1 Purpose of and Need for the Proposed Action

This chapter provides background information related to the Proposed Action and describes the purpose of and need for the Proposed Action. It also describes the National Environmental Policy Act (NEPA) process, public involvement, and how the Environmental Impact Statement (EIS) was developed and organized.

1.1 Introduction

The United States (U.S.) Department of the Navy (Navy), beginning as early as 2018, proposes to:

- continue and expand existing EA-18G "Growler" operations at the Naval Air Station (NAS) Whidbey Island complex, which includes field carrier landing practice (FCLP) by Growler aircraft that occurs at Ault Field and Outlying Landing Field (OLF) Coupeville
- increase electronic attack capabilities by adding 35 or 36 aircraft to support an expanded U.S. Department of Defense (DoD) mission for identifying, tracking, and targeting in a complex electronic warfare environment
- construct and renovate facilities at Ault Field to accommodate additional Growler aircraft
- station additional personnel and their family members at the NAS Whidbey Island complex and in the surrounding community

In addition, the Navy would continue all flight operations of other aircraft at the NAS Whidbey Island complex. This EIS evaluates the potential direct, indirect, and cumulative environmental impacts of the Proposed Action under three action alternatives (further described in Section 2.3, Alternatives Carried Forward for Analysis). After completion of the EIS process and issuance of a Record of Decision (ROD), construction of new and improved facilities could begin as early as 2018. Personnel and aircraft would arrive incrementally, as aircraft are delivered by the manufacturer, personnel are trained, and families relocate to the area, until the action is complete. No final decision has yet been made. The ultimate decision with respect to force structure and FCLP distribution will be made by the Secretary of the Navy or his representative and announced in a ROD no earlier than 30 days following the public release of the Final EIS.

The Navy has prepared this EIS in accordance with NEPA and its implementing regulations.

1.2 Location

The NAS Whidbey Island complex is located in Island County, Washington, on Whidbey Island, in the northern Puget Sound region (Figure 1.2-1). The NAS Whidbey Island complex includes the main air station (Ault Field), OLF Coupeville, the Seaplane Base, and Lake Hancock. Ault Field is located in the north-central part of the island, adjacent to the City of Oak Harbor (Figure 1.2-2). OLF Coupeville is located approximately 10 miles south of Ault Field (Figure 1.2-3) and is used primarily for FCLP. The Seaplane Base is within the city limits of Oak Harbor and is the primary support facility for NAS Whidbey Island complex, including Navy housing, the Navy Exchange and Commissary, and administration/ communications facilities. The Seaplane Base is included in this analysis because it contains housing and support facilities, which would be used by personnel and their dependents. Lake Hancock is a 423-acre site near Greenbank, Washington, that was previously used for aerial bombing training between 1943 and 1971. Lake Hancock Training Range was listed as closed for aerial bombing training in 2002. Today, the site is managed by the Navy and The Nature Conservancy as a wetlands marsh. This area is still underneath restricted airspace, and a portion of the site is currently being used by the military to

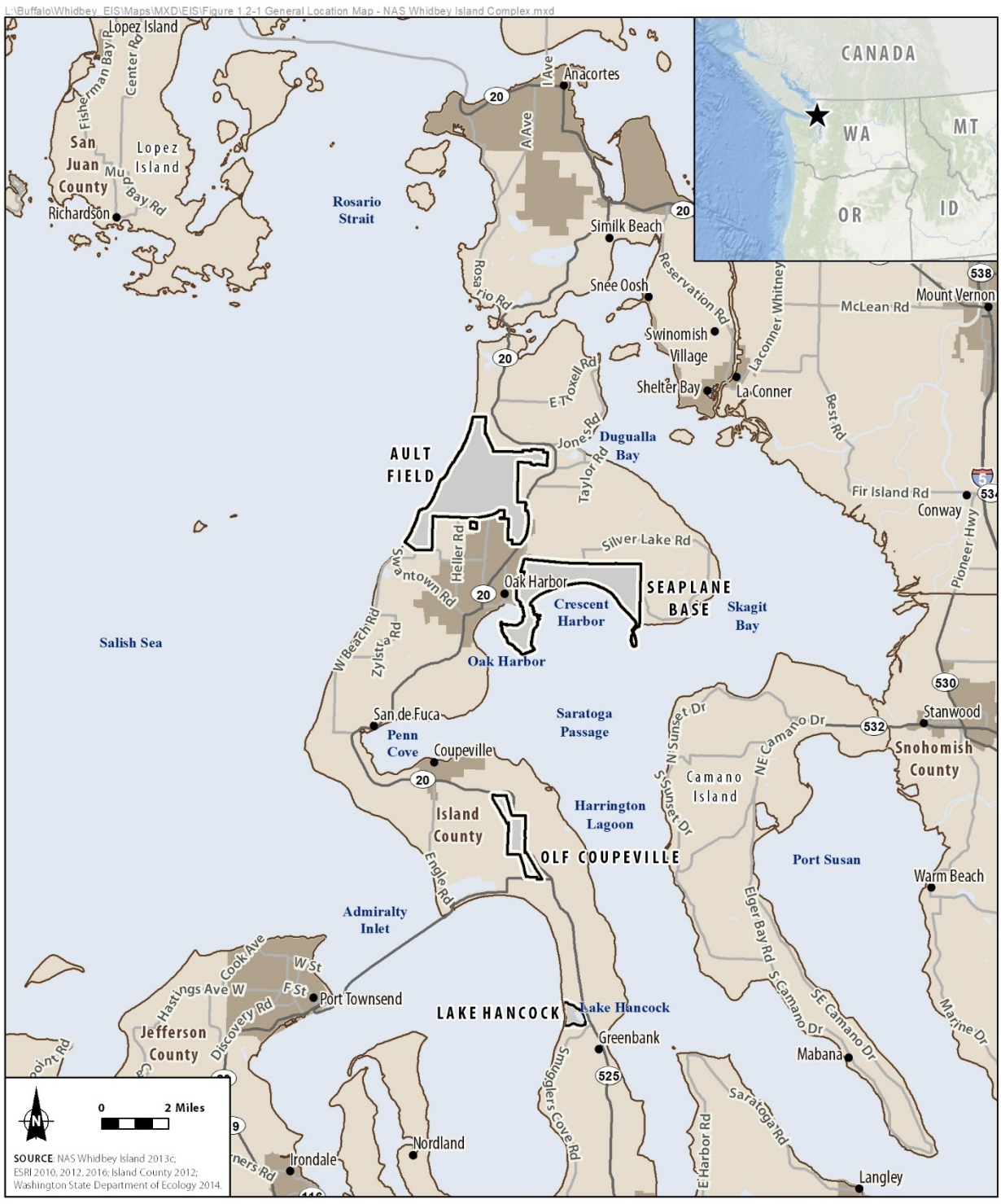


Figure 1.2-1
General Location Map – NAS Whidbey Island Complex
Whidbey Island, Island County, WA

Figure 1.2-2
General Location Map, Aerial - Ault Field
Whidbey Island, Island County, WA

Figure 1.2-3
General Location Map, Aerial - OLF Coupeville
Whidbey Island, Island County, WA

monitor training in Admiralty Bay and for other military training exercises. The Proposed Action would not impact resources at Lake Hancock; therefore, Lake Hancock will not be discussed further in this analysis.

1.3 Purpose of and Need for the Proposed Action

10 U.S.C. Section 5062: "The Navy shall be organized, trained, and equipped primarily for prompt and sustained combat incident to operations at sea. It is responsible for the preparation of Naval forces necessary for the effective prosecution of war except as otherwise assigned and, in accordance with integrated joint mobilization plans, for the expansion of the peacetime components of the Navy to meet the needs of war."

The purpose of the Proposed Action is to augment the Navy's existing Electronic Attack community at NAS Whidbey Island by operating additional Growler aircraft that have been appropriated by Congress. The Navy needs to effectively and efficiently increase electronic attack capabilities in order to counter increasingly sophisticated threats, and provide more aircraft per squadron in order to give operational commanders more flexibility in addressing future threats and missions. The need for the Proposed Action is to maintain and expand Growler operational readiness to support national defense requirements under Title 10, United States Code (U.S.C.), Section 5062.

1.4 The Navy's Electronic Attack Community at Ault Field and OLF Coupeville

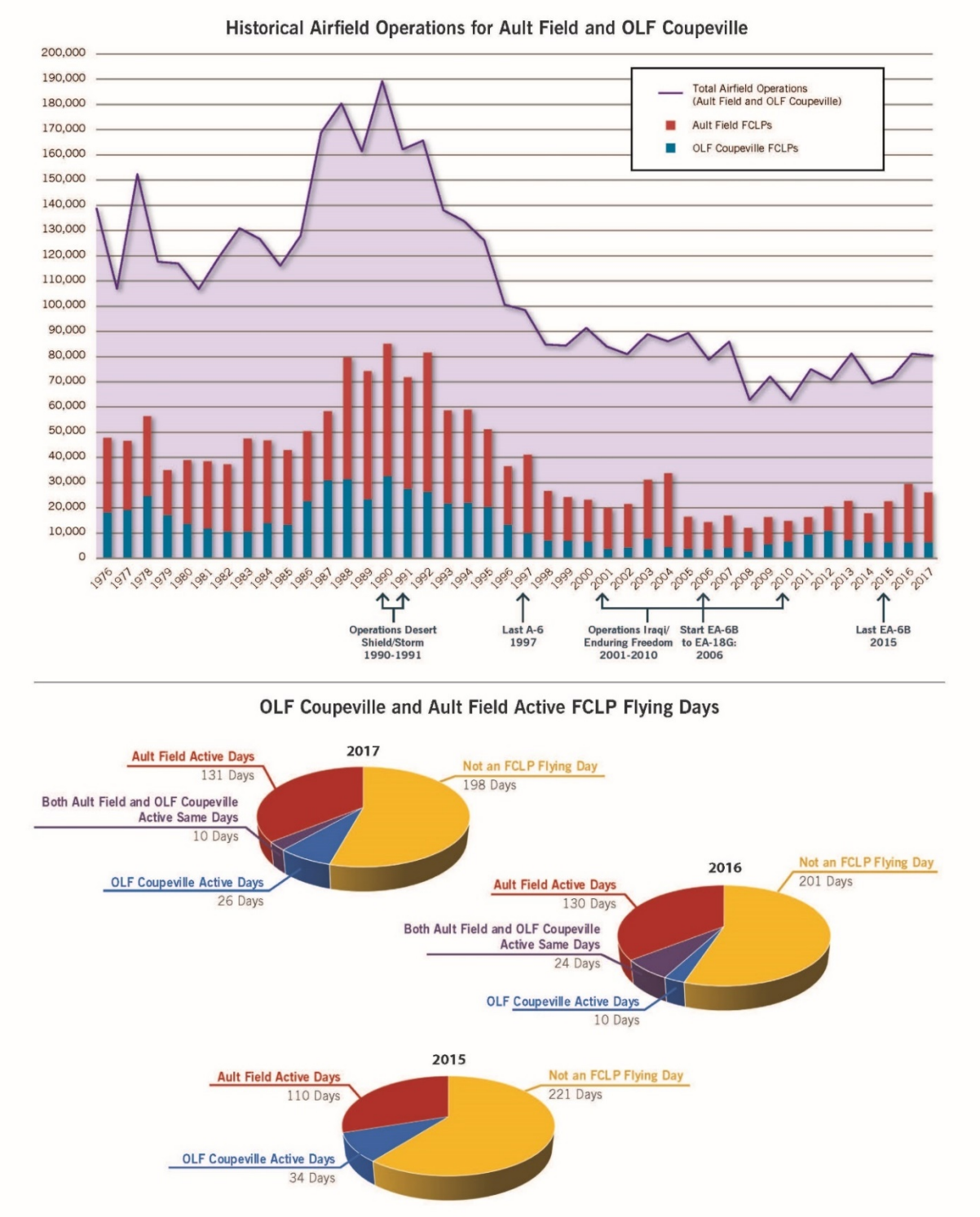
Commissioned in 1942 as part of NAS Whidbey Island, Ault Field is the only naval air station in the Pacific Northwest and has supported naval aviation for more than 75 years. Ault Field has served as the home base location for the Navy's tactical Electronic Warfare community for more than 45 years. Ault Field and the Seaplane Base were identified as ideal locations for the rearming and refueling of Navy patrol planes and other tactical aircraft operating in defense of Puget Sound during World War II; OLF Coupeville became operational in 1943 to support practice approach/landings and emergency landings. Over a period of more than 45 years, Ault Field has evolved into the Navy's home for its Electronic Attack aircraft. OLF Coupeville, an integral part of operations at Ault Field, provides the most realistic training for FCLP, as well as training for search-and-rescue and parachute operations.

FCLP (field carrier landing practice) is a graded flight exercise that prepares pilots for landing on aircraft carriers. FCLPs are conducted on shore facilities to provide pilots the opportunity to simulate carrier landing operations in an environment where the risks associated with at-sea carrier operations can be safely managed. Landing on an aircraft carrier is one of the most dangerous tasks a pilot can perform, and is a perishable skill.

A typical FCLP evolution lasts approximately 45 minutes, usually with three to five aircraft participating in the training. FCLP schedules are dictated by training and deployment schedules, occur with concentrated periods of high-tempo operations, and are followed by periods of little to no activity.

Per Navy guidelines, pilots must perform FCLP before initial carrier qualification (ship) landings or re-qualification landings. The first carrier landing needs to occur within 10 days of completion of FCLP.

Since the late 1960s, the Navy has continuously used OLF Coupeville for FCLP. Previous flight operations data for both Ault Field and OLF Coupeville indicate periods of higher and lower activity, depending on Navy mission requirements. The following graphs represent approximate and best available aircraft operations data for Ault Field and OLF Coupeville as recorded through tracking methods at the time.



Ault Field is the home base location of the Navy's tactical Electronic Attack community in the U.S., including all Growler squadrons, and provides facilities and support services for nine carrier squadrons, three expeditionary squadrons, one expeditionary reserve squadron, one training squadron, and an Electronic Attack Weapons School. The carrier and expeditionary squadrons have similar missions but differ in where they deploy and how they train before deployment.

Three types of Growler squadrons support the Airborne Electronic Attack mission for DoD:

- **carrier squadrons,** which deploy on aircraft carriers and conduct periodic FCLP to requalify to land on aircraft carriers
- **expeditionary squadrons,** including the reserve squadron, deploy to overseas land-based locations and therefore do not normally require periodic FCLP prior to deployment
- **the training squadron,** which is also known as the Fleet Replacement Squadron, or FRS, is responsible for "post-graduate" training of newly designated Navy pilots and Naval Flight Officers, those returning to flight status after non-flying assignments, or those transitioning to a new aircraft for duty in the Fleet. The training squadron is the "schoolhouse" where pilots receive their initial FCLP, and it fosters professional standardization and a sense of community.

Electronic warfare has played a key role in combat operations since being first introduced during World War II, and its importance continues to grow as potential adversaries invest in modern threat systems. The mission of the Navy's Growler aircraft is to suppress enemy air defenses and communications systems. Additionally, Navy Growlers disrupt land-based threats in order to protect the lives of U.S. ground forces. In 2009, the Secretary of Defense directed the Navy to take responsibility for the nation's tactical Airborne Electronic Attack mission. As a result, the Navy is the only U.S. military service that will maintain a tactical airborne electronic attack capability and is required to preserve and cultivate the expertise and knowledge of the Growler community.

In addition to being home to the Growler community, Ault Field is the West Coast home of the Maritime Patrol community and a Fleet Air Reconnaissance squadron initially consisting of three P-3C Orion squadrons, one reserve P-3C Orion squadron, and one EP-3 squadron. On June 3, 2014, the Navy signed a ROD to replace the existing three P-3C Orion squadrons with six P-8A Poseidon squadrons at Ault Field. The P-8A Poseidon began arriving at Ault Field in 2016, and the transition from three P-3C Orion squadrons to six P-8A Poseidon squadrons is expected to be complete in 2020. Furthermore, the one EP-3 squadron is slated for disestablishment by 2021. Ault Field also supports a unit of MH-60 search and rescue helicopters and a squadron of C-40 aircraft. It should be noted that Maritime Patrol and Fleet Air Reconnaissance aircraft conduct airfield operations at Ault Field but not at OLF Coupeville.

FCLP at OLF Coupeville provides a realistic training environment for both student pilots and experienced pilots to prepare for landing on aircraft carriers. A series of day and night FCLP must be performed by all pilots before landing the Growler on an aircraft carrier for the first time, or, for experienced pilots, after a period of absence away from the aircraft carrier environment. Training at OLF Coupeville allows pilots, as well as Landing Signal Officers (LSOs), the opportunity to train in a closed pattern, or a pattern without interference from other aircraft. LSOs are highly trained carrier pilots who instruct and critique aircrews' landing performance from the flight deck. During FCLP, LSOs are stationed next to the approach end of the runway and train and evaluate pilots while providing an additional margin of safety during each landing by maintaining two-way radio communication with the landing aircraft, which allows the LSOs to give immediate feedback to pilots during their landing approaches.

Since OLF Coupeville is dedicated primarily to FCLP (although it also supports helicopter operations), pilots and LSOs can maximize the number of practice landings in a given timeframe while significantly benefitting from the unique environment OLF Coupeville provides. Using OLF Coupeville allows the Navy to conclude daily operations in less time, thereby reducing community impacts. When performing FCLP at Ault Field, operations are often hindered due to multiple types of aircraft flying patterns around the field that differ from the prescribed FCLP pattern and that extend flights beyond the normal pattern. Operations by non-FCLP aircraft (e.g., Growlers not performing FCLP, P-3s, P-8s, EP-3s, MH-60s, C-40s, cargo and passenger aircraft, and other transient aircraft) degrade FCLP due to aircraft separation requirements, varying field lighting, topography requirements, and specific approach requests. This degradation in training can occur for FCLP pilots as well as non-FCLP pilots, who, in some cases, are precluded from practicing their own landings due to aircraft limitations in the landing pattern. For example, aircraft may have take-offs, practice approaches, or landings delayed or denied. An inability to accomplish required training due to pattern congestion disrupts training schedules, increases operational costs to the Navy, and complicates pilot training. Performing FCLP at Ault Field can be more impactful to the community by extending flight patterns, repeating training, extending daily operations later into the night, and impacting more densely populated areas.

The field elevation of OLF Coupeville is 200 feet above mean sea level, and the aircraft landing pattern for the field is 800 feet above mean sea level. The altitude above ground at which the aircraft fly the landing pattern at OLF Coupeville closely replicates the altitude of the aircraft carrier landing pattern (OLF Coupeville is located on a 200-foot ridge surrounded by flat terrain, similar to how an aircraft carrier is situated at sea). Practicing at an altitude that simulates the carrier environment is essential for pilots preparing to land on an aircraft carrier because such practice matches the visual cues as well as the required power settings needed to fly a safe approach for an actual landing on an aircraft carrier. Growlers routinely perform FCLPs at OLF Coupeville and would only perform a full-stop landing in an extreme circumstance. The proximity of OLF Coupeville to Ault Field allows for more training to be conducted per fuel load and provides a safe divert field if an emergency arises. Finally, OLF Coupeville is close enough to Ault Field so the LSO, who for safety and training reasons is required to be present at the field and in radio contact with the pilots performing FCLP, may brief the participating aircrew on training procedures and then drive to the OLF in a reasonable amount of time to be present in order to oversee the training and to qualify the pilot for carrier landings.

1.5 Scope of Environmental Analysis

This EIS includes an analysis of potential environmental impacts associated with the No Action Alternative and action alternatives. In general, environmental analysis involving aircraft operations at military airfields requires an analysis of noise, air quality, biological resources, and land use compatibility. New facility construction generally requires analysis of potential impacts to topography and soils, water resources and wetlands, biological resources, and cultural resources. Changes in personnel levels generally require analysis of socioeconomics, community services, safety, infrastructure and utilities, and transportation. The study area for each resource analyzed may differ due to how the Proposed Action interacts with or impacts the resource. For instance, the study area for geological resources may only include the construction footprint of a building, whereas the noise study area would expand out to include areas that may be impacted by airborne noise.

For the affected environment analysis, environmental conditions for each resource are evaluated using the best available data for that specific resource. Depending on the resource and best available data, the

affected environment conditions may vary. For example, the noise discussion uses the year 2021 to describe the affected environment, when previous aircraft loading decisions unrelated to the Proposed Action are expected to be fully implemented and complete (2021 is when the P-8A Poseidon will complete the transition), whereas the biological resource discussion uses the most current and best available species data sets and surveys to inform the analysis.

This EIS assesses the potential environmental effects of continuing and expanding the existing Growler operations at the NAS Whidbey Island complex and analyzes aircraft operations conducted in the vicinity of Ault Field and OLF Coupeville. The following topics are evaluated in this EIS:

- Airspace and Airfield Operations
- Noise Associated with Aircraft Operations (Noise)
- Public Health and Safety
- Air Quality
- Land Use
- Cultural Resources
- American Indian Traditional Resources
- Biological Resources
- Water Resources
- Socioeconomics
- Environmental Justice
- Transportation
- Infrastructure
- Geological Resources
- Hazardous Materials and Wastes
- Climate Change and Greenhouse Gases

Additional information about specific resource areas is included in the following appendices to this EIS.

Volume 2, Appendices, includes the following:

- Appendix A, Aircraft Noise Study
- Appendix B, Air Emissions Calculations

Volume 3, Appendices, includes the following:

- Appendix C, Federal and State Agency Coordination

Volume 4, Appendices, includes the following:

- Appendix D, Transportation Trip Generation Data
- Appendix E, Land Use Data, High-tempo FCLP Year
- Appendix F, Environmental Justice Data, High-tempo FCLP Year
- Appendix G, Civilian Airfield Analysis
- Appendix H, Noise Mitigation

- Appendix I, Community Health and Learning Review
- Appendix J, 2013 Scoping Information
- Appendix K, 2014 Scoping Information
- Appendix L, 2016 Draft EIS Public Information Meetings
- Appendix M, Draft EIS Public Commenting and Response Key

1.6 Key Documents

Key documents are sources of information incorporated into this EIS. Documents are considered key because of similar actions, analyses, or impacts that may apply to the Proposed Action. Although these NEPA documents address actions that are separate and distinct from the Proposed Action analyzed in this EIS, the potential cumulative effects from these actions have been considered in the preparation of this EIS and are described further in Chapter 5, Cumulative Impacts.

2005 Environmental Assessment for Replacement of Prowler Aircraft with Growler Aircraft at NAS Whidbey Island

This document analyzed the environmental consequences of transitioning Growler carrier squadrons at NAS Whidbey Island from the older Prowler aircraft to the newer Growler aircraft. A Finding of No Significant Impact (FONSI) was signed on July 19, 2005. The transition of Prowler squadrons to the Growler aircraft was completed in April 2016.

2012 Environmental Assessment for the Expeditionary Transition of Prowler Squadrons to the Growler at NAS Whidbey Island

This Environmental Assessment (EA) analyzed the potential environmental effects of transitioning the expeditionary Electronic Attack squadrons at NAS Whidbey Island from the aging Prowler to the newer Growler in the 2012 through 2014 timeline. The action included retaining the expeditionary Electronic Attack squadrons at NAS Whidbey Island; performing the in-place transition of three existing expeditionary Electronic Attack squadrons home based at NAS Whidbey Island from the Prowler aircraft to the Growler aircraft; relocating one reserve expeditionary Electronic Attack Prowler squadron from Joint Base Andrews to NAS Whidbey Island and transitioning from the Prowler aircraft to the Growler aircraft; adding up to 11 Growler aircraft to the FRS at NAS Whidbey Island to support the expeditionary Electronic Attack community; modifying certain facilities at Ault Field to provide infrastructure and functions to support the new aircraft type; and a modest increase in personnel to support the expeditionary Electronic Attack community. The purpose of the transition was to provide deployable, land-based expeditionary Electronic Attack community assets that meet DoD requirements. A FONSI for the EA was signed on October 30, 2012. The in-place transitions and relocation of the reserve squadron were completed in 2014.

