" weighted scale of human hearing to determine the effects on their habitat. Your conclusions do not take into account that some of these species are State "species of concern" and their habitat needs to be addressed when changing use.

We concur with the comments submitted by Paul Marczin and Doug Thompson, Area Habitat Biologists; and Ruth Milner, District Wildlife Biologist of Washington's Department of Fish and Wildlife, that the draft is lacking a scientific basis for its conclusions. Full text attached. Sample below:

We have reviewed the Draft Environmental Impact Statement with particular emphasis on Chapter 4, Environmental Consequences. We are dismayed by the lack of best available science used to assess impacts to fish and wildlife and strongly disagree with the unsubstantiated, repeated assertions that all wildlife will simply habituate and remain unaffected by any and all increases in growler traffic proposed in the DEIS.

Economic Analysis of Impact

The Draft focuses on mitigation for the impacts to the base itself, and leaves the surrounding community to deal with the issues off the base caused by the placement of additional Growlers. There are appropriations for a hangar but not to purchase homes affected by the increase. The Draft

acknowledges the impact to the Oak Harbor School System but does not commit funds to cover the additional children in the system. The School superintendent commented at the Community Leader briefing, that the number of military children attending Oak Harbor Schools had increased during the past five years, however funding has not increased.

It does not acknowledge the documented lost revenue to State Parks during Growler operations and thus does not project the additional losses due to increased operations.

We believe that that a comprehensive economic analysis needs to be done which includes the above (purchasing homes, guaranteeing Federal student reimbursement), and costs associated with decreased land value on the south end of Lopez and San Juan Islands as well as repair and maintenance for historic buildings in Port Angeles. These costs should be borne by the Navy as a condition of additional Growlers.

Draft EIS Executive Summary: From a purely operational perspective, the Navy would prefer to use OLF Coupeville for all FCLPs because it more closely replicates the pattern and conditions at sea and therefore provides superior training. Conceptual APZs at OLF Coupeville would impact 1,301 acres of residential land under Scenario A and 503 acres under Scenario B under all three action alternatives, if developed. If warranted and depending upon the alternative and scenario selected, the APZs could be updated by completing an AICUZ update and coordinating with local communities to provide appropriate new land use recommendations as necessary, which could impact regional land-use controls.

Later: *The increased enrollment at the Oak Harbor School district would further exacerbate the existing overcrowding problem and have a significant adverse impact on the district.*

No Change Alternative

The No Change is a standard to use because it is supposed to be an alternative. It should reflect the analysis of cost savings, etc. for the base not to add 35 new Growlers. Congress appropriated money for 35 more Growlers for the Navy not necessarily for NAS Whidbey.

San Juan County asks that the Navy do the studies necessary to answer these questions and implement measures to minimize the impacts to your personnel and the surrounding communities.

COUNTY COUNCIL
SAN JUAN COUNTY, WASHINGTON

Jamie Stephens, Member
District No. 3

Rick Hughes, Chair
District No. 2

Bill Watson, Vice Chair
District No. 1

EBEY'S LANDING
NATIONAL HISTORICAL RESERVE

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EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
Attn: Code EV21/SS
6506 Hampton Boulevard
Norfolk, VA 23508

Date: February 17, 2017

RE: Response to Draft Environmental Impact Statement (Draft EIS) for the continued and increased EA-18G Growler Operation at Naval Air Station Whidbey Island (NASWI).

Dear EA-18G Growler EIS Project Manager:

Established by Congress in 1978 (National Parks and Recreation Act, P.L .95-625), Ebey's Landing National Historical Reserve (the Reserve) is a 17,572 acre area of nationally significant historic resources with boundaries defined by the Central Whidbey Island Historic District. As stated in its enabling legislation, the Reserve was established "to preserve and protect a rural community which provides an unbroken historical record from nineteenth century exploration and settlement in Puget Sound to the present time."

The Trust Board of Ebey's Landing National Historical Reserve coordinates administration and management of the Reserve according to the mandates of an Interlocal Agreement between the National Park Service, Island County, the Town of Coupeville, and the Washington State Parks and Recreation Commission.

For almost 40 years, the Navy and the Reserve have been neighbors, sharing a precious historic and cultural environment. The Trust Board, in commenting on this Draft EIS, has carefully considered the importance of the Navy to our region and nation. Although we support the Navy and its mission, we conclude that the action proposed in this Draft EIS, which would increase OLF Growler operations by as much as five fold, is not consistent with the preservation mission of the Reserve and would have long term and cumulative effects on the Reserve we are charged with protecting.

The Navy has the means to develop a viable "everybody wins" scenario in which NASWI supports the Growler operation, pilots are effectively trained, and surrounding communities avoid significant adverse impact.

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1.a. Thank You
11.d. Per- and Polyfluoroalkyl Substances
12.c. Socioeconomic Impacts
12.e. Agriculture Analysis
12.h. Tourism
2.k. Range of Alternatives
2.l. No Action Alternative
2.n. Alternatives Considered But Eliminated
4.d. Day-Night Average Sound Level Metric
4.f. Noise Measurements/Modeling/On-Site Validation
4.j. Other Reports
4.l. Points of Interest
4.m. Supplemental Metrics
7.b. Land Use Compatibility and Air Installations Compatible Use Zones
7.g. Ebey's Landing National Historical Reserve
8.a. Cultural Resources Area of Potential Effect
8.b. Section 106 Process
8.c. Noise and Vibration Impacts to Cultural Resources
8.f. Cultural Landscape and Impacts to Ebey's Landing National Historical Reserve
8.h. Ebey's Landing National Historical Reserve, Military Association

The Trust Board responded previously to this EIS by providing comments during scoping in 2013 and 2014, and as a consulting party in the Section 106 review initiated in accordance with the National Historic Preservation Act. These comments requested that the EIS address concerns about noise measurement methods, definition of the affected area, and the operation's overall impact on Reserve residents, visitors and nationally significant resources.

The Trust Board finds that the Draft EIS lacks key information and analysis needed to evaluate impacts to the Reserve and prepare the Navy for making a well informed decision. Especially concerning is the lack of noise measurement data and analysis requested during scoping, because this data informs every impact and analysis that is relevant to the protection, preservation and interpretation of the Reserve and our community.

The Trust Board urges the Navy to reject the proposed alternatives and consider a No Action Alternative that reflects no increase over current (2016) operations, with viable compromise alternative scenarios that use strategies such as detachment training spread across multiple locations to diffuse, and not increase, the most impactful aspects of the Growler operations to the Reserve and community.

The Trust Board appreciates the opportunity to comment on this Draft EIS and looks forward to an expanding collaboration with the Navy as this analysis and decision are concluded. Specific comments on the draft are attached.

Respectfully,

Wilbur Bishop, Chair
Trust Board of Ebey's Landing NHR

Cc *Senator Patty Murray*
Senator Maria Cantwell
Congressman Rick Larsen
Congressman Derek Kilmer
Governor Jay Inslee
Mayor Molly Hughes
Commissioner Helen Price-Johnson
Eric Watilo, Washington State Parks & Recreation
Capt. Geoff Moore, Naval Air Station, Whidbey Island
Charles Arndt, Friends of Ebey's
Allyson Brooks, WA St. Dept. of Archeology & Historic Preservation
Palmer Jenkins, Deputy Regional Director, National Park Service
Karen Taylor-Goodrich, Superintendent, North Cascades National Park
Judith Rocchio, PWR, Air Quality, Natural Sounds, Night Skies Coordinator, NPS
Roy Zipp, Operations Manager, NPS
Trust Board Members
file

SPECIFIC POINTS NEEDING CORRECTION OR RESPONSE

GENERAL:

1. With local support, Congress established Ebey's Landing National Historical Reserve as an area to be protected and preserved for the public, in perpetuity. Although the proposed action could undermine that intent, the Draft EIS does not fully consider how extreme noise and other changes will impact the Reserve's resources, values and visitor experience. Environmental Impact Statements are intended to provide a full and clear discussion that informs decision-makers and the public, and include alternatives that could avoid or minimize adverse impacts. By excluding alternatives that could meet the Navy's need without impacting the Reserve, this Draft EIS seems instead to justify decisions and plans that have already been set in motion. As a result, the Draft EIS does not provide what is needed for the public or the Navy to understand the proposed action's long term and cumulative effects on the Reserve or the community that supports it.

2. The Draft EIS states that noise and vibration from Growler operations should not be regarded as detracting from the historic nature or character of historic properties or the Reserve because there has been consistent military presence in the Reserve. The Final EIS should clarify that the proposed Growler expansion is not linked historically or thematically to the Reserve's cultural landscape or 426 contributing structures.

AREA OF POTENTIAL EFFECT (APE):

3. The Draft EIS defines APE based on a 65 DNL sound contour mapped with modeled Day-Night Average Sound Level data. The Trust Board restates its concern that this method does not fully characterize noise exposure and impacts to the Reserve's resources, values and visitor experience, which are primary concerns of the Trust Board. In addition, public perceptions and a sound monitoring study in the Reserve question the accuracy of the 65 DNL contour mapped through Day-Night Average Sound Level. These concerns are extremely important because the APE informs every analysis of impact in the Draft EIS.

ALTERNATIVES AND SCENARIOS:

4. All of the scenarios in the Draft EIS sharply increase FCLP operations at OLF over current levels (6,100 operations in 2016), introducing to the Reserve more of the loudest planes, more of the loudest operations, and more area exposed to significant noise. No evidence is presented showing that the Navy has evaluated whether the people who live in, or use, the Reserve or surrounding community can tolerate the extreme noise impacts from as many as 35,100 operations per year. If consistent with current OLF FCLP scheduling, this could result in as many as 135 incidents of significant, disruptive noise every weekday. The Final EIS should note that the Reserve and Coupeville community experienced operations near these levels in the 1980s and 1990s and the community was not able to tolerate the noise. Public outcry was so intense operations

were reduced. Planning to reintroduce this level of noise impact will create significant conflict between the Navy and a growing number of communities.

5. The Draft EIS arbitrarily proposes percentages (up to 80%) of FCLP operations (the most extreme noise impacts) assigned to OLF. The EIS should explain the need, data or rationale responsible for these percentages. In addition, it is not equitable for risks and impact from a proposed action centered in one community to be shifted to another community. Scenarios that concentrate FCLP operations (and the most extreme noise and risk) at OLF pose an unfair impact to Coupeville and the Reserve. The Reserve and surrounding community represent a longstanding, collaborative effort to protect rural character and a way of life. Less dense development in this area is the result of planning and investment and should not be sacrificed because the Navy regards it as a superior training environment.

POPULATION COUNTS:

6. The Draft EIS understates the numbers of people (and children) who could be impacted by noise or exposed to risk in the Reserve. Population estimates should go beyond census block data, and consider the millions of people who use, travel and recreate within the Reserve each year. These include people using the three Washington State parks in the Reserve (1,057,439 in 2016); people using the Washington State Ferry at Coupeville (over 819,000 riders in 2016); and a busy Scenic state highway (2015 average daily total 8492, over 3 million annually, based on a WSDOT traffic recorder in the Reserve). Camp Casey is another example of a location within the Reserve that attracts tens of thousands of visitors each year (especially children) who would not be reflected in a census count. Visitation figures from festivals should also be considered.

NOISE AND NOISE MEASUREMENT:

7. The Draft EIS does not respond to requests during scoping and consultation that the EIS incorporate noise measurement methods that fully characterize noise exposure and impacts to the Reserve's resources, values and visitor experience, and meet NEPA's requirements to characterize environmental impacts according to intensity, context and duration. Instead of relying solely on Day-Night Average Sound Level, this would require the use of metrics such as "time audible" and "time above," maximum A-weighted sound level, sound exposure level, equivalent sound level, and number-of-events-above a specified sound level. The Trust Board recognizes that the Day-Night Average Sound Level metric is the baseline measurement of aircraft noise for the Department of Defense (DOD), but DOD sources, such as the Defense Noise Working Group (DNWG) also recognize that supplemental noise metrics and analysis tools may be necessary to fully inform the public and support analysis and decision making in processes like this EIS (2009 DNWG Technical Bulletin "Using Supplemental Noise Metrics and Analysis Tools"). For this Draft EIS, appropriate noise assessment and analysis should include actual ground measurement of noise intensity, frequency, and vibration as they are

experienced by Reserve users, historic structures and other resources and these measurements should occur at a wide range of locations within the Reserve.

8. The additional POIs (Point of Interest) locations noted in the Draft EIS have increased the number of noise data collection points in the Reserve, but they use the same Day-Night Average Sound Level noted above and therefore do not respond to scoping comments requesting actual ground measurement of noise intensity, frequency, and vibration as they are experienced by Reserve users, historic structures and other resources.

9. The Final EIS should expand its discussion of a 2016 National Park Service sound monitoring report for the Reserve that offers a highly credible, on the ground measurement to compare to the Navy's Day-Night Average Sound Level modeling method (Draft EIS page 1-23). One of the monitoring locations suggests that areas outside the Navy's 65 DNL noise contour may be experiencing noise that is louder and more impactful than modeled. This is important because it challenges the modeling data on which all of the Draft EIS estimates of impact from noise are generated.

CULTURAL RESOURCES:

10. According to 36 CFR 800.8(a), NEPA and NHPA (Section 106) reviews of cultural resources should be coordinated. The Draft EIS was routed for comment without a complete Section 106 review (no defined APE or identification of historic properties), making it difficult for reviewers to understand and comment on impacts to cultural resources. This is especially a problem for a federal undertaking with an affected environment that includes a large National Historic District and a 17,572 acre Reserve with 426 contributing structures and an intact, nationally significant cultural landscape.

11. Analysis of cultural resources in the Environmental Consequences chapter concludes that noise and vibration from Growler operations would not detract from the historic nature or character of historic properties or the Reserve because there has been consistent military presence in the Reserve, and because the Reserve's interpretive themes include aspects of military history (page 4-195). These are not valid criteria for considering adverse impact under NEPA or NHPA.

12. Several comments and conclusions about Cultural Resources in the Affected Environment and Environmental Consequences chapters need correction in the Final EIS. These especially include statements that imply Section 106 review is completed; discussion of adverse impacts under Section 106; discussion of noise and vibration impacts without identification of specific historic properties; and inadequate discussion of impact to the defining features of the historic district's cultural landscape, which include setting and soundscape.

13. The Draft EIS does not consider ways that a new APZ for OLF would impact preservation of historic character in the Reserve. Required by Navy regulations for each of the proposed scenarios, the APZ would trigger expanded land use regulations restricting the rehabilitation and adaptive use of historic properties, and expand the reach of regulations and noise mitigation measures that affect the preservation of features like historic single pane windows, original cladding, and traditional construction techniques. These impacts would primarily be experienced by local government and private property owners.

VISITOR EXPERIENCE:

14. Although the affected area includes an intensively used outdoor recreation network and a National Historical Reserve established to preserve, protect and share a rural landscape with the public, the Draft EIS does not adequately analyze how expanded Growler operations will impact the ability of residents and visitors to use and enjoy these areas as intended. The Draft EIS (page ES-5 and elsewhere) reports that, according to Department of Defense data, about 87 percent of the population is not highly annoyed by outdoor sound levels below 65 dB DNL (data from FICUN - Federal Interagency Committee on Urban Noise, 1980). The Draft EIS should recognize that the FICUN data regards noise that exceeds 65 dB as "Significant Exposure" and the threshold at which land use controls are needed. This means that the proposed Growler expansion results in significantly more land, residents and visitors subjected to "Significant Exposure" sufficient to require land use controls. Given the importance of public use and outdoor recreation to the Reserve, the Final EIS should compare and supplement the nearly 40 year old FICUN data with sources that are more recent (such as Fidell, 2005), and more relevant to the type of outdoor experiences people seek and value in the Reserve.

15. The Draft EIS (page 4-195) describes noise and vibration from the expansion of the Growler operation as "a potential annoyance to visitors in the reserve," but concludes that because noise and vibration are temporary and occur "outside the airfield," the result would be a minimal to moderate annoyance. This might be true where noise is minor, but it is unlikely to be true for the expanded areas and instances where residents and visitors experience extreme or "Significant Exposure" as described above. It is also unlikely to be true for people seeking the Reserve's rural character and opportunities for outdoor recreation, especially under a scenario resulting in as many as 135 incidents of extreme noise from FCLP operations every weekday.

GROUNDWATER CONTAMINATION:

16. Because aspects of the Growler operation, including aviation mishaps, could result in contamination of groundwater, the Final EIS should analyze this as a potential adverse impact, including an analysis of risk to the public and the Reserve's resources. Wherever

potential impacts are considered or analyzed, impacts to agriculture and economy should be considered along with human health.

APZ IMPACTS:

17. All nine of the proposed scenarios increase operations at OLF to levels requiring the designation of an Accident Potential Zone (APZ). Although an OLF APZ would cover large areas of the Reserve and possibly Coupeville, the configuration will not be disclosed until after the EIS is completed and a decision rendered. The APZ would have an undisclosed effect on land use regulation, and most likely a negative impact on property values. The resulting shortfall caused by lower property values will likely increase property taxes paid by all other property owners in Island County. This information should be disclosed to the public and local government so they can gauge how they will be impacted.

RUNWAY EXPANSION:

18. Appendix H (Airfield Analysis) in the Draft EIS acknowledges that the OLF runway does not meet Navy FCLP requirements, but the Draft EIS does not describe how this will be corrected. If corrective actions include runway or other expansion into the Reserve, this should be discussed in the Affected Environment and Environmental Consequences chapters. Associated costs should be included in estimates of overall cost to accomplish the proposed action.

SOCIOECONOMIC ANALYSIS:

19. The Draft EIS fails to fully consider socioeconomic impacts to a unique community that is sustained by a long and remarkable tradition of recreation and collaborative preservation. The Reserve, and the community that supports it, are part of a "place based" economy, defined as a place in which a significant part of the economy comes from businesses and spending that depend upon the local environment and local character. This includes economic activity from land preservation, historic preservation, strong property values, specialized agriculture, parks and outdoor recreation, eco-tourism, cultural tourism, and businesses that include retail, visitor services, overnight accommodations, special events (such as festivals and the wedding industry) as well as local art, crafts and local foods. Extreme noise from an expanded Growler operation would disproportionately impact this economy. Socioeconomic analysis should recognize that the Reserve represents a longstanding pattern of investment in the community. Loss of integrity of the landscape and diminished outdoor recreation opportunities due to noise threaten this pattern of investment. Examples include:
    - **Continued Voluntary Participation in Land Protection**: Hundreds of residents in Ebey's Reserve have committed to preserving the Reserve's character and environment by voluntarily limiting their ability to develop their own property, and reducing their own property values, by placing easements or other restrictions on their property. The benefits from preservation are shared by the entire community.

- **Continued Financial Investment in Protecting the Reserve**: Federal agencies, Land Trust organizations, non-profit preservation organizations and thousands of citizens (local and otherwise) have invested many millions of dollars to secure conservation easements for the express purpose of protecting and preserving the Reserve's scenic beauty, natural and cultural resources, recreational opportunities, heritage, rural character and way of life.
- **Continued Citizen Participation:** Because the Reserve is valued within a broad community, it attracts an extensive network of volunteers and in-kind donations, centered on protecting and preserving the Reserve's resources, heritage, rural character and way of life.
- **Local Government Participation and Commitment:** Because the Reserve is valued by their citizens, local government partners help it succeed with official support.
    - Island County, the Town of Coupeville, Washington State Parks and the National Park Service share responsibility and collaborate in the management and administration of the Reserve;
    - Island County supports the Reserve by incorporating the Reserve's strategic plan into its own Comprehensive Plan;
    - Island County and the Town of Coupeville protect the Reserve's historic character with a joint design review process;
    - State and federal agencies regularly contribute special support for the Reserve because of its recognized state and national significance.
    - The Growth Management Act (GMA) guides local government planning across Washington State and requires communities to identify "Urban Growth Areas" for future expansion. The only community to seek an exception to identifying an Urban Growth Area is the Town of Coupeville. This demonstrates the Town of Coupeville's commitment to protecting the rural character of the Reserve that shares its boundaries, and its determination to protect its own local character and way of life, even at the at the expense of financial gain through growth.

Kyle Loring
Friends of the San Juans

Friday Harbor, WA 98250

Submitted online at: http://whidbeyeis.com/Comment.aspx February 24, 2017 EA-18G Growler EIS Project Manager Naval Facilities Engineering Command Atlantic 6506 Hampton Boulevard Norfolk, VA 23508 Attn: Code EV21/SS Dear EA-18G Growler EIS Project Manager, Friends of the San Juans ("Friends") submits the following comments to address the fatal deficiencies in the U.S. Navy Draft Environmental Impact Statement for EA-18G "Growler" Airfield Operations at Naval Air Station (NAS) Whidbey Island Complex ("DEIS"). Friends is a 501(c)(3) non-profit organization whose mission is to protect the land, sea, water & livability of the San Juan Islands and the Salish Sea through education, citizen involvement, science, and law. Friends is based in Friday Harbor, San Juan Island, and represents approximately 2000 members who live and work throughout the region. Friends submitted scoping comments on the proposal to expand the Growler (EA-18G) operations at Naval Air Station ("NAS") Whidbey Island and assumed for the purposes of those comments that the number of Growlers would increase by 35 to 36. Friends now understands that although the number may be greater than 35-36, that increase is not reflected in the DEIS. These comments also understand that although the number of Growlers would not double, the number of operations would more than double, from a current level of 20,800 to between 41,900 and 43,900, with operations split 20/80, 50/50 or 80/20 between Ault Field and Outlying Field Coupeville ("OLFC"). Before beginning our substantive comments, Friends wants to express our profound disappointment with the open houses that the Navy conducted around the region. First, they did not offer an opportunity for public comment that would allow commenters to hear from each other. Although a Navy official contended that the public desires the open house format, in the fourteen years during which I have been engaged in public hearings, I have yet to meet a member of the public who prefers that approach to one where they have the opportunity to provide feedback directly to a decisionmaker. Second, although I enjoyed speaking with most of the officials taking questions at the open house, I could obtain meaningful answers from very few. For example, although an official initially mentioned that it was not possible to take physical noise measurements of the Growlers because their location would have to be known, he later agreed that the Navy does know where the Growlers fly. His answer then shift to the cost of taking noise measurements, but it was not possible to learn how much such measurements would cost or how that cost would add too great an expense when compared with the substantial cost of the Growler program. And in response to questions about the number of species that had left the area rather than "habituating" to the noise, I could not get an answer. The inescapable conclusion from the open houses was that the Navy either could not or would not squarely answer many public questions. In addition to the comments below, Friends has reviewed much of the comments by Citizens of Ebey's Reserve and Quiet Skies Over San Juan County and supports much of the substance therein. In particular, those groups have conducted reasonable, insightful analyses of the DEIS noise evaluation and Friends urges the Navy to conduct a more meaningful noise impact analysis consistent with the impacts felt by the communities that host and neighbor NAS Whidbey Island. The comments below identify the National Environmental

1.a. Thank You
10.c. Wildlife Sensory Disturbance and Habituation
10.m. Impacts to Marine Species and Habitat
12.c. Socioeconomic Impacts
19.b. Revised Cumulative Impacts Analysis
2.c. Compliance with the National Environmental Policy Act
2.d. Program of Record for Buying Growler Aircraft
2.e. Public Involvement Process
2.k. Range of Alternatives
2.n. Alternatives Considered But Eliminated
3.a. Aircraft Operations
4.d. Day-Night Average Sound Level Metric
4.f. Noise Measurements/Modeling/On-Site Validation
4.g. Average Annual Day/Average Busy Day Noise Levels
4.h. C-Weighted Noise, Low Frequency Noise, and Vibrations
4.o. Classroom Learning Interference
4.p. Sleep Disturbance
4.r. Nonauditory Health Effects
4.s. Health Impact Assessment and Long-term Health Study Requests
4.t. Noise Mitigation
6.f. Fuel Dumping

Policy Act (“NEPA”) requirements and the areas where the DEIS fails to provide the “hard look” at impacts required by NEPA. The noise analysis that serves as the basis for much of the overall impacts analysis is sufficiently flawed that the Navy must conduct it again and prepare a new DEIS. A. NEPA Requirements In 1969, Congress promulgated the National Environmental Policy Act to ensure that federal agencies give proper consideration to a project’s environmental impacts prior to undertaking any major federal action that might significantly affect the environment. 42 U.S.C. § 4321 et seq. The purposes of NEPA are “[t]o declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.” 42 U.S.C. § 4321. Congress recognized the “profound impact of man’s activity on the interrelations of all components of the natural environment” and recognized the federal government responsibility to: (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice; (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities. 42 U.S.C. § 4331(a)-(b). Congress also recognized that “each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.” 42 U.S.C. § 4331(c). NEPA’s lynchpin is its requirement to prepare an environmental impact statement (“EIS”) that meaningfully identifies and evaluates a project’s environmental impacts. 42 U.S.C. § 4332. For every “major Federal action[] significantly affecting the quality of the human environment,” the responsible official must consult with Federal agencies that have expertise on related environmental impacts and then create a detailed statement on: (1) the environmental impact of the proposed action; (2) any adverse environmental effects that cannot be avoided if the proposal is implemented; (3) alternatives to the proposed action; (4) the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity; and (5) any irreversible and irretrievable commitments of resources that would be involved in the proposal if implemented. 42 U.S.C. § 4332(C). An EIS must provide a full and fair discussion of significant direct and indirect environmental impacts and must inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment. 40 C.F.R. § 1502.1. To do so, the EIS must demonstrate that an agency took a “hard look” at a proposal, including whether it is necessary, its resulting environmental impacts, and feasible alternatives. 42 U.S.C. §§ 4321-4370(d); 40 C.F.R. §§ 1500.1(b), 1502.1; City of Carmel-By-The-Sea v. U.S. Dept. of Transp., 123 F.3d 1142, 1150-51 (9th Cir. 1996). A hard look requires at least that an EIS contain "a reasonably thorough discussion of the significant aspects of the probable environmental consequences.” Idaho Conservation League v. Mumma, 956 F.2d 1508, 1519 (9th Cir. 1992). In taking that hard look, agencies must review high quality, accurate scientific analyses. 40 C.F.R. § 1500.1(b). The EIS must also contain sufficient information to foster informed decision-making and

inform public participation. City of Carmel-By-The-Sea, 123 F.3d at 1150-51. “Where the information contained in the initial EIS was so incomplete or misleading that the decision maker and the public could not make an informed comparison of the alternatives, revision of the EIS may be necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA.” Animal Def. Council v. Hodel, 840 F.2d 1432, 1439 (9th Cir. 1988), as amended by 867 F.2d 1244 (9th Cir. 1989) (internal citation and quotations omitted); 40 C.F.R. § 1502.9(a) (“If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion.”). Agencies must thus “present complete and accurate information to decision makers and to the public to allow an informed comparison of the alternatives considered in the EIS.” Natural Res. Def. Council v. U.S. Forest Serv., 421 F.3d 797, 813 (9th Cir. 2005). The substantial flaws in the noise modeling identified below warrant correction and reissuance of a DEIS. B. Deficiencies in the DEIS. The flaws in the DEIS include the following. (1) Inadequacies in the Noise Analysis—the noise analysis suffers from the following flaws, resulting in the under-representation of impacts: • the Navy did not conduct local physical measurements of the noise impacts of the Growlers, instead relying upon modeling. When asked about this at the Lopez Island Open House session on December 7th, a Navy official replied that this was not possible because the location of the Growlers would need to be known for an accurate measurement. Upon follow-up, the official agreed that the Navy does know the location of the Growlers when in flight. Another official stated that physical measurements had been taken for Growler noise, but that they had occurred in a desert setting unlike the setting found in the Salish Sea, and then extrapolated to the Growlers’ current location. The EIS must include actual physical measurements of the noise generated by the Growlers in their training area here in the Salish Sea in order to gauge the accuracy of and, if necessary recalibrate, the model currently applied. • the Navy measured the human noise exposure in A-weighted decibels (dB) more appropriate for higher frequency noise than the Growler’s lower frequency engine noise, which would need to be measured on a C-weighted scale to accurately capture the noise energy affecting people within range of Growler noise emissions. As the DEIS notes, “[t]he C-weighting scale is quite flat, and it therefore includes much more of the low-frequency range of sounds than the A and B scales (Witt 2013).” DEIS, at 4-194. To the extent that the DEIS mentions C-weighted sound level, it does so only in the context of structural impacts. DEIS, at 4-194. Nonetheless, the DEIS notes that the Growlers emit C-weighted sound levels of 115 dBC under takeoff conditions. Id. The DEIS dismisses this noise level as not powerful enough to damage typical residential structures in the vicinity of NAS Whidbey Island. DEIS, at 4-194 – 4-195. However, the EIS must evaluate the health impacts of the C-weighted sound levels on humans and wildlife. • the DEIS uses Day-Night Average Sound Level (“DNL”), DEIS, at 3-17—3-18, which meaningfully under-represents the magnitude of individual noise impacts by diluting them with periods of low activity unless based on an average busy day (“ABD”). The Onyx Group, AICUZ Study Update for Naval Air Station Whidbey Island’s Ault Field and Outlying Landing Field Coupeville, Washington, Final Submission, Appendix B, B-7 (May 2005). The DEIS does not appear to have based its DNL figures on ABDs, but instead on all days. Although the DEIS states that using the ABD calculation “would greatly overstate the nature of the noise impacts at OLF Coupeville,” it failed to explain how it would do so. DEIS, at 3-13. Instead, due to the non-continuous nature of the Growler operations at both of OLFC and Ault Field, using ABD would more accurately capture the noise energy

impacts to residents in those areas without smoothing out the peaks by averaging in periods of inactivity. By averaging the noise energy from shorter, intense noise events over a longer period, the DNL metric fails to accurately quantify the impacts of the higher decibel noise events to which Growlers expose people. To the extent that the Navy believes that ABD would not accurately represent the Growlers' noise impacts on the local community, it should identify a metric for doing so and conduct the proper analysis for the EIS. • the DEIS uses 65 dB DNL as the threshold for impacts rather than the 55 dB used by other federal agencies and recommended by the World Health Organization as the level that causes "serious annoyance" in outdoor living areas in urban areas. World Health Organization Guideline for Community Noise, 65, Table 4.1 (1999), available at: http://www.who.int/docstore/peh/noise/Commnoise4.htm (last visited February 23, 2017). In rural areas, the Organization for Economic Cooperation and Development ECD recommends a limit of 50 dB (40 dB at night). Paul D. Schomer, Criteria for assessment of noise annoyance, 53 Noise Control Eng. J. 132, 136-37 (July-Aug. 2005) available at: https://nnsa.energy.gov/sites/default/files/nnsa/08-14-multiplefiles/Schomer%202005.pdf (last visited February 23, 2017). The EIS should base its evaluation of all impacts on the 55 dB standard or below. (2) Health Impacts — The DEIS bases its Environmental Health Risks and Safety Risks to Children section on noise studies that incorporate the flaws identified above. DEIS, at 4-20 – 4-128. Once the Navy corrects those flaws, it should conduct its health assessment based on the revised figures to understand the: (a) physiological responses to sudden or high volume noises; (b) psychological and physiological impacts associated with the inability to control or predict the noise; (c) impacts to youth during school overflights; and (d) sleep disruption due to nighttime Growler engine operation. (3) Noise Impacts to Fauna—the DEIS falls short of the necessary study of impacts on the critically endangered Southern Resident Killer Whale ("SRKW"). DEIS, at 4-221. The DEIS states that there are no aircraft disturbance data or studies for the SRKW but fails to note that a significant number of boat noise studies exist for SRKW. See, e.g., NOAA Fisheries, Southern Resident Killer Whale Research Publications, Noise Effects, available at https://www.nwfsc.noaa.gov/research/divisions/cb/ecosystem/marinemammal/research.cfm, last visited Feb. 24, 2017. These studies should be evaluated for applicability and to determine the amount of disturbance the Growlers are likely to impose on them and the associated increased energetic costs. (4) Fuel dumping – The DEIS does not evaluate the potential impacts of fuel dumping associated with the proposed expansion. Anecdotal evidence indicates that fuel dumping occurs during Growler training sessions and the effects of that dumping on human health and the environment must be documented in the EIS. (5) Socioeconomics — The DEIS omits discussion of the socioeconomic impacts in San Juan County associated with a doubling of Growler flights. The FEIS must evaluate the impacts of the proposal on at least the following socioeconomic factors in the San Juans: housing values, lodging income, and agricultural operations. Given the substantial amount of noise disturbance that the Growlers impose on residents and visitors in the San Juans, the lack of analysis of the impacts is particularly troubling. See San Juan County Jet Aircraft Noise Reporting, available at http://sjcgis.org/aircraft-noise-reporting/ (last visited February 24, 2017). For example, a comment left on San Juan County's Jet Aircraft Noise Reporting website on February 24, 2017 stated that the Growler produced "[e]arsplitting noise from jets going right over our house. Hard to imagine life here on ou [sic] beloved island with more Jets." Id. (6) Alternatives¬¬ — the DEIS summarily

dismisses alternative sites for the Growler expansion or program without adequate evaluation. Examination of alternatives is the heart of the EIS; it must analyze all reasonable alternatives that would avoid or minimize the action's adverse impacts. 40 C.F.R. §§ 1502.1, 1502.14. An EIS must "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 C.F.R. § 1502.14(a). Although an EIS need not "include every alternative device thought conceivable by the mind of man," (Vt. Yankee Nuclear Power Corp. v. Natural Res. Def. Council, 435 U.S. 519, 551, 98 S. Ct. 1197, 55 L.Ed.2d 460 (1978)) the "existence of a viable but unexamined alternative renders an environmental impact statement inadequate." Westlands Water Dist. v. U.S. Dept. of Interior, 376 F.3d 853, 868 (9th Cir. 1998). And "'substantial treatment' must be devoted 'to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.'" Conservation Council for Hawaii, et al., v. Nat'l Marine Fisheries Serv., et al., 97 F. Supp.3d 1210, 1218 (D. Hawai'I 2015) (quoting 40 C.F.R. § 1502.14(b). Although the scope of viable alternatives is determined by the purpose of the proposal, the agency cannot "'define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency's power would accomplish the goals of the agency's action, and the EIS would become a foreordained formality.'" Friends of Southeast's Future v. Morrison, 153 F.3d 1059, 1066 (9th Cir. 1998) (quoting Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 196 (D.C. Cir. 1991)). The DEIS' dismissal of alternative locations did not offer adequate discussion of the reasons for their elimination as follows: • the DEIS states that the northern Puget Sound region has uniquely unencumbered SUA and military training routes due primarily to the relatively low volume of commercial air traffic but does not identify the amount of commercial air traffic or the presumed lack of other amenities near other jet bases; DEIS, at 2-14. • the DEIS states that "[n]o installation exists that could absorb the entire Growler community without excessive cost and major new construction," but does not identify the extent of any cost elsewhere or the cost to install the Growler program at NAS Whidbey Island; DEIS, at 2-15. • the DEIS states that "moving all Growler squadrons to another installation would only move the potential environmental impacts from one community to another community" but does not identify or compare the characteristics of potential recipient communities with those at NAS Whidbey Island, such as population density, proximity of civilian population to airstrips, or identity and number of sensitive wildlife species. DEIS, at 2-15. • the DEIS states that Growler squadrons must be located near Growler-specific infrastructure but does not explain why that infrastructure could not be located elsewhere with the Growler squadrons. DEIS, at 2-15. • the DEIS identifies several potential locations but does not compare or contrast their suitability to host the Growler program with that of NAS Whidbey Island. DEIS, at 2-15 – 2-17. • the DEIS dismisses airfields greater than 50 nautical miles of Ault Field "due to fuel constraints," but does not explain what those fuel constraints are. DEIS, at 2-17. • the DEIS states that the construction of a new OLF is highly speculative and would require years to accomplish because there is no statutory authority to purchase necessary land and easements but the DEIS does not evaluate the construction of an OLF elsewhere on land already owned at NAS Whidbey Island and moving more community-consistent facilities from the base to OLF Coupeville. DEIS, at 2-18. The DEIS justifications do not demonstrate that alternative locations would not have met the purpose of the project, "to augment the Navy's existing Electronic Attack community at NAS Whidbey Island by

operating additional Growler aircraft as appropriated by Congress." DEIS, at ES-1. Thus, the EIS must include additional information about the suitability of the discarded alternatives to satisfy NEPA's requirement to evaluate reasonable alternatives. (7) Mitigation—The DEIS addressed a limited number of mitigation actions, but did not address the following reasonable noise-mitigating actions: (a) modifying training flight paths to avoid noise-sensitive areas; (b) flight paths at higher elevations than currently experienced in some areas over the San Juan Islands; and (c) refraining from engaging afterburners in populated areas. An EIS must address measures to mitigate those adverse effects. 40 C.F.R. § 1502.14(f). Consequently, the EIS should evaluate the decreased impacts associated with each of these options. (8) Cumulative Impacts – The DEIS does not evaluate at least the following cumulative impacts: (a) the combined noise impacts to SRKWs from marine operations like sonobuoys and underwater detonations in the Northwest Training Range Complex and the airborne noise impacts imposed by the Growlers; DEIS, at 5-20 – 5-23. (b) the health and socioeconomic impacts on the Coupeville community of the Growler noise in conjunction with drinking water contamination found in the vicinity of OLF Coupeville; Whidbey News-Times, "Navy starts second phase of well testing" (Feb. 23, 2017), available at https://www.whidbeynewstimes.com/news/navy-starts-second-phase-of-well-testing/ (last visited Feb. 24, 2017); and (c) the combined impact of the electromagnetic warfare training on the Olympic Peninsula with the noise impacts of the Growler expansion. An EIS must consider a project's cumulative impact, defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. 40 C.F.R. §§ 1508.25(c)(3), 1508.7. To satisfy NEPA, the EIS must adequately catalogue past projects in the area and provide a "useful analysis of the cumulative impact of past, present, and future projects." City of Carmel-By-The-Sea, 123 F.3d at 1160. The EIS must evaluate the cumulative impacts of the actions identified above. Sincerely, Kyle Loring Friends of the San Juans

04_HOODCANALENVIRONMENTALCOUNCIL-01

1.a. Thank You
1.b. Best Available Science and Data
10.a. Biological Resources Study Area
10.b. Biological Resources Impacts
10.c. Wildlife Sensory Disturbance and Habituation
10.f. Endangered Species Impact Analysis Adequacy
12.h. Tourism
19.c. Olympic Peninsula, Olympic National Park, and at-Sea Training
19.h. Cumulative Impacts on Biological Resources
4.e. Day-Night Average Sound Level Contours and Noise
4.l. Points of Interest
4.v. Impacts to Domestic Pets, Livestock, or Wildlife
7.d. Recreation and Wilderness Analysis and Study Area

HOOD CANAL ENVIRONMENTAL COUNCIL
America's Unique Heritage
P. O. BOX 87 , SEABECK, WASHINGTON 98380

February 22, 2017

EA-18G EIS Project Manager
Naval Facilities Engineering Command (NAVFAC) Atlantic – Attn: Code EV21/SS 6506 Hampton Blvd.
Norfolk, Virginia 23508

Re: **US Navy Growler Draft Environmental Impact Statement**

Attn: Project Manager:

The Hood Canal Environmental Council (HCEC) appreciates the opportunity to provide comments on the above-named Draft Environmental Impact Statement (DEIS). We request that the following comments from the HCEC be entered into the public record.

Since it was established in 1969, the Hood Canal Environmental Council (HCEC) has worked to protect the environmental integrity of the Hood Canal watershed and to oppose any activity that would, either directly or indirectly, degrade the watershed's natural resources or quality of life. The HCEC has serious concerns about the US Navy's proposal to conduct military training exercises involving jet aircraft flying over fragile habitats of the Olympic National Forest 260 days a year, 16 hours a day. The HCEC fully supports the West Coast Action Alliance, the FSEEE (Forest Service Empoyees for Environmental Ethics), and other organizations in their opposition to this proposed military activity.

Unacceptable Noise Levels

Along with visitors and local residents, many of our members continue to enjoy various recreational activities offered by the Olympic National Forest and Olympic National Park. These people are increasingly attracted to the beauty of the Hood Canal area and appreciate the quiet solitude our natural areas provide. If the Navy's Growler jets are allowed to fly 500 to 1000 feet over sparsely populated areas as stated in the DEIS, a significant level of noise would be generated, seriously degrading the wilderness experience envisioned when the National Parks and Forests were created. Many national park and national forest users could decide against hiking, camping, or other recreational activities in the Hood Canal region due to loud jet noise. If this happens, the local economy, which relies heavily on tourism and services, will be negatively impacted.

Impacts to Areas Outside the Navy's Study Area

We believe that the potential adverse impacts from high levels of noise generated by Growler jets has been neither previously disclosed nor analyzed. We are deeply concerned that the study area of the effects of noise documented in the DEIS included only "6-10 miles of the corners of runways". This ignores the potential impacts to areas outside of the narrow study area, including the Hood Canal region. Because the scope of the DEIS is limited to areas adjacent to runways, analysis of impacts to wildlife from connected flight operations that occur outside these narrow confines were omitted.

Impacts to Threatened and endangered species

Threatened and endangered species, sensitive species and other wildife and critical habitat areas would likely suffer negative impacts from the noise of jet takeoffs, landings and flight operations well beyond the study area described in the DEIS. The Navy's proposal represents yet another policy decision with the potential to drive Marbled Murrelets, which are sometimes seen in the Dabob Bay area of Hood Canal where quality habitat still exists, into extirpation. The numbers of this federally listed seabird would continue to fall under the Navy's proposal due to the impacts of noise and collisions. In addition to the potential harm to Marbled Murrelet populations, the DEIS fails to evaluate direct, indirect or cumulative impacts to other wildlife species as well. The 1988 synthesis of published literature on wildlife included in the DEIS fails to consider the latest peer-reviewed research summarized in 2015, which lists multiple consequences of noise greater than 65 dB. The *best available science* must be considered in the final Environmental Impact Statement.

The HCEC understands and supports the US Navy's mandate to continue to protect our national security. However, securing and protecting our natural environment must be considered a high priority during the decision-making process. Given the unique natural ecosystems on the Olympic Peninsula and the fact that it includes a UNESCO Heritage Site national park, it should be obvious that this is not the place for the Navy to conduct Growler training excercises.

Thank you again for allowing the HCEC to comment on this matter. We look forward to your decision regarding the US Navy's decision.

Sincerely,

Donna M. Simmons

Donna M. Simmons, President
Hood Canal Environmental Council
(360) 877-5747
nana@hctc.com

cc US Senator Maria Cantwell
US Senator Patty Murray
US Representative Derek Kilmer

ISLAND COUNTY HISTORICAL SOCIETY MUSEUM

EA-18G EIS Project Manager,
Naval Facilities Engineering Command (NAVFAC) Atlantic
Attn: Code EV21/SS,
6506 Hampton Blvd., Norfolk, VA 23508

February 22, 2017

RE: Response to invitation to provide public comment on Draft EIS concerning expansion of EA-18G Growler flight training at OLF Coupeville.

Dear EA18G EIS Project Manager,

Since 1949, the mission of the Island County Historical Society has been the *Collection, Preservation, and Interpretation of Island County History*. Our non-profit Board of Trustees has chosen to address several concerns raised by the U.S. Navy's Draft Environmental Impact Statement, related to the proposed expansion of training flights on the Coupeville Outlying Field.

Please accept these comments as a response to the Navy's invitation to the public to provide input on this important historic document. Please know that our organization has been and will continue to be good neighbors with NAS Whidbey, and that we respect and are appreciative of all the good people who serve in our armed forces, and we are grateful for their service to our country.

We shall only address the issues we feel are related directly to the successful execution of our mission.

- **Concerns of increased noise and low frequency vibration impact on historic sites / structures, as it pertains to *Preserving Island County History***
    - Central Whidbey Island has the highest density of heritage structures (pre-1889) on the West Coast.
        - The Draft EIS states there should be no disruption because there has been a long-standing military presence in our area. While this is true (Ft. Casey, since 1900; OLF, since WWII), there has never been anything like the proposed preferred alternative of 35,000 "touch and go" flights per year. We hold real concerns on the potential impact of this unprecedented amount of noise and low frequency vibration generated by up to 135 flights per day; Monday-Friday.

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04_ISLANDCOUNTYHISTORICALSOCIETY-01

1.a. Thank You
11.d. Per- and Polyfluoroalkyl Substances
12.h. Tourism
12.j. Property Values
5.a. Accident Potential Zones
7.a. Regional Land Use and Community Character
7.d. Recreation and Wilderness Analysis and Study Area
8.c. Noise and Vibration Impacts to Cultural Resources
8.d. Island County Cultural Resources
8.h. Ebey's Landing National Historical Reserve, Military Association

- It is our understanding that a "crash zone" will be defined to extend to 15,000 feet in diameter around the OLF site. The crash zone will include many of the heritage structures on Central Whidbey and a good portion of historic Coupeville. Will any / all structures within the crash zone be required to be vacated?
- Vastly increased noise and vibration will likely have a negative impact on property values. This may deter citizens from purchasing historic properties in the Central Whidbey area, potentially discouraging the responsible stewardship of these irreplaceable structures.

☐ **Concerns of increased noise and low frequency vibration impact on the *Interpretation of Island County History***

- Our Island County Museum holds regular free, weekly outdoor interpretive programming for all ages. A wide range of historical topics are discussed at these informal and interactive programs. Additionally, several other walking tours and other outdoor activities are provided by our museum. All of these programs are funded by sponsors, our partners, and by the public. This revenue supports the continued operations of our historical museum. Occasionally, at current flight frequency, a Growler jet will pass overhead during an outdoor interpretive event. The program must cease, until the noise sufficiently decreases to continue. The proposed increase of up to 135 flights per day over Central Whidbey will likely eliminate any outdoor programming on weekdays.

☐ **Concerns of increased noise and low frequency vibration on the heritage tourism economy**

- Nearly 80% of all tourists participate in cultural or heritage activities such as visiting museums when they travel. Our museum guest logs show visitors from around the world. When asked about why they are visiting, most reply simply that they've heard about the beauty and authenticity of Central Whidbey Island and wished to experience it. A number of visitors also reply they are here to visit their children stationed at NAS Whidbey, and were told about the beauty of Coupeville and Ebey's Reserve. When asked what they enjoyed most during their stay, most reply how they love the historical setting and serenity of the area – beaches and trails, birding, and the unspoiled beauty of Ebey's Landing National Historical Reserve. It seems that a potential of about a 587% increase in training flights over Central Whidbey Island will have a severe impact on tourism and overnight lodging. If this is true, the Central Whidbey tourism economy will be severely affected, diminishing tourism revenues collected by Island County. These tourism revenues help fund tourism-related activities, including our museum and other heritage activities.

☐ **Concerns of water quality issues and impact on residents and heritage tourism**

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- Water contaminants have been identified on North Whidbey and around OLF Coupeville (including perflourooctane sulfonate and perflourooctanoic acid), and are attributed to the flight activities and firefighting drills performed on these properties. Will a nearly 600% increase in training activities equate to a like increase in contaminant levels (currently < 70ppt)? Will *any* level of chemical contaminants in Island County water discourage tourism? Obviously, this is an area of serious concern. Not only for economic reasons, but for the health of our citizens – on and off NAS Whidbey.

Please understand that our concerns are based on a question of capacity, and how potentially exceeding that capacity may affect what our organization works so hard to preserve: The History of Island County. People have lived and flourished here for some *10,000 years*. Whidbey Island still has some of the finest farmland in the world. Our shores and surrounding waters are teeming with seafood and marine life. We enjoy world class scenery, and are so fortunate to live in a place where history runs so deep. We are hopeful the U.S. Navy will look much more closely at this proposed expansion and explore all available options before making a final decision of this magnitude.

Finally, we are most thankful for the opportunity of being invited to comment on the Draft Environmental Impact Statement, and we are so grateful to live in a country where civil discourse is always welcome and valued.

We appreciate the continued opportunity of working with the Navy, its personnel, and our Island community in preserving the history of this very special place for all to cherish for generations to come.

On Behalf of the Island County Historical Society Board of Trustees.

Respectfully,

Richard L. Castellano, Executive Director
Island County Historical Society

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04_KWIAHT-01

1.a. Thank You
10.c. Wildlife Sensory Disturbance and Habituation
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
4.f. Noise Measurements/Modeling/On-Site Validation
4.v. Impacts to Domestic Pets, Livestock, or Wildlife

KWIAHT

November 15, 2016

Comments on Draft Environmental Impact Statement
EA-18G "Growler" Airfield Operations at NAS Whidbey

We have reviewed the Draft EIS prepared by the Navy with great interest and offer the following comments from our perspective as a conservation biology laboratory located in and serving the San Juan Islands. Our comments are limited to our area of expertise, which is to say the nature and functioning of protected ecosystems and wildlife in San Juan County. As residents of the county, we also share many of the concerns expressed by our neighbors regarding human health and well-being.

1. Definition of noise levels

   The Draft at 3-15 uses A-weighted noise levels as a basis for determining the geographical envelope of project impacts as well as the potential for harm This weighting method is based on the sensitivity of human hearing in air. It is inaccurate to apply the same negative weighting factor to those animals that have greater sensitivity of hearing than humans. In terms of noise impacts on wildlife, then, the Draft underestimates effective levels of exposure.

2. Determination of the impact envelope

   The contours on the area-of-impact maps (at 3-26 and subsequent) are based on "modeled aircraft noise levels" rather than measured levels. Models are not data; they are forecasts or predictions. In the present case, moreover, the model appears to have been based on flight path geometry, *i.e.* the nominal departure and approach trajectories of aircraft operating from Ault Field. These ideal paths are incomplete and inaccurate. Our core laboratory is located in Lopez village, and we observe low-elevation flights several days per week at 80 dB and greater, yet according to the Draft our lab is not on a flight path (at 3-8). We contend that the Navy's modeling of the area of impact is flawed, and that actual measurements must be the basis for determining levels of noise exposure.

   A critical effect of the methodology used to predict the geographic area exposed to 65 dB or greater is the exclusion from consideration of the most important, sensitive federally protected wildlife areas in the San Juan Islands, viz. the SJI National Monument and SJI National Wildlife Refuge, which are used seasonally for nesting and foraging by tens of thousands of seabirds as well as seals, sea lions, orcas, porpoises, and minke whales.

3. Exclusion of the SJI National Monument

   The Draft suggests that the lands and waters of the SJI National Monument are exempt from NEPA protection because the 2013 proclamation establishing this NCLS preserve states: "Nothing in this proclamation shall be deemed to restrict safe and efficient aircraft operations, including activities and exercises of the Armed Forces ... in the vicinity of the monument." Legally, this merely has the effect of preserving the *status quo ante*: that is to say, it clarifies that the creation of the National Monument does not place any *additional* burden on the Navy to justify its operations in the vicinity. The President did not—indeed, he did not have the power to exempt the National Monument area from federal laws

that already applied to wildlife there. Hence while the creation of the Monument did not *per se* give the seabirds and terrestrial animals there any *greater* protection from operation of military aircraft, neither did it exempt the Navy from NEPA or ESA with respect to wildlife in the Monument, such as Marbled Murrelets or marine mammals.

Insofar as the Draft excludes the National Monument as a matter of law (at 3-74 and subsequently) it is inadequate under NEPA and should be reconsidered. We note that the Draft concedes that the SJI National Monument is subjected to a maximum noise level of 95 dB an estimated 372 times per year (at 3-34), hence the exclusion of this conservation area from consideration of noise impacts is plainly non-trivial.

4. Reliance on speculation rather than science

The Draft concedes that many protected marine and terrestrial animals within the operational area will be subjected to louder and more frequent noise, but dismisses the relevance of this conclusion by stating, repeatedly, that animals have "presumably habituated" to current aircraft noise, implying that animals will surely tolerate even greater noise levels (4-307, 4-308).

This is the pivotal scientific assertion in the Draft with regard to environmental impacts, and it is both speculative and illogical. No evidence of habituation by the species concerned is provided. Moreover, if something is capable of causing harm--whether it is a chemical compound, or a physical force such as sound pressure--greater exposure is likely to increase stress on organisms, and eventually exceed their ability to adapt. The proper scientific question is "How much noise can species X habituate to in these circumstances?" This is a question of fact that can only be determined by observation.

Hence the Draft is merely speculating (presuming) that species in the operational area have already adapted to existing levels of aircraft noise, *i.e.*, they are no longer stressed or responding adversely to overflights. Having speculated that past aircraft operations have had no effect, the Draft asks the reader to assume that raising the noise level will have no impact either, which is nonsense.

Accordingly, we submit that the Draft underestimates the levels of noise and the geographical area that will be affected, and merely speculates that existing and future noise levels will not impact the protected species within the underestimated 65 dB envelope. This is not based on science and does not meet the review criteria of NEPA.

We may be contacted at kwiaht@gmail.com for clarification and additional information.