2008 EIS and 2014 Supplemental EIS for Introduction of the P-8A Multi-Mission Maritime Aircraft into the U.S. Navy Fleet

An EIS and Supplemental EIS were prepared to analyze the potential environmental impacts associated with the introduction of P-8A Poseidon aircraft into the Navy Fleet. In 2008, the Navy decided to provide facilities and functions to support home basing 12 P-8A Poseidon squadrons and one FRS into the Navy Fleet. The P-8A Poseidon will replace the current maritime patrol aircraft, the P-3C Orion, at the three existing maritime patrol home bases. In light of changing conditions after completion of the original EIS

(ROD signed on December 23, 2008), the Navy prepared a Supplemental EIS. The Supplemental EIS (ROD signed June 3, 2014) selected NAS Jacksonville and NAS Whidbey Island as the two home base locations. At NAS Whidbey Island, the existing three P-3C Orion squadrons will be replaced with six P-8A Poseidon squadrons. The P-8A aircraft began arriving at Ault Field in 2016, and the transition from P-3C Orion to P-8A Poseidon aircraft is expected to be complete in 2020.

2014 Environmental Assessment for Pacific Northwest Electronic Warfare Range

This EA tiered off the 2010 *Northwest Training Range Complex Final EIS/Overseas Environmental Impact Statement (OEIS)*, which analyzed at-sea and inland training, including electronic warfare training in existing Military Operations Areas. This EA proposed to improve existing training with the use of a fixed emitter site and up to three mobile emitter vehicles that would transmit low-power signals skyward to aircraft for aircrew to detect, locate, and identify. The ground-based emitters are intended to improve flight training by providing aircrews with more varied signal locations. The Navy completed the EA and issued a FONSI on August 28, 2014. In July 2017, the Navy was issued a permit from the U.S. Forest Service to drive the mobile emitter vehicles on existing roads and cutouts, and is required to report operation numbers.

2015 EIS/Overseas Environmental Impact Statement for Northwest Training and Testing

An EIS/OEIS was prepared to analyze the potential environmental impacts associated with training and testing activities primarily within existing range complexes, operating areas, testing ranges, and selected pier-side locations in the Pacific Northwest, which includes areas where Growler aircraft currently train. The ROD was signed on October 31, 2016.

2015 EIS for Military Readiness Activities at Naval Weapons Systems Training Facility Boardman

An EIS was prepared for a Navy proposal to continue and enhance Navy and Oregon National Guard training at Naval Weapons Systems Training Facility Boardman, Oregon. The ROD was signed on March 31, 2016. The Naval Weapons Systems Training Facility Boardman EIS analyzes current and future Growler training requirements at the facility.

1.7 Relevant Laws and Regulations

The Navy has prepared this EIS based upon federal and state laws, statutes, regulations, and policies that are pertinent to the implementation of the Proposed Action, including the following:

- NEPA (42 U.S.C. sections 4321-4370h)
- CEQ regulations for Implementing NEPA (40 Code of Federal Regulations [CFR] parts 1500-1508)
- Navy regulations for implementing NEPA (32 CFR part 775)
- Clean Air Act (42 U.S.C. section 7401 et seq.)
- Clean Water Act (33 U.S.C. section 1251 et seq.)
- Coastal Zone Management Act (16 U.S.C. section 1451 et seq.)
- National Historic Preservation Act (54 U.S.C. section 306101 et seq.)
- Endangered Species Act (16 U.S.C. section 1531 et seq.)
- Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (16 U.S.C. section 1801 et seq.)

- Marine Mammal Protection Act (16 U.S.C. section 1361 et seq.)
- Migratory Bird Treaty Act (16 U.S.C. sections 703-712)
- Bald and Golden Eagle Protection Act (16 U.S.C. section 668-668d)
- Fish and Wildlife Coordination Act of 1996 (16 U.S.C. 661)
- Safe Drinking Water Act of 1974 (42 U.S.C. 300f et seq.)
- Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.)
- Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. 9601 et seq.)
- Sikes Act Improvement Act of 1997 (16 U.S.C. 670)
- Federal Aviation Act of 1958 (49 U.S.C. 1301 et seq.)
- Federal Noxious Weeds Act of 1970 (7 U.S.C. 2803 and 2809)
- Energy Independence and Security Act of 2007 (42 U.S.C. section 17001 et seq.)
- Emergency Planning and Community Right to Know Act (42 U.S.C. section 116 et seq.)
- Pollution Prevention Act of 1990 (42 U.S.C. section 13101 et seq.)
- Executive Order (EO) 11990, Protection of Wetlands
- EO 11988, Floodplain Management
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks
- EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management
- EO 13175, Consultation and Coordination with Indian Tribal Governments
- EO 13834, Efficient Federal Operations

A description of the Proposed Action's consistency with these laws, policies, and regulations, as well as the names of regulatory agencies responsible for their implementation, is presented in Chapter 6.

1.8 Agency Participation and Intergovernmental Coordination

NEPA implementing regulations (40 CFR Section 1506.6) direct agencies to involve the public in preparing NEPA analysis. The Navy solicited agency comments during two scoping periods and during the Draft EIS review period. The Navy conducted a total of eight scoping meetings and five Draft EIS public information meetings. Elected officials and federal and state agencies were invited to attend public meetings, submit comments, and participate in the development of this analysis. The Navy has coordinated with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Washington State Department of Ecology, Washington State Department of Health, and Washington State Historic Preservation Office (SHPO) regarding the Proposed Action. Based on early coordination with these federal and state agencies, supporting documentation and consultation items were prepared and submitted as needed (see Appendix C, Federal and State Agency Coordination). The section 7 Endangered Species Act consultation has been completed with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (see also Sections 3.8 and 4.8, Biological Resources). A National

Historic Preservation Act Section 106 consultation process has been completed with the SHPO and the Advisory Council on Historic Preservation (See also Sections 3.6 and 4.6, Cultural Resources). A Coastal Consistency Determination has been completed with the Washington State Department of Ecology. The following federally recognized American Indian tribes and nations (herein after referred to as "tribes") were invited to initiate government-to-government consultation:

- Jamestown S'Klallam Tribe
- Lummi Tribe of the Lummi Reservation
- Samish Indian Nation
- Stillaguamish Tribe of Indians of Washington
- Suquamish Indian Tribe of the Port Madison Reservation
- Swinomish Indian Tribal Community
- Tulalip Tribes of Washington
- Upper Skagit Indian Tribe

1.9 Public Participation: Scoping 2013 and Scoping 2014

Scoping is a fundamental part of the EIS process. Scoping informs the public about the Proposed Action and alternatives and allows the public and interested stakeholders to identify topics and concerns of particular interest to affected communities. Comments received during the public scoping comment periods were considered in preparing the Draft EIS. Specifically, the Navy solicited scoping comments from elected officials, tribes, agencies, and the general public to determine what topics should be studied and analyzed in the EIS. In addition to soliciting comments for preparation of the EIS, the Navy used the NEPA scoping process to solicit comments related to Section 106 of the National Historic Preservation Act. Section 1.9.4 provides a summary of scoping comment topics.

Two separate scoping efforts were completed for this project:

1. **2013-2014 Scoping Efforts**[2]
   A 139-day initial public scoping period was conducted from September 5, 2013, to January 3, 2014, and reopened from January 13 to 31, 2014, and included three scoping meetings held in Coupeville, Oak Harbor, and Anacortes, Washington.
2. **2014-2015 Scoping Efforts**[3]
   A 93-day re-scoping effort was conducted from October 8, 2014, to January 9, 2015, which included a total of five scoping meetings held in Coupeville, Oak Harbor, Anacortes, Lopez Island, and Port Townsend, Washington.

[2] A Notice of Intent was published on September 5, 2013 (78 FR 54635). A notice to re-open scoping and extend the scoping period through January 31 was published on January 17, 2014 (79 FR 3188).

[3] A Revised Notice of Intent was published on October 10, 2014 (79 FR 61296). An extension notice was published on November 17, 2014 (79 FR 221).

2013-2014 Scoping Efforts

The initial scoping efforts for the EIS commenced in September 2013. This effort focused on the Navy's proposal to introduce two additional Growler expeditionary squadrons (two squadrons of five aircraft each) and the addition of three Growler aircraft to the training squadron, for a total of 13 additional aircraft, and the continuation and increase of Growler operations at Ault Field and OLF Coupeville. The EIS scope also included an assessment of the distribution of operations between Ault Field and OLF Coupeville.

2014-2015 Scoping Efforts

In the spring of 2014, following completion of the first scoping efforts, the Chief of Naval Operations requested the purchase of additional Growler aircraft as part of the Unfunded Requirements List in the President's Budget for Fiscal Year 2015. While it was unclear at that time how many Growler aircraft would ultimately be procured, if any, the Navy elected to analyze the potential environmental impacts of these additional aircraft in order to be proactive and transparent. Therefore, the Navy revised the scope of the ongoing EIS originally presented to the public in 2013 and initiated a new scoping effort on October 8, 2014, which was completed on January 9, 2015.

The revised EIS scope presented the Navy's revised proposal to add up to 36 Growler aircraft to support an expanded Electronic Attack mission. This includes training at Ault Field and OLF Coupeville, and the continuation and increase in Growler operations at these two airfields, including the distribution of operations between the two airfields.

1.9.1 Scoping Notifications

A range of notification tools were used during both scoping efforts to: 1) publicize the issuance of the Notice of Intent for each scoping period; 2) provide details on the proposals and the times, dates, and locations of the scoping meetings; and 3) describe ways to comment. Notification tools included mailings (letters and postcards), newspaper display advertisements, press releases, and the use of the project website (see Table 1.9-1). Two additional methods of notification were used during re-scoping efforts: digital advertisements (i.e., advertisements on the newspaper websites) and phone calls to elected leaders.

Table 1.9-1 Summary of Public Scoping Notifications for the Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

	2013-2014[1]		*2014-2015[2]*	
Notification Method	*Total for Initial Scoping Period*	*Total for Scoping Extension*	*Total for Re-scoping Period*	*Total for Re-scoping Extension*
Mailings to addressees on initial mailing list[3]	350	-	771	-
Letter	72	-	86	-
Postcard	278	-	685	705
Newspapers with paid advertisements	6	8	8	8
Paid print advertisements (days)	25	14	28	28
Paid digital advertisements (days)	-	-	7 sites, for a total of 14 days each	8 sites, for a total of 14 days each
Media outlets that received press release	48	49	45	45
Phone calls to elected leaders	-	-	70	-
Website visits	3,454	1,103	2,553	3,567
Libraries with scoping materials	-	-	14	

Notes:

1 A 139-day initial public scoping period was conducted from September 5, 2013, to January 3, 2014, and from January 13 to 31, 2014.

2 A 93-day re-scoping effort was conducted from October 8, 2014, to January 9, 2015. .

3 See Chapter 9 for the current mailing distribution list.

1.9.2 Scoping Meetings

The Navy held two sets of public scoping meetings (Table 1.9-2):

- **2013-2014**, which included three scoping meetings held in Coupeville, Oak Harbor, and Anacortes, Washington
- **2014-2015**, which included five scoping meetings held in Coupeville, Oak Harbor, Anacortes, Lopez Island, and Port Townsend, Washington

Table 1.9-2 Public Scoping Meeting Dates and Locations for the Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

Date	*Location*
Tuesday, December 3, 2013 4:00 pm to 8:00 pm	Coupeville High School 501 South Main Street Coupeville, WA 98239
Wednesday, December 4, 2013 4:00 pm to 8:00 pm	Oak Harbor High School 1 Wildcat Way Oak Harbor, WA 98277
Thursday, December 5, 2013 4:00 pm to 8:00 pm	Anacortes Middle School 2202 M Avenue Anacortes, WA 98221
Tuesday, October 28, 2014 4:00 pm to 8:00 pm	Coupeville High School Commons Area 501 South Main Street Coupeville, WA 98239
Wednesday, October 29, 2014 4:00 pm to 8:00 pm	Oak Harbor Elks Lodge 155 NE Ernst Street Oak Harbor, WA 98277
Thursday, October 30, 2014 4:00 pm to 8:00 pm	Anacortes High School Cafeteria 1600 20th Street Anacortes, WA 98221
Wednesday, December 3, 2014[1] 3:00 pm to 6:00 pm	Lopez Center for Community and Arts 204 Village Road Lopez Island, WA 98261
Thursday, December 4, 2014[1] 3:00 pm to 6: 00 pm	Fort Worden Conference Center, Commons B and C 200 Battery Way Port Townsend, WA 98368

Notes:

[1] The Navy added two additional meetings (Lopez Island and Port Townsend) at the request of Congressional leaders. A Notice of Extension of Public Scoping Period and Additional Public Scoping Meetings was published on November 17, 2014 (79 FR 68423).

Scoping meetings were conducted in an open-house format designed to enhance public understanding of the project and the NEPA process, and to allow members of the public to identify for Navy representatives topics and concerns they would like to see addressed in the EIS. During the scoping meetings, attendees could speak individually with Navy representatives and submit written and oral comments. Scoping information materials were made available in paper copy to scoping meeting attendees and in electronic data files downloaded from the project website. Meeting start times and duration varied from 3 to 4 hours based on local conditions to accommodate travel distances, the schedules for ferries used by the public attending the meetings, tidal variance, and peak hours for public attendance. Across all eight scoping meetings, a total of 1,307 individuals were counted in attendance, including federal and state elected officials, the media, city government agencies, and local community planning groups.

During the 2014-2015 scoping effort, the Navy expanded its public outreach and provided paper copies of the scoping information materials at various libraries in the area (Table 1.9-3).

Table 1.9-3 Libraries and Locations Provided Paper Copies of Scoping Information Materials (2014-2015 Scoping Efforts) for the Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

Library	*Location*
Oak Harbor City Library	1000 SE Regatta Drive Oak Harbor, Washington
Anacortes Public Library	1220 10th Street Anacortes, Washington
La Conner Regional Library	614 Morris Street La Conner, Washington
Coupeville Library	788 NW Alexander Street Coupeville, Washington
San Juan Island Library	1010 Guard Street Friday Harbor, Washington
Lopez Island Library District	2225 Fishermen Bay Road Lopez Island, Washington
Orcas Island Public Library	500 Rose Street Eastsound, Washington
Island Library	2144 South Nugent Road Lummi Island, Washington
Camano Island Library	848 North Sunrise Boulevard Camano Island, Washington
Mount Vernon City Library	315 Snoqualmie Street Mount Vernon, Washington
Port Townsend Public Library	1220 Lawrence Street Port Townsend, Washington
Guemes Island Library	7549 Guemes Island Road Anacortes, Washington
Seattle Public Library	1000 4th Avenue Seattle, Washington
Burlington Public Library	820 East Washington Avenue Burlington, Washington

1.9.3 Scoping Comments

Comments were received from elected officials, tribes, federal regulatory and state resource agencies, business and community leaders, organizations, and individuals. Comments received during scoping were provided through one or more of the following five comment-submittal methods:

- in writing, while attending one of the meetings
- orally to the stenographer, while attending one of the meetings
- electronically, via the project website at www.whidbeyeis.com
- electronically, via email
- in writing, by mail

Comments pertaining to this project that were submitted during public involvement efforts for other regional NEPA projects were collected and considered in the development of this EIS. Similarly, comments submitted during public meetings for this project but which pertain to other regional NEPA

projects were forwarded to those project teams as appropriate for consideration in the preparation of their projects. In total, 73 comments from other project meetings were forwarded to this project team, and, in turn, this project team forwarded 192 comments to other projects. Table 1.9-4 summarizes the total number of scoping comments submitted through all methods made available to the public during each scoping period.

Table 1.9-4 Summary of Comment Methods during Public Scoping for the Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

	2013-2014 Scoping[3]	*2014-2015 Re-scoping*[4]
Method of Comment Submittal	***Number of Comments Received***[5]	
Written Comments Submitted at Scoping Meetings[2]	149	276
Oral Comments Submitted at Scoping Meetings	29	67
Comments Submitted via the Website	1,122	1,473
Comments Emailed	262	8
Comments Mailed	102	146
Comments Received from Other NEPA Efforts[1]	14 (P-8A Draft Supplemental EIS)	59 (NWTT Supplemental Draft EIS, Electronic Warfare Range EA, and Transit Protection System Pier EA)
Total	**1,678**	**1,970**

Notes:

1 In addition to the project team receiving comments from other concurrent projects being conducted within the region, comments were received during the re-scoping process for the Growler EIS that pertain to the NWTT Supplemental Draft EIS and the Electronic Warfare Range EA. In total, 192 comments were forwarded to other project teams for review and consideration. Of the 192 forwarded comments, 36 were provided to the project team for the NWTT Supplemental Draft EIS/Overseas Environmental Impact Statement, and 156 comments were provided to the project team for the Electronic Warfare Range EA.

2 Comments collected during the 2013 Oak Harbor scoping meeting included a variety of studies, reports, and literature provided by the Citizens of Ebey's Reserve.

3 A 139-day initial public scoping period was conducted from September 5, 2013, to January 3, 2014, and from January 13 to 31, 2014.

4 A 93-day re-scoping effort was conducted from October 8, 2014, to January 9, 2015.

5 A comment is an individual communication received (e.g., letter, email, oral statement). Any one comment (e.g., letter, email, oral statement) may include several topics. Comments are counted based on the number of individual communications received (e.g., letters, emails, oral statements).

Key:
EA = Environmental Assessment
EIS = Environmental Impact Statement
NEPA = National Environmental Policy Act
NWTT = Northwest Training and Testing

1.9.4 Summary of Scoping Comment Topics and Commenters

Table 1.9-5 provides a summary of all comments received by topic area across the two scoping efforts. The alternatives analysis, human health effects, noise and vibration, socioeconomic impacts, and

biological resources were the top five named topics identified during both scoping efforts. Of the comment topics raised, general support of the project constituted 27 percent of the total comments received during the 2013-2014 scoping efforts and 15 percent of the total comments received during the 2014-2015 scoping efforts.

Table 1.9-5 Comparison of Comment Topics and Quantities of Public Scoping Comments for the Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

Topic	*Number of Comments*	
	2013-2014	*2014-2015*
1. General Support	459	303
2. Purpose and Need	3	8
3. Project Description/Proposed Action	176	19
4. Alternatives	287	334
5. National Environmental Policy Act Process/Public Involvement	55	300
6. Specific Resources		
a. Airfield Operations	138	114
b. Noise and Vibration	783	1,002
c. Noise Disclosure	57	31
d. Land Use and Recreation	205	73
e. Public Safety	207	56
f. Human Health Effects	433	481
g. Socioeconomics[1]	502	304
h. Environmental Justice	183	107
i. Air Quality	142	65
j. Transportation	16	13
k. Community Facilities and Services	11	8
l. Aesthetics	10	0
m. Hazardous Materials and Waste[2]	105	30
n. Biological Resources	396	145
o. Topography, Geology, and Soils	181	22
p. Water Resources	66	15
q. Cultural Resources	163	40
r. Cumulative Effects	43	27

Notes:

[1] Comments related to property values were considered under the topic of Socioeconomics.

[2] Comments related to fuel dumping were considered under the topic of Hazardous Materials and Wastes.

1.10 Public Participation: Draft EIS Review

The Navy extends its thanks to the elected officials; federal, state, and local agencies; and members of the public for taking the time to review the Draft EIS, attend public information meetings, and submit comments on the Draft EIS. The Draft EIS public comment period and information meetings are an important aspect of the environmental analysis process. Comments received during the Draft EIS public comment period were considered in preparing the Final EIS. Section 1.11 provides a summary of Draft EIS public review comment themes.

A 105-day public comment period was conducted from November 10, 2016, to February 24, 2017, and included five public information meetings held in Port Townsend, Oak Harbor, Lopez Island, Anacortes, and Coupeville, Washington. The public comment period for the Draft EIS began on November 10, 2016, with publication of the Draft EIS Notice of Availability in the *Federal Register*[4]. The initial deadline for the public comment period was January 25, 2017. However, due to requests from elected officials, the public comment period was extended to February 24, 2017. An announcement of the amended Notice of Availability and Notice of the Extension of the Public Comment Period were published on January 23, 2017, and January 24, 2017, respectively, in the *Federal Register*[5]. A press release with notification of the comment period extension was issued on January 13, 2017. Display advertisements with the public notice of the comment period extension were published in local newspapers from January 19, 2017, through January 25, 2017. In total, the public comment period comprised 105 days.

1.10.1 Draft EIS Notifications

A range of notification tools were used to: 1) publicize the release of the Draft EIS; 2) provide details on the Proposed Action and the times, dates, and locations of the public meetings; and 3) describe ways to comment. Notification tools included mailings (letters and postcards), newspaper display advertisements, digital advertisement (i.e., advertisements on the newspaper websites), press releases, use of the project website, and phone calls to elected leaders (Table 1.10-1).

[4] A Notice of Availability was published on November 10, 2016 (81 FR 79019).

[5] An amended Notice of Availability was published on January 23, 2016 (82 FR 7822). A Notice of Extension of the Public Comment Period for the Draft EIS was published on January 24, 2016 (82 FR 8185).

Table 1.10-1 Summary of Notifications for the Draft Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

	2016-2017[1]	
Notification Method	***Total for Notice of Availability, Initial Comment Period, and Notice of Public Meetings***	***Total for Amended Notice of Availability and Extension of Public Comment Period***
Mailings to addressees on initial mailing list[2]	1,388	-
Letter	125	-
Postcard	1,263	-
Newspapers with paid advertisements	8	7
Paid print advertisements (days)	28	13
Paid digital advertisements (days)	7 sites, for a total of 14 days each	6 sites, for a total of 7 days each
Phone calls to elected leaders	12	-
Website visits	10,219	5,110
Libraries with Draft EIS materials	22	22

Notes:

[1] An initial 75-day public comment period was conducted from November 10, 2016, to January 25, 2017. Due to requests from elected officials, the public comment period was extended to February 24, 2017, for a total of 105 days. An amended Notice of Availability and a Notice of Extension of the Public Comment Period for the Draft EIS were published January 23, 2017, and January 24, 2017, respectively, in the *Federal Register*.

[2] See Chapter 9 for the distribution list for these mailings.

1.10.2 Draft EIS Public Meetings

The Navy held five open house public meetings in Port Townsend, Oak Harbor, Lopez Island, Anacortes, and Coupeville, Washington (Table 1.10-2). A Notice of Public Meetings was published on November 18, 2016, in the *Federal Register*[6].

[6] Notice of Public Meetings was published on November 18, 2016, (81 FR 81748) in the *Federal Register*.