Russel Barsh

Russel Barsh, Director

Rob Smith
National Parks Conservation Association

Seattle, WA 98101

February 23, 2017 EA-18G EIS Project Manager Naval Facilities Engineering Command (NAVFAC) Atlantic, Attn: Code EV21/SS 6506 Hampton Blvd. Norfolk, VA 23508 To Whom It May Concern: Since 1919, the National Parks Conservation Association (NPCA) has been the leading voice of the American people in protecting and enhancing our National Park System. NPCA is an independent, nonpartisan, non-profit organization that, together with more than 1.2 million members and supporters, works to protect and preserve our nation's national parks for present and future generations. Our members and supporters regularly visit and use national park sites and it is on their behalf that I offer the enclosed comments. NPCA appreciates the opportunity to provide comments on the Draft Environmental Impact Statement for EA-18G "Growler" Airfield Operations at Naval Air Station Whidbey Island Complex (DEIS) and is concerned with potential negative impacts this project may present to both Ebey's Landing National Historical Reserve and Olympic National Park. Ebey's Landing National Historical Reserve ("the Reserve") is a 17,572-acre national park of environmental, cultural, and historical significance located on Whidbey Island. The Reserve protects the agricultural and cultural traditions of Ebey's Landing—both indigenous and Euro-American—while offering spectacular opportunities for recreation. Olympic National Park ("Olympic") is like nowhere else in the world. It was designated an International Biosphere Reserve and World Heritage Site in 1976 and 1981 respectively, and 95 percent of the area is designated wilderness. Acoustic ecologist Gordon Hempton has called the park "the most acoustically diverse" and "least noise polluted" place in the lower 48 states. The park includes a diverse range of habitat, from high alpine peaks to lush rainforests and wild beaches, and 24 species of plants and animals found in the park are found nowhere else on Earth. Olympic is also the most popular national park in the Northwest, with more than 3 million visitors in 2015 alone. With these park sites in mind, NPCA has concerns about the following elements of the DEIS. Improperly narrow purpose and need The purpose and need of the DEIS specifies that the expansion of the Navy's Electronic Attack capabilities must occur at NASWI (ES-1). This is an unreasonably narrow requirement. A more reasonable purpose and need would allow the Navy to augment its Electronic Attack capabilities without determining a set location. Defining the purpose and need as the Navy did unreasonably limits the scope of reasonable alternatives, eliminating the option of an alternative that would mitigate noise on Whidbey Island and the Olympic Peninsula and rendering negligible the differences between Alternatives 1, 2, and 3. The environmental impacts are too similar between the three alternatives, therefore giving the DEIS a pre-decisional quality that falls short of the purpose of NEPA. Inadequate range of alternatives The DEIS lacks a reasonable range of alternatives, including an alternative that locates all operations at Ault Field. As an initial matter, the airfield attributes listed by the Navy that are allegedly necessary to conduct flight carrier landing practices (FCLP) are so numerous and specific that they effectively delineate the single alternative that the Navy desires, and eliminate all other alternatives from consideration. As such, the Navy effectively foreclosed considering alternatives in which FCLP training would be conducted elsewhere. Such a narrow bracketing of alternatives violates NEPA. Additionally, the

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1.a. Thank You
1.c. Segmentation and Connected Actions
10.a. Biological Resources Study Area
10.c. Wildlife Sensory Disturbance and Habituation
11.d. Per- and Polyfluoroalkyl Substances
19.c. Olympic Peninsula, Olympic National Park, and at-Sea Training
19.g. Cumulative Impacts of Noise
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.c. Compliance with the National Environmental Policy Act
2.d. Program of Record for Buying Growler Aircraft
2.e. Public Involvement Process
2.h. Next Steps
2.k. Range of Alternatives
2.n. Alternatives Considered But Eliminated
4.d. Day-Night Average Sound Level Metric
4.j. Other Reports
4.m. Supplemental Metrics
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7.d. Recreation and Wilderness Analysis and Study Area
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graph titled “Previous Airfield Operations for Ault Field and OLF Coupeville” (1-6) indicates that in 1992, the Navy conducted over 50,000 FCLPs at Ault Field alone. No alternative in the DEIS proposes more than 43,900 total annual FCLPs (2-8), indicating that it is feasible and reasonable to conduct 100 percent of the total proposed FCLPs at Ault Field, even providing for other flight operations. Given that the Navy exclusively uses Outlying Landing Field (OLF) Coupeville for FCLPs, the Navy could conduct all the proposed FCLPs at Ault Field and end operations at OLF Coupeville, an alternative which would greatly reduce jet noise over and around the Ebey’s Landing Reserve. However, no such alternative exists in the DEIS. The Navy itself tacitly acknowledges the similarities between the three alternatives: for 12 of the 16 environmental resources evaluated in the DEIS, the Navy found no need to provide separate analyses of each alternative. Lack of mitigating alternatives or measures As noted in the Executive Summary, “This EIS does not identify any mitigation measures for the implementation of the action alternatives” (ES-11). However, CEQ Regulations for Implementing NEPA Section 1502.14 requires that agencies “Include appropriate mitigation measures not already included in the proposed action or alternatives.” Therefore, the DEIS presented on the EA-18G Growler Airfield operations does not meet the full requirements of NEPA. Improper scope of analysis To determine the scope of environmental impact statements, the Navy is required to consider “connected actions,” “cumulative actions,” and “similar actions.” However, in addition to an incomplete analysis of cumulative impacts, the Navy failed to consider connected actions and similar actions to the proposed actions of the DEIS. At the very least, the Navy’s Pacific Northwest Electronic Warfare Range is a connected action as it is an “independent parts of a larger action and depends on the larger action for their justification” (40 C.F.R. § 1508.25(a)(1)). Indeed, this narrow NEPA analysis appears to be simply a continuation of the Navy’s repeated efforts to improperly segment its NEPA analysis regarding its naval aircraft training activities on Whidbey Island and over the Olympic Peninsula and other nearby areas in the Pacific Northwest. All these various activities are clearly connected, cumulative or related actions and they should have been considered together in a comprehensive, programmatic EIS. Instead the Navy has improperly and illegally split up its NEPA analysis into multiple EISs and EAs and released that analysis piecemeal to the public over many years. This makes public understanding of the actual impacts of the activities almost impossible and makes public participation extremely difficult. Incomplete analysis of cumulative effects The Navy’s cumulative impacts analysis is woefully insufficient. For instance, the separation of this DEIS and the 2014 Environmental Assessment (EA) for the Pacific Northwest Electronic Warfare Range fails to address the cumulative effects of the proposed expansions of operations for NASWI. Alternatives 2 and 3 of this DEIS expand NASWI’s expeditionary capabilities, which would result in increased Growler flights over Olympic to detect Mobile Electronic Warfare Training System emitters within the Olympic Military Operations Areas (MOAs) on land adjacent to Olympic, as per the 2014 EA (5-8). As such, the DEIS should examine the cumulative effects of the project over its entire range, including the affected areas on the Olympic Peninsula and in Olympic National Park. Instead, the DEIS limits its analysis of cumulative effects to “the land and population under the day-night average sound level (65 DNL) contour of the NAS Whidbey Island complex” (5-12). As a result, the DEIS eliminates far too many direct, indirect and cumulative effects to be considered a valid analysis. For example, the DEIS falsely concludes that “no significant impacts would occur to wilderness areas” (4-162) by unreasonably excluding Olympic National Park from its study area, 95 percent of which is

federally designated wilderness. Further, the DEIS makes no mention of the possibility of future increases to Growler training. Poor metrics and weak noise analysis The DEIS heavily relies on a Day-Night Average Sound Level (DNL), a metric that is not adequate or realistic for intermittent, extreme noise. The use of DNL as a primary metric diminishes the true impact of the jet noise and low-frequency noise and vibration on Whidbey Island and the surrounding areas. Further, aircraft noise levels represented in this draft EIS are "generated by a computer model and not actual noise measurements at Ault Field or OLF Coupeville" (3-16). There is, however, substantial evidence that this modeling significantly underrepresents the actual noise of the EA-18G Growler Airfield operations. In summer of 2015, the NPS conducted 31 days of acoustic monitoring at the Reuble Farmstead and the Ferry House (see Attachment 1). This study showed damaging levels of real-time noise produced by the Growlers that, when compared to the Navy's modeled numbers, indicate that the DEIS's 65 DNL contour lines may not accurately represent the effects of Growler noise. For example, measurements from the NPS study indicate the maximum Sound Exposure Level (SEL) over Reuble Farmstead during the study period was 117.2 dB, whereas the Navy's modeling predicts a maximum SEL of only 112 dB in a similar area, Rhodedendron Park, for all three Alternatives (4-36, 4-65, 4-94). The Navy's reliance on DNL is deeply flawed and ignores other important acoustic metrics. The DNL metric alone is not adequate to capture other characteristics of noise exposure and the impacts to park resources, values, and visitor experience. We call for the use of audibility-based and "time above" metrics to take into account the duration of aircraft noise events, the number of aircraft noise events, and sound level events. These metrics correlate better with flight operations than day-night average metrics, which obscure the dynamic range of acoustic events. The Navy should also include other metrics such as maximum A-weighted sound levels (Lmax), SEL, equivalent sound level (Leq), and number-of-events-above a specified sound level, as these metrics and analyses would better satisfy the requirements under NEPA to characterize impacts to the environment in terms of intensity and context, as per Regulations for Implementing NEPA Section 1508.27. Inadequate consideration of NPS land, NPS employee and visitor health and safety, and visitor use and enjoyment The DEIS provides Accident Potential Zones (APZs) that include significant portions of NPS land at the Reuble Farmstead of the Reserve. Current uses and future potential alternative uses for this property would not be compatible with Department of Defense (DoD) land use compatibility guidelines for APZs, thus creating a conflict of interest between the National Park Service and the Navy. The NPS mission includes preservation of natural soundscapes, as declared in NPS Director's Order #47. Extreme noise and vibration significantly impacts the landscapes of both the Reserve and Olympic by intermittently degrading the natural resources and park values of the area. Visitors come to national parks to see, hear and experience specific natural and cultural environments, not anthropogenic noise. According to a 1994 National Park Service report to Congress, an impressive 91 percent of visitors to national parks come to enjoy the natural soundscapes. The DEIS provides no suggested methods to mitigate or resolve these conflicts of interest. Unsatisfactory public process The Navy's choice to structure its public meetings in an open house format and to deny the public a chance for public testimony runs counter to NEPA's collaborative spirit and purpose. The Navy should further extend the comment period to incorporate meetings with public testimony into the extended timeline. Omission of information about total count of Growler aircraft A Selected Acquisition Report on EA-18G Growler Aircraft that the DoD released in March 2016 indicates that the DoD has placed orders for a total of 160 EA-18G

Growlers (page 19, www.dod.mil/pubs/foi/Reading_Room/Selected_Acquisition_Reports/16-F-0402_DOC_51_EA-18G_DEC_2015_SAR.pdf). However, the DEIS reports that there will be either 117 or 118 Growlers at NASWI under each of the Alternatives (2-9). Given that NASWI is currently the sole proposed base for the Navy's Electronic Attack community, the Navy must clarify its intent for the additional Growler aircraft that the DoD ordered but that were not accounted for in the DEIS. The total order including the planned additions would nearly double the number of Growler jets based at NAS Whidbey Island, along with noise impacts and the amount of time during which jet aircraft are audible could be expected to increase in proportion. Omission of intent to train on weekends The DEIS does not discuss flying training missions on weekends, yet page 11 of the USFS Draft Permit says that the Navy may fly on weekends with advance permission, excepting the "opening day and associated opening weekend of Washington State's Big Game Hunting Season." Why does the DEIS not discuss Growler training on weekends, and why is there only an exception for big game hunting? Given that weekends are also a peak time for local economies and visitation to the Reserve and Olympic, omission of a discussion of weekend training invalidates the Navy's analysis of impact to economies and public lands. By calling out the desire to avoid interrupting Washington State's Big Game Hunting Season, the Navy is tacitly conceding that there are clear and demonstrable negative impacts from Growler noise—including potential harm to many kinds of outdoor activities that the DEIS fails to address. Omitted discussion of perfluoroalkyl substances (PFAS) On November 7, 2016, the Navy notified the owners of more than 100 private and public drinking wells that perfluoroalkyl substances (PFAS) found beneath OLF Coupeville may have spread beyond Navy property. The Navy uses firefighting foam containing PFAS, which are linked to kidney and testicular cancers, birth defects, damage to the immune system, heart and thyroid disease, and complications during pregnancy. The DEIS acknowledges that "Increased operations increase the potential for flight incidents" (4-115), indicating an increased potential need for firefighting chemicals. Even with this additional information and threat of toxicity to local residents, the DEIS does not address the implications this has for contamination of drinking water. Neither the word "perfluoroalkyl" nor "PFAS" is mentioned in the entire DEIS. The DEIS simply concludes without scientific evidence that "No significant impacts related to hazardous waste and materials would occur due to construction activities or from the addition and operation of additional Growler aircraft." The Navy's failure to fully disclose and analyze the impacts from increased use of these dangerous chemicals does not satisfy the requirements of NEPA. Incomplete analysis of impacts to wildlife The DEIS states that "terrestrial and marine wildlife in the study area are already exposed to a high level of long-term aircraft operations and other human-made disturbances and have presumably habituated" (4-222). However, the Navy does not make clear its baseline for determining such habituation; presumed habituation is an insufficient basis on which to determine No Significant Impact. The Navy should rely on independent studies and peer reviewed scientific analysis, rather than presumptions, to draw such conclusions. Further, by limiting the study area to Whidbey Island and excluding the areas within Olympic National Park, as discussed above, the DEIS lacks a true analysis of the impacts to wildlife. To provide an adequate analysis of the environmental impacts on wildlife, the DEIS must expand the study area to incorporate all affected areas, including federally designated wilderness and the region's more diverse wildlife habitat. NPCA appreciates the opportunity to share our concerns. Thank you for considering these comments, and we

look forward to reviewing the Final EIS. Sincerely, Rob Smith Northwest Regional Director Northwest Regional Office National Parks Conservation Association 1200 5th Ave, Suite 1118 Seattle, WA 98101 PH: 206-903-1457 FX: 206-903-1448 rsmith@npca.org www.npca.org

Rob Smith
National Parks Conservation Association

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10.c. Wildlife Sensory Disturbance and Habituation
11.d. Per- and Polyfluoroalkyl Substances
19.b. Revised Cumulative Impacts Analysis
19.c. Olympic Peninsula, Olympic National Park, and at-Sea Training
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February 23, 2017

EA-18G EIS Project Manager
Naval Facilities Engineering Command (NAVFAC)
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6506 Hampton Blvd.
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With these park sites in mind, NPCA has concerns about the following elements of the DEIS.

Improperly narrow purpose and need

The purpose and need of the DEIS specifies that the expansion of the Navy's Electronic Attack capabilities must occur at NASWI (ES-1). This is an unreasonably narrow requirement. A more reasonable purpose and need would allow the Navy to augment its Electronic Attack capabilities without determining a set location. Defining the purpose and need as the Navy did unreasonably limits the scope of reasonable alternatives, eliminating the option of an alternative that would mitigate noise on Whidbey Island and the Olympic Peninsula and rendering negligible the differences between Alternatives 1, 2, and 3. The environmental impacts are too similar between the three alternatives, therefore giving the DEIS a pre-decisional quality that falls short of the purpose of NEPA.

1.a. Thank You
1.c. Segmentation and Connected Actions
10.a. Biological Resources Study Area
10.c. Wildlife Sensory Disturbance and Habituation
11.d. Per- and Polyfluoroalkyl Substances
19.c. Olympic Peninsula, Olympic National Park, and at-Sea Training
19.g. Cumulative Impacts of Noise
2.a. Purpose and Need
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.c. Compliance with the National Environmental Policy Act
2.d. Program of Record for Buying Growler Aircraft
2.e. Public Involvement Process
2.h. Next Steps
2.k. Range of Alternatives
2.n. Alternatives Considered But Eliminated
4.d. Day-Night Average Sound Level Metric
4.j. Other Reports
4.m. Supplemental Metrics
4.t. Noise Mitigation
5.a. Accident Potential Zones
7.d. Recreation and Wilderness Analysis and Study Area
7.g. Ebey's Landing National Historical Reserve

Inadequate range of alternatives

The DEIS lacks a reasonable range of alternatives, including an alternative that locates all operations at Ault Field. As an initial matter, the airfield attributes listed by the Navy that are allegedly necessary to conduct flight carrier landing practices (FCLP) are so numerous and specific that they effectively delineate the single alternative that the Navy desires, and eliminate all other alternatives from consideration. As such, the Navy effectively foreclosed considering alternatives in which FCLP training would be conducted elsewhere. Such a narrow bracketing of alternatives violates NEPA.

Additionally, the graph titled "Previous Airfield Operations for Ault Field and OLF Coupeville" (1-6) indicates that in 1992, the Navy conducted over 50,000 FCLPs at Ault Field alone. No alternative in the DEIS proposes more than 43,900 total annual FCLPs (2-8), indicating that it is feasible and reasonable to conduct 100 percent of the total proposed FCLPs at Ault Field, even providing for other flight operations. Given that the Navy exclusively uses Outlying Landing Field (OLF) Coupeville for FCLPs, the Navy could conduct all the proposed FCLPs at Ault Field and end operations at OLF Coupeville, an alternative which would greatly reduce jet noise over and around the Ebey's Landing Reserve. However, no such alternative exists in the DEIS.

The Navy itself tacitly acknowledges the similarities between the three alternatives: for 12 of the 16 environmental resources evaluated in the DEIS, the Navy found no need to provide separate analyses of each alternative.

Lack of mitigating alternatives or measures

As noted in the Executive Summary, "This EIS does not identify any mitigation measures for the implementation of the action alternatives" (ES-11). However, CEQ Regulations for Implementing NEPA Section 1502.14 requires that agencies "Include appropriate mitigation measures not already included in the proposed action or alternatives." Therefore, the DEIS presented on the EA-18G Growler Airfield operations does not meet the full requirements of NEPA.

Improper scope of analysis

To determine the scope of environmental impact statements, the Navy is required to consider "connected actions," "cumulative actions," and "similar actions." However, in addition to an incomplete analysis of cumulative impacts, the Navy failed to consider connected actions and similar actions to the proposed actions of the DEIS. At the very least, the Navy's Pacific Northwest Electronic Warfare Range is a connected action as it is an "independent parts of a larger action and depends on the larger action for their justification" (40 C.F.R. § 1508.25(a)(1)). Indeed, this narrow NEPA analysis appears to be simply a continuation of the Navy's repeated efforts to improperly segment its NEPA analysis regarding its naval aircraft training activities on Whidbey Island and over the Olympic Peninsula and other nearby areas in the Pacific Northwest. All these various activities are clearly connected, cumulative or related actions and they should have been considered together in a comprehensive, programmatic EIS. Instead the Navy has improperly and illegally split up its NEPA analysis into multiple EISs and EAs and released that analysis piecemeal to the public over many years. This makes public understanding of the actual impacts of the activities almost impossible and makes public participation extremely difficult.

Incomplete analysis of cumulative effects

The Navy's cumulative impacts analysis is woefully insufficient. For instance, the separation of this DEIS and the 2014 Environmental Assessment (EA) for the Pacific Northwest Electronic Warfare Range fails to address the cumulative effects of the proposed expansions of operations for NASWI. Alternatives 2 and 3 of this DEIS expand NASWI's expeditionary capabilities, which would result in increased Growler flights over Olympic to detect Mobile Electronic Warfare Training System

emitters within the Olympic Military Operations Areas (MOAs) on land adjacent to Olympic, as per the 2014 EA (5-8).

As such, the DEIS should examine the cumulative effects of the project over its entire range, including the affected areas on the Olympic Peninsula and in Olympic National Park. Instead, the DEIS limits its analysis of cumulative effects to "the land and population under the day-night average sound level (65 DNL) contour of the NAS Whidbey Island complex" (5-12). As a result, the DEIS eliminates far too many direct, indirect and cumulative effects to be considered a valid analysis. For example, the DEIS falsely concludes that "no significant impacts would occur to wilderness areas" (4-162) by unreasonably excluding Olympic National Park from its study area, 95 percent of which is federally designated wilderness. Further, the DEIS makes no mention of the possibility of future increases to Growler training.

Poor metrics and weak noise analysis

The DEIS heavily relies on a Day-Night Average Sound Level (DNL), a metric that is not adequate or realistic for intermittent, extreme noise. The use of DNL as a primary metric diminishes the true impact of the jet noise and low-frequency noise and vibration on Whidbey Island and the surrounding areas. Further, aircraft noise levels represented in this draft EIS are "generated by a computer model and not actual noise measurements at Ault Field or OLF Coupeville" (3-16). There is, however, substantial evidence that this modeling significantly underrepresents the actual noise of the EA-18G Growler Airfield operations. In summer of 2015, the NPS conducted 31 days of acoustic monitoring at the Reuble Farmstead and the Ferry House. This study showed damaging levels of real-time noise produced by the Growlers that, when compared to the Navy's modeled numbers, indicate that the DEIS's 65 DNL contour lines may not accurately represent the effects of Growler noise. For example, measurements from the NPS study indicate the maximum Sound Exposure Level (SEL) over Reuble Farmstead during the study period was 117.2 dB, whereas the Navy's modeling predicts a maximum SEL of only 112 dB in a similar area, Rhodedendron Park, for all three Alternatives (4-36, 4-65, 4-94).

The Navy's reliance on DNL is deeply flawed and ignores other important acoustic metrics. The DNL metric alone is not adequate to capture other characteristics of noise exposure and the impacts to park resources, values, and visitor experience. We call for the use of audibility-based and "time above" metrics to take into account the duration of aircraft noise events, the number of aircraft noise events, and sound level events. These metrics correlate better with flight operations than day-night average metrics, which obscure the dynamic range of acoustic events. The Navy should also include other metrics such as maximum A-weighted sound levels (Lmax), SEL, equivalent sound level (Leq), and number-of-events-above a specified sound level, as these metrics and analyses would better satisfy the requirements under NEPA to characterize impacts to the environment in terms of intensity and context, as per Regulations for Implementing NEPA Section 1508.27.

Inadequate consideration of NPS land, NPS employee and visitor health and safety, and visitor use and enjoyment

The DEIS provides Accident Potential Zones (APZs) that include significant portions of NPS land at the Reuble Farmstead of the Reserve. Current uses and future potential alternative uses for this property would not be compatible with Department of Defense (DoD) land use compatibility guidelines for APZs, thus creating a conflict of interest between the National Park Service and the Navy. The NPS mission includes preservation of natural soundscapes, as declared in NPS Director's Order #47. Extreme noise and vibration significantly impacts the landscapes of both the Reserve and Olympic by intermittently degrading the natural resources and park values of the area. Visitors come to national parks to see, hear and experience specific natural and cultural environments, not anthropogenic noise. According to a 1994 National Park Service report to Congress, an impressive 91

percent of visitors to national parks come to enjoy the natural soundscapes. The DEIS provides no suggested methods to mitigate or resolve these conflicts of interest.

Unsatisfactory public process

The Navy's choice to structure its public meetings in an open house format and to deny the public a chance for public testimony runs counter to NEPA's collaborative spirit and purpose. The Navy should further extend the comment period to incorporate meetings with public testimony into the extended timeline.

Omission of information about total count of Growler aircraft

A Selected Acquisition Report on EA-18G Growler Aircraft that the DoD released in March 2016 indicates that the DoD has placed orders for a total of 160 EA-18G Growlers (page 19, www.dod.mil/pubs/foi/Reading_Room/Selected_Acquisition_Reports/16-F-0402_DOC_51_EA-18G_DEC_2015_SAR.pdf). However, the DEIS reports that there will be either 117 or 118 Growlers at NASWI under each of the Alternatives (2-9). Given that NASWI is currently the sole proposed base for the Navy's Electronic Attack community, the Navy must clarify its intent for the additional Growler aircraft that the DoD ordered but that were not accounted for in the DEIS. The total order including the planned additions would nearly double the number of Growler jets based at NAS Whidbey Island, along with noise impacts and the amount of time during which jet aircraft are audible could be expected to increase in proportion.

Omission of intent to train on weekends

The DEIS does not discuss flying training missions on weekends, yet page 11 of the USFS Draft Permit says that the Navy may fly on weekends with advance permission, excepting the "opening day and associated opening weekend of Washington State's Big Game Hunting Season." Why does the DEIS not discuss Growler training on weekends, and why is there only an exception for big game hunting? Given that weekends are also a peak time for local economies and visitation to the Reserve and Olympic, omission of a discussion of weekend training invalidates the Navy's analysis of impact to economies and public lands. By calling out the desire to avoid interrupting Washington State's Big Game Hunting Season, the Navy is tacitly conceding that there are clear and demonstrable negative impacts from Growler noise—including potential harm to many kinds of outdoor activities that the DEIS fails to address.

Omitted discussion of perfluoroalkyl substances (PFAS)

On November 7, 2016, the Navy notified the owners of more than 100 private and public drinking wells that perfluoroalkyl substances (PFAS) found beneath OLF Coupeville may have spread beyond Navy property. The Navy uses firefighting foam containing PFAS, which are linked to kidney and testicular cancers, birth defects, damage to the immune system, heart and thyroid disease, and complications during pregnancy. The DEIS acknowledges that "Increased operations increase the potential for flight incidents" (4-115), indicating an increased potential need for firefighting chemicals. Even with this additional information and threat of toxicity to local residents, the DEIS does not address the implications this has for contamination of drinking water. Neither the word "perfluoroalkyl" nor "PFAS" is mentioned in the entire DEIS. The DEIS simply concludes without scientific evidence that "No significant impacts related to hazardous waste and materials would occur due to construction activities or from the addition and operation of additional Growler aircraft." The Navy's failure to fully disclose and analyze the impacts from increased use of these dangerous chemicals does not satisfy the requirements of NEPA.

Incomplete analysis of impacts to wildlife

The DEIS states that "terrestrial and marine wildlife in the study area are already exposed to a high level of long-term aircraft operations and other human-made disturbances and have presumably habituated" (4-222). However, the Navy does not make clear its baseline for determining such habituation; presumed habituation is an insufficient basis on which to determine No Significant Impact. The Navy should rely on independent studies and peer reviewed scientific analysis, rather than presumptions, to draw such conclusions. Further, by limiting the study area to Whidbey Island and excluding the areas within Olympic National Park, as discussed above, the DEIS lacks a true analysis of the impacts to wildlife. To provide an adequate analysis of the environmental impacts on wildlife, the DEIS must expand the study area to incorporate all affected areas, including federally designated wilderness and the region's more diverse wildlife habitat.

NPCA appreciates the opportunity to share our concerns. Thank you for considering these comments, and we look forward to reviewing the Final EIS.

Sincerely,

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1.a. Thank You
4.j. Other Reports

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science

Ebey's Landing National Historical Reserve

Acoustical Monitoring Report

Natural Resource Report NPS/ELBA/NRR—2016/1299

ON THE COVER
Photograph of Ebey's Landing National Historical Reserve courtesy of NPS.

Ebey's Landing National Historical Reserve

Acoustical Monitoring Report

Natural Resource Report NPS/ELBA/NRR—2016/1299

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November 2016

U.S. Department of the Interior
National Park Service
Natural Resource Stewardship and Science
Fort Collins, Colorado

The National Park Service, Natural Resource Stewardship and Science office in Fort Collins, Colorado, publishes a range of reports that address natural resource topics. These reports are of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

The Natural Resource Report Series is used to disseminate comprehensive information and analysis about natural resources and related topics concerning lands managed by the National Park Service. The series supports the advancement of science, informed decision-making, and the achievement of the National Park Service mission. The series also provides a forum for presenting more lengthy results that may not be accepted by publications with page limitations.

All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner.

Data in this report were collected and analyzed using methods based on established, peer-reviewed protocols and were analyzed and interpreted within the guidelines of the protocols.

Views, statements, findings, conclusions, recommendations, and data in this report do not necessarily reflect views and policies of the National Park Service, U.S. Department of the Interior. Mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. Government.

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NPS 484/134126, November 2016

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Executive Summary

Ebey's Landing National Historical Reserve (EBLA) is located approximately five miles south of the Naval Air Station (NAS) Whidbey Island. The Department of the Navy (Navy) is proposing to increase the number of EA-18G Growlers (Growlers) stationed at NAS Whidbey Island (Revised Notice of Intent, 2014). The National Park Service and Navy met in March 2015 to discuss operations at Whidbey Island and potential impacts of Growler noise at the reserve. The NPS and Navy agreed that additional acoustic information, collected at the Reserve, would be beneficial for the NPS to adequately respond to the NEPA (National Environmental Policy Act) document being prepared by the Navy. In July 2015, NPS started acoustic data collection.

Natural sounds are integral to ecosystem function and are one of the many resources and values that NPS managers are responsible for preserving and restoring. NPS evaluates federal actions that may impact the human and natural environment of units within the national park system. The acoustic environment, like air, water or wildlife, is a valuable resource that can be substantially degraded by inappropriate sound levels and frequencies. Intrusive sounds (noise) are of concern to NPS managers because they can impede the ability to accomplish the NPS mission of resource protection and public enjoyment. Anthropogenic noise may also disrupt ecosystem processes by interfering with predator prey relationships and the ability of wildlife to communicate, establish territory, reproduce, support and protect offspring (Siemers and Schaub, 2011; Schroeder et al., 2012; McClure et al., 2013). People visit national parks to see, hear and experience myriad phenomena associated with specific natural and cultural environments. Yet, in many cases, those environments are being increasingly impacted by anthropogenic noise altering their experience (Lynch, Joyce, and Fristrup, 2011).

Two acoustic monitoring systems were set up and recorded data for 31 days on NPS property in the Reserve. The systems were deployed near the Reuble Farmstead (EBLA001) and adjacent to Ebey's Landing at the Ferry House (EBLA002). These systems collected continuous audio and sound pressure level (SPL) data for 731 hours and 741 hours respectively. A total of 1,853 Growler overflight events were identified during the measurement period. A single deployment of a Growler may have resulted in multiple events depending on the flight path.

Growlers conduct Field Carrier Landing Practice (FCLP) at Outlying Landing Field (OLF) Coupeville, an airstrip that is partially within and partially abutting the Reserve. EBLA001 was selected because it is directly under the low elevation flight path for operations at OLF Coupeville. EBLA002 was selected because it is adjacent to Ebey's Landing, Ebey's Prairie, and the historic Ferry House. These features are fundamental cultural resources for the Reserve, and a focal point for visitor use and enjoyment. EBLA002 is farther away from the OLF Coupeville, but is close enough to pick up aircraft using this runway and will likely pick up more aircraft flying to Ault Field than EBLA001. EBLA002 is under or near many of the flight paths identified in the Air Installation Compatible Use Zone (AICUZ) Update for Naval Air Station Whidbey Island's Ault Field and Outlying Landing Field Coupeville, Washington (The Onyx Group, 2005). EBLA002 had a higher overall, daytime and nighttime existing ambient SPL (L_{50}) than Reuble Farmstead (EBLA001) and more aircraft events. Extremely loud acoustic events (measured as high as 113 dBA) from military

aircraft were recorded at EBLA001. EBLA001 had louder but less frequent events and a higher LAeq (equivalent continuous sound level) than EBLA002

This report summarizes data on all commercial and military jet aircraft events recorded during the monitoring period. The analysis does not provide comprehensive information on natural sound sources or other notable anthropogenic sounds, such as vehicles and boats. Sound pressure level measurements collected at the Reserve produced spectrograms with unique sound signatures used to differentiate between military aircraft and commercial aircraft. The metrics presented in this report are calculated from sound pressure level data and audio recorded at the site. The total number of aircraft events heard at each site is shown in Table 1. An aircraft event, in this case, represents an acoustic event with a beginning and end point and a peak between, similar to a Gaussian curve.

Table 1. The number of aircraft events for each site and the total time that military aircraft were audible during the 31-day study period.

Sites	Locations	Commercial Aircraft Events	Military Aircraft Events	Total time audible for military aircraft (hh:mm:ss)
EBLA001	Reuble Farmstead	571	417	10:25:23
EBLA002	Ferry House	407	1436	28:55:53

In determining the current conditions of an acoustic environment, it is informative to examine how often SPLs exceed certain levels. Table 2 summarizes SPL levels that relate to human health and speech. These values are relevant to various aspects of the visitor experience including camping in front-country and backcountry sites, communication between Reserve staff and visitors, and informal communication. Additionally, human responses can often serve as a proxy for potential impacts to other vertebrates because humans have hearing that is more sensitive at low frequencies than many species (Dooling and Popper, 2007, Fay, 1988).

Table 3 reports the percent of time that measured levels were above four key levels during the (daytime and nighttime) monitoring period. The top level in each split-cell focuses on frequencies affected by transportation noise (20-1250 Hz), including aircraft, whereas the lower levels represent the conventional full frequency range (12.5-20,000 Hz). Recent studies suggest that sound events as low as 35 dBA can have adverse effects on blood pressure while sleeping (Haralabidis, 2008). The second level addresses the World Health Organization’s recommendations that noise levels inside bedrooms remain below 45 dBA (Berglund et al., 1999). The third level, 52 dBA, refers to the Environmental Protection Agency’s (EPA) speech interference level for speaking in a raised voice to an audience at 10 meters (EPA 1974). This level addresses the effects of sound on interpretive presentations in park units. The next level, 60 dBA, provides a basis for estimating impacts on average voice communications at 1 meter. Hikers or other visitors viewing scenic areas in the Reserve would likely be conducting such conversations. The 24hr LAeq was 68.9 at EBLA001 and

48.0 at EBLA002. The highest SPL of 113 dBA was recorded at EBLA001and the highest SEL of 117.2 dBA was calculated at EBLA001.

Table 2. Effects at discrete acoustic levels.

SPL (dBA)	Relevance
35	Blood pressure and heart rate increase in sleeping humans (Haralabidis et al., 2008)[1] Desired background sound level in classrooms (ANSI S12.60-2002)
45	World Health Organization's recommendation for maximum noise levels inside bedrooms (Berglund, Lindvall, and Schwela, 1999)
52	Speech interference for interpretive programs (U.S. Environmental Protection Agency, 1974)
60	Speech interruption for normal conversation (U.S. Environmental Protection Agency, 1974)

[1] The authors of Haralabidis use both dB and dBA in this paper and LAeq (an A-weighted Measurement), since A weighting is the industry standard we assumed their decibel measurements are A-weighted for the referenced data.

Table 3. Percent time above sound pressure levels from the monitoring period represented in a truncated (T) frequency range and the full measured frequency range.

Site	Frequency (Hz)	% Time above sound level: 07:00-19:00				% Time above sound level: 19:00-07:00			
		35dBA	45dBA	52dBA	60dBA	35dBA	45dBA	52dBA	60dBA
EBLA001	20-1250 (T)	53.79	8.26	1.85	0.37	36.87	3.85	0.71	0.07
	12.5-20,000	73.96	12.2	2.57	0.43	57.32	8.96	1.83	0.13
EBLA002	20-1250 (T)	75.51	7.85	1.98	0.38	62.11	2.69	0.32	0.03
	12.5-20,000	90.8	17.99	4.00	0.55	77.52	11.45	2.43	0.34

Acknowledgments

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Introduction

Ebey's Landing National Historical Reserve is located approximately five miles south of the NAS Whidbey Island. The Reserve is jointly managed by the NPS in partnership with Island County, the Town of Coupeville, and Washington State Parks. Most of the land within the Reserve (85%) is privately owned and includes residential and commercial property.

The Navy is transitioning from EA-6B Prowler fighter jets to EA-18G Growlers and is preparing an Environmental Impact Statement in accordance with the National Environmental Policy Act (NEPA) to analyze the impacts associated with the proposed addition of up to 36 Growlers at NAS Whidbey Island (Revised Notice of Intent, 2014). Past research has shown an increase of low frequency noise below 80 Hz from individual Growler flyovers and comparable noise impacts at higher frequencies to its predecessor, the Prowler (Kester and Czech, 2012). The National Park Service did not have adequate information to respond to the Navy's NEPA analysis and met with the Navy in March 2015 and discussed the need to collect ambient baseline data at the Reserve.

This report presents acoustic data and information collected by the NPS Natural Sounds and Night Skies Division (NSNSD) in July-August 2015. Ambient sound levels and noise from Growlers that frequently use the area, especially those using Outlying Landing Field Coupeville for FCLP were measured.

The NPS Visitor

A 1998 survey of the American public revealed that 72% of respondents thought providing opportunities to experience natural quiet and the sounds of nature were a very important reason for having national parks, while another 23% thought that it was somewhat important (Haas & Wakefield, 1998). In another survey specific to park visitors, 91% of respondents considered enjoyment of natural quiet and the sounds of nature as compelling reasons for visiting national parks (McDonald et al., 1995). Acoustical monitoring provides a scientific basis for assessing the status of acoustic resources, identifying trends in resource conditions, quantifying impacts from other actions, assessing consistency with park management objectives, and informing management decisions regarding desired future conditions.

Soundscape Planning Authorities

The National Park Service Organic Act of 1916 states that the purpose of national parks is "… to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." The enabling legislation for the Reserve provides the additional mission of "preserving and protecting a rural community" and mandates that all NPS administered land within the Reserve shall be managed in accordance with the NPS' Organic Act (McKinley, 1993). In addition the Redwoods Act of 1978 affirmed that, "the protection, management, and administration of these areas shall be conducted in light of the high value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress."

Direction for management of natural soundscapes[1] comes from NPS 2006 Management Policy 4.9:

> The Service will restore to the natural condition wherever possible those park soundscapes that have become degraded by unnatural sounds (noise), and will protect natural soundscapes from unacceptable impacts. Using appropriate management planning, superintendents will identify what levels and types of unnatural sound constitute acceptable impacts on park natural soundscapes. The frequencies, magnitudes, and durations of acceptable levels of unnatural sound will vary throughout a park, being generally greater in developed areas. In and adjacent to parks, the Service will monitor human activities that generate noise that adversely affects park soundscapes [acoustic resources], including noise caused by mechanical or electronic devices. The Service will take action to prevent or minimize all noise that through frequency, magnitude, or duration adversely affects the natural soundscape [acoustic resource] or other park resources or values, or that exceeds levels that have been identified through monitoring as being acceptable to or appropriate for visitor uses at the sites being monitored (NPS, 2006a).

[1] The 2006 Management Policy 4.9 and related documents refer to “soundscapes” instead of “acoustic resources.” When quoting from this authority, it is advisable to note that the term often refers to resources rather than visitor perceptions.

Study Area

Ebey's Landing National Historical Reserve is located in Washington State on Whidbey Island in north central Puget Sound (Figure 1). In 1978, Congress established the reserve in order to "preserve and protect a rural community which provides an unbroken historical record from nineteenth century exploration and settlement in [the] Puget Sound to the present time." The Reserve commemorates four historical eras: the first explorations of the Puget Sound by Captain George Vancouver in 1792; the settlement of Whidbey Island by Colonel Isaac Neff Ebey, a figure important in the development of Washington Territory; the rapid settlement of Whidbey Island in and after the years of the Donation Land Claim Act (1850-1855); and the growth since 1883 of the historic town of Coupeville (McKinley, 1993). NAS Whidbey Island is located approximately five miles north of the boundary of the Reserve. NAS Whidbey Island has evolved into the Navy's training center for electronic attack, patrol and reconnaissance squadrons. OLF Coupeville, located just south of Ault Field Airfield (Ault Field), is used for FCLP and other operations including helicopter and parachute operations (The Onyx Group, 2005).

The acoustic monitoring stations were set up to monitor acoustic conditions and measure Growler noise from OLF Coupeville (Table 4). In addition to OLF Coupeville, Ault Field is nearby and more heavily used by the military. There is also a less frequently used Seaplane Base (The Onyx Group, 2005). OLF Coupeville is partially within, and immediately adjacent to, the Reserve. Typical FCLP flight paths at OLF Coupeville cross over the Reserve (Figure 2). Ault Field is more heavily used and has an array of flight tracks over the Reserve but the low tactical air navigation (TACAN) flight paths departing from Ault Field in Figure 3 have the potential to produce some of the highest acoustic impacts, aside from FCLP, due to the low altitude of this type of departure. There are approximately eight departure flight paths and eight arrival flight paths that take aircraft directly above the park boundary. There is also an Interfacility Flight Track between Ault Field and OLF Coupeville that uses both facilities (The Onyx Group, 2005).

Table 4. Locations of recording equipment in the Reserve (Copass, 2016).

Site	Location	Dates	Vegetation	Elevation	Latitude	Longitude
EBLA001	Reuble Farmstead	6/19/2015-7/21/2015	Agricultural Field	19 m	48.1893	-122.6664
EBLA002	Ferry House	6/19/2015-7/21/2015	Agricultural Field and Ruderal Shrubland	15 m	48.19182	-122.7036

The Reuble Farmstead site, EBLA001, was set up in an open field in the middle of the Reserve towards the south. The Reuble farmstead is used as the base of operations for the NPS, and includes offices, a conference room, transient quarters, and workshops that support the NPS' mission. The Ferry House site, EBLA002, was placed further west of Reuble Farmstead closer to Ebey's Landing, Ebey's Prairie, and the iconic Ferry House. This popular area is a fundamental resource for the Reserve and a focal point for visitors in the Reserve. EBLA002 was surrounded by open fields on one side and shrubby vegetation on the other side. Refer to Appendix B for pictures of the sites.

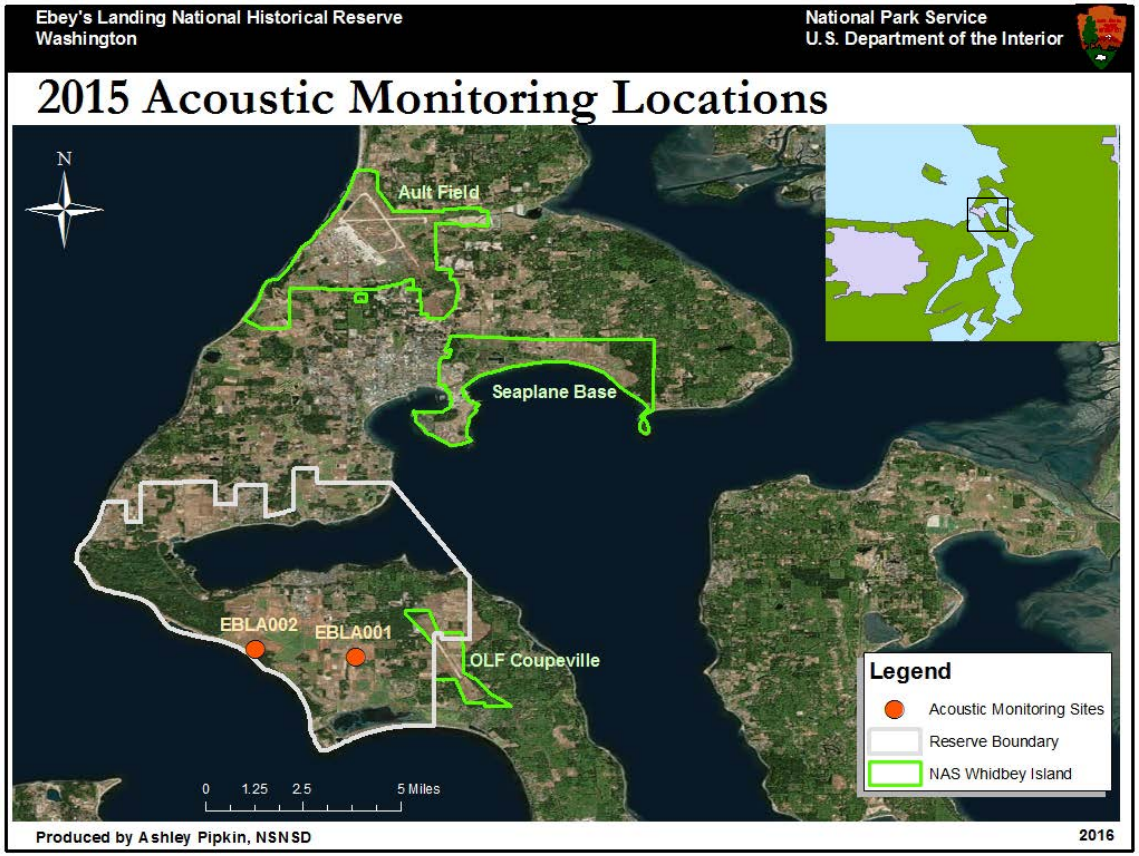

Figure 1. Location of Acoustic Monitoring Stations, EBLA001 and EBLA002, within Ebey's Landing National Historical Reserve.

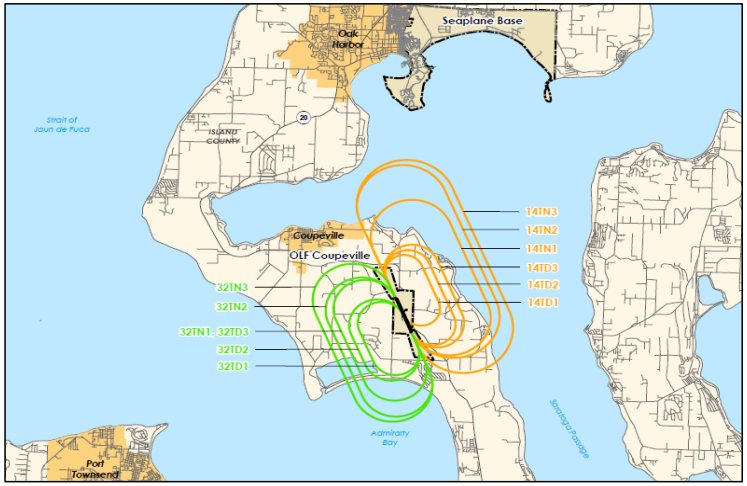

Figure 2. Field carrier landing practice Flight Tracks at NAS Whidbey Island's OLF Coupeville (The Onyx Group, 2005).

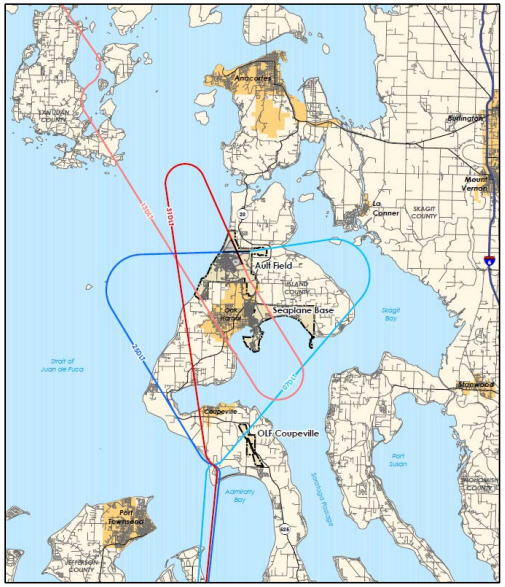

Figure 3. Low-TACAN Departure Flight Tracks for NAS Whidbey Island's Ault Field (The Onyx Group, 2005).

Methods

Automatic Monitoring

Larson Davis 831 sound level meters (SLM) were employed over the monitoring period at each of the EBLA sites. The Larson Davis SLM is a hardware-based, real-time analyzer that constantly records one second sound pressure level and 1/3 octave band data. These Larson Davis instruments met American National Standards Institute (ANSI) Type 1 standards. The sound level meters provided the information needed to calculate metrics described below in the "Calculation of Metrics" section.

The sampling stations consisted of:

- Microphone with environmental shroud
- Preamplifier
- 3.2 V LiFe rechargeable battery packs
- Anemometer (wind speed and direction)
- Temperature and humidity probe
- MP3 recorder

The sampling stations collected:

- SPL data in the form of A-weighted decibel readings (dBA) every second
- Continuous digital audio recordings
- One third octave band data every second ranging from 12.5 Hz – 20,000 Hz
- Continuous meteorological data including wind speed, direction, temperature, and relative humidity

Calculation of Metrics

The status of the acoustical environment can be characterized by spectral measurements, durations, and overall sound levels (intensities). The NSNSD uses descriptive figures and metrics to interpret these characteristics. A fundamental descriptor is existing ambient (L_{50}) sound levels. Existing ambient or L_{50} is an example of an exceedance level, where an L_x level refers to the SPLs that are exceeded x% of the time. The L_{50} represents the median sound pressure level, and is comprised of spectra (in dB) drawn from a full dataset (removing data with wind speed > 5m/s to eliminate error from microphone distortion.). Another example, the L_{90}, represents the sound pressure level that is exceeded 90% of the time, therefore, only 10% of the sound levels that occur are below the L_{90}. LAeq (A-weighted equivalent continuous sound level) is another important metric that shows an average SPL over the monitoring period. Day-Night Level (L_{dn}) is also provided in this report, sometimes referred to as DNL. This metric was calculated from hourly LAeq of the monitoring period with the hours from 22:00 to 7:00 increased by 10 dB.

The Department of Defense has found another metric useful to supplement DNL analysis for military aircraft. A useful way to describe aircraft noise is to provide the total number of noise events that

exceed a selected Maximum A-weighted Sound Pressure Level (LAmax) (Department of Defense, 2009). NPS chose 70 dBA LAmax because this level is likely to interfere with conversation among park visitors and employees including interpretive talks.

Off-Site Listening/Analysis

Auditory and visual analysis was used to calculate the audibility of sound sources at the Reserve. Trained technicians at Colorado State University analyzed 31 days of data collected from the sound pressure level meter and MP3 recorder deployed at each site. From the SPL data, spectrograms were created with the accompanying recorded audio (Figures 4, 5, 6, and 7). Spectrograms are plots that display sound level as a function of time and frequency. Since aircraft have a recognizable sound signature, they are visually identifiable on spectrograms. Individual events can be isolated and analyzed. For every noise event the user is able to record beginning and end times, frequencies spanned, maximum sound pressure level, and sound exposure level (SEL). This dataset also included continuous audio that can be played for events with questionable sound signatures. This method uses a platform created for sound pressure level annotation referred to as SPLAT by NSNSD. Bose Quiet Comfort Noise Canceling headphones were used for off-site audio playback to minimize limitations imposed by the office acoustic environment.

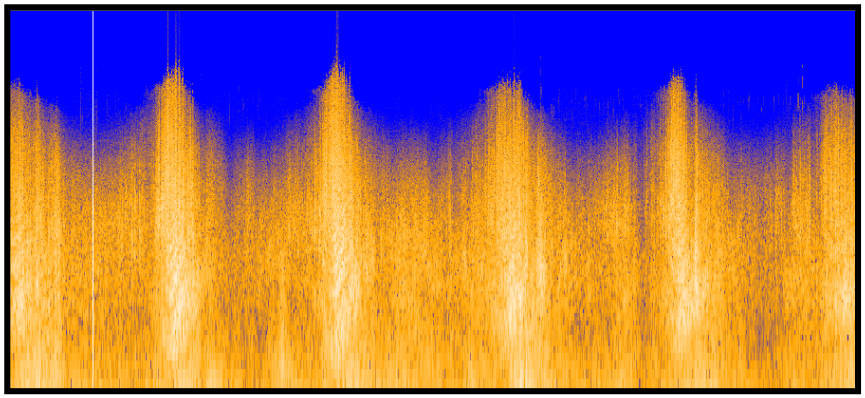

Figure 4. This spectrogram sample is taken from EBLA001 from 14:19:21 to 14:24:42 on 06/29/2015 and shows the acoustic signature of military aircraft.

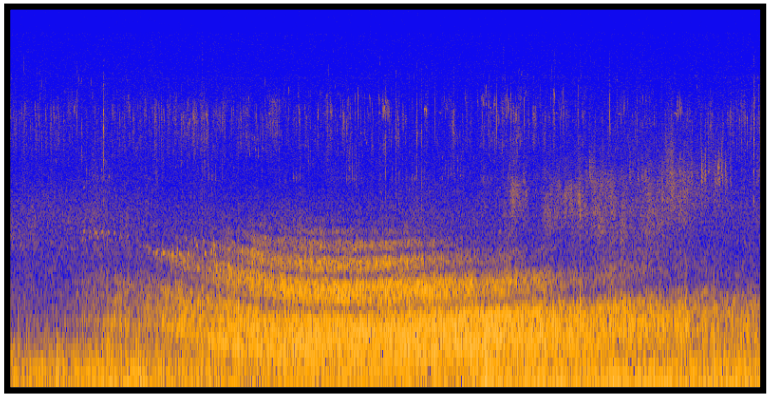

Figure 5. This spectrogram sample from EBLA001 at 8:08:21 to 8:10:32 on 06/29/205 and shows the acoustic signature from a commercial jet. The irregular high frequency notes near the top of the spectrogram are from birds.

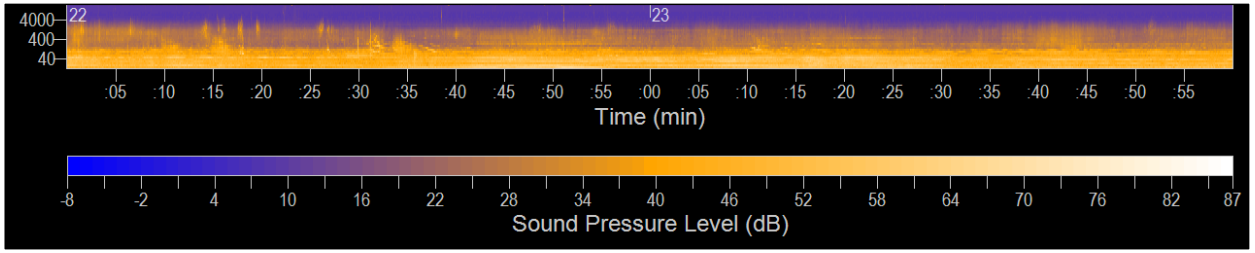

Figure 6. A spectrogram from EBLA002 collected on 06/27/2015 representing two hours, 22:00 and 23:00. This spectrogram contains two overflights starting at 22:14 and 22:31 that were categorized as commercial overflights.

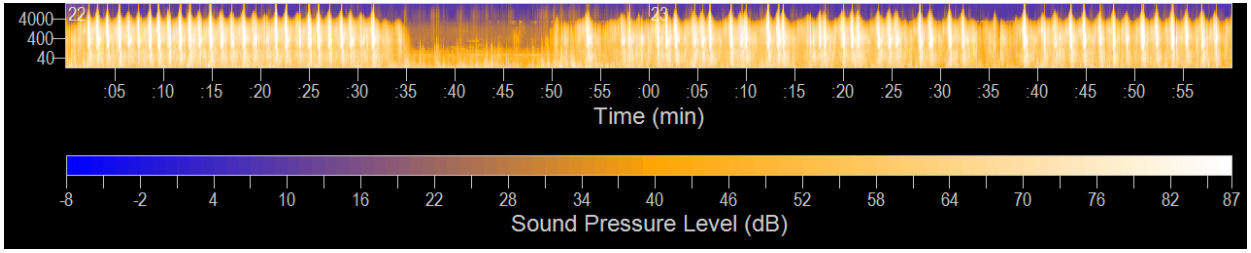

Figure 7. A spectrogram from EBLA001 collected on 07/06/2015 representing two hours, 22:00 and 23:00. This spectrogram shows 59 events from military aircraft during the two-hour period.

Results

At each site, sound pressure level measurements were taken, along with digital audio recordings and meteorological data. The equipment makes 33 SPL measurements each second for a set of frequency bands that span the range of human hearing (12.5 – 20,000 Hz). These 33 measurements approximate the capacity of human listeners to independently sense signals in different parts of the audible spectrum. The SPL is measured in decibels (dB), a logarithmic scale where 0 dB represents the threshold of human hearing at 1 kHz. Microphone measurements were adjusted according to a weighted scale (A-weighting) such that they resemble the response of the human ear (Harris, 1998).

The logarithmic dB scale can be difficult to interpret, and the functional effect of a seemingly small change in SPL can be greater than anticipated. When noise interferes with hearing natural sounds, the noise *masks* the natural sounds, and this affects the extent of the listening area. For example, if the natural ambient SPL is 30 dB, and transportation noise raises the ambient to 33 dB (a 3 dB increase), the listening area for humans (and many birds and mammals) is reduced by 50%. Increasing the ambient SPL an additional 3 dB (to 36 dB) would reduce the listening area by half again, to 25% of the initial area. Chronic noise exposure resulting in reduced listening area may interfere with predator prey relationships and the ability of wildlife to communicate, forage, establish territory, and reproduce (Barber, 2010). Note, however, that changes in SPL do not proportionately translate to changes in perceived loudness. The rate of change of loudness is complex and dependent on the stimulus itself and other environmental factors (e.g., SPL, frequency, bandwidth, duration, background). Table 5 presents park sound sources and other common sound sources with their corresponding A-weighted decibel levels (dBA).

Table 5. Sound pressure level examples.

Park Sound Sources	Common Sound Sources	dBA
Volcano crater (Haleakala National Park)	Human breathing at 3m	10
Leaves rustling (Canyonlands National Park)	Whispering	20
Crickets at 5m (Zion National Park)	Residential area at night	40
Conversation at 5m (Whitman Mission National Historic Site)	Busy restaurant	60
Snowcoach at 30m (Yellowstone National Park)	Curbside of busy street	80
Thunder (Arches National Park)	Jackhammer at 2m	100
Military jet at 100m Above Ground Level (Yukon-Charley Rivers National Preserve)	Train horn at 1m	120

The Time Above metric indicates the amount of time that the sound level exceeds specified decibel levels. In determining the current conditions of an acoustical environment, the NPS examines how often sound pressure levels exceed certain decibel levels that relate to human health and speech. The NPS uses these levels for making comparisons, but they should not be construed as thresholds of impact. Table 6 summarizes sound levels that relate to human health and speech. The first decibel

level, 35 dBA, addresses the health effects of sleep interruption (Haralabidis, et al., 2008). The second level addresses the World Health Organization's recommendations that noise levels inside bedrooms remain below 45 dBA (Berglund, et al., 1999). The third level, 52 dBA, is based on the Environmental Protection Agency's speech interference threshold for speaking in a raised voice to an audience at 10 meters (Environmental Protection Agency, 1974). This level addresses the effects of sound on interpretive presentations in parks. The final level, 60 dBA, provides a basis for estimating impacts on normal voice communications at 1 m (3 ft). Hikers and visitors viewing scenic vistas in the park would likely be conducting such conversations. Human responses can serve as a proxy for potential impacts to other vertebrates because humans have hearing that is more sensitive at low frequencies than many species (Dooling and Popper, 2007, Fay, 1988).

Table 6. Effects at discrete acoustic levels.

SPL (dBA)	Relevance
35	Blood pressure and heart rate increase in sleeping humans (Haralabidis et al., 2008)[1] Desired background sound level in classrooms (ANSI S12.60-2002)
45	World Health Organization's recommendation for maximum noise levels inside bedrooms (Berglund, Lindvall, and Schwela, 1999)
52	Speech interference for interpretive programs (U.S. Environmental Protection Agency, 1974)
60	Speech interruption for normal conversation (U.S. Environmental Protection Agency, 1974)

[1] The authors of Haralabidis use both dB and dBA in this paper and LAeq (an A-weighted Measurement), since A weighting is the industry standard we assumed their decibel measurements are A-weighted for the referenced

By comparing the amount of time that sound levels are above certain specified levels, variations in levels can be observed over time (or between sites). Table 7 reports the percent of time that measured levels were above the specified levels in Table 6 for a given frequency range. The top level in each split-cell of Table 7 reports the *percent time above* for the 20 – 1,250 Hz range. It is useful to look at this low-frequency range because it includes transportation noise while excluding higher-frequency bird and insect sounds. Transportation is often a major contributor of low frequency sound, but the 20 – 1,250 Hz range does not correspond to a specific aircraft or type of transportation. Note that many non-natural sounds also occur in frequencies higher than this range. The bottom *percent time above* level in each split-cell is calculated from the full 12.5 – 20,000 Hz range.

Table 7. Percent time above sound levels, represented in a truncated (T) frequency range and the full measured frequency range, for daytime and nighttime during the monitoring period.

Site	Frequency (Hz)	% Time above sound level: 07:00-19:00				% Time above sound level: 19:00-07:00			
		35dBA	45dBA	52dBA	60dBA	35dBA	45dBA	52dBA	60dBA
EBLA001	20-1250 (T)	53.79	8.26	1.85	0.37	36.87	3.85	0.71	0.07
	12.5-20,000	73.96	12.2	2.57	0.43	57.32	8.96	1.83	0.13
EBLA002	20-1250 (T)	75.51	7.85	1.98	0.38	62.11	2.69	0.32	0.03
	12.5-20,000	90.8	17.99	4.00	0.55	77.52	11.45	2.43	0.34

Exceedance levels (L_x) represent the SPL exceeded **x** percent of time during the given measurement period. For example, L_{90} is the dB level that has been exceeded 90% of the time, and only the quietest 10% of the samples can be found below this point. On the other hand, the L_{10} is the dB level that has been exceeded 10% of the time, and 90% of the measurements are quieter than the L_{10}. Table 8 reports the L_{90}, L_{50}, and L_{10} levels for both sites. For each split-cell in Table 8, the top level reports the L_x for the 20 – 1,250 Hz subset of the frequency range, and the bottom L_x level is calculated from the 12.5 – 20,000 Hz spectrum.

Table 8. Exceedance levels for existing conditions in EBLA, for daytime and nighttime in a truncated (T) frequency range and the full measured frequency range, for daytime and nighttime during the monitoring period.