Table 1.10-2 Public Meeting Dates and Locations for the Draft Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

Date	*Location*
Monday, December 5, 2016 3:00 pm to 6:00 pm	Fort Worden State Park Conference Center, USO Hall 200 Battery Way Port Townsend, WA 98368
Tuesday, December 6, 2016 4:00 pm to 7:00 pm	Oak Harbor Elks Lodge, Grande Hall 155 NE Ernst Street Oak Harbor, WA 98277
Wednesday, December 7, 2016 3:00 pm to 6:00 pm	Lopez Center for Community and the Arts 204 Village Road Lopez Island, WA 98261
Thursday, December 8, 2016 3:00 pm to 6:00 pm	Seafarer's Memorial Park Building 601 Seafarer's Way Anacortes, WA 98221
Friday, December 9, 2016 4:00 pm to 7:00 pm	Coupeville High School Commons 501 South Main Street Coupeville, WA 98239

Public meetings were conducted in an open-house format designed to enhance public understanding of the project and the NEPA process, and to allow members of the public to identify for Navy representatives topics and concerns they would like to see addressed in the Final EIS. In addition to soliciting comments on the Draft EIS, the Navy used the NEPA public meetings to solicit comments related to Section 106 of the National Historic Preservation Act.

During the public meetings, attendees could speak individually with Navy representatives and submit written and oral comments. Meeting materials were made available in paper copy to public meeting attendees and were also available for electronic download from the project website. Across all five public meetings, a total of 1,013 individuals were counted in attendance, including federal and state elected officials, and members of the media, city government agencies, and local community planning groups.

During the public Draft EIS public review and comment period, the Navy expanded its public outreach and provided paper copies of the Draft EIS to additional libraries in the area (Table 1.10-3).

Table 1.10-3 Libraries and Locations Provided Paper Copies of the Draft Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

Library	*Location*
Oak Harbor City Library	1000 SE Regatta Drive Oak Harbor, Washington
Anacortes Public Library	1220 10th Street Anacortes, Washington
La Conner Regional Library	614 Morris Street La Conner, Washington
Coupeville Library	788 NW Alexander Street Coupeville, Washington
San Juan Island Library	1010 Guard Street Friday Harbor, Washington
Lopez Island Library District	2225 Fishermen Bay Road Lopez Island, Washington
Orcas Island Public Library	500 Rose Street Eastsound, Washington
Island Library	2144 South Nugent Road Lummi Island, Washington
Camano Island Library	848 North Sunrise Boulevard Camano Island, Washington
Mount Vernon City Library	315 Snoqualmie Street Mount Vernon, Washington
Port Townsend Public Library	1220 Lawrence Street Port Townsend, Washington
Guemes Island Library	7549 Guemes Island Road Anacortes, Washington
Seattle Public Library	1000 4th Avenue Seattle, Washington
Burlington Public Library	820 East Washington Avenue Burlington, Washington
Freeland Library	5495 Harbor Avenue Freeland, WA 98249
Langley Library	104 2nd Street Langley, WA 98260
Clinton Library	4781 Deer Lake Road Clinton, WA 98236
North Olympic Library System, Sequim	630 North Sequim Avenue Sequim, WA 98382
Bellingham Public Library	210 Central Ave Bellingham, WA 98225
North Olympic Library System, Port Angeles	2210 South Peabody Street Port Angeles, WA 98362
Jefferson County Library	620 Cedar Ave Port Hadlock, WA 98339
Sedro-Woolley Library	802 Ball St Sedro-Woolley, WA 98284

1.10.3 Draft EIS Public Comments

Comments were received from elected officials, federal regulatory and state resource agencies, business and community leaders, organizations, and individuals. Comments received during the Draft EIS public comment period were provided through one or more of the following five comment-submittal methods:

- in writing, while attending one of the meetings
- orally to the stenographer, while attending one of the meetings
- electronically, via the project website at www.whidbeyeis.com
- electronically, via email
- in writing, by mail

Comments pertaining to this project but submitted during public involvement efforts for other regional NEPA projects were collected, reviewed by this project team, and considered in the development of this EIS analysis. Similarly, comments submitted during public information meetings for this project but that pertain to other regional Navy projects were forwarded to those project teams as appropriate for consideration in the preparation of their projects. In total, one comment from other project meetings was forwarded to this project team, and, in turn, this project team forwarded 950 comments to other project teams (this includes 151 Electronic Warfare comments, eight Naval Special Operations comments, 673 perfluorinated compound [PFC] comments, and 18 water test requests). Table 1.10-4 summarizes the total number of comments submitted through all methods that were made available to the public during the Draft EIS public comment period.

Table 1.10-4 Summary of Comments by Submittal Method during the Public Comment Period for the Draft Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

Method of Comment Submittal	*2016-2017 Draft EIS Public Comment Period* *Number of Comments Received*[2]
Written Comments Submitted at Public Meetings	335
Oral Comments Submitted at Public Meetings	30
Comments Submitted via the Website	3,334
Comments Emailed	17
Comments Mailed	619
Comments Received from Other NEPA Efforts[1]	1
Total Comments	4,335

Notes:

[1] Comments were received during the public comment period for this Draft EIS that pertain to other regional efforts. These included comments on perfluorinated compounds, NWTT Supplemental Draft EIS/OEIS, the Electronic Warfare Range EA, and the Naval Special Operations EA. In total, 950 comments were forwarded to other project teams for review and consideration. Of the 950 forwarded comments, 673 were provided to the project team for perfluorinated compounds, 251 were provided to the project teams for the NWTT Supplemental Draft EIS/OEIS and the Electronic Warfare Range EA, and eight were provided to the project team for the Naval Special Operations EA.

[2] A comment is an individual communication received (e.g., letter, email, oral statement). Any one comment (e.g., letter, email, oral statement) may include several topics. Comments are counted based on the number of individual communications received (e.g., letters, emails, oral statements).

Key:
EA = Environmental Assessment
EIS = Environmental Impact Statement
NEPA = National Environmental Policy Act
NWTT = Northwest Training and Testing
OEIS = Overseas Environmental Impact Statement

1.10.4 Summary of Draft EIS Comment Topics and Commenters

Each comment submittal received during the Draft EIS public comment period was reviewed and segmented/categorized by its primary resource area and subtopics. Most comment submittals included multiple topics and were therefore divided accordingly into multiple comment segments. Each substantive segment was assigned to the appropriate resource-specific specialist from the Navy's interdisciplinary team for review and response.

Table 1.10-5 provides a summary of all coded comment segments, categorized by primary resource area. A total of 4,335 comment submittals were received during the comment period from 2,638 unique commenters. These comment submittals were coded into 20,527 comment segments for review and response. Noise associated with aircraft operations, socioeconomics, alternatives, public health and safety, and the NEPA process were the top five named topics identified during the public comment period.

Table 1.10-5 Comment Topics and Quantities of Public Comment Segments for the Draft Environmental Impact Statement for EA-18G Growler Airfield Operations at the Naval Air Station Whidbey Island Complex

Primary Resource Area	*Number of Comment Segments*[1] *2016-2017*
1. General Support	192
2. General Opposition	93
3. Purpose and Need	188
4. Proposed Action	73
5. Alternatives	1,782
6. National Environmental Policy Act Process	1,268
7. Public Participation	529
8. Specific Resources	
a. Airspace and Airfield Operations	576
b. Noise Associated with Aircraft Operations	7,388
c. Public Health and Safety	1,489
d. Air Quality	159
e. Land Use	847
f. Cultural Resources	302
g. American Indian Traditional Resources	36
h. Biological Resources	1,071
i. Water Resources	50
j. Socioeconomics	2,327
k. Environmental Justice	93
l. Transportation	71
m. Infrastructure	26
n. Geologic Resources	85
o. Hazardous Materials and Wastes	1,141
p. Climate Change and Greenhouse Gases	130
9. Cumulative Impacts	145
10. Electronic Warfare	448
11. Naval Special Operations	8
12. No Comment Submitted	10
Total Comment Segments	20,527

Notes:

[1] A comment segment is an individual substantive statement within a comment submittal that warrants a response. Comment segments were categorized by primary resource area and subtopic. A comment is an individual communication received (e.g., letter, email, oral statement). Any one comment submittal (e.g., letter, email, oral statement) may include numerous comment segments.

As discussed above, comment segments were categorized by primary resource area and subtopic. Primary resource areas (in bold) and their associated subtopics are listed below (note: there were no subtopics identified for some primary resource areas):

- General Support
- General Opposition
- Purpose and Need

- Proposed Action
- Alternatives
- NEPA Process
- Public Participation
- **Airspace and Airfield Operations** – Airspace and Airfield Operations (General), Flight Tracks, and Airspace, Airspace Classification
- **Noise Associated with Aircraft Operations** – Noise (General), Day-Night Average Sound Level (DNL) Contours, Domestic Pets or Livestock, Location Specific (Not Canada), Location Specific (Canada), Neutral/Support, Noise Mitigation, Noise Modeling, Nonauditory Health Effects, Supplemental Metrics and Health, Supplemental Noise Metrics (General), Classroom/Learning Interference, Effects on Recreation, Potential Hearing Loss, Single Event Noise, Sleep Disturbance, Speech Interference, and Vibration Effects
- **Public Health and Safety** – Public Health and Safety (General), Bird/Animal Aircraft Strike Hazard, Risk of Mishap, Safety Risks to Children, and Accident Potential Zones (APZs)
- **Air Quality** – Air Quality (General), Construction Emissions, Fuel Dumping, Mobile Emissions, and Stationary Operation Emissions
- **Land Use** – Land Use (General), Coastal Consistency Determination, Noise Disclosure, On-Station Land Use, Regional Land-Use, and Recreation and Wilderness
- **Cultural Resources** – Cultural Resources (General), Archaeological Resources, Architectural Resources, SHPO Consultation, and Vibration Effects
- **American Indian Traditional Resources** – American Indian Traditional Resources (General) and Government-to-Government Consultation
- **Biological Resources** – Biological Resources (General), Habitat, Marine Species, Terrestrial Wildlife (Birds), Terrestrial Wildlife (Not Birds), Threatened and Endangered Species, and Threatened and Endangered Species Consultation
- **Water Resources** – Water Resources (General), Floodplains and Wetlands, Groundwater, Marine Water and Sediments, and Surface Water
- **Socioeconomics** – Socioeconomics (General), Housing, Local Government Revenue and Expenditures, Population, Property Values, Community Services (General), Education, Fire and Emergency, Medical, Police, Economy/Employment/Income, and Tourism
- **Environmental Justice** – Environmental Justice (General), Impacts, and Methodology
- **Transportation** – Transportation (General), Off-Base Transportation, and On-Base Transportation
- **Infrastructure** – Infrastructure (General), Energy, Potable Water, Solid Waste, Stormwater, and Wastewater
- Geologic Resources
- **Hazardous Materials and Wastes** – Hazardous Materials and Wastes (General), PFCs, and Water Test Request
- **Climate Change and Greenhouse Gases** – Climate Change and Greenhouse Gases

- **Cumulative Impacts** – Cumulative Impacts (General), Cumulative Impacts (Project), and Cumulative Impacts (Resource)
- Electronic Warfare
- Naval Special Operations
- No Comment Submitted

1.11 Public Participation: Comment Themes

Specific comment themes have been identified across the three public comment periods (Scoping 2013, Scoping 2014, and Draft EIS Release). Themes are recurring topics raised by commenters across the three public comment periods. Theme topics are detailed below, including information on how these themes are considered within the EIS analysis. Themes are organized under their respective resource area, in the order they are presented in the EIS. When applicable, theme descriptions include references to analysis in the EIS where expanded or additional information is located.

1.11.1 General Topics

- **Best Available Science and Analysis Methodology.** The EIS fully considers peer-reviewed studies and articles, particularly those related to potential health effects (nonauditory) of aircraft noise on humans and wildlife. An extensive literature review was conducted for the purposes of this EIS analysis (see Section 4.2 [Noise], 4.8 [Biological Resources], and Appendix A, Aircraft Noise Study). A comprehensive Aircraft Noise Study (Appendix A) was prepared for this EIS, and specific discussions on key topics are addressed in Section 4.2 (Noise) and Section 4.8 (Biological Resources), respectively. Through public comment, specifically from the State of Washington Department of Health, the U.S. Environmental Protection Agency (USEPA), and other public comments, requests were received to review additional published articles. In preparation of the Final EIS, the Navy reviewed 260 published articles as suggested by public comment. In doing so, the Navy identified that many of these studies had been already reviewed and included in the Navy's literature review or were referenced in or by studies the Navy has already considered. However, expanded information has been incorporated as appropriate. The studies did not change the overall findings of the Navy's original literature review. See Appendix A-8 for details on the literature review process.
- **Previous NEPA Studies and Segmentation.** Multiple Navy actions have previously occurred at the NAS Whidbey Island complex. Through public comment, inquiries were received about how earlier studies are related to the current Proposed Action. Information has been provided in Section 1.6 (Key Documents) on the studies relevant to this Proposed Action. Documents are considered key because of similar actions, analyses, or impacts that are either directly relevant or inform the analysis of this Proposed Action. Under the Proposed Action, the Navy evaluated potential environmental impacts of increasing the capabilities of the electronic attack mission by increasing the number of Growlers operating at NAS Whidbey Island and associated personnel changes. This EIS does not analyze impacts of Growler training occurring at existing range complexes, Special Use Airspace, and testing ranges. The Navy prepares separate NEPA documents addressing home basing and training because each of these documents is focused on the specific action that occurs at these locations. These actions are separated from other actions by their purpose and need, independent utility, timing, and geographic location. While the Navy has analyzed, and is currently analyzing, various proposed actions in the area, those

proposed actions are not preconditions for Growler operations at the NAS Whidbey Island complex. Growler operations at the NAS Whidbey Island complex are not a precondition for larger military readiness activities on range complexes in the Pacific Northwest. Even in the absence of this Proposed Action, military training in the Pacific Northwest would continue independently from this Proposed Action as analyzed in the documents referenced in Section 1.6. The Navy does consider the impacts from past, present, and reasonably foreseeable future actions in Chapter 5 (Cumulative Impacts).

- **Drinking Water Testing.** The Navy is actively identifying all known and suspected sites where perfluorooctane sulfanate (PFOS) and/or perfluorooctanic acid (PFOA) may have been released, as well as locations where PFOA or PFOS may have migrated to off-installation drinking water sources. Through public comment on this document, inquiries were received related to the Navy's handling of these emerging contaminants. Areas surrounding both Ault Field and OLF Coupeville are receiving drinking water testing to confirm the USEPA drinking water lifetime health advisory is not exceeded for PFOS and PFOA. In situations where the USEPA lifetime health advisory level is exceeded, the Navy is providing alternative drinking water.

  The Navy is also taking action to reduce potential releases of these compounds into the environment. Consistent with Navy policy, these actions include ceasing uncontrolled environmental release of aqueous film-forming foam (AFFF) for shoreside installations (with the exception of emergency response), ceasing training with AFFF, testing firefighting and crash response vehicle AFFF systems, and testing to ensure hangar AFFF and other fixed systems have appropriate controls in place to prevent environmental release. The Navy is identifying for removal and destruction all legacy 3M® PFOS-containing (and PFOA-containing) AFFF. The Navy is testing current AFFF (most of which was developed to comply with the USEPA 2010/2015 PFOA Stewardship Program) to confirm chemical formulations, with the goal of identifying suitable replacements for existing stocks. If a crash occurs that necessitates the use of AFFF, the Navy will contain and capture released AFFF to the maximum extent practical to ensure limited infiltration into the soil and/or groundwater. Per public comment on this document, more information on this topic is included in Sections 3.9 and 4.9, Water Resources.
- **Olympic Peninsula/Olympic National Park and Study Area.** The Olympic Peninsula, including the Olympic National Park, is not part of the study area for this analysis. Through public comment, inquiries were received as to how the Navy addresses its activities in these areas. The Navy prepares separate NEPA documents addressing home basing and training activities. These actions are separated from other actions by their purpose and need, independent utility, timing, and geographic location. Discussion has been included in Section 1.6 related to how the environmental impacts from Navy activities for the Olympic Peninsula are evaluated in the 2010 Northwest Training Range Complex EIS/OEIS and the 2015 EIS/OEIS for Northwest Training and Testing.

  Growler operations at the NAS Whidbey Island complex do not automatically trigger larger military training activities in the Pacific Northwest. Likewise, Navy military readiness activities proceed independently of whether this Proposed Action is implemented. NEPA documents that address training typically analyze various training activities of many different types of aircraft and ships within an existing military range. This EIS focuses on the facilities and functions to support Growler operations at the NAS Whidbey Island complex.

- **Procurement Aircraft and Operational Aircraft.** The Navy's Proposed Action remains as communicated to the public, which is to potentially operate up to 118 Growler aircraft at the NAS Whidbey Island complex, an increase of up to 36 operational aircraft from the current 82. Through public comment, inquiries were received about the total number of aircraft that may be procured by the Navy and the number of aircraft that will be operated at NAS Whidbey Island. The program of record, or the total number of Growlers the Navy plans on buying over the expected life of the Growler program, is 160 aircraft. This does not mean that all 160 aircraft will be operating at NAS Whidbey Island complex at one time. The program of record represents a pool of available assets: some aircraft will be in an operational flight status, while others will be inoperable (non-flying or preservation status) until such time as they are needed.

  The Navy purchased additional replacement aircraft because the manufacturing line was still operational. Many of these additional aircraft will be maintained in a preservation status and will be used to replace aircraft at the end of their service life, aircraft that are undergoing repairs, or aircraft that may be lost in combat. Some of the preservation aircraft may be stored at Ault Field, while other preservation aircraft may be stored at other locations. One carrier squadron is forward-deployed to Japan as part of Carrier Air Wing FIVE. Some of the aircraft will be designated as test aircraft, which will be assigned to NAS Patuxent River, in Maryland, and the Naval Air Weapons Station China Lake, in California. Some aircraft will be assigned to NAS Fallon, Nevada, as part of the Naval Aviation Warfighting Development Center.

  It is important to note that the number of aircraft operations is defined by the number of aviators who are conducting training operations. The aircraft only facilitate the training of Navy aircrew because Navy aircrew fly the available aircraft from a pool of assets. Thus, the total number of aircraft procured by the Navy does not define how many aircraft will be operational; rather, the number of training operations is determined by the number of aviators available to fly the aircraft.

1.11.2 Airspace and Airfield Operations

- **Flight Tracks**. Air Traffic Control (ATC) services for all aircraft operating within the Class C airspace are provided by the NAS Whidbey Island ATC facility. The NAS Whidbey Island ATC facility is responsible for the safe, orderly, and expeditious flow of all civil and military air traffic and provides the en-route traffic control service within 2,100 square miles of the airspace surrounding the Class C airspace. Through public comment, requests were made for additional information on the flight tracks used by Growler aircraft at the NAS Whidbey Island complex. This EIS examines existing airspace conditions, which includes a discussion of flight tracks, in Section 3.1 and impacts to airspace under each alternative in Section 4.1.

  The flight tracks at NAS Whidbey Island complex, depicted in Chapters 3.1 and 4.1 of the EIS, were established based on land use and obstacle clearance, civil air traffic routes and available airspace, and navigational aid coverage, as well as current operational characteristics of the aircraft operating at NAS Whidbey Island complex. Since additional Growlers will perform the same mission as the existing Growlers, the Navy is not proposing to change the type, location, or current ratio of daytime and nighttime operations to support the additional aircraft. All Navy pilots are required to comply with Federal Aviation Administration (FAA) and Navy regulations, which dictate allowable aircraft flight altitudes. Many variables determine flight pattern altitude, such as designation of flight corridors, distance between takeoff and landing locations, mission,

and other air traffic. Other than during takeoff and landing, low-altitude flight is conducted only for specific training requirements in approved areas and on approved routes.

- **Explanation of Operation Types and Training Needs**. This EIS examines air operations in Section 3.1 and any proposed changes to air operations under each alternative in Section 4.1. In addition, the EIS addresses the need for this Proposed Action in Section 1.3 (Purpose of and Need for the Proposed Action). Through public comment, requests were received for a more comprehensive explanation of the various types of operations (such as FCLP) completed by Growler aircraft at the NAS Whidbey Island complex. In addition, some commenters requested additional information on the need for this action and reasoning why another type of training or alternative was not being analyzed (e.g., moving the Growlers to another location and conducting FCLP there). Additional discussion has been added to Sections 3.1 and 4.1.
- **Australian Air Force Operations**. The Navy conducts training at NAS Whidbey Island for Royal Australian Air Force EA-18G pilots. The training is not scheduled to change as part of the Proposed Action. Through public comment, inquiries were received about how the Navy is including this program under the Proposed Action. Flight operations for this training program are included in the operation totals under the affected environment analysis (see Sections 3.1, Airspace and Airfield Operations, and 3.2, Noise Associated with Aircraft Operations) because the training is in progress and ongoing.
- **Seasonal Impacts on Airfield Operations.** Airfield operations at the NAS Whidbey Island complex can be affected by weather delays and other seasonal conditions (such as longer daylight hours during the summer months or shifts in the prevailing wind direction). Through public comment, inquiries were received related to how these types of considerations are incorporated into the analysis. Current airfield operations are provided in Section 3.1.2, and changes to operations under the various alternatives are examined in Section 4.1. Relevant operational considerations are included in the discussion within these sections.

1.11.3 Noise Associated with Aircraft Operations

- **Sonic Booms**. Sonic booms are the sound created by an object traveling faster than the speed of sound, or when aircraft are traveling at or above Mach 1.0. Through public comment, sonic booms were identified as a concern pertaining to Growler aircraft. Navy regulations strictly control supersonic flight and provide that sonic booms shall not be intentionally generated below 30,000 feet of altitude unless over water and more than 30 miles from inhabited land areas. Supersonic flight over land or within 30 miles offshore may only be conducted in specifically designated areas, and no such areas exist in the study area. The training activities that have the potential to produce sonic booms occur well out at sea in the Northwest Training Range Complex and are covered in a separate NEPA document. Northwest Training Range Complex rules prohibit supersonic flight except when greater than 30 nautical miles off shore of the Pacific Coast and clear of ship traffic and personnel. For this reason, sonic booms are rarely heard in the vicinity of the NAS Whidbey Island complex and can be confused with seismic or atmospheric events and industrial activities. Navy rules strictly control supersonic flight over land. This Proposed Action is not anticipated to result in any increase in the instances of sonic booms in the study area. A comprehensive Aircraft Noise Study (Appendix A) was prepared for this EIS, and impacts associated with noise are further analyzed in Section 4.2.

- **Noise Mitigation.** The Navy employs numerous mitigation measures for aircraft operating at the installation and periodically reviews ongoing operational procedures to minimize noise impacts whenever and wherever practicable while maintaining flight safety. Through public comment, requests were made for more information on the measures that would be taken by the Navy to mitigate potential noise impacts as a result of implementing the Proposed Action. Additional details have been added to Sections 3.2 and 4.2 regarding existing and potential future noise mitigation measures. In addition, a technical appendix has been added to the EIS providing an expanded discussion of this topic; see Appendix H, Noise Mitigation. Numerous noise-abatement procedures are specified in the current air operations manual for NAS Whidbey Island. NAS Whidbey Island's policy is to conduct required training and operational flights with a minimal impact on surrounding communities. All aircrews using NAS Whidbey Island facilities 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. Section 3.2.4.2 discusses some examples of the Navy's current noise-abatement procedures at NAS Whidbey Island, which are outlined in the NAS Whidbey Island Air Operations Manual and are also subject to change in the future based on revisions to the manual.

  Installation Public Affairs personnel frequently correspond with numerous media outlets and utilize the installation's webpage and social media, such as the station's Facebook page, to share flight schedules and other information and to solicit public feedback. When possible and if weather conditions allow, station officials modify fight operations to minimize noise impacts, such as during weekends and during school exams. The installation will continue to publish FCLP schedules and notify the public of any changes to them, such as for weekend festivals. The installation continuously reviews flight procedures to determine whether there are any changes that could help reduce noise impacts on the surrounding population. 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. These measures include the following:

  - **Precision Landing Mode (PLM),** also known as MAGIC CARPET (an acronym for Maritime Augmented Guidance with Integrated Controls for Carrier Approach and Recovery Precision Enabling Technologies), is a flight control system that automates some controls to assist pilots with landing on aircraft carriers, making the flight deck operations aboard the carrier safer and more efficient. In addition, the technology potentially reduces the workload and training required for pilots to develop and maintain proficiency for shipboard landings. This technology could eventually result in a decrease of future training requirements, resulting in fewer FCLPs at locations such as the NAS Whidbey Island complex. The initial capabilities of PLM were demonstrated when the system was used in its first shore-based flight on the Super Hornet and the Growler on February 6, 2015. PLM has already been successfully demonstrated on the F-35C Joint Strike Fighter during operational testing. PLM's introduction into the Growler fleet began in 2017 and is scheduled to be complete by the end of 2020. PLM holds great promise for making carrier landing safer

through automation, which will reduce the amount of FCLP required. The potential training reduction for required FCLPs is estimated at 20 percent overall. This reduction has been factored into the Final EIS analysis under all alternatives and leads to a decrease in FCLP operations as compared to the FCLP operations described in the Draft EIS. The Navy is moving forward with an aggressive schedule to incorporate this technology into the Fleet, and the Navy expects that this will reduce FCLP training requirements in the next several years. In fact, initial versions of PLM capability have been introduced to all carrier squadrons in the Growler fleet currently stationed at NAS Whidbey Island, and a more robust version offering full capabilities and redundancy is expected to be complete by the end of 2020.

- **Chevrons.** Chevrons are specially designed shapes installed at the end of a jet engine exhaust nozzle for sound reduction. Testing confirmed that chevron technology has some positive effect on noise output; however, it also demonstrated that redesign and additional testing are necessary to fully assess any noise-reduction benefits and potential drawbacks. The Navy is continuing to explore different technologies to reduce noise impacts from aircraft.
- **Air Installations Compatible Use Zones.** The Navy has an active Air Installations Compatible Use Zones (AICUZ) program in place at the NAS Whidbey Island complex. The Navy AICUZ program's goals are to protect the safety, welfare, and health of those who live and work near military airfields while preserving the military flying mission. This is done through working with the local community and municipal organizations to coordinate appropriate development and land uses in various locations surrounding the installation. The Navy will continue to address local concerns about aircraft noise by updating the existing AICUZ, as necessary, and coordinating closely with the local community.

- **NOISEMAP and Noise Monitoring.** NOISEMAP is the approved DoD program to assess aircraft noise impacts on the surrounding community. Through public comment, inquiries were received related to NOISEMAP, modeling, and monitoring future noise conditions in order to validate NOISEMAP results. The discussion of the NOISEMAP model, as well as the data inputs into the model that were used for this analysis, can be found in Section 3.2.2. As discussed in Section 3.2.2, computer modeling provides a tool to assess potential noise impacts. DNL noise contours are generated by a computer model that draws from a library of actual aircraft noise measurements. Noise contours produced by the model allow for a comparison of existing conditions and proposed changes or alternative actions that do not currently exist or operate at the installation. For these reasons, on-site noise monitoring is seldom used at military air installations for NEPA analyses, especially when the aircraft mix and operational tempo are not uniform. However, NOISEMAP has already been validated as an accurate process through many years of use by the DoD.

  NOISEMAP is the latest model available for environmental noise for all DoD studies. It should also be noted that the noise analysis was updated in the Final EIS using the most recent update to the modeling software, NOISEMAP 7.3 (released in March 2017). NOISEMAP modeling results are based in part on aircraft noise data that were measured from actual aircraft. The noise source data used to analyze the Growler for this impact assessment were measured by the U.S. Air Force on February 15, 2001, and are publicly available. Typical measurement procedures

involve establishing large arrays of microphones at specific points on the ground and can include aerial microphones suspended from cranes. The aircraft to be tested is flown along a planned path at known speeds, altitudes, and power settings while the microphones record the sound levels generated. Data are then normalized using prescribed protocols to account for the location, weather conditions, and terrain.

The noise measurements used for the Growler are based on the FA-18E/F Super Hornet, which shares the same airframe and engine as the Growler. Since the Growler includes different onboard equipment than the Super Hornet, the Growler-specific aircraft flight parameters (speed, power, etc.) were modeled to account for potential differences in aircraft weight.

The noise model takes this measured noise data from the aircraft maneuvers and then applies it to how the Growler flies specifically at NAS Whidbey Island, including the flight tracks, site-specific flight profiles, number of operations, and other site-specific factors such as terrain (including land and water) and relative humidity. The combination of these aircraft noise measurements, operational inputs, and environmental factors are utilized by the noise model to output noise results in different metrics.

- **Noise Points of Interest.** Noise is not limited to the areas immediately around Ault Field and OLF Coupeville. Therefore, the Navy includes additional noise analyses in the EIS using other noise metrics for various points of interest (POIs) around the airfields and in the surrounding communities. The wide geographic distribution of POIs provides broad coverage and context to compare the noise effects for the affected environment with the noise effects under each of the alternatives. Input from public scoping was used to identify these POIs, which include residential areas, parks, and schools. In addition, based upon public comments received between the Draft EIS and Final EIS, an additional 18 POIs were added to the analysis to provide the public and decision makers with more data to compare. These additional POIs include additional residential areas, schools, and parks, as well as two points in Ebey's Landing National Historical Reserve as identified in the National Park Service's acoustical monitoring report. The two points from that report (designated as EBLA001 [Reuble Farmstead] and EBLA002 [Ferry House]) correspond to POIs P18 and P17, respectively, in this EIS. All POIs are illustrated on Figure 3.2-6 and listed in Table 3.2-4 of this EIS, with a comprehensive impact analysis provided in Section 4.2 and in Appendix A. As discussed in Section 3.2.4.3, in general, the POIs were chosen based upon several factors, including geographic dispersal from the airfields and being located under flight operations, near major or identifiable landmarks, and areas that have had a history of noise impacts. It should be noted that for POIs located closely to one another (i.e., within about 0.25 mile, depending on topography), the results will most likely be the same or very similar and thus not add value to the analysis. Furthermore, it is possible to deduce the potential noise impacts for a specific location based on its proximity to a POI and its distance from the airfields. The POIs represent a geographic variety of residential neighborhoods, schools, and parks throughout Island County, as well as in the surrounding counties of San Juan, Jefferson, Clallam, Snohomish, and Skagit where noise from aircraft activity may be experienced. The supplemental metrics presented in the EIS for the various POIs include sound exposure level, the peak noise level for an event, indoor/outdoor speech interference, classroom learning interference, and sleep disturbance. These supplemental metrics are based upon what an individual may experience in terms of noise levels from a single aircraft event or number of events they may experience during a given time period when aircraft are flying in the vicinity. However, it should be kept in

mind that these are still averages, and, on a given day, an individual may experience more or fewer noise events than are presented in the EIS.

- **Average Annual Day.** Some commenters have stated that the Navy should have used the Average Busy Day (ABD) methodology found in the Navy's AICUZ instruction. The ABD methodology is not appropriate for this analysis for the reasons stated in Section 3.1.2.
- **Day-Night Average Sound Level Metric.** As stated in Section 3.2, DNL is the standard and federally accepted metric for assessing community annoyance due to aircraft noise impacts. In 1992, the Federal Interagency Committee on Noise (FICON) found "There are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric" (FICON, 1992), and the latest International Organization for Standardization (ISO) update (ISO 1996:1-2016) also suggests L_{dn} (another name for DNL) for community noise assessments. The FAA continues to recommend and utilize DNL, and the DoD methodology remains consistent with other federal agencies (including the USEPA, DoD, FICON, American National Standards Institute, and World Health Organization [WHO], among others).

  During the public comment process, comments were received on other noise metrics including Effective Perceived Noise Level and Weighted Equivalent Continuous Perceived Noise Level. These noise metrics are typically used only for engine certification, and, in addition, Effective Perceived Noise Level is analogous to SEL in that both are best suited to single-event analysis. DNL, on the other hand, is a cumulative noise metric designed to account for all noise events over the period of assessment (typically one day) and applies adjustments to account for the added intrusiveness of noise events that occur during nighttime. Due to these adjustments implemented by DNL and the ability to account for all noise events over the period of assessment, DNL is better suited for determination of annoyance rates among noise-exposed populations and remains the industry standard metric for environmental noise impact analysis. In the U.S. (specifically California), a variant of DNL, the Community Noise Equivalent Level (CNEL), is required by state law and applies an additional adjustment for noise events occurring during the evening time period of 7:00 p.m. to 10:00 p.m. Generally, CNEL results are within 0.5 to 1 dB of DNL, which yields very similar rates of annoyance. In scientific literature, particularly when correlating annoyance and evaluating health effects, DNL (or L_{dn}) is more prevalent and used at least 10 times more frequently than CNEL. Although CNEL is more conservative (i.e., predicts higher annoyance rates) than DNL, the stronger documented correlation between DNL and annoyance more than offsets this variance when evaluating potential environmental impacts. Scientific literature has not demonstrated a significant advantage of CNEL over DNL, so DNL remains the best available science.
- **A-Weighted vs. C-Weighted Sound Levels.** All sounds have a spectral content, which means their magnitude or level changes with frequency, where frequency is measured in cycles per second, or Hertz. Based on the type of analysis or evaluation being conducted, the spectral content is weighted, and there are different weighting scales. For a discussion on noise, refer to Section 3.2 and Appendix A (Aircraft Noise Study). A-weighting best replicates human hearing and is the most appropriate for the assessment of annoyance from aircraft noise. A-weighted sound levels form the basis of the DNL metric, which is the best available metric to relate aircraft noise to long-term annoyance.

  Commenters have suggested that A-weighted measures may not be as accurate in determining the disturbing effects of noises with strong low-frequency components. However, the

alternative measurement methodology, C-weighting, increases the emphasis on lower frequencies when compared with A-weighting, and it is most appropriate for impulsive or repetitive sounds such as blast noise and machine gun fire, which contain significant low-frequency noise, as well as continuous noise sources such as pumps and compressors. The FAA continues to recommend and utilize DNL and A-weighting for airfield noise studies, and the DoD methodology used in the EIS is consistent with all applicable federal standards.

The low-frequency sound characteristics of the Growler are noticeably different from those of the Prowler, which previously operated at NAS Whidbey Island, but are quite similar to the sound characteristics of typical fighter aircraft. The Growler generates the greatest sound pressure levels (SPLs) at frequencies between 200 and 4,000 Hertz, consistent with the SPLs of many commercial jetliners, and noise impact analyses for these commercial jetliners utilize A-weighted DNL measurements.

The 15 dB and 25 dB attenuation levels for, respectively, windows-open and windows-closed conditions utilized in this analysis are consistent with DoD guidance. These values already account for the reduced attenuation at lower frequencies as well as the greater attenuation at high frequencies. The supplemental metrics that include assumed values of structure attenuation (sleep disturbance, speech interference, and classroom learning) apply the same attenuation to all scenarios. The analysis focuses on a "'before-and-after" comparison of the Proposed Action to existing conditions, which effectively reduces or, in some cases, completely eliminates the impact of variances in assumed structure attenuation.

- **Advanced Acoustic Model (AAM).** The discussion of the NOISEMAP model, which is the current, validated, and publicly available model that was used for this analysis, can be found in Section 3.2.2. Some commenters have asked the Navy to use the AAM instead of NOISEMAP.

  NOISEMAP is capable of modeling complex airfield activity by computing and combining many, often hundreds, of single aircraft flight paths. This method remains reliable when computing DNL even with multiple aircraft in the pattern at OLF Coupeville. The environmental analysis presents a comparison of potential impacts under the proposed scenarios to the existing conditions. With the focus on impacts as the difference between the Proposed Action and existing conditions, the use of NOISEMAP gives a valid comparison. NOISEMAP is the latest model available for environmental noise for all DoD studies. It should be noted that the FAA uses an integrated model similar to NOISEMAP for creating noise contours at commercial airports and does not plan, at this time, to change to a simulation model, such as AAM.

  The AAM is based on the Rotorcraft Noise Model, which was developed by the National Aeronautics and Space Administration since the late 1990s. AAM extends the algorithms in the Rotorcraft Noise Model to apply to fixed-wing aircraft and adds the capability to account for nonlinear propagation effects and vectored thrust. AAM is still in development and not ready for use. DoD's current version of AAM (v1) does not accurately account for the nonlinear propagation of noise that is associated with tactical jet aircraft. The U.S. Air Force, which has fixed-wing model responsibility, is currently considering approaches to develop reference noise spheres created from legacy data so that older aircraft can also be modeled within AAM. After the DoD receives an updated version of AAM that incorporates nonlinear propagation and validated legacy noise spheres, the model will have to undergo final testing, evaluation, and validation by the U.S. Air Force before it can be utilized by DoD to support informed decision

making regarding fixed-wing aircraft. Consequently, the Navy is continuing to utilize the latest version of NOISEMAP for modeling.

Wyle Report WR-1304 describes the potential benefits of AAM and limitations of NOISEMAP for assessing next-generation aircraft primarily differentiated by vectored thrust ability and higher maximum thrust. These factors apply primarily to fifth-generation aircraft, such as the F-22 and F-35. The F-22 is capable of generating more than 35,000 pounds of force (lbf) from each of its two engines. The F-35 produces 43,000 lbf of thrust from its single engine. The Growler utilizes two General Electric F414-GE-400 engines with reported thrust of 22,000 lbf with afterburner, significantly lower than the next-generation fighter aircraft. For comparison of historical aircraft, the maximum thrust for each of the two engines of the F-15C is 23,700 lbf with afterburner, while the F-14's two engines were each capable of 28,200 lbf with afterburner. For comparison to aircraft that historically operated at NAS Whidbey Island, the Prowler engines generated 10,400 lbf of thrust.

- **Other Noise Reports.** Several other noise reports are available that examine both measured and experiential noise in the areas near and far from NAS Whidbey Island. These include the *NPS Acoustic Monitoring Report for Ebey's Landing National Historical Reserve* (2016), the *Dahlgren Report on Combat Jet Noise from Landing and Taking Off at Whidbey Island* (2015), the JGL Acoustics, Inc., report, *Whidbey Island Military Jet Noise Measurements* (JGL Acoustics, Inc., 2013), and the *San Juan County Jet Aircraft Noise Reporting* (2014 to present), and they are discussed in Section 1.12. The results of these noise reports have not been incorporated into the EIS because these results have not been peer reviewed and in some cases do not use empirical data, although the results of the *NPS Acoustic Monitoring Report* (dated August 2016) appear to be consistent with the Navy's previous noise analyses. Furthermore, the National Park Service's (NPS's) monitoring report demonstrates that, while military aircraft are loud, military aircraft operations are highly intermittent, with long periods of no military aircraft activity.
- **Nonauditory Health Effects.** The EIS analysis considers the potential for aircraft noise to impact one's health, as discussed throughout Section 4.2 and Appendix A. The nonauditory health effects literature review was expanded using journals and research referred to by the Washington State Department of Health, the USEPA, and the public in their comment letters. More complete information added with respect to the following topics includes, but is not limited to, hypertension and cardiovascular health, lack of sleep, stress, and anxiety. Details can be found in Appendix A.

  Numerous epidemiological studies and meta-analyses have been conducted on the long-term health impacts of exposure to noise. The basic premise of these studies is that noise can cause annoyance, annoyance can cause stress, and prolonged stress is known to be a contributor to a number of health disorders, such as hypertension, myocardial infarction (heart attack), cardiovascular disease, and stroke.

  A 1974 study confirmed that noise can provoke stress but noted that results on its effect on cardiovascular health were contradictory. Some studies in the 1990s found a connection between aircraft noise and increased blood pressure, while others did not. This inconsistency in results led the WHO in 2000 to conclude that there was only a weak association between long-term noise exposure and hypertension and cardiovascular effects, and that a dose-response relationship (i.e., the change in effect [response] on an organism based on differing levels of exposure [dose]) could not be established (WHO, 2000).

Research studies seem to indicate that aircraft noise may contribute to the risk of health disorders, along with other confounding factors such as heredity, medical history, smoking, alcohol use, diet, lack of exercise, and air pollution, but the measured effect is small compared to the effects of these other factors and often not statistically significant. Although commenters have suggested aircraft noise contributes heavily to health disorders, there are no peer-reviewed studies that definitively show a causal and significant relationship between aircraft noise and health. Such definitive, peer-reviewed studies are very difficult to conduct and interpret because of the large number of confounding factors that have to be considered for their effects to be excluded from the analysis. The WHO (2000) notes there is still considerable variation among studies. Almost without exception, research studies conclude that additional research is needed to determine whether such a causal relationship between noise and human health exists. The European Network on Noise and Health, in its summary report of 2013, concludes "…..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" (European Network on Noise and Health, 2013).

Even though residents are exposed to aircraft noise, data collected from the Centers for Disease Control and Prevention, the Washington State Department of Health, and Island County Board of Health demonstrate that Island County is among the healthiest places to live and to work in the State of Washington (Appendix I). In general, individuals living in Island County enjoy a longer life span and better overall health. Island County ranks third for health outcomes and fifth for health factors among the 39 counties that comprise the State of Washington. Based on these indicators, while the local community may be concerned about aircraft noise, it does not appear to affect the overall health of most individuals.

1.11.4 Public Health and Safety

- **Accident Potential Zones.** APZs are areas near airfield runways where an aircraft mishap is most likely to occur, should one occur. Although some commenters suggested otherwise, APZs do not predict the likelihood of an aircraft accident. An examination of military aircraft mishaps indicates that most occur on or near the runway, or within the first 15,000 feet of the extended arrival or departure corridor of the airfield for Class B runways that are utilized by heavy or high-performance aircraft. While APZs do not predict the likelihood of an aircraft mishap, they do predict the most likely location of an aircraft accident, if one were to occur. While the likelihood of a mishap is small, the Navy recommends that land use within APZs be minimal or low density to ensure maximum protection of public health and property.
- **Mishap Rates.** From FY 2009 through FY 2017, the Growler community conducted approximately 187,642 flight hours of operations from land-based airfields. During that 9-year period, the Growler community experienced four Class A mishaps while operating from land-based airfields, equivalent to a mishap rate of 2.13 per 100,000 flight hours, none of which involved a "crash." A Class A mishap is defined as a mishap where either property damage is $2 million or more and/or the aircraft is destroyed or the mishap results in a fatality or permanent total disability. Two of the Growler Class A mishaps were ground mishaps and occurred at Ault Field. Mishaps are classified as ground mishaps if the "intent for flight" did not exist at the time of the mishap. The remaining two Class A mishaps from land-based operations were flight-related mishaps that did not occur at the NAS Whidbey Island complex. The FRS conducts

training for fully qualified pilots on operational aircraft. A replacement pilot may be a newly winged aviator or a veteran pilot returning from a non-flying tour who requires refresher training. While some have commented that replacement pilots are more mishap-prone, statistical evidence does not support the assertion that replacement pilots are more likely to have a mishap. In the same 9-year time period of 2009 through 2017, the Growler FRS experienced one Class A mishap during approximately 90,000 flight hours.

- **Risk of a terrorist attack.** Many comments were received that suggested there would be an increased risk of a terrorist attack due to the implementation of the Proposed Action. Section 1.11 of the Final EIS provides details on this topic. The Proposed Action does not change the status of NAS Whidbey Island as the home of the Navy's tactical Electronic Attack community. Therefore, it does not impact the Navy's force-protection requirements, which make a terrorist attack on a guarded military facility difficult and unlikely. Thus, to the extent that NAS Whidbey Island is currently a target for terrorism, the Proposed Action would not change that. It should be noted that, due to the robust protection measures at military facilities, military bases are generally unattractive targets for such attacks. To the extent an attack is intended to do something other than damage aircraft, such as damage infrastructure, the Proposed Action would not significantly add to the overall base infrastructure that is already present.

  In February 2012 (amended October 1, 2013), the DoD issued Unified Facility Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards For Buildings (February 9, 2012), requiring all DoD components to adopt and adhere to common criteria and minimum construction standards to reduce the potential damage that could be inflicted by terrorist activity directed at buildings occupied by DoD personnel. The intent of these building standards is to integrate greater resistance to a terrorist attack into all inhabited buildings. That philosophy affects the general practice of designing inhabited buildings. Anti-Terrorist Force Protection (ATFP) requirements and standards consist of restrictions for onsite planning, including standoff distances, unobstructed space, drive-up and drop-off areas, access roads, and parking; structural design; and electrical and mechanical design.

  In September 2008, the DoD issued UFC 4-020-01, DoD Security Engineering Facilities Planning Manual. This UFC supports the planning of DoD facilities that includes requirements for security and antiterrorism and is used in conjunction with UFC 4-010-01 to establish the security and antiterrorism design criteria that will be the basis for DoD facility designs. Those criteria include the assets to be protected, the threats to those assets, the levels to which those assets are to be protected against those threats, and any design constraints imposed by facility users. The document also provides a risk management process for evaluating costs and protection options.

  UFC 4-010-01 and UFC 4-020-01 contain several design strategies that protect facilities from terrorist attacks, including controlled perimeters, access control standards, vehicle barriers, and manpower and procedures. Controlled perimeters require physical boundaries that channel vehicles to access control points. They are intended to clearly delineate the perimeter and to force potential aggressors to perpetrate an overt act to breach the perimeter rather than being able to cross the perimeter at any point other than the entry control point without any obstacles. Controlled perimeters and access control standards assume that procedures are implemented to search for and detect explosives to limit the likelihood that a vehicle carrying explosives could penetrate a controlled perimeter undetected. It is further assumed that access control will include provisions to reject vehicles without penetrating the controlled perimeter.

DoD Instruction 2000.16 requires every installation or base to have an antiterrorism officer. The role of the antiterrorism officer is to orchestrate the development of comprehensive antiterrorism plans and to coordinate the efforts of all organizations on the installations with respect to antiterrorism preparation and response (DoD, 2008; DoD, 2012).

Physical security of NAS Whidbey Island includes requirements for a secured perimeter, building siting, construction types, and setbacks from the installation secured perimeter, roadways, and parking, including any new construction under the Proposed Action. All new construction or renovation projects for a facility that exceed 50 percent of the Plant Replacement Value for that facility (or 75 percent if the structure is historic) must be in compliance with ATFP requirements. NAS Whidbey Island completed an ATFP barrier plan in 2010. According to security officials, base security operations are anticipated to grow with the arrival of additional aircraft (NAVFAC, 2016b).

Based on current threat reporting, there is no known specific threat targeting the NAS Whidbey Island complex. The risks of terrorist attacks are otherwise too speculative, remote, and removed from the environmental effects of the Proposed Action to merit further analysis under NEPA.

1.11.5 Air Quality

- **Fuel Dumping**. Fuel dumping is the release of aviation fuel during flight operations. Fuel release procedures are governed by the FAA and Navy rules. Some commenters expressed concerns with respect to fuel dumping. Per the NAS Whidbey Island Air Operations Manual, Navy pilots are prohibited from dumping fuel at altitudes below 8,000 feet above ground level, except in an emergency situation. Related environmental impacts are addressed in Section 4.4 (Air Quality) and Section 4.15 (Hazardous Materials and Waste).