Site	Frequency (Hz)	Exceedance levels (dBA): 07:00-19:00			Exceedance levels (dBA): 19:00-07:00		
		L_{90}	L_{50}	L_{10}	L_{90}	L_{50}	L_{10}
EBLA001	20-1250 (T)	30.5	43.6	52.6	27.7	37.1	44.9
	12.5-20,000	32.9	45.6	54.5	30.5	41.1	48.3
EBLA002	20-1250 (T)	34.1	43.7	53.9	34.5	39.7	43.5
	12.5-20,000	35.5	47.4	56.2	35.7	43.4	48.0

The dB levels for 33 one-third octave band frequencies over the day and night periods are shown in Figures 8 and 9. High frequency natural sounds (such as a cricket chirping) and low frequency sounds (such as flowing water) often occur simultaneously, so the frequency spectrum is split into 33 smaller ranges, each encompassing one-third of an octave. For each one-third octave band, dB levels were recorded once per second for the duration of the monitoring period. Recording the sound intensity of each one-third octave band (combined with digital audio recordings) allows acoustic technicians to determine what types of sounds are contributing to the overall sound pressure level of a site. The gray shading of the graph represents sound levels outside of the typical range of human hearing. The exceedance levels (L_x) are also shown for each one-third octave band. The line in the middle represents $L_{50,}$ which measures the median over the 31-day monitoring period. This graph

represents the typical acoustic environment but does not provide information on the loudest (or quietest) events at a location. At the Reserve, since many military aircraft exceed L_{10} these figures do not represent this sound source but instead provide a broad picture of the acoustic environment.

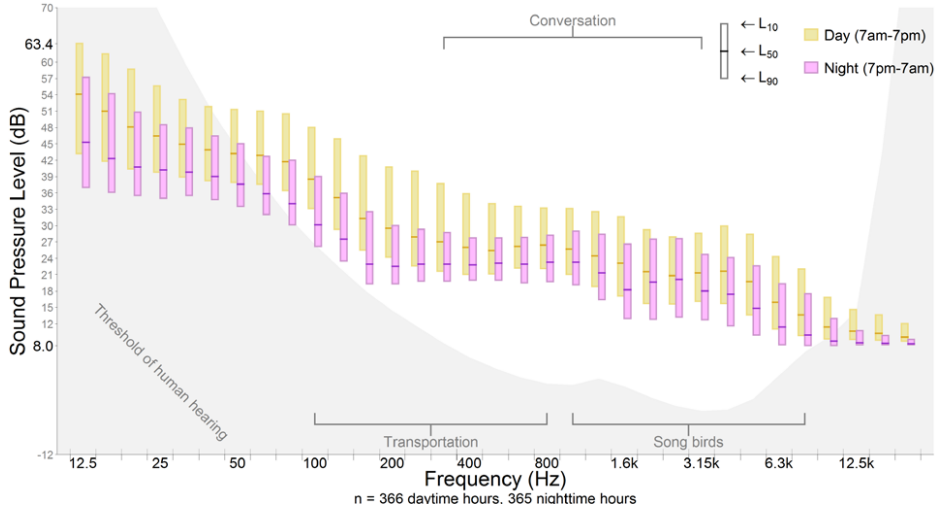

Figure 8. Day and night dB levels for 33 one-third octave bands at Reuble Farm (EBLA001) summer 2015.

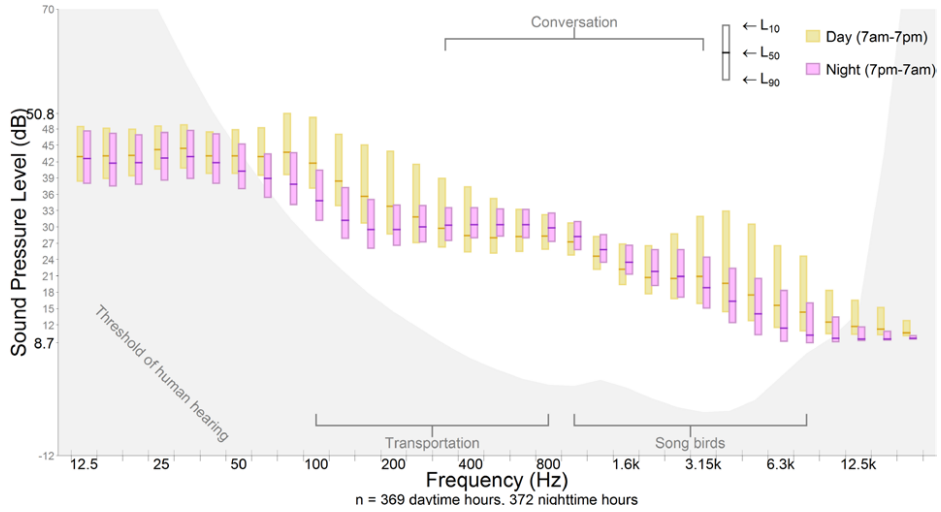

Figure 9. Day and night dB levels for 33 one-third octave bands at Ferry House (EBLA002) summer 2015

Two other important metrics provided in this report are LAeq and L_{dn}. LA_{eq} provides an average SPL for the monitoring period. L_{dn} is short for the day-night average sound levels and adds a 10 dB penalty for noise between 22:00 and 07:00. Table 9 displays the LAeq and L_{dn} for each site. These metrics and some additional indices are reported and there is an overview of their common applications in the Discussion section following these results.

Table 9. Common acoustic metrics referred to in acoustic literature and calculated from data collected during the monitoring period.

Site	$LAeq_{(12\ hr)}$ daytime	$LAeq_{(12\ hr)}$ nighttime	$LA_{EQ(24\ hr)}$	$L_{DN\ (31\ days)}$
EBLA001	70.9	65.3	68.9	73.6
EBLA002	47.8	48.1	48.0	54.7

The LAmax for all aircraft events recorded during the monitoring period are represented graphically in figures 10 and 11. Military aircraft are shown in red and aircraft that could not be classified as the military's or were positively identified as commercial jets are shown in blue. The existing ambient SPL (L_{50} or median) of each hour over the course of the entire monitoring period is shown with a dark gray square. The existing ambient is influenced by all the natural and non-natural noise sources from a particular period (an hour in this case) including aircraft events. A technique called alpha blending was used to plot LAmax of aircraft events over the course of the monitoring period by hour. Alpha blending is the process of graphing multiple translucent events that combine with each other to form increasingly opaque blocks representing increasing event intensity. The increased opacity of the square, means there was a higher occurrence of events for that hour (x-axis) that registered at that decibel level (y-axis) over the monitoring period.

The highest recorded SPL and SEL at EBLA001 were 113 and 117.2 and at EBLA002 were 85 and 96.6, respectively; both of these were from aircraft. Figures 10 and 11 show the LAmax recorded during an event, different from the SEL (sound exposure level) which is equivalent to the total sound energy of the event, which is calculated as opposed to, recorded. SEL is better when considering the intrusiveness of a single noise event. Where noise consists of discrete events the LAmax of the event will be a good indicator of disturbance to activities and sleep (Berglund, Lindvall, and Schwela, 1999). Nearly 100% of aircraft events exceed the hourly existing median ambient (L_{50}). Levels of 70 dBA LAmax were exceeded by 281 military aircraft events at EBLA001 and 125 military aircraft events at EBLA002. This can be visually observed in figures 10 and 11.

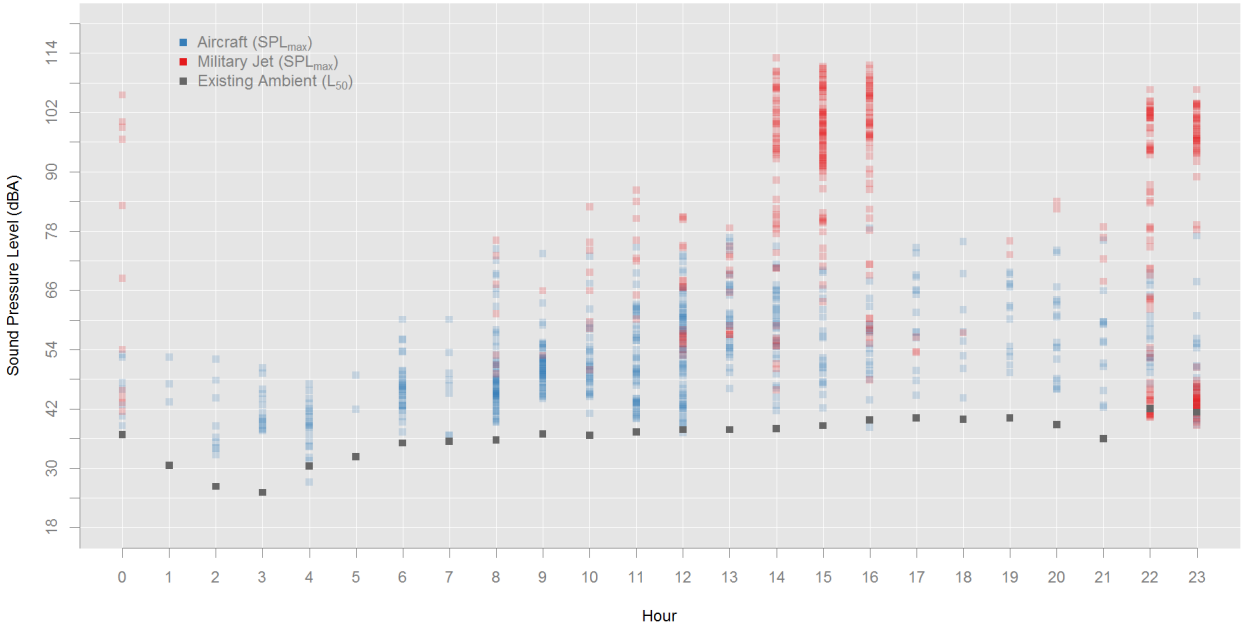

Figure 10. LAmax for all aircraft events recorded during the monitoring period at EBLA001, Reuble Farmstead, plotted hourly over the course of a 24-hour day.

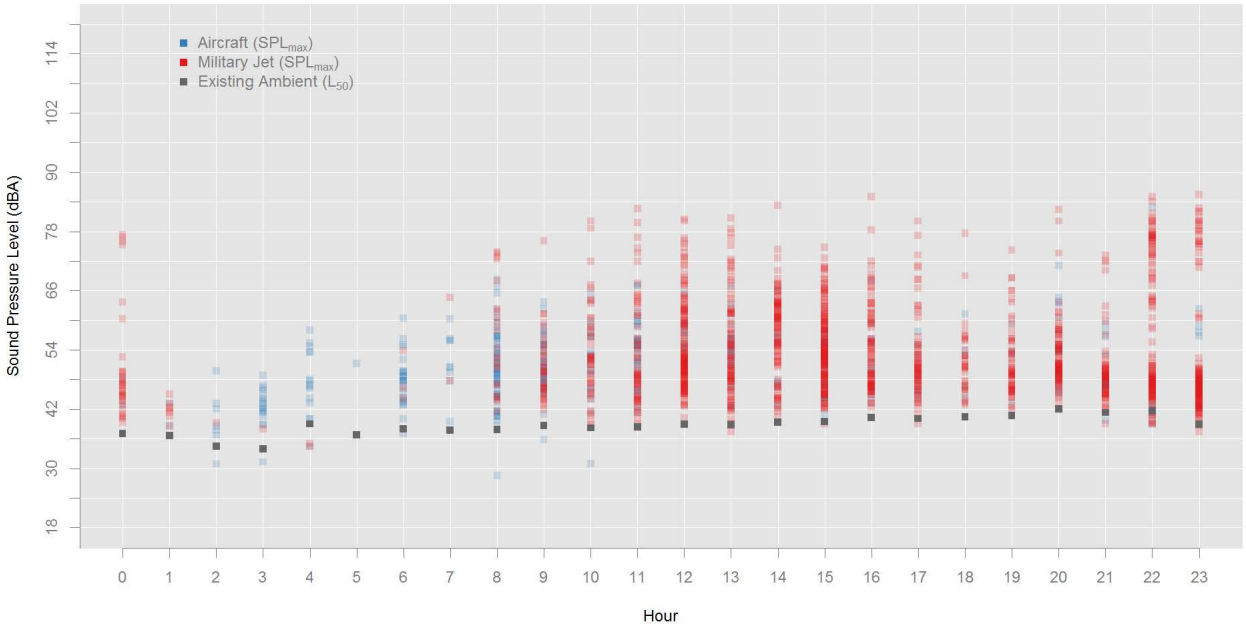

Figure 11. LAmax for all aircraft events recorded during the monitoring period at EBLA002, Ferry House, plotted hourly over the course of a 24-hour day.

Discussion

This report presents the data collected at the Reserve during a timeframe that Growlers were using OLF Coupeville. The results show that the loudest events were recorded at EBLA001 and are a result of this site's proximity to OLF Coupeville and the FCLP that occurred during the monitoring period. EBLA002 had more frequent military flyovers and a longer period of aircraft audibility than EBLA001. EBLA002 is near the flight path for Low-TACAN departure flight tracks on the most frequently used runway (Runway 25, used 49% of the time) at Ault Field (The Onyx Group, 2005).

This report includes metrics typically used by the NPS to describe the acoustic environment of units managed by the NPS. In addition to our commonly used suite of metrics and indices, this report also includes other frequently used metrics such as LAeq and L_{dn} (Day Night Average Sound Level or DNL). The Federal Aviation Administration and the Department of Defense use the DNL metric to identify noise zones as a land use-planning tool for local planning agencies (The Onyx Group, 2005). These metrics are used for a range of assessments including average sound levels in urban and non-urban populations, allowable noise exposure before hearing damage, speech interference and annoyance (EPA, 1974). The measured L_{dn} during the 31 day monitoring period at EBLA001 was 73.6 and at EBLA002 was 54.7 (Table 9).

Figures 8 and 9 illustrate a snapshot of the acoustic properties during the monitoring period from the two stations where data were collected at the Reserve. These graphs show the acoustic data parsed into 1/3 octave frequency bands; the low frequency bands have the most energy at both sites, likely due to aircraft events (Ketzer, 2012). The line located in each bar gives the existing ambient (L_{50}) SPL at each site. Figures 8 and 9 do not show the loudest (and quietest) 10% of sounds heard at each site. These figures also show that there is less variation in the medians recorded at EBLA002 than EBLA001 as a result of the more modest extremes at this site, confirmed in figures 10 and 11. Figures 10 and 11 show that many military aircraft would not be counted in the summary shown in Figures 8 and 9 because they were recorded at levels that exceeded 90% of the sound pressure levels recorded (Table 8).

Figure 8 shows that existing ambient (L_{50}) levels are higher at EBLA001 during the daytime compared to nighttime at frequency bands below 1,250 Hz. At EBLA001, there were 651 daytime overflights and 337 nighttime overflights over the 31 days. The daytime LAeq is also much higher during the day. This difference between the day and night in the low frequency bands may be a result of the higher occurrence of flights during the day as well as the extreme SPLs recorded from this period. At EBLA002 there is a daytime avian chorus (bird songs) shown by the tall yellow bars between 3,150Hz and 9,000 Hz. Like EBLA001, there are more daytime flights (1,132) than nighttime flights (711). The common daytime transportation low frequency bands show higher SPLs compared to nighttime levels less than 300 Hz and after that the L_{50} levels are variable until the frequency bands common among songbirds. Day and night LAeq at EBLA002 are very close with the nighttime LAeq being slightly higher. The overall L_{50} is also very similar especially in the truncated range but is slightly higher in the daytime in the full frequency spectrum.

At EBLA001, there is a peak occurrence of military overflights at 14:00 to 17:00 and 22:00 to1:00. The aircraft recorded during these hours were the loudest recorded for the entire monitoring period. The lowest military aircraft activity occurs between 1:00 and 8:00 in the morning, which may explain why the LAeq and L_{50} at this site are much lower at night. Nighttime natural and existing ambient is typically quieter than daytime ambient measurements in biologically abundant and human occupied areas.

EBLA002 has a higher event occurrence of military aircraft, and fewer occurrences during the early morning hours. With the exception of the hours between 2:00-7:00, military jets were recorded frequently throughout the day and night without a clear pattern. This site is close to an important riparian area and surrounded by shrubby vegetation, which may be why the dawn chorus is so apparent. Birds use the Reserve during breeding, nesting and migration. It is important to differentiate day and night noise levels due to increased sensitivity to noise during nighttime hours. The military defines acoustical daytime hours as, 07:00 to 22:00, and night time hours as, 22:00 to 07:00. Using the military's definition of day (15 hours) and night (9 hours), approximately 38% of military flights occurred during nighttime hours at EBLA001 and 24% at EBLA002. When the NPS definition of night is used (19:00-7:00), the percentages of nighttime flights increase to 40% at EBLA001 and 35% at EBLA002.

Figures 8 and 9 give a broader snapshot of the acoustic environment while Figures 10 and 11 take a closer look at acoustic energy of aircraft. Figures 10 and 11 show all aircraft events that occurred during the monitoring period at EBLA001 and EBLA002. According to figures 10 and 11, the quietest period of daylight hours at the Reserve is between 07:00 and 9:00 for both sites. The Reuble Farmstead area also experiences a quieter period between the hours of 17:00 and 21:00, a pattern that is not replicated at the Ferry House site.

Conclusion

This report provides current baseline ambient sound level metrics and data on military overflights at and near the Reserve. The data suggest that EBLA002 has an elevated level of anthropogenic noise from frequent aircraft using a myriad of flight paths, and while this is also partially true at EBLA001, Growler operations cause extremely loud events during training exercises at OLF Coupeville. . This data show that the ambient sound level at EBLA001 was elevated during use of the OLF by military aircraft.

EBLA002 had a higher occurrence of aircraft events but at lower sound levels than at EBLA001 overall. The presence of military aircraft flying over or near EBLA increases anthropogenic noise at the Reserve. The information in this report should be considered when evaluating impacts to the Reserve and its resources as defined by Federal laws, regulations, and executive orders, and according to policies established by the Director of the National Park Service.

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Appendix A: List of Acoustic Terms

Acoustic Environment- A combination of all the physical sound resources within a given area. This includes natural sounds and cultural sounds, and non-natural human-caused sounds. The acoustic environment of a park can be divided into two main categories: intrinsic and extrinsic.

Acoustic Resources- Includes both natural sounds like wind, water, & wildlife and cultural and historic sounds like tribal ceremonies, quiet reverence, and battle reenactments.

Amplitude- The relative strength of a sound wave, described in decibels (dB). Amplitude is related to what we commonly call loudness or volume.

Audibility- The ability of animals with normal hearing, including humans, to hear a given sound. It can vary depending upon the frequency content and amplitude of sound and by an individual animal's hearing ability.

Decibel (dB)- A unit of sound energy. Every 10 dB increase represents a tenfold increase in energy. Therefore, a 20 dB increase represents a hundredfold increase in energy. When sound levels are adjusted for human hearing they are expressed as dB(A).

Extrinsic Sound- Any sounds not forming an essential part of the park unit, or a sound originating from outside the park boundary. This could include voices, radio music, or jets flying thousands of feet above the park.

Frequency- Related to the pitch of a sound, it is defined as the number of times per second that the wave of sound repeats itself and is expressed in terms of hertz (Hz). Sound levels are often adjusted ("weighted") to match the hearing abilities of a given animal. In other words, humans and different species of animals are capable or hearing (or not hearing) at different frequencies. Humans with normal hearing can hear sounds between 20 Hz and 20,000 Hz, and as low as 0 dB at 1,000 Hz. Bats, on the other hand, can hear sounds between 20 Hz and 200,000 Hz.

Intrinsic Sound- Belongs to a park by the park's very nature, based on its purposes, values, and establishing legislation. Intrinsic sounds can include natural, cultural, and historic sounds that contribute to the acoustic environment of the park.

L50, L90- Metrics used to describe sound pressure levels (L), in decibels, exceeded 50 and 90 percent of the time, respectively. Put another way, half the time the measured levels of sound are greater than the L50 level, while 90 percent of the time the measured levels are higher than the L90 level.

Ldn- Day-Night Average Sound Level. Average equivalent sound level over a 24-hour period, with a 10-dB penalty added for sound levels between 10 p.m. and 7 a.m.

LAeq- The A-weighted energy equivalent sound level. The sound energy level averaged over the measurement period. For example $LAeq_{12}$ measures energy equivalent sound level over 12 hours.

Lnat (Natural Ambient Sound Level)- The natural sound conditions in parks that exist in the absence of any human-produced noise.

Maximum Sound Pressure Level (LAmax)- The highest recorded sound pressure level measured during a discrete event or period of time.

Noise Free Interval (NFI)- The length of the continuous period of time during which no human-caused sounds are audible.

Percent Time Above Natural Ambient- The amount of time that various sound sources are above the natural ambient sound pressure levels in a given area. It is most commonly used to measure the amount of time that human-caused sounds are above natural ambient levels. This measure is not specific to the hearing ability of a given animal, but a measure of when and how long human-caused sounds exceed natural ambient levels.

Percent Time Audible- The amount of time that various sound sources are audible to humans with normal hearing. A sound may be above natural ambient sound pressure levels, but still not audible. Similarly, some sounds that are below the natural ambient can be audible. Percent Time Audible is useful because of its simplicity. It is a measure that correlates well with visitor complaints of excessive noise and annoyance. Most noise sources are audible to humans at lower levels than virtually all wildlife species. Therefore, percent time audible is a protective proxy for wildlife. These data can be collected either by a trained observer (on-site listening) or by making high-quality digital recordings for later playback (off-site listening).

Sound Exposure Level (SEL)- The total sound energy of the actual sound during a specific time period. SEL is usually expressed using a time period of one second.

Sound Pressure- Minute change in atmospheric pressure due to passage of sound that can be detected by microphones.

Sound vs. Noise- The NSNSD differentiates between the use of sound and noise, since these definitions have been used inconsistently in the literature. Although sound is sometimes incorrectly used as a synonym for noise, it is in fact noise that is undesired or extraneous to an environment. Humans perceive sound as an auditory sensation created by pressure variations that move through a medium such as water or air and are measured in terms of amplitude and frequency (Harris, 1998; Templeton, 1997).

Soundscape- The human perception of the physical sound resource.

Appendix B: Site Photos

Figure 12. EBLA001 at Reuble Farm, this picture was taken facing north.

Figure 13. EBLA002 at Ferry House, picture facing south.

Appendix C: Modeled Ambient Sound Levels

NSNSD developed a geospatial model (Mennitt et al. 2014) that predicts measured ambient SPL using measurements made in hundreds of national park sites as well as 109 explanatory variables such as location, climate, land cover, hydrology, wind speed, and proximity to noise sources such as roads, railroads, and airports. The resulting model can predict sound levels anywhere in the contiguous U.S., and also estimate how much lower these sound levels would be in the absence of human activities. The model does not account for things like new roads or development in an area. This model would not accurately reflect proposed changes in Growler use. This predictive tool provides insight on what the natural acoustic conditions at this site would be without anthropogenic noise. Since natural ambient (L_{nat}) was not calculated from the acoustic data collected for these sites, the geospatial model is used to estimate the natural ambient. Table 10 provides us with information about the natural ambient SPL that were calculated at the sites using modeled data and comparing it to measurements collected in the park. The model has a median absolute deviation of approximately 3 dB. The modeled L_{50} and measured L_{50} for both sites are within 3 dB.

Table 10. Modeled data taken from a Geospatial Model of SPL at EBLA (Mennitt et al. 2014) along with actual measured SPL collected during the monitoring period.

Site	Modeled L50	Measured L50	Modeled Natural Ambient
EBLA001	38.8-40.1	45.6	33.7-34.4
EBLA002	35.8-37.2	47.4	33.7-34.4
Entire Park	38.8	NA	34.2

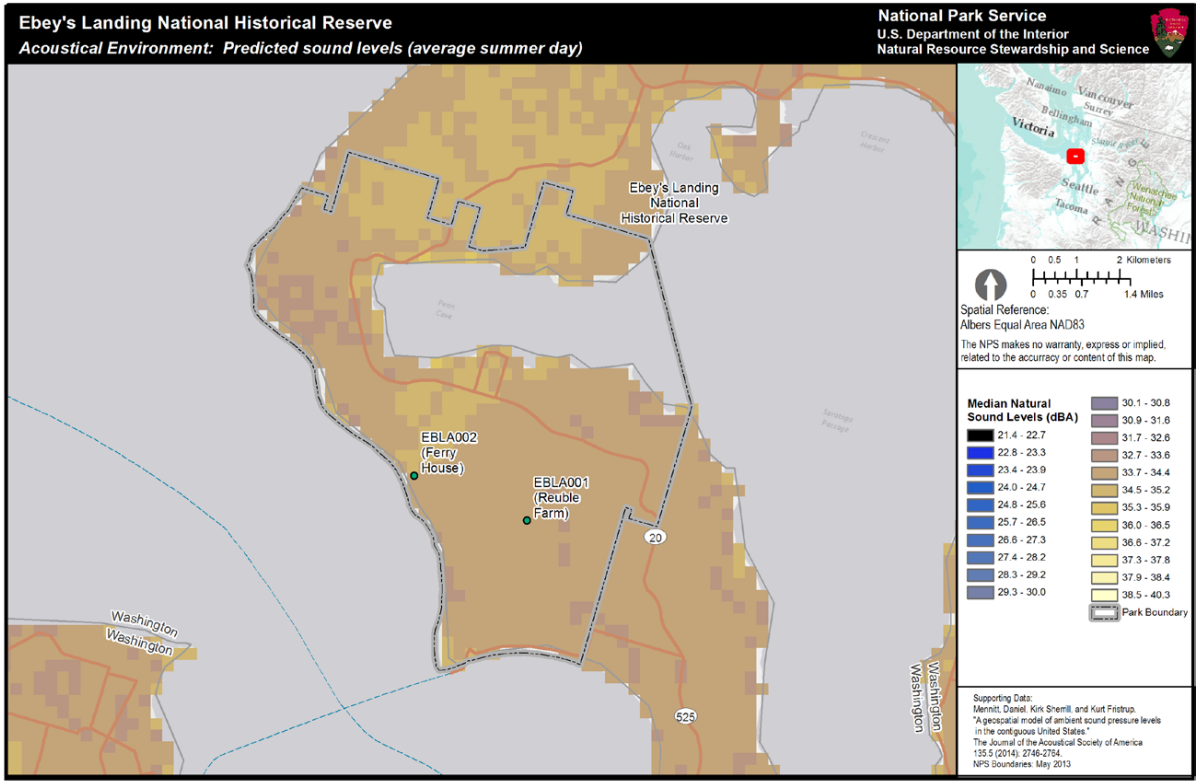

Figure 14. Map of modeled predicted sound levels (Mennitt et al. 2014) at the Reserve.

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

NPS 484/134126, September 2016

National Park Service
U.S. Department of the Interior

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1.a. Thank You
1.c. Segmentation and Connected Actions
10.a. Biological Resources Study Area
10.c. Wildlife Sensory Disturbance and Habituation
11.d. Per- and Polyfluoroalkyl Substances
19.c. Olympic Peninsula, Olympic National Park, and at-Sea Training
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5.a. Accident Potential Zones
7.d. Recreation and Wilderness Analysis and Study Area
7.g. Ebey's Landing National Historical Reserve

February 23, 2017

EA-18G EIS Project Manager
Naval Facilities Engineering Command (NAVFAC)
Atlantic, Attn: Code EV21/SS
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To Whom It May Concern:

Since 1919, the National Parks Conservation Association (NPCA) has been the leading voice of the American people in protecting and enhancing our National Park System. NPCA is an independent, nonpartisan, non-profit organization that, together with more than 1.2 million members and supporters, works to protect and preserve our nation's national parks for present and future generations. Our members and supporters regularly visit and use national park sites and it is on their behalf that I offer the enclosed comments. NPCA appreciates the opportunity to provide comments on the Draft Environmental Impact Statement for EA-18G "Growler" Airfield Operations at Naval Air Station Whidbey Island Complex (DEIS) and is concerned with potential negative impacts this project may present to both Ebey's Landing National Historical Reserve and Olympic National Park.

Ebey's Landing National Historical Reserve ("the Reserve") is a 17,572-acre national park of environmental, cultural, and historical significance located on Whidbey Island. The Reserve protects the agricultural and cultural traditions of Ebey's Landing—both indigenous and Euro-American—while offering spectacular opportunities for recreation.

Olympic National Park ("Olympic") is like nowhere else in the world. It was designated an International Biosphere Reserve and World Heritage Site in 1976 and 1981 respectively, and 95 percent of the area is designated wilderness. Acoustic ecologist Gordon Hempton has called the park "the most acoustically diverse" and "least noise polluted" place in the lower 48 states. The park includes a diverse range of habitat, from high alpine peaks to lush rainforests and wild beaches, and 24 species of plants and animals found in the park are found nowhere else on Earth. Olympic is also the most popular national park in the Northwest, with more than 3 million visitors in 2015 alone.

With these park sites in mind, NPCA has concerns about the following elements of the DEIS.

Improperly narrow purpose and need

The purpose and need of the DEIS specifies that the expansion of the Navy's Electronic Attack capabilities must occur at NASWI (ES-1). This is an unreasonably narrow requirement. A more reasonable purpose and need would allow the Navy to augment its Electronic Attack capabilities without determining a set location. Defining the purpose and need as the Navy did unreasonably limits the scope of reasonable alternatives, eliminating the option of an alternative that would mitigate noise on Whidbey Island and the Olympic Peninsula and rendering negligible the differences between Alternatives 1, 2, and 3. The environmental impacts are too similar between the three alternatives, therefore giving the DEIS a pre-decisional quality that falls short of the purpose of NEPA.

Inadequate range of alternatives

The DEIS lacks a reasonable range of alternatives, including an alternative that locates all operations at Ault Field. As an initial matter, the airfield attributes listed by the Navy that are allegedly necessary to conduct flight carrier landing practices (FCLP) are so numerous and specific that they effectively delineate the single alternative that the Navy desires, and eliminate all other alternatives from consideration. As such, the Navy effectively foreclosed considering alternatives in which FCLP training would be conducted elsewhere. Such a narrow bracketing of alternatives violates NEPA.

Additionally, the graph titled "Previous Airfield Operations for Ault Field and OLF Coupeville" (1-6) indicates that in 1992, the Navy conducted over 50,000 FCLPs at Ault Field alone. No alternative in the DEIS proposes more than 43,900 total annual FCLPs (2-8), indicating that it is feasible and reasonable to conduct 100 percent of the total proposed FCLPs at Ault Field, even providing for other flight operations. Given that the Navy exclusively uses Outlying Landing Field (OLF) Coupeville for FCLPs, the Navy could conduct all the proposed FCLPs at Ault Field and end operations at OLF Coupeville, an alternative which would greatly reduce jet noise over and around the Ebey's Landing Reserve. However, no such alternative exists in the DEIS.

The Navy itself tacitly acknowledges the similarities between the three alternatives: for 12 of the 16 environmental resources evaluated in the DEIS, the Navy found no need to provide separate analyses of each alternative.

Lack of mitigating alternatives or measures

As noted in the Executive Summary, "This EIS does not identify any mitigation measures for the implementation of the action alternatives" (ES-11). However, CEQ Regulations for Implementing NEPA Section 1502.14 requires that agencies "Include appropriate mitigation measures not already included in the proposed action or alternatives." Therefore, the DEIS presented on the EA-18G Growler Airfield operations does not meet the full requirements of NEPA.

Improper scope of analysis

To determine the scope of environmental impact statements, the Navy is required to consider "connected actions," "cumulative actions," and "similar actions." However, in addition to an incomplete analysis of cumulative impacts, the Navy failed to consider connected actions and similar actions to the proposed actions of the DEIS. At the very least, the Navy's Pacific Northwest Electronic Warfare Range is a connected action as it is an "independent parts of a larger action and depends on the larger action for their justification" (40 C.F.R. § 1508.25(a)(1)). Indeed, this narrow NEPA analysis appears to be simply a continuation of the Navy's repeated efforts to improperly segment its NEPA analysis regarding its naval aircraft training activities on Whidbey Island and over the Olympic Peninsula and other nearby areas in the Pacific Northwest. All these various activities are clearly connected, cumulative or related actions and they should have been considered together in a comprehensive, programmatic EIS. Instead the Navy has improperly and illegally split up its NEPA analysis into multiple EISs and EAs and released that analysis piecemeal to the public over many years. This makes public understanding of the actual impacts of the activities almost impossible and makes public participation extremely difficult.

Incomplete analysis of cumulative effects

The Navy's cumulative impacts analysis is woefully insufficient. For instance, the separation of this DEIS and the 2014 Environmental Assessment (EA) for the Pacific Northwest Electronic Warfare Range fails to address the cumulative effects of the proposed expansions of operations for NASWI. Alternatives 2 and 3 of this DEIS expand NASWI's expeditionary capabilities, which would result in increased Growler flights over Olympic to detect Mobile Electronic Warfare Training System

emitters within the Olympic Military Operations Areas (MOAs) on land adjacent to Olympic, as per the 2014 EA (5-8).

As such, the DEIS should examine the cumulative effects of the project over its entire range, including the affected areas on the Olympic Peninsula and in Olympic National Park. Instead, the DEIS limits its analysis of cumulative effects to "the land and population under the day-night average sound level (65 DNL) contour of the NAS Whidbey Island complex" (5-12). As a result, the DEIS eliminates far too many direct, indirect and cumulative effects to be considered a valid analysis. For example, the DEIS falsely concludes that "no significant impacts would occur to wilderness areas" (4-162) by unreasonably excluding Olympic National Park from its study area, 95 percent of which is federally designated wilderness. Further, the DEIS makes no mention of the possibility of future increases to Growler training.

Poor metrics and weak noise analysis

The DEIS heavily relies on a Day-Night Average Sound Level (DNL), a metric that is not adequate or realistic for intermittent, extreme noise. The use of DNL as a primary metric diminishes the true impact of the jet noise and low-frequency noise and vibration on Whidbey Island and the surrounding areas. Further, aircraft noise levels represented in this draft EIS are "generated by a computer model and not actual noise measurements at Ault Field or OLF Coupeville" (3-16). There is, however, substantial evidence that this modeling significantly underrepresents the actual noise of the EA-18G Growler Airfield operations. In summer of 2015, the NPS conducted 31 days of acoustic monitoring at the Reuble Farmstead and the Ferry House. This study showed damaging levels of real-time noise produced by the Growlers that, when compared to the Navy's modeled numbers, indicate that the DEIS's 65 DNL contour lines may not accurately represent the effects of Growler noise. For example, measurements from the NPS study indicate the maximum Sound Exposure Level (SEL) over Reuble Farmstead during the study period was 117.2 dB, whereas the Navy's modeling predicts a maximum SEL of only 112 dB in a similar area, Rhodedendron Park, for all three Alternatives (4-36, 4-65, 4-94).

The Navy's reliance on DNL is deeply flawed and ignores other important acoustic metrics. The DNL metric alone is not adequate to capture other characteristics of noise exposure and the impacts to park resources, values, and visitor experience. We call for the use of audibility-based and "time above" metrics to take into account the duration of aircraft noise events, the number of aircraft noise events, and sound level events. These metrics correlate better with flight operations than day-night average metrics, which obscure the dynamic range of acoustic events. The Navy should also include other metrics such as maximum A-weighted sound levels (Lmax), SEL, equivalent sound level (Leq), and number-of-events-above a specified sound level, as these metrics and analyses would better satisfy the requirements under NEPA to characterize impacts to the environment in terms of intensity and context, as per Regulations for Implementing NEPA Section 1508.27.

Inadequate consideration of NPS land, NPS employee and visitor health and safety, and visitor use and enjoyment

The DEIS provides Accident Potential Zones (APZs) that include significant portions of NPS land at the Reuble Farmstead of the Reserve. Current uses and future potential alternative uses for this property would not be compatible with Department of Defense (DoD) land use compatibility guidelines for APZs, thus creating a conflict of interest between the National Park Service and the Navy. The NPS mission includes preservation of natural soundscapes, as declared in NPS Director's Order #47. Extreme noise and vibration significantly impacts the landscapes of both the Reserve and Olympic by intermittently degrading the natural resources and park values of the area. Visitors come to national parks to see, hear and experience specific natural and cultural environments, not anthropogenic noise. According to a 1994 National Park Service report to Congress, an impressive 91

percent of visitors to national parks come to enjoy the natural soundscapes. The DEIS provides no suggested methods to mitigate or resolve these conflicts of interest.

Unsatisfactory public process

The Navy's choice to structure its public meetings in an open house format and to deny the public a chance for public testimony runs counter to NEPA's collaborative spirit and purpose. The Navy should further extend the comment period to incorporate meetings with public testimony into the extended timeline.

Omission of information about total count of Growler aircraft

A Selected Acquisition Report on EA-18G Growler Aircraft that the DoD released in March 2016 indicates that the DoD has placed orders for a total of 160 EA-18G Growlers (page 19, www.dod.mil/pubs/foi/Reading_Room/Selected_Acquisition_Reports/16-F-0402_DOC_51_EA-18G_DEC_2015_SAR.pdf). However, the DEIS reports that there will be either 117 or 118 Growlers at NASWI under each of the Alternatives (2-9). Given that NASWI is currently the sole proposed base for the Navy's Electronic Attack community, the Navy must clarify its intent for the additional Growler aircraft that the DoD ordered but that were not accounted for in the DEIS. The total order including the planned additions would nearly double the number of Growler jets based at NAS Whidbey Island, along with noise impacts and the amount of time during which jet aircraft are audible could be expected to increase in proportion.

Omission of intent to train on weekends

The DEIS does not discuss flying training missions on weekends, yet page 11 of the USFS Draft Permit says that the Navy may fly on weekends with advance permission, excepting the "opening day and associated opening weekend of Washington State's Big Game Hunting Season." Why does the DEIS not discuss Growler training on weekends, and why is there only an exception for big game hunting? Given that weekends are also a peak time for local economies and visitation to the Reserve and Olympic, omission of a discussion of weekend training invalidates the Navy's analysis of impact to economies and public lands. By calling out the desire to avoid interrupting Washington State's Big Game Hunting Season, the Navy is tacitly conceding that there are clear and demonstrable negative impacts from Growler noise—including potential harm to many kinds of outdoor activities that the DEIS fails to address.

Omitted discussion of perfluoroalkyl substances (PFAS)

On November 7, 2016, the Navy notified the owners of more than 100 private and public drinking wells that perfluoroalkyl substances (PFAS) found beneath OLF Coupeville may have spread beyond Navy property. The Navy uses firefighting foam containing PFAS, which are linked to kidney and testicular cancers, birth defects, damage to the immune system, heart and thyroid disease, and complications during pregnancy. The DEIS acknowledges that "Increased operations increase the potential for flight incidents" (4-115), indicating an increased potential need for firefighting chemicals. Even with this additional information and threat of toxicity to local residents, the DEIS does not address the implications this has for contamination of drinking water. Neither the word "perfluoroalkyl" nor "PFAS" is mentioned in the entire DEIS. The DEIS simply concludes without scientific evidence that "No significant impacts related to hazardous waste and materials would occur due to construction activities or from the addition and operation of additional Growler aircraft." The Navy's failure to fully disclose and analyze the impacts from increased use of these dangerous chemicals does not satisfy the requirements of NEPA.

Incomplete analysis of impacts to wildlife

The DEIS states that "terrestrial and marine wildlife in the study area are already exposed to a high level of long-term aircraft operations and other human-made disturbances and have presumably habituated" (4-222). However, the Navy does not make clear its baseline for determining such habituation; presumed habituation is an insufficient basis on which to determine No Significant Impact. The Navy should rely on independent studies and peer reviewed scientific analysis, rather than presumptions, to draw such conclusions. Further, by limiting the study area to Whidbey Island and excluding the areas within Olympic National Park, as discussed above, the DEIS lacks a true analysis of the impacts to wildlife. To provide an adequate analysis of the environmental impacts on wildlife, the DEIS must expand the study area to incorporate all affected areas, including federally designated wilderness and the region's more diverse wildlife habitat.

NPCA appreciates the opportunity to share our concerns. Thank you for considering these comments, and we look forward to reviewing the Final EIS.

Sincerely,

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Natural Resource Stewardship and Science

Ebey's Landing National Historical Reserve

Acoustical Monitoring Report

Natural Resource Report NPS/ELBA/NRR—2016/1299

ON THE COVER
Photograph of Ebey's Landing National Historical Reserve courtesy of NPS.

Ebey's Landing National Historical Reserve

Acoustical Monitoring Report

Natural Resource Report NPS/ELBA/NRR—2016/1299

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November 2016

U.S. Department of the Interior
National Park Service
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Fort Collins, Colorado

The National Park Service, Natural Resource Stewardship and Science office in Fort Collins, Colorado, publishes a range of reports that address natural resource topics. These reports are of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

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All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner.

Data in this report were collected and analyzed using methods based on established, peer-reviewed protocols and were analyzed and interpreted within the guidelines of the protocols.

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NPS 484/134126, November 2016

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Executive Summary

Ebey's Landing National Historical Reserve (EBLA) is located approximately five miles south of the Naval Air Station (NAS) Whidbey Island. The Department of the Navy (Navy) is proposing to increase the number of EA-18G Growlers (Growlers) stationed at NAS Whidbey Island (Revised Notice of Intent, 2014). The National Park Service and Navy met in March 2015 to discuss operations at Whidbey Island and potential impacts of Growler noise at the reserve. The NPS and Navy agreed that additional acoustic information, collected at the Reserve, would be beneficial for the NPS to adequately respond to the NEPA (National Environmental Policy Act) document being prepared by the Navy. In July 2015, NPS started acoustic data collection.

Natural sounds are integral to ecosystem function and are one of the many resources and values that NPS managers are responsible for preserving and restoring. NPS evaluates federal actions that may impact the human and natural environment of units within the national park system. The acoustic environment, like air, water or wildlife, is a valuable resource that can be substantially degraded by inappropriate sound levels and frequencies. Intrusive sounds (noise) are of concern to NPS managers because they can impede the ability to accomplish the NPS mission of resource protection and public enjoyment. Anthropogenic noise may also disrupt ecosystem processes by interfering with predator prey relationships and the ability of wildlife to communicate, establish territory, reproduce, support and protect offspring (Siemers and Schaub, 2011; Schroeder et al., 2012; McClure et al., 2013). People visit national parks to see, hear and experience myriad phenomena associated with specific natural and cultural environments. Yet, in many cases, those environments are being increasingly impacted by anthropogenic noise altering their experience (Lynch, Joyce, and Fristrup, 2011).

Two acoustic monitoring systems were set up and recorded data for 31 days on NPS property in the Reserve. The systems were deployed near the Reuble Farmstead (EBLA001) and adjacent to Ebey's Landing at the Ferry House (EBLA002). These systems collected continuous audio and sound pressure level (SPL) data for 731 hours and 741 hours respectively. A total of 1,853 Growler overflight events were identified during the measurement period. A single deployment of a Growler may have resulted in multiple events depending on the flight path.

Growlers conduct Field Carrier Landing Practice (FCLP) at Outlying Landing Field (OLF) Coupeville, an airstrip that is partially within and partially abutting the Reserve. EBLA001 was selected because it is directly under the low elevation flight path for operations at OLF Coupeville. EBLA002 was selected because it is adjacent to Ebey's Landing, Ebey's Prairie, and the historic Ferry House. These features are fundamental cultural resources for the Reserve, and a focal point for visitor use and enjoyment. EBLA002 is farther away from the OLF Coupeville, but is close enough to pick up aircraft using this runway and will likely pick up more aircraft flying to Ault Field than EBLA001. EBLA002 is under or near many of the flight paths identified in the Air Installation Compatible Use Zone (AICUZ) Update for Naval Air Station Whidbey Island's Ault Field and Outlying Landing Field Coupeville, Washington (The Onyx Group, 2005). EBLA002 had a higher overall, daytime and nighttime existing ambient SPL (L_{50}) than Reuble Farmstead (EBLA001) and more aircraft events. Extremely loud acoustic events (measured as high as 113 dBA) from military

aircraft were recorded at EBLA001. EBLA001 had louder but less frequent events and a higher LAeq (equivalent continuous sound level) than EBLA002

This report summarizes data on all commercial and military jet aircraft events recorded during the monitoring period. The analysis does not provide comprehensive information on natural sound sources or other notable anthropogenic sounds, such as vehicles and boats. Sound pressure level measurements collected at the Reserve produced spectrograms with unique sound signatures used to differentiate between military aircraft and commercial aircraft. The metrics presented in this report are calculated from sound pressure level data and audio recorded at the site. The total number of aircraft events heard at each site is shown in Table 1. An aircraft event, in this case, represents an acoustic event with a beginning and end point and a peak between, similar to a Gaussian curve.

Table 1. The number of aircraft events for each site and the total time that military aircraft were audible during the 31-day study period.

Sites	Locations	Commercial Aircraft Events	Military Aircraft Events	Total time audible for military aircraft (hh:mm:ss)
EBLA001	Reuble Farmstead	571	417	10:25:23
EBLA002	Ferry House	407	1436	28:55:53

In determining the current conditions of an acoustic environment, it is informative to examine how often SPLs exceed certain levels. Table 2 summarizes SPL levels that relate to human health and speech. These values are relevant to various aspects of the visitor experience including camping in front-country and backcountry sites, communication between Reserve staff and visitors, and informal communication. Additionally, human responses can often serve as a proxy for potential impacts to other vertebrates because humans have hearing that is more sensitive at low frequencies than many species (Dooling and Popper, 2007, Fay, 1988).

Table 3 reports the percent of time that measured levels were above four key levels during the (daytime and nighttime) monitoring period. The top level in each split-cell focuses on frequencies affected by transportation noise (20-1250 Hz), including aircraft, whereas the lower levels represent the conventional full frequency range (12.5-20,000 Hz). Recent studies suggest that sound events as low as 35 dBA can have adverse effects on blood pressure while sleeping (Haralabidis, 2008). The second level addresses the World Health Organization’s recommendations that noise levels inside bedrooms remain below 45 dBA (Berglund et al., 1999). The third level, 52 dBA, refers to the Environmental Protection Agency’s (EPA) speech interference level for speaking in a raised voice to an audience at 10 meters (EPA 1974). This level addresses the effects of sound on interpretive presentations in park units. The next level, 60 dBA, provides a basis for estimating impacts on average voice communications at 1 meter. Hikers or other visitors viewing scenic areas in the Reserve would likely be conducting such conversations. The 24hr LAeq was 68.9 at EBLA001 and

48.0 at EBLA002. The highest SPL of 113 dBA was recorded at EBLA001and the highest SEL of 117.2 dBA was calculated at EBLA001.

Table 2. Effects at discrete acoustic levels.

SPL (dBA)	Relevance
35	Blood pressure and heart rate increase in sleeping humans (Haralabidis et al., 2008)[1] Desired background sound level in classrooms (ANSI S12.60-2002)
45	World Health Organization's recommendation for maximum noise levels inside bedrooms (Berglund, Lindvall, and Schwela, 1999)
52	Speech interference for interpretive programs (U.S. Environmental Protection Agency, 1974)
60	Speech interruption for normal conversation (U.S. Environmental Protection Agency, 1974)

[1] The authors of Haralabidis use both dB and dBA in this paper and LAeq (an A-weighted Measurement), since A weighting is the industry standard we assumed their decibel measurements are A-weighted for the referenced data.

Table 3. Percent time above sound pressure levels from the monitoring period represented in a truncated (T) frequency range and the full measured frequency range.

Site	Frequency (Hz)	% Time above sound level: 07:00-19:00				% Time above sound level: 19:00-07:00			
		35dBA	45dBA	52dBA	60dBA	35dBA	45dBA	52dBA	60dBA
EBLA001	20-1250 (T)	53.79	8.26	1.85	0.37	36.87	3.85	0.71	0.07
	12.5-20,000	73.96	12.2	2.57	0.43	57.32	8.96	1.83	0.13
EBLA002	20-1250 (T)	75.51	7.85	1.98	0.38	62.11	2.69	0.32	0.03
	12.5-20,000	90.8	17.99	4.00	0.55	77.52	11.45	2.43	0.34

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Introduction

Ebey's Landing National Historical Reserve is located approximately five miles south of the NAS Whidbey Island. The Reserve is jointly managed by the NPS in partnership with Island County, the Town of Coupeville, and Washington State Parks. Most of the land within the Reserve (85%) is privately owned and includes residential and commercial property.

The Navy is transitioning from EA-6B Prowler fighter jets to EA-18G Growlers and is preparing an Environmental Impact Statement in accordance with the National Environmental Policy Act (NEPA) to analyze the impacts associated with the proposed addition of up to 36 Growlers at NAS Whidbey Island (Revised Notice of Intent, 2014). Past research has shown an increase of low frequency noise below 80 Hz from individual Growler flyovers and comparable noise impacts at higher frequencies to its predecessor, the Prowler (Kester and Czech, 2012). The National Park Service did not have adequate information to respond to the Navy's NEPA analysis and met with the Navy in March 2015 and discussed the need to collect ambient baseline data at the Reserve.

This report presents acoustic data and information collected by the NPS Natural Sounds and Night Skies Division (NSNSD) in July-August 2015. Ambient sound levels and noise from Growlers that frequently use the area, especially those using Outlying Landing Field Coupeville for FCLP were measured.

The NPS Visitor

A 1998 survey of the American public revealed that 72% of respondents thought providing opportunities to experience natural quiet and the sounds of nature were a very important reason for having national parks, while another 23% thought that it was somewhat important (Haas & Wakefield, 1998). In another survey specific to park visitors, 91% of respondents considered enjoyment of natural quiet and the sounds of nature as compelling reasons for visiting national parks (McDonald et al., 1995). Acoustical monitoring provides a scientific basis for assessing the status of acoustic resources, identifying trends in resource conditions, quantifying impacts from other actions, assessing consistency with park management objectives, and informing management decisions regarding desired future conditions.

Soundscape Planning Authorities

The National Park Service Organic Act of 1916 states that the purpose of national parks is "… to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." The enabling legislation for the Reserve provides the additional mission of "preserving and protecting a rural community" and mandates that all NPS administered land within the Reserve shall be managed in accordance with the NPS' Organic Act (McKinley, 1993). In addition the Redwoods Act of 1978 affirmed that, "the protection, management, and administration of these areas shall be conducted in light of the high value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress."

Direction for management of natural soundscapes[1] comes from NPS 2006 Management Policy 4.9:

> The Service will restore to the natural condition wherever possible those park soundscapes that have become degraded by unnatural sounds (noise), and will protect natural soundscapes from unacceptable impacts. Using appropriate management planning, superintendents will identify what levels and types of unnatural sound constitute acceptable impacts on park natural soundscapes. The frequencies, magnitudes, and durations of acceptable levels of unnatural sound will vary throughout a park, being generally greater in developed areas. In and adjacent to parks, the Service will monitor human activities that generate noise that adversely affects park soundscapes [acoustic resources], including noise caused by mechanical or electronic devices. The Service will take action to prevent or minimize all noise that through frequency, magnitude, or duration adversely affects the natural soundscape [acoustic resource] or other park resources or values, or that exceeds levels that have been identified through monitoring as being acceptable to or appropriate for visitor uses at the sites being monitored (NPS, 2006a).

[1] The 2006 Management Policy 4.9 and related documents refer to “soundscapes” instead of “acoustic resources.” When quoting from this authority, it is advisable to note that the term often refers to resources rather than visitor perceptions.

Study Area

Ebey's Landing National Historical Reserve is located in Washington State on Whidbey Island in north central Puget Sound (Figure 1). In 1978, Congress established the reserve in order to "preserve and protect a rural community which provides an unbroken historical record from nineteenth century exploration and settlement in [the] Puget Sound to the present time." The Reserve commemorates four historical eras: the first explorations of the Puget Sound by Captain George Vancouver in 1792; the settlement of Whidbey Island by Colonel Isaac Neff Ebey, a figure important in the development of Washington Territory; the rapid settlement of Whidbey Island in and after the years of the Donation Land Claim Act (1850-1855); and the growth since 1883 of the historic town of Coupeville (McKinley, 1993). NAS Whidbey Island is located approximately five miles north of the boundary of the Reserve. NAS Whidbey Island has evolved into the Navy's training center for electronic attack, patrol and reconnaissance squadrons. OLF Coupeville, located just south of Ault Field Airfield (Ault Field), is used for FCLP and other operations including helicopter and parachute operations (The Onyx Group, 2005).

The acoustic monitoring stations were set up to monitor acoustic conditions and measure Growler noise from OLF Coupeville (Table 4). In addition to OLF Coupeville, Ault Field is nearby and more heavily used by the military. There is also a less frequently used Seaplane Base (The Onyx Group, 2005). OLF Coupeville is partially within, and immediately adjacent to, the Reserve. Typical FCLP flight paths at OLF Coupeville cross over the Reserve (Figure 2). Ault Field is more heavily used and has an array of flight tracks over the Reserve but the low tactical air navigation (TACAN) flight paths departing from Ault Field in Figure 3 have the potential to produce some of the highest acoustic impacts, aside from FCLP, due to the low altitude of this type of departure. There are approximately eight departure flight paths and eight arrival flight paths that take aircraft directly above the park boundary. There is also an Interfacility Flight Track between Ault Field and OLF Coupeville that uses both facilities (The Onyx Group, 2005).

Table 4. Locations of recording equipment in the Reserve (Copass, 2016).

Site	Location	Dates	Vegetation	Elevation	Latitude	Longitude
EBLA001	Reuble Farmstead	6/19/2015-7/21/2015	Agricultural Field	19 m	48.1893	-122.6664
EBLA002	Ferry House	6/19/2015-7/21/2015	Agricultural Field and Ruderal Shrubland	15 m	48.19182	-122.7036

The Reuble Farmstead site, EBLA001, was set up in an open field in the middle of the Reserve towards the south. The Reuble farmstead is used as the base of operations for the NPS, and includes offices, a conference room, transient quarters, and workshops that support the NPS' mission. The Ferry House site, EBLA002, was placed further west of Reuble Farmstead closer to Ebey's Landing, Ebey's Prairie, and the iconic Ferry House. This popular area is a fundamental resource for the Reserve and a focal point for visitors in the Reserve. EBLA002 was surrounded by open fields on one side and shrubby vegetation on the other side. Refer to Appendix B for pictures of the sites.

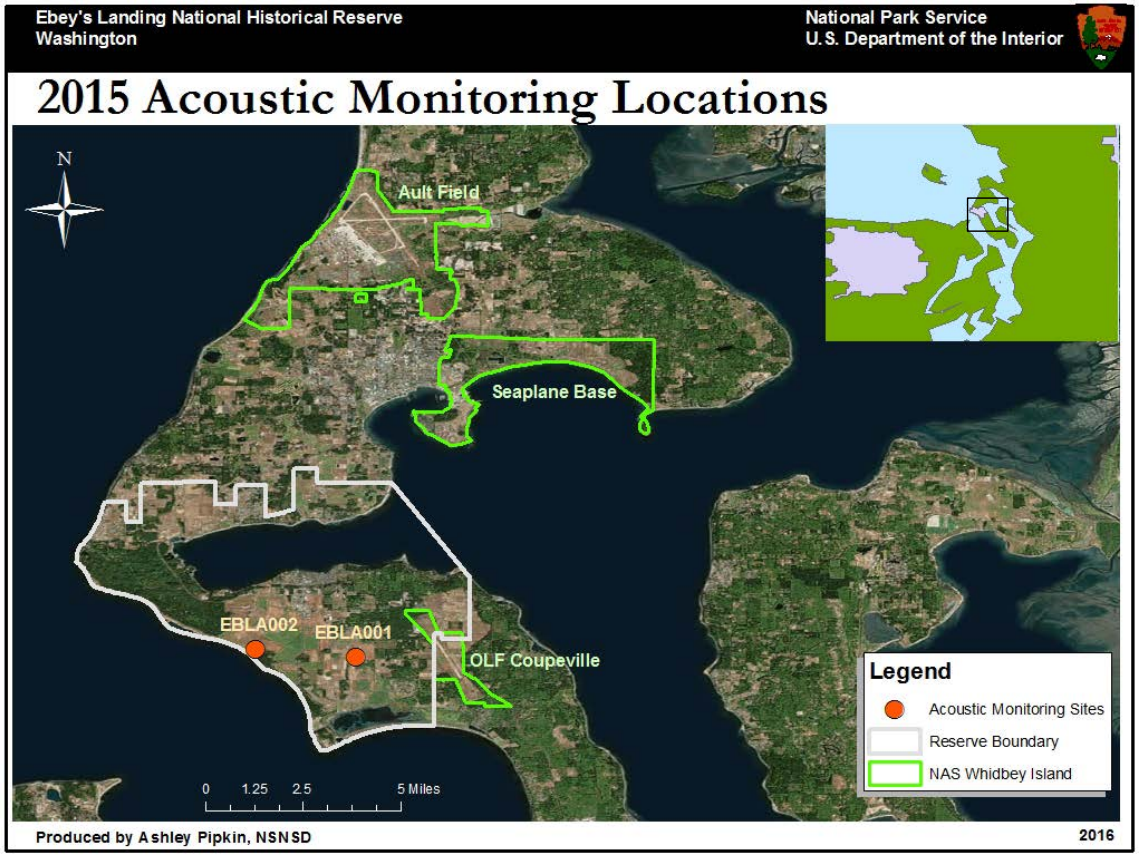

Figure 1. Location of Acoustic Monitoring Stations, EBLA001 and EBLA002, within Ebey's Landing National Historical Reserve.

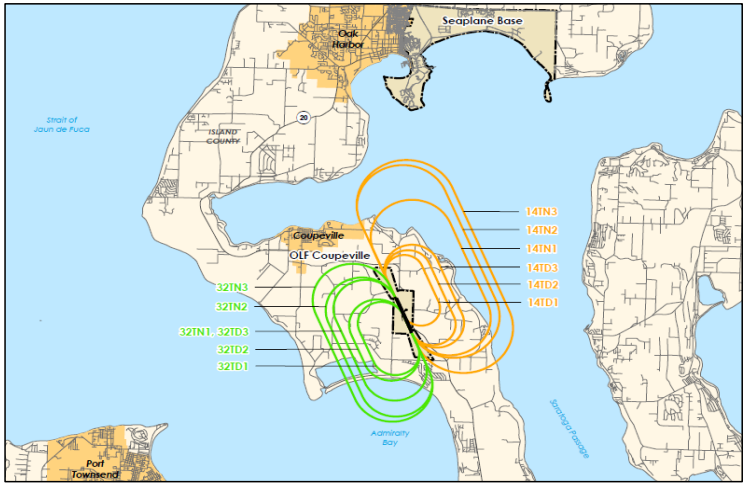

Figure 2. Field carrier landing practice Flight Tracks at NAS Whidbey Island's OLF Coupeville (The Onyx Group, 2005).

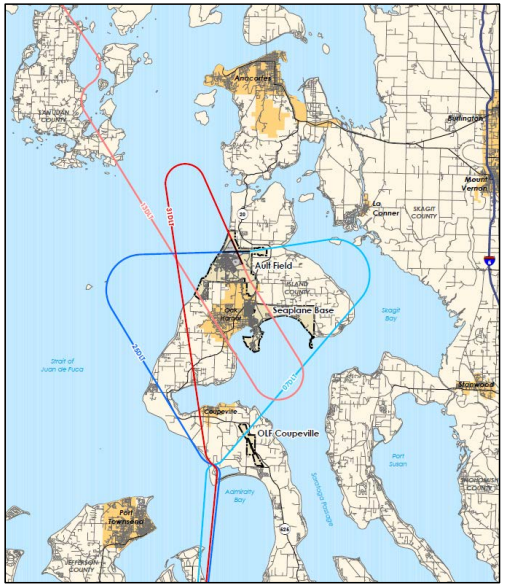

Figure 3. Low-TACAN Departure Flight Tracks for NAS Whidbey Island's Ault Field (The Onyx Group, 2005).

Methods

Automatic Monitoring

Larson Davis 831 sound level meters (SLM) were employed over the monitoring period at each of the EBLA sites. The Larson Davis SLM is a hardware-based, real-time analyzer that constantly records one second sound pressure level and 1/3 octave band data. These Larson Davis instruments met American National Standards Institute (ANSI) Type 1 standards. The sound level meters provided the information needed to calculate metrics described below in the "Calculation of Metrics" section.

The sampling stations consisted of:

- Microphone with environmental shroud
- Preamplifier
- 3.2 V LiFe rechargeable battery packs
- Anemometer (wind speed and direction)
- Temperature and humidity probe
- MP3 recorder

The sampling stations collected:

- SPL data in the form of A-weighted decibel readings (dBA) every second
- Continuous digital audio recordings
- One third octave band data every second ranging from 12.5 Hz – 20,000 Hz
- Continuous meteorological data including wind speed, direction, temperature, and relative humidity

Calculation of Metrics

The status of the acoustical environment can be characterized by spectral measurements, durations, and overall sound levels (intensities). The NSNSD uses descriptive figures and metrics to interpret these characteristics. A fundamental descriptor is existing ambient (L_{50}) sound levels. Existing ambient or L_{50} is an example of an exceedance level, where an L_x level refers to the SPLs that are exceeded x% of the time. The L_{50} represents the median sound pressure level, and is comprised of spectra (in dB) drawn from a full dataset (removing data with wind speed > 5m/s to eliminate error from microphone distortion.). Another example, the L_{90}, represents the sound pressure level that is exceeded 90% of the time, therefore, only 10% of the sound levels that occur are below the L_{90}. LAeq (A-weighted equivalent continuous sound level) is another important metric that shows an average SPL over the monitoring period. Day-Night Level (L_{dn}) is also provided in this report, sometimes referred to as DNL. This metric was calculated from hourly LAeq of the monitoring period with the hours from 22:00 to 7:00 increased by 10 dB.

The Department of Defense has found another metric useful to supplement DNL analysis for military aircraft. A useful way to describe aircraft noise is to provide the total number of noise events that

exceed a selected Maximum A-weighted Sound Pressure Level (LAmax) (Department of Defense, 2009). NPS chose 70 dBA LAmax because this level is likely to interfere with conversation among park visitors and employees including interpretive talks.

Off-Site Listening/Analysis

Auditory and visual analysis was used to calculate the audibility of sound sources at the Reserve. Trained technicians at Colorado State University analyzed 31 days of data collected from the sound pressure level meter and MP3 recorder deployed at each site. From the SPL data, spectrograms were created with the accompanying recorded audio (Figures 4, 5, 6, and 7). Spectrograms are plots that display sound level as a function of time and frequency. Since aircraft have a recognizable sound signature, they are visually identifiable on spectrograms. Individual events can be isolated and analyzed. For every noise event the user is able to record beginning and end times, frequencies spanned, maximum sound pressure level, and sound exposure level (SEL). This dataset also included continuous audio that can be played for events with questionable sound signatures. This method uses a platform created for sound pressure level annotation referred to as SPLAT by NSNSD. Bose Quiet Comfort Noise Canceling headphones were used for off-site audio playback to minimize limitations imposed by the office acoustic environment.

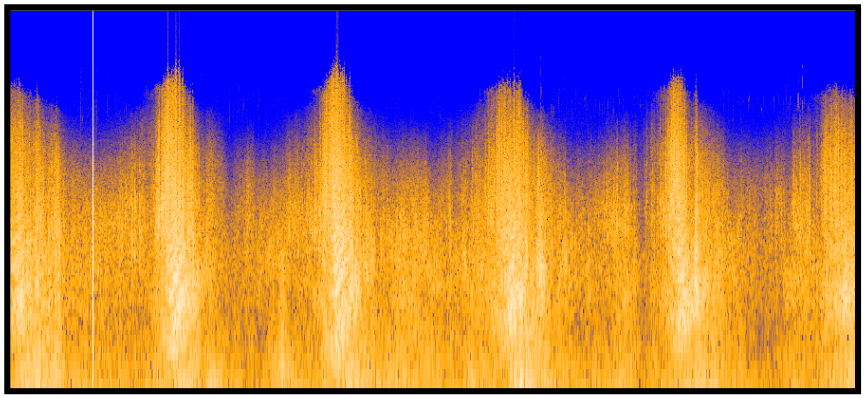

Figure 4. This spectrogram sample is taken from EBLA001 from 14:19:21 to 14:24:42 on 06/29/2015 and shows the acoustic signature of military aircraft.

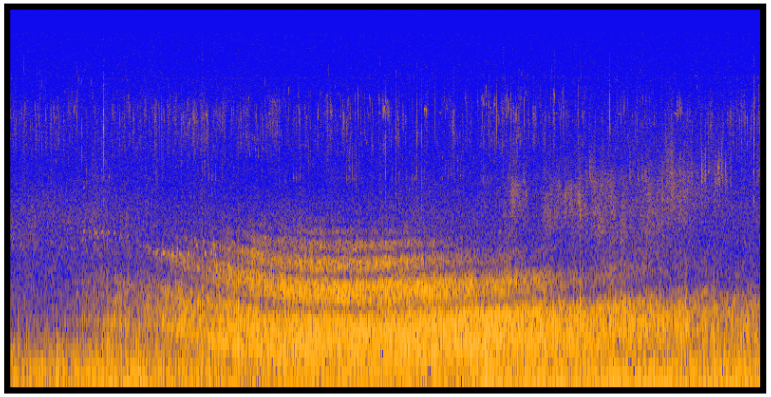

Figure 5. This spectrogram sample from EBLA001 at 8:08:21 to 8:10:32 on 06/29/205 and shows the acoustic signature from a commercial jet. The irregular high frequency notes near the top of the spectrogram are from birds.

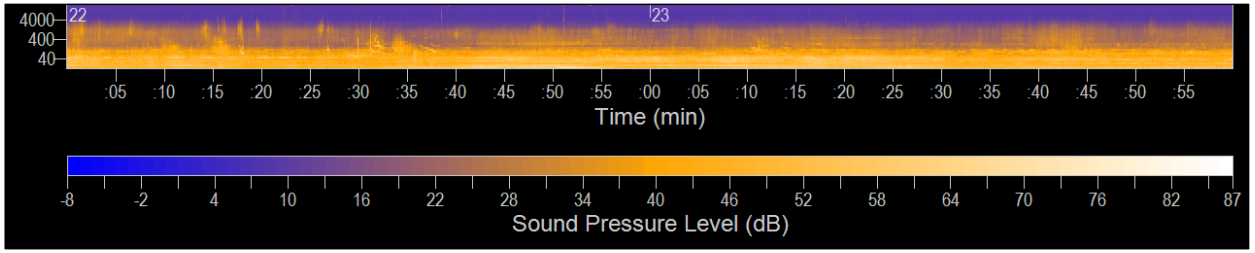

Figure 6. A spectrogram from EBLA002 collected on 06/27/2015 representing two hours, 22:00 and 23:00. This spectrogram contains two overflights starting at 22:14 and 22:31 that were categorized as commercial overflights.

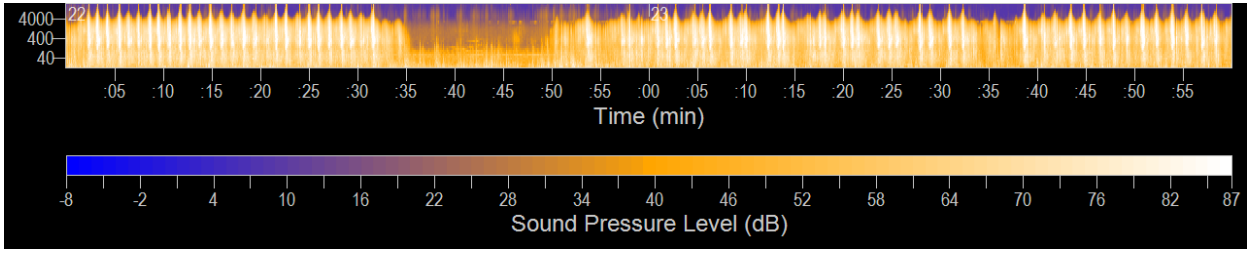

Figure 7. A spectrogram from EBLA001 collected on 07/06/2015 representing two hours, 22:00 and 23:00. This spectrogram shows 59 events from military aircraft during the two-hour period.

Results

At each site, sound pressure level measurements were taken, along with digital audio recordings and meteorological data. The equipment makes 33 SPL measurements each second for a set of frequency bands that span the range of human hearing (12.5 – 20,000 Hz). These 33 measurements approximate the capacity of human listeners to independently sense signals in different parts of the audible spectrum. The SPL is measured in decibels (dB), a logarithmic scale where 0 dB represents the threshold of human hearing at 1 kHz. Microphone measurements were adjusted according to a weighted scale (A-weighting) such that they resemble the response of the human ear (Harris, 1998).

The logarithmic dB scale can be difficult to interpret, and the functional effect of a seemingly small change in SPL can be greater than anticipated. When noise interferes with hearing natural sounds, the noise *masks* the natural sounds, and this affects the extent of the listening area. For example, if the natural ambient SPL is 30 dB, and transportation noise raises the ambient to 33 dB (a 3 dB increase), the listening area for humans (and many birds and mammals) is reduced by 50%. Increasing the ambient SPL an additional 3 dB (to 36 dB) would reduce the listening area by half again, to 25% of the initial area. Chronic noise exposure resulting in reduced listening area may interfere with predator prey relationships and the ability of wildlife to communicate, forage, establish territory, and reproduce (Barber, 2010). Note, however, that changes in SPL do not proportionately translate to changes in perceived loudness. The rate of change of loudness is complex and dependent on the stimulus itself and other environmental factors (e.g., SPL, frequency, bandwidth, duration, background). Table 5 presents park sound sources and other common sound sources with their corresponding A-weighted decibel levels (dBA).

Table 5. Sound pressure level examples.

Park Sound Sources	Common Sound Sources	dBA
Volcano crater (Haleakala National Park)	Human breathing at 3m	10
Leaves rustling (Canyonlands National Park)	Whispering	20
Crickets at 5m (Zion National Park)	Residential area at night	40
Conversation at 5m (Whitman Mission National Historic Site)	Busy restaurant	60
Snowcoach at 30m (Yellowstone National Park)	Curbside of busy street	80
Thunder (Arches National Park)	Jackhammer at 2m	100
Military jet at 100m Above Ground Level (Yukon-Charley Rivers National Preserve)	Train horn at 1m	120

The Time Above metric indicates the amount of time that the sound level exceeds specified decibel levels. In determining the current conditions of an acoustical environment, the NPS examines how often sound pressure levels exceed certain decibel levels that relate to human health and speech. The NPS uses these levels for making comparisons, but they should not be construed as thresholds of impact. Table 6 summarizes sound levels that relate to human health and speech. The first decibel

level, 35 dBA, addresses the health effects of sleep interruption (Haralabidis, et al., 2008). The second level addresses the World Health Organization's recommendations that noise levels inside bedrooms remain below 45 dBA (Berglund, et al., 1999). The third level, 52 dBA, is based on the Environmental Protection Agency's speech interference threshold for speaking in a raised voice to an audience at 10 meters (Environmental Protection Agency, 1974). This level addresses the effects of sound on interpretive presentations in parks. The final level, 60 dBA, provides a basis for estimating impacts on normal voice communications at 1 m (3 ft). Hikers and visitors viewing scenic vistas in the park would likely be conducting such conversations. Human responses can serve as a proxy for potential impacts to other vertebrates because humans have hearing that is more sensitive at low frequencies than many species (Dooling and Popper, 2007, Fay, 1988).

Table 6. Effects at discrete acoustic levels.

SPL (dBA)	Relevance
35	Blood pressure and heart rate increase in sleeping humans (Haralabidis et al., 2008)[1] Desired background sound level in classrooms (ANSI S12.60-2002)
45	World Health Organization's recommendation for maximum noise levels inside bedrooms (Berglund, Lindvall, and Schwela, 1999)
52	Speech interference for interpretive programs (U.S. Environmental Protection Agency, 1974)
60	Speech interruption for normal conversation (U.S. Environmental Protection Agency, 1974)

[1] The authors of Haralabidis use both dB and dBA in this paper and LAeq (an A-weighted Measurement), since A weighting is the industry standard we assumed their decibel measurements are A-weighted for the referenced

By comparing the amount of time that sound levels are above certain specified levels, variations in levels can be observed over time (or between sites). Table 7 reports the percent of time that measured levels were above the specified levels in Table 6 for a given frequency range. The top level in each split-cell of Table 7 reports the *percent time above* for the 20 – 1,250 Hz range. It is useful to look at this low-frequency range because it includes transportation noise while excluding higher-frequency bird and insect sounds. Transportation is often a major contributor of low frequency sound, but the 20 – 1,250 Hz range does not correspond to a specific aircraft or type of transportation. Note that many non-natural sounds also occur in frequencies higher than this range. The bottom *percent time above* level in each split-cell is calculated from the full 12.5 – 20,000 Hz range.

Table 7. Percent time above sound levels, represented in a truncated (T) frequency range and the full measured frequency range, for daytime and nighttime during the monitoring period.

Site	Frequency (Hz)	% Time above sound level: 07:00-19:00				% Time above sound level: 19:00-07:00			
		35dBA	45dBA	52dBA	60dBA	35dBA	45dBA	52dBA	60dBA
EBLA001	20-1250 (T)	53.79	8.26	1.85	0.37	36.87	3.85	0.71	0.07
	12.5-20,000	73.96	12.2	2.57	0.43	57.32	8.96	1.83	0.13
EBLA002	20-1250 (T)	75.51	7.85	1.98	0.38	62.11	2.69	0.32	0.03
	12.5-20,000	90.8	17.99	4.00	0.55	77.52	11.45	2.43	0.34

Exceedance levels (L_x) represent the SPL exceeded **x** percent of time during the given measurement period. For example, L_{90} is the dB level that has been exceeded 90% of the time, and only the quietest 10% of the samples can be found below this point. On the other hand, the L_{10} is the dB level that has been exceeded 10% of the time, and 90% of the measurements are quieter than the L_{10}. Table 8 reports the L_{90}, L_{50}, and L_{10} levels for both sites. For each split-cell in Table 8, the top level reports the L_x for the 20 – 1,250 Hz subset of the frequency range, and the bottom L_x level is calculated from the 12.5 – 20,000 Hz spectrum.

Table 8. Exceedance levels for existing conditions in EBLA, for daytime and nighttime in a truncated (T) frequency range and the full measured frequency range, for daytime and nighttime during the monitoring period.

Site	Frequency (Hz)	Exceedance levels (dBA): 07:00-19:00			Exceedance levels (dBA): 19:00-07:00		
		L_{90}	L_{50}	L_{10}	L_{90}	L_{50}	L_{10}
EBLA001	20-1250 (T)	30.5	43.6	52.6	27.7	37.1	44.9
	12.5-20,000	32.9	45.6	54.5	30.5	41.1	48.3
EBLA002	20-1250 (T)	34.1	43.7	53.9	34.5	39.7	43.5
	12.5-20,000	35.5	47.4	56.2	35.7	43.4	48.0

The dB levels for 33 one-third octave band frequencies over the day and night periods are shown in Figures 8 and 9. High frequency natural sounds (such as a cricket chirping) and low frequency sounds (such as flowing water) often occur simultaneously, so the frequency spectrum is split into 33 smaller ranges, each encompassing one-third of an octave. For each one-third octave band, dB levels were recorded once per second for the duration of the monitoring period. Recording the sound intensity of each one-third octave band (combined with digital audio recordings) allows acoustic technicians to determine what types of sounds are contributing to the overall sound pressure level of a site. The gray shading of the graph represents sound levels outside of the typical range of human hearing. The exceedance levels (L_x) are also shown for each one-third octave band. The line in the middle represents $L_{50,}$ which measures the median over the 31-day monitoring period. This graph

represents the typical acoustic environment but does not provide information on the loudest (or quietest) events at a location. At the Reserve, since many military aircraft exceed L_{10} these figures do not represent this sound source but instead provide a broad picture of the acoustic environment.

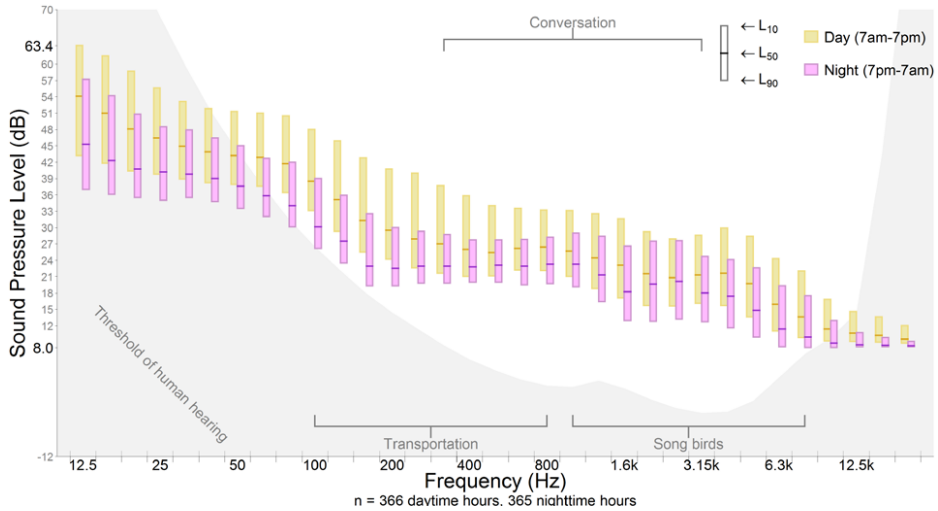

Figure 8. Day and night dB levels for 33 one-third octave bands at Reuble Farm (EBLA001) summer 2015.

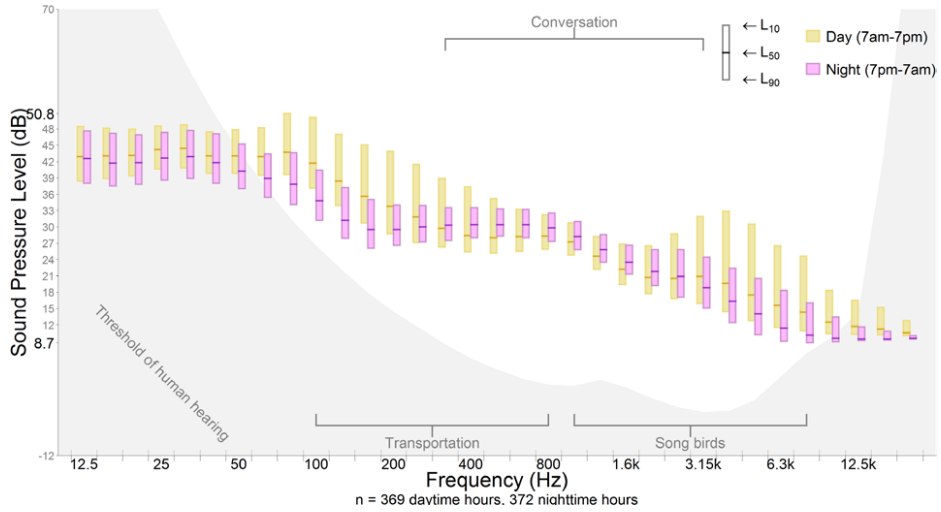

Figure 9. Day and night dB levels for 33 one-third octave bands at Ferry House (EBLA002) summer 2015

Two other important metrics provided in this report are LAeq and L_{dn}. LA_{eq} provides an average SPL for the monitoring period. L_{dn} is short for the day-night average sound levels and adds a 10 dB penalty for noise between 22:00 and 07:00. Table 9 displays the LAeq and L_{dn} for each site. These metrics and some additional indices are reported and there is an overview of their common applications in the Discussion section following these results.

Table 9. Common acoustic metrics referred to in acoustic literature and calculated from data collected during the monitoring period.

Site	$LAeq_{(12\ hr)}$ daytime	$LAeq_{(12\ hr)}$ nighttime	$LA_{EQ(24\ hr)}$	$L_{DN\ (31\ days)}$
EBLA001	70.9	65.3	68.9	73.6
EBLA002	47.8	48.1	48.0	54.7

The LAmax for all aircraft events recorded during the monitoring period are represented graphically in figures 10 and 11. Military aircraft are shown in red and aircraft that could not be classified as the military's or were positively identified as commercial jets are shown in blue. The existing ambient SPL (L_{50} or median) of each hour over the course of the entire monitoring period is shown with a dark gray square. The existing ambient is influenced by all the natural and non-natural noise sources from a particular period (an hour in this case) including aircraft events. A technique called alpha blending was used to plot LAmax of aircraft events over the course of the monitoring period by hour. Alpha blending is the process of graphing multiple translucent events that combine with each other to form increasingly opaque blocks representing increasing event intensity. The increased opacity of the square, means there was a higher occurrence of events for that hour (x-axis) that registered at that decibel level (y-axis) over the monitoring period.

The highest recorded SPL and SEL at EBLA001 were 113 and 117.2 and at EBLA002 were 85 and 96.6, respectively; both of these were from aircraft. Figures 10 and 11 show the LAmax recorded during an event, different from the SEL (sound exposure level) which is equivalent to the total sound energy of the event, which is calculated as opposed to, recorded. SEL is better when considering the intrusiveness of a single noise event. Where noise consists of discrete events the LAmax of the event will be a good indicator of disturbance to activities and sleep (Berglund, Lindvall, and Schwela, 1999). Nearly 100% of aircraft events exceed the hourly existing median ambient (L_{50}). Levels of 70 dBA LAmax were exceeded by 281 military aircraft events at EBLA001 and 125 military aircraft events at EBLA002. This can be visually observed in figures 10 and 11.

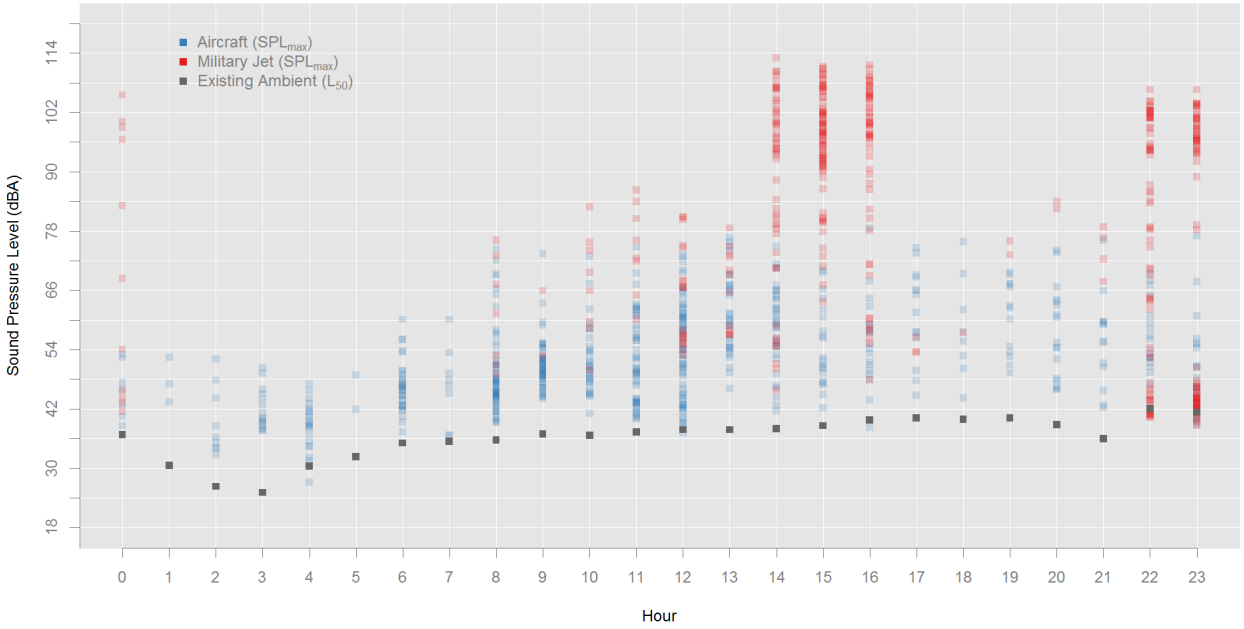

Figure 10. LAmax for all aircraft events recorded during the monitoring period at EBLA001, Reuble Farmstead, plotted hourly over the course of a 24-hour day.

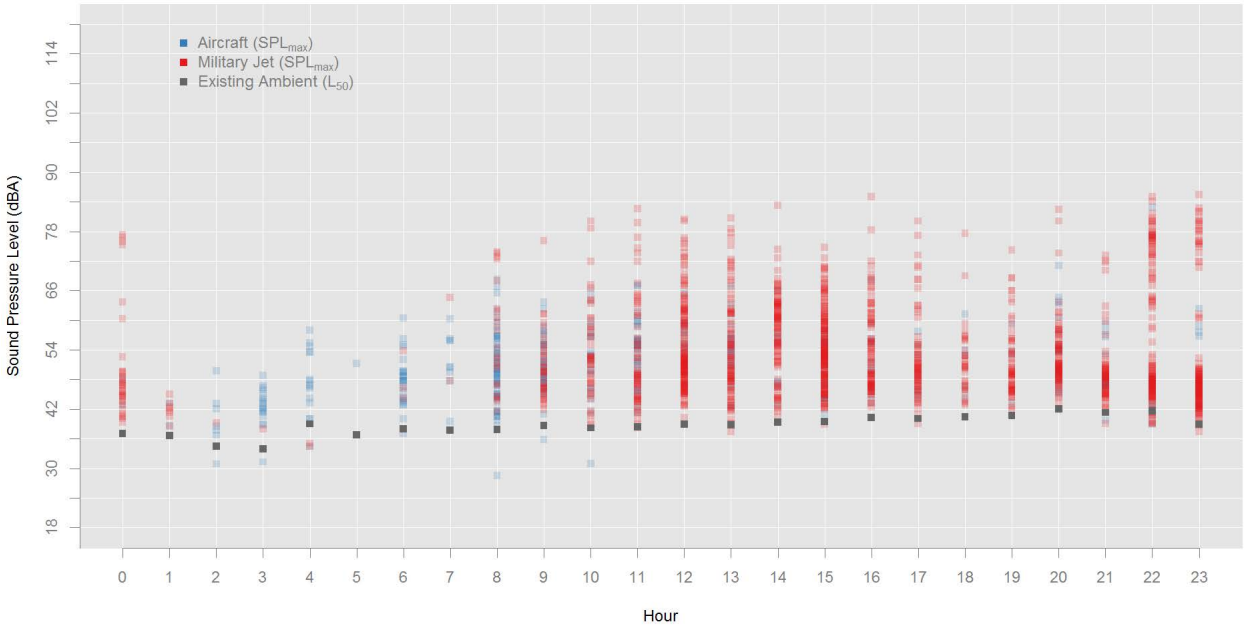

Figure 11. LAmax for all aircraft events recorded during the monitoring period at EBLA002, Ferry House, plotted hourly over the course of a 24-hour day.

Discussion

This report presents the data collected at the Reserve during a timeframe that Growlers were using OLF Coupeville. The results show that the loudest events were recorded at EBLA001 and are a result of this site's proximity to OLF Coupeville and the FCLP that occurred during the monitoring period. EBLA002 had more frequent military flyovers and a longer period of aircraft audibility than EBLA001. EBLA002 is near the flight path for Low-TACAN departure flight tracks on the most frequently used runway (Runway 25, used 49% of the time) at Ault Field (The Onyx Group, 2005).

This report includes metrics typically used by the NPS to describe the acoustic environment of units managed by the NPS. In addition to our commonly used suite of metrics and indices, this report also includes other frequently used metrics such as LAeq and L_{dn} (Day Night Average Sound Level or DNL). The Federal Aviation Administration and the Department of Defense use the DNL metric to identify noise zones as a land use-planning tool for local planning agencies (The Onyx Group, 2005). These metrics are used for a range of assessments including average sound levels in urban and non-urban populations, allowable noise exposure before hearing damage, speech interference and annoyance (EPA, 1974). The measured L_{dn} during the 31 day monitoring period at EBLA001 was 73.6 and at EBLA002 was 54.7 (Table 9).

Figures 8 and 9 illustrate a snapshot of the acoustic properties during the monitoring period from the two stations where data were collected at the Reserve. These graphs show the acoustic data parsed into 1/3 octave frequency bands; the low frequency bands have the most energy at both sites, likely due to aircraft events (Ketzer, 2012). The line located in each bar gives the existing ambient (L_{50}) SPL at each site. Figures 8 and 9 do not show the loudest (and quietest) 10% of sounds heard at each site. These figures also show that there is less variation in the medians recorded at EBLA002 than EBLA001 as a result of the more modest extremes at this site, confirmed in figures 10 and 11. Figures 10 and 11 show that many military aircraft would not be counted in the summary shown in Figures 8 and 9 because they were recorded at levels that exceeded 90% of the sound pressure levels recorded (Table 8).

Figure 8 shows that existing ambient (L_{50}) levels are higher at EBLA001 during the daytime compared to nighttime at frequency bands below 1,250 Hz. At EBLA001, there were 651 daytime overflights and 337 nighttime overflights over the 31 days. The daytime LAeq is also much higher during the day. This difference between the day and night in the low frequency bands may be a result of the higher occurrence of flights during the day as well as the extreme SPLs recorded from this period. At EBLA002 there is a daytime avian chorus (bird songs) shown by the tall yellow bars between 3,150Hz and 9,000 Hz. Like EBLA001, there are more daytime flights (1,132) than nighttime flights (711). The common daytime transportation low frequency bands show higher SPLs compared to nighttime levels less than 300 Hz and after that the L_{50} levels are variable until the frequency bands common among songbirds. Day and night LAeq at EBLA002 are very close with the nighttime LAeq being slightly higher. The overall L_{50} is also very similar especially in the truncated range but is slightly higher in the daytime in the full frequency spectrum.

At EBLA001, there is a peak occurrence of military overflights at 14:00 to 17:00 and 22:00 to1:00. The aircraft recorded during these hours were the loudest recorded for the entire monitoring period. The lowest military aircraft activity occurs between 1:00 and 8:00 in the morning, which may explain why the LAeq and L_{50} at this site are much lower at night. Nighttime natural and existing ambient is typically quieter than daytime ambient measurements in biologically abundant and human occupied areas.

EBLA002 has a higher event occurrence of military aircraft, and fewer occurrences during the early morning hours. With the exception of the hours between 2:00-7:00, military jets were recorded frequently throughout the day and night without a clear pattern. This site is close to an important riparian area and surrounded by shrubby vegetation, which may be why the dawn chorus is so apparent. Birds use the Reserve during breeding, nesting and migration. It is important to differentiate day and night noise levels due to increased sensitivity to noise during nighttime hours. The military defines acoustical daytime hours as, 07:00 to 22:00, and night time hours as, 22:00 to 07:00. Using the military's definition of day (15 hours) and night (9 hours), approximately 38% of military flights occurred during nighttime hours at EBLA001 and 24% at EBLA002. When the NPS definition of night is used (19:00-7:00), the percentages of nighttime flights increase to 40% at EBLA001 and 35% at EBLA002.

Figures 8 and 9 give a broader snapshot of the acoustic environment while Figures 10 and 11 take a closer look at acoustic energy of aircraft. Figures 10 and 11 show all aircraft events that occurred during the monitoring period at EBLA001 and EBLA002. According to figures 10 and 11, the quietest period of daylight hours at the Reserve is between 07:00 and 9:00 for both sites. The Reuble Farmstead area also experiences a quieter period between the hours of 17:00 and 21:00, a pattern that is not replicated at the Ferry House site.

Conclusion

This report provides current baseline ambient sound level metrics and data on military overflights at and near the Reserve. The data suggest that EBLA002 has an elevated level of anthropogenic noise from frequent aircraft using a myriad of flight paths, and while this is also partially true at EBLA001, Growler operations cause extremely loud events during training exercises at OLF Coupeville. . This data show that the ambient sound level at EBLA001 was elevated during use of the OLF by military aircraft.

EBLA002 had a higher occurrence of aircraft events but at lower sound levels than at EBLA001 overall. The presence of military aircraft flying over or near EBLA increases anthropogenic noise at the Reserve. The information in this report should be considered when evaluating impacts to the Reserve and its resources as defined by Federal laws, regulations, and executive orders, and according to policies established by the Director of the National Park Service.

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Appendix A: List of Acoustic Terms

Acoustic Environment- A combination of all the physical sound resources within a given area. This includes natural sounds and cultural sounds, and non-natural human-caused sounds. The acoustic environment of a park can be divided into two main categories: intrinsic and extrinsic.

Acoustic Resources- Includes both natural sounds like wind, water, & wildlife and cultural and historic sounds like tribal ceremonies, quiet reverence, and battle reenactments.

Amplitude- The relative strength of a sound wave, described in decibels (dB). Amplitude is related to what we commonly call loudness or volume.

Audibility- The ability of animals with normal hearing, including humans, to hear a given sound. It can vary depending upon the frequency content and amplitude of sound and by an individual animal's hearing ability.

Decibel (dB)- A unit of sound energy. Every 10 dB increase represents a tenfold increase in energy. Therefore, a 20 dB increase represents a hundredfold increase in energy. When sound levels are adjusted for human hearing they are expressed as dB(A).

Extrinsic Sound- Any sounds not forming an essential part of the park unit, or a sound originating from outside the park boundary. This could include voices, radio music, or jets flying thousands of feet above the park.

Frequency- Related to the pitch of a sound, it is defined as the number of times per second that the wave of sound repeats itself and is expressed in terms of hertz (Hz). Sound levels are often adjusted ("weighted") to match the hearing abilities of a given animal. In other words, humans and different species of animals are capable or hearing (or not hearing) at different frequencies. Humans with normal hearing can hear sounds between 20 Hz and 20,000 Hz, and as low as 0 dB at 1,000 Hz. Bats, on the other hand, can hear sounds between 20 Hz and 200,000 Hz.

Intrinsic Sound- Belongs to a park by the park's very nature, based on its purposes, values, and establishing legislation. Intrinsic sounds can include natural, cultural, and historic sounds that contribute to the acoustic environment of the park.

L50, L90- Metrics used to describe sound pressure levels (L), in decibels, exceeded 50 and 90 percent of the time, respectively. Put another way, half the time the measured levels of sound are greater than the L50 level, while 90 percent of the time the measured levels are higher than the L90 level.

Ldn- Day-Night Average Sound Level. Average equivalent sound level over a 24-hour period, with a 10-dB penalty added for sound levels between 10 p.m. and 7 a.m.

LAeq- The A-weighted energy equivalent sound level. The sound energy level averaged over the measurement period. For example $LAeq_{12}$ measures energy equivalent sound level over 12 hours.

Lnat (Natural Ambient Sound Level)- The natural sound conditions in parks that exist in the absence of any human-produced noise.

Maximum Sound Pressure Level (LAmax)- The highest recorded sound pressure level measured during a discrete event or period of time.

Noise Free Interval (NFI)- The length of the continuous period of time during which no human-caused sounds are audible.

Percent Time Above Natural Ambient- The amount of time that various sound sources are above the natural ambient sound pressure levels in a given area. It is most commonly used to measure the amount of time that human-caused sounds are above natural ambient levels. This measure is not specific to the hearing ability of a given animal, but a measure of when and how long human-caused sounds exceed natural ambient levels.

Percent Time Audible- The amount of time that various sound sources are audible to humans with normal hearing. A sound may be above natural ambient sound pressure levels, but still not audible. Similarly, some sounds that are below the natural ambient can be audible. Percent Time Audible is useful because of its simplicity. It is a measure that correlates well with visitor complaints of excessive noise and annoyance. Most noise sources are audible to humans at lower levels than virtually all wildlife species. Therefore, percent time audible is a protective proxy for wildlife. These data can be collected either by a trained observer (on-site listening) or by making high-quality digital recordings for later playback (off-site listening).

Sound Exposure Level (SEL)- The total sound energy of the actual sound during a specific time period. SEL is usually expressed using a time period of one second.

Sound Pressure- Minute change in atmospheric pressure due to passage of sound that can be detected by microphones.

Sound vs. Noise- The NSNSD differentiates between the use of sound and noise, since these definitions have been used inconsistently in the literature. Although sound is sometimes incorrectly used as a synonym for noise, it is in fact noise that is undesired or extraneous to an environment. Humans perceive sound as an auditory sensation created by pressure variations that move through a medium such as water or air and are measured in terms of amplitude and frequency (Harris, 1998; Templeton, 1997).

Soundscape- The human perception of the physical sound resource.

Appendix B: Site Photos

Figure 12. EBLA001 at Reuble Farm, this picture was taken facing north.

Figure 13. EBLA002 at Ferry House, picture facing south.

Appendix C: Modeled Ambient Sound Levels

NSNSD developed a geospatial model (Mennitt et al. 2014) that predicts measured ambient SPL using measurements made in hundreds of national park sites as well as 109 explanatory variables such as location, climate, land cover, hydrology, wind speed, and proximity to noise sources such as roads, railroads, and airports. The resulting model can predict sound levels anywhere in the contiguous U.S., and also estimate how much lower these sound levels would be in the absence of human activities. The model does not account for things like new roads or development in an area. This model would not accurately reflect proposed changes in Growler use. This predictive tool provides insight on what the natural acoustic conditions at this site would be without anthropogenic noise. Since natural ambient (L_{nat}) was not calculated from the acoustic data collected for these sites, the geospatial model is used to estimate the natural ambient. Table 10 provides us with information about the natural ambient SPL that were calculated at the sites using modeled data and comparing it to measurements collected in the park. The model has a median absolute deviation of approximately 3 dB. The modeled L_{50} and measured L_{50} for both sites are within 3 dB.

Table 10. Modeled data taken from a Geospatial Model of SPL at EBLA (Mennitt et al. 2014) along with actual measured SPL collected during the monitoring period.

Site	Modeled L50	Measured L50	Modeled Natural Ambient
EBLA001	38.8-40.1	45.6	33.7-34.4
EBLA002	35.8-37.2	47.4	33.7-34.4
Entire Park	38.8	NA	34.2

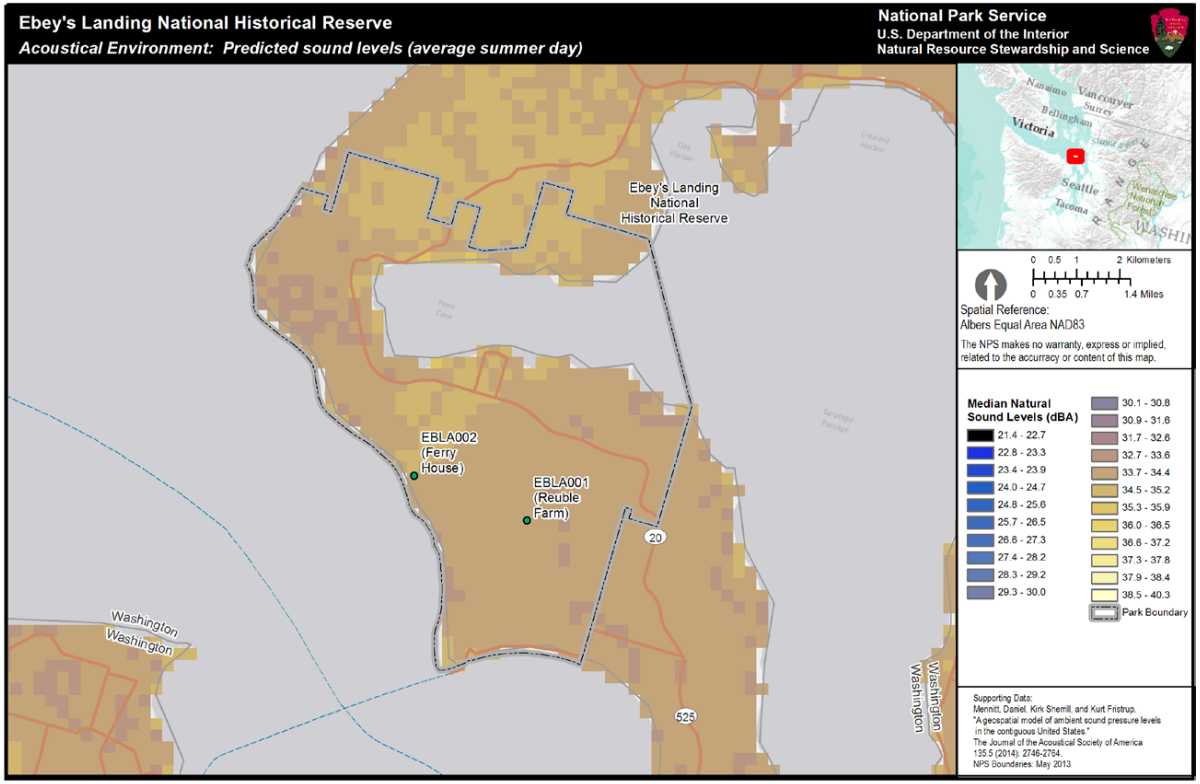

Figure 14. Map of modeled predicted sound levels (Mennitt et al. 2014) at the Reserve.

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

NPS 484/134126, September 2016

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
1201 Oakridge Drive, Suite 150
Fort Collins, CO 80525

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2016 National Park Service CENTENNIAL

EXPERIENCE YOUR AMERICA ™

Janet Marx
North Olympic Group, Sierra Club

Carlsborg, WA 98324

On behalf of the Sierra Club's North Olympic Group and its 1,000 members, we are commenting on this draft EIS that would expand existing EA-18G Growler operations at the NAS Whidbey Island by adding 35 or 36 aircraft to support expanded electronic warfare exercises on OLFC on Whidbey Island and in the San Juans, Puget Sound, Olympic Peninsula, and adjacent areas. While we support the need for adequate military training, we also support a fair and open public process that protects public health and the environment. Unfortunately, the Navy's draft EIS fails to do so as described below: The Draft EIS Improperly Segments the Navy's Expansion of Growler Activities: The Draft Environmental Impact Statement (EIS) is deficient in not addressing 40 additional Growlers that are in the process of delivery beyond the 35 or 36 identified in the Proposed Action. The Navy has, to date, piecemealed its aircraft training and testing activities affecting Whidbey Island, the San Juans, and the Olympic Peninsula into multiple separate actions: 1. 4 squadrons of P-8A Poseidon Multi-Mission Aircraft; 2. A 2005 EA (57 Growler jets); 2010 EIS (reaffirming the 57 Growlers that replaced Prowlers); 3. 2012 EA (26 Growlers including 5 from a reserve unit); 4. 2014 EA (Growler electronic warfare activity); 5. 2015 EIS discussing electronic warfare training and testing activity; 6. The current 2016-2017 DEIS (36 Growlers); 7. And, a seventh likely process, as confirmed by a Navy official at a recent open house, for 42 more jets to bring the Growler fleet total to 160. As a result, it has been impossible for the public to know just how many Growlers there would be, or what their impacts would be, or what limits, if any, the Navy intends to establish to protect human health and the environment. Furthermore, this piecemeal approach to public involvement violates NEPA as 40 C.F.R. § 1502.4 "…does not allow an approach that would permit dividing a project into multiple 'actions,' each of which individually has an insignificant environmental impact, but which collectively have a substantial impact." In public meetings, the Navy referred to these increases in Growler activities as "adjustments" to its mission, but "adjustments" to functionally and geographically related activities, each of which when taken individually might not rise to the level of "significance," are significant when taken together. This segmentation represents a significant but hidden erosion of environmental protection and public health. Citizens, elected officials, and tribes have reminded the Navy for years that its segmentation of impacts violates both the law and the public trust, but the Navy continues to ignore these concerns. The Draft EIS Fails to Consider All Impacts: The draft EIS only analyzes potential impacts for 35 or 36 of potentially 160 Growlers, and is further confined to evaluating impacts only to areas immediately surrounding the runways. However, jet noise, emissions and other impacts from Growler operations adversely affect a wide area including Olympic National Park, state parks, tribal and private lands as well as Puget Sound and endangered Orcas and other species. By failing to enlarge the scope of its analysis beyond Naval Air Station Whidbey Island, the DEIS also violates NEPA by not considering all the interdependent parts of a larger action: Growler operations cannot proceed without takeoffs and landings, regional overflights, broadly distributed noise impacts, etc. By failing to consider these additional impacts, the DEIS also fails to evaluate cumulative effects as required by NEPA. The

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Draft EIS Fails to Consider Reasonable Alternatives: The Navy has not made a good faith effort to explore other alternatives as NEPA requires in S40 CFR 1502.14 (a). All of the Navy's 'alternative' scenarios will increase noise, harm to health, and other adverse impacts. The Navy's "no action alternative" would continue Growler operations that currently expose people in homes, schools, parks and businesses to noise that exceeds community standards set by the State of Washington, the EPA, the Occupational and Health Administration (OSHA), and the World Health Organization. No genuine "no-action" alternative is proposed that would address these impacts. Furthermore, the draft EIS violates basic NEPA procedures as it appears to improperly reflect procurement and operational decisions already made by the Navy. Increased Air Emissions and Worsening Effects on Climate Change Not Adequately Addressed: Growler jets use an extraordinary amount of fuel--a single Growler jet's emissions dwarf what thousands of citizens seek to reduce voluntarily by choosing to use electric cars, add solar collectors to their homes, and conserve energy in other ways. In its continuing and planned expansion of the Growler fleet, the Navy has ignored the cumulative impact of Growler emissions, including their effects on climate change. The military is the world's largest single user of fossil fuels, and exhaust emissions beyond the narrowly defined affected areas near runways are not being analyzed and should be. The Navy Has Failed to Document that DOD-Owned Lands Are Unsuitable or Unavailable for Growler Operations: The DEIS did not comply with the National Environmental Policy Act (NEPA) by failing to examine non-Whidbey Island sites to conduct flight carrier land practice (FCLP). Instead, it continues to assume that an outdated and dangerously small World War II landing strip on Whidbey, the OLFC, can be used for an increasing number of Growler and other training flights. The two most dangerous aspects of flying are the approach, landing and takeoff. Because the OLFC is about 49,000 acres smaller and 3,000 feet short of the Growler standard for these maneuvers, it places nearby schools, hospitals, residences, a state ferry terminal and parks, and a state conference center at serious risk of accidents. This risk is greatly increased because FLCP maneuvers are, by their nature, conducted at low elevations where collision with birds is likely to occur, particularly since much of the surrounding area is a protected habitat for shore birds. The draft EIS, itself, acknowledges that one of the runways at OLFC has an "unacceptably steep angle of bank" and can only be used 30 percent of the time due to weather conditions. Yet knowing this, the Navy is significantly increasing the number of flights there and placing nearby communities at harm. Impact on Threaten Endangered Species Not Adequately Addressed: The Navy needs to provide a more detailed and specific response on whether and how the additional Growlers will affect endangered species, particularly Marbled Murrelets, given that the acknowledged lack of scientific information on noise impacts to this species affects the ability to determine harm and cumulative effects. This is particularly urgent in light of their precipitous decline and the December 2016 decision by the State of Washington to reclassify Marbled Murrelets from threatened to endangered. More generally, by failing to initiate consultation under Section 7 of the Endangered Species Act with the US Fish and Wildlife Service on the potential impacts from the significant increase in Growler flights, the DEIS fails to evaluate direct, indirect and cumulative impacts on threatened and endangered species. Inadequate Consideration of Public Health Impacts: Growler jets utilize the latest electronic warfare capabilities yet the risk of exposure to people and wildlife from downward-directed radiation is not considered. The only discussion we are aware of was a brief mention in a 2014 EA, in reference to radio transmitters on mobile emitter trucks and the stationary

transmitter at Pacific Beach on the Olympic Peninsula. In that document, the Navy referenced a paper and concluded that links from radiation exposure to leukemia were speculative, when in fact, that same paper stated unequivocally that there are direct links between radiation exposure and childhood leukemia. Despite this, any mention or discussion of risks from exposure to electromagnetic radiation from Navy jets is completely missing from all discussions of potential impacts. The annual Day-Night Noise Level (DNL) noise contours depicted in the DEIS are misleading for two reasons: (1) the Navy inappropriately uses a 365-day averaging rather busy-day averaging, and (2) the Navy represents as scientifically valid an outdated, misleading, and scientifically invalidated DNL threshold for high noise annoyance. Furthermore, modeled noise levels by the Navy have not been validated with on-site noise data nor has the Navy made any actual noise measurements in the affected communities. In addition, the NOISEMAP software used for computer modeling is outdated, and a report from a DOD commission concluded that noise measurements using this software may be legally indefensible. Additionally, the DEIS selectively cites and relies on out-of-date medical research findings on impacts of noise on human health that are at odds with the overwhelming body of contemporary research. Moreover, there are no alternatives proposed in this DEIS that would reduce noise. Therefore, it represents decisions already made. This violates NEPA §1506.1, which states, “…no action concerning the proposal shall be taken which would have an adverse environmental impact or limit the choice of reasonable alternatives.” Also, as mentioned earlier in this letter, by narrowly considering only takeoff and landing noise and exhaust emissions at the runways themselves, the DEIS violates the National Environmental Policy Act (NEPA) §1508.25 by failing to consider the wider area of functionally connected impacts caused by naval flight operations. The DEIS Fails to Consider Historic and Economic Impacts: The Navy has not responded to an August 2016 request for formal consultation under Section 106 of the National Historic Preservation Act, from the City of Port Townsend, in a letter also asking the Navy to expand its Area of Potential Effect (APE). The APE is so narrowly defined in this DEIS that the State Historic Preservation Officer (SHPO) wrote to the Navy in January 2017, confirming that not only would cultural and historic resources within the existing APE be adversely affected, but also recommended expanding the APE to include additional portions of Whidbey Island, Camano Island, Port Townsend, and the San Juan Islands, because the state is “…not convinced that the 65 dBA serves as the best or most appropriate measure for quantifying and assessing harmful levels of sound and vibrations from Growler activities.” The SHPO went on to say, “Our concern is based upon what appears to be an averaging of sound levels over long time periods that does not adequately capture the real time experience of brief but more numerous exposures to higher decibel levels, as well as the cumulative effect of these events.” Additionally, the addition of Growlers will have a deleterious effect on the economy of the region. The region is heavily dependent on recreation and tourism and Washington's overall economy is heavily dependent on tourism and outdoor recreation, accounting for: $22.5 billion annually, 227,000 direct jobs, and $l.6 billion in tax revenues. Accordingly, any expansion of the Growler fleet needs to address potential job loss, economic harm, and state revenue loss from decreased tourism and outdoor recreation. Conclusion: For all of the deficiencies, omissions, and failures to properly implement NEPA, as cited above, we are asking the Navy to issue a revised, second draft EIS with a new public comment period. We appreciate the opportunity to comment on this draft EIS. Sincerely, Janet Marx, Chair North Olympic Group, Sierra Club PO Box 714 Carlsborg, WA 98324

February 18, 2017

EA-18G EIS Project Manager
Naval Facilities Engineering Command (NAVFAC) Atlantic – Attn: Code EV21/SS
6506 Hampton Blvd.
Norfolk, VA 23508

Re: Draft EIS for EA-18G Growler airfield operations at Naval Air Station (NAS) Whidbey Island

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[1] Sierra Club policies require that all public agencies, including the Armed Services and the Department of Defense, "should strive to protect the integrity of human and natural communities (and that) military training and preparedness should be pursued in ways that avoid or minimize adverse effects."

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The Draft EIS Fails to Consider All Alternatives

The Navy has not made a good faith effort to explore other alternatives as NEPA requires in S40 CFR 1502.14 (a). All of the Navy's 'alternative' scenarios will increase noise, harm to health, and other adverse impacts. The Navy's "no action alternative" would continue Growler operations that currently expose people in homes, schools, parks and businesses to noise that exceeds community standards set by the State of Washington, the EPA, the Occupational and Health Administration (OSHA), and the World Health Organization. No genuine "no-action" alternative is proposed that would address these impacts. Furthermore, the draft EIS violates basic NEPA procedures as it appears to improperly reflect procurement and operational decisions already made by the Navy.

Increased Air Emissions and Worsening Effects on Climate Change Not Adequately Addressed

Growler jets use an extraordinary amount of fuel--a single Growler jet's emissions dwarf what thousands of citizens seek to reduce voluntarily by choosing to use electric cars, add solar collectors to their homes, and conserve energy in other ways. In its continuing and planned expansion of the Growler fleet, the Navy has ignored the cumulative impact of Growler emissions, including their effects on climate change. The military is the world's largest single user of fossil fuels, and exhaust emissions beyond the narrowly defined affected areas near runways are not being analyzed and should be.

The Navy Has Failed to Document that DOD-Owned Lands Are Unsuitable or Unavailable for Growler Operations

The DEIS did not comply with the National Environmental Policy Act (NEPA) by failing to examine non-Whidbey Island sites to conduct flight carrier land practice (FCLP). Instead, it continues to assume that an outdated and dangerously small World War II landing strip on Whidbey, the OLFC, can be used for an increasing number of Growler and other training flights.[2]

The two most dangerous aspects of flying are the approach, landing and takeoff. Because the OLFC is about 49,000 acres smaller and 3,000 feet short of the Growler standard for these maneuvers, it places nearby schools, hospitals, residences, a state ferry terminal and parks, and a state conference center at serious risk of accidents. This risk is greatly increased because FLCP maneuvers are, by their nature, conducted at low elevations where collision with birds is likely to occur, particularly since much of the surrounding area is a protected habitat for shore birds.

The draft EIS, itself, acknowledges that one of the runways at OLFC has an "unacceptably steep angle of bank" and can only be used 30 percent of the time due to weather conditions. Yet knowing this, the Navy is significantly increasing the number of flights there and placing nearby communities at harm.

Impact on Threaten Endangered Species Not Adequately Addressed

The Navy needs to provide a more detailed and specific response on whether and how the additional Growlers will affect endangered species, particularly Marbled Murrelets, given that the acknowledged lack of scientific information on noise impacts to this species affects the ability to determine harm and cumulative effects. This is particularly urgent in light of their precipitous decline and the December 2016 decision by the State of Washington to reclassify Marbled Murrelets from threatened to endangered.

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[2] Unfortunately, this failure represents a continuing pattern and is consistent with the Navy's previous decisions regarding its request for a permit from the USFS to conduct electronic warfare missions on the Olympic Peninsula. In this instance, the Navy never adequately substantiated its need for non-Defense Department lands or that DOD lands were either unavailable or unsuitable, which was the primary requirement of a 1988 DOD-USDA Master Agreement.

More generally, by failing to initiate consultation under Section 7 of the Endangered Species Act with the US Fish and Wildlife Service on the potential impacts from the significant increase in Growler flights, the DEIS fails to evaluate direct, indirect and cumulative impacts on threatened and endangered species.