1.11.6 Socioeconomics

- **Property Values.** Commenters have expressed concerns that increased operations at Ault Field and OLF Coupeville may potentially have a negative impact on surrounding property values with the increased frequency of noise exposure. Property values are dynamic and influenced by a combination of factors, including market conditions, neighborhood characteristics, and individual real property characteristics (e.g., the age of the property, its size, home amenities, and lot size). The degree to which a particular factor may affect property values is influenced by many other factors that fluctuate widely with time and market conditions. These same factors go into the personal decision for people to purchase a home. As discussed in Section 4.10.2.1 (Population Impacts) and in Appendix A, aircraft noise could affect the value of property under the greater than 65 DNL noise contours. As described and based on a review of relevant technical articles, property values generally can be expected to decrease by 0.2 percent to 2.0 percent per additional dB. On average, property values would decrease by approximately 0.5 percent per dB. The actual change in value will vary from location to location, and property values are affected by many non-noise-related factors. The frequency of flights and the noise related to them are two of many factors that may affect changes in property values. The total number of daily operations at Ault Field and OLF Coupeville under each alternative is less than the daily operations at several of the airports that were included in the review of relevant technical articles discussed in Section 4.10.2.1, Population Impacts. Therefore, since many non-

noise-related factors can affect property values, the analysis does not attempt to quantify changes in property values as a result of the Proposed Action. In addition, because many factors go into determining property values and because mapping property values would only show current values and not reflect any change in value associated with the Proposed Action, such a mapping effort would not add appreciably to an understanding of the effects of the Proposed Action and, therefore, is not feasible for this analysis.

In a separate study, Frankel (1988) found that economic impacts to noise-affected property owners differed depending on when their properties were purchased. As described in his study, property owners who purchased their property when the location was quiet are the most significantly impacted. Those owners who willingly purchased their property after the airport and flight operations were established would not be economically or monetarily injured. Since these individuals voluntarily purchased their properties after aircraft noise was already occurring, they would have received the property at a discounted price. Those owners who purchased their property after flight operations were already occurring but later experienced an increase in aircraft noise would experience some monetary loss, but these losses would not be as large as those of the first group (Frankel, 1988). More details on this study can be found in Section 4.10.2.1.

While the Navy acknowledges that some decrease in property values may occur as a result of increased operations at Ault Field and OLF Coupeville, it does not anticipate that this decline in value would be substantial enough to significantly affect local governments' property tax receipts. As described in Section 4.10.2.3, while some reductions in property values in the highest noise areas are anticipated, local property values for the area as a whole are expected to experience upward pressure as a result of the influx of additional Navy personnel. Therefore, no substantial changes in property receipts are anticipated as a result of the Proposed Action.

The Proposed Action would not physically occupy any private property or take control of any private property through the use of eminent domain. The Navy recommends that land use within APZs be minimal or low density but does not restrict existing land uses; land use decisions are made by the local government. See Sections 3.5.2.2 and 4.5.2.2 for a more detailed discussion of these topics.

Compensation and/or Mitigation. Numerous public comments have asked for the Navy to pay for various forms of property improvements, or for compensation of various forms. With regard to property improvements, the Navy does not have authority to expend appropriated funds on improvements to state, local, or private property.

Several commenters referenced the FAA's ability to do so as part of its Part 150 program, but that program is specific to the FAA. Specific Congressional authorization and appropriation for the Navy would be required to establish a similar program, and the Navy does not currently intend to seek such an authorization. In addition to addressing sound attenuation, several comments suggested that the Navy should pay for perceived loss of property values, loss of business profitability, personal hearing protection, compensation for leaving the home, or other forms of compensation for losses alleged from aircraft operations.

As discussed in the Navy's response to comments questioning the methodology underlying the noise analysis (see Sections 3.2 and 4.2), noise impacts analyzed in this document are predictive. This approach to noise modeling has been adopted by the FAA and the military services, and approved by reviewing courts as the best available methodology for describing noise impacts on

communities, but, as the EIS notes, this response is a subjective, individual response to stimulus affected by many variables. It is beyond the scope of this assessment to forecast individual response to this impact at the level of whether an individual will be sufficiently disturbed by the aircraft to bring claims against the Navy or whether the impact will rise to the level of a legally compensable taking. Moreover, as noted, the Navy's ability to expend appropriated funds is limited by law. To the extent individuals believe they have experienced damages or injury from Navy activities, they may pursue a claim against the Navy. Several public comments inquired as to whether the Navy would condemn private property. The Navy has no intention of condemning private property as part of the Proposed Action.

Separately, several comments alleged that realtors provide, or have provided, misleading information regarding noise levels near Navy airfields. The Navy has no control over private real estate transactions or whether sellers and/or realtors misrepresent the historical noise environment around a real estate parcel. The Navy believes that all lawful disclosures, including noise, should be provided to a prospective buyer prior to purchase. Island County and the City of Oak Harbor have adopted noise-disclosure ordinances whereby noise disclosure is the responsibility of the property owner and his or her agents.

- **Cost-Benefit Analysis.** The analysis discusses impacts to the natural and human environment in both qualitative and quantitative terms as applicable, but it does not attempt to assign a monetary value to these impacts. A cost-benefit analysis is beyond the scope of this EIS and therefore is not included. Likewise, monetizing major external costs from the Proposed Action--including the impacts of noise, the impacts to property values, the impact of potential accidents, and the impact to tourism--is also beyond the scope of this EIS. In accordance with NEPA, these impacts have been analyzed in the EIS, but their values have not been converted to dollar amounts.

  The purpose of NEPA is to assess the environmental impacts of a proposed federal action. The Proposed Action evaluated in this analysis is described in Section 1.1. A meaningful comparison of the alternatives under consideration must entail a comparison of multiple factors and, as such, does not lend itself to a monetary cost-benefit analysis; moreover, one is not required. As set forth in 40 CFR 1502.23, “For purposes of complying with [the National Environmental Policy Act], the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations.” Given that the purpose and need of the Proposed Action is ultimately to enhance the Navy’s warfighting capability, qualitative considerations such as operational synergy and efficient logistics support weigh more heavily than a pure cost analysis. The EIS evaluates the impacts of each alternative within relevant resource areas, assesses the significance of those impacts, and provides an indication of the considerations relevant and important to a decision.

1.12 Other Reports

The Navy uses the best available science to evaluate human and environmental impacts from the Proposed Action. Throughout the public comment period as well as through individual research, many reports and studies were suggested to the Navy to be reviewed and analyzed in the EIS. Studies utilized for the analysis are summarized in each specific resource area throughout the EIS. The following reports have been developed by independent sources, and the Navy has reviewed their findings in conjunction

with this EIS analysis. In addition to the specific reports listed below, the Navy conducted an expansive literature review on potential health effects of noise on humans based on the U.S. Environmental Protection Agency, the Washington State Department of Health, and other public comment letters. The results of this literature review, which are also mentioned in Section 1.11, are discussed in Appendix A.

1.12.1 San Juan County Jet Aircraft Noise Reporting (2014 to present)

For the past several years, San Juan County and its residents have been logging data related to aircraft noise events in a web-based aircraft noise reporting system (http://www.sjcgis.org/aircraft-noise-reporting/). The information logged is periodically summarized and submitted in batches to the Navy. In addition, the website contains information regarding the Navy's noise complaint contact information, including e-mail and phone.

The Navy is aware of the San Juan Jet Aircraft Noise Reporting system and has reviewed the information submitted. The data are typically reported with such information as Incident Report ID, Loudness, Aircraft Type, Comment, Date, and Time. Although the noise data have value from an anecdotal standpoint and inform the Navy regarding single-event aircraft noise concerns in San Juan County, the individual reports are subjective and do not provide the type of information and timeliness of data from which to draw direct conclusions or to take corrective action. For example, noise complaints received on the NAS Whidbey Island noise complaint hotline are reviewed daily, facilitating a prompt investigation to determine whether aircraft operations were being conducted in an appropriate manner.

For aircraft noise complaint and operational concerns to be of most value, they should be logged directly through the Navy's noise complaint hotline, which has established procedures (see Section 4.2.5) that allow the Navy to be responsive. This will help inform the larger, regional noise picture.

1.12.2 Sandford Fidell Public Comment on the "Significance" Criterion Used for Noise Impacts (2017)

Sandford Fidell provided a comment letter that claimed the "significance" criterion used for noise impacts underestimates the size of the residential population significantly impacted by the Proposed Action because it fails to provide the noise exposure on days when FCLP operations are to be conducted at OLF Coupeville. Fidell contends that the use of 65 dB DNL as a threshold for significant noise impact determination is inappropriate and underestimates the percentage of the population highly annoyed by noise. Fidell's comments are summarized below, with a presentation of the Navy's assumptions and response following.

Underestimation of Number of Population Impacted Due to Proposed Action:

- Fidell describes the Draft EIS as disclosing anticipated environmental impacts by first predicting noise exposure expected from future flight operations and then comparing the predicted quantity of noise exposure with its policy on the "significance" of the predicted exposure levels. Fidell states that disclosure of aircraft noise exposure alone does not directly disclose aircraft noise impacts in residential neighborhoods.
- Fidell criticizes the quantification of aircraft noise exposure as an outdated process that is not easily understood by the public and argues that the Navy should have taken specific measurements of aircraft noise at NAS Whidbey Island rather than rely on software models.
- Fidell concludes that, since the Navy must estimate the future operating conditions, the resulting noise exposure estimates can be no more credible than the computational assumptions used for their analysis. The author states that the Navy's assumption of analyzing

the intermittent FCLP operations on an annual average day (AAD) basis leads to underestimation in both aircraft noise exposure and the size of the population significantly affected by it. Fidell discusses DoD airfield flight activity and how weekday flight activity is often considerably greater than flight activity during weekends and federal holidays. He also discusses that previous studies utilized average busy day (ABD) rather than AAD, as is utilized in the Draft EIS. Utilizing annual average exposure level is more reasonable at large commercial airports, where the pace of operations varies only slightly from day to day and where a predominant direction of air traffic flow exists, according to Fidell. He feels annual averaging is unwarranted when day-to-day variability in operations is extreme.

Underestimation of Noise Exposure at OLF Coupeville during FCLP Operations:

- Fidell states that many readers of the Draft EIS are unlikely to fully understand that the DNL metric represents a notional "annual average" day, which does not correspond to any particular day of the year. OLF Coupeville is not in operation every day, so some days include greater sound exposure than average, while others include no aircraft noise. For this reason, the noise contours presented for OLF Coupeville activity do not accurately represent the aircraft noise exposure generated by Navy aircraft, according to Fidell. He further states that the Draft EIS lacks simple statements about the actual numbers of days per year when OLF Coupeville is used for FCLP operations. Fidell provides decibel-equivalent values for several quantities of operating days per year, from 30 days through 200 days, which would correspond to a 10.9 to 2.6 dB increase in OLF operating-day DNL compared to the annual average DNL depicted in the Draft EIS.

Draft EIS Does Not Specify Significance Criteria Used:

- Fidell contends that the Draft EIS is not clear in the significance threshold utilized for analysis, which ultimately affects the calculation of population significantly exposed in a manner consistent with other U.S. federal agencies, such as the Federal Highway Administration (FHWA, 1997) Noise Abatement Criteria that disclose and interpret hourly, not daily, equivalent (energy-average) sound levels (cf. Table 1, 23 CFR Part 772). The Federal Highway Administration's criterion of the significance of noise impacts in residential neighborhoods is exceeded when actual A-weighted traffic noise levels during any hour of the day exceed 67 dB. Another example provided by Fidell that criticizes basing environmental impact disclosures solely on AAD noise exposure predictions is the Federal Railroad Administration (2012), which considers simple increases in existing sound levels, not just absolute sound levels, as indicative of noise impacts.
- According to Fidell, the Draft EIS relies on a 1992 report published by FICON to predict impacts of aircraft noise on exposed residential populations along with the updated Schultz curve (Fidell et al., 1989, 1991) to provide the link to convert the Navy's predicted noise dose into exposed population expected to be "highly annoyed" and therefore impacted. Fidell states that the FICON report is silent on exactly how the updated Schultz curve supports a definition of the significance of noise exposure in units other than annoyance and that there is no objective or scientific technical justification for inferring a definition of significance of noise exposure from a curvilinear dosage-response relationship. Fidell contends that the Navy's opinion that a DNL value of 65 dB can serve as a threshold of significance of noise exposure intentionally sidesteps its duty under NEPA to disclose noise impacts in the Draft EIS.

- Fidell states that decibel-for-decibel, aircraft noise is more annoying than rail or road noise (Miedema and Vos, 1998; Miedema and Oudschoorn, 2001). ISO's 2016 dosage-response relationship is based on much more social survey information than was available in 1992, it is specific to aircraft noise, and it indicates that considerably greater percentages of the population are highly annoyed by aircraft noise than the 1992 "updated Schultz curve." Indicates. Fidell provides a figure that compares FICON's 1992 dosage-response relationship with ISO's 2016 relationship for aircraft noise, which shows that the FICON relationship under-predicts the proportion of people highly annoyed. If the Navy's definition of the significance of noise exposure were, as claimed in the Draft EIS, truly based on FICON's 1992 dosage-response relationship, it is apparent that to maintain consistency with the current international standard, the Navy would have to redefine the threshold of significance of aircraft noise exposure as 55.5 dB. It follows that this would require the Draft EIS to display noise exposure contours for DNL values 5 to 10 dB lower than those depicted in Figures 6-1 and following of Volume 2 (Appendix A) of the Draft EIS.
- Fidell claims that use of the DNL value of 65 dB as a threshold of "significant" noise impact is incorrect for the following reasons:
    1) The updated Schultz curve of the FICON report erroneously predicts that only 12.3 percent of the population is highly annoyed by noise at a DNL value of 65 dB. It is now known, per ISO 1996-1 (2016), that the prevalence of annoyance with aircraft noise exposure is more than twice as great as that predicted by the updated Schultz curve.
    2) The Navy's opinion is technically obsolete and indefensible because it fails to distinguish between the annoyance created by exposure to aircraft noise and that created by road and rail traffic.
    3) The Navy's opinion is arbitrary because, contrary to the recommendation of the FICON report, it is not based on the annoyance created by its aircraft operations. The criterion of CNR = 100, subsequently transformed mathematically into a DNL value of 65 dB, was based on analyses of complaint behavior and threats of litigation, not on the attitude of annoyance.
    4) The Navy's policy is unsupported by its claim that the policy is based on the 1992 FICON report. This claim is self-evidently erroneous for two principal reasons. First, the 1992 FICON report nowhere prescribes how or why the "updated Schultz Curve" in the report compels the Navy to define a DNL value of 65 dB as a threshold of significant noise impact. Second, the FICON report merely reiterates prior claims about quantities of noise exposure that were adequate to suppress complaints and litigation approximately 40 years before publication of the FICON report.

Assumption/Methodological Errors/Response

The Navy's use of AAD computation of DNL is consistent with the FAA methodology as described in FAA Regulation 14 CFR Part 150, as well as consistent with other DoD services (e.g., Air Force Instruction AFI 32-7063). This methodology defines yearly averaged DNL as the metric to be used for evaluating the cumulative impacts of multiple events, which consolidates the effects of intensity, duration, frequency, and time of occurrence.

The correlation between DNL and percentage of people highly annoyed is not precise and is affected by many variables, both emotional and physical (i.e., community opinion on necessity of activity that generates noise, number of years residing in the area, activity at the time an individual hears the noise, season, predictability of noise, control over the noise, etc.). The Draft EIS includes both the overall annual average DNL as well as significant additional analysis focusing on the changes in DNL exposure. The change in DNL, if assessed for both average and busy day, would yield identical values because the roughly 1.5 dB higher DNL value would apply to all alternatives and scenarios (including the No Action Alternative). Additionally, the use of busy day would fail to account for the benefit the Navy's minimal weekend operations would have on those days, which are days when people are less likely to be away from their homes at work. Also, ABD used for an analysis with multiple scenarios can be misleading. For example if an airfield doubles operations but also doubles its flying days, the resulting DNL will not change with all else being equal. The activity at OLF Coupeville only occurs when FCLP training is needed, which means operations occur during a minority of days per year, and no aircraft events occur on the remaining days. To provide some historical context, information on the number of active flying days at OLF Coupeville has been added to Section 1.4 and ranged between 10 and 36 days per year from 2015 to 2017.

It is important to realize that a typical or busiest day during the No Action Alternative would not change substantively for the Proposed Action. The change proposed at OLF Coupeville is primarily to increase the number of days of OLF operations per year to support a larger number of annual FCLPs. The use of "busy day" DNL without the inclusion of "average day" DNL risks misleading the public because the proposed conditions would prove identical to existing conditions.

The use of 65 dB DNL as a threshold for significance is consistent with the FAA's use of this metric (as well as all other DoD services). FAA Regulation 14 CFR Part 150 is the primary federal regulation guiding and controlling planning for aviation noise compatibility on and around commercial airports, and it explicitly requires the use of 65 dB DNL as a threshold for determining land use compatibility. Dense residential land use in locations exposed to 65 dB DNL or greater is generally considered incompatible. As this threshold of 65 dB DNL is used for determining a high potential for annoyance and because a large number of people will be exposed to noise that is associated with a high risk of annoyance in the case of this Proposed Action, we consider it significant.

Potential for impact to humans (both direct and perceived) is a major concern. As described in the Draft EIS and supporting appendices and Final EIS and supporting appendices, many dozens of studies have tried to determine annoyance attributable to airport or airfield operations through various metrics, and all methodologies have shortcomings that can produce differing results when non-noise conditions are changed.

The Navy and DoD, following the FAA's lead, have adopted the same 65 dB DNL threshold for determining incompatible land uses for AICUZ studies. An AICUZ shares a similar goal to the FAA Part 150 study, which informs local policy-makers of potential incompatible land uses. FICON (1992) and ISO 1996-1 (2016) predict approximately 12.5 percent and 25 percent of people exposed to 65 dB DNL to be highly annoyed, respectively.

Given the uncertainty in predicting the proportion of populations highly annoyed and the variability due to many factors, the Navy analyzed populations within the 65 dB DNL noise contour but also geographically depicted noise levels for the 55 dB and 60 dB DNL noise contour and analyzed

supplemental metrics (see Sections 3.2 and 4.2). The ISO suggest a different standard, but the FICON is the standard recognized by federal agencies that is being used in this analysis.

1.12.3 State of Washington Department of Health Public Comment (2017)

The Washington State Department of Health provided a public comment on the Draft EIS in letter format, providing the following three recommendations: 1) provide evidence to assure NOISEMAP model estimates are applicable for use at NAS Whidbey Island, 2) improve the description of the current state of science around noise and public health—specifically, nonauditory health effects, and 3) conduct a health impact analysis. An attachment summarized noise and health studies that the State of Washington Department of Health recommended be reviewed for potential inclusion in the Final EIS. The three recommendations from the State of Washington Department of Health are discussed in more detail below.

- **Comment/Recommendation No. 1: NOISEMAP model estimates' applicability to NAS Whidbey Island**
    - The comment states that the Draft EIS did not provide evidence that the NOISEMAP model accurately predicts noise exposure under conditions at NAS Whidbey Island but instead that the model has been validated for use at military airfields.
    - Each metric for exposure used for an outcome should be measured under appropriate conditions, and the model estimates need to be compared to these actual values to identify the model's predictive nature.
    - The Draft EIS should provide greater detail on how this modeling software has been updated to address ongoing findings within the health outcomes arena and include a discussion pertaining to the portion of the population highly annoyed by noise outside of the 65 dB DNL.
- **Comment/Recommendation No. 2: Improve description of the current state of science regarding nonauditory health effects**
    - The comment explains the methodology used in the Draft EIS to analyze annoyance, speech interference, sleep disturbance, and noise-induced hearing impairment. The comment takes issue with the Draft EIS use of "definitive causal and significant relationship" as the threshold for analyzing the potential for nonauditory health impacts due to aircraft noise and that research to date indicates that adverse health effects are initiated by chronic stress and/or sleep disturbance. The comment explains that if an odds ratio is determined to be statistically significant, then it should be discussed in terms of the percentage of the population affected. The comment further recommends including noise effects from non-aircraft noise sources in the analysis.
- **Comment/Recommendation No. 3: Conduct a health impact assessment**
    - The comment states that, based on recent literature reviews conducted by the State of Washington Department of Health, noise levels similar to those reported on Whidbey Island are associated with annoyance, sleep disturbance, cognitive impairment, and adverse cardiovascular outcomes, so a health impact assessment should be performed for susceptible groups of people on Whidbey Island.

Assumptions/Issues/Response

The NOISEMAP model is capable of accounting for varying terrain elevation, ground impedance, and weather conditions (temperature, relative humidity, and barometric pressure). The analysis performed in support of the Draft EIS utilized NAS Whidbey Island specific data for all of the above-mentioned parameters of NOISEMAP modeling to fully account for the specific environment associated with NAS Whidbey Island. All aircraft flight profiles were modeled with detailed altitude and power settings based on input from pilots and ATC personnel at NAS Whidbey Island. The result is an analysis that fully accounts for the specific nature of the conditions at NAS Whidbey Island rather than of a generic airfield.

The modeling software has been updated to NOISEMAP 7.3 (released March 2017), and one update included improvements to the sound propagation algorithms. This most recent update has increased capability to add single-event noise metrics such as number of events above a user-specified sound level to the modeling outputs. These resulting metric value outputs are then compared with thresholds identified in the scientific literature for impact analysis as appropriate. The software generally does not directly compute impacts.

In preparing the Final EIS, the Navy reviewed and considered the information and data contained in an additional 260 published articles, which include the documents recommended by the State of Washington Department of Health, the USEPA, and other public commenters. Studies with additional data not already included in the Draft EIS have been added to the discussion, as applicable. See Appendix A-8 for details on the literature review.

Although the EIS does not include a stand-alone Health Impact Assessment (HIA), by following the Navy's NEPA policy as prescribed in OPNAV M-5090.1, the EIS analysis meets and greatly exceeds the standards of HIAs. Furthermore, the EIS analysis satisfies the best practices identified in a HIA review, as described in "Minimum Elements and Practice Standards for Health Impact Assessments, Version 3, dated September 2014" (Bhatia et al., 2014). The EIS documents extensive public stakeholder engagement, with a transparent literature review on nonauditory health impacts; assesses the potential noise effects using best available science (data, methods, and metrics); assesses air quality and socioeconomic aspects of the Proposed Action, including vulnerable population groups (children, minorities, and the low-income population); and discusses reasonable and actionable noise mitigation actions as appropriate for a military airfield with a vital defense mission. For a detailed comparison of HIAs and this EIS, see Appendix I, Community Health and Learning Review.

1.12.4 Paul Schomer Public Comment on Aircraft Noise and Hearing Protection (2017)

Paul D. Schomer of Schomer and Associates, Inc., reviewed a table of acoustical measurement data, presumably taken at five locations adjacent to OLF Coupeville. Although the source of the data is not stated in the comment, the five locations, referred to as "positions" by Schomer, appear to coincide with those presented in the JGL Acoustics, Inc., report, *Whidbey Island Military Jet Noise Measurements* (JGL Acoustics, Inc. 2013). The data include the duration of time that sound levels measured exceeded specified thresholds, from 85 through 115 A-weighted decibels (dBA), in 3-dB increments. Schomer calculated the percentage of full dosage at each sound level from the total allowed for Navy workers and combined the result to estimate the percentage of maximum daily noise dosage. Schomer considered the source data to contain one "session" of aircraft training events and multiplied the results by two to simulate the effect of two flying sessions occurring in a single day. Schomer concludes that at Position 1, the dosage would reach 115 percent of Navy-allowable exposure. Although this calculation is

accurate, the reasoning behind it is flawed. The hearing protection time weighted average is for a daily exposure to noise. FCLP sessions will not be a daily occurrence at OLF Coupeville; therefore, this analysis does not account for non-consecutive periods where an individual's hearing would recover/rest. The analysis of these "loud" events and hearing is taken into account by the potential hearing loss analysis, which is provided in the EIS analyses (see Sections 3.2 and 4.2 for more details). Schomer also calculated the noise exposure at Positions 2, 3, and 4 to reach 45, 29, and 92 percent of maximum daily dosage, respectively. Position 5 was not analyzed. From the images provided in the JGL report, Position 1 appears to be located southeast of the OLF Coupeville runway, adjacent to a residential yard. The JGL report proposes that this location represents some of the greatest sound levels generated in the OLF area.