Inadequate Consideration of Public Health Impacts

Growler jets utilize the latest electronic warfare capabilities yet the risk of exposure to people and wildlife from downward-directed radiation is not considered. The only discussion we are aware of was a brief mention in a 2014 EA, in reference to radio transmitters on mobile emitter trucks and the stationary transmitter at Pacific Beach on the Olympic Peninsula. In that document, the Navy referenced a paper and concluded that links from radiation exposure to leukemia were speculative, when in fact, that same paper stated unequivocally that there are direct links between radiation exposure and childhood leukemia. Despite this, any mention or discussion of risks from exposure to electromagnetic radiation from Navy jets is completely missing from all discussions of potential impacts.

The annual Day-Night Noise Level (DNL) noise contours depicted in the DEIS are misleading for two reasons: (1) the Navy inappropriately uses a 365-day averaging rather busy-day averaging, and (2) the Navy represents as scientifically valid an outdated, misleading, and scientifically invalidated DNL threshold for high noise annoyance. Furthermore, modeled noise levels by the Navy have not been validated with on-site noise data nor has the Navy made any actual noise measurements in the affected communities. In addition, the NOISEMAP software used for computer modeling is outdated, and a report from a DOD commission concluded that noise measurements using this software may be legally indefensible.[3] Additionally, the DEIS selectively cites and relies on out-of-date medical research findings on impacts of noise on human health that are at odds with the overwhelming body of contemporary research.

Moreover, there are no alternatives proposed in this DEIS that would reduce noise. Therefore, it represents decisions already made. This violates NEPA §1506.1, which states, "...no action concerning the proposal shall be taken which would have an adverse environmental impact or limit the choice of reasonable alternatives."

Also, as mentioned earlier in this letter, by narrowly considering only takeoff and landing noise and exhaust emissions at the runways themselves, the DEIS violates the National Environmental Policy Act (NEPA) §1508.25 by failing to consider the wider area of functionally connected impacts caused by naval flight operations.

The DEIS Fails to Consider Historic and Economic Impacts

The Navy has not responded to an August 2016 request for formal consultation under Section 106 of the National Historic Preservation Act, from the City of Port Townsend, in a

[3] https://www.serdp-estcp.org/Program-Areas/Weapons-Systems-and-Platforms/Noise-and-Emissions/Noise/WP-1304

letter also asking the Navy to expand its Area of Potential Effect (APE). The APE is so narrowly defined in this DEIS that the State Historic Preservation Officer (SHPO) wrote to the Navy in January 2017, confirming that not only would cultural and historic resources within the existing APE be adversely affected, but also recommended expanding the APE to include additional portions of Whidbey Island, Camano Island, Port Townsend, and the San Juan Islands, because the state is "...not convinced that the 65 dBA serves as the best or most appropriate measure for quantifying and assessing harmful levels of sound and vibrations from Growler activities."[4] The SHPO went on to say, "Our concern is based upon what appears to be an averaging of sound levels over long time periods that does not adequately capture the real time experience of brief but more numerous exposures to higher decibel levels, as well as the cumulative effect of these events."

Additionally, the addition of Growlers will have a deleterious effect on the economy of the region. The region is heavily dependent on recreation and tourism and Washington's overall economy is heavily dependent on tourism and outdoor recreation, accounting for: $22.5 billion annually, 227,000 direct jobs, and $1.6 billion in tax revenues.[5] Accordingly, any expansion of the Growler fleet needs to address potential job loss, economic harm, and state revenue loss from decreased tourism and outdoor recreation.

Conclusion

For all of the deficiencies, omissions, and failures to properly implement NEPA, as cited above, we are asking the Navy to issue a revised, second draft EIS with a new public comment period. We appreciate the opportunity to comment on this draft EIS.

Sincerely,

Janet Marx

Janet Marx, Chair

North Olympic Group, Sierra Club
PO Box 714
Carlsborg, WA 98324

[4] State Historic Preservation Officer. Letter to Navy, January 9, 2017.
[5] Outdoor Industry Association

1.a. Thank You

MEMORANDUM REGARDING

Draft Environmental Impact Statement for Naval Air Station Whidbey Island

To: EA-18G EIS Project Manager, Naval Facilities Engineering Command (NAVFAC), Norfolk, VA

From: Pacific Northwest Coast Alliance

Date: February 22, 2017

Subject: Resolution addressing the Draft Environmental Impact Statement (DEIS) for Naval Air Station Whidbey Island (NASWI)

Resolution of the Pacific Northwest Coast Alliance

Whereas: The signatories of this correspondence represent the following citizen groups concerned about the impacts of the proposed draft environmental impact statement (DEIS) for Naval Air Station Whidbey Island (NASWI):

- CITIZENS of EBEY'S RESERVE (COER)
- QUIET SKIES OVER SAN JUAN COUNTY
- STOP - SAVE THE OLYMPIC PENINSULA
- POP - PROTECT THE OLYMPIC PENINSULA
- OLYMPIC ENVIRONMENTAL COUNCIL
- FRIENDS OF THE SAN JUANS
- MARROWSTONE ISLAND COMMITTEE
- KAREN SULLIVAN

Whereas: The National Environmental Policy Act of 1969 charges federal agencies to examine all impacts of proposed actions over all applicable geographic areas where they may occur.

Whereas: Each of the above groups represents a distinct portion of that area and therefore has different but often overlapping concerns and interests regarding the environmental impacts relevant to the DEIS alternatives.

Whereas: Each of the above groups have reviewed the nearly 1400 pages of the DEIS and found numerous errors, omissions, and inadequacies, which each group has addressed in their individual DEIS comments to the EA-18G EIS Project Manager.

Whereas: Each group has reviewed the comments of the others and found them to be credible and thoughtful and of critical importance and consistent with the overarching concerns of all the above groups.

Be It Therefore Resolved: That the above groups stand in agreement with and support of each individual group's comments on the draft EIS for NAS Whidbey Island.

Be It Further Resolved: That while there may be some minor instances of disparate facts or data or of stated position, such instances are generally infrequent, and where they may occur, each group's individual information or position is held as valid and unaltered, and the incongruity is accepted.

Signatories:

CITIZENS of EBEY'S RESERVE (COER)

QUIET SKIES OVER SAN JUAN COUNTY

STOP - SAVE THE OLYMPIC PENINSULA

POP - PROTECT THE OLYMPIC PENINSULA

OLYMPIC ENVIRONMENTAL COUNCIL

MARROWSTONE ISLAND COMMITTEE

KAREN SULLIVAN

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Beverly Goldie
Save The Olympic Peninsula

Port Angeles, WA 98362

February 20, 2017 EA-18G Growler EIS Project Manager Naval Facilities Engineering Command Atlantic 6506 Hampton Boulevard Norfolk, VA 23508 Attn: Code EV21/SS Via: http://www.whidbeyeis.com/Comment.aspx RE: Draft Environmental Impact Statement for the additional Growler Aircraft on Whidbey Island. Dear Project Manager: Save the Olympic Peninsula (STOP) is a non-profit, public benefit corporation registered in Washington State since June 16, 2015. The undersigned Beverly Goldie is the President of STOP, and she has been designated as its lead for Pacific Northwest Electronic Warfare Range and Growler aircraft related issues. STOP's purposes include ensuring "the best use of the land, the lakes, and the rivers on, and the skies above, the earth below, and the waters adjoining, the Olympic Peninsula of the State of Washington, in order to retain the unique character of the area, protect its environmental qualities, and provide for its enjoyment by generations to come." Through this letter we hope to educate our governmental officials as to why the EWR is not consistent with those purposes. All the members of STOP's Board of Directors live, work, recreate, hike, fish, or travel in areas of Olympic National Park, Olympic National Forest, and Clallam, Jefferson, Grays Harbor, Island, and San Juan Counties that will be adversely affected by the proposed Pacific Northwest Electronic Warfare Range and the activities of the Growler aircraft operating out of NAS Whidbey Island. It is for these purposes and with these interests in this issue that STOP offers the following comments on the Draft Environmental Impact Statement for the additional Growler Aircraft on Whidbey Island. The DEIS is deficient in the following respects: 1. The DEIS is merely another segment in the illegal segmentation of the environmental studies related to the Navy's training activities conducted out of NAS Whidbey Island. The impacts of all the aircraft training activities conducted out of NAS Whidbey Island must be considered in one comprehensive environmental impact statement considering the activities of all the aircraft, wherever they fly and whatever they do, from takeoff to landing. 2. Alternatives to using NAS Whidbey Island for aircraft training activities were not adequately addressed. As admitted in an email from michael.welding@navy.mil to michaelmonson@outlook.com on February 13, 2017 at 8:31:25 AM PST, the Growler training can be conducted in Japan, at Patuxent River, MD, at China Lake, CA, and at Fallon, NV. That training can also obviously be conducted at Mountain Home, ID, where it is currently being conducted. 3. At least some of the 40 Growlers referenced in the above mentioned email will be using NAS Whidbey Island at least some of the time. The impacts of those Growlers should have been considered in the DEIS. 4. The noise modeling and the noise averaging on which the DEIS is based is inappropriate. The DEIS must be based on actual noise measurements, as opposed to computer generated noise approximations, and the effects of instantaneous sound levels must be considered. 5. The impacts of aircraft crashes were not addressed. 6 The impacts on children were not adequately addressed. 7. The impacts of fuel dumping were not addressed. AC 8. The economic impact on tourism, property values, population declines, and loss of business is not adequately addressed. 9. The impacts on the marbled murrelet and the spotted owl are not adequately addressed. 10. The other environmental documents that have been prepared by the Navy as part of the unlawful

1.a. Thank You
1.b. Best Available Science and Data
1.c. Segmentation and Connected Actions
10.f. Endangered Species Impact Analysis Adequacy
12.c. Socioeconomic Impacts
12.d. Population Impacts
12.f. Economic Hardship and Impacts
12.h. Tourism
12.j. Property Values
19.c. Olympic Peninsula, Olympic National Park, and at-Sea Training
19.d. Electronic Warfare
2.a. Purpose and Need
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.c. Compliance with the National Environmental Policy Act
2.e. Public Involvement Process
2.f. Use of Public Comments
2.i. Proposed Action
2.k. Range of Alternatives
2.n. Alternatives Considered But Eliminated
4.f. Noise Measurements/Modeling/On-Site Validation
4.m. Supplemental Metrics
5.d. Environmental Health Risks and Safety Risks to Children
6.f. Fuel Dumping

segmentation scheme referred to in 1, above, have not adequately addressed any of the DEIS's deficiencies as discussed above. In this respect please see the attached comments as submitted by Save the Olympic Peninsula in response to the U.S. Forest Service DN/FONSI issued on November 29, 2016, in regard to the Navy's request for a Special Use Permit for the Pacific Northwest Electronic Warfare Range. STOP resubmits them now as comments on how the subject DEIS must be modified to meet NEPA standards. Respectfully submitted by: Save the Olympic Peninsula, by _____ Beverly Goldie, President 360-683-7097 Save the Olympic Peninsula 124 Township Line Rd Port Angeles, WA 98362 January 9, 2017 United States Forest Service 1835 Black Lake Blvd. SW Olympic, WA 98512 Attention: Reta Laford, Reviewing Officer to: https://cara.ecosystem-management.org/Public/CommentInput?project=42759 Re: Objection Pacific Northwest Electronic Warfare Range (EWR) More Specifically Re: The Draft Decision Notice and Finding of No Significant Impact (DN/FONSI) issued on November 29, 2016, by the Responsible Official, Dean Millet, the District Ranger of the Pacific Ranger District of the Olympic National Forest, which is the affected National Forest Dear Reviewing Officer and District Ranger: Save the Olympic Peninsula (STOP) is a non-profit, public benefit corporation registered in Washington State since June 16, 2015. The undersigned Beverly Goldie is the President of STOP, and she has been designated as its EWR Lead. STOP's purposes include ensuring "the best use of the land, the lakes, and the rivers on, and the skies above, the earth below, and the waters adjoining, the Olympic Peninsula of the State of Washington, in order to retain the unique character of the area, protect its environmental qualities, and provide for its enjoyment by generations to come." Through this letter we hope to educate our governmental officials as to why the EWR is not consistent with those purposes. All the members of STOP's Board of Directors live, work, recreate, hike, fish, or travel in areas of Olympic National Park, Olympic National Forest, and Clallam, Jefferson, Grays Harbor, Island, and San Juan Counties that will be adversely affected by the proposed Pacific Northwest Electronic Warfare Range. STOP did not previously submit comments on the EWR because we had not yet been formed at the times of the previous comment period. However, we believe we are entitled to participate during this comment period and in any future litigation related to the proposed DN/ FONSI for the reasons stated below: The following NEW INFORMATON has arisen after previous opportunities to comment closed: a. The Navy has proposed a significant expansion of the number of EA-18G Electronic Warfare Growler Jets that will be based at Naval Air Station Whidbey Island (NASWI) and will train in the EWR. This will result in a significant increase in the environmental and other damage caused by the testing and training activities in the EWR. It is certainly a reasonably foreseeable future action that must be, but has not been, considered by the Forest Service in its National Environmental Policy Act proceedings. See 40 CFR 1508.7. b. The U.S. Fish and Wildlife Service has issued its Biological Opinion 01EWFW00-2015-F-0251 (Biological Opinion) related to the EWR dated July 21, 2016. That Biological Opinion is cited in the Forest Service's proposed DN/ FONSI. As discussed later in this letter, that document presents reasons as to why the DN/FONSI should be withdrawn. c. The U. S. Navy has issued its Northwest Training and Testing FEIS/OEIS that contains Exhibits "J" and "K" related to the EWR. That FEIS/OEIS also contains revised figures for how many aircraft would be using the EWR. That FEIS/OEIS is cited in the Forest Service's new DN/FONSI. As discussed later in this letter, that document presents reasons as to why the DN/FONSI should be withdrawn. d.

The Forest Service has included new arbitrary, capricious, and unlawful justifications for the DN/FONSI. FURTHERMORE, as noted in the proposed DN/FONSI at page 22, "objections must be submitted within 45 days following the publication of the legal notice in . . . The Peninsula Daily News (Port Angeles, Washington)." The first time any legal notice was published in The Peninsula Daily News of any proposed decision by the U.S. Forest Service relating to the EWR was on November 29, 2016. Consequently, nobody can be precluded from now commenting for not having commented earlier than 45 days from November 29, 2016. Therefore, we hereby submit the following objections to the proposed DN/FONSI: 1. The Forest Service has failed to follow the requirements of the National Environmental Policy Act by illegally segmenting its environmental review of the mobile emitters from the environmental review of the impacts of the aircraft that will be directly associated with the mobile emitters. In this respect, the arguments submitted by Protect the Peninsula's Future as Scoping Comments on the Fall 2014 U.S. Navy EIS for the EA-18G Growler Airfield Operations at Naval Air Station (NAS) Whidbey Island are still valid until the studies suggested in Appendix A are included in the proposed EIS to which those comments were originally directed, or in another EIS. Those comments are reproduced in the attached Appendix A as the comments of STOP in regard to the proceedings here. 2. That a study of the impacts of the associated aircraft between NASWI and the EWR is especially important is evident from Table 3.1-2 of the recently released Draft EIS for EA-18G "Growler" Airfield Operations at NASWI Complex. Therein it is noted that ground level sound levels for aircraft transiting to and from NASWI can reach 116 dba, and that aircraft in transit can operate as low as 200 feet above ground level. Large portions of Olympic National Park, Olympic National Forest, and remaining portions of the Olympic Peninsula and the Strait of Juan de Fuca lie under the necessary transit routes. These areas contain critical habitat for both the spotted owl and the marbled murrelet. See, e.g., Figures 3.2-5 and 3.2-6, of the PNWEWR Draft Environmental Assessment. The Biological Opinion states that noise levels in excess of 92 dba can harm both spotted owls and marbled murrelets. 3. The Forest Service has failed to follow the requirements of the National Environmental Policy Act by relying on Exhibit "J" of the Northwest Training and Testing EIS without the impacts considered in that Exhibit ever having been considered in the full environmental review procedure required by NEPA. Those impacts were never mentioned in any scoping document required by NEPA; they were never addressed in any draft environmental impact statement, and they were never subjected to any public review and comment process. 4. The Forest Service has failed to follow the requirements of the National Environmental Policy Act by relying on the NWTT FEIS/OEIS, which document fails to meet the requirements of NEPA by failing to address the impacts of the electronic warfare weapons and jamming equipment that will be used in the EWR. While the NWTT FEIS/OEIS contains extensive descriptions of the type, characteristics and specifications of the conventional weapons to be used in the training and testing activities, it contains no description of the type, characteristics and specifications, of the electronic warfare weapons and jamming equipment. Without such information in the NWTT FEIS/OEIS, or in any other document considered by the Forest Service, no adequate analysis of the impacts of the electronic warfare weapons on the EWR can be made. 5. The proposed DN/FONSI is contrary to the record, makes inconsistent claims, and is arbitrary and capricious, as demonstrated for example by the following: a. Footnote 3, Page 15 of the DN/FONSI, and the Forest Service's responses to Concerns Nos. 49, 53, 56, and many others, in Appendix B of the DN/FONSI make claims to the effect that: "To allow flexibility

of training in these areas, the Navy has estimated that a 10 percent increase in flights may occur related to EW training activities, which averages to less than one additional flight per day." The Forest Service is sadly mistaken here, so much so that it appears it has not read much of the information provided by the Navy. First, the increase in flights related to the EWR will be far more than the "less than one additional flight per day" considered by the Forest Service. The Navy has repeatedly stated that the baseline usage in the MOA is 1,250 flights per year. A Navy internet document entitled NASWI EW Range FAQ.pdf states: "The average number of flights in the Olympic Military Operations Area is 1,250 annually. That number is based on data collected over the past two years. Annual flight requirements and actual flight activities tend to fluctuate from year to year based on many variables, such as world events, deployment schedules for squadrons, budget allocations and the cost of fuel. To allow flexibility of training in these areas, the Navy has estimated that a 10 percent increase in the current averages for flight numbers may occur related to electronic warfare training activities, which amounts to less than one additional flight per day." This exact language is also used in an email (by michael.welding@navy.mil to a citizen at wxxxxxxx716@msn.com) sent on Mon, 2 Feb 2015 20:19:04 +0000. Comparing this language to that used by the Forest Service in Appendix B, it is evident that the 10 percent increase considered by the Forest Service is a 10 percent increase from the 1,250 annual average number of flights, or about 125 flights per year. Based on the Navy's plans to operate 5 days a week for 50 weeks, or 250 days, this does amount to "less than one additional flight per day." But the actual increase in the flight numbers that the Navy now claims will result from the EWR in the official environmental documents is much larger. Table 2.8-1, beginning at page 2-55 of the NWTT FEIS/OEIS, and Table 2 beginning on Page 24 of the Biological Opinion, list 550 air combat maneuver events per year, and 5,000 electronic warfare operations events per year, in W-237 and the Olympic MOA. Table 2 of the Biological Opinion, on Page 24, states there are typically 2 to 4 aircraft per air combat maneuver event, but no maximum number of aircraft per event is stated. Table 2 of the Biological Opinion, on Page 26, states there are typically 1 to 4 aircraft per electronic warfare operations event, but no maximum number of aircraft per event is stated. Because the number of flights is not broken out between the W-237 and the MOA, this information could mean from 6,100 to 22,200 flights per year could occur in the Olympic MOA. This would mean an increase of between 4,850 to 20,950 or more flights per year. That would mean an increase of between 19 and 84 flights per day. This would mean an increase of between 388 per cent and 1,676 per cent in the number of flights per day or per year. At Section 2.7.1.4 of the NWTT FEIS/OEIS, on Page 2-48, the Navy attempts to explain away the significance of these increases by saying: "It is estimated that the additional flights proposed as part of Alternative 1 will result in an approximate 10 percent annual increase in actual flights, which equates to approximately one or two additional flights per day. This is because each flight could accommodate multiple Electronic Warfare training events." However, this is contradicted by the Navy's admission in the Biological Opinion, referred to above, that there are "typically 2 to 4 aircraft per (air combat maneuver) event" and "typically 1 to 4 aircraft per (electronic warfare operations) event." See Table 2, Proposed Training Activities, Pages 24 and 26 of the Biological Opinion. To avoid an arbitrary and capricious decision, the Forest Service must identify the real number of flights that will take place over the MOAs, and it cannot allow the Navy's contradictory claims to how many aircraft are involved per training event to remain unexplained. As more fully discussed in Appendix A, it must also analyze the impacts of the aircraft based on a determination of

the flight paths and power levels of the aircraft as they approach the various mobile emitter sites and any critical habitat of the spotted owl or marbled murrelet. With vast differences between the wildlife and environmental conditions that exist in W-237 and the wildlife and environmental conditions that exist in the MOAs, and with the Forest Service lands only located within the MOAs, the failure of the Forest Service to require precise figures on how many aircraft will be operating over the MOAs is inexcusable. b. The responses to Concerns Nos. 49, 53, 56, and many others, in Appendex B of the DN/FONSI make claims to the effect that: "With the EW training, the aircraft themselves will not be emitting EW signals, but instead will be passively receiving signals from the vehicle signal transmitters positioned on existing Forest Service Roads." This statement is demonstratively contradicted by the record. See Section 2.1.2 of the EA for the proposed EWR that states: “The activities of the Proposed Action center on two divisions of EW, known as electronic warfare support (ES) and electronic attack (EA)." Also see Section A.1.4 of the NWTT FEIS/OEIS that states: "Electronic warfare is the mission area of naval warfare that aims to control use of the electromagnetic spectrum and to deny its use by an adversary. Typical electronic warfare activities include threat avoidance training, signals analysis for intelligence purposes, and use of airborne and surface electronic jamming devices to defeat tracking systems"; and Section A.1.4.1 of the NWTT FEIS/OEIS that states: "Fixed-wing aircraft employ active jamming and deception against enemy search radars to mask the friendly inbound strike aircraft mission." Also see the related discussion in Appendix A below. c. The DN/FONSI is based in part on a noise study set forth as Exhibit "J" to the NWTT FEIS/OEIS that is arbitrary and capricious, and violates NEPA, in several ways. Specifically: i. An analysis of the impacts of aircraft was omitted from the Scoping Document for the NWTT EIS/OEIS, and from the NWTT Draft EIS/OEIS, and from the Supplement to the NWTT Draft EIS/OEIS; ii. The statement in the EWR EA that "[A]ny changes to the type or tempo of training conducted in the Olympic MOAs and W237 will be addressed in the Northwest Training and Testing (NWTT) EIS/OEIS" indicates that the Navy intentionally omitted the impacts of the aircraft from the preliminary steps of preparing an EIS, and planned all along to slip any mention of the impacts into the NWTT FEIS/OEIS; iii. Exhibit "J" is not based on the actual plans of the Navy and uses lower levels of aircraft activity than are said to be contemplated by the NWTT FEIS; iv. Exhibit "J" is based on "performance parameters (airspeed, altitude, and power settings) provided by the aircrews who fly the missions", whereas the actual airspeed, altitude, and power settings that the Navy intends to use should be what is analyzed; v. Exhibit "J" bears no understandable relationship to the NWTT FEIS/OEIS. See Paragraph 9.4.1, Section 3, of Appendix "J" that states: "The numbers reflected in the following tables are based on the number of aircraft sorties, while the numbers in the [NWTT FEIS] are the number of activities; therefore, a comparison between the two sets of data in not easily made. One aircraft sortie could result in the completion of multiple training activities. Similarly, is some cases, one activity could include multiple aircraft sorties." This is further contradicted, complicated and confused by the Navy's admission referred to above, that there are "typically 2 to 4 aircraft per (air combat maneuver) event" and "typically 1 to 4 aircraft per (electronic warfare operations) event." See Table 2, Proposed Training Activities, Pages 24 and 26 of the Biological Opinion. vi. Exhibit "J" fails to consider any aircraft activity between Naval Air Station Whidbey Island (NASWI), where the training flights originate and return, and the EWR. Large portions of those areas between NASWI and the EWR overlie Olympic National Park, a World Heritage Site and an International Biosphere Reserve; vii. Exhibit "J" fails to consider any aircraft

activity within a three nautical mile distance from the outside edge of the SUAs towards the interior of the SUAs, whereas aircraft must transit that area in order to reach the interior of the SUAs, and they must operate within that area to detect and target mobile emitter sites that are to be located within that area; viii. Exhibit "J" assumes that the aircraft events are uniformly distributed throughout the SUAs, including W237A, W237B, Olympic MOA A, and Olympic MOA B when in fact that cannot possibly be accurate when, for example, the mobile emitters that the planes will be detecting and targeting are planned to be at specific sites within the Olympic MOAs; ix. The assumption noted in viii, above, distorts and dilutes the actual impacts of the aircraft within the Olympic MOAs, and within Marbled Murrelet and Spotted Owl Critical Habitat as defined by the Endangered Species Act that exist within the Olympic MOAs; x. Nowhere is the training range of the aircraft flying out of NASWI defined, and nowhere are the boundaries of the so-called Pacific Northwest Electronic Warfare Range defined. Without these training ranges and boundaries being defined, it is impossible for the Forest Service to have properly assessed the impacts the Navy's plans will have on the environment; xi. No noise studies included in Exhibit "J" use real, measured, and accurate noise levels generated by the aircraft that would utilize the training areas. All studies are based on unreliable, computer generated approximations from dated information. xii. No flight profiles are provided in Exhibit "J" from which to analyze the impacts of the aircraft that would utilize the training areas. d. The DN/FONSI is based in part on a noise study set forth in the Biological Opinion that is arbitrary and capricious, and violates NEPA, in all the ways Exhibit "J" does as stated above. The following statement at Page 214 of the Biological Opinion is an example of the cavalier approach that the USFWS took, and the Forest Service accepted, it the consideration of the impacts of the EWR: "Without knowing the location and flight pattern of each training flight, we assumed that the training flights will be evenly distributed throughout the Olympic MOAs." The mobile emitter sites which the electronic warfare aircraft will be targeting are generally in the higher elevation areas of the MOAs, and are mostly located in the critical habitat of the spotted owl and the marbled murrelet. To proceed without the knowledge of flight profiles of each training flight in these circumstances precludes the Navy and the Forest Service from determining the real environmental impacts of the proposed action. 6. The proposed action violates the Endangered Species Act. The proposed DN/FONSI, at page 17, states: "The U.S. Fish and Wildlife Service determined that the project may affect, likely to adversely affect marbled murrelets due to noise from aircraft use and that the project will have no effect to marbled murrelet critical habitat." This is correct except for the conclusions that the project will have no effect to marbled murrelet critical habitat. Figure 3.2-6 of the EWR EA shows that emitter sites 1 through 8, 12 through 15, will all be located in marbled murrelet critical habitat. Furthermore, Section 2.1.14 of the EWR EA states that "Once at the site, the trucks would pull off the road utilizing the “pullouts” or turnarounds that already exist at the preselected training sites, park, and shut down their engines. The existing pullouts and turnarounds have already been cleared (harvested), or have natural open areas that would allow emitter use to the west/northwest in the Olympic National Forest and would not cause an obstruction for other vehicles or ground disturbance. Furthermore, these sites have been preselected because, in general, they are on a cliff or ridgeline and/or currently provide an open area to the west of the pullout that enables the mobile emitter a clear line of sight to the west." Clearly, portions of the spotted owl critical habitat were selected and cleared for the emitter sites for the project. That is a physical effect of the project on marbled murrelet critical habitat. Furthermore,

sound is a physical effect. Just as waves on the water can turn a calm surface into a tumultuous sea, sound waves can turn the atmosphere into an uninviting environment - which in this case the Forest Service concedes damages the marbled murrelet. With expected noise levels of up 116 dba, this must be considered physical damage to marbled murrelet critical habitat. For all these reasons, and many more that the limited time given for responses to the DN/FONSI at a busy time of the year precluded us from fully analyzing and commenting upon, we urge you to reject the proposed DN/FONSI and deny the Navy's request for the Special Use Permit. Respectfully submitted by: Save the Olympic Peninsula, by _____ Beverly Goldie, President 360-683-7097 Save the Olympic Peninsula 124 Township Line Rd Port Angeles, WA 98362 See attached Appendix A Appendix A The geographic area proposed to be covered by the EIS is limited to the Whidbey Island area generally, and to landings, takeoffs, and touch and go training at Ault and OLF fields. In this regard, a diagram on the left side of the “Growler Operations” page of the Scoping Meeting Guide is most telling. That diagram includes three flight paths that extend to the southwest of the area shown as follows: Those flight paths, we are sure, lead to the Navy’s proposed Pacific Northwest Electronic Warfare Range (EWR). The impacts of the Gowlers on those flight paths do not end at the boundaries of the Navy’s diagram. The impacts extend as far as the Growlers fly. Under NEPA those impacts must be evaluated in the EIS – both in the area between Whidbey Island and the proposed EWR, and in the area of the proposed EWR. Because that was not done in the Navy’s Environmental Assessment (EA) for the proposed EWR, it should be done now. This is also necessary under the 1988 Master Agreement between the Department of Defense and the US Department of Agriculture. That Master Agreement requires the Forest Service to study both the impacts of the proposed land-based training activities and the impacts of the proposed use of airspace if “directly associated with the land based training.” We are mindful that the Navy’s EA for the EWR states at Page 2-8: “All of the EW training activities and locations that would be associated with the implementation of the Pacific Northwest EW Range were analyzed in the NWTRC EIS/OEIS. The NWTRC EIS/OEIS has an October 2010 Record of Decision that approved an alternative that included EW training activities associated with the establishment of a fixed emitter in the Pacific Beach area. Current training levels in the Olympic MOAs and W237 will remain the same as per the NWTRC EIS/OEIS, and any changes to the type or tempo of training conducted in the Olympic MOAs and W237 will be addressed in the Northwest Training and Testing (NWTT) EIS/OEIS.” However, neither underlined statement is accurate. That the NWTRC EIS does not evaluate the activities contemplated by the proposed EWR is apparent from the following tables: Table 3.2-2 lists the emission sources for all training activities evaluated by the NWTRC EIS. The only emission sources listed for Electronic Combat are from aircraft and ships or boats. There are no emission sources listed for ground based mobile emitters. Had the activities contemplated by the proposed EWR been evaluated by the NWTRC EIS, the ground based mobile emitters should have been listed here as an emission source. Table 3.3-8 lists, by activity and training area, the stressors and hazardous materials that would be associated with the activities evaluated by the NWTRC EIS. For Electronic Combat the only areas listed are the Darrington Area and W-237. Had the activities contemplated by the proposed EWR been evaluated by the NWTRC EIS, the Olympic MOAs should have been listed here as a training area. Table 3.16-1 lists by Range and Training Site, the training environment and the type of training activity covered by the NWTRC EIS. For Electronic Combat the only area listed is W-237.

Had the activities contemplated by the proposed EWR been evaluated by the NWTRC EIS, the Olympic MOAs should have been listed here as a training area. Table 3.16-2 lists by warfare type the area in which it would be conducted. For Electronic Combat the only areas listed are W-237a and the Darrington Area. Had the activities contemplated by the proposed EWR been evaluated by the NWTRC EIS, the Olympic MOAs would should have been listed here as a training area. That the NWTT EIS did not evaluate the activities contemplated by the proposed EWR is apparent from the following statements: At Page 2-3 it says “The land resources affected by the use of the Olympic MOAs A and B will be evaluated as they are directly impacted by overflights for at-sea activities.” To emphasize the obvious, only overflights of the MOAs for training at sea was contemplated in the NWTT EIS. No mention is made of impacts on the Olympic MOAs from Electronic Combat training there. At Page 3.6-18 it says “The training activities involving aircraft in the Olympic MOAs evaluated in this EIS/OEIS are similar to the training evaluated in the NWTRC EIS.” With Electronic Combat training in the Olympic MOAs not having been evaluated in the NWTRC EIS, this sentence demonstrates it was not evaluated in the NWTT EIS either. PPF expects the Navy in the proposed EIS to evaluate the impacts of the Growlers, both in the area between Whidbey Island and the proposed EWR, and in the area of the proposed EWR, with the same intensity and specificity it evaluates the impacts of the Growlers in the Whidbey Island area. In this regard, a diagram on the right side of the “Growler Operations” page of the Scoping Meeting Guide is helpful. It shows a detailed portrayal of the flight paths of Growlers using the OLF for Field Carrier Landing Practice (FCLP). A copy is shown below. It is commendable that the Navy has gone to such extents to study the impacts of the 36 new Growlers at OLF. However, the same detailed portrayal of flight paths of Growlers going to and returning from, and using, the proposed EWR, is essential for a proper evaluation of the impacts in those locations. Because there are 15mobile emitter sites in the proposed EWR, and one fixed emitter site, there are essentially 16 OLFs in the proposed EWR. A detailed portrayal of flight paths for each of the 16 proposed emitter sites is needed. The same is true of every possible flight path to and from the proposed EWR. With neither the NWTRC EIS nor the NWTT EIS having adequately evaluated Electronic Combat in the Olympic MOAs, or aircraft flights in the area between Whidbey Island and those MOAs, the impacts of the 82 or so Growlers currently at NASWI, as well as the proposed 36 new Growlers, must now be evaluated in the proposed EIS. Prior to preparing an EIS as suggested above, the Navy should consider that the Master Agreement referred to above authorized military use of National Forest lands only if that use is “…compatible with other uses and in conformity with applicable forest plans, provided the Department of Defense determines and substantiates that lands under its administration are unsuitable or unavailable.” NASWI is already conducting electronic warfare training at several Department of Defense bases in the Northwest that include restricted airspace and nearly half a million acres of land. Only one, the Fallon Training Range Complex, is mentioned, in a single paragraph on page 2-9 of the EA for the proposed EWR. This does not qualify as the kind of determination and substantiation required by the Master Agreement. Also, Capt. Michael Nortier, the commanding officer at NASWI, stated in a Commentary in the Peninsula Daily News on December 26, 2014, that “The armed services have decades of experience successfully operating similar fixed and mobile emitters at a variety of locations across the nation.” This being the case, the Navy cannot meet the condition under the Master Agreement that lands already “under [the DOD’s] administration are unsuitable or unavailable” for an electronic warfare range.

Consequently, no mobile emitter sites in Olympic National Forest can be used for the proposed EWR. In the proposed EIS, the Navy must also consider the impacts related to both parts of Electronic Combat – Electronic Surveillance and Electronic Attack. In the informational meetings held in Forks and Port Angeles to explain the proposed EWR, the Navy repeatedly stressed that training for Electronic Attack would not take place in the proposed EWR. Capt. Michael Nortier said the same in the Commentary mentioned above. The official documents say otherwise. Specifically: Section 2.1.2 of the EA for the proposed EWR, says “The activities of the Proposed Action center on two divisions of EW, known as electronic warfare support (ES) and electronic attack (EA)”; Section 1.3 of the EA for the proposed EWR, and the related Forest Service and Navy FONSIs, say “The purpose of the Proposed Action is to … maximize the ability of local units to achieve their training requirements on local ranges”; Section 4.2.1.3 of the EA for the proposed EWR says “The Wing’s mission is to support U.S. Naval Air Forces and the Unified Command Structure by providing combatready Tactical Electronic Attack squadrons which are fully trained, properly manned, interoperable, wellmaintained, and supported”; The Proposed Action section of the Fall 2014 “A Guide to the Scoping Meeting (for the subject EIS)” says “The Navy is proposing to increase electronic attack (VAQ) capabilities by adding up to 36 aircraft to support an expanded VAQ mission and training at NAS Whidbey Island; and The VAQ Mission and Training section of the above mentioned Guide says “The missions of the VAQ squadrons include electronic surveillance and attack against enemy radar and communications systems. This involves the use of jamming equipment and anti-radiation missiles. The Growler has an advanced electronic system that allows it to identify targets and protect itself from those targets.” The Navy cannot “maximize” the use of the proposed EWR, nor can it produce “fully trained” “combat-ready Tactical Electronic Attack squadrons” on the proposed EWR without electronic attack training being conducted there. Nor can the Navy meet the Proposed Action and VAQ Mission and Training goals for the proposed action without electronic attack training being conducted on the proposed EWR. The Navy must study the impacts of this electronic attack training in the proposed EIS. It should also stop denying its true intentions regarding electronic attack training in its public statements. In the Navy’s informational meetings at Forks and Port Angeles on the proposed EWR, as well as in the EA for the proposed EWR, it is suggested that EMF from the proposed emitters would not be dangerous, in part because it was directed upwards and away from any living thing that could be adversely affected by the EMF. The implication from this is that EMF directed downwards, as it will be from Growlers training in the proposed EWR, would be dangerous. Perhaps that is why the Navy chose not to address this element of the proposed EWR in its environmental documents. NEPA, however, does not allow for that exception. PPF is encouraged by the statement in the above mentioned Guide that: “A noise assessment will be conducted as part of the EIS and it will include a supplemental noise analysis, a potential hearing-loss analysis, and an assessment of non-auditory health effects. The supplemental noise analysis will include an evaluation of sleep disturbance, indoor speech interference, and classroom learning interference. The potential hearing loss analysis will focus on any portion of the local population that may be exposed to noise levels greater than 80 DNL. Lastly, the assessment of non-auditory health effects will consist of a comprehensive literature review.” These studies, however, must be done with real noise level data obtained from actual on ground measurements under the actual, specifically located flight paths that the Growlers will travel, wherever they travel, and at whatever power levels they travel, including all times when their

afterburners are operating. These studies must also be done by time of day and by time of year. This latter consideration is particularly important in relation to nesting seasons for endangered birds and tourist seasons for Olympic National Park and surrounding areas. It is not sufficient to assume that training will take place at a constant number and duration of flights throughout the year, unless in fact it does. These studies should include C-Weighted sound measurements and analysis, they must incorporate supplemental noise measurements including Sound Exposure Level (SEL) and Peak Sound Level (Lmax), in addition to Ldn, and they must document the projected annual number of events that exceed 60 dB SEL and Lmax in 5 dB increments throughout the impacted areas. These studies should also address the health effects of “Startle Reactions” and the effects on a person’s feelings of loss of control over their environment when subjected to noise impacts beyond their control. The mention of certain impacts herein, does not mean to imply that there are not other impacts to cover. The proposed EIS must consider the full range of environmental issues and not eliminate any issues on the basis of preliminary, incomplete studies that purport to reveal resources upon which the proposed action is unlikely to have any potential environmental impacts. In the EA for the proposed EWR, the exclusion of geology, water, land use, cultural, and transportation resources, and socioeconomics, and environmental justice and protection of children, was simply not excusable. In evaluating the impacts on Olympic National Park, the Navy should pay special attention to the fact that the Park is a World Heritage site, an International Biosphere Reserve, and the home of One Square Inch of Silence, one of the quietest places in the United States. The Park includes the world's last remaining coastal rainforest ecosystem of its kind. It is an irreplaceable cultural and natural resource. It is also the economic hub of the Olympic Peninsula. No proposed action by the Navy should adversely impact this treasure in any way. Because so much more should be evaluated in the Proposed EIS than was presented in the Scoping documents, a whole new Scoping evaluation should be conducted by the Navy, with another opportunity for the public to comment.

Beverly Goldie
Save The Olympic Peninsula

Port Angeles, WA 98362

February 20, 2017 EA-18G Growler EIS Project Manager Naval Facilities Engineering Command Atlantic 6506 Hampton Boulevard Norfolk, VA 23508 Attn: Code EV21/SS Via: http://www.whidbeyeis.com/Comment.aspx RE: Draft Environmental Impact Statement for the additional Growler Aircraft on Whidbey Island. Dear Project Manager: Save the Olympic Peninsula (STOP) is a non-profit, public benefit corporation registered in Washington State since June 16, 2015. The undersigned Beverly Goldie is the President of STOP, and she has been designated as its lead for Pacific Northwest Electronic Warfare Range and Growler aircraft related issues. STOP's purposes include ensuring "the best use of the land, the lakes, and the rivers on, and the skies above, the earth below, and the waters adjoining, the Olympic Peninsula of the State of Washington, in order to retain the unique character of the area, protect its environmental qualities, and provide for its enjoyment by generations to come." Through this letter we hope to educate our governmental officials as to why the EWR is not consistent with those purposes. All the members of STOP's Board of Directors live, work, recreate, hike, fish, or travel in areas of Olympic National Park, Olympic National Forest, and Clallam, Jefferson, Grays Harbor, Island, and San Juan Counties that will be adversely affected by the proposed Pacific Northwest Electronic Warfare Range and the activities of the Growler aircraft operating out of NAS Whidbey Island. It is for these purposes and with these interests in this issue that STOP offers the following comments on the Draft Environmental Impact Statement for the additional Growler Aircraft on Whidbey Island. The DEIS is deficient in the following respects: 1. The DEIS is merely another segment in the illegal segmentation of the environmental studies related to the Navy's training activities conducted out of NAS Whidbey Island. The impacts of all the aircraft training activities conducted out of NAS Whidbey Island must be considered in one comprehensive environmental impact statement considering the activities of all the aircraft, wherever they fly and whatever they do, from takeoff to landing. 2. Alternatives to using NAS Whidbey Island for aircraft training activities were not adequately addressed. As admitted in an email from michael.welding@navy.mil to michaelmonson@outlook.com on February 13, 2017 at 8:31:25 AM PST, the Growler training can be conducted in Japan, at Patuxent River, MD, at China Lake, CA, and at Fallon, NV. That training can also obviously be conducted at Mountain Home, ID, where it is currently being conducted. 3. At least some of the 40 Growlers referenced in the above mentioned email will be using NAS Whidbey Island at least some of the time. The impacts of those Growlers should have been considered in the DEIS. 4. The noise modeling and the noise averaging on which the DEIS is based is inappropriate. The DEIS must be based on actual noise measurements, as opposed to computer generated noise approximations, and the effects of instantaneous sound levels must be considered. 5. The impacts of aircraft crashes were not addressed. 6 The impacts on children were not adequately addressed. 7. The impacts of fuel dumping were not addressed. AC 8. The economic impact on tourism, property values, population declines, and loss of business is not adequately addressed. 9. The impacts on the marbled murrelet and the spotted owl are not adequately addressed. 10. The other environmental documents that have been prepared by the Navy as part of the unlawful

1.a. Thank You
1.b. Best Available Science and Data
1.c. Segmentation and Connected Actions
10.f. Endangered Species Impact Analysis Adequacy
12.c. Socioeconomic Impacts
12.d. Population Impacts
12.f. Economic Hardship and Impacts
12.h. Tourism
12.j. Property Values
19.c. Olympic Peninsula, Olympic National Park, and at-Sea Training
19.d. Electronic Warfare
2.a. Purpose and Need
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.c. Compliance with the National Environmental Policy Act
2.e. Public Involvement Process
2.f. Use of Public Comments
2.i. Proposed Action
2.k. Range of Alternatives
2.n. Alternatives Considered But Eliminated
4.f. Noise Measurements/Modeling/On-Site Validation
4.m. Supplemental Metrics
5.d. Environmental Health Risks and Safety Risks to Children
6.f. Fuel Dumping

segmentation scheme referred to in 1, above, have not adequately addressed any of the DEIS's deficiencies as discussed above. In this respect please see the attached comments as submitted by Save the Olympic Peninsula in response to the U.S. Forest Service DN/FONSI issued on November 29, 2016, in regard to the Navy's request for a Special Use Permit for the Pacific Northwest Electronic Warfare Range. STOP resubmits them now as comments on how the subject DEIS must be modified to meet NEPA standards. Respectfully submitted by: Save the Olympic Peninsula, by _____ Beverly Goldie, President 360-683-7097 Save the Olympic Peninsula 124 Township Line Rd Port Angeles, WA 98362 January 9, 2017 United States Forest Service 1835 Black Lake Blvd. SW Olympic, WA 98512 Attention: Reta Laford, Reviewing Officer to: https://cara.ecosystem-management.org/Public/CommentInput?project=42759 Re: Objection Pacific Northwest Electronic Warfare Range (EWR) More Specifically Re: The Draft Decision Notice and Finding of No Significant Impact (DN/FONSI) issued on November 29, 2016, by the Responsible Official, Dean Millet, the District Ranger of the Pacific Ranger District of the Olympic National Forest, which is the affected National Forest Dear Reviewing Officer and District Ranger: Save the Olympic Peninsula (STOP) is a non-profit, public benefit corporation registered in Washington State since June 16, 2015. The undersigned Beverly Goldie is the President of STOP, and she has been designated as its EWR Lead. STOP's purposes include ensuring "the best use of the land, the lakes, and the rivers on, and the skies above, the earth below, and the waters adjoining, the Olympic Peninsula of the State of Washington, in order to retain the unique character of the area, protect its environmental qualities, and provide for its enjoyment by generations to come." Through this letter we hope to educate our governmental officials as to why the EWR is not consistent with those purposes. All the members of STOP's Board of Directors live, work, recreate, hike, fish, or travel in areas of Olympic National Park, Olympic National Forest, and Clallam, Jefferson, Grays Harbor, Island, and San Juan Counties that will be adversely affected by the proposed Pacific Northwest Electronic Warfare Range. STOP did not previously submit comments on the EWR because we had not yet been formed at the times of the previous comment period. However, we believe we are entitled to participate during this comment period and in any future litigation related to the proposed DN/ FONSI for the reasons stated below: The following NEW INFORMATON has arisen after previous opportunities to comment closed: a. The Navy has proposed a significant expansion of the number of EA-18G Electronic Warfare Growler Jets that will be based at Naval Air Station Whidbey Island (NASWI) and will train in the EWR. This will result in a significant increase in the environmental and other damage caused by the testing and training activities in the EWR. It is certainly a reasonably foreseeable future action that must be, but has not been, considered by the Forest Service in its National Environmental Policy Act proceedings. See 40 CFR 1508.7. b. The U.S. Fish and Wildlife Service has issued its Biological Opinion 01EWFW00-2015-F-0251 (Biological Opinion) related to the EWR dated July 21, 2016. That Biological Opinion is cited in the Forest Service's proposed DN/ FONSI. As discussed later in this letter, that document presents reasons as to why the DN/FONSI should be withdrawn. c. The U. S. Navy has issued its Northwest Training and Testing FEIS/OEIS that contains Exhibits "J" and "K" related to the EWR. That FEIS/OEIS also contains revised figures for how many aircraft would be using the EWR. That FEIS/OEIS is cited in the Forest Service's new DN/FONSI. As discussed later in this letter, that document presents reasons as to why the DN/FONSI should be withdrawn. d.

The Forest Service has included new arbitrary, capricious, and unlawful justifications for the DN/FONSI. FURTHERMORE, as noted in the proposed DN/FONSI at page 22, "objections must be submitted within 45 days following the publication of the legal notice in . . . The Peninsula Daily News (Port Angeles, Washington)." The first time any legal notice was published in The Peninsula Daily News of any proposed decision by the U.S. Forest Service relating to the EWR was on November 29, 2016. Consequently, nobody can be precluded from now commenting for not having commented earlier than 45 days from November 29, 2016. Therefore, we hereby submit the following objections to the proposed DN/FONSI: 1. The Forest Service has failed to follow the requirements of the National Environmental Policy Act by illegally segmenting its environmental review of the mobile emitters from the environmental review of the impacts of the aircraft that will be directly associated with the mobile emitters. In this respect, the arguments submitted by Protect the Peninsula's Future as Scoping Comments on the Fall 2014 U.S. Navy EIS for the EA-18G Growler Airfield Operations at Naval Air Station (NAS) Whidbey Island are still valid until the studies suggested in Appendix A are included in the proposed EIS to which those comments were originally directed, or in another EIS. Those comments are reproduced in the attached Appendix A as the comments of STOP in regard to the proceedings here. 2. That a study of the impacts of the associated aircraft between NASWI and the EWR is especially important is evident from Table 3.1-2 of the recently released Draft EIS for EA-18G "Growler" Airfield Operations at NASWI Complex. Therein it is noted that ground level sound levels for aircraft transiting to and from NASWI can reach 116 dba, and that aircraft in transit can operate as low as 200 feet above ground level. Large portions of Olympic National Park, Olympic National Forest, and remaining portions of the Olympic Peninsula and the Strait of Juan de Fuca lie under the necessary transit routes. These areas contain critical habitat for both the spotted owl and the marbled murrelet. See, e.g., Figures 3.2-5 and 3.2-6, of the PNWEWR Draft Environmental Assessment. The Biological Opinion states that noise levels in excess of 92 dba can harm both spotted owls and marbled murrelets. 3. The Forest Service has failed to follow the requirements of the National Environmental Policy Act by relying on Exhibit "J" of the Northwest Training and Testing EIS without the impacts considered in that Exhibit ever having been considered in the full environmental review procedure required by NEPA. Those impacts were never mentioned in any scoping document required by NEPA; they were never addressed in any draft environmental impact statement, and they were never subjected to any public review and comment process. 4. The Forest Service has failed to follow the requirements of the National Environmental Policy Act by relying on the NWTT FEIS/OEIS, which document fails to meet the requirements of NEPA by failing to address the impacts of the electronic warfare weapons and jamming equipment that will be used in the EWR. While the NWTT FEIS/OEIS contains extensive descriptions of the type, characteristics and specifications of the conventional weapons to be used in the training and testing activities, it contains no description of the type, characteristics and specifications, of the electronic warfare weapons and jamming equipment. Without such information in the NWTT FEIS/OEIS, or in any other document considered by the Forest Service, no adequate analysis of the impacts of the electronic warfare weapons on the EWR can be made. 5. The proposed DN/FONSI is contrary to the record, makes inconsistent claims, and is arbitrary and capricious, as demonstrated for example by the following: a. Footnote 3, Page 15 of the DN/FONSI, and the Forest Service's responses to Concerns Nos. 49, 53, 56, and many others, in Appendix B of the DN/FONSI make claims to the effect that: "To allow flexibility

of training in these areas, the Navy has estimated that a 10 percent increase in flights may occur related to EW training activities, which averages to less than one additional flight per day." The Forest Service is sadly mistaken here, so much so that it appears it has not read much of the information provided by the Navy. First, the increase in flights related to the EWR will be far more than the "less than one additional flight per day" considered by the Forest Service. The Navy has repeatedly stated that the baseline usage in the MOA is 1,250 flights per year. A Navy internet document entitled NASWI EW Range FAQ.pdf states: "The average number of flights in the Olympic Military Operations Area is 1,250 annually. That number is based on data collected over the past two years. Annual flight requirements and actual flight activities tend to fluctuate from year to year based on many variables, such as world events, deployment schedules for squadrons, budget allocations and the cost of fuel. To allow flexibility of training in these areas, the Navy has estimated that a 10 percent increase in the current averages for flight numbers may occur related to electronic warfare training activities, which amounts to less than one additional flight per day." This exact language is also used in an email (by michael.welding@navy.mil to a citizen at wxxxxxxx716@msn.com) sent on Mon, 2 Feb 2015 20:19:04 +0000. Comparing this language to that used by the Forest Service in Appendix B, it is evident that the 10 percent increase considered by the Forest Service is a 10 percent increase from the 1,250 annual average number of flights, or about 125 flights per year. Based on the Navy's plans to operate 5 days a week for 50 weeks, or 250 days, this does amount to "less than one additional flight per day." But the actual increase in the flight numbers that the Navy now claims will result from the EWR in the official environmental documents is much larger. Table 2.8-1, beginning at page 2-55 of the NWTT FEIS/OEIS, and Table 2 beginning on Page 24 of the Biological Opinion, list 550 air combat maneuver events per year, and 5,000 electronic warfare operations events per year, in W-237 and the Olympic MOA. Table 2 of the Biological Opinion, on Page 24, states there are typically 2 to 4 aircraft per air combat maneuver event, but no maximum number of aircraft per event is stated. Table 2 of the Biological Opinion, on Page 26, states there are typically 1 to 4 aircraft per electronic warfare operations event, but no maximum number of aircraft per event is stated. Because the number of flights is not broken out between the W-237 and the MOA, this information could mean from 6,100 to 22,200 flights per year could occur in the Olympic MOA. This would mean an increase of between 4,850 to 20,950 or more flights per year. That would mean an increase of between 19 and 84 flights per day. This would mean an increase of between 388 per cent and 1,676 per cent in the number of flights per day or per year. At Section 2.7.1.4 of the NWTT FEIS/OEIS, on Page 2-48, the Navy attempts to explain away the significance of these increases by saying: "It is estimated that the additional flights proposed as part of Alternative 1 will result in an approximate 10 percent annual increase in actual flights, which equates to approximately one or two additional flights per day. This is because each flight could accommodate multiple Electronic Warfare training events." However, this is contradicted by the Navy's admission in the Biological Opinion, referred to above, that there are "typically 2 to 4 aircraft per (air combat maneuver) event" and "typically 1 to 4 aircraft per (electronic warfare operations) event." See Table 2, Proposed Training Activities, Pages 24 and 26 of the Biological Opinion. To avoid an arbitrary and capricious decision, the Forest Service must identify the real number of flights that will take place over the MOAs, and it cannot allow the Navy's contradictory claims to how many aircraft are involved per training event to remain unexplained. As more fully discussed in Appendix A, it must also analyze the impacts of the aircraft based on a determination of

the flight paths and power levels of the aircraft as they approach the various mobile emitter sites and any critical habitat of the spotted owl or marbled murrelet. With vast differences between the wildlife and environmental conditions that exist in W-237 and the wildlife and environmental conditions that exist in the MOAs, and with the Forest Service lands only located within the MOAs, the failure of the Forest Service to require precise figures on how many aircraft will be operating over the MOAs is inexcusable. b. The responses to Concerns Nos. 49, 53, 56, and many others, in Appendex B of the DN/FONSI make claims to the effect that: "With the EW training, the aircraft themselves will not be emitting EW signals, but instead will be passively receiving signals from the vehicle signal transmitters positioned on existing Forest Service Roads." This statement is demonstratively contradicted by the record. See Section 2.1.2 of the EA for the proposed EWR that states: “The activities of the Proposed Action center on two divisions of EW, known as electronic warfare support (ES) and electronic attack (EA)." Also see Section A.1.4 of the NWTT FEIS/OEIS that states: "Electronic warfare is the mission area of naval warfare that aims to control use of the electromagnetic spectrum and to deny its use by an adversary. Typical electronic warfare activities include threat avoidance training, signals analysis for intelligence purposes, and use of airborne and surface electronic jamming devices to defeat tracking systems"; and Section A.1.4.1 of the NWTT FEIS/OEIS that states: "Fixed-wing aircraft employ active jamming and deception against enemy search radars to mask the friendly inbound strike aircraft mission." Also see the related discussion in Appendix A below. c. The DN/FONSI is based in part on a noise study set forth as Exhibit "J" to the NWTT FEIS/OEIS that is arbitrary and capricious, and violates NEPA, in several ways. Specifically: i. An analysis of the impacts of aircraft was omitted from the Scoping Document for the NWTT EIS/OEIS, and from the NWTT Draft EIS/OEIS, and from the Supplement to the NWTT Draft EIS/OEIS; ii. The statement in the EWR EA that "[A]ny changes to the type or tempo of training conducted in the Olympic MOAs and W237 will be addressed in the Northwest Training and Testing (NWTT) EIS/OEIS" indicates that the Navy intentionally omitted the impacts of the aircraft from the preliminary steps of preparing an EIS, and planned all along to slip any mention of the impacts into the NWTT FEIS/OEIS; iii. Exhibit "J" is not based on the actual plans of the Navy and uses lower levels of aircraft activity than are said to be contemplated by the NWTT FEIS; iv. Exhibit "J" is based on "performance parameters (airspeed, altitude, and power settings) provided by the aircrews who fly the missions", whereas the actual airspeed, altitude, and power settings that the Navy intends to use should be what is analyzed; v. Exhibit "J" bears no understandable relationship to the NWTT FEIS/OEIS. See Paragraph 9.4.1, Section 3, of Appendix "J" that states: "The numbers reflected in the following tables are based on the number of aircraft sorties, while the numbers in the [NWTT FEIS] are the number of activities; therefore, a comparison between the two sets of data in not easily made. One aircraft sortie could result in the completion of multiple training activities. Similarly, is some cases, one activity could include multiple aircraft sorties." This is further contradicted, complicated and confused by the Navy's admission referred to above, that there are "typically 2 to 4 aircraft per (air combat maneuver) event" and "typically 1 to 4 aircraft per (electronic warfare operations) event." See Table 2, Proposed Training Activities, Pages 24 and 26 of the Biological Opinion. vi. Exhibit "J" fails to consider any aircraft activity between Naval Air Station Whidbey Island (NASWI), where the training flights originate and return, and the EWR. Large portions of those areas between NASWI and the EWR overlie Olympic National Park, a World Heritage Site and an International Biosphere Reserve; vii. Exhibit "J" fails to consider any aircraft

activity within a three nautical mile distance from the outside edge of the SUAs towards the interior of the SUAs, whereas aircraft must transit that area in order to reach the interior of the SUAs, and they must operate within that area to detect and target mobile emitter sites that are to be located within that area; viii. Exhibit "J" assumes that the aircraft events are uniformly distributed throughout the SUAs, including W237A, W237B, Olympic MOA A, and Olympic MOA B when in fact that cannot possibly be accurate when, for example, the mobile emitters that the planes will be detecting and targeting are planned to be at specific sites within the Olympic MOAs; ix. The assumption noted in viii, above, distorts and dilutes the actual impacts of the aircraft within the Olympic MOAs, and within Marbled Murrelet and Spotted Owl Critical Habitat as defined by the Endangered Species Act that exist within the Olympic MOAs; x. Nowhere is the training range of the aircraft flying out of NASWI defined, and nowhere are the boundaries of the so-called Pacific Northwest Electronic Warfare Range defined. Without these training ranges and boundaries being defined, it is impossible for the Forest Service to have properly assessed the impacts the Navy's plans will have on the environment; xi. No noise studies included in Exhibit "J" use real, measured, and accurate noise levels generated by the aircraft that would utilize the training areas. All studies are based on unreliable, computer generated approximations from dated information. xii. No flight profiles are provided in Exhibit "J" from which to analyze the impacts of the aircraft that would utilize the training areas. d. The DN/FONSI is based in part on a noise study set forth in the Biological Opinion that is arbitrary and capricious, and violates NEPA, in all the ways Exhibit "J" does as stated above. The following statement at Page 214 of the Biological Opinion is an example of the cavalier approach that the USFWS took, and the Forest Service accepted, it the consideration of the impacts of the EWR: "Without knowing the location and flight pattern of each training flight, we assumed that the training flights will be evenly distributed throughout the Olympic MOAs." The mobile emitter sites which the electronic warfare aircraft will be targeting are generally in the higher elevation areas of the MOAs, and are mostly located in the critical habitat of the spotted owl and the marbled murrelet. To proceed without the knowledge of flight profiles of each training flight in these circumstances precludes the Navy and the Forest Service from determining the real environmental impacts of the proposed action. 6. The proposed action violates the Endangered Species Act. The proposed DN/FONSI, at page 17, states: "The U.S. Fish and Wildlife Service determined that the project may affect, likely to adversely affect marbled murrelets due to noise from aircraft use and that the project will have no effect to marbled murrelet critical habitat." This is correct except for the conclusions that the project will have no effect to marbled murrelet critical habitat. Figure 3.2-6 of the EWR EA shows that emitter sites 1 through 8, 12 through 15, will all be located in marbled murrelet critical habitat. Furthermore, Section 2.1.14 of the EWR EA states that "Once at the site, the trucks would pull off the road utilizing the “pullouts” or turnarounds that already exist at the preselected training sites, park, and shut down their engines. The existing pullouts and turnarounds have already been cleared (harvested), or have natural open areas that would allow emitter use to the west/northwest in the Olympic National Forest and would not cause an obstruction for other vehicles or ground disturbance. Furthermore, these sites have been preselected because, in general, they are on a cliff or ridgeline and/or currently provide an open area to the west of the pullout that enables the mobile emitter a clear line of sight to the west." Clearly, portions of the spotted owl critical habitat were selected and cleared for the emitter sites for the project. That is a physical effect of the project on marbled murrelet critical habitat. Furthermore,

sound is a physical effect. Just as waves on the water can turn a calm surface into a tumultuous sea, sound waves can turn the atmosphere into an uninviting environment - which in this case the Forest Service concedes damages the marbled murrelet. With expected noise levels of up 116 dba, this must be considered physical damage to marbled murrelet critical habitat. For all these reasons, and many more that the limited time given for responses to the DN/FONSI at a busy time of the year precluded us from fully analyzing and commenting upon, we urge you to reject the proposed DN/FONSI and deny the Navy's request for the Special Use Permit. Respectfully submitted by: Save the Olympic Peninsula, by _____ Beverly Goldie, President 360-683-7097 Save the Olympic Peninsula 124 Township Line Rd Port Angeles, WA 98362 See attached Appendix A Appendix A The geographic area proposed to be covered by the EIS is limited to the Whidbey Island area generally, and to landings, takeoffs, and touch and go training at Ault and OLF fields. In this regard, a diagram on the left side of the “Growler Operations” page of the Scoping Meeting Guide is most telling. That diagram includes three flight paths that extend to the southwest of the area shown as follows: Those flight paths, we are sure, lead to the Navy’s proposed Pacific Northwest Electronic Warfare Range (EWR). The impacts of the Gowlers on those flight paths do not end at the boundaries of the Navy’s diagram. The impacts extend as far as the Growlers fly. Under NEPA those impacts must be evaluated in the EIS – both in the area between Whidbey Island and the proposed EWR, and in the area of the proposed EWR. Because that was not done in the Navy’s Environmental Assessment (EA) for the proposed EWR, it should be done now. This is also necessary under the 1988 Master Agreement between the Department of Defense and the US Department of Agriculture. That Master Agreement requires the Forest Service to study both the impacts of the proposed land-based training activities and the impacts of the proposed use of airspace if “directly associated with the land based training.” We are mindful that the Navy’s EA for the EWR states at Page 2-8: “All of the EW training activities and locations that would be associated with the implementation of the Pacific Northwest EW Range were analyzed in the NWTRC EIS/OEIS. The NWTRC EIS/OEIS has an October 2010 Record of Decision that approved an alternative that included EW training activities associated with the establishment of a fixed emitter in the Pacific Beach area. Current training levels in the Olympic MOAs and W237 will remain the same as per the NWTRC EIS/OEIS, and any changes to the type or tempo of training conducted in the Olympic MOAs and W237 will be addressed in the Northwest Training and Testing (NWTT) EIS/OEIS.” However, neither underlined statement is accurate. That the NWTRC EIS does not evaluate the activities contemplated by the proposed EWR is apparent from the following tables: Table 3.2-2 lists the emission sources for all training activities evaluated by the NWTRC EIS. The only emission sources listed for Electronic Combat are from aircraft and ships or boats. There are no emission sources listed for ground based mobile emitters. Had the activities contemplated by the proposed EWR been evaluated by the NWTRC EIS, the ground based mobile emitters should have been listed here as an emission source. Table 3.3-8 lists, by activity and training area, the stressors and hazardous materials that would be associated with the activities evaluated by the NWTRC EIS. For Electronic Combat the only areas listed are the Darrington Area and W-237. Had the activities contemplated by the proposed EWR been evaluated by the NWTRC EIS, the Olympic MOAs should have been listed here as a training area. Table 3.16-1 lists by Range and Training Site, the training environment and the type of training activity covered by the NWTRC EIS. For Electronic Combat the only area listed is W-237.

Had the activities contemplated by the proposed EWR been evaluated by the NWTRC EIS, the Olympic MOAs should have been listed here as a training area. Table 3.16-2 lists by warfare type the area in which it would be conducted. For Electronic Combat the only areas listed are W-237a and the Darrington Area. Had the activities contemplated by the proposed EWR been evaluated by the NWTRC EIS, the Olympic MOAs would should have been listed here as a training area. That the NWTT EIS did not evaluate the activities contemplated by the proposed EWR is apparent from the following statements: At Page 2-3 it says “The land resources affected by the use of the Olympic MOAs A and B will be evaluated as they are directly impacted by overflights for at-sea activities.” To emphasize the obvious, only overflights of the MOAs for training at sea was contemplated in the NWTT EIS. No mention is made of impacts on the Olympic MOAs from Electronic Combat training there. At Page 3.6-18 it says “The training activities involving aircraft in the Olympic MOAs evaluated in this EIS/OEIS are similar to the training evaluated in the NWTRC EIS.” With Electronic Combat training in the Olympic MOAs not having been evaluated in the NWTRC EIS, this sentence demonstrates it was not evaluated in the NWTT EIS either. PPF expects the Navy in the proposed EIS to evaluate the impacts of the Growlers, both in the area between Whidbey Island and the proposed EWR, and in the area of the proposed EWR, with the same intensity and specificity it evaluates the impacts of the Growlers in the Whidbey Island area. In this regard, a diagram on the right side of the “Growler Operations” page of the Scoping Meeting Guide is helpful. It shows a detailed portrayal of the flight paths of Growlers using the OLF for Field Carrier Landing Practice (FCLP). A copy is shown below. It is commendable that the Navy has gone to such extents to study the impacts of the 36 new Growlers at OLF. However, the same detailed portrayal of flight paths of Growlers going to and returning from, and using, the proposed EWR, is essential for a proper evaluation of the impacts in those locations. Because there are 15mobile emitter sites in the proposed EWR, and one fixed emitter site, there are essentially 16 OLFs in the proposed EWR. A detailed portrayal of flight paths for each of the 16 proposed emitter sites is needed. The same is true of every possible flight path to and from the proposed EWR. With neither the NWTRC EIS nor the NWTT EIS having adequately evaluated Electronic Combat in the Olympic MOAs, or aircraft flights in the area between Whidbey Island and those MOAs, the impacts of the 82 or so Growlers currently at NASWI, as well as the proposed 36 new Growlers, must now be evaluated in the proposed EIS. Prior to preparing an EIS as suggested above, the Navy should consider that the Master Agreement referred to above authorized military use of National Forest lands only if that use is “…compatible with other uses and in conformity with applicable forest plans, provided the Department of Defense determines and substantiates that lands under its administration are unsuitable or unavailable.” NASWI is already conducting electronic warfare training at several Department of Defense bases in the Northwest that include restricted airspace and nearly half a million acres of land. Only one, the Fallon Training Range Complex, is mentioned, in a single paragraph on page 2-9 of the EA for the proposed EWR. This does not qualify as the kind of determination and substantiation required by the Master Agreement. Also, Capt. Michael Nortier, the commanding officer at NASWI, stated in a Commentary in the Peninsula Daily News on December 26, 2014, that “The armed services have decades of experience successfully operating similar fixed and mobile emitters at a variety of locations across the nation.” This being the case, the Navy cannot meet the condition under the Master Agreement that lands already “under [the DOD’s] administration are unsuitable or unavailable” for an electronic warfare range.

Consequently, no mobile emitter sites in Olympic National Forest can be used for the proposed EWR. In the proposed EIS, the Navy must also consider the impacts related to both parts of Electronic Combat – Electronic Surveillance and Electronic Attack. In the informational meetings held in Forks and Port Angeles to explain the proposed EWR, the Navy repeatedly stressed that training for Electronic Attack would not take place in the proposed EWR. Capt. Michael Nortier said the same in the Commentary mentioned above. The official documents say otherwise. Specifically: Section 2.1.2 of the EA for the proposed EWR, says “The activities of the Proposed Action center on two divisions of EW, known as electronic warfare support (ES) and electronic attack (EA)”; Section 1.3 of the EA for the proposed EWR, and the related Forest Service and Navy FONSIs, say “The purpose of the Proposed Action is to … maximize the ability of local units to achieve their training requirements on local ranges”; Section 4.2.1.3 of the EA for the proposed EWR says “The Wing’s mission is to support U.S. Naval Air Forces and the Unified Command Structure by providing combatready Tactical Electronic Attack squadrons which are fully trained, properly manned, interoperable, wellmaintained, and supported”; The Proposed Action section of the Fall 2014 “A Guide to the Scoping Meeting (for the subject EIS)” says “The Navy is proposing to increase electronic attack (VAQ) capabilities by adding up to 36 aircraft to support an expanded VAQ mission and training at NAS Whidbey Island; and The VAQ Mission and Training section of the above mentioned Guide says “The missions of the VAQ squadrons include electronic surveillance and attack against enemy radar and communications systems. This involves the use of jamming equipment and anti-radiation missiles. The Growler has an advanced electronic system that allows it to identify targets and protect itself from those targets.” The Navy cannot “maximize” the use of the proposed EWR, nor can it produce “fully trained” “combat-ready Tactical Electronic Attack squadrons” on the proposed EWR without electronic attack training being conducted there. Nor can the Navy meet the Proposed Action and VAQ Mission and Training goals for the proposed action without electronic attack training being conducted on the proposed EWR. The Navy must study the impacts of this electronic attack training in the proposed EIS. It should also stop denying its true intentions regarding electronic attack training in its public statements. In the Navy’s informational meetings at Forks and Port Angeles on the proposed EWR, as well as in the EA for the proposed EWR, it is suggested that EMF from the proposed emitters would not be dangerous, in part because it was directed upwards and away from any living thing that could be adversely affected by the EMF. The implication from this is that EMF directed downwards, as it will be from Growlers training in the proposed EWR, would be dangerous. Perhaps that is why the Navy chose not to address this element of the proposed EWR in its environmental documents. NEPA, however, does not allow for that exception. PPF is encouraged by the statement in the above mentioned Guide that: “A noise assessment will be conducted as part of the EIS and it will include a supplemental noise analysis, a potential hearing-loss analysis, and an assessment of non-auditory health effects. The supplemental noise analysis will include an evaluation of sleep disturbance, indoor speech interference, and classroom learning interference. The potential hearing loss analysis will focus on any portion of the local population that may be exposed to noise levels greater than 80 DNL. Lastly, the assessment of non-auditory health effects will consist of a comprehensive literature review.” These studies, however, must be done with real noise level data obtained from actual on ground measurements under the actual, specifically located flight paths that the Growlers will travel, wherever they travel, and at whatever power levels they travel, including all times when their

afterburners are operating. These studies must also be done by time of day and by time of year. This latter consideration is particularly important in relation to nesting seasons for endangered birds and tourist seasons for Olympic National Park and surrounding areas. It is not sufficient to assume that training will take place at a constant number and duration of flights throughout the year, unless in fact it does. These studies should include C-Weighted sound measurements and analysis, they must incorporate supplemental noise measurements including Sound Exposure Level (SEL) and Peak Sound Level (Lmax), in addition to Ldn, and they must document the projected annual number of events that exceed 60 dB SEL and Lmax in 5 dB increments throughout the impacted areas. These studies should also address the health effects of “Startle Reactions” and the effects on a person’s feelings of loss of control over their environment when subjected to noise impacts beyond their control. The mention of certain impacts herein, does not mean to imply that there are not other impacts to cover. The proposed EIS must consider the full range of environmental issues and not eliminate any issues on the basis of preliminary, incomplete studies that purport to reveal resources upon which the proposed action is unlikely to have any potential environmental impacts. In the EA for the proposed EWR, the exclusion of geology, water, land use, cultural, and transportation resources, and socioeconomics, and environmental justice and protection of children, was simply not excusable. In evaluating the impacts on Olympic National Park, the Navy should pay special attention to the fact that the Park is a World Heritage site, an International Biosphere Reserve, and the home of One Square Inch of Silence, one of the quietest places in the United States. The Park includes the world's last remaining coastal rainforest ecosystem of its kind. It is an irreplaceable cultural and natural resource. It is also the economic hub of the Olympic Peninsula. No proposed action by the Navy should adversely impact this treasure in any way. Because so much more should be evaluated in the Proposed EIS than was presented in the Scoping documents, a whole new Scoping evaluation should be conducted by the Navy, with another opportunity for the public to comment.

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1.a. Thank You
10.a. Biological Resources Study Area
10.f. Endangered Species Impact Analysis Adequacy
10.k. Aircraft-Wildlife Strike and Hazing/Lethal Control of Wildlife

Skagit Audubon Society
P.O. Box 1101
Mount Vernon, WA 98273

February 23, 2017

EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508
Attn: Code EV21/SS

Dear sir/madam:

We are writing on behalf of Skagit Audubon Society to comment on the Environmental Impact Statement (EIS) for EA-18G "Growler" Airfield Operations at Naval Air Station (NAS) Whidbey Island. Skagit Audubon, the Skagit County-centered chapter of National Audubon, has 235 member families. With over 450 chapters nationwide, we share the Audubon mission to conserve and restore natural ecosystems, focusing on birds, other wildlife and their habitats for the benefit of humanity and the earth's biological diversity. We recognize the importance of EA-18G pilots receiving thorough and realistic training and the difficulty of finding a place to do this without significant impacts to people and wildlife.

Skagit County is directly adjacent to Island County, home of NAS Whidbey, and many of our members live beneath the flight paths of Whidbey's EA-18G Growlers. We imagine you have received detailed comments on evaluating the effects of Growler noise on human well-being. We are writing, however, to offer several comments on the potential effects of Growler numbers and operations on birds as described in, or partially absent from, the draft Environmental Impact Statement.

<u>Effects on the Marbled Murrelet need to be more specifically studied and must be mitigated.</u>
Twenty-five years ago, the marbled murrelet, a small seabird which nests in old growth forest and forages for small fish in nearshore marine waters, was listed as a threatened species under the Endangered Species Act (ESA). The draft EIS on which we are commenting duly lists the marbled murrelet as the one ESA listed bird species within the area on which the document focuses. The overview of the bird's life history in Chapter 3 (Affected Environment) appears to be based on a thorough search of the research on this species. The murrelet population is rapidly declining in Washington State. Its decline in recent years has been particularly rapid around Puget Sound, and without concerted and perhaps dramatic changes in such things as public lands management and the restoration of forage fish, the marbled murrelet will be gone from Washington State in our lifetime. We feel that this EIS's attention to adverse effects of naval operations on this species is inadequate.

In Chapter 4 (Environmental Consequences) of the draft EIS on pages 4-209 and 4-210, there is the following discussion of possible effects of increased flights of Growlers over waters where marbled murrelets are present (quoted here in part):

> "Research into the effects of aircraft disturbances on marbled murrelets is extremely limited. Kuletz (1996) found that marbled murrelet counts in marine waters decreased in response to increasing numbers of both boats and low-flying planes. This appears to be the only study noting the effects of aircraft on marbled murrelets in marine waters, although evaluating aircraft impacts was not a primary objective. In the absence of information regarding aircraft disturbances on marbled murrelets in marine waters, boat-related studies provide some insight into how marbled murrelets respond to human disturbances … Due to the lack of studies regarding aircraft disturbances on at-sea marbled murrelets, the following (i.e. (our note) effects of boats and aircraft on other bird species) serves as the best available information."

The text then elaborates, drawing tentative conclusions about the potential for Growlers to disturb the resting and feeding activity of murrelets with potential consequences for their success at rearing their young and perpetuating this declining species.

The conclusion (p.4-211) is that (our underlining):
"Marbled murrelets may occur in all marine waters in the study area and have been documented at a number of locations, and they would be susceptible to disturbances from aircraft operations. However, marbled murrelets in the study area are already exposed to an annual average of 89,000 aircraft operations on the NAS Whidbey Island complex (refer to Table 3.1-1), which suggests they are habituated to the existing high levels of aircraft activity as well as other human-made disturbances (e.g., boat traffic). Existing research indicates that most individuals would not respond to aircraft overflights, and those that do may return to normal foraging and loafing activities relatively soon after the disturbances end (Speckman, Piatt, and Springer, 2004; Hentze, 2006; Bellefleur, Lee, and Ronconi, 2009). For these reasons, the Proposed Action under each of the three action alternatives would not result in significant aircraft-related, sensory disturbance impacts on marbled murrelets based on the best available information."

We believe that to admit to a lack of directly relevant research and then draw a conclusion of no effect, especially for a species whose state listing Washington Department of Fish & Wildlife elevated from "threatened" to "endangered" (December 2016), is faulty logic. That said, we were happy to read, in Table 4.17-1 "Summary of Potential Impacts to Resource Areas" (p. 4-308): "The Navy has determined that, pursuant to the ESA, the Proposed Action may affect the marbled murrelet. The Navy will consult with the USFWS." Consultation is, of course, a legal requirement under the ESA and is required for the EIS to be deemed adequate.

It seems that study of marbled murrelet reaction to the type and duration of noise generated by Growlers over and adjacent to Whidbey Island's nearshore waters is necessary. We also believe that the geographic area considered in this DEIS is incomplete and should include all the area where the expanded number of Growlers would be training. The murrelet would experience the admitted impact of Growler noise not only near Whidbey Island but everywhere the species occurs and the planes fly. This means, too, that the potential effects on marbled murrelets and their habitat need to be considered over a much larger area of Puget Sound and the Straits of Juan de Fuca as well as the areas where murrelets nest on the Olympic Peninsula and around Puget Sound. The effects studied should examine those of the full range of noise frequencies which Growlers generate. Findings should be followed by a careful determination of effective

mitigation, before the project in question is implemented. There are biologists with advanced expertise in studying marbled murrelets. The Navy, under the oversight of the U.S. Fish & Wildlife Service, should commission the necessary study and determination of mitigation. Drawing conclusions from admittedly inadequate information is not adequate for addressing effects on a listed species.

Trumpeter and Tundra Swans are inadequately represented in the discussion on birds strikes. Their size and manner of flight could pose a particular danger to Growler operations.
Both these species are mentioned on page 3-120 in the description of Skagit Bay Important Bird Area IBA) and a few other places describing species of special emphasis in county ordinances. However, these largest of North American waterfowl are not specifically addressed in the section of chapter 4 on bird strikes (pages 4-213 and 4-214). The text does state that more Growlers would mean greater potential for bird strikes over such places as Skagit Bay IBA, but that is the only even indirect reference to potential interaction of swans and Whidbey planes. We know that in some recent years there have been swans regularly present on certain fields and ponds directly under or close to flight paths to Ault Field. Perhaps this is not presently the case, but it could be again in the future. We suggest a more thorough analysis of the potential for and consequences of a Navy plane striking birds as large and relatively slow moving as Trumpeter and Tundra Swans. If such a study and plan already exist, they should be discussed in the DEIS with reference to any necessary changes in light of the planned increase in planes and flights.

Habitat of ESA-listed Birds on the Olympic Peninsula
In analyzing the potential effects of increasing the number of Growlers at NAS Whidbey and the related increases and changes in training operations, it seems unrealistic to not address effects on the Olympic Peninsula. While an earlier environmental analysis for U.S. Forest Service permitting looked at the effects of NAS Whidbey's electronic warfare training on the Olympic Peninsula, did it take into consideration the number of Growlers which would be engaged in such training were expansion to take place? State and federal lands on the peninsula are essential breeding areas for the federally listed spotted owl and marbled murrelet. And Olympic National Park, designated a World Heritage Site and International Biosphere Reserve, is renowned for its natural soundscape and profound quiet. The draft EIS on which we are commenting should include an analysis of environmental effects everywhere that the full planned complement of Growlers would fly when based at NAS Whidbey.

We appreciate your attention to our comments. Thank you also for accommodating public interest by extending the original comment period.

Sincerely,

/s/ Irene Perry

Irene Perry
President
Skagit Audubon Society

Timothy Manns
Conservation Chair
Skagit Audubon Society

04_WASHINGTONTRUSTFORHISTORICPRESERVATION-01

Chris Moore
Washington Trust for Historic Preservation

Seattle, WA 98101

February 24, 2017 EA-18G Growler EIS Project Manager Naval Facilities Engineering Command Atlantic Attn: Code EV21/SS 6506 Hampton Boulevard Norfolk, VA 23508 Delivered by email 2/24/2017. Re: Response to Draft Environmental Impact Statement (DEIS) on EA-18G Growler Operations at Naval Air Station Whidbey Island (NASWI). Dear EA-18G Growler EIS Project Manager: Established in 1976, the Washington Trust for Historic Preservation is the only statewide nonprofit organization committed to preserving Washington's historic and cultural resources. Given our statewide advocacy role, we feel obligated to comment on the DEIS, expressing several concerns regarding the adverse impact the proposed activity will have for cultural resources in the area. These concerns are outlined as follows: 1. We believe the Area of Potential Effect (APE) does not fully cover all areas that will be affected by noise and visual intrusions caused by the increase in flight operations. The APE should be expanded to cover all areas that will experience noise disturbance from the frequency and duration of operations. 2. The DEIS asserts that noise and vibration from expanded Growler operations will not adversely impact the historic character and nature of effected resources. We do not agree with this assertion, which seems to stem from a statement that no significant damage or impacts have been reported from operations to date. Operations to date should not be used as a measure of potential future impacts caused by vibration and noise given that such impacts will be heightened by the proposed expansion of operations. It is not enough to conclude an absence of adverse impact moving forward simply because such impacts have not materialized to a significant degree in the past. 3. Areas affected by expanded operations include units of the National Park Service (Ebey's Landing National Historical Reserve), 14 identified units of Washington's State Park System (including Fort Casey and Fort Flagler, to name two), Port Townsend's National Historic Landmark District (containing nationally significant resources associated with a Victorian-era seaport), and numerous other cultural and historic resources under private and public ownership. These areas are enjoyed by residents and visitors alike. In our opinion, the DEIS fails to provide adequate analysis over the degree to which the resident and visitor experience of and interaction with historic sites and places will be impacted. 4. The region proposed for expanded Growler operations includes a high density of day-use and overnight historic and cultural visitor experiences. The economic impact derived from this visitation is directly correlated with the ability of owners of historic resources to serve as good stewards for those resources. The owner of a historic inn located in Port Townsend will not be able to care for their building if tourism is impacted by increased noise levels. State Parks will not be able to provide cultural and historic related programming or services at their locations if people are unable to visit the parks because of expanded operations. The Washington Trust for Historic Preservation concludes that historic and cultural resources will be adversely impacted if the proposal to expand Growler operations is implemented. We urge adoption of a No Action Alternative, allowing for time to more fully assess the impacts such a project will have for a region that includes sensitive and fragile cultural resources. Sincerely, Chris Moore Executive Director

1.a. Thank You
12.h. Tourism
2.l. No Action Alternative
7.e. Impacts to Recreation from Noise/Operations
7.g. Ebey's Landing National Historical Reserve
7.i. Deception Pass State Park and Other State Parks
8.a. Cultural Resources Area of Potential Effect
8.b. Section 106 Process
8.c. Noise and Vibration Impacts to Cultural Resources
8.j. City of Port Townsend Cultural Resources

WASHINGTON TRUST FOR HISTORIC PRESERVATION

February 24, 2017

EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
Attn: Code EV21/SS
6506 Hampton Boulevard
Norfolk, VA 23508

Delivered by email 2/24/2017.

Re: Response to Draft Environmental Impact Statement (DEIS) on EA-18G Growler Operations at Naval Air Station Whidbey Island (NASWI).

Dear EA-18G Growler EIS Project Manager:

Established in 1976, the Washington Trust for Historic Preservation is the only statewide nonprofit organization committed to preserving Washington's historic and cultural resources. Given our statewide advocacy role, we feel obligated to comment on the DEIS, expressing several concerns regarding the adverse impact the proposed activity will have for cultural resources in the area. These concerns are outlined as follows:

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3. Areas affected by expanded operations include units of the National Park Service (Ebey's Landing National Historical Reserve), 14 identified units of Washington's State Park System (including Fort Casey and Fort Flagler, to name two), Port Townsend's National Historic Landmark District (containing nationally significant resources associated with a Victorian-era seaport), and numerous other cultural and historic resources under private and public ownership. These areas are enjoyed by residents and visitors alike. In our opinion, the DEIS

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T 206.624.9449 F 206.624.2410 | www.PreserveWA.org

04_WASHINGTONTRUSTFORHISTORICPRESERVATION-02

1.a. Thank You
12.h. Tourism
2.l. No Action Alternative
7.e. Impacts to Recreation from Noise/Operations
7.g. Ebey's Landing National Historical Reserve
7.i. Deception Pass State Park and Other State Parks
8.a. Cultural Resources Area of Potential Effect
8.b. Section 106 Process
8.c. Noise and Vibration Impacts to Cultural Resources
8.j. City of Port Townsend Cultural Resources

fails to provide adequate analysis over the degree to which the resident and visitor experience of and interaction with historic sites and places will be impacted.

4. The region proposed for expanded Growler operations includes a high density of day-use and overnight historic and cultural visitor experiences. The economic impact derived from this visitation is directly correlated with the ability of owners of historic resources to serve as good stewards for those resources. The owner of a historic inn located in Port Townsend will not be able to care for their building if tourism is impacted by increased noise levels. State Parks will not be able to provide cultural and historic related programming or services at their locations if people are unable to visit the parks because of expanded operations.

The Washington Trust for Historic Preservation concludes that historic and cultural resources will be adversely impacted if the proposal to expand Growler operations is implemented. We urge adoption of a No Action Alternative, allowing for time to more fully assess the impacts such a project will have for a region that includes sensitive and fragile cultural resources.

Sincerely,

Chris Moore
Executive Director

WCAA
West Coast Action Alliance

Olympic Forest Coalition
olympicforest.org

To: EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508

Attn: Code EV21/SS

Subject: Navy Draft EIS – EA-18G Growlers at Naval Air Station Whidbey Island

Date: February 23, 2017

Dear Sir or Madam,

Thank you for the opportunity to comment on the Navy's 1400-page Growler Draft Environmental Impact Statement (DEIS). We appreciate need for pilot training, and we are grateful for the sacrifices made by the members of our military and their families. We hope that our comments here are taken in the spirit of strengthening the protection for our country, the communities you sacrifice to protect, and our shared environment.

We strongly believe that this DEIS does not adequately address significant potential impacts from the unprecedented expansion of Navy activities into civilian areas that have previously been unaffected. Our comments focus on procedural and substantive problems that we feel must be addressed. The DEIS has significant gaps, inaccuracies, and therefore underreports and does not analyze direct, indirect and cumulative impacts to human health, endangered species, land and marine environment, and historic sites of importance. We seek to point out specific areas that must be addressed, and provide recommendations to correct the problems we identify with this comment.

By way of example of the seriousness of DEIS' deficiencies, one of the most significant gaps in the DEIS, is that it is does not include approximately 40 additional Growlers that are in the process of purchase and delivery, beyond the 35 or 36 identified in the proposed action. The DEIS only analyzes 50% of the action, and 50% of the potential impact. This is an inappropriate segmentation of the proposed action. The DEIS states in Volume 1, Abstract 1, that the total

04_WCAA-OLYMPICFORESTCOALITION-01

1.a. Thank You
1.b. Best Available Science and Data
1.c. Segmentation and Connected Actions
10.a. Biological Resources Study Area
10.b. Biological Resources Impacts
10.c. Wildlife Sensory Disturbance and Habituation
10.f. Endangered Species Impact Analysis Adequacy
11.d. Per- and Polyfluoroalkyl Substances
13.a. Environmental Justice Impacts
18.a. Climate Change and Greenhouse Gases
18.b. Average Carbon Dioxide per Aircraft
18.d. Washington State Greenhouse Gas Goals
19.a. Scope of Cumulative Analysis
19.b. Revised Cumulative Impacts Analysis
19.c. Olympic Peninsula, Olympic National Park, and at-Sea Training
19.d. Electronic Warfare
19.h. Cumulative Impacts on Biological Resources
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
2.c. Compliance with the National Environmental Policy Act
2.d. Program of Record for Buying Growler Aircraft
2.e. Public Involvement Process
2.h. Next Steps
2.k. Range of Alternatives
2.n. Alternatives Considered But Eliminated
3.b. Flight Tracks and Federal Aviation Administration Regulations
3.e. Field Carrier Landing Practice Patterns
4.a. General Noise Modeling
4.b. NOISEMAP Model, Modeling Methodology, and Noise Sources
4.c. Advanced Acoustic Model
4.f. Noise Measurements/Modeling/On-Site Validation
4.j. Other Reports
4.k. Comparison of the Prowler to the Growler
4.l. Points of Interest
4.p. Sleep Disturbance
4.q. Potential Hearing Loss
4.r. Nonauditory Health Effects
4.s. Health Impact Assessment and Long-term Health Study Requests
4.t. Noise Mitigation
4.v. Impacts to Domestic Pets, Livestock, or Wildlife
5.a. Accident Potential Zones
5.d. Environmental Health Risks and Safety Risks to Children
6.a. Air Quality Impacts from Mobile Source Emissions (Jet Engine and Vehicle)
6.b. National Ambient Air Quality Standards Compliance

6.c. Hazardous Air Pollutant Compliance
6.d. Air Operating Permit
6.f. Fuel Dumping
8.a. Cultural Resources Area of Potential Effect
8.b. Section 106 Process
8.j. City of Port Townsend Cultural Resources

number of Growler aircraft at Ault Field will be 117 or 118. However, a Department of Defense (DOD) report[1] from 2016 states:

> "The procurement profile of the FY 2017 PB adds 7 EA-18G aircraft in FY 2016. The result of this addition will be a FY 2016 FRP contract for Lot 40 EA-18G aircraft, which increases the total Program of Record (PoR) from 150 to 157. … These aircraft are in the process of delivery …"
>
> "Initial aircrew training will be conducted at NAS Whidbey Island, WA. … Limited I-Level for some EA-18G and F/A-18E/F common maintenance tasks has been established at Whidbey Island, WA. Airborne Electronic Attack (AEA) I-Level maintenance will be stood up at Whidbey Island and aboard the CVWs commencing FY18."

The Draft EIS has not fulfilled its obligation to "evaluate[s] the potential environmental impacts … as well as the cumulative impacts of the Proposed Action and other local projects." Council on Environmental Quality (CEQ) Regulation 1502.9 states:

> (c) Agencies: (1) Shall prepare supplements to either draft or final environmental impact statements if: (i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

We therefore recommend that the Navy revise and issue a new DEIS to address the 40 additional Growlers, and any and all others destined to be stationed at Naval Air Station Whidbey Island, and to allow further opportunity for public comment before the Final EIS is prepared.

The public access to information and opportunity to comment has been inappropriately limited in the procedure followed by the Navy for this action. An internet search reveals that the current comment period ending on February 24, 2017, may be the last chance the public will have to comment on the matter within an official comment period under NEPA. According to a flow chart in an online Navy brochure that has not been updated to reflect delays,[2] the Navy does not intend to allow a public comment period on the Final EIS.

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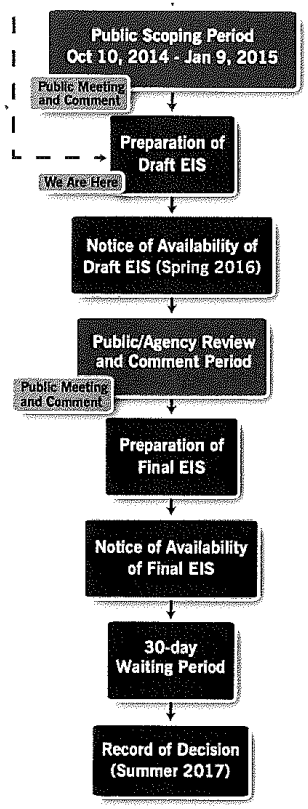
[1] Selected Acquisition Report (SAR), RCS: DD-A&T (Q&A) 823-378, EA-18G Growler Aircraft (EA 18G), As of FY 2017 President's Budget, March 17, 2016, pg. 7. https://goo.gl/IQrY4K

[2] US Navy. Growler Aircraft Operations at NAS Whidbey Island and OLF Coupeville, online brochure, page 6. View at: http://www.cnic.navy.mil/content/dam/cnic/cnrnw/pdfs/NASWIfactsheets/Whidbey%20Island%20Growler%20OPS%20OLF%20Brochure.pdf



Above from online brochure, see footnote #2.

The "30-day waiting period" the Navy proposes for the Final is not a public comment period. It would not allow the public to evaluate whether the Navy has considered comments made at the Draft EIS phase. Our concerns also include the fact that this DEIS does not provide the public with opportunity to access information, nor the full scope of direct, indirect and cumulative impacts, because so many of them have been excluded from this DEIS. An agency must prepare a revised DEIS if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.[3] The addition of 40 more Growler aircraft represents significant new information relevant to the environmental effects that have bearing on the proposed action and its impacts. A Revised DEIS must also include adequate public access to information and opportunity to comment.

The remainder of our comments on the Growler Draft EIS include the following deficiencies:

[3] CEQ NEPA Regulations, 40 C.F.R. § 1502.9(c).

1. National Environmental Policy Act (NEPA) noncompliance
2. National Historic Preservation Act (NHPA) noncompliance
3. Noise has not been analyzed on Olympic Peninsula
4. Flying on weekends not disclosed in DEIS
5. Air crash dangers not addressed in the DEIS
6. Navy is piecemealing Growler public process
7. Noise modeling software outdated, legally questionable
8. Flight tracks and Military Operating Areas not adequately considered in noise analysis
9. Climate change and air quality analysis piecemealed, inadequate
10. Water and soil contamination from Growler-related activities not addressed
11. Cumulative impacts to wildlife, threatened and endangered species inadequate

1. NEPA noncompliance: The Navy's Growler Draft Environmental Impact Statement (DEIS) does not comply with the National Environmental Policy Act of 1969 (NEPA) on several counts. When an agency intentionally attempts to circumvent NEPA by dividing a federal action into smaller components in order to allow those smaller component pieces to avoid evaluating the overall impacts of the single project, then "improper segmentation" has occurred. It is unlawful for agencies to evade their responsibilities under NEPA by artificially dividing a major federal action into smaller components, each without significant impact. To more than double the number of aircraft being evaluated in this DEIS amounts to what case law has labeled a non-comprehensive consideration of a project by dividing it into smaller parts, each of which when taken alone may or may not have a significant impact, but when taken as a whole definitely have significant impact. This is a clear example of noncompliance under NEPA.

A four-factor test developed by the Court and published as a Final Rule on January 13, 2014, determines whether improper segmentation has occurred. These factors include whether the proposed segment:

(1) has logical termini [rational endpoints];
(2) has substantial independent utility;
(3) does not foreclose the opportunity to consider alternatives; and
(4) does not irretrievably commit federal funds for closely related projects.[4]

By considering only takeoff and landing noise produced immediately adjacent to runways at Ault Field and OLF Coupeville, the DEIS violates NEPA §1508.25 by failing to consider the wider area of functionally related impacts caused by naval flight operations. By failing to enlarge the scope of its analysis beyond the immediate environs of Naval Air Station Whidbey Island (NASWI), the DEIS fails to consider interdependent parts of a larger action that cannot proceed without takeoffs and landings, fails to consider the automatically-triggered additional impacts from takeoffs and landings, and fails to evaluate cumulative effects. In addition, the annual Day-Night Noise Level (DNL) used to establish projected noise levels does not take into account the low frequency noise that Growlers make. The DEIS also averages peak noise events over 365

[4] Veenendaal, Elijah. Avoiding Improper Segmentation and Accounting for Cumulative Impacts During Deployment of a Broadband Infrastructure, July 2012. http://westcoastactionalliance.org/wp-content/uploads/2015/05/E.-Veenendaal-NEPA-Segmentation.pdf

days of quiet periods to get the 65-dB (decibel) average level, and it holds up as scientifically valid an outdated, misleading and scientifically invalidated DNL threshold for high noise annoyance. This violates NEPA §1508.23, which says that effects must be meaningfully evaluated. By failing to offer the public a reasonable alternative that would reduce noise levels, the Navy violates NEPA §1506.1.

It is illegal to irretrievably commit funding to a project before completion of the public NEPA process, yet the abovementioned 2016 DOD report clearly demonstrates that funds have been committed. The Navy's NEPA representative at a December 2016 open house confirmed to a crowd of people that funding had been committed for the manufacture of these new Growlers prior to initiation of NEPA; she justified it by saying the jets had not yet been *delivered.* This is nonsensical. When funding is committed before the NEPA process is begun, it forecloses public options. Such a delay of NEPA initiation and completion amounts to an inappropriate retrofit of the public process to decisions already made, and it makes proposed alternatives, even if there was one offering a reduction in noise, into mere window dressing. This is in violation of 40 CFR §1506.1, which says:

> Limitations on actions during NEPA process. (a) Until an agency issues a record of decision as provided in §1505.2 (except as provided in paragraph (c) of this section), no action concerning the proposal shall be taken which would: (2) Limit the choice of reasonable alternatives.

By failing to consider all of the above, the DEIS does not evaluate all potential direct, indirect, and cumulative environmental impacts under its three action alternatives. The Navy is well aware of public concerns that were raised in writing about these problems in 2014 during the scoping process, but it has not addressed those concerns. In addition, neither the 3 action alternatives nor the no-action alternative in the DEIS offers a reduction in noise, as is required by NEPA.

Navy NEPA regulations as issued in OPNAVINST 5090.1B[5] state:

> Involve interested and affected agencies, governments, organizations and individuals early in the agency planning and decision making process when significant impacts are or may be expected to the quality of the human environment from implementation of proposed major Federal actions; and
> Conduct and document environmental reviews and related decisions appropriately and efficiently.

The Navy does not make it easy to learn about commencement of its NEPA processes in a timely way. Our Board members have tried three times over the span of a year and a half to subscribe to the Navy's mailing list that notifies interested parties of NEPA processes that may affect them; the first time was in August 2015, after a meeting with Navy Public Affairs Officer Chris Haley, who assured us that our contact information was added to the email database. When no notice of the Final EIS published 45 days later appeared and caused a week's delay in learning of its existence, we contacted Chris again, and also went back to the database to re-enter contact

[5]http://www.navfac.navy.mil/navfac_worldwide/atlantic/fecs/southwest/about_us/our_services/Environmental/planning/nepa.htmlhttp://www.navfac.navy.mil/navfac_worldwide/atlantic/fecs/southwest/about_us/our_services/Environmental/planning/nepa.html

information. When nothing arrived for further notifications through mid-2016, we contacted Public Affairs Officer Sheila Murray, who said to sign up, which we did, again, yet no notifications ever arrived. We also requested in writing, twice, hard copies or CDs; none have ever been received. We must therefore conclude that the Navy's database for interested parties is either nonexistent, defunct, or that contact information for some constituents has been repeatedly lost. Since the email list that NASWI uses for announcements and press releases was inadvertently made public earlier this year and includes, besides members of the press, a number of civilians known to be enthusiastic in their support of the Navy, it's clear that the Navy knows how to keep some, but not all, people informed.

Regarding "ownership" of the airspace above non-military lands and waters, one could argue, as has the Navy and economist Murray Rothbard at the Cato Institute, that airports which were long ago built "far from any residential areas" enjoy a sort of "homestead principle" which gives them the right to radiate loud sound waves across surrounding vacant or agricultural land. Navy personnel have repeatedly argued that "new" residents have no right to complain about the noise, and that the Navy's presence since 1941 gives them the right to "trump" the quiet enjoyment of residential properties. Rothbard's argument continues: "The airport, through homesteading, has earned an easement right to create x decibels of noise. This "homesteaded easement" is an example of the ancient legal concept of "prescription," in which a certain activity earns a prescriptive property right to the person engaging in the action." Given this statement, made to one of our members at a November 19, 2014 Navy public meeting in Pacific Beach, Washington, by Northwest Training and Testing Range Manager Kent Mathes, -- "We own the airspace and there's nothing you or anyone else can do about it" -- it would appear that the Navy's assertion of what amounts to an acoustic eminent domain has been based on such arguments.

Where this argument fails, however, is on three points: first, the land was not vacant; the Ebey family homesteaded the area in the 1850s, and their descendants are still there. Development of the Admiral's Cove community near OLF-Coupeville started in 1963, with many homes and community infrastructure completed by the early 2000s. As a result, the Navy's normal buffer of vacant land around this reactivated WW2-era runway does not exist. That is not the fault of the community. Second, the Navy was considered a good neighbor until the Growlers arrived in the mid-2000s; whatever "homestead easement" may have been theoretically established by the noise levels produced between 1941 and 2005, no longer exists. There is no real or theoretical "easement" for the far louder and expanded noise footprint, no logic for not measuring or modeling it, and no justification for the harm to businesses and private individuals. And third, not even an implied historic "noise easement" would extend to the Olympic National Park or to residential properties and businesses that are across the Sound or Strait, many miles from NASWI. Locations of these electronic warfare mobile emitters are right next to Park boundaries, and the jets will be homing in on them. Currently the Growlers make low sweeps for many miles up the Hoh River and throughout the West End, diminishing public enjoyment of State, Park and private lands. The Growlers are loud enough to drown out the sounds made by the Hoh River or ocean surf, even if one is sitting within a few meters of these waters.

The National Park Service, via Soundscape Management Policy 4.9, Cultural Soundscape Management Policy 5.3.1.7, and Director's Order #47, directs park staff to preserve and restore the soundscape, which is defined as "...all natural sounds occurring in parks, the capacity for

transmitting those sounds, and the relationships among natural sounds." While the Navy enjoys certain exemptions, it is still important to note that the soundscape at Olympic National Park is additionally governed and protected by the following, as well as NEPA: Wilderness Act 36 CFR Section 2.12 Audio Disturbance; and NPS Policy 8.2.3 re: Use of Motorized Equipment. When noise levels reach the point where park visitors as well as communities for thousands of square miles on both sides of the Strait of Juan de Fuca and throughout Puget Sound are suffering and complaining about Navy noise, it is incumbent upon the government agencies that are creating or facilitating such noise to first offer solutions that reduce it, and then to present a fair and balanced analysis for an honest dialog with other agencies and the public about mitigating its impacts. Unfortunately, this is not happening.

We urge the Navy to comply with the spirit and letter of NEPA requirements by proposing alternatives that reduce the noise, by properly and accurately evaluating noise and other impacts in all affected areas, by making actual noise measurements as well as computer modeling throughout the affected areas, and by using scientifically valid standards that measure the more realistic aspects of noise, as previously requested by local governments in surrounding communities. This should be accomplished via preparation of a revised EIS that addresses the full scope of impacts, with a public comment period of adequate length. We further request a reliable method of notification that will facilitate prompt public awareness and minimize the delays that reduce available time during comment periods.

2. NHPA noncompliance: The Navy's Growler DEIS does not comply with the National Historic Preservation Act because its Area of Potential Effect is too small and too narrowly focused on the immediate environs around the runways at NASWI, and it does not consider harm to historic and cultural properties outside that narrow area. It focuses on takeoffs and landings only, and not on noise from flight operations. It does not take into account the potential effects of chronic low-frequency noise produced by Growlers that can impact historic buildings, including potential structural weakening that could render them and the people who occupy them, more vulnerable to earthquakes. The Navy was made aware of this concern by local and Tribal governments and individuals prior to publication of the DEIS. However, the Navy has not addressed those concerns. It has evidently chosen to ignore the August 2016 request for consultation under this federal statute, from the City of Port Townsend, which maintains two Historic Districts whose quiet settings and structural integrities are being directly impacted by Navy jet noise. **A revised EIS is required, that expands the Area of Potential Effect to include all areas affected by noise from this significant increase in Growler jet activities. The Navy must respond to all requests from local governments for consultation under Section 106 of the National Historic Preservation Act.**

3. Noise has not been analyzed on Olympic Peninsula: The Navy has not adequately considered direct, indirect or cumulative effects of jet noise on the Olympic Peninsula in previous NEPA processes; its claims of analyzed noise via previous "tiered" NEPA documents are not accurate. For example: although the Navy said it evaluated noise for the Olympic Peninsula in 2010 with the Northwest Training Range Complex EIS, that document did not do so. Had the activities contemplated by the proposed Electronic Warfare Range been evaluated by

that EIS, the ground-based mobile emitters should have been listed as an emission source. They were not. For Electronic Combat and Electronic Attack, the only areas listed by activity and training area, warfare type, and Range and Training Site were the Darrington Area east of Whidbey Island, and W-237 offshore from the coast. Neither is on the Olympic Peninsula. Had noise been properly evaluated, the Olympic Military Operating Areas (MOAs) were required to be listed and evaluated. They were not.

Computer modeling for the "Affected Noise Environment" immediately adjacent to Naval Air Station Whidbey Island (NASWI) runways extends to the year 2021 and clearly demonstrates the Navy's ability to model noise impacts, yet no computer noise modeling was done for Port Townsend, Port Angeles, the northern San Juans, or the highly impacted West End of the Olympic Peninsula. These areas have different terrain and weather conditions from those found at NASWI. For example, the Hoh River is surrounded by steep-sloped mountains which amplify and echo noise. Port Townsend is on a peninsula surrounded on three sides by water, which echoes sound. Port Angeles gets reflected sound from the Strait of Juan de Fuca to its north and from the Olympic Mountains to its south. Some of these communities may not hear takeoffs and landings, but they are severely affected by Navy over flight operations. Models for the flatter NASWI runway terrain and Whidbey Island weather simply do not apply in these other areas, as evidenced by separate NOAA weather forecasts for them. The DEIS's attempt, for example, in Table 4.2-23 on page 4-103, to lay out an average number events per hour in which outdoor speech interference from Growler noise occurs is inaccurate for Port Townsend. While the table shows zero instances of speech interference outdoors, residents can attest that jet noise drowns out speech numerous times, not just outdoors but also indoors, unless windows are tightly shut. In addition, we will discuss later in more detail the reasons why the software the Navy uses to model noise is outdated and does not account for the noise characteristics of newer aircraft.

Therefore, for reasons cited above, Growler jet noise has not been properly analyzed for the Olympic Peninsula. This is an egregious omission considering that the Aircraft Environmental Support Office directs Navy aircraft "…to avoid towns and populated areas by 1 nm (nautical mile) or overfly 1,000 feet AGL (above ground level)," and, "over sparsely populated areas, aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure."[6] A Growler generates 150 dB at takeoff. Such low altitude flying generates in excess of 100 decibels, shortens exposure times for permanent hearing damage, causes serious non-auditory effects, especially to children, and degrades wildlife habitat. The DEIS acknowledges a study that "…found a linear relation between chronic aircraft noise exposure and impaired reading comprehension and recognition memory. No associations were found between chronic road traffic noise exposure and cognition."

The DEIS concludes, not without irony, that it "…cannot be conclusively stated that a causal link exists between aircraft noise exposure and the various type of non-auditory health effects that were studied," but goes on to say that the jury is still out on whether noise causes physiological harm to wildlife. This inappropriately ignores known potential effects from multiple analyses, and justifies itself by claiming lack of clear evidence. In complete violation of the Precautionary Principle and despite medical documentation from members of the public, it states, "…no scientific consensus exists that noise causes non-auditory health impacts to human beings," and

[6] DEIS, Chapter 3.

also, "…while the literature on non-auditory health effects of environmental noise is extensive, the scientific evidence of the relationship between noise and non-auditory effects is still contradictory. As a result, it is not possible to state that there is sound scientific evidence that aircraft noise is a significant contributor to health disorders." Nevertheless, the DEIS contradicts that statement in section A.3.12: "The relationships between potential auditory/physiological effects and species interactions with their environments are not well understood. Manci et al. (1988), assert that the consequences that physiological effects may have on behavioral patterns are vital to understanding the long-term effects of noise on wildlife. Questions regarding the effects (if any) on predator-prey interactions, reproductive success, and intra-inter specific behavior patterns remain." **We request that the Navy, using Best Available Science, document and analyze the potential non-auditory impacts to both wildlife, including endangered species, and human health. The Navy must revise the EIS to complete the analysis of direct, indirect and cumulative impacts which include this source of potential significant harm to wildlife and human health.**

A technical report from DOD's Environmental Research Program says, "…acoustic propagation [from newer jets] cannot be modeled using the same simple linear theories employed in the classic noise models."[7] It expresses concern about "legally defensible" noise assessments using outdated software. **Therefore, the DEIS's computer modeled noise levels which used this "classic" system do not accurately account for actual noise levels. The DEIS-modeled noise levels are underreported and not accurately assessed. Impacts based upon this model are inaccurate. A revised EIS must be completed to correct the deficiency.**

> The acoustic environments in the vicinity of newer aircraft such as the F-35, F-22, and the F/A-18E/F differ from those of most prior aircraft, with high noise levels associated with higher thrust engines. At those high levels, acoustic propagation cannot be modeled using the same simple linear theories employed in the classic noise models. Furthermore, the F-22 has a rectangular exhaust geometry which changes the sound radiation patterns. Both the F-35 and the F-22 employ engine thrust vectoring which cannot be easily incorporated into classic models. Little reliable data had existed on the noise produced by such jets in the thrust vectoring mode. Moreover, the segmented flight path modeling approach typical of integrated noise models do not properly account for the complex operational and noise characteristics of the new aircraft.
>
> New models, which take advantage of today's computer computational capabilities, were needed to provide legally defensible noise assessments of current and future aircraft operations in protecting bases and airspace for training purposes, and minimizing restrictions based on noise. The objective of this project was to provide environmental specialists with tools, based on the latest technology, for assessing and mitigating the noise impact around bases and on ranges of the new generation of fighter aircraft operating under all possible weather and terrain conditions.

See footnote #7.

[7] https://www.serdp-estcp.org/Program-Areas/Weapons-Systems-and-Platforms/Noise-and-Emissions/Noise/WP-1304

The Navy claims that the no-longer flown EA-6B Prowler was about 30 percent louder than the EA-18G Growler that replaced it, and thus used the Prowler as its benchmark for noise. Yet the number of complaints about Growlers is exponentially greater than the number ever made about Prowlers, which did not have afterburners and could fly at only half the speed of a Growler. According to a retired Navy carrier pilot, "The EA-18G Growler is about 20% louder than my F-4 Phantom at military (non-afterburner) power. I didn't think that was possible. In full AB, it's nearly 30% louder. Its max weight is 10,000 lbs. heavier and it has a better thrust-to-weight ratio, hence 29% more thrust. It's about 26% noisier than the basic F/A-18 Hornet that the Blue Angels fly."[8]

As a result of failing to accurately model noise and leaving out vast areas where noise and other impacts are not being recognized but will occur (and are occurring now), the DEIS eliminates far too many direct, indirect and cumulative impacts to be considered a valid analysis. By law, the public has the right to address the full scope of impacts, not just a narrow sliver of them. **We therefore ask that noise and other impact evaluations for the Olympic Peninsula and other affected areas, including the San Juan Islands, the southwestern Canadian coastline and Gulf Islands, must be conducted in order to have a scientifically valid noise analysis, which must include actual measurements as well as computer modeling. This should be analyzed in a revised EIS with an adequate public comment period**.

4. Flying on weekends not disclosed in DEIS: The DEIS excluded important elements of the action, including complete operational zones described above and timing of flying training missions, one of the key reasons the Navy proposes to undertake in its action. Flying training missions on weekends is not mentioned in the Growler DEIS, yet the Forest Service's Draft Permit [for mobile emitters] says on page 11 that the Navy will be allowed to fly on weekends so long as it does not interfere with "…opening day and associated opening weekend of Washington State's Big Game Hunting Season for use of rifle/guns."[9]

[8] Personal communication.

[9] US Forest Service Draft Permit (Appendix C, page 11, bullets 5 & 7). Click on "2016-11-29.NavyPermitDNAppendixC_DraftPermit," (View here: https://www.fs.usda.gov/project/?project=42759)

FOREST SERVICE PROJECT DESIGN FEATURES

GENERAL:

- One week prior to initial operations, the Permit Holder must notify the Forest Service Authorized Officer.
- The Permit Holder will provide the Forest Service an anticipated schedule of the emitter locations prior to operating on Forest lands, and the Navy will update the schedule monthly or at an agreed upon frequency.
- The Permit Holder will submit changes and additions to the schedule/plans must to the Forest Service for discretionary approval prior to implementing the schedule/plans.
- Semi-annually, the Permit Holder will provide the Forest Service a list that indicates the sites used and the duration of use at those sites during the previous 6 months (due by July 15 and January 15).
- The Permit Holder will schedule activities to avoid the opening day and associated opening weekend of Washington State's Big Game Hunting Season for use of rifle/guns. No activities will be conducted from noon on an opening day Friday through 6:00 a.m. on the Monday following the opening week end. [The Washington Department of Fish and Wildlife annually determines the Big Game Hunting Season.]
- The Permit Holder will not conduct activities during Federal holidays.
- The Permit Holder will not usually conduct activity on weekends. The Permit Holder may request specific limited weekend activity 30 days in advance of desired use, which is at the sole discretion of the Forest Service to grant or deny.

See footnote #9.

An exemption for one user group among the many that are impacted is highly unusual, and shows unusual preferential treatment to one user group while excluding others with no objective rationale for doing so, given that so many other users will likely be affected. Why was weekend flight training not mentioned in the DEIS? It has long been understood, and the DEIS acknowledges, that the Navy will cooperate with local officials and populations by not flying training missions on weekends and holidays. No communities have had the opportunity to evaluate these additional noise impacts, especially given that the DEIS evaluates less than half of the scheduled incoming Growlers. Weekends are peak times for local economies, and to have that quiet obliterated by jet noise from a rapidly expanding mega-base is a threat to local economies and public health. People come here throughout all 4 seasons to relax in peaceful, unspoiled surroundings. To not disclose weekend flying in the DEIS, and then to extend such a courtesy to one user group without consulting with municipalities and other economically viable (and vulnerable) tourism and recreation entities, is unwise, irresponsible, and does nothing to rebuild trust between the Navy and the public. 157 to 160 jets and weekend flying will also make the Navy's current noise level projections obsolete even before they are finalized. **This new activity was not discussed in the DEIS; nor were any exemptions for public or private entities mentioned, other than big game hunters. Since a significant exemption is being granted for one user group, the same consideration must be given for other constituents that use the forest and adjacent park year-round. This new weekend activity must be fully considered including impacts on all user groups in a revised EIS with an adequate public comment period.**

5. Air crash dangers not adequately considered: The most dangerous aspects of flying are the approach, landing and takeoff—in other words, most of the flight paths around the runways at Ault Field and OLF Coupeville. These risks are particularly significant at the World War 2-era runway at OLF Coupeville, which is 3,000 feet short of standard for Growlers. Normally, the unoccupied buffer area for naval airfields would be 30,000 to 50,000 acres larger than what the Navy currently has at OLF Coupeville, which is mostly a residential area. Therefore Growlers must fly at extremely low altitudes—a couple hundred feet above rooftops—over homes and businesses, the Port Townsend-Keystone Ferry, and over a significant portion of Admiralty Inlet that sees heavy shipping traffic in and out of Seattle and Tacoma. These pilots are mostly students flying the F-18 airframe, which records show is 5.5 times more likely to crash than its EA-6B (Prowler) predecessor. Nine F-18s have crashed in the past several months.[10] On February 4, 2016, the chairman of the House Armed Services Subcommittee on Tactical Air and Land Forces announced that his subcommittee would be looking into a "rise in physiological episodes" among F/A-18 and EA-18G (Growler) pilots.[11] Hypoxia, a state of oxygen deficiency in the blood, tissues and cells sufficient to cause an impairment of body functions, was listed by the Navy as one of the "physiological events" problematic to aircrews flying these planes. Other problems include toxic exposure such as carbon monoxide poisoning, decompression sickness, hyperventilation, spatial disorientation, and loss of consciousness. All Growlers and F-18s were recently grounded due to a mechanical malfunction at NASWI that severely injured two pilots. While everyone wishes these pilots a speedy recovery, there is no room for error when flying a military jet at low altitude over densely populated civilian areas. To allow at OLF Coupeville as many as 35,500 annual low-altitude flights by student pilots making tight circles over residential areas and shipping lanes is to court a magnified tragedy.