In response, occupational noise dosage guidelines are created to provide safe thresholds to protect workers over an 8-hour work day, with the assumption that this exposure would continue for their entire working life of 40 years. OLF Coupeville is not active every day, and while it is difficult to predict how many days the airfield will be utilized per year in the future, historically, from 2015 and 2017, there were between 34 and 36 active flying days per year. Additionally, people spend time inside and away from their residence, so it is very unlikely any individuals would exceed an excessive lifetime dosage. Just the reduction in sound levels achieved by building attenuation with windows open (an approximately 15 dB noise reduction) would result in only 2 percent of the daily allowable noise dosage for the same two aircraft flying sessions calculated by Schomer.

The EIS concludes that there would be significant noise impacts to surrounding areas due to loud, intrusive noise generated by Navy aircraft, and the number of occurrences of intrusive events would increase under the Proposed Action analyzed. This is discussed extensively within Sections 3.2 and 4.2 of the EIS where the DNL noise metric and several supplemental metrics are used to evaluate community annoyance and disturbances due to aircraft activity. Also, an analysis of potential hearing loss is used to evaluate the loud noise events with respect to an individual's hearing, making for a comprehensive noise analysis.

1.12.5 Michael Shuman's Report on the Economic Costs of the NAS Whidbey Island Complex (2017)

In 2017, Michael Shuman, an independent consultant hired by the Sustainable Economy Collective, authored a report entitled *Invisible Costs: The $122 Million Price Tag for the Naval Air Station Whidbey Island* and submitted it as a comment to the Draft EIS. In this report, Shuman contends that the positive economic impacts of the NAS Whidbey Island complex are overstated in both the Draft EIS and in other independent economic literature and that the true costs of the Navy's presence in Island County are much larger than acknowledged.

In this report, Shuman states that the Island County economy would be larger, more diverse, and more resilient in the absence of the NAS Whidbey Island complex. The author bases his analysis on the erroneous assumption that if the NAS Whidbey Island complex were to close, civilian employment in a different sector and/or economic activity in a different sector would automatically replace all current military employment and/or all current economic stimulus generated by military spending.

Shuman goes on to analyze the differences between the economic impact generated by military personnel and the economic impact generated by hypothetical civilian employees. The Navy concedes that military and civilian personnel do have different spending patterns and, therefore, do have different economic impacts. However, Shuman contends that the estimated positive economic impact of the

complex is over-inflated because the estimates do not consider the amount of economic impact that could have occurred if these military personnel were civilians. This analysis is speculative and is beyond the scope of this EIS. The EIS forecasts what the economic impacts of the Proposed Action would be, not what the economic impacts would be of switching the NAS Whidbey Island complex to a civilian use.

Estimates of the positive economic impact of the NAS Whidbey Island complex and the positive economic impact implementation of the Proposed Action would have on the regional economy described in the EIS were generated using input-output models. The U.S. Bureau of Economic Analysis' Regional Input-Output Model System was utilized to forecast the impact of the Proposed Action. An input-output model works by analyzing existing linkage between industries and utilizes past spending patterns within a regional economy to forecast how a change in final demand in one industry would change the final demand of another. Since the NAS Whidbey Island complex already has been operating in Island County, the industrial linkages and spending patterns associated with the Navy's presence are already incorporated within the model; therefore, the differences in spending patterns between civilian employees and military personnel have been accounted for in the EIS analysis.

In his report, Shuman also contends that military personnel generate significantly less local tax revenue than their civilian counterparts. He assumes that military personnel do most, if not all, of their spending on base and in tax-exempt, Navy-controlled commissaries. He also cites the fact that the federal property is exempt from local taxes. The Navy concedes that military personnel do spend a portion of their income at on-base, tax-exempt retailers and that the Navy does not pay local taxes. However, these topics are beyond the scope of this EIS. The EIS analyzes the economic and fiscal impacts of the Proposed Action, not the overall fiscal impact of the NAS Whidbey Island complex on local governments' tax revenues.

Section 4.10.2.1, Population Impacts, provides forecasts of the expected increase in local tax receipts that would occur under each alternative. These forecasts were developed by assuming that the additional personnel at the NAS Whidbey Island complex under each alternative would generate a similar per capita amount of tax revenue as current residents. Given the fact that no new federally controlled property will be purchased, no new Navy housing will be built, and that all additional personnel assigned to the NAS Whidbey Island complex will be housed in the local community under each of the action alternatives, the impact to property tax receipts from the additional personnel would be the same or slightly greater than the current per capita levels. Military personnel who reside off base would be required to pay property taxes either directly or indirectly through their mortgage or rental payments. Since the current per capita tax receipts include military personnel living in federally controlled, tax-exempt housing while all additional personnel would be housed off base, the current per capita levels would slightly undercount the expected increase in property tax receipts.

Per capita sales and use tax receipts are likely to be similar or slightly less than current per capita figures. While the Navy acknowledges that military spending patterns differ from civilian spending patterns, these differences have already been incorporated into measurements of current sales and use tax receipts. The proportion of military versus civilian households in affected communities is not expected to change substantially. Therefore, existing per capita sales and use tax receipts will already include military spending patterns.

Finally, a major objection that Shuman raises in his report is that the EIS does not monetize the externalities associated with the Proposed Action. Shuman feels that major external costs from the Proposed Action, including the health impacts of noise, the impacts to property values, potential

accidents, and the impact to tourism, have not been adequately considered and calculated. Shuman makes some attempts to quantify these impacts.

As required under NEPA, each of these topics has been analyzed and evaluated in Chapter 4 of this Final EIS. See Section 4.2 for a discussion of the health impacts of noise, see Section 4.10 for a discussion of impacts to property values, and see Section 4.3 for a discussion of accident potential. Additional text has been added to Section 4.10 during the Final EIS phase to describe and evaluate potential impacts to tourism.

It should be noted that NAS Whidbey Island contributes significantly to local economies in Island County and to a lesser degree in Skagit County. With approximately 10,000 employees, the installation is four times the size of the next-nearest employer in Island, San Juan, Skagit, and Whatcom Counties (Island County EDC, 2013). Based on a 2013 study by the Island County Economic Development Council, the military payroll for the installation contributed $726 million into Island County's economy and $15 million into Skagit's economy annually, and federal civilian payroll contributed $107 million annually. Furthermore, the number of veterans living near the installation is three times higher than the national average. In 2011, veterans in Island County and Skagit County received, respectively, $44 million and $28 million in retirement and disability payments. While not a comprehensive economic report, the 2013 Island County Economic Development Council study describes the direct and indirect benefits of wages, salaries, and benefits attributable to the installation. The study included medical insurance (Tricare) reimbursements to local health care providers, financial assistance to local schools, credit purchases, volunteers and donations to community service programs, service contracts to hire local residents with disabilities, conservation programs, and medical evacuation and rescue support to area residents and visitors.

As set forth in 40 CFR 1502.23, "For purposes of complying with [the National Environmental Policy Act], the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations." Given the purpose and need as defined in Section 1.3, qualitative considerations are primary. The EIS evaluates the impacts of each alternative within relevant resource areas, assesses the significance of those impacts, and provides an indication of the considerations relevant and important to a decision. The Navy is not making a decision on selection of alternatives based on financial criteria; rather, the Navy is weighing the relative impacts of each alternative to its mission, operational capabilities and efficiencies, training, personnel, and environmental and fiscal budget authorization factors. Accordingly, a cost-benefit analysis would not aid the decision and is beyond the scope of NEPA. Likewise, it is beyond the scope of this EIS to critique the selected topics discussed in Shuman's cost-benefit analysis and the methodologies he utilized to calculate the value of these impacts.

1.12.6 National Park Service Acoustical Monitoring Report for Ebey's Landing National Historical Reserve (2016)

Background. The Natural Sounds and Night Skies Division of the NPS collected acoustical data to measure aircraft noise at two locations within Ebey's Landing National Historical Reserve. Acoustic monitoring systems were installed and recorded data for 31 days on NPS property in Ebey's Landing National Historical Reserve; this monitoring process collected continuous audio and SPL readings for over 700 hours (the systems collected continuous audio data for 731 hours at EBLA001 and 741 hours at EBLA002). The report provides measured metrics as follows:

- **LA_{eq} (or L_{eq}) –** Equivalent Sound Level is the equivalent continuous SPL in dB that would contain the same sound energy as a time-varying sound. The "A" denotes A-weighted sound.
- **L_{dn} (also known as DNL) –** Day-Night Average Sound Level is a cumulative metric that accounts for all noise events in a 24-hour period, with a penalty of 10 dB given to operations taking place at night between 10:00 p.m. and 7:00 a.m.
- **%TA –** Percent Time Above is the percentage of total time that the A-weighted noise level is at or above a threshold.
- **Number of events above 70 dBA –** Number of events above metric gives the total number of events that exceed a noise-level threshold during a specified period of time.

The equipment consisted of Larson Davis 831 sound level meters, which conform to Class 1 standards and are appropriate for the measurements performed. As shown in Table 1 of the NPS report, over the course of over 700 hours of audio data collection, the total time audible for all military aircraft was approximately 10 hours and 25 minutes for EBLA001 and 28 hours and 56 minutes for EBLA002. This equates to approximately 1.4 percent and 3.9 percent of the audio data collection time, respectively. Therefore, the NPS report confirms that while the Navy aircraft operations are highly intermittent and are loud when aircraft are flying, there are long periods of time between noise events during which there is no military aircraft activity.

With respect to the noise events recorded, noise above 60 dBA occurred less than 1 percent of the time at either recording location (see Table 3 of the NPS report). Overall, the NPS report is consistent with the Navy's modeled noise data presented in the EIS. However, there are still some concerns with respect to the preparation of the NPS report.

Thresholds. To provide additional context on the relevance of the SPL thresholds, the NPS selected six SPL thresholds (35, 45, 52, 60, 70, and 130 dBA) for its analysis, which are presented in Table 2 and Table 6 of the NPS report. As discussed below, some of these thresholds may not be appropriate to support the report's conclusions:

- **35 dBA threshold (related to health):** The NPS selected the 35 dB level assuming that exposure to noise causes increases in blood pressure and heart rate in sleeping individuals. This 35 dBA "threshold" was derived by a study of noise at locations around four European airports with nighttime flights, specifically Athens (Greece), Malpensa (Italy), Arlanda (Sweden), and London Heathrow (UK) (Haralabidis et al., 2008). The Haralabidis study had a total of 4,861 participants, between the ages of 45 and 70, where samples were taken from representative populations exposed to various levels of aircraft and vehicular traffic noise around airports, based upon noise contours. Following the application of a series of nine exclusion criteria that could affect study results, the final sample of individuals consisted of 140 subjects across the four geographic locations.

  However, in examining the Haralabidis study, this threshold was inappropriately applied within the NPS report because it was simply the threshold for counting a noise "event" and not necessarily a threshold of any identified adverse effects. Since this threshold is so low, and in many cases well below ambient noise levels, it is not surprising that there were many events that exceeded this threshold. Further, to the extent the study found that noise affected blood pressure, the finding was limited to nighttime vehicular noise. In addition, Haralabidis found

that the increase in blood pressure associated with vehicular traffic noise events was less significant than the increase in blood pressure associated with a snoring partner.

- **35 dBA threshold (related to classroom learning):** The NPS report references the desired classroom background sound level as 35 dB (from the American National Standards Institute S12.60-2002). This is an indoor hourly Equivalent Sound Level (L_{eq}) that corresponds to an outdoor 8-hour L_{eq} of 60 dBA, or higher depending on building attenuation. Therefore, applying a desired indoor noise level of 35 dB to assess potential classroom learning interference to a measured outdoor noise is inappropriate. The EIS uses outdoor modeled noise levels and then applies building sound attenuation to reach an indoor sound level to assess classroom learning interference.
- **45 dBA threshold:** The 45 dBA threshold was selected by the NPS to evaluate the recommended maximum noise levels inside bedrooms and is derived from the WHO (2000). As stated within *Guidelines for Community Noise,* the scope of the WHO's effort is to "…derive guidelines for community noise is to consolidate actual scientific knowledge on the health impacts of community noise and to provide guidance to environmental health authorities and professionals trying to protect people from the harmful effects of noise in non-industrial environments" (WHO, 2000). Therefore, the 45 dBA interior nighttime level identified by NPS and in the WHO recommendation (WHO, 2000) is not a threshold for determining adverse health effects but a guideline or target to inform and for use by policy makers and governing authorities.

  The 45 dBA threshold identified for sleep disturbance is the indoor maximum A-weighted sound level (L_{max}), which corresponds to an outdoor L_{max} of 60 or 70 dBA for windows opened and closed, respectively. Therefore, applying a desired indoor bedroom noise level of 45 dB to assess potential sleep disturbance to a measured outdoor noise without proper sound attenuation is inappropriate.
- **70 dBA threshold:** The 70 dBA threshold identified as the risk for hearing impairment is a 24-hour L_{eq} level and only applies to the most sensitive 1 percent of the population, requires 40 years of daily exposure, and assumes the person spends all time outdoors to be exposed to all aircraft noise events. Berglund et al. (1999) states "…hearing impairment is not expected to occur at LA_{eq}, 8-hour levels of 75 dB(A) or below, even for prolonged occupational noise exposure."

Assumption/Methodological Errors

In reviewing the NPS report, there are several instances where incorrect assumptions or errors in methodological practices were made. These are briefly outlined individually below:

- The NPS study incorrectly identifies Growlers operating on the Low-Tactical Air Navigation flight tracks as the primary driver for the noise events at the western measurement site. The Low-Tactical Air Navigation track and flight profile is only applicable to the P-3/P-8 aircraft, and Growlers do not perform this type of operation. The Growler FCLP and interfacility operations cause the noise events in these areas.
- The NPS report presents a series of spectrograms from the two measurement locations (EBLA001 and EBLA002), which are graphs/plots showing sound levels over a given period of time. The presentation of spectrographs comparing a military jet to a commercial jet look drastically different primarily due to location and relative position of the source and receiver, not due to the type of sound source (i.e., military aircraft versus commercial aircraft).

Additionally, the commercial jet recording appears to be of a single event recorded over a 2-minute period, while the military spectrogram appears to depict five FCLP passes by a single aircraft over approximately a 5-minute period, which can be misleading to a reader.

- It appears that military and commercial events were identified solely by their "signature." This could be effective if first-person observation over a sufficient portion of the 31-day measurement duration was able to determine that commercial aircraft consistently used flight paths drastically different from military flight paths. However, no mention of this is made in the NPS report, so the accuracy of the categorization between military and commercial events is unclear.
- The NPS report measured a 31-day L_{dn} (DNL) of 73.6 and 54.7 dBA at EBLA001 and EBLA002, respectively (Table 9 of the NPS report). Aircraft activity varies throughout the year; therefore, 31 days of measurements cannot reliably be extrapolated to compute annual average daily DNL for the entire year, which is the federally approved metric presented in the EIS.

Results Comparison/Conclusions

The NPS report concludes that elevated levels of anthropogenic noise from aircraft exist in Ebey's Landing National Historical Reserve, with the highest occurrence at EBLA002, but at lower sound levels than at EBLA001. As outlined below, the EIS now provides a closer comparison of the results of the NPS report to those contained within the EIS:

- As a result of evaluating the NPS report and based on public comments received, the Navy added several POIs between the Draft EIS and the Final EIS to the noise analysis for supplemental metrics. Two of the POIs added to the noise analysis for the EIS were EBLA001 and EBLA002, which correspond to the NPS measurement points (identified as POIs P18 and P17, respectively, in the noise analysis and presented in Sections 3.2 and 4.2). A tabular comparison between the NPS report's measured data and the EIS's modeled data for the No Action Alternative is provided below (the No Action Alternative is used as the closest modeled alternative to the conditions when the NPS measurements were taken).

	SEL (in dB)		*L_{max} (in dB)*	
Point of Interest	***NPS***	***EIS***	***NPS***	***EIS***
NPS (EBLA001)/EIS (P18) – Reuble Farmstead	117	114	113	109
NPS (EBLA002)/EIS (P17) – Ferry House	96.6	96	85	85

- EBLA001 (P18) is nearly underneath some of the FCLP flight paths modeled for the No Action Alternative. With aircraft at low altitudes of 500 to 800 feet over EBLA001 (P18), small changes in the flight path location or altitude can have a relatively large effect on the sound levels on the ground at EBLA001 (P18). Since the noise study for the EIS models "average daily flight tracks," it essentially is analyzing the center of a handful of common flight paths. On the other hand, the NPS recorded all events over a 31-day period, which captured flights at the extremes of flight paths. Figure 10 of the NPS report shows a relatively high concentration of events around 108 dB L_{max} with events spread up to 113 dB and down to 102 dB. Therefore, it is possible that the NPS maximum recorded SEL and L_{max} were a result of a few aircraft events that deviated from

either the planned flight path or altitude, or both. Regardless, the differences between the NPS and the noise study of 3 to 4 dB are reasonable and consistent with each other.

- EBLA002 (P17) is further from the OLF flight paths, and therefore small differences in aircraft flight path contribute a much smaller difference in sound levels measured/computed at this POI. The fact that the results are nearly identical for EBLA002 (P17) agrees with the hypothesis that relatively small differences between the modeled average flight path (model in the noise study for the EIS) and the closest recorded flight event (measured by the NPS) can cause moderate differences in sound levels at locations on the ground near the flight path.

Overall, although the NPS's noise report differs in a variety of ways from the affected environment modeled for calendar year 2021 in this EIS, the results of the study appear consistent with the Navy's noise analyses. Furthermore, the NPS's monitoring report demonstrates that, while military aircraft are loud, military aircraft operations are highly intermittent, with long periods of no military aircraft activity. For example, the report demonstrates that audible aircraft noise (Table 7 of the NPS Report) above 60 dB (normal conversation levels) occurred less than 1 percent of the time during the study period. The Navy does not dispute the potential for Growler operations to produce noise vibrations; however, the current scientific studies of noise vibrations on buildings and, more specifically, historic properties are unique to the circumstances of the structures and noise produced. Although studies are limited, the available data suggest that sounds lasting more than 1 second above the sound level of 130 C-weighted decibels (dBC) are potentially damaging to structural components. A 2012 study by Kester and Czech considered Growler overflights at 1,000 feet above ground level in takeoff, cruise, and approach configuration power conditions and measured 115 dBC under takeoff conditions, up to 101 dBC when cruising, and 109 dBC at approach (with gear down). Using a very conservative estimate to add 6 dB to convert A-weighted measurements to C-weighted measurements, these levels are still much less than the 130 dBC criterion. Therefore, damage would not be expected. When comparing the highest recorded sound pressures reported in the NPS report within Ebey's Landing National Historical Reserve of 113 dBA and 85 dBA at Reuble Farmstead and Ferry House, and conservatively converting these A-weighted measurements to C-weighted measurements, it is unlikely that sound pressures of 119 dBC and 91 dBC would approach a sound level greater than or equal to 130 dBC.

1.12.7 Dahlgren Opinion Paper on the Public Health Impact of Aircraft Noise on Residents in the Vicinity of Whidbey Island (2015)

Background

A 2015 opinion paper developed by Dr. James Dahlgren, a toxicologist and "diplomat of the American Board of Internal Medicine, Occupational and Environmental Medicine; Toxicology," was reviewed as part of this EIS. Writing to support litigation on behalf of the Citizens of the Ebey's Reserve for a Healthy, Safe, & Peaceful Environment (*Citizens of the Ebey's Reserve for a Healthy, Safe, & Peaceful Environment* v. *U.S. Department of the Navy, et al.)*, Dahlgren provided his opinion regarding the impact on public health from aircraft noise on residents in the vicinity of NAS Whidbey Island. His opinion is based on review of general aircraft noise research and surveys from individuals expressing opinions regarding their health.

Assumptions/Methodological Errors

Review of the Dahlgren paper found incorrect application of noise metrics and conclusions drawn from poor assumptions or lacking of support in peer-reviewed scientific literature. These issues are outlined individually below:

Application of Noise Metrics and Sound Measurements:

- The first page presents a graphic "…that describes where jet aircraft noise compares with other loud noise," but this graphic contains health effect conditions alongside noise level. There is no source cited for the graphic, and it therefore cannot be substantiated or confirmed. The graphic does not identify the noise measure metric utilized, but it is suspected to be sound pressure level (SPL). However, many of the effects from which Dahlgren draws conclusions (i.e., sleep and communication disturbance, etc.) are not directly associated with the instantaneous SPL metric but instead with a number of nighttime events above a certain maximum level or equivalent sound level (L_{eq}).
- Dahlgren states on page 3, "The high-level noise exposure from a combat jet flying over a person has been shown in a scientific study to causes a significant increase in blood pressure and 'shock' to the body, with some individuals becoming acutely ill from the noise." His report also states, "If the noise rises and subsides quickly, such as occurs in this case when there are multiple jets flying one after the other, the blood pressures do not return to the pre-noise level and continues to climb higher and higher. This is shown in the graphic above from a published, peer-reviewed study of combat jet noise by Michalak and colleagues." The Navy reviewed the cited paper by Michalak et al., which studied residents aged 70 to 89 in a senior citizen's home who were exposed to noise via headphones, not actually exposed to jets as they flew overhead (Michalak et al., 1990). This Michalak report analyzes blood pressure increase over time while participants are exposed to four noise events and categorizes noise events into slow rise-time events (+7.5 dB/sec) and fast rise-time events (+75 dB/sec). The noise attributable to OLF operations generates a slow increase in sound level (rise-time rate) that varies from less than +1 dB/sec to approximately +5 dB/sec, so the slow rise-time events are more appropriate for comparison to aircraft activities at airfields such as at the NAS Whidbey Island complex. The participant responses in Michalak et al. to fast rise-time events are not applicable to the aircraft operations at OLF Coupeville; however, this is what Dahlgren uses for comparison. Dahlgren misapplied fast time-rise noise to an OLF airfield environment, and the "shock" and "startle" as described in Michalak et al. would not apply to the aircraft activity at the OLF. Therefore, the conclusions stated by Dahlgren are not accurate.
- Dahlgren also states on page 6, "The noise pattern at Central Whidbey Island has been measured and the noise levels are higher than the Michalak study. The noise measured at OLF Coupeville is illustrated by this graphic derived from JGL's study." The graphic presented is a generic "triangle" wave, which, to the Navy's knowledge, does not appear anywhere in the JGL study. However, this overly simplified wave is inconsistent with any acoustic measurements of aircraft overflights.
- Dahlgren states on page 10, "In 1978 the US EPA published a monograph on noise pollution and recommended the community noise levels not exceed 70 decibels to prevent hearing loss (3) (EPA 1978)." The L_{eq} of 70 dB described here as a universal threshold for the potential for hearing loss is misleading. The USEPA document presents 70 dB for sound that is heard

continuously throughout a 24-hour period. As aircraft activity at OLF Coupeville is intermittent in nature, it does not fit this description, and people do not spend all of their time outdoors, so there would be an additional level of sound attenuation applied when inside a building.