Because Fleet Carrier Landing Practice (FCLP) "touch and go" occurs at such low altitudes over these residential/business/marine areas and also over exceptionally rich habitat for a large population of birds, including species that are heavy enough to crash through windshields or otherwise disable aircraft, the increased likelihood of bird strikes further increases the risk of crashes and loss of life. NASWI reports that birds comprised 275 of the 279 reported strikes (98.6 percent) from 2005 through 2015. Most occurred between July and October. Bird species found under Navy flight paths include cormorants, mergansers, loons, grebes, gulls, ducks, guillemots, murrelets, kingfishers, herons, goldeneyes, bufflehead, scaup, eagles, harriers, peregrine falcons, and other species.

The elevated crash risk and consequences cannot be mitigated in any other way than moving the FCLPs to a more suitable location, away from densely populated residential areas. If the FCLPs are moved only to Ault Field, the residents of San Juan County will be plunged into even more misery than they are already experiencing. The level of noise during FCLPs is more than 16 times the level to trigger hearing loss. The Growler mission originated at the 30,000-acre Naval Air Station Lemoore in California, the Navy's newest and largest Master Jet Base, which hosts

[10] https://theaviationist.com/2016/12/07/yet-another-u-s-fa-18-has-just-crashed-in-japan-its-the-9th-legacy-hornet-lost-in-6-months-and-the-crash-rate-is-alarming/

[11] http://www.defensemedianetwork.com/stories/navy-congress-looking-into-fa-18-ea-18g-physiological-episodes/

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[10] https://theaviationist.com/2016/12/07/yet-another-u-s-fa-18-has-just-crashed-in-japan-its-the-9th-legacy-hornet-lost-in-6-months-and-the-crash-rate-is-alarming/

[11] http://www.defensemedianetwork.com/stories/navy-congress-looking-into-fa-18-ea-18g-physiological-episodes/

five Carrier Air Wings and 20 F/A-18 Super Hornet squadrons and maintains two 13,500-foot runways. Government Accountability Office (GAO) reports have shown for more than a decade that the Department of Defense's utilization of the millions of acres of lands it already owns is inefficient. At a public meeting in 2014, Navy representative John Mosher was videotaped saying that "scheduling problems" were a major reason for increasing Growler presence in the Pacific Northwest, yet this was not mentioned as a justifying reason in the 2014 Electronic Warfare EA. Such justification is irrevocably flawed, especially when it puts so many lives unnecessarily at risk. No scientific evidence, nor plain logic can support the Navy's claim that expanding FCLP flights from 3,200 in 2010 to as many as 35,500 in the coming year, which represents a 1,000 percent increase, will have "no significant impacts."

The risk and impacts of a Growler crash to life and property, and of the aqueous film forming foam that would be used for firefighting to risk contamination of the sole-source aquifer at Whidbey Island, are not addressed in the DEIS. This is unacceptable.

On page 2-34 the DEIS states, "The northern Puget Sound region of the Pacific Northwest has uniquely unencumbered SUA [small unmanned aircraft] and military training routes (MTRs) due primarily to the relatively low volume of commercial air traffic. This limited air traffic and clear airspace allows this SUA and MTRs to support Growler training, including the current and future training requirements." But that statement is contradicted by reports of "stratospheric growth" at Sea-Tac airport; in fact the growth rate is the highest rate in the country. Sea-Tac is categorized in the National Plan of Integrated Airport Systems for 2015-2019 as a primary commercial service (large hub) airport. Sea-Tac is the largest generator of vehicle trips in the state, and its 13,000-car parking garage is North America's largest parking structure under one roof. Forecasts for passenger traffic go from 42.3 million in 2015 (a 13 percent increase over the previous year) to 66 million within as little as 15 years. This represents neither low volume nor unencumbered airspace. To dismiss this region's explosive growth and the resulting air collision risks with Navy student pilots is irresponsible. There are millions of acres already in DOD ownership whose airspaces are far more open and unencumbered. So why would the Navy move so many aircraft into one of the fastest growing air traffic regions in the nation? **We recommend that the Navy should move the Growler FCLP flights to Department of Defense property that does not present such elevated risks to surrounding residential and business communities. Move the Growler fleet to where the mission is historically based, and to where concentrations of military and commercial aircraft are not experiencing such explosive growth. The DEIS should have incorporated this alternative to mitigate the risks, and cumulative impacts of the action. It must therefore be revised to explore this reasonable, and accessible alternative.**

6. Navy is inappropriately segmenting the Growler public process: The public does not view the air, sea and ground components of electronic warfare testing and training with Growlers as separate, yet the Navy so far has piecemealed its aircraft training and testing activities affecting Whidbey Island, the San Juan Islands, and the Olympic Peninsula into at least six separate actions:

1. 4 squadrons of P-8A Poseidon Multi-Mission Aircraft;

2. A 2005 EA (57 Growler jets); a 2010 EIS (reaffirming the 57 Growlers that replaced Prowlers);
3. 2012 EA (26 Growlers including 5 from a reserve unit);
4. 2014 EA (Growler electronic warfare activity);
5. 2015 EIS discussing electronic warfare training and testing activity;
6. The current 2016-2017 DEIS (36 Growlers);
7. And, likely, a process for 40 more Growlers.

It is unlawful to piecemeal the Navy's expanding activities in this manner, and it makes it impossible for agencies, elected officials and the public to understand the full scope and cumulative nature of impacts. It is also exhausting for local governments, communities, and residents to try and keep up with all these piecemealed NEPA processes. Avoiding cumulative effects analyses for functionally related activities is unlawful. It has been impossible for the public to know just how many Growlers there would be, or what their impacts would be, or what limits, if any, the Navy intends to establish. In just four documents—the 2014 EA, Forest Service permit Draft Decision, and the 2010 and 2015 EISs, there are more than 6,000 pages of complex technical material. 40 C.F.R. § 1502.4 "...does not allow an approach that would permit dividing a project into multiple 'actions,' each of which individually has an insignificant environmental impact, but which collectively have a substantial impact."

The DEIS fails to discuss, describe or even mention any potential impacts associated with electromagnetic radiation in devices employed by the Growlers in locating and interacting with the ground transmitters. It fails to mention any potential impacts associated with the practice on electromagnetic weaponry that will allow the Navy to make good on its statement that it is "turning out fully trained, combat-ready Electronic Attack crews."

In another example of improper segmentation, on page 3-23 section 3.2.4, the DEIS states that the affected noise environment as modeled for Calendar Year 2021 includes P-8A Poseidon aircraft but "does not include the additional Growlers associated with the Proposed Action." Separate noise metrics are also used for Growlers at Ault Field and OLF – why? What is the advantage of isolating (and thus segmenting) this noise impact from a rapidly growing fleet, especially when noise from these specific and very loud jets is not even being considered in areas beyond NASWI's immediate environs? To an already confused public, and to the law, this amounts to a segmentation within a segmentation.

The Navy's pattern of segmenting and omitting impacts analyses is widespread, and it is appropriate here to discuss other examples where this practice has taken place to the detriment of local communities, species, and environment. In the Northern Marianas Islands, the Navy's 1,388-page Draft EIS proposing to turn Pagan Island into a bombing range and Tinian Island into an artillery range overlooks impacts to residents, water supplies, historic sites, and rare species of coral. Human habitation has been documented to go back 3,000 years, yet historic site surveys were halted after only a few of those that exist were documented. No analysis of how rocket fuel could contaminate the aquifer was conducted, and no discussion of cleanup and mitigation for destruction of coral reefs was included. A December 2016 news article stated, "Federal agencies and other organizations found the Navy's analysis was plagued with missing information on

issues ranging from how the Navy would handle hazardous waste to how noise from Navy training could be worsened by concurrent training activities."[12]

The most astounding instance of NEPA segmentation, mentioned here not because it concerns Growlers but because it's so extreme, is part of the geographic area impacted by the proposed action, and because we wish to go on the public record with it, is noise in the water (sonar, pile driving, etc). In one 4.7-mile stretch of waterfront at Bangor, there have been 10 separate NEPA processes for driving 2,000 in-water pilings, plus 1 NEPA process at Keyport, 3 at Everett, 2 at Whidbey, 5 at Bremerton, 2 at Manchester, and 2 at Port Angeles. Noise, whether in the water or in the air, is a sensitive issue with significant potential for serious ecological impacts. Pile-driving noise can carry for 18 miles underwater. The total number of public processes on pile-driving alone between 2012 and 2018 number at least 24, with more than 5,200 pilings being driven in Puget Sound and the Strait of Juan de Fuca.[13] A Navy spreadsheet is attached at the end of this letter illustrating this endemic practice of segmentation. For Fiscal Years 2016 through 2018, at least forty findings of no significant impact and records of decision are scheduled by the Navy in the Puget Sound region alone.[14] A Navy spreadsheet is also attached at the end of this letter. Many of these upcoming EAs should be combined into EISs. An internal memo analyzing several courses of action for multiple functionally-related projects concluded that the risk of legal vulnerability from violating NEPA was worth the segmenting of those projects.[15] This memo is attached at the end of this letter. While pilings may not be directly related to Growlers, the segmentation of impacts from the construction of naval infrastructure is one of the most vivid illustrations of the Navy's avoidance of cumulative impacts analyses. The geographic zone, and species and communities that rely on the marine resources, ARE impacted by Growlers activities and must be considered in these related EISs.

The Navy has been reminded for years, by citizens, elected officials, and Tribes, that its piecemealing of impacts violates both the law and the public trust, but the Navy continues to ignore these concerns and violate its duty to uphold the law. As a public agency whose equipment and salaries are funded by taxpayers who are discovering a pattern of separation of impacts and avoidance of cumulative impacts analysis that extends to wherever the Navy operates, the Navy should know that an awakened public will not stand for such cheating. Because federal law may not be currently enforced does not mean it is not being violated. The Navy has a duty to uphold the constitution and the law, not violate it with short cuts, improper manipulation, and covering up its actions. That is not the Navy we hold dear. Taking short cuts, the easy way out, cheating, is not the Navy we respect. The Navy is revered for its dedication, training, and making the ultimate sacrifice. This practice tarnishes the hard earned reputation of men and women in service and is unbecoming to an American military service.

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[12] "Missing Data Plagues Military Training Plans In The Marianas," Honolulu Civil Beat, December 2016. http://www.civilbeat.org/2016/12/what-the-military-isnt-saying-about-its-training-plans-in-the-marianas/

[13] US Navy Region Northwest. *NRNW In Water Construction Projects. XL spreadsheet*, attached at end of letter. http://westcoastactionalliance.org/wp-content/uploads/2015/09/1in9w2atr3con8stru4ct5ion6pr7oj.xlsx

[14] U.S. Navy, NW-NEPA-Report-12-15-2015. View at: http://westcoastactionalliance.org/wp-content/uploads/2016/11/NW-NEPA-Report-12.15.15-4.xlsx

[15] US Navy – Goodman, Layna. Proposed NEPA Approach for Planned Waterfront Projects Which May Require Environmental Impact Statements, Naval Base Kitsap Bangor. (attached at end of letter.) http://westcoastactionalliance.org/wp-content/uploads/2015/09/re1ci2pe34ne5pa6.docx

The Navy must revise the Growler EIS to include all relevant areas of activities, and end the improper segmentation of its activities. There is no rationale that supports anything less.

7. Noise modeling software outdated, legally questionable: The DEIS uses an outdated noise simulation model. A DOD commissioned study found this is not appropriate for Growler engines. To quote it, aircraft noise levels represented in the DEIS are, "generated by a computer model and not actual noise measurements at Ault Field or OLF Coupeville." The modeling was done using software called NOISEMAP. It was developed in the 1970s. Version 7.2, used in this EIS, was used for studies completed as long as 12 years ago. A Department of Defense Strategic Environmental Research and Development Program determined that new software was needed "…to provide **legally defensible noise assessments** of current and future aircraft operations."[16] The final report found that NOISEMAP's linear acoustics were inadequate for modeling the acoustic environments in the vicinity of higher thrust engines used in the Growler, stating, "Moreover, the segmented flight path modeling approach typical of integrated noise models do not properly account for the complex operational and noise characteristics of the new aircraft."

In 2010 a new noise model, the Advanced Acoustic Model (AAM), was developed under DOD contract to address these shortcomings. But the Navy's continued use of the outdated NOISEMAP has rendered the noise analysis scientifically inaccurate and, potentially, legally indefensible with respect to the requirements of the National Environmental Policy Act (NEPA). It is certainly not an example of Best Available Science. Even if NOISEMAP modeling was scientifically sound for these newer jets, the quality of data used as inputs into the model would still be questionable. It is unclear what kind of empirical noise data were used as a basis for noise simulation. The only mention found in the 1400 page DEIS was that the computer model draws from "a library of actual noise measurements" with no details provided. Without data transparency, it is impossible to assess if the empirical noise data used in noise simulation is scientifically defensible.

The lack of data transparency is not surprising given that it was the Navy itself who identified the problem of inadequate noise measurement data. The Naval Research Advisory Committee (NRAC) issued a report on jet noise and found that "…the Air Force maintains the only known acoustic database for tactical aircraft." NRAC's findings highlighted the Navy's lack of empirical jet noise data measurements, lack of consistent measurement methodology and standards, and lack of a jet noise database and its proper maintenance. NRAC's insightful assessments and sensible recommendations have been made to the Navy since April 2009. If the Navy has not yet acted on the NRAC's recommendations, **it must start now by taking proper Growler noise measurements as a key input for preparing a scientifically and legally defensible revised EIS.** Nearby communities, including San Juan County, have done actual noise measurements and have shared their data[17] with the Navy. Unfortunately, these data do not appear to have been used in the DEIS. **Because computer modeling using the**

[16] https://www.serdp-estcp.org/Program-Areas/Weapons-Systems-and-Platforms/Noise-and-Emissions/Noise/WP-1304 (Third paragraph)

[17] San Juan County Aircraft Noise Reports. Downloadable database: http://data.sjcgis.opendata.arcgis.com/datasets/30e08036e4f4463dabe19bc98d6c9b81_0 (As of January 2017, there are more than 6,400 complaints over a 2½ year period.)

recommendations of the Department of Defense Strategic Environmental Research and Development Program would likely reveal new information not previously available to the public, the Navy should include it and all of these other data in a revised EIS, and adequate comment period.

8. Flight tracks and Military Operating Areas not adequately considered in noise analysis: The aircraft Military Operating Areas (MOAs) discussed in Chapter 3 include, besides the Olympic MOA, several other MOAs that have "floors," or low flight altitude limits, of 300 feet. These include the 47,000 acre Chinook MOAs over the eastern end of the Strait of Juan de Fuca, the 3.7 million-acre Okanogan and 4.6 million-acre Roosevelt MOAs in north central Washington, and the 47,000-acre Boardman MOA in Oregon, the latter located within 200 miles of Whidbey Island. In addition to those, the DEIS also lists twelve Military Training Routes, (6 VFR and 6 IFR), all "within 250 miles of NASWI," some with floors as low as 200 feet above ground level. These areas are receiving direct and cumulative impacts that are functionally related to takeoffs and landings, yet they are not included in noise analyses, and for the number of Growlers now coming to NASWI, have not been evaluated for noise at such levels in any previous NEPA documents.

Each Military Training Route has two widely separated tracks, one for departure and the other arrival, as shown on page 3-8; therefore, each route is actually two routes, generating noise exposures in completely separate areas for inbound and outbound flights. The reality of considering actual rather than modeled noise impacts would mean that the twelve Military Training Routes are really 24 separate flight tracks that directly affect surrounding communities. The DEIS maps only show flight tracks within approximately 10 miles of NASWI, so these tracks over outlying areas remain unknown. A public request to the Navy in early December for a map showing the rest of these routes and flight tracks was denied. These routes should have been included in the DEIS.

As stated previously, the DEIS quotes guidance from the Aircraft Environmental Support office: "aircraft are directed to avoid towns and populated areas by 1 nm (nautical mile) or overfly 1,000 feet AGL (above ground level) and to avoid airports by 3 nm or overfly 1,500 AGL. Over sparsely populated areas, aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure." It is therefore puzzling that Table 3.1-2, titled "Representative Sound Levels for Growler Aircraft in Level Flight," on page 3-6, does not show sound exposure levels for Growlers flying at either 1,000 feet or 1,500 feet AGL. Why? When Navy representatives reassured the public throughout 2014, 2015 and 2016 that these jets always fly very high, usually at 25,000 feet but at a minimum altitude of 6,000 feet above sea level, they did not disclose that jets could fly within "500 feet of any person, vessel, vehicle or structure." This would cause catastrophic effects to humans, wildlife, and habitat.

If guidance directs aircraft to fly at such altitudes, why did the Navy not disclose this in previous NEPA documents? The public needs to know how much actual noise exposure there will be, and the threats to public health as a result of this new disclosure must be evaluated in a public process. The current DNL noise modeling method and data in no way reflect exposure accuracy, given this new information. Therefore, such analyses must be

included in a revised EIS with an adequate public comment period. Further, the Navy must revise its guidance to significantly increase the distances that Growler jets are currently allowed to fly from towns, airports, individual people, vessels, vehicles and structures, because no alternatives are provided to the public that reduce noise.

According to the Navy's calculations for areas directly under flight tracks and within a mile of them, sound exposure levels can reach 116 and 77 decibels, respectively, with Growlers using an 84.5% engine power setting. This does not take into account afterburners or multiple aircraft, both of which significantly increase the noise exposure (and also occur frequently). For every 3 dB sound pressure over 85 dB, the permissible exposure time is cut in half before damage to hearing will occur. The CDC and NIOSH permissible exposure time for 115 dB before damage occurs is 28.1 seconds. The Navy will far exceed that exposure time limit for people in affected areas, and their hearing will be damaged because their ears will not have time to recover from the strain and fatigue of repeated exposures to high noise levels. Hearing, especially in children, will be damaged, and non-auditory health impacts, which are already being felt on Whidbey Island, are likely to increase throughout the region. For example, in children, chronic aircraft noise exposure impairs reading comprehension and long-term memory and may be associated with raised blood pressure.[18] Effects on wildlife from such noise is discussed below.

The Navy's claims that no scientific evidence supports the fact that noise at these levels causes harm via auditory or non-auditory impacts because most people spend more than 80 percent of their time indoors, is inaccurate and ignores those who must work outdoors, including people who work at jobs that do not give them a choice of being indoors, or Tribal members who depend upon resources harvested and gathered outdoors in traditional ways. It raises unaddressed environmental justice issues.

With all of the concerns about low flights, inaccurate computer modeling software, no actual noise measurements at NASWI or anywhere else, and no modeling or measuring of noise in areas away from NASWI, the Navy's claim that there will be no significant impacts is not defensible. In fact, independent sound professionals near the airfield at OLF Coupeville measured A-weight noise levels at 119.2 dBA, with the unweighted peak level at 134.2 dB. The former number cuts in half the permissible exposure time of the maximum noise levels provided by the Navy, and the latter is well past the pain threshold, causing instantaneous hearing loss and other physiological and psychological damage. Reports of animal deaths and humans feeling internal organs vibrating have not been uncommon. Sonic booms are becoming more frequent on the west end of the Olympic Peninsula. During one 40-minute flight operation where actual measurements were taken, there were 35 jet flyovers at OLF Coupeville, which produced an average sound exposure level of 113.1 dBA, in a densely populated residential area. Permissible exposure time for 113 dBA is less than a minute. 35,500 potential low-altitude flights per year over these residential areas will make an already unbearable level of noise dangerous to the health of residential and commercial property owners, workers, domestic animals, and wildlife.

[18] Stansfield, Stephen, and Matheson, Mark P. Noise pollution: non-auditory effects on health. Department of Psychiatry, Medical Sciences Building, Queen Mary, University of London, London, UK. View at: http://www.kensingtonassociation.org.au/wp-content/uploads/2013/10/Noise+Pollution_non-auditory+effects+on+health.pdf

A Navy "Key Point" on page 3-7 admits, "aircraft can be several miles to the left or right of the flight track depicted on maps." This means that noise exposures depicted in Figure 3.1-3 on page 3-8 will be far less predictable and therefore potentially greater in scope than the narrow pink and blue lines that show flight tracks on these maps. Not included on these maps are flight paths for Fleet Carrier Landing Practice at OLF Coupeville; that is a separate map. Finally, no comprehensive map of flight paths beyond the immediate environs of the runways has been provided to the public, despite a request the Navy denied. The limited map provided in the DEIS is a maze of flight tracks that are almost impossible to count; aircraft that stray "several miles" from these published flight tracks will have the effect of filling in all the blank space on the map with intense and unpredictable noise.

According to Table 3.1-1, which shows the amount of usage of these flight tracks in and out of NASWI, the annual total for these training routes is "2,310 operations." However, the number of "operations" does not remotely match the 73,900 Growler flights listed in Table 3.1-3, nor does it match the projected 47 percent increase in airfield operations to 130,000 flights per year, unless perhaps 2,310 operations means dozens of flights per operation, or possibly is meant as a per-flight track estimate. This is left to the reader to interpret. Regardless, with 79,000 Growler flights and some potentially at low altitudes of 200-300 feet above the ground, the DEIS grossly underestimates direct and cumulative effects of noise. **We recommend that the Navy revise its low-altitude flight permissions to more respectful levels for residential areas and wildlife habitat. We further ask the Navy to provide maps of the flight tracks outside the immediate environs of NASWI, to please conduct accurate measurements and modeling of noise for these areas, and include the information in a revised EIS, with corresponding adequate comment periods.**

9. Climate change and air quality analysis piecemealed, inadequate: This DEIS purports to assess "...Growler operations at the NAS Whidbey Island complex, and analyzes aircraft operations conducted in the vicinity of Ault Field and OLF Coupeville." Among the items analyzed that fall within this impermissibly narrow scope are climate change and greenhouse gas. Unfortunately, effects from emissions measured only within the narrow area defined by the DEIS don't stay there. They affect not only surrounding areas, but contribute to greenhouse gases and climate change worldwide.

The DEIS lists what appear to be Growler emissions for each individual type of greenhouse gas, for NASWI/OLF vicinity only, in nine separate tables, but incredibly, the totals are not added up. Readers are left to add up the numbers themselves to get the total emissions for each scenario, but then there is no interpretation provided for these numbers.

Section 3.16.2 states that NASWI total greenhouse gas emissions from stationary sources, meaning construction and facilities, are 89,849 metric tons of CO2 per year, and greenhouse gas emissions from Growler aircraft personnel who, one assumes, are servicing the planes, are 9,091 metric tons per year. Emissions in Table 4.4-16 are for scenarios that cover takeoffs and landings only, yet significant emissions are expected to occur from flight operations. Why are these not included? For example, the October 2015 Northwest Training and Testing EIS says that air combat (dogfighting) operations, which employ heavy use of afterburners, will increase to 550

hours. This is a 244 percent increase. Yet emissions from 550 hours of dogfighting are not analyzed for Growlers in any document, including the October 2015 EIS, which oddly enough, listed the no-longer-flown Prowler as the dogfighting aircraft in its air quality emissions Table D-3. Since Prowlers were retired by the Navy several years ago and never had afterburners, and since they could only fly at about half the speed of a Growler, then listing Prowler emissions instead of Growlers makes no sense. A rule of thumb for bypass turbofan engines is that an afterburner nets about a 50 percent increase in thrust with at least a 500 percent increase in fuel consumption. So, eliminating afterburner use from air emissions calculations by analyzing an aircraft that doesn't have afterburners hides a significant amount of exhaust emissions.

It is not possible to separate the contributions to climate change and greenhouse gases resulting from takeoffs, landings, and local operations, from the emissions of flight operations that occur beyond a 10 to 15-mile radius of NASWI runways. To state the obvious, flight operations are functionally connected to takeoffs and landings. Their impacts cannot be separated or ignored in a NEPA analysis. Even if the Navy separates functionally related activities on the ground into different public processes, it is a fundamental fact that neither the air that swirls around the planet nor the CO2 load it carries can be segmented. The idea that civilians have to point this out to the United States Navy is Kafka-esque. **We therefore ask that emissions from Growler activities that include flight operations beyond takeoffs and landings at NASWI be included in a manner that the public can understand, in a revised EIS, with adequate comment period.**

The Navy admits several times, from pages 4-129 through 4-136, that increases in mobile emissions, meaning flight operations, "…are not covered by the NAS Whidbey Island AOP (Air Observation Post); however, these emissions contribute to regional emission totals and can affect compliance with NAAQS" (National Ambient Air Quality Standards).

This is new information; the public was not aware that air quality in this region could potentially be downgraded to EPA non-attainment status. Post-combustion exhaust from jet engines also contains carcinogenic pollutants of air, water and soil that are capable of acute and chronic toxicity to animals as well as plant and aquatic life. In a region known for its clean air, it is reasonable to assume that the probability of harm from the breathing of these hugely increased emissions may constitute a threat to public health. EPA-designated non-attainment areas for air quality include nine large cities: Atlanta, Boston, Chicago, Houston, Philadelphia, Phoenix, New York, Los Angeles, and Washington, DC. If this region also becomes a non-attainment area due to the contribution of Navy emissions, and these emissions have not been wholly evaluated for direct, indirect and cumulative impacts from all aspects of flight operations, as it appears they have not, then those who are harmed from breathing this large increase in air pollution should rightfully have legal standing to pursue remedies in court. **The Navy must address this extraordinary shortcoming in a revised EIS that includes all relevant emissions information that does not try to segment the air, avoid cumulative impacts analysis, or ignore the contribution of such emissions to climate change. Further, it must take immediate steps to prevent further significant degradation of air, water and soil by reconsidering alternate homeporting locations for the Growler fleet.**

Based on data in the "Selected Acquisition Report for the EA-18G,"[19] **one** Growler flying for **one** hour:

- uses 1,304 gallons of jet fuel (and 500 percent to ten times that much with afterburners);
- produces 12.5 metric tons of CO2 (not counting afterburner use).

The per capita annual emissions in Washington State in 2011 were 10.8 metric tons per person (including all residential, commercial and industrial activities.) Therefore, **one hour** of Growler flight produces:

- 23% more than the CO2 emissions that a typical Washington state citizen in residential, commercial and industrial activities emits in one year.

Put another way, **one hour** of Growler flying without afterburners produces:

- as much CO2 as a typical car produces driving 29,500 miles;
- as much CO2 as 656 cars driving 45 miles per hour;
- more CO2 than 12.7 round trips from Anacortes to New York in a Toyota Prius;
- more CO2 than an hour of operation by the entire ferry fleet of four vessels serving the San Juan Islands;
- more CO2 than that emitted by the generation of electricity sufficient for 7 average hours of electricity consumption to meet the needs of all of San Juan County.

Therefore, at 1,304 gallons per hour, and assuming 500 percent to ten times more on afterburners, it is conceivable that Growlers could annually use more than 7 million gallons of fuel for dogfighting alone. An estimate by IHS Jane's puts the cost of flying the F-18 airframe at $24,000 per hour. This trivializes the $4.5 million dollars in fuel savings that the 2014 Electronic Warfare EA claimed to be a reason for choosing the Olympic Peninsula in the first place. 550 annual hours of dogfighting would equal 6,875 metric tons of carbon dioxide per year, or the equivalent emissions of around 360,000 average-sized cars driving 45 miles per hour. In other words, with the projected frequency and duration of flight times, the Navy could produce each year as much as 51,000 times the average annual per capita emissions in Washington State.

On page 2-2 the DEIS states: "Maximum transit distance from the home field is 50 nautical miles, which is the distance a Growler can travel on a fuel load in order to conduct eight to 10 FCLP passes with sufficient fuel to return to its home field." 8 to 10 touch-and-go passes per plane requires a lot of afterburner use. But the DEIS revises significantly downward its estimates of afterburner use, from 30 minutes to 20 seconds. This is an enormous revision, and it is also new information. On page 4-131 it states: "The Aircraft Environmental Support Office estimates a 30-minute maximum setting (with afterburner) time-in-mode for Growler take off; however,

[19] Selected Acquisition Report for the EA-18G. View data compilation at: https://docs.google.com/spreadsheets/d/1wsLDJmTWqAHLkS9L5F3D-Y_Abx2lNNDkw4sjpmwpC2Y/edit#gid=0 View reports at: http://www.dod.mil/pubs/foi/Reading_Room/Selected_Acquisition_Reports/15-F-0540_EA-18G_SAR_Dec_2014.PDF and http://www.dod.mil/pubs/foi/Reading_Room/Selected_Acquisition_Reports/EA-18G-SAR_31_DEC_2011.pdf

emission factors have been adjusted to account for a more accurate estimate at NAS Whidbey Island of 20 seconds at this setting (NAS Whidbey Island Operations Command, 2016)." If this is not a typographical error, please explain the rationale for such a drastic reduction. It also appears to conflict with a statement on page 4-112, which says afterburner maintenance events will last for 5 minutes per day. And during touch-and-go operations, afterburners are used heavily and intermittently, for hours at a time. So, which use level is it? Such afterburner use is not overtly stated in any tables or calculations. Regardless, revising afterburner use time downward from 30 minutes to 20 seconds is significant in the calculation of emissions, because fuel use is so much greater with afterburners than without; therefore, **please explain in a revised EIS how Growlers are projected to use only 20 seconds of afterburner, when 30 minutes of afterburner was quoted in the DEIS as the guidance issued by the Aircraft Environmental Support Office.**

There will be 157-160 Growlers at NASWI within a few years. They can fly for at least 260 days per year, 8 to 16 hours per day, and, as we have recently learned, on weekends. If each Growler has a planned service life of 10,000 hours,[20] then we are looking at a conservative cumulative estimate over the life of 160 aircraft, of about 21 billion metric tons of CO2, not counting afterburner use. This does not count emissions from any other aircraft at NASWI, such as P-8A Poseidons, for which "full transition to NAS Whidbey will occur by 2020." They are considered a "separate, ongoing action" and are not adequately analyzed for noise, either. In fact, emissions are not addressed for the squadrons of P-8A, H-60, C-40, and transient aircraft. The Navy is one of the largest air polluters, not just on the Olympic Peninsula, but in the Pacific Northwest. Over 20 years we are looking at a grim picture of chronic air and noise pollution, habitat and public health degradation, and major contributions to climate change, from an area that is globally renowned for its World Heritage, Biosphere Reserve, Marine Sanctuary and wilderness values, and its vibrant culture and tourism economy.

10. Water and soil contamination from Growler-related activities not addressed: Despite claiming to evaluate all potential direct, indirect, and cumulative environmental impacts under its three action alternatives, the DEIS does not do this. For example, the practice of fuel dumping, which an active-duty Navy pilot said happens about once a month,[21] is dismissed in the DEIS with this statement that plays down public concerns raised during the scoping process: "The issue of fuel dumping (the release of aviation fuel during flight operations) was raised by some commenters during scoping. Fuel release procedures are governed by the Federal Aviation Administration and Navy rules. Navy pilots are prohibited from dumping fuel at altitudes below 6,000 feet above ground level, except in an emergency situation." It further said this issue was dealt with in another section of the DEIS, but we did not find fuel dumping mentioned elsewhere in the document.

Reports from residents living well downwind of NASWI belie that raw fuel released into the air is not a problem; they say the smell of jet fuel when FCLP touch-and-go practice occurs is

[20] Congressional Research Service. Navy F/A-18E/F and EA-18G Aircraft Procurement and Strike Fighter Shortfall: Background and Issues for Congress. Viewed at: www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA521226

[21] Personal communication, US Navy.

sometimes overpowering. There have been eyewitness reports of fuel dumping from observers in boats near Smith and Minor Islands, a national wildlife refuge in the eastern Strait of Juan de Fuca. Common sense says if you can see fuel being dumped or the smell is strong, and there are Navy jets flying overhead, it's probably at altitudes lower than 6,000 feet. Jets doing touch-and-go practice are not flying at this altitude.

The jet propellant that is used by the Growlers is refined kerosene that contains a mixture of volatile organic compounds (VOCs), some of which are known carcinogens as well as being liver, kidney and immune system toxins. The DEIS glosses over jet fuel spills, yet a quick Google search reveals that a storage tank in Hawaii recently spilled 27,000 gallons, a ship in Bremerton spilled 500 gallons, a helicopter spilled 100 gallons into a public reservoir, and a leaky tank spilled 112,000 gallons into a mangrove forest in Puerto Rico, which flowed into a harbor. Plus, as previously mentioned, fuel dumping occurs with great frequency, approximately once a month, as provided anecdotally by an active-duty pilot. Biodegradation of jet fuel in seawater is very slow without significant nutrients, and is considerably slowed by cold temperatures such as what we have in local waters.[22] The post-combustion exhaust from jet engines contains equally carcinogenic pollutants of air, water and soil that are capable of acute and chronic toxicity to animals as well as plant and aquatic life. The cumulative impacts discussion does not address this in any way and constitutes a major deficiency in the DEIS.

The DEIS confines its discussion of groundwater contamination to soil compression and compaction effects from new construction, and concludes there will be no impacts to groundwater from operations.

Recently the contamination of residential and commercial drinking water from the use of aqueous fire fighting foam on runways to protect Growlers and their pilots has come to the public's attention. This situation is severe, requiring 2,000 people on Whidbey Island to switch to bottled water and avoid using tap water. Many are wondering how long they've been drinking this PFC and PFOA-contaminated well water, but the Navy is not testing most residential wells unless asked to. PFCs and PFOAs are among the most carcinogenic substances known. This situation has many people whose wells have not been tested wondering if their water is safe to drink, given what is known about the movement of toxic plumes through soils and groundwater from similar situations in other areas. For example, earlier this year, the Port of San Diego sued the Navy over a toxic plume that is contaminating San Diego Bay; in 3 counties in Pennsylvania, drinking water for 70,000 people has been contaminated with the same toxic chemicals as on Whidbey, and people are falling ill. In the latter, the Navy has refused to pay for blood tests, which besides being un-neighborly, implies, at least to the public, an uncaring attitude and/or a defensive position on legal culpability. Coupeville is not an isolated example; dozens of areas nationwide where drinking water has become contaminated by PFCs and PFOAs from military firefighting foam, are being revealed in recent news stories. In March 2016 the DOD announced that it was going to examine 664 sites nationwide to determine whether toxic chemicals from firefighting foam have contaminated groundwater and spread to drinking water. The list of sites

[22] Kerosene/Jet Fuel Category Assessment Document, American Petroleum Institute, submitted to USEPA, 2010.

being investigated include burn pits, active and old fire training areas, fuel spill areas, research sites, and crash sites. It is sobering to read, and horrifying for people who live near them.[23]

Although the Navy only recently (in June 2016) labeled PFC contamination an "emerging" problem, this does not justify the exclusion of such contamination from a Draft EIS published six months later. It is clear that at the November 10 publication date, the Navy was well aware of potential problems with contamination of residential drinking water, due to what it calls "historic" use of "legacy" fire suppressants for flight operations.

In May 2016, the USEPA had issued drinking water health advisories for two types of PFCs, and the Navy announced in June that it was in the process of "identifying and for removal and destruction all legacy perfluorooctane sulfonate (and PFOA) containing AFFF [aqueous film forming foam]." Yet on page 3-62, the DEIS dismisses all concerns with an incredible statement about actions that took place nearly 20 years ago: "Remediation construction was completed in September 1997, human exposure and contaminated groundwater exposures are under control, and the OUs at Ault Field and the Seaplane Base are ready for anticipated use (USEPA, 2016e)." This easily misinterpreted statement is outdated at best, but given the weight of the other deficiencies in this DEIS and the Navy's foreknowledge of the problem before publication, it looks more like a deliberate obfuscation. Why would the Navy print such a claim knowing that its interpretation in light of more recent contamination events would likely mislead the public?

Three days before the DEIS was published, on November 7, 2016, the Navy sent a letter to more than 100 private and public drinking water well owners expressing concern that perfluoroalkyl substances (PFAS) found beneath the OLF had spread beyond Navy property. The word "perfluoroalkyl" or "PFAS" is not mentioned in the entire 1400-page Growler DEIS. Hazardous materials discussion in both the 2005 and 2012 EAs on Growlers was perfunctory and brief, and perfluoroalkyl substances were not mentioned in either of those documents. Therefore, no evaluation of this significant impact in a public process related to a federal action at NASWI has ever occurred. **We request that a revised EIS be prepared that addresses this gross deficiency, including proposed actions to remediate the contaminate drinking water or connect these residents to a permanent, uncontaminated source, and to address the health of affected residents, as well as compensation to business owners affected by contaminated water, such as the many organic farming businesses on Whidbey Island.**

According to the DEIS, NASWI does not use groundwater for drinking. This should not in any way affect the urgency of obtaining a steady source of uncontaminated drinking and irrigation water for non-Navy residents.

The runway at OLF is used for Growler training, and has been in use by Growlers since 2005. The DEIS refers to use of fire fighting foam as "historic" and "legacy." Webster's defines the word historic as "significant and consequential; having great and lasting importance," and "known or established in the past." The DOD does not define the word historic except in the context of cultural resources management and conserving and restoring historic properties. It also does not define the word legacy except in the context of the Legacy Resource Management Program, which focuses on "stewardship, leadership and partnership" in "safeguarding

[23] https://www.documentcloud.org/documents/2755131-List-of-military-fire-and-crash-training-sites.html

irreplaceable natural and cultural resources." Use of those words to help justify excluding this direct impact from analysis is unwarranted. Besides, the Navy selectively includes "historic" facts and figures elsewhere in the DEIS to track noise complaint data, (page 4-114) to study aircraft accidents (page 3-43) and to project runway usage in the year 2021, (page 2-4). So it does not make sense for the DEIS to completely ignore the use of toxic contaminants associated with the Growler jets whose impacts it purports to evaluate and who use the runway at OLF.

Since the Navy did not publicly recognize the danger associated with these contaminants until 2016, it is reasonable to assume that these hazardous materials have been in use at least between 2005, when the Growlers first arrived, and the present time. The firefighting foam is for protecting the Growlers, as well as other aircraft that came before them, so use of the adjective "legacy" to imply that application of these firefighting chemicals to runways in previous decades was their only application, is misleading. It is impossible to either disassociate this impact from Growler operations, or to separate out how much PFC contamination occurred prior to 2005, and what has occurred since 2005. **The honest thing to do would be fully disclose the use of these chemicals in amount and time, admit culpability, and find ways to help these people beyond a simple delivery of bottled water. The Navy has been testing some wells only upon request. What if some affected residents are not aware they need to make such a request in order to have their wells tested? If it means testing every well and hooking these homes to safer public water supplies, then that is what must be done, the polluter pays in our system - because the Navy caused the problem and the Navy must fix it.**

The Precautionary Principle applies not only to climate change but also to public health, especially when unintended negative consequences like this occur. The 1989 Rio Declaration (#12) said: "Nations shall use the precautionary approach to protect the environment. Where there are threats of serious or irreversible damage, scientific uncertainty shall not be used to postpone cost-effective measures to prevent environmental degradation."

It is surprising and disappointing, therefore, to hear a Navy spokesman reassure the public that the Navy will remove the contamination, when in fact the Navy knows full well that this cannot be done. A statement in a recent news interview by NASWI Public Affairs Officer Mike Welding sought to reassure the public: "The Navy is going to provide those people with safe drinking water until we can figure out how to remove the contaminant from the water well, filter it out or something like that. It's something that still needs to be worked out."[24] Unfortunately, a statement from the Department of Defense's own "MERIT" program that is easily found on the internet contradicts Mr. Welding: "Currently, there are no in situ technologies and very limited ex situ options to treat soil or groundwater contaminated with PFCs." This comes from a bulletin that has long been published and distributed to federal and state agencies.[25] So why would the Navy mislead people into thinking their water can be decontaminated?

[24] http://www.kiro7.com/news/local/navy-finds-toxic-contaminants-in-whidbey-island-water/476220156
[25] Department of Defense Materials of Evolving Regulatory Interest Team. Chemical & Material Emerging Alert: Aqueous Film Forming Foam (AFFF). View at: https://dec.alaska.gov/spar/ppr/hazmat/Chemical-&-Material-Emerging-Risk-Alert-for-AFFF.pdf

If records indicate your facility may have experienced AFFF leaks, spills or releases to the environment, refer to DoD Instruction 4517.18 for principles to follow in determining what site specific characterization, assessment, and risk management actions you should take.[7]

Currently, there are no *in situ* technologies and very limited *ex situ* options to treat soil or groundwater contaminated with PFCs. Thermal treatment is typically used for contaminated solids while granular activated carbon is the most effective water treatment method.[8] The DoD Strategic Environmental Research and Development Program is funding research to develop innovative treatment technologies for PFCs.[9]

Screen shot from https://dec.alaska.gov/spar/ppr/hazmat/Chemical-&-Material-Emerging-Risk-Alert-for-AFFF.pdf

If Mr. Welding unintentionally gave false information, then the Navy should immediately issue a retraction in those media and directly to affected victims, and explain what it knows, including the implications to public health and of finding other sources of permanent water supply. If Mr. Welding's statement intentionally misled the public into hoping that the Navy will decontaminate their drinking water, the Navy would be in grave violation not only of the public trust, but also its own Ethics Code. To have a Public Affairs Officer give an uninformed and erroneous statement to the press that victims will then interpret as something positive demonstrates an apparent willingness to say anything however baseless, to allay public outcry and potential culpability. Further, if the Navy is willing to pay farmers for easements to keep their land near runways in agricultural use, it should be equally willing to pay the costs of finding a permanent water source for people whose drinking water it has permanently poisoned.

Extensive evaluations for a variety of hazardous materials were included in the Northwest Training and Testing EIS, so it does not make sense that the Navy would leave contaminants such as fire fighting foam out of the Growler DEIS. These are functionally related activities; without the Growlers to worry about, you don't need firefighting foam. Notification of this well water contamination is new information to the public. Therefore, a revised EIS is called for which must include the new firefighting measures the Navy will take, and the potential impacts from those measures. Presumably, the risk of fire does not go away.

The DEIS concludes, "No significant impacts related to hazardous waste and materials would occur due to construction activities or from the addition and operation of additional Growler aircraft." With flights at OLF Coupeville alone increasing from 3,200 in 2010 to as many as 35,500, nobody can claim that such an increase over 7 years for which no groundwater or soil

contaminant analyses have ever been conducted and presented to the public in a NEPA process would be considered not significant. **Please explain why this contamination is not a direct, indirect or cumulative environmental impact that should have been considered in the Growler EIS in a revised EIS.**

11. Impacts to domestic animals and wildlife, including threatened and endangered species: The DEIS concludes there will be no significant or population-level impacts to threatened or endangered species or other wildlife, yet acknowledges in section A.3.12, "The relationships between potential auditory/physiological effects and species interactions with their environments are not well understood. Manci et al. (1988), assert that the consequences that physiological effects may have on behavioral patterns are vital to understanding the long-term effects of noise on wildlife. Questions regarding the effects (if any) on predator-prey interactions, reproductive success, and intra-inter specific behavior patterns remain."

The Navy's presumption that federally-listed species such as the marbled murrelet are habituated to the high noise levels caused by Growler takeoffs and landings, and thus will not be significantly impacted by the addition of 36 Growlers (not to mention the additional 40) ignores a series of significant problems:

> The DEIS considers only chronic noise in areas near the runways, and fails to consider intermittent noise disturbance events in areas where murrelets may not be habituated; for example, these birds range from coastal marine waters, where they forage for food, to forested areas up to 55 miles inland. To consider only one occupied foraging area near the runways out of many throughout Puget Sound and the Strait of Juan de Fuca, (Raphael et al. 2015) and to not consider effects of flight operations on the terrestrial mature forest habitat that these birds return to each night, renders the analysis grossly incomplete.
>
> A 2009 study concluded that the probability of nest site usage was greater with increasing distance from roads that produced man-made noise.[26] Implication is that the alteration of habitat by noise renders it less usable.
>
> It ignores nearly three decades of more recent research, and thus does not use the Best Available Science.
>
> It fails to acknowledge the segmentation resulting in omission of the cumulative impacts of up to 160 Growlers, which are being analyzed separately in smaller batches. Adverse impacts from an increase this large would be significant if they were evaluated together.

[26]Golightly, Richard, et al. Characteristics of Marbled Murrelet (Brachyramphus marmoratus) Habitat in Northern California, Humboldt State University, February 2009. http://humboldt-dspace.calstate.edu/bitstream/handle/2148/823/Characteristics%20of%20Marbled%20Murrelet%20habitat%20in%20Northern%20California%20Feb%202009%20locked.pdf?sequence=1

The cumulative impacts from an increase to 130,000 flights that includes 79,000 Growler flights and lots of low-altitude flying, have not been considered. This many flights could easily impact large numbers of migratory birds along the coast each spring and fall.

The Precautionary Principle has been widely incorporated, in various forms, in international environmental and public health agreements and declarations, and further developed in a number of national laws. An element common to the various formulations of the Precautionary Principle is the recognition that lack of certainty regarding the threat of environmental harm should not be used as an excuse for not taking action to avert that threat. It recognizes that delaying action until there is compelling evidence of harm will often mean that it is then too costly or impossible to avert the threat—in this case, of functional extirpation of a federally-listed species (marbled murrelet) whose Washington population has been declining at rates between 4.4 and 7 percent per year and is now 44% smaller than it was in 2001 (Lance and Pearson 2016). Use of the Precautionary Principle promotes action to avert risks of serious or irreversible harm in such cases. The Principle is based on the recognition that a false prediction that a human activity *will not* result in significant environmental harm will typically be more harmful to society than a false prediction that it *will* result in significant environmental harm. It therefore provides a fundamental policy basis to anticipate, avoid and mitigate threats to the environment.

Integral to decision-making that incorporates elements of the Precautionary Principle is the use of Best Available Science. While the term "Best Available Science" is a moving target in time, the Navy has used a 28 year-old literature review (Manci et al. 1988) that is widely quoted in numerous DOD documents, to support the claim that enough questions remain about effects of jet noise on wildlife to warrant doing nothing about it. Besides promoting a baseless claim, the Navy failed to disclose that this review discussed many studies that actually concluded the opposite: for example, one study concluded that wild ungulates appear to be much more sensitive to aircraft noise disturbance than domestic livestock, yet the latter, while more adaptable to it, were still documented to have primary and secondary effects that included reduced milk production, increased glucose concentrations, decreased hemoglobin levels, increased heart rate, and reduction in thyroid activity. Further, a 1983 study suggested that 2 of 10 cows in late pregnancy aborted after showing rising estrogen and falling progesterone levels. These increased hormonal levels were reported as being linked to 59 aircraft overflights. A similar study reported abortions occurred in three out of five pregnant cattle after exposing them to flyovers by six different aircraft (U.S.Air Force 1994b). Another study suggested that feedlot cattle could stampede and injure themselves when exposed to low-level overflights (U.S. Air Force 1994b). Studies of terrestrial mammals have shown that noise levels of 120 dBA can damage mammals' ears, and levels at 95 dBA can cause temporary loss of hearing.

High-noise events (like a low-altitude aircraft overflight) may cause birds to engage in escape or avoidance behaviors, such as flushing from perches or nests (Ellis, et al. 1991). These activities impose an energy cost on the birds that, over the long term, may affect survival or population growth. In addition, the birds may spend less time engaged in necessary activities like feeding, preening, or caring for their young because they spend time in noise-avoidance activities, resulting in lower reproductive success and population fecundity. So, even if one or more of the studies in that literature review concluded that physiological/auditory effects were not well understood, the Navy should not be implying that they are just as poorly understood 28 years

later. A synthesis of two decades of scientific literature on noise effects on wildlife was published in 2016, before the DEIS was released. If not availing itself of the individual studies produced over the last 28 years, then why did the Navy at least not acknowledge that more recent research existed? When a federal agency cites the absence of evidence while failing to seek out the large volume of it that actually exists, it is being disingenuous. It is also objectively wrong and unethical for a federal agency to cherry-pick a single statement of doubt from an obsolete review in which not all of the studies it referenced reached that conclusion.[27] The DEIS therefore fails to justify why it did not use the Best Available Science.

Science is a process. It is not a product or the outcome of deliberations. In that light, the Best Available Science directive rightfully references not science, but "scientific data," meaning an element or product of the scientific process or a synthesis of the most reliable knowledge at a point in time. While the 1988 literature review marked an appropriate point in time on which to base data-driven decisions, there has been much research since then, on physiological effects of noise on animals, that would help to mitigate the DEIS's failure to use the Best Available Science. For example, the 2016 synthesis of two decades of research on effects of noise on wildlife concludes that while "taxonomic groups vary in auditory capabilities," the "...majority of studies documented effects from noise, including altered vocal behaviour to mitigate masking, reduced abundance in noisy habitats, changes in vigilance and foraging behaviour, and impacts on individual fitness and the structure of ecological communities." Also, "This literature survey shows that terrestrial wildlife responses begin at noise levels of approximately 40 dBA, and 20% of papers documented impacts below 50 dBA."[28]

The Fish and Wildlife Service's July 2016 Biological Opinion said, "The decline in murrelet populations from 2001 to 2013 is weakly correlated with the decline in nesting habitat, with the greatest declines in Washington, and the smallest declines in California, indicating that when nesting habitat decreases, murrelet abundance in adjacent marine waters may also decrease." The BiOp acknowledges that current estimates for reproductive success are well below the levels needed "...to maintain or increase the murrelet population" in all areas of the Pacific Northwest where the murrelet is found. The list of threats to its survival and recovery includes habitat destruction and modification of the terrestrial environment from timber harvest and human development, but among other threats the BiOp does not list military jet noise or sonar. Yet while the highest conservation priority is reestablishment of abundant supply of high-quality nesting habitat, and while it acknowledges that murrelet populations in the areas where the Navy will most frequently be operating have "lost resistance to deleterious population-level effects and are at risk of continual declines," it all but admits outright that the marbled murrelet population in these areas is headed toward eventual extirpation, because "activities which degrade the existing conditions of occupied nest habitat or reduce adult survivorship and/or nest success will be of greatest consequence to the species, reinforcing the current marbled murrelet population decline throughout the coterminous United States." To have such omissions and conflicting statements in a document that allegedly supports the Navy's proposed activities is disturbing, especially when one considers the Navy's influence on the Fish and Wildlife Service's actions.

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[27] http://www.noisequest.psu.edu/noiseeffects-domesticanimals.html

[28] Shannon, Graeme et al. A synthesis of two decades of research documenting the effects of noise on wildlife. Biol. Rev. (2016), 91, pp. 982–1005. doi: 10.1111/brv.12207

For example: the Navy has drawn a clear line between permanent and temporary threshold shift (TTS), which is a term for hearing loss. The Navy's long-held position is that temporary threshold shift does not result in tissue damage including hair cell loss, and is therefore temporary and non-injurious; the Navy considers TTS to be "auditory fatigue."[29] During negotiations with the Navy on the Biological Opinion, the Fish and Wildlife Service maintained that TTS does result in hair cell loss, and is thus an injury. The Navy also expressed concern that the Fish and Wildlife Service was not separating harassment from harm. "We [Navy] explained that the Navy's proposed criteria would allow for them [FWS] to separate harassment from harm. This is biologically significant from an animal's perspective, as well as significant from a public perception stand point (behavioral harassments should not be quantified as harm)."[30] The law does not agree with that assessment. The definition of harm under the Endangered Species Act does not accommodate separation of temporary from permanent threshold shift, nor does it allow "auditory fatigue" or harassment to be excluded from its definition of harm.

During these negotiations, the Navy also said:

> "There is a physics constant called "impedance" and they [FWS] disagree with that value. If they change to the actual physics constant (as Navy suggests) then their criteria change from phase I to phase II jumps up almost 30 dB. This causes them concern that it's too great a change and that the Navy is "not being conservative enough" in our proposal. However, criteria does not "conserve a species" it only allows for an evaluation of effects."[31]

The last sentence in the above paragraph is the crux of the matter: of two federal agencies in consultation under Section 7 of the Endangered Species Act, only one, the Fish and Wildlife Service, was pursuing the conservation of the species. The Fish and Wildlife Service was seriously hampered in its duty to protect species and the environment. However, the Navy has a duty to uphold the law – including the Endangered Species Act and NEPA. The Navy has failed in its duty to carry out its mission within existing legal parameters.

Because of the Navy's failure to provide the FWS with information it needed, the FWS had to make assumptions. To wit, the BiOp said: "For scenarios pertaining to marbled murrelets, we also had to make assumptions about where and when the Navy would conduct the proposed activities. For example, hypothetically, if the Navy stated that a given activity would occur year-round at distances greater than three nm [nautical miles] from shore in the W-237 area, we would need to form assumptions about how much of the activity would be done during the summer and how much during the winter, as well as how much of the activity would be carried out between three and 12 nm [nautical miles] from shore, and how much of the activity would be carried out less than 50 nm from shore."

In other words, the FWS was not given enough information about when and where the bulk of Navy training and testing activities would be occurring in the seasonal presence or absence of

[29]Personal communication, US Navy.
[30]Personal communication, US Navy.
[31]Personal communication, US Navy.

listed species at different times of the year, to be specific rather than generic about impacts to these species.

Table 4 in the BiOp reveals that FWS had to make such assumptions for torpedo testing, underwater unmanned vessel testing events, and gunnery, bombing, and missile exercises (both surface to air and air to surface) plus maritime patrol aircraft exercises. The total number of Navy operational "events" that FWS had to make assumptions about exceeded 450.

The Navy said, "They [FWS] asked if we could limit our actions to 5 years and we said no." The normal duration of a Biological Opinion's validity before it expires has traditionally been 5 years. Despite acknowledging that vital population trend information for the marbled murrelet population was missing, the FWS made the duration of its Biological Opinion good for 20 years.

As previously documented, noise degrades habitat as well as a species' ability to carry out its daily activities. In the marbled murrelet Long Term Conservation Strategy, daily timing restrictions on forest practice activities apply only during the birds' daily peak activity periods (one hour before official sunrise to two hours after official sunrise and from one hour before official sunset to one hour after official sunset) during the nesting season. Unfortunately, after the chick hatches, adults must make visits to and from the nest throughout the day and are subject to disturbances throughout the day (USFWS 2012). Murrelets spend 0.3 to 3.5 hours per day (mean 1.2 ± 0.7 hours per day) commuting to nests during the breeding season (Hull et al. 2001). USFWS (2012) reports "Based on a compilation of radio-telemetry data (Golightly, R., in litt. 2010), we estimate that up to 10 feedings could occur during the mid-day portion of the nestling phase (Livezey, K., in litt. 2012)."

There are no restrictions on military activities regarding low flights over the Washington coast, where the murrelet's decline is most serious. Noise and visual disturbances throughout the day can cause an adult murrelet to abort one or more prey deliveries to the nestling, which increases the energy cost per food delivery attempt and increases the risk of predation of the adult (Hull et al. 2001, Kuletz 2005). Such disturbances are considered significant because they have the potential to reduce hatching success, fitness, or survival of juveniles and adults (Hébert and Golightly 2006, USFWS 2012). The above are mostly from the Fish and Wildlife Service's own research, yet effects from low-flying Navy jets were not adequately considered. We have discussed in # 3, 7 and 8 the lack of accuracy with regard to measuring or modeling real noise levels produced by Growlers.

In a November 2015 letter to the Superintendent of the Olympic Coast National Marine Sanctuary,[32] the Navy stated that, "...permanent threshold shifts (Level A harassment) involve some tissue damage and a permanent reduction in hearing sensitivity and [Navy] agrees that these effects should be considered injurious to an individual marine mammal. However, the Navy's position remains that Level B harassment takes should not be characterized as an injury to sanctuary resources as they do not constitute physical injury to the species." The argument simply does not apply to marbled murrelets and northern spotted owls, in part because the unnamed surrogate species that were used to quantify the amount or extent of anticipated take do not appear to have been adequately analyzed, and because injuries and behavioral disturbances

[32]http://www.nmfs.noaa.gov/pr/permits/incidental/military/navynwtt_2015loa_ocnms_letter.pdf

were being considered by the Navy in the context of the Marine Mammal Protection Act, not the Endangered Species Act under which these birds are protected. As previously stated, the ESA definition of harm does not allow for segmentation of impacts.

How do you know what damage is permanent and what's temporary, in a rare, tiny and secretive marbled murrelet? More fundamentally, where do you draw the line on hearing loss for species that depend on hearing for survival? What do the species that depend upon hearing do for protection from predators while recovering from not being able to hear properly? Recovery can take hours, days or weeks, and may or may not be a full recovery. How is it possible to say *with any degree of certainty* that recovery from a temporary threshold shift has taken place in a wild bird, when the surrogate species being tested is a parakeet?

What is the contribution of Growler jet noise to habitat loss in formerly quiet areas? Why is this not addressed in the Biological Opinion? And what about repeated noise or explosive events as opposed to one or two? In the case of marbled murrelets, which spend 90% of their lives on or in the water from along the coast to 50 and even 250 miles offshore, it's not so easy to establish what is temporary and what is permanent harm, when it comes to exposure to undersea and in-air explosions, plus sonar, plus jet overflights. How is it also possible to document or establish accurate thresholds of temporary versus permanent tissue injury by relying on a 1974 military study on domestic chickens, ducks and geese to calculate "probabilities"?[33] Weight differences alone, never mind the wildness factor, would render such measures wild guesses at best. Because the Navy failed to supply the Fish and Wildlife Service with sufficient information to make such a judgment, the FWS was forced to improvise in its Biological Opinion. How is it possible for this to be valid for the next 20 years?

With regard to the Navy's influence over the FWS on mitigation, the Navy said, "USFWS discussed with the Navy a couple of mitigation proposals during this [September 3, 2015] meeting. They requested that the Navy consider adding the following two mitigation items to our proposed action to help reduce effects which they claim will help expedite their analysis. The mitigation items were as follows: 1) Carry into NWTT [Northwest Training and Testing EIS] the marbled murrelet monitoring the Navy currently does in the inland waters for UNDETS [Undersecretary of Defense] under NWTRC [Northwest Training Range Complex, from a 2010 EIS]. However, add the requirement that instead of generic observers and shutting down in the presence of any bird that we use certified marbled murrelet observers that have taken USFWS's training class. We indicated that we didn't think it would be feasible to have certified observers. We also asked for clarification on how it would expedite the analysis if we added this mitigation measure. They wouldn't have to do as much analysis on the overlap since the monitoring would help preclude most take. They weren't willing to say that adding this mitigation measure would put us in a no jeopardy situation. They felt it was too pre-decisional since they don't know have the criteria or zones of effect. We indicated that we would consider this but that we preferred to the analysis without any mitigation, make their determination of take, and then show (quantitatively) how any mitigation measure they propose actually reduces this take. We felt it was more transparent to the public and would show a clear nexus between any mitigation and

[33] Damon, Edward G, et al. The Tolerance of Birds to Airblast. Lovelace Foundation for Medical Education Research. Prepared for the Defense Nuclear Agency, 23 July 1974.
http://www.dtic.mil/dtic/tr/fulltext/u2/785259.pdf

reduction of impacts. 2) In the offshore area, any activities that we use marine mammal observers to ensure a mitigation zone is clear to also have them look for an ensure the zone is clear of albatross. We clarified that we don't use MMOs but our Navy personnel that are lookouts receive training in sighting/identifying marine mammals. We told them that not all activities have marine mammal observers because some activities are events in which an object is fired several 10s of km away from a ship and it isn't practical for them to observe that far. We indicated for some activities that have air support that the pilots sometimes serve as lookouts to clear a target area, but that clearing an area for marine mammals would be different than albatross because the much smaller size of albatross."[34]

So, if the Navy won't accept mitigation measures such as using certified observers trained by the FWS, without demanding quantification of reductions in take or a no-jeopardy assurance, for which they refuse to provide accurate operational information, and if they fire into an area without clearing it first, then the Navy's ability to document actual takes will remain suspect.

As early as August 2015, the Navy was pressuring the FWS and attempting to steer the process. A Navy official said, "I would like to explore the possibility of getting ASN [Assistant Secretary of the Navy] (EI&E) approval to release the Final [Northwest Training and Testing] EIS even without having a Draft Biological Opinion from FWS. We did not discuss it with FWS today, but maybe we could request assurances from FWS that we would not have any jeopardy conclusions in advance of a Draft BO to support this COA [course of action] (there certainly have not been any indications that we might be anywhere close to a jeopardy call)?"[35]

The Navy released its NWTT Final EIS in October 2015 without a public comment period and without completing any of the required federal and state consultations. It abruptly terminated consultation with the State of Washington a month later, over the State's objections, and it did not receive the Biological Opinions from NOAA and the Fish and Wildlife Service until November 6, 2015, and July 21, 2016, respectively. The Biological Opinion is good for 20 years, and the Navy recently announced another EIS for/and another increase in activity in the Northwest Training and Testing Range for summer 2017. This segmentation and avoidance of legal requirements is unacceptable; the cumulative impacts on endangered and other species will likely be significant.

With only 7500 marbled murrelets currently remaining in Washington, a population viability analysis shows it is more likely than not that the state population will only be between a quarter to half of its current size after 50 years, between 2,077 and 2,182 birds. Given that the Navy observes guidance from the Aircraft Environmental Support Office, which directs Navy aircraft to fly "over sparsely populated areas, [where] aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure," then the levels of noise are likely to degrade or render more marbled murrelet habitat uninhabitable, especially along the Washington coast where murrelet declines are most severe.

In its letter to the Olympic Coast National Marine Sanctuary staff the Navy wrote, "There is no science to support Navy activities have been detrimental to any Sanctuary resources." It went on

[34] Personal communication, US Navy.
[35] Personal communication, US Navy.

to caution Sanctuary staff about drawing conclusions of some areas being biodiversity "hot spots" and making "assumptions of importance," because such studies were "limited and focused" without "review of best available science." The Navy added that it was familiar with these studies used by Sanctuary staff, because most were conducted under Navy funding. If the Navy wishes to caution agencies about the use of Best Available Science, then it is entirely appropriate for agencies and the public to question whether the Navy's use of a single isolated statement from a 28 year-old literature review meets its own standards for Best Available Science. It certainly does not meet the public's.

A 2011 study on acute and chronic impacts of long-term vehicle noise exposure to the reproductive success of northern spotted owls concludes, "...populations can compensate for perturbations up to a threshold, beyond which disturbance impacts may be greatly magnified—and even cause system collapse."[36] It also concluded that northern spotted owls (NSO) "...close to noisy roads fledged significantly fewer young than NSO near quiet roads, indicating that routine traffic exposure may decrease NSO reproductive success over time." And this was vehicle noise - there are likely to be far more strong negative results from jet noise, especially in quiet areas that this DEIS dismisses.

The marbled murrelet has been experiencing drastic declines in Washington and has lost 44% in population size since 2001 (Lance and Pearson 2016). So significant is this decline that the State of Washington up-listed them from state-threatened to state-endangered in December 2016, stating "it is likely the Marbled Murrelet could become functionally extirpated in Washington within the next several decades" (Desimone 2016). Noise alters habitat and can make good habitat unusable.

Neither the Navy nor the Fish and Wildlife Service fully considered the significant physiological effect that noise-related elevated stress levels have to immune response or other essential life functions; rather, the agencies claimed there is insufficient evidence to show that noise-induced stress threatens survival and reproductive success. The maintenance of existing murrelet habitat is considered integral to stabilizing the population, especially on non-federal lands in the near-term.[37] We note the irony of the fact that while the Navy expressed concern about a potential jeopardy call by the Fish and Wildlife Service, military jet noise is not listed as a threat in the Service's July 21, 2016 Biological Opinion.

This again violates the Precautionary Principle. In the 2016 Biological Opinion, the study cited (Busch and Hayward, 2009) actually contradicts this claim. There the researchers state that suppression of the immune system, severe protein loss, deposition of fat and atherosclerotic plaques, hypertension and other effects were possible, especially when noise is sporadic and the species could not acclimate to it. It is irresponsible and scientifically invalid to conclude without corroborating scientific evidence that adverse impacts to all birds, including state endangered marbled murrelets, and spotted owls, and in fact all wildlife in the study area, can be dismissed because they are "presumably habituated to the very high level of noise and visual disturbances at NAS Whidbey Island."

[36] Hayward, Lisa et al. Impacts of acute and long-term vehicle exposure on physiology and reproductive success of the northern spotted owl. Ecosphere 2(6):art65. doi:10.1890/ES10-00199.1

[37] (Falxa et al. 2016, Lorenz et al. 2016, Raphael et al. 2016, Raphael et al. In Press).

The Strait of Juan de Fuca has recently been identified as one of three regional "hotspots" with an exceptionally high murrelet abundance (the upper 20th percentile with low annual variation), nesting habitat abundance, and nesting habitat cohesion across the species listed range (Raphael et al. 2015). Compared with marine variables, nesting habitat attributes explained more of the variation in murrelet abundance, underscoring its greater importance to murrelet recovery. According to the Fish and Wildlife Service's Recovery Plan, the risk of chance events wiping out the species is "exacerbated for the murrelet because populations that have negative long-term growth rates, as does the listed population of the murrelet ...have little or no capacity to overcome catastrophic population losses."

The Endangered Species Act prohibits harm to a listed species. § 1538(a)(1)(B). The Recovery Plan, created under § 4(f) when a species is listed by the FWS serves as a guidance document in determining what actions are likely to impede recovery. Using the Best Available Science, three biological goals for the marbled murrelet were adopted in 2008:

1. a stable or increasing population,
2. an increasing geographic distribution, and
3. a population that is resilient to disturbances. (USFWS 2011, Raphael and others 2008.)

In order to fully replace the biological value that is taken and to satisfy the jeopardy requirements, an alternative must at a minimum not impair pursuit of any of these three objectives. The consulting agency must use "the best scientific and commercial data available."[38] While an agency typically has leeway to identify the Best Available Science, it must address all available scientific information, even if it decides that some of those data are not to be incorporated into the jeopardy analysis. Failure to consider available data undermines the agency's assertion that it met the Best Available Science standard. The Navy offered to help write portions of the Biological Opinion.[39] The Growler DEIS cites a 28 year-old literature review and ignores more recent research.

The State's Long Term Conservation Strategy DEIS appears to indicate the likelihood of increased extinction risk, and, barring actual extinction, it indicates precipitously low population sizes over many decades under all alternatives described in that document—from activities that do not include any analysis of impacts from jet noise.

Besides making an unproven presumption about habituation of murrelets to noise and visual disturbance, the Navy presents alternatives that are inadequate in that no reduction in noise is offered, and no information exists on impacts from flight operations that could, when added to the impacts presented in the State's DEIS, risk jeopardy to the species by impeding its recovery. Cumulative impacts include those effects by other actors that are "reasonably certain to occur" and that include past, present and future events and actions.

In a 2014 Biological Opinion issued by the National Marine Fisheries Service on the Federal Columbia River Power System, the agency concluded that a slight increase in abundance over

[38] 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(g); *San Luis & Delta-Mendota Water Auth. v. Locke*, 776 F.3d 971, 995 (9th Cir. 2014).
[39] Personal communication, US Navy.

time in the wake of a proposed action indicates that such action will not inhibit recovery; however, the courts rejected this "trending toward recovery" argument because it failed to consider that populations had already been seriously reduced in size. In the case of marbled murrelets, the population has not only been seriously reduced in size, it is trending toward extinction. The volatility of the situation requires a greater margin of error than has been shown, to ensure that the species is not in jeopardy. Neither the DEIS nor the Biological Opinion have allowed for such a margin of error.

Thus, given the serious deficiencies of this DEIS, which include the following:

1. failure to evaluate all of the incoming new Growlers together, instead segmenting their impacts,
2. failure to analyze indirect and cumulative impacts to the species from takeoffs, landings and flight operations of 157-160 Growlers, not just the 36 discussed in this DEIS,
3. failure to consider noise beyond the immediate vicinity of naval facilities on Whidbey Island,
4. failure to use the new software recommended by a DOD committee, which would have accounted for noise characteristics of newer aircraft such as Growlers and provided more accurate noise level estimates,
5. failure to back up the presumption with Best Available Science, that marbled murrelets near runways are habituated to jet noise and visual disturbance,
6. failure to provide the Fish and Wildlife Service with more specific information on the seasonality and timing of training and testing,

and, given the continued steep population decline in marbled murrelets, added to the fact that Growler noise is not listed as a threat to this species in the Fish and Wildlife Service's July 21, 2016 Biological Opinion, nor is it mentioned as a threat in the State of Washington's Long Term Conservation Strategy DEIS, plus the fact that climate change has not been factored into population projections in the State's DEIS, making them appear too optimistic, we believe that, combined with all this, the Navy's DEIS presents a scenario that grossly underestimates Growler noise impacts and thus cumulative effects on a listed species whose Washington population is expected to be cut in half in a few decades if there are no changes in current externalities. Those externalities are of course changing rapidly, and the combination of impacts to the marbled murrelet promises to accelerate its decline. The ESA does not provide that an agency is only responsible for remediating its share of the harm. Rather, the ESA mandate is simple and clear -- agencies may not undertake any action that results in jeopardy to the threatened species.[40]

We further believe that unless the Navy presents a revised DEIS and provides better information to agencies in order to *accurately* evaluate noise impacts to listed species, that the likelihood of jeopardy is far higher than has been portrayed. The proposed actions must be delayed and modified in order to reduce further declines.

We therefore implore the Navy to take the following actions immediately:

[40] See, e.g., Pac. Coast Fedn. of Fishermen's Ass'ns v. United States Bureau of Reclamation, No. C02-2006 SBA, 2006 U.S. Dist. LEXIS 24893 (N.D. Cal. Mar. 27, 2006); PCFFA v. U.S. Bureau of Reclamation, 2003 U.S. Dist. LEXIS 13745, No. 02-2006 SBA, slip op. at 16 (N.D. Cal. July 15, 2003)

1.) Stop the practice of segmenting large projects into numerous smaller ones, and conduct cumulative impacts analyses for the full scope of functionally and geographically related activities;

2.) Provide any and all information and materials requested by state and federal agencies to undertake the reviews and consultations required of them;

3.) Hold public meetings and hearings in addition to or in lieu of Open Houses. In most cases at the latter, questioners are sent from table to table without getting answers to their questions, and their concerns and comments are not adequately documented. A proper public Q&A where everyone can hear the Navy's responses would greatly improve the public's understanding of proposed activities and provide information upon which the public may evaluate and propose alternatives that would meet the Navy's needs, as well as the public's. Further, the Navy must advertise in media of record in affected communities, and not assume that a small ad in the Seattle Times will be read by people living three to four hour's drive away.

4.) Incorporate and grant mitigation requests and proposals by wildlife, historic preservation, and public health agencies; so far, mitigation proposals have been reasonable. Yet the Navy as a matter of course refused to grant some of the most basic of mitigation requests. For example, refusing to allow Fish and Wildlife Service experts to train Navy personnel on spotting marbled murrelets is unwarranted, unreasonable and unjustified.

5.) Respond to requests from local governments for consultation under Section 106 of the National Historic Preservation Act; expand the Area of Potential Effect and initiate these requested consultations in order to assess impacts to these areas, including those requested by the State Historic Preservation Officer in her letter of January 9, 2017.

6.) Reinstate public comment periods and suspend "30 day wait periods" on Final Navy EISs, especially when new information has come available.

7.) Ensure that the scientific inaccuracies contained in the 2014 Pacific Northwest Electronic Warfare EA are corrected to standards that Forest Service and Fish and Wildlife Service biologists can support, and allow the public to read and comment.

8.) Employ more rigorous cumulative impacts analyses in general, including evaluations of effects on climate change and air, soil and water quality. The military is the world's largest single user of fossil fuels, and exhaust emissions beyond the narrowly defined 65 dB DNL-affected areas near runways are not being analyzed.

9.) Clarify basic terms such as "event." It should be defined in each context, so that the public can understand their durations and significance. Some events last for seconds and involve one or two aircraft; others last for hours and involve multiple aircraft, and still others last for days and involve multiple aircraft, ships and submarines; the Navy must clarify the term "event" each time it is used.

10.) Fulfill the DOD-USDA 1988 Master Agreement requirements to fully substantiate the need for Defense Department use of non-military lands for electronic warfare training and military operations, by proving in a report to the public that DOD-owned lands are either unsuitable or unavailable.

11.) Provide a detailed, specific answer on whether and how the additional Navy stressors on Endangered Species Act (ESA) listed species as described in the Growler DEIS, particularly to marbled murrelets, comports with ESA Section 4F recovery, given that the acknowledged lack of scientific information on noise impacts to this species affects the ability to determine harm and cumulative effects, and also in light of precipitous declines and the December 2016 up-listing of this species by the State of Washington, from threatened to endangered.

12.) Revise the DEIS to address the 40 additional Growlers to be stationed at Naval Air Station Whidbey Island, as well as additional flying on weekends, and allow further opportunity for public comment before the Final EIS is prepared.

13.) Comply with the spirit and letter of NEPA requirements by proposing alternatives that reduce the noise, by properly and accurately evaluating noise and other impacts in all affected areas, by making actual noise measurements as well as computer modeling, and by using scientifically valid standards that measure the more realistic aspects of noise that current models don't address, as previously requested by local governments in surrounding communities.

Thank you for the opportunity to comment on this Draft EIS.

Sincerely yours,

Karen Sullivan
Co-Founder, West Coast Action Alliance

Connie Gallant
President, Olympic Forest Coalition

Ken Bleyer
Co-Founder, West Coast Action Alliance

Patricia Jones
Executive Director, Olympic Forest Coalition

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P.O. Box 461
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cc:
The Honorable Patty Murray
The Honorable Maria Cantwell
The Honorable Bernie Sanders
The Honorable Derek Kilmer
The Honorable Rick Larsen
The Honorable Jay Inslee, Governor of the State of Washington
The Honorable Elizabeth May, Member of Parliament, Saanich-Gulf Islands, British Columbia, Canada
Mayor Deborah Stinson, Port Townsend, Washington
Mayor Candace Pratt, Sequim, Washington
Mayor Patrick Downie, Port Angeles, Washington
Mayor Erik Larson, Aberdeen, Washington
Board of County Commissioners, Jefferson County, Washington
Board of County Commissioners, Clallam County, Washington
Board of County Commissioners, Grays Harbor, Washington
Advisory Council on Historic Preservation
Washington State Historic Preservation Officer
Sarah Creachbaum, Superintendent, Olympic National Park
Reta Laford, Supervisor, Olympic National Forest
Michael R. Gordon, The New York Times
Craig Whitlock, The Washington Post
Hal Bernton, Seattle Times
Dahr Jamail, Truthout
National Parks Conservation Association
Earthjustice
Natural Resources Defense Council
Earthrise Law Center
Western Forest Law Center

Attachments:

1. Footnote #13: US Navy Region Northwest. *NRNW In Water Construction Projects. XL spreadsheet*, View file at: http://westcoastactionalliance.org/wp-content/uploads/2015/09/1in9w2atr3con8stru4ct5ion6pr7oj.xlsx

2. Footnote #14: U.S. Navy, NW-NEPA-Report-12-15-2015. View at: http://westcoastactionalliance.org/wp-content/uploads/2016/11/NW-NEPA-Report-12.15.15-4.xlsx

3. Footnote #15: Example of intent to segment NEPA: US Navy – Goodman, Layna. Proposed NEPA Approach for Planned Waterfront Projects Which May Require Environmental Impact Statements, Naval Base Kitsap Bangor. http://westcoastactionalliance.org/wp-content/uploads/2015/09/re1ci2pe34ne5pa6.docx

NRNW In Water Construction Projects

*Does not include in-water construction projects for which applicability of a CATEX is anticipated
**Does not include potential proposed actions (if any) of which action proponents have not informed NAVFAC NW
***In situations where the total number of piles was not specified in the 1391, it was then estimated 1 pile is built every 10 LF
****Project descriptions, construction timeframes, and the approximate # of piles can change during the design and environmental planning process

	Project	Project # or Name	Project Description	approximate # of piles	Timeframe of Construction (actual if programmed or best guess)	NEPA funded (yes or no)
	NBK-Bangor					
	Included in Pile Repair & Replacement EA					
1		Bangor Contingency Piles	15 piles per year for a total of 75 piles between FY13 and FY18; repairs to be conducted on an "as needed/if needed" basis in response to annually conducted pier inspections for structural integrity	75	Contingency FY 13-FY18	yes
2		EHW-1 Repair Project	Replace critical structure piles	104	FY13-FY18	yes
3		K/B Dock Repair	Replace deteriorated creosote-timber piles on a WWII vintage pier with new treated timber piles, which will maintain the usability of the pier. Six timber piles will be removed with a vibratory hammer. Five fender pile, guide piles 2013, 2014 Ten Fender piles for 2015, Ten Fender piles for 2016, 15 Fender piles for 2017, 15 fender piles for 2018	60	Unprogrammed FY13-FY18	yes
4		Zelatched Point Dock Repair	Five Fender piles 2015, Five Fender piles for 2016, Five Fender piles for 2017, Five Fender piles for 2018; note that Zelatched Point is in Dabob Bay section of Hood Canal approx 9-11 miles by boat from Bangor waterfront.	30	Unprogrammed FY15-FY18	yes
	Stand Alone Environmental Assessment					
	Service Pier (Barge) Mooring Dolphins	RDT&E project	Install two mooring dolphins and two guide piles to provide a permanent mooring for a RDT&E barge.	20	FY13	yes
	Environmental Impact Statements					
	EHW-2	P-990	Construct a second explosive handling wharf to meet Trident mission requirements at Bangor.	1250	FY12-FY16	yes
	Land Water Interface	P-983	Construct two piers across intertidal zone with steel mesh (10x10 inch grid) extending to the seafloor and north and south abutments.	136	FY14-FY15	yes
	Electro Magnetic Measurement Range Installation	EMMR	Project involves installation of a 21-sensor array on the seafloor. The magnetic range is needed to degauss submarines when they return from deployment to reduce their electronic signatures. Horizontal directional drilling, jet plow, and cable armoring would be used for cable installation from array to existing MSF building on NBK-Bangor. The project would also involve construction of a camera platform with cable junction. The 15 ft x 15 ft offshore platform would require installation of five 24-inch square batter pre-cast concrete piles (one for each corner and one in the center of the platform). Sponsor is evaluating performance and design characteristics in an effort to reduce significance of both impacts and potential public interest.	5	FY14-FY15	proponent willing to fund

(Continued next page)

24	Transit Protection System		P-925	A berthing pier for the Transit Protection System and Port Operations craft assigned to NBK Bangor. The berthing pier will consist of a pile-supported reinforced concrete structure. The pier will be provided with full hotel service capability including power, potable water, fire protection, sewage connections, Ship Overboard Drainage (SOD) collection, fuel, telephone, cable, and Local Area Network (LAN) service. This pier will be located at the site of the existing Magnetic Silencing Facility (MSF). The pier and berths will have lighting. The pier will support 25-ton capacity mobile crane operations. The pier and berthing slips will be provided with necessary mooring, fendering, and corrosion protection systems. The project will proved a berth to accommodate a fuel barge moored permanently to the pier. A study is underway to determine if there are more cost effective solutions than the originally envisioned project.	21-27	FY16-FY17	proponent willing to fund
25	Service Pier Extension		P-834	Construct 28,000 SF general purpose berthing pier. Construct 2153 SF permanent standby generator building with four new 2 MW 900 RPM emergency generators. Construct 19,500 SF Ships Service Support Building. 320 piles for the pier extension and 11 piles for the wave attenuation component.	320	Unprogrammed. FY14 or later	partially funded; additional funding promised
27				***Estimated Pile Total at NBK Bangor***	**2000**		
28	**NBK-Keport**						
31	**Included in Pile Repair & Replacement EA**						
32		1	Keyport Contingency Piles	Up to 16 piles from FY13 - FY18; repairs to be conducted on an "as needed/if needed" basis in response to annually conducted pier inspections for structural integrity	16	Contingency FY 13-FY18	yes
33				***Estimated Pile Total at Keyport***	**16**		
34	**NAVSTA Everett**						
37	**Included in Pile Repair & Replacement EA**						
38		1	Contingency Piles	15 piles per year for a total of 75 piles between FY13 and FY18; repairs to be conducted on an "as needed/if needed" basis in response to annually conducted pier inspections for structural integrity	75	Contingency FY 13-FY18	yes
39		2	Major Waterfront Repairs		5	Unprogrammed FY13-FY18	yes
40	**NEPA Strategy Unknown/Early Project Planning Still Underway**						
41	Piers D&E Replacement		P-165		1671	Unprogrammed. FY15 or later	no
42				***Estimated Pile Total at Everett***	**1751**		
43	**NAS Whidbey Island**						
44	**Included in Pile Repair & Replacement EA**						
45		1	Contingency Piles	12 piles per year for a total of 60 piles between FY13 and FY18; repairs to be conducted on an "as needed/if needed" basis in response to annually conducted pier inspections for structural integrity	60	Contingency FY 13-FY18	yes
46	**Stand Alone Environmental Assessment**						
47	Fuel Pier Breakwater		P-191	There are 43, W14x120 steel plumb piling plus 43, 24 inch diameter steel pipe batter piling with 8 ft wide x 3 ft deep concrete pile cap and concrete wall panels for the new breakwater. There would also be a sheet pile wall consisting of 16" sheet piles for the length of the 270 ft wall resulting in ~203 sheet piles. The breakwater and sheet pile wall are needed to replace a pier that is collapsing and must be demolished due to storm inflicted major damage on it ~9 years ago. The failing/disintegrating pier currently provides the breakwater protection that the proposed new pier would replace.	289	FY14-FY15	yes
48				***Estimated Pile Total at NASWI***	**349**		
49	**NBK Bremerton - PSNS**						
50	**Included in Pile Repair & Replacement EA**						
51		1	Contingency Piles	10 piles per year for a total of 50 piles between FY13 and FY18; repairs to be conducted on an "as needed/if needed" basis in response to annually conducted pier inspections for structural integrity	50	Contingency FY 13-FY18	yes
52		2	Replace Fendering System Pier 6	Up to 415 concrete piles would be used	415	FY14-FY15	yes
53		3	Replace Fendering System Pier 5	Concrete Piles for Pier 5	380	FY16-FY17	yes
54		4	Pier 4 Repair Fendering System	Steel piles	43	Unprogrammed FY13-FY18	yes
55	**NEPA Strategy Unknown/Early Project Planning Still Underway**						
56	Ship Maintenance and Pier Replacement		P-411	Construct a permanent concrete ship maintenance pier 404 meters (1325 ft) by 38 meters (125 ft) to replace existing Pier 4 to be located at the site of the existing Pier 4. Structure consists of solid prestressed concrete piles and concrete pile caps supporting a concrete deck capable of supporting a 60-ton portal crane and a 140-ton mobile crane load. The pier will include portal crane rail, cleats, twelve 100-ton bollards and four 200-ton bollards, and a fendering/camel system capable of supporting SSBN and SSN hulls.	182	Unprogrammed. FY16 or later	no
57							
58				***Estimated Pile Total at Bremerton***	**1070**		
59	**Manchester Fuel Department**						
60	**Covered under Pile Repair & Replacement EA**						
61		1	Contingency Piles	8 piles per year for a total of 40 piles between FY13 and FY18; repairs to be conducted on an "as needed/if needed" basis in response to annually conducted pier inspections for structural integrity	40	Contingency FY 13-FY18	yes
62		2	Barge Mooring Pier Repairs		TBD	Unprogrammed FY13-FY18	yes
63				***Estimated Pile Total at Manchester***	**40**		
64	**Region (USCG Station Port Angeles, WA)**						
65	**Stand alone Environmental Assessment**						
66	Transit Protection System Operational Pier at USCG Station Port Angeles		P-854	Construct a permanent floating concrete pier structure, with 5- mooring dolphins and shore power delivery	30	Unprogrammed. FY13 or later	yes
67				***Estimated Pile Total in Region***	**30**		
68							
69							
70							

(end NRNW In-Water Construction Projects)

(Begin footnote #14)

NEPA Project Manager	Project Name	Description	Type	eProjects WON Clickable Link	Activity	NEPA Preparer	NEPA Notification Ltr signed by Action Proponent	NNU NOI from CNRNW to CNIC	NNU/NOI from CNIC from CNIO(N45)	Draft EA/DEIS	Draft EA Public Review	Final EA/FEIS	FONSI/ROD Signed	FONSI/ROD Signatory	Coop Age
FY16 FONSI/ROD															
Stevenson	P-603 Shore Power to Ammo Pier, NAVMAG Indian Island	Construct permanent electrical distribution system to provide power to Ammunition Pier. Demolish 1 storage shed, construct 1 building. Remove temporary generators. Consolidate pier side equipment storage.	EA	1357306	NAVMAG Indian Island	NAVFAC NW	6/24/14	7/22/14	8/6/14	7/6/15	8/12/2015 - 9/11/2015	10/19/15	11/25/15	CNRNW	Non
Escola	INRMP, Everett	Implementation of the revised INRMP for NAVSTA Everett.	EA	1331172	NAVSTA Everett	NAVFAC LANT NAVFAC NW	2/3/14	2/18/14	3/24/14	8/1/14	1/9/2015 - 2/9/2015	10/9/15	12/31/15	CNRNW	Non
Kler	Northwest Training and Testing (NWTT)	Combined EIS for ranges covered by Northwest Training Range Complex and NUWC Keyport, plus other Pacific Northwest RDT&E and pier side maintenance at PSNS, NSE and Bangor.	EIS/OEIS	1131527	Fleet	SRS-Parsons	N/A	N/A	N/A	1/24/14	N/A	10/2/15	1/15/16	ASN(E&E)	Yes
Burt	NWSTF Boardman	Ongoing and proposed naval training activities at Naval Weapons Systems Training Facility (NWSTF) Boardman.	EIS	810307	Fleet	SRS-Parsons	N/A	N/A	N/A	09/07/2012	N/A	12/18/15	1/29/16	ASN(E&E)	Oregon National Guard, N Federal Aviation A
Whalen	In-Water Activities, Acoustic Research Detachment (ARD), Bayview	EA to cover in-water RDT&E activities conducted by ARD Bayview.	EA	1292301	NSWC Carderock	SRS-Parsons	4/10/14	N/A	N/A	1/2/14	3/11/2015 to 4/9/2015	12/30/15	2/1/16	NAVSEA	Non
Whalen	INRMP, NBK	Implementation of the revised INRMP for NBK.	EA	870067	NAVBASE Kitsap	NAVFAC NW	3/11/10	4/13/10	6/3/10	4/3/15	12/23/15	2/22/16	4/1/16	CNRNW	Non
Burt	Gulf of Alaska	Supplemental EIS for Gulf of Alaska to renew MMPA permit by May 2016, will include new acoustic modeling and other updated data.	SEIS/ OEIS	1172776	Fleet	SRS-Parsons	N/A	N/A	N/A	8/22/14	N/A	1/29/16	4/11/16	ASN(E&E)	Yes
Dildine/Senner	Land/Water Interface P-983 and Service Pier Extension P-834, NBK Bangor	Construction of two land/water interface barriers to connect both ends of Bangor's waterfront security enclave to the existing floating barriers and construction of an extension to the existing Bangor Service Pier.	EIS	962462	NAVBASE Kitsap	Leidos	N/A	8/21/12	N/A	2/13/15	N/A	2/12/16	4/20/16	ASN(E&E)	USACE
Mikaa	INRMP, Pacific Beach	Implementation of INRMP for Pacific Beach	EA	1370589	Pacific Beach	NAVFAC NW	3/17/15	4/6/15	4/28/15	1/19/16	2/29/16	4/18/16	5/31/16	CNRNW	TBD
Escola	INRMP, NAVMAG Indian Island	Implementation of the revised INRMP for NAVMAG Indian Island.	EA	962456	NAVMAG Indian Island	NAVMAG	6/7/13	7/18/13	8/18/13	2/15/16	2/29/16	5/9/16	6/28/16	CNRNW	Non
Mikaa	Airfield Obstruction Removal, NASWI	Identify and remove trees within airfield safety and approach/departure zones.	EA	1384020	NAS Whidbey Island	NAVFAC NW	10/28/15	12/8/15		3/15/16	4/16/16	5/3/16	6/30/16	CNRNW	TBD
Senner	P-993 Transit Protection System at Port Angeles	Install 144 piles to support a new fixed pier for forward staging of Transit Protection System (TPS) vessels at United States Coast Guard station Port Angeles.	EA	1172628	NAVBASE Kitsap	Cardno TEC-AECOM JV	3/28/14	4/4/14	5/20/14	7/23/15	DOPAA: 10/6/2015 - 2/25/2015 Draft EA: 11/30/2015 - 01/26/2016	6/24/16	8/8/16	CNRNW	USC
Stevenson	INRMP, Manchester	Implementation of updated INRMP for Manchester	EA	1384015	NAVBASE Kitsap	NAVFAC NW				3/18/16	4/18/16	7/28/16	9/6/16	CNRNW	TBD
Whalen	SPECWAR NW Training	Naval Special Warfare in-water and on-land training in Western WA State. FONSI would be signed by CNO.	EA	1384019	SPECWAR	TBD				TBD	TBD	TBD	TBD	CNRNW	TBD
Escola	INRMP, Remote AK properties	Implementation of INRMP for Icy Cape, Point McIntyre, and Barrow, Alaska	EA	1370808	CNRNW	NAVFAC NW				TBD	TBD	TBD	TBD	CNRNW	TBD
Whalen	INRMP, SEAFAC AK	Implementation of INRMP for SEAFAC property in Alaska	EA	1370812	NAVBASE Kitsap	NAVFAC NW				TBD	TBD	TBD	TBD	CNRNW	TBD

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Whalen	INRMP, SEAFAC AK	Implementation of INRMP for SEAFAC property in Alaska	EA	1370812	NAVBASE Kitsap	NAVFAC NW				TBD	TBD	TBD	TBD	CNRNW	TBD

(end footnote #14)

(Begin footnote #15)

Background and Analysis

Environmental Impact Statement (EIS) for Waterfront Projects Naval Base Kitsap at Bangor

BACKGROUND

- Per 15 CFR §1508.25, actions should be discussed in the same impact statement if they:
  - are connected actions; or
  - have cumulatively significant impacts when viewed with other proposed actions.
- Similar actions such as common timing or geography may be discussed in the same impact statement, but this is not required.
- The subject projects have different project sponsors and different design schedules. Notional project schedules have been developed; ASN approval for all schedules is required.
  - LWI/P-983 has SSP as the project sponsor. 35% design is scheduled for February 2012. The project is programmed for FY14.
  - EMMR has COMSUBPAC as project sponsor. 100% design is complete. The project is currently planned for FY14 construction. Project sponsor is currently evaluating design requirements to potentially reduce the NEPA and mitigation requirement.
  - SPE/P-834 is not currently programmed in FY-14; but may be an OSD add; the project will be resubmitted for the FY15 MILCON program. CSDS-5 (COMSUBPAC) is project sponsor. 10% conceptual design is scheduled for February 2012. Navy analysis initially determined an EA was appropriate; subsequent analysis and regulatory requirements indicate an EIS is required.
  - Shore facilities to support the Transit Protection System (TPS/P-925) are listed as a FY16 project in the FY13 POM submit. SSP is the project sponsor. Planning studies are underway, and conceptual design information is available. It is anticipated the project will require an EIS.
- This paper uses the term "project sponsor" to refer to the command that is funding preparation of the NEPA documentation. The project sponsor is frequently, but not always, the same as the action proponent.

ANALYSIS OF POSSIBLE COAs

COA-1 : Combined Bangor Waterfront EIS (LWI/P-983, EMMR, SPE/P-834 EIS and TPS/P-925)

Purpose and Need:

The purpose is to provide security enhancements and to improve support, maintenance and homeporting capabilities for submarines at Naval Base Kitsap at Bangor. The proposed action is needed because critical assets along the Bangor waterfront must be protected from threats. Protection of strategic military assets is a vital national security concern. Aggressive security improvements within the Navy pre-date the USS Cole incident and the terrorist attacks of

September 11, 2001, and continue today. The Navy continues to improve security at the Bangor waterfront to protect its assets. Existing support, maintenance and homeporting facilities are not adequate to support the Department of Defense (DOD) and to alleviate deployment constraints imposed by current SSBN, SSGN and SEAWOLF homeport locations and maintenance operations.

These actions have similar geography and may have cumulatively significant impacts and schedules that overlap to some extent. The EIS will describe a preferred alternative for each project/site as well as other project/site alternatives and the no action alternative. A combination of preferred alternatives will be selected in the ROD.

- *Pros*:
  - Avoids or minimizes appearance of segmented environmental planning and reduces litigation risk.
  - Streamlines review time for regulatory agencies, tribes, stakeholders and the public.
  - Minimizes documents requiring regulatory and tribal consultations and chain-of-command reviews and endorsements.
  - Minimizes public burden of reviewing multiple documents and attending multiple meetings/hearings.
  - Minimizes technical and legal staff workload to review multiple documents for projects with similar impacts in the same geographic area.
  - Cumulative impacts, tribal concerns, and mitigation could be considered comprehensively instead of project-by-project.
  - Improves consistency across one large document with multiple project sponsors.
  - Reduces overall costs as compared to individual EIS costs.
  - Could utilize existing contract actions with some modifications.
- *Cons*:
  - Delay in one project could affect all projects. More than one ROD may be required to support projects on different timelines. For projects that require additional consultation or action, supplemental NEPA documentation would be prepared for components not included in the earlier ROD.
    - This approach was used for Guam and CNMI Military Relocation EIS and Undersea Warfare Training Range EIS.
    - NUWC Keyport Range Complex Extension EIS/OEIS is example of combining multiple sites/projects into one EIS. EIS/OEIS describes each site/project alternative leading to a preferred alternative for each site. PDASN had option to select a combination of preferred alternatives for ROD.
    - Unknown if ASN(E,I&E) and OPNAV N45 would support this concept for a Bangor Waterfront EIS.
  - Getting tribal consensus on all four projects may prove difficult, and could result in the most problematic project affecting other projects.
  - Multiple funding sources, project sponsors, and contractors required.
  - Modifications to existing Task Orders for SPE/P-834 and LWI/P-983 will be needed.
  - A combined EIS will not reduce the number of required Clean Water Act permits (Section 10, Section 401/404).

- If the design for TPS/P-925 is not sufficiently developed in time to support an FY14 ROD, a supplemental EIS would be required for this proposed action.
- Discussions with the Project Sponsors indicate this is not their preferred COA.

- **COA-2 → Two combined EISs; 1) SSP Focused (LWI/P-983 and TPS/P-925) and 2) COMSUBPAC Focused (EMMR and SPE/P-834)**
- *Purpose and Need:*
- 1) SSP Focused: To maintain existing security posture and provide necessary security enhancements for Naval Base Kitsap at Bangor. The proposed action is needed to protect Strategic Weapons Systems from increased and evolving threats. Protection of strategic military assets is a vital national security concern. Aggressive security improvements within the Navy pre-date the USS Cole incident and the terrorist attacks of September 11, 2001, and continue today. The Navy continues to improve security at the Bangor waterfront to protect its submarines and critical support facilities.

  2) COMSUBPAC Focused: The purpose is to provide support and maintenance for *Seawolf* and *Ohio*-class submarines and to enhance homeporting capabilities at Naval Base Kitsap at Bangor to enable these assets to support the mission of COMSUBPAC. The proposed action is needed to provide enhanced and efficient operation and maintenance of these submarines and to alleviate deployment constraints imposed by current SSBN, SSGN and SEAWOLF homeport locations by improving submarine support and facilities.

  The documents would be structured the same as COA-1; separate alternatives analyses conducted for each project contained within the overall SSP or COMSUBPAC focused EIS. A combination of preferred alternatives would be chosen in the ROD.
-
  - *Pros:*
    - Projects included in one EIS may not be directly affected by schedule delays in projects covered in the other EIS.
    - Each project sponsor would have a focused document supporting their projects.
    - Somewhat streamlines review time for regulatory agencies, tribes, stakeholders and the public.
    - Reduces documents requiring regulatory and tribal consultations and chain-of-command reviews and endorsements.
    - Reduces public burden of reviewing multiple documents and attending multiple meetings/hearings.
    - Reduces technical and legal staff workload to review multiple documents for projects with similar impacts in the same geographic area.
    - Consistency across two documents with different project sponsors somewhat easier compared to four separate documents.
    - Reduces some costs as compared to individual EIS costs.
    - Could utilize existing contract actions with some modifications.
    - Discussions with SSP staff indicate they may support this COA if amenable to OPNAV N45 and ASN(E,I&E).
  - *Cons:*

- Does not fully address NEPA segmentation issues (15 CFR §1508.25); increased susceptibility to legal challenges as projects are occurring within same geographic area at same time.
- Multiple consultation packages submitted to regulatory agencies during the same timeframe. Since Regulatory agencies have limited staff, they may require that all consultations be consolidated (precedent is NMFS consultation with Keyport and NWTRC EISs).
- Multiple documents submitted for tribal consultation during same timeframe. Tribes may not agree on treaty mitigation for one project when impacts of the other projects are still under negotiation.
- Delay in one project could affect other projects in the EIS. More than one ROD may be required to support projects on different timelines. For projects that require additional consultation or action, supplemental NEPA documentation would be prepared for components not included in the earlier ROD.
  - For example, if the design for TPS/P-925 is not sufficiently developed in time to support an FY14 ROD, a supplemental EIS would be required for this proposed action.
- Modifications to existing Task Orders for SPE/P-834 and LWI/P-983 will be needed.
- A sponsor specific EIS will not reduce the number of required Clean Water Act permits (Section 10, Section 401/404).
- Discussions with COMSUBPAC indicate this is not their preferred COA.

COA-3 → Individual EISs for LWI/P-983, EMMR, SPE/P-834 and TPS/P-925

Purpose and need statements would be developed to support the individual projects. Project focused alternatives analysis and project-specific RODs would be prepared.

- *Pros:*
  - Individual projects may not be directly affected by schedule delays in another project.
  - Current contract actions could continue as planned with project-specific modifications as needed.
  - Each project sponsor would have a focused document supporting one project.
  - A tribal objection to one project may not necessarily affect other projects.
  - Project Sponsors support this COA.
- *Cons:*
  - Does not fully address NEPA segmentation issues (15 CFR §1508.25); increased susceptibility to legal challenges as projects are occurring within same geographic area with project schedules that overlap to some extent.
  - Schedule changes in any of the projects may result in overlapping reviews, releases or submittals. Project priorities and business rules would be required, should one project schedule negatively impact another project.
  - An independent review to ensure consistency among the four documents would be required under this COA adding time and cost to the schedule.

- Multiple consultation packages submitted to regulatory agencies during the same timeframe. Since Regulatory agencies have limited staff, they may require that all consultations be consolidated (precedent is NMFS consultation with Keyport and NWTRC EISs).
- Multiple documents submitted for tribal consultation during same timeframe. Tribes may not agree on treaty mitigation for one project when impacts of the other projects are still under negotiation.

(end footnote #15)

WHIDBEY AUDUBON SOCIETY
P.O. Box 1012
Oak Harbor, WA 98277

January 18 , 2017

EA-18G EIS Project Manager
Naval Facilities Engineering Command(NAVFAC)
Atlantic, Attn: Code EV21/SS
6506 Hampton Blvd
Norfolk VA 23508

Whidbey Audubon response to November 2016 U.S. Navy Draft Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

The November 2016 Draft Environmental Impact Statement fails to address a number of questions and issues that Whidbey Audubon has raised in the past. This proposal to greatly increase the number of planes and the number of flights raises additional concerns.

A new concern in this draft EIS report is that it frequently cites Ebird as a corroborating source in Chapter 3.8 despite stating in the Chapter 1.5 "For the affected environment analysis, environmental conditions for each resource are evaluated using, the best available data for that specific resource." Ebird is a collection of unverified sightings, posted by citizens of all birding skill levels. It is anecdotal at best and not a reliable indicator of the presence or absence of a species. Audubon's Christmas Bird Counts, Seattle Audubon's Seabird Surveys and Shorebird Surveys, and Whidbey Audubon's Pigeon Guillemot Project and bird counts all report hard data, collected by trained volunteers, over a number of years. We are surprised the navy has not taken advantage of this data.

In discussing the impact on birds, this current EIS states "In general, aircraft disturbances are not likely to disrupt major behavior patterns, and impacts are not expected to have an adverse impact at the population level." The fact that migratory songbirds, raptors, waterfowl, and ducks are around where jets fly does not mean the noise does not affect their behaviors, their breeding success, their food sources, or their life spans. Noise is a stressor for humans; birds and animals have more acute hearing than humans and it is unscientific to say (as did the poster display at the open house on the EIS) that birds are expected to adapt to the proposed increased noise events. Many studies point to birds' avoidance of noisy environments and the changes it causes for them. Effects of Noise Pollution on Birds: A Brief Review of Our Knowledge Catherine P. Ortega Ornithological Monographs No. 74 and A phantom road experiment reveals traffic noise is an invisible source of habitat degradation Heidi E. Ware, 12105–12109, doi: 10.1073/pnas.1504710112 Proceedings of the National Academy of the Sciences of the United States of America vol. 112 no. 39.

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1.a. Thank You
1.b. Best Available Science and Data
1.c. Segmentation and Connected Actions
10.a. Biological Resources Study Area
10.b. Biological Resources Impacts
10.c. Wildlife Sensory Disturbance and Habituation
10.f. Endangered Species Impact Analysis Adequacy
10.g. eBird Data
10.h. Species-Specific Discussions
10.l. Bird Migration
10.m. Impacts to Marine Species and Habitat
11.d. Per- and Polyfluoroalkyl Substances
2.b. Scope of the Environmental Impact Statement and Analysis Conducted
4.v. Impacts to Domestic Pets, Livestock, or Wildlife
6.f. Fuel Dumping

Additionally, this EIS, on pages 4-203 through 4-207, implies that additional flights would have no additional detrimental impacts. We question the accuracy of the data used to determine this finding. Stating that "Migrating and wintering waterfowl are already exposed to an annual average of 89,000 aircraft operations (year 2021 flight operations; see Table 3.1-1)." while Table 3.1-1 refers to a current level of only 2,310 flights per year gives us pause. Again just because birds are currently present and exposed to current noise does not mean they will not be impacted by increased and more frequent noise.

In particular, there is a colony of Great Blue Herons at the west end of Crockett Lake. Great Blue Herons are listed as a species of concern, and are particularly susceptible to noise disturbance during breeding and nesting. Noise disturbances can cause a colony to abandon its nesting site and can result in failure of a breeding cycle. Flights should be directed away from this end of the Crockett Lake when the birds are nesting and raising young.

PFOS has been detected in Town of Coupeville wells next to Crockett Lake. Crockett Lake is an Important Bird Area (IBA), a critical habitat according to Island County, a migratory bird stopover and a year-round bird habitat. Because PFOS bioaccumulate, their presence in Crockett Lake can have a large impact on the birds that feed there, and the birds and animals that feed on the birds that feed there. Duck hunting is common on the north side of the lake; hunters and their families eat the birds they shoot. Crockett Lake should be tested for PFOS and the results made public so hunters can make informed decisions about eating their game. Swan Lake is in the watershed for Ault Field. It is also an Important Bird Area, a critical habitat, migratory stopover and a duck hunting site, and should be tested for PFOS for the same reasons as Crockett Lake. Additionally a plume of 1,4 dioxane has been detected in the groundwater extending from NAS to the City of Oak Harbor. This is a known carcinogen and its impact on the birds drinking this water is not yet known.

Whidbey Audubon Society has previously responded in November 3013 to the supplemental draft EIS (Attachment 1) and added further comments dated 12/14/13 (Attachment 2). These responses asked for studies or best available science about impacts on birds and the environment. Whidbey Audubon reiterates these requests.

Sincerely,

Sharon Gauthier, President
Whidbey Audubon Society

Attachments: 1 & 2

Comments on Draft Supplemental Environmental Impact Statement for the Introduction of P-8A Multi-Mission Maritime Aircraft to the U. S. Navy fleet at NAS Whidbey Island, Washington:

For decades, Whidbey Audubon Society has been involved in conservation and environmental concerns impacting local habitat.

We are addressing here six major areas of concern for your review and response. They relate to water quality, wetlands, migratory birds, biological resources, the endangered Marbled Murrelet, and fuel dumping.

These comments refer directly to Chapter 6 of the MMASEIS of September 2013, and are approved by the Board of Directors of Whidbey Audubon Society.

RE: 6.7.2 Water Quality

Dugualla Lagoon and Dugualla Bay provide important habitat for overwintering ducks, swans and shorebirds. Juvenile salmon, including endangered Chinook, exit both forks of the Skagit River and depend on the nearshore along Whidbey Island for refuge and feeding. As is pointed out in the EIS, the proposed developments would increase impervious surface area and impact drainage ditches that transfer stormwater runoff to Dugualla Bay, generating and additional 3.7 to 7.5 million gallons annually (6.7.1, 6.7.2). Possible mitigation measures include underground infrastructure and infiltration structures. We are concerned about that since the initial EIS work in 2007, "*disturbance in a portion of the study area appears to have compacted soils*" and "*lack of drainage ditch maintenance*" has increased the total area of the wetland by approximately 1.73 acres. (Appendix H, 4-1)

Please explain how the Navy will ensure that storm water mitigation features, such as ponds, ditches and swales, will be maintained in the long term to protect the quality of water discharged to Dugualla Lagoon. Also, what measures would be in place to ensure that a fuel spill on runway or parking areas could not infiltrate pollution into Dugualla Lagoon and thence to Dugualla Bay?

RE: 6.7.5 Wetlands:

We endorse the concept of mitigating the loss of wetlands at Ault Field with rehabilitation of the degraded wetlands in Crescent Harbor to connect to the existing salt marsh area, assuming it benefits the birds using this significant wetland and nearshore area. Crescent Harbor is designated an Important Bird Area for protection of wintering waterfowl, and its shorelines are habitat for Black Oystercatcher, a current Audubon WatchList species. Please describe how the mitigation in Crescent Harbor will affect migrating shorebirds and wintering waterfowl.

RE: 6.8.3 Migratory Birds:

Pigeon Guillemots are an indicator of Salish Sea health. Of the 6000 or so Pigeon Guillemots in Washington, over 1000 nest in the bluffs on Whidbey Island, including at

Cliffside Park, Forbes Point, Crescent Harbor, and Maylor Point. The prey they depend on are very susceptible to changes in the water column (e.g., light, acidity, toxins).

Please describe how additional infrastructure for the P-8A aircraft would affect these bluffs, and how additional flight activity would affect foraging of sculpin, gunnel, perch, and cod by the birds to feed their young.

The SEIS says that "management activities outlined in the station's INRMP to benefit migratory birds would continue to be implemented, offsetting any adverse impact associated with the proposed action," with ongoing management activities such as "conducting surveys to determine migratory bird and habitat use on the installation, providing nest boxes and platforms for birds, and leaving snags and downed logs for nesting, roosting, foraging, cover, and/or perching" (p.6-38).

What assurance can you give that such management activities to benefit migratory birds will continue to be funded and implemented into the future? Will there be a schedule for follow-up monitoring and adaptive management if needed?

RE: 6.8 Biological Resources

The original EIS was conducted in 2007. Since that time, the ecological importance of the marine area west of Whidbey has been recognized with the establishment of the Smith and Minor Islands Aquatic Reserve, which includes over 36,300 acres of tidelands and seafloor habitat. The islands themselves are part of the San Juan Islands National Wildlife Refuge which is managed by the US Fish and Wildlife Service. The reserve contains the largest kelp bed in Puget Sound, and the islands provide critical habitat for numerous seabirds and marine mammals. Puffins, Rhinoceros Auklets and cormorants nest on the islands and they are a haulout for seals and sealions. The reserve's exceptional biological diversity also brings recreational uses to the area for fishing, and bird and whale watching. .The flight area of the P-8As would extend into the reserve. How will the higher decibel, higher frequency jet noise from the P-8As affect the species that nest and rest on the islands?

RE: 6.8.4.1 Marbled Murrelet

The endangered Marbled Murrelet is found year-round at Crescent Harbor, one of five Important Bird Areas in Island County. The SEIS contemplates potential impacts on the Marbled Murrelet from the noise of P-8A flights. Since there are no studies documenting behavioral responses of Marbled Murrelets to aircraft noise or whether the species is habituated to such noise, the SEIS references some studies assessing habituation of waterfowl to aircraft noise, most specifically a paper by Conomy et al. (1998) looking at four species of ducks in North Carolina.

The SEIS concludes: "Investigators concluded that levels of aircraft disturbance recorded were not adversely affecting the time-activity budgets of selected waterfowl

species wintering at these islands. Based on these previous studies, it is assumed that murrelets have become habituated to the noise of NAS Whidbey Island air operations."

The references cited in the SEIS are selective. The 1998 article by Conomy et al. cited above is followed in the same issue of the Journal of Wildlife Management by a second study which found that black ducks became habituated *whereas wood ducks did not* (Conomy, J.T., J.A. Dubovsky, J.A. Collazo and W.J. Fleming. 1998. Do black ducks and wood ducks habituate to aircraft disturbance? Journal of Wildlife Management 62:1135-1142.)

Comparing Marbled Murrelets, an endangered species, with American Black Duck, American Wigeon, Gadwall, and American Green-winged Teal in North Carolina is not appropriate because these birds are more numerous, are in a different habitat, and are dabbling ducks, not seabirds. It is not appropriate to extrapolate from these studies to the Marbled Murrelet.

The SEIS discusses *decibel* differences between the P-3C and P-8A, but what about the difference in *frequencies* when replacing a propeller engines with jet engines?

In their literature synthesis on the effects of aircraft noise and sonic booms on wildlife, Manci et al. state: "While propeller engine aircraft engines generally produce low-frequency noise, jet engines produce a large amount of noise in the middle- and high-frequency range. Therefore, jet aircraft are typically judged to be more noisy and annoying, at least to human listeners. This principle also may apply to some, if not most, species of wildlife. In addition to a generally higher noise frequency range, the presence of discrete tones tends to make jet engine noise more annoying and thus more impacting than it would be without these tones." (Manci, K.M., D.N. Gladwin, R. Vilella and M.G. Cavendish. 1988. Effects of aircraft noise and sonic booms on domestic animals and wildlife: a literature synthesis. National Ecology Research Center Report# NERC-88/29.)

Please explore the potential impact of the switch from propeller engine noise to the jet engine frequencies of the P-8A.

Without studies done specifically on the effect of noise on Marbled Murrelets in Crescent Harbor, how can you determine that it will have no significant effect? Will you, as part of your management plan for this program, do a survey to determine Marbled Murrelet numbers and habitat use as a baseline, and mitigate if it is determined that there has been a decrease in either?

RE: Fuel dumping on land or over water:

Anecdotally it has been reported for years that jet fuel has been dumped on approach runs to Ault Field. We cannot find reference to fuel dumping, its frequency or quantity in this SEIS. Please describe where and when fuel dumping occurs and describe its effects on humans, flora and fauna specifically on and around Whidbey Island.

ATTACHMENT 2. 12/14/13 WAS letter to NAVE re EA-18G EIS

Sent 12/14/13

To: EA-18G EIS Project Manager (Code EV21/SS)
Naval Facilities Engineering Command (NAVFAC)
6506 Hampton Blvd.
Norfolk, Virginia 23508

At Whidbey Audubon Society, conserving local habitat and protecting the fragile and important environment around Whidbey Island has been our primary mission for nearly three decades.

We are particularly concerned about the impact that the introduction of the EA-18G on locally important bird and wildlife habitat. To this end, we ask the Navy to respond to our questions and concerns as part of their Environmental Impact Statement.

Whidbey Island has five designated Important Bird Areas(IBA):Crescent Harbor, Crockett Lake, Deception Pass, Deer Lagoon, and Penn Cove. These five IBA are of extraordinary significance to migrating, wintering, and nesting birds. In particular, around Crockett Lake and the surrounding area of Ebey's Reserve there have been 213 species of birds sighted. From raptors, like the Peregrine Falcon, Bald Eagle and Snowy Owl to the thousands of shorebirds that stop at the lake from July to November to feed and rest before continuing their southward migration to wintering grounds, to the nine species of ducks and numerous species of passerines, all of the these birds rely on the habitat around Crockett Lake for their very survival.

At Crescent Harbor, another IBA, the endangered Marbled Murrelet is found year-round. How will the Navy determine and monitor the impact of noise from the EA-18G jets on the Marbled Murrelet?

What SPECIFIC studies have been identified by the Navy to determine the effects that noise, not only the decibel level but also the penetrating frequencies of the EA-18G, could have on the specific species that use Crockett Lake and Crescent Harbor? Using data from studies completed on dissimilar species of birds in other areas is not an adequate response to this concern. Any Environmental Impact Statement needs to be specific. To date we can not find specific data from the Navy that addresses this concern. (For example, in an EIS on the introduction of the P-8A, the Navy concluded there would be minimal impact on the Marbled Murrelet by selecting certain citing studies of dabbling ducks - a totally different type of bird - and omitting studies by the same researchers that DID show an impact from aircraft noise on different duck species.)

In addition to these five IBA just off the west coast of Whidbey Island lies another very significant area, the Smith and Minor Island Aquatic Reserve. This reserve is part of the larger San Juan Islands National Wildlife Refuge, which is managed by the US Fish and Wildlife Service.
Containing the largest kelp bed in Puget Sound, this reserve provides critical habitat for numerous seabirds and marine mammals. Puffins, Rhinoceros Auklets and Cormorants nest on the islands and they are a haul out sites for seals and sea lions. The flight area of the EA-18G extends into the reserve. How will the increased jet noise from the EA-18G affect these species?

Finally, we request the Navy to clarify any practices related to fuel dumping around Whidbey Island. For years there have been rumors of this practice and we feel it would be in good faith for the Navy to explain in detail any circumstances where fuel dumping around Whidbey Island would or would not occur. Our concerns are the impacts and consequences from fuel dumping on the marine and land habitat and wildlife that inhabit these areas. Please include this information in the context of the EIS.

Thank you for the opportunity to provide input and comments. Whidbey Audubon Society looks forward to your response.

Respectfully submitted,

Ann Casey, President
Whidbey Audubon Society