Scientific Support for Conclusions:

- Dahlgren states on page 2, "The longer-term, noise level exposure is strongly associated with permanent hypertension, heart attacks, anxiety, depression, gastrointestinal changes, and learning impairment. The association in epidemiological studies is not the only evidence that noise causes adverse health effects: there are animal and mechanistic studies that explain how noise pollution at the levels and circumstance present on Central Whidbey Island causes these health problems. The weight of the evidence provided shows that noise is causative of serious injuries." However, no specific references are cited to justify those statements (or to afford the Navy the ability to review), and Dahlgren's conclusionary statements are not supported by the vast body of science in this area (as documented in the EIS, contained within the health literature review conducted and provided in Sections 3.2 and 4.2, and Appendix A).
- Dahlgren continues on page 10, "A study of noise and whole body vibration (the Navy study indicates that whole body vibration, i.e., shaking of buildings, is caused by the Growler Jets) finds that the combination of noise and vibration is additive, causing more health problems than with noise alone (Yamanaka, K. et al. 1982)." Whole body vibration is a very specific term referring to vibrations transferred to the human body through direct contact, such as vibration experienced by a jackhammer operator or fork-lift operator. The Navy study referenced in Dahlgren's report is the 2012 Environmental Assessment, which analyzed the potential for windows to rattle due to low-frequency vibration but did not find evidence that the Growler would cause "whole body vibration" to humans (Navy, 2012). The Yamanaka study referenced in Dahlgren's report describes the results of self-administered health questionnaires combined with measurements of noise near the Shinkansen high speed "bullet train." Road noise has been found to have different effects than aircraft noise (Schreckenberg et al., 2010). Rail noise is associated with different effects than aircraft noise, due in part to vibrations generated directly through the rails that may vibrate nearby structures in a manner very different from aircraft overflights (Schreckenberg and Guski, 2015). Therefore, drawing conclusions from the Yamanaka study for rail noise and applying the concepts to aircraft noise is not appropriate and can be misleading.
- Dahlgren discusses noise-induced hearing loss on page 11 and then provides a sample audiogram without a referenced medical document or source. It is not clear whether that audiogram is an actual audiogram or simply a representation of what an audiogram of someone with noise-induced hearing loss would look like (or whether the individual has a history of exposure to high occupational noise levels); therefore, the Navy cannot review or substantiate Dahlgren's use of this information.
- Another misleading statement is made on page 12: "WHO quoted numerous high quality studies to document the deadly effect of noise on cardiovascular health." However, in reviewing the World Health Organization (WHO) monograph, it described statistically significant but minor effects after considering many studies, not all of which consistently agreed with each other.
- Dahlgren includes a number of references intended to show evidence that noise exposure causes hypertension in adults and children; however, this is not substantiated by the text. There

is a difference between association and causation. The latter is often very difficult to prove, as there are usually many variables that can contribute to an effect. For instance, the EIS examines the Haralabidis reference, which found increases in systolic blood pressure of 6.2 millimeters of mercury for aircraft events (about 6 percent) and an increase of 7.4 millimeters of mercury (about 7 percent) for other indoor noises, such as snoring: a snoring partner had similar impacts on blood pressure to aircraft events (Haralabidis et al., 2008). An association is what these references show, and further studies are necessary to identify which variables actually cause the adverse effect.

- Dahlgren states on page 17, "The non-auditory adverse health effects of sound include stomach ulcers and other GI problems (60). (Da Fonseca, 2006)." The graphic included is of rat stomach tissue, showing the direct impact of sound waves on the tissue. This is misleading because directing sound waves at stomach tissue in a rat is not comparable or representative to what the Whidbey Island residents experience. The referenced study also examined the effects of infrasound on gastric mucosal blood flow in rats. The method subjected rats to pure tones of 8, 16, and 32 Hertz at sound levels ranging from 80 dB to 130 dB. The sound spectra for the EA-18G presented in Figure 7-4 of the October 2012 Wyle noise study calculated SPLs between 70 and 78 dB for those low frequencies when the aircraft is only 1,000 feet from the observer (Kester and Czech, 2012). The rats in the study were exposed to sound levels with nearly 400 times more energy than the Growlers at NAS Whidbey Island create at those frequencies.
- Dahlgren claims on page 19, "The science quoted above indicates that there is solid uncontroverted evidence that health problems have occurred in the exposed population. If the flights continue more health damage will occur." This statement is misleading for two reasons: 1) none of the articles quoted studied the Whidbey Island residents, and 2) the document presented no supporting, peer-reviewed evidence.

Conclusions

The validity of the arguments and more general statements made in the report cannot be determined or authenticated. The document was not published in a peer-reviewed journal and does not meet the standard of inclusion in this EIS analysis. No physician was consulted to substantiate the health complaints, and Dahlgren reaches conclusions that are justified neither by the literature cited nor by data from Whidbey Island residents. In addition, Dahlgren commonly refers to the JGL Acoustics, Inc., report, *Whidbey Island Military Jet Noise Measurements* (JGL Acoustics, Inc., 2013) for information on noise measurements at OLF Coupeville. This report is discussed separately within this section.

As stated above, overall, this report relies on conclusions on individuals' health that are not based on reviews of the medical records of the individuals in question, some conclusions appear to have no supporting basis, and some conclusions are not consistent with, or are contrary to, the references cited in the report. The Navy has considered the best available science in the development of the Aircraft Noise Study for this EIS and provides a detailed discussion of its findings in Sections 3.2 and 4.2, as well as in Appendix A.

1.12.8 JGL Acoustics, Inc., Report on Whidbey Island Military Jet Noise Measurements (2013)

Background

The report summarizes measurements of noise from Navy jets operating at NAS Whidbey Island performed by Jerry G. Lilly of JGL Acoustics, Inc. (JGL). Noise measurements were conducted on a single

day (May 7, 2013) at five locations near OLF Coupeville, utilizing the Bruel & Kjaer models 2238 and 2270, which are Class 1 sound level meters that are appropriate for aircraft overflight noise measurements.

Assumptions and Errors

Review of the JGL report identified several methodological errors:

- JGL used a 1-second recording rate while the standard is 1/8 second; however, this discrepancy would not have a significant effect on the results.
- The author attempts to calculate L_{dn} (DNL) using less than one hour of measurements by utilizing the average SEL of events measured on May 7, 2013. The resulting DNL presented in Table 4 differs from the 2005 AICUZ, and the author identifies the shortcomings of this approach as follows: "There may be several reasons for this discrepancy, including aircraft type and percentage of nighttime flights, but the main reason has to do with the annual average. Because the jets do not fly every day, when you average the 'noisy' days with the 'quiet' days, the L_{dn} values become lower (diluted) (Lilly, 2013)." Additional causes for variability include runway direction flown, "night pattern" versus "day pattern" flight profiles, and the skill of the individual pilot. In order to more accurately estimate the DNL attributable to aircraft overflights, measurements must be taken over an extended period of time--on the order of weeks or several months--to gather a better picture of all types of flight operations and their variability over time.
- The author states, "In this analysis, I have assumed that all jets are the EA-18G aircraft and the number of military jet over-flights is 4,834 per year at Position 1 (bounces using either path 14 or 32) and 3,784 at Positions 2 through 4 (bounces using path 32), which I understand to be the actual number of over-flights from 2012 (Lilly, 2013)." The numbers 14 and 32 refer to runway heading direction, which would affect whether the aircraft are approaching the runway while flying past Position 1 or departing the runway. It is not clear from the report which way aircraft were operating during the measurements, but the sound levels may vary greatly between the two, depending upon the relative microphone location.
- The JGL report concludes that the maximum sound level (L_{max}) is well above the levels requiring hearing protection and is high enough to potentially result in permanent hearing loss. Although this would be true if an individual remained outdoors at that location continuously over decades and was exposed to all aircraft activity, the risk of permanent hearing loss is reduced dramatically when those conditions are not met. The EIS addresses the potential for hearing loss using a method similar to the USEPA's Guidelines for Noise Impact Analysis, and potential hearing loss is discussed in further detail in both Sections 3.2 and 4.2.

Results Comparison/Conclusions

The single-event sound levels presented in Table 1 of the JGL report appear to have been gathered accurately and align with those computed in the EIS. Highest maximum A-weighted level of 119 dBA at Position 1 found by JGL correlates well with the EIS modeled noise results for POI R06, which is in the same general area and had an estimated L_{max} of 117 dBA.

The author concludes that L_{dn} (DNL) is less than ideal to assess annoyance due to aircraft operations and that L_{max} and SEL would be more appropriate for OLF activity given the more sporadic operating frequency. As stated in Section 3.2, DNL is the federally accepted standard by the FAA and DoD for

assessing annoyance due to aircraft operations. However, the EIS goes beyond DNL contours to specific points of interest (POIs) to perform additional impact analysis (sleep disturbance, speech interference, classroom learning disruption, etc.) as well as providing SEL and L_{max} values ranked by event.

The JGL report determines that the 2005 AICUZ DNL results differ significantly from those calculated from the 2013 measurements, which is to be expected given the difficulty in estimating DNL that represents a year of events averaged over one day by measuring less than one hour of aircraft activity. The JGL report can serve as an accurate snapshot of typical noise levels in the OLF generated by aircraft overflights, but the methodology employed cannot accurately predict average daily DNL.

1.13 Clarification and Changes to the Environmental Impact Statement

Several updates were applied to the noise analysis between release of the Draft EIS and the Final EIS , which include:

1. updating the noise model using the latest NOISEMAP Version 7.3 software
2. applying refinements to certain flight profiles/aircraft operating assumptions
3. incorporating the effects of Precision Landing Mode (PLM), also known as Maritime Augmented Guidance with Integrated Controls for Carrier Approach and Recovery Precision Enabling Technologies (MAGIC CARPET), into the noise analysis
4. updating the number of pilots per squadron

These changes reduced the total number of operations and total number of FCLPs at the NAS Whidbey Island complex. Additionally, the Navy updated the analysis in the Final EIS to incorporate two additional FCLP distribution scenarios that may further mitigate noise impacts at Ault Field and OLF Coupeville. The Navy announced these changes to the Final EIS in a press release distributed September 22 , 2017.

For several years, the Navy has been developing technology to make landing on a carrier easier and safer. This effort has resulted in the Navy's projected Fleet-wide implementation of PLM technology (also known as MAGIC CARPET). PLM makes aircraft carrier approaches and landings more automated, resulting in a safer environment for Navy pilots. This technology will reduce the workload and training required for pilots to develop and maintain proficiency at carrier landings. PLM has proven so successful that the Navy has decided to accelerate its Fleet-wide implementation.

While it was premature to consider reductions in FCLP requirements for the NAS Whidbey Island complex in the Draft EIS, based upon subsequent successful testing and operational use of this technology, the Navy has included more complete information in the Final EIS analysis. Operational factors, including incorporation of PLM and a reduced number of pilots assigned to each squadron (two fewer pilots per carrier squadron), have been factored into the analysis and reduce FCLP requirements at the NAS Whidbey Island complex when compared to projections in the Draft EIS. The Final EIS has been updated to account for a 20-percent reduction in FCLP requirements related to incorporation of PLM into the Fleet, which leads to a reduction in the number of FCLP operations.

In addition to the three scenarios analyzed in the Draft EIS, two new scenarios have been included in the Final EIS to determine how the distribution of FCLP operations affect noise impacts at Ault Field and OLF Coupeville. The five scenarios analyzed in the Final EIS include:

- Scenario A (from Draft EIS): 20 percent of all FCLP conducted at Ault Field and 80 percent conducted at OLF Coupeville

- Scenario B (from Draft EIS): 50 percent of all FCLP conducted at Ault Field and 50 percent conducted at OLF Coupeville
- Scenario C (from Draft EIS): 80 percent of all FCLP conducted at Ault Field and 20 percent conducted at OLF Coupeville
- Scenario D (New for Final EIS): 30 percent of all FCLP conducted at Ault Field and 70 percent conducted at OLF Coupeville
- Scenario E (New for Final EIS): 70 percent of all FCLP conducted at Ault Field and 30 percent conducted at OLF Coupeville

Based on implementation of the new PLM technology as well as a reduced number of pilots per squadron applied to this Final EIS analysis, there was a commensurate reduction or change under certain resource areas. For example, between the Preferred Alternative (Alternative 2, Scenario A) in the Draft EIS and the Final EIS, there was a 13-percent reduction in total airfield operations and a 30-percent reduction in total FCLP operations. Additionally, the Final EIS includes 36 fewer personnel and 50 fewer dependents as compared to the Draft EIS under Alternative 2, Scenario A. Total acreage within the 65 dB DNL noise contour was reduced by 2 percent for the Preferred Alternative between the Draft EIS and the Final EIS, while total population within the 65 dB DNL noise contour was reduced by 2 percent. There was a 13-percent reduction in carbon dioxide equivalent (CO_2e) emissions between the Draft EIS and Final EIS under the Preferred Alternative. Table 1.13-1 presents a comparison of the Preferred Alternative between the Draft EIS and Final EIS and the commensurate reduction or change under certain resource areas. For more details on the selection of the Preferred Alternative, see Section 2.4, Preferred Alternative.

Table 1.13-1 Comparison of the Preferred Alternative (Alternative 2, Scenario A) from Draft EIS to Final EIS

	Draft EIS	*Final EIS*	*Change from Draft EIS to Final EIS*
Total Annual Airfield Operations at NAS Whidbey Island Complex	129,100	112,100	13% reduction
Total Annual FCLPs at NAS Whidbey Island Complex	42,000	29,600	30% reduction
Total Acreage within the 65 dB DNL Noise Contour	23,643	23,246	2% reduction
Total Population within the 65 dB DNL Noise Contour	12,684	12,487	2% reduction
Total Action-Related CO_2e Emission Increases (metric tons per year)	156,669	136,783	13% reduction
Growler Personnel	4,768	4,732	36 fewer personnel
Dependents	6,537	6,487	50 fewer dependents
Projected Increase in School-aged Children	341	324	17 fewer school-age children

Notes:

[1] Changes between the Draft EIS and Final EIS include a 20-percent reduction in FCLP training requirements related to incorporation of Precision Landing Mode (PLM) (aka MAGIC CARPET) technology into the Fleet and a reduction in the number of pilots assigned to each squadron (two fewer pilots per carrier squadron). While it was premature to consider reductions in FCLP requirements for the NAS Whidbey Island complex in the Draft EIS, based upon successful testing and operational use of this technology, the Navy has incorporated the use of PLM into the Final EIS analysis; therefore, the anticipated 20-percent reduction to FCLP requirements and the associated reduction in FCLP operations has been applied to the No Action Alternative as well as the action alternatives associated with the Proposed Action in the Final EIS.

Key:
dB = decibel
DNL = day-night average sound level
FCLP = Field Carrier Landing Practice
CO_2e = carbon dioxide equivalent
OLF = Outlying Landing Field Coupeville

Table 1.13-2 presents a detailed comparison of certain data by resource area to show the differences between the Draft EIS and Final EIS across all alternatives and scenarios related to implementation of PLM and a reduction in squadron personnel and associated dependents. Resource areas include annual aircraft operations and FCLPs, noise associated with aircraft operations, Growler personnel and dependents, education/school-aged children, greenhouse gases, and a comparison between the quantities presented in the Draft EIS and the quantities presented in the Final EIS.

Table 1.13-2 Comparison of Certain Resource Areas from Draft EIS to Final EIS[1]

	Scenario A (20/80)[2]	*Scenario B (50/50)*	*Scenario C (80/20)*	*Scenario D[3] (30/70)*	*Scenario E[3] (70/30)*
Total Annual Airfield Operations					
No Action Alternative	**DRAFT EIS:** Total: 88,600 Ault Field: 82,100 OLF Coupeville: 6,500				
	FINAL EIS: Total: 84,700 Ault Field: 78,200 OLF Coupeville: 6,500				
Action Alternative 1	**DRAFT EIS:** Total: 129,900 Ault Field: 94,400 OLF Coupeville: 35,500	**DRAFT EIS:** Total: 129,800 Ault Field: 107,500 OLF Coupeville: 22,300	**DRAFT EIS:** Total: 130,000 Ault Field: 120,800 OLF Coupeville: 9,200	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: Total: 112,600 Ault Field: 87,300 OLF Coupeville: 25,300	**FINAL EIS:** Total: 111,200 Ault Field: 95,300 OLF Coupeville: 15,900	**FINAL EIS:** Total: 109,800 Ault Field: 103,200 OLF Coupeville: 6,600	**FINAL EIS:** Total: 112,200 Ault Field: 90,000 OLF Coupeville: 22,200	**FINAL EIS:** Total: 110,100 Ault Field: 100,400 OLF Coupeville: 9,700
Action Alternative 2	**DRAFT EIS:** Total: 129,100 Ault Field: 95,100 OLF Coupeville: 34,000	**DRAFT EIS:** Total: 129,100 Ault Field: 107,700 OLF Coupeville: 21,400	**DRAFT EIS:** Total: 129,100 Ault Field: 120,300 OLF Coupeville: 8,800	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: Total: 112,100 Ault Field: 88,000 OLF Coupeville: 24,100	**FINAL EIS:** Total: 110,700 Ault Field: 95,500 OLF Coupeville: 15,200	**FINAL EIS:** Total: 109,500 Ault Field: 103,200 OLF Coupeville: 6,300	**FINAL EIS:** Total: 111,800 Ault Field: 90,600 OLF Coupeville: 21,200	**FINAL EIS:** Total: 110,000 Ault Field: 100,700 OLF Coupeville: 9,300
Action Alternative 3	**DRAFT EIS:** Total: 128,800 Ault Field: 94,900 OLF Coupeville: 33,900	**DRAFT EIS:** Total: 128,700 Ault Field: 107,400 OLF Coupeville: 21,300	**DRAFT EIS:** Total: 128,700 Ault Field: 120,000 OLF Coupeville: 8,700	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: Total: 111,800 Ault Field: 87,700 OLF Coupeville: 24,100	**FINAL EIS:** Total: 110,500 Ault Field: 95,300 OLF Coupeville: 15,200	**FINAL EIS:** Total: 109,200 Ault Field: 102,900 OLF Coupeville: 6,300	**FINAL EIS:** Total: 111,400 Ault Field: 90,300 OLF Coupeville: 21,100	**FINAL EIS:** Total: 109,600 Ault Field: 100,300 OLF Coupeville: 9,300

Table 1.13-2 Comparison of Certain Resource Areas from Draft EIS to Final EIS[1]

	Scenario A (20/80)[2]	*Scenario B (50/50)*	*Scenario C (80/20)*	*Scenario D[3] (30/70)*	*Scenario E[3] (70/30)*
Annual FCLP Operations					
No Action Alternative	**DRAFT EIS:** Total: 20,800 Ault Field: 14,700 OLF Coupeville: 6,100				
	FINAL EIS: Total: 17,400 Ault Field: 11,300 OLF Coupeville: 6,100				
Action Alternative 1	**DRAFT EIS:** Total: 43,800 Ault Field: 8,700 OLF Coupeville: 35,100	**DRAFT EIS:** Total: 43,800 Ault Field: 21,900 OLF Coupeville: 21,900	**DRAFT EIS:** Total: 43,900 Ault Field: 35,100 OLF Coupeville: 8,800	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: Total: 31,000 Ault Field: 6,100 OLF Coupeville: 24,900	**FINAL EIS:** Total: 31,000 Ault Field: 15,500 OLF Coupeville: 15,500	**FINAL EIS:** Total: 31,100 Ault Field: 24,900 OLF Coupeville: 6,200	**FINAL EIS:** Total: 31,000 Ault Field: 9,200 OLF Coupeville: 21,800	**FINAL EIS:** Total: 31,000 Ault Field: 21,700 OLF Coupeville: 9,300
Action Alternative 2	**DRAFT EIS:** Total: 42,000 Ault Field: 8,400 OLF Coupeville: 33,600	**DRAFT EIS:** Total: 42,000 Ault Field: 21,000 OLF Coupeville: 21,000	**DRAFT EIS:** Total: 42,000 Ault Field: 33,600 OLF Coupeville: 8,400	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: Total: 29,600 Ault Field: 5,900 OLF Coupeville: 23,700	**FINAL EIS:** Total: 29,600 Ault Field: 14,800 OLF Coupeville: 14,800	**FINAL EIS:** Total: 29,600 Ault Field: 23,700 OLF Coupeville: 5,900	**FINAL EIS:** Total: 29,700 Ault Field: 8,900 OLF Coupeville: 20,800	**FINAL EIS:** Total: 29,700 Ault Field: 20,800 OLF Coupeville: 8,900
Action Alternative 3	**DRAFT EIS:** Total: 41,900 Ault Field: 8,400 OLF Coupeville: 33,500	**DRAFT EIS:** Total: 41,900 Ault Field: 21,000 OLF Coupeville: 20,900	**DRAFT EIS:** Total: 41,800 Ault Field: 33,500 OLF Coupeville: 8,300	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: Total: 29,600 Ault Field: 5,900 OLF Coupeville: 23,700	**FINAL EIS:** Total: 29,600 Ault Field: 14,800 OLF Coupeville: 14,800	**FINAL EIS:** Total: 29,600 Ault Field: 23,700 OLF Coupeville: 5,900	**FINAL EIS:** Total: 29,600 Ault Field: 8,900 OLF Coupeville: 20,700	**FINAL EIS:** Total: 29,600 Ault Field: 20,700 OLF Coupeville: 8,900

Table 1.13-2 Comparison of Certain Resource Areas from Draft EIS to Final EIS[1]

	Scenario A (20/80)[2]	*Scenario B (50/50)*	*Scenario C (80/20)*	*Scenario D[3] (30/70)*	*Scenario E[3] (70/30)*
Noise Associated with Aircraft Operations: Number of Acres and Total Population within the 65 dB DNL Noise Contour					
No Action Alternative	**DRAFT EIS:** Total: • 19,933 acres • 11,033 people Ault Field: • 12,174 acres • 8,717 people OLF Coupeville: • 7,759 acres • 2,316 people				
	FINAL EIS: Total: • 19,821 acres • 11,171 people Ault Field: • 12,414 acres • 8,941 people OLF Coupeville: • 7,407 acres • 2,230 people				

Table 1.13-2 Comparison of Certain Resource Areas from Draft EIS to Final EIS[1]

	Scenario A (20/80)[2]	*Scenario B (50/50)*	*Scenario C (80/20)*	*Scenario D[3] (30/70)*	*Scenario E[3] (70/30)*
Action Alternative 1	**DRAFT EIS:** Total: • 23,810 acres • 12,791 people Ault Field: • 13,247 acres • 9,159 people OLF Coupeville: • 10,563 acres • 3,632 people	**DRAFT EIS:** Total: • 23,623 acres • 13,299 people Ault Field: • 13,780 acres • 10,044 people OLF Coupeville: • 9,843 acres • 3,255 people	**DRAFT EIS:** Total: • 22,968 acres • 13,547 people Ault Field: • 14,355 acres • 10,696 people OLF Coupeville: • 8,613 acres • 2,851 people	**DRAFT EIS:** • N/A	**DRAFT EIS:** • N/A
	FINAL EIS: Total: • 23,423 acres • 12,576 people Ault Field: • 13,226 acres • 9,110 people OLF Coupeville: • 10,197 acres • 3,466 people	**FINAL EIS:** Total: • 23,107 acres • 12,989 people Ault Field: • 13,616 acres • 9,855 people OLF Coupeville: • 9,491 acres • 3,134 people	**FINAL EIS:** Total: • 22,014 acres • 13,021 people Ault Field: • 13,922 acres • 10,253 people OLF Coupeville: • 8,092 acres • 2,768 people	**FINAL EIS:** Total: • 23,402 acres • 12,935 people Ault Field: • 13,395 acres • 9,562 people OLF Coupeville: • 10,007 acres • 3,373 people	**FINAL EIS:** Total: • 22,610 acres • 13,050 people Ault Field: • 13,818 acres • 10,119 people OLF Coupeville: • 8,792 acres • 2,931 people

Table 1.13-2 Comparison of Certain Resource Areas from Draft EIS to Final EIS[1]

	Scenario A (20/80)[2]	*Scenario B (50/50)*	*Scenario C (80/20)*	*Scenario D[3] (30/70)*	*Scenario E[3] (70/30)*
Action Alternative 2	**DRAFT EIS:** Total: • 23,643 acres • 12,684 people Ault Field: • 13,194 acres • 9,112 people OLF Coupeville: • 10,449 acres • 3,572 people	**DRAFT EIS:** Total: • 23,452 acres • 13,178 people Ault Field: • 13,717 acres • 9,978 people OLF Coupeville: • 9,735 acres • 3,200 people	**DRAFT EIS:** Total: • 22,748 acres • 13,330 people Ault Field: • 14,230 acres • 10,502 people OLF Coupeville: • 8,518 acres • 2,828 people	**DRAFT EIS:** • N/A	**DRAFT EIS:** • N/A
	FINAL EIS: Total: • 23,246 acres • 12,487 people Ault Field: • 13,164 acres • 9,078 people OLF Coupeville: • 10,082 acres • 3,409 people	**FINAL EIS:** Total: • 22,913 acres • 12,876 people Ault Field: • 13,535 acres • 9,781 people OLF Coupeville: • 9,378 acres • 3,095 people	**FINAL EIS:** Total: • 21,665 acres • 12,814 people Ault Field: • 13,788 acres • 10,095 people OLF Coupeville: • 7,877 acres • 2,719 people	**FINAL EIS:** Total: • 23,216 acres • 12,817 people Ault Field: • 13,329 acres • 9,498 people OLF Coupeville: • 9,887 acres • 3,319 people	**FINAL EIS:** Total: • 22,413 acres • 12,889 people Ault Field: • 13,707 acres • 9,978 people OLF Coupeville: • 8,706 acres • 2,911 people

Table 1.13-2 Comparison of Certain Resource Areas from Draft EIS to Final EIS[1]

	Scenario A (20/80)[2]	*Scenario B (50/50)*	*Scenario C (80/20)*	*Scenario D[3] (30/70)*	*Scenario E[3] (70/30)*
Action Alternative 3	**DRAFT EIS:** Total: • 23,708 acres • 12,716 people Ault Field: • 13,210 acres • 9,116 people OLF Coupeville: • 10,498 acres • 3,600 people	**DRAFT EIS:** Total: • 23,581 acres • 13,226 people Ault Field: • 13,773 acres • 9,989 people OLF Coupeville: • 9,808 acres • 3,237 people	**DRAFT EIS:** Total: • 22,811 acres • 13,325 people Ault Field: • 14,230 acres • 10,483 people OLF Coupeville: • 8,581 acres • 2,842 people	**DRAFT EIS:** • N/A	**DRAFT EIS:** • N/A
	FINAL EIS: Total: • 23,265 acres • 12,483 people Ault Field: • 13,133 acres • 9,050 people OLF Coupeville: • 10,132 acres • 3,433 people	**FINAL EIS:** Total: • 22,982 acres • 12,880 people Ault Field: • 13,535 acres • 9,762 people OLF Coupeville: • 9,447 acres • 3,118 people	**FINAL EIS:** Total: • 21,764 acres • 12,824 people Ault Field: • 13,766 acres • 10,077 people OLF Coupeville: • 7,998 acres • 2,747 people	**FINAL EIS:** Total: • 23,239 acres • 12,817 people Ault Field: • 13,300 acres • 9,474 people OLF Coupeville: • 9,939 acres • 3,343 people	**FINAL EIS:** Total: • 22,428 acres • 12,884 people Ault Field: • 13,669 acres • 9,960 people OLF Coupeville: • 8,759 acres • 2,924 people
Growler Personnel and Dependents					
No Action Alternative	**DRAFT EIS:** 4,104 personnel 5,627 dependents				
	FINAL EIS: 4,104 personnel 5,627 dependents				
Action Alternative 1	**DRAFT EIS:** 4,475 personnel 6,136 dependents	**DRAFT EIS:** 4,475 personnel 6,136 dependents	**DRAFT EIS:** 4,475 personnel 6,136 dependents	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: 4,439 personnel 6,086 dependents	**FINAL EIS:** 4,439 personnel 6,086 dependents	**FINAL EIS:** 4,439 personnel 6,086 dependents	**FINAL EIS:** 4,439 personnel 6,086 dependents	**FINAL EIS:** 4,439 personnel 6,086 dependents

Table 1.13-2 Comparison of Certain Resource Areas from Draft EIS to Final EIS[1]

	Scenario A (20/80)[2]	*Scenario B (50/50)*	*Scenario C (80/20)*	*Scenario D[3] (30/70)*	*Scenario E[3] (70/30)*
Action Alternative 2	**DRAFT EIS:** 4,768 personnel 6,537 dependents	**DRAFT EIS:** 4,768 personnel 6,537 dependents	**DRAFT EIS:** 4,768 personnel 6,537 dependents	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: 4,732 personnel 6,487 dependents	**FINAL EIS:** 4,732 personnel 6,487 dependents	**FINAL EIS:** 4,732 personnel 6,487 dependents	**FINAL EIS:** 4,732 personnel 6,487 dependents	**FINAL EIS:** 4,732 personnel 6,487 dependents
Action Alternative 3	**DRAFT EIS:** 4,481 personnel 6,144 dependents	**DRAFT EIS:** 4,481 personnel 6,144 dependents	**DRAFT EIS:** 4,481 personnel 6,144 dependents	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: 4,445 personnel 6,094 dependents	**FINAL EIS:** 4,445 personnel 6,094 dependents	**FINAL EIS:** 4,445 personnel 6,094 dependents	**FINAL EIS:** 4,445 personnel 6,094 dependents	**FINAL EIS:** 4,445 personnel 6,094 dependents
Education: Projected Number of School-aged Children Relocating to the Region as a Result of Changes in EA-18G Growler Personnel Loading at NAS Whidbey Island Compared to the No Action Alternative Levels					
No Action Alternative	**DRAFT EIS:** No additional students				
	FINAL EIS: No additional students				
Action Alternative 1	**DRAFT EIS:** 191 additional students				
	FINAL EIS: 173 additional students				
Action Alternative 2	**DRAFT EIS:** 341 additional students				
	FINAL EIS: 324 additional students				
Action Alternative 3	**DRAFT EIS:** 195 additional students				
	FINAL EIS: 176 additional students				
Greenhouse Gases: Total Action-Related Mobile CO_2e Emissions (metric tons per year)					
No Action Alternative	**DRAFT EIS:** 99,521				
	FINAL EIS: 96,954				
Action Alternative 1	**DRAFT EIS:** 156,214	**DRAFT EIS:** 147,057	**DRAFT EIS:** 138,385	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: 135,904	**FINAL EIS:** 128,422	**FINAL EIS:** 121,440	**FINAL EIS:** 133,543	**FINAL EIS:** 123,305

Table 1.13-2 Comparison of Certain Resource Areas from Draft EIS to Final EIS[1]

	Scenario A (20/80)[2]	*Scenario B (50/50)*	*Scenario C (80/20)*	*Scenario D[3] (30/70)*	*Scenario E[3] (70/30)*
Action Alternative 2	**DRAFT EIS:** 156,669	**DRAFT EIS:** 147,832	**DRAFT EIS:** 139,356	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: 136,783	**FINAL EIS:** 129,577	**FINAL EIS:** 122,878	**FINAL EIS:** 134,549	**FINAL EIS:** 125,151
Action Alternative 3	**DRAFT EIS:** 155,766	**DRAFT EIS:** 147,436	**DRAFT EIS:** 138,522	**DRAFT EIS:** N/A	**DRAFT EIS:** N/A
	FINAL EIS: 135,827	**FINAL EIS:** 129,174	**FINAL EIS:** 122,012	**FINAL EIS:** 133,601	**FINAL EIS:** 124,265

Notes:

1 Changes between the Draft EIS and Final EIS include a 20-percent reduction in FCLP operations related to incorporation of Precision Landing Mode (PLM) (aka MAGIC CARPET) technology into the Fleet and a reduction in the number of pilots assigned to each squadron (two fewer pilots per carrier squadron). While it was premature to consider reductions in FCLP requirements for the NAS Whidbey Island complex in the Draft EIS, based upon successful testing and operational use of this technology, the Navy has incorporated the use of PLM into the Final EIS analysis; therefore, the anticipated 20-percent reduction to FCLP requirements and the associated reduction in FCLP operations has been applied to the No Action Alternative as well as the action alternatives associated with the Proposed Action in the Final EIS.

2 All five scenarios are outlined in Section 2.3.3, where the split represents the percent of FCLPs conducted at Ault Field and OLF Coupeville, respectively (i.e., 20/80 FCLP split = 20 percent of FCLPs at Ault Field and 80 percent of FCLPs at OLF Coupeville).

3 Scenarios D and E were not analyzed in the Draft EIS. These two new scenarios were added to the Final EIS to further determine how the distribution of FCLP operations affects noise impacts at Ault Field and OLF Coupeville.

Key:

CO_2e = carbon dioxide equivalent
dB = decibel
DNL = day-night average sound level
FCLP = Field Carrier Landing Practice
N/A = Not applicable
OLF = Outlying Landing Field Coupeville

The Final EIS also addresses comments that were received during the public comment period that followed the release of the Draft EIS.

The Navy revised portions of the Final EIS in response to numerous comments received on the Draft EIS to provide technical edits or clarifications and include updated or additional information. While these revisions improve the accuracy and thoroughness of the analysis presented in the Draft EIS, they do not alter conclusions regarding the nature or magnitude of impacts to resources. Substantive revisions from the Draft EIS to the Final EIS are detailed here and include the following.

1.13.1 Executive Summary

- Portions of the Executive Summary were revised to reflect corresponding changes in the main text of the EIS.

1.13.2 Chapter 1: Purpose and Need for the Proposed Action

- Section 1.8, Agency Participation and Intergovernmental Coordination, was updated to include the latest consultation information.
- Section 1.10 (Public Participation: Draft EIS Review) was added to summarize the Draft EIS review, comment, and public outreach process. This section includes information on the Draft EIS notifications, public meetings, and public comments, along with a summary of comment topics and commenters.
- Section 1.11 (Public Participation: Comment Themes) was added to discuss specific comment themes and identify recurring topics raised across the three public comment periods (Scoping 2013, Scoping 2014, and Draft EIS Release). This section details each comment theme and discusses how the comment theme was addressed within the EIS.
- Section 1.12 (Other Reports) replaced the discussion in Section 1.9.3 of the Draft EIS on third-party documents suggested to the Navy for review in the EIS analysis. Since the release of the Draft EIS, the list of third-party reports and studies grew from three to eight documents. The following is a list of the eight documents that have been reviewed by the Navy for consideration in this analysis:
    - San Juan County Jet Aircraft Noise Reporting (2014 to present)
    - Sandford Fidell Public Comment on the “Significance” Criteria Used for Noise Impacts (2017)
    - State of Washington Department of Health Public Comment (2017)
    - Paul Schomer Public Comment on Aircraft Noise and Hearing Protection (2017)
    - Michael Shuman’s Report on the Economic Costs of the NAS Whidbey Island Complex (2017)
    - National Park Service Acoustical Monitoring Report for Ebey’s Landing National Historical Reserve (2016)
    - Dahlgren Opinion Paper on the Public Health Impact of Aircraft Noise on Residents in the Vicinity of Whidbey Island (2015)
    - JGL Acoustics, Inc., report, *Whidbey Island Military Jet Noise Measurements* (2013)

1.13.3 Chapter 2: Proposed Action and Alternatives

- Section 2.2 was revised to clarify the requirement for a suitable FCLP airfield within 50 nautical miles of Ault Field.
- Section 2.4, Alternatives Considered but Not Carried Forward for Further Analysis, was expanded to clarify reasons for eliminating some alternatives from further consideration in this EIS.

1.13.4 Chapter 3: Affected Environment and Chapter 4: Environmental Consequences

Chapters 3 and 4 are complementary and discuss existing and potential future conditions, respectively, for specific resource areas that may be impacted by the Proposed Action. Revisions to Chapters 3 and 4 are noted below by resource topic in the order in which they appear in the EIS.

1.13.4.1 Airspace and Airfield Operations

- An FCLP pattern altitude figure (Figure 3.1-6) was added for clarification of FCLP pattern altitudes.
- Updates were made to Sections 3.1.2 and 4.1.2 to add clarifying information related to flight altitudes in Military Operations Areas.
- Updates were made to Sections 3.1.2.1, 4.1.2.1, 4.1.3.1, and 4.1.4.1 to add clarifying information related to OLF Coupeville pattern altitudes and expected runway utilization.
- Figure 4.1-1 was updated to align with text.
- Sections 3.1.2.1 and 4.1.2.1 were revised to better explain why the length of the OLF Coupeville runway does not represent a safety risk.

1.13.4.2 Noise Associated with Aircraft Operations

- Several updates were applied to the noise modeling/analysis between release of the Draft EIS and the Final EIS, which include 1) updating the noise model using the latest version of NOISEMAP (Version 7.3); 2) applying refinements to certain flight profiles/aircraft operating assumptions based upon third-party review; 3) incorporating the effects of PLM (aka MAGIC CARPET) into the noise analysis; and 4) adjusting the number of pilots per squadron. These changes are discussed individually below:
    - The noise analysis was updated using the latest NOISEMAP Version 7.3 model. The most recent approved version of NOISEMAP (released March 2017) involves the inclusion of supplemental metrics in the noise-calculation module, in addition to general code fixes for the program.
    - Refinements were applied to certain flight profiles/aircraft operating assumptions based upon input from a third-party review of the noise modeling inputs.
    - The updated noise modeling for the Final EIS incorporates the implementation of PLM technology at NAS Whidbey Island by the time the Proposed Action is implemented; therefore, the anticipated 20-percent reduction to FCLP requirements and the associated reduction in FCLP operations have been applied to the No Action Alternative as well as the action alternatives associated with the Proposed Action.

  - The noise analysis also updated the number of pilots per squadron for the Fleet carrier squadrons.
- Section 3.2.2, Noise Metrics and Modeling, was revised as follows:
  - Additional text was added to explain why NOISEMAP represents the most current model and best available science.
  - A discussion was added to better explain why modeling represents best available science in predicting future noise impacts, particularly for aircraft that are not yet operating, and for noise impacts over large areas.
  - Discussion was added on how the noise model is validated and the specific inputs added into the model to make it site specific (i.e., terrain).
  - Information was added to clarify that the aircraft noise model is based upon actual measurements.
  - A discussion was added to help demonstrate how modeling results are consistent with noise levels reported by other sources, including on-site measurements.
  - Discussion was expanded on thresholds for supplemental metrics.
- Noise mitigation discussion was expanded to include:
  - Updates were made to Section 3.2.4.1, under Existing Noise Mitigation, as well as to Section 4.2.4, Noise Mitigation. The updated information references Appendix H (new), which summarizes the Navy's noise-mitigation efforts.
  - Sections 3.2.4 and 4.2.6 were revised to discuss implementation of PLM Fleet-wide and how PLM has been incorporated into the analysis. The modeled noise contours and supplemental noise data in Sections 3.2 and 4.2 have been updated to incorporate PLM.
  - Noise abatement text was updated with the information from the latest NAS Whidbey Island Air Operations Manual.
- As discussed further in Section 3.2.2.1, 65 dB DNL is the established federal standard for determining potential for high annoyance. This level has been identified in both the Federal Aviation Administration's (FAA's) Part 150 Program and the Department of Defense's (DoD's) Air Installations Compatible Use Zones (AICUZ) Program (including the individual Air Force and Navy programs) as a threshold for land use recommendations. Consistent with this guidance, 65 dB DNL is used to show areas with potential for high annoyance in this analysis. However, aircraft noise does occur outside the 65 dB DNL contour, and individuals may have different reactions to it. In order to more fully reflect the noise environment, the Draft EIS included noise contours of 60 dB DNL, as well as detailed noise analysis for specific points of interest. In response to public comments, the Navy has expanded the analysis in the Final EIS to show geographic areas subject to greater than 55 dB DNL.
- For the Supplemental Noise Metrics/Discussion, Sections 3.2 and 4.2, new POIs were added based on public comments. A total of 18 additional POIs were added, for a total of 48 analyzed. In addition, the supplemental metrics modeled at certain POIs were expanded; for instance, all POIs now have outdoor speech interference metrics applied to them.
- Discussion was expanded to clarify that noise was studied outside of the DNL contours per supplemental metrics and POIs.

- The single-event noise analysis was modified to include a table separate from the SEL/L_{max} metrics in order to present the number of events above a threshold of 80 dB L_{max}, 90 dB L_{max}, and 100 dB L_{max}.
- The Probability of Awakening metric was revised as part of the update from NOISEMAP 7.2 to 7.3.
- Discussion of health impacts related to noise (i.e., potential hearing loss) was expanded.
- Nonauditory health effects were discussed as follows:
    - The Navy expanded its nonauditory health effects literature review and bibliography to include journals and research recommended by the Washington State Department of Health, the USEPA, and others in their comments on the Draft EIS. Details of this review are located in Appendix A of the Aircraft Noise Study (Appendix A of this EIS) and summarized in Section 3.2.3.7.
    - A new technical appendix (Appendix I, Community Health and Learning Review) was created to provide details on Island County health factors, local school district test scores and graduation rates, and a comparison of topics discussed in health impact assessments and this EIS.

1.13.4.3 Public Health and Safety

- Sections 3.3.2.1 and 4.3.2.1 were updated to add clarifying information related to the Growler's safety record.
- Accident Potential Zone (APZ) analysis was updated based on changes in FCLP requirements.
- The number of children living within the noise contours was updated.
- Additional locations where children congregate was added to the analysis.

1.13.4.4 Air Quality

- A general discussion was provided in Section 3.4.1 of other potential aircraft emissions, and more details and clarified information were provided on specific hazardous air pollutants. Discussions on proper procedures and specific conditions for dispensing chaff and dumping fuel were clarified.
- A verified description of test cell use at NAS Whidbey Island test cell facilities was provided in Section 3.4.2.
- Section 4.4.2.2 was revised to include additional quantified operations-related emissions from stationary sources for Alternative 1.
- Discussion was added of potential changes to the existing Title V permit related to temporary construction equipment, boilers, and heaters that require review for possible permit changes. No new stationary sources are expected as part of the Proposed Action.
- Section 4.4.2.1.3 was revised to include mobile operations-related emissions for Alternative 1.
- Qualitative discussions were added to refine the analysis regarding chaff, fuel dumping, and hazardous air pollutants. Also added was a discussion of emissions dispersion.
- Conclusion statements were added to demonstrate compliance with National Ambient Air Quality Standards in Sections 4.4.2, 4.4.3, and 4.4.4.

1.13.4.5 Land Use

- Section 3.5.2.2 was revised to include additional details on the AICUZ program, including municipality involvement, responsibilities of the municipality, and enforcement of the AICUZ program.
- Additional details were added to Section 3.5 on potentially incompatible land uses, current land uses within APZs, and noise disclosures for each municipality.
- A new subsection was added within Sections 3.5 and 4.5, Community Character.
- Sections 3.5 and 4.5 were revised under Recreation and Wilderness to include discussion of one wilderness area within the study area, Williamson Rocks, part of the San Juan Islands National Wildlife Reserve. Information and analysis related to the following activities was also added:
    - Camping at Deception Pass State Park, Rhododendron Park, and Fort Casey State Park
    - Recreation outside of designated parks/recreation areas, including community centers and gathering places
    - School sporting events and sports at local ball fields
- Additional studies on the impacts of aircraft noise on recreational experiences that were referenced in comments on the Draft EIS were reviewed and incorporated into Section 4.5.2.2.
- The discussion of impacts to the management of Ebey's Landing National Historical Reserve was revised based on information provided by the National Park Service in comments on the Draft EIS.
- The analysis in Section 4.5.2.2 was updated to include the potential impact of noise events over 50 dB to recreation and outdoor areas within the study area. The Draft EIS analyzed the potential impact of noise events over 65 dB.

1.13.4.6 Cultural Resources

- Section 3.6.1.1 was revised to include information regarding the Section 106 process.
- Section 3.6.1.2 was revised to include additional text on selecting the area of potential effect. This revision included clarification on areas included within the area of potential effect and areas not included in the analysis.
- Figure 3.6-1 was revised regarding the boundaries of the Ebey's Landing National Historical Reserve and the Central Whidbey Island Historic District. This figure also was revised to include the aggregate Area of Potential Effects (APE) based on the revised noise contours and the inclusion of Ebey's Landing National Historical Reserve.
- Section 3.6.2 was revised to account for additional study conducted by the Navy for its Section 106 evaluations. It includes additional text to describe the demolition of some of the buildings located at Ault Field. Text also was added in the OLF Coupeville and Island County sections, to reference Section 106 consultation and the evaluation of the historic properties (individually listed and contributing resources) that are located within Ebey's Landing National Historical Reserve.
- Text was added to consider landscape areas within Ebey's Landing National Historical Reserve.

- Additional background discussion was added for OLF Coupeville and the community of Coupeville.
- Section 106 consultation updates were included to account for the additional correspondence that has occurred since the Draft EIS.
- Section 4.6.2.1.1 was revised to include a discussion of Building 115.

1.13.4.7 American Indian Traditional Resources

- No substantive changes were made to these sections.

1.13.4.8 Biological Resources

- This section was updated based on the outcome of agency consultation for biological resources.
- Additional literature was reviewed and included, and text was revised where applicable.
- Sections 3.8 and 4.8 were revised to include information related to population density and estimates, breeding habitat, and noise and wildlife-strike impacts consistent with the U.S. Fish and Wildlife Service consultation.
- Section 4.8 was revised to include the following:
    - Text on sensory disturbance, other types of anthropogenic disturbance, and discussion of potential impacts to fitness and population effects was added.
    - Pigeon guillemot research was added.
    - Research results were added from a study on aircraft impacts to shorebirds and from a military noise (i.e., helicopter) study on the Mexican spotted owl.
    - Content was added related to aircraft disturbance on ungulates, small mammals, and frogs.
- Text regarding sensory disturbances “habituated” and “no significance” was edited to reflect that the Proposed Action may have impacts on wildlife (including various species groups).
- For marine species, text was revised related to acoustic impacts consistent with agency consultations.

1.13.4.9 Water Resources

- No substantive revisions were made to Water Resources.

1.13.4.10 Socioeconomics

- The population discussion was revised to include transient (summertime vacationer and seasonal worker) populations.
- Growler personnel and distribution of Navy households data were updated.
- Under Economy, Employment, and Income, discussion was added on quality of life/community character, in coordination with land use analysis.
- Clarification was added for how the analysis defines the economic study area.
- The economic analysis was expanded to include discussion of agriculture output and employment for Island County, including a discussion of seasonal workers for Island County.
- A discussion was included of impacts on property values from expanding the APZs.

- Housing affordability and housing availability in the affected region were discussed in greater detail in Sections 3.10 and 4.10.
- Revisions were made to Sections 3.10 and 4.10 to add a discussion of tourism, including data on hotel stays/employment.

1.13.4.11 Environmental Justice

- Sections 3.11 and 4.11 were updated with regrouped census data to include Hispanic/Latino populations within minority populations in accordance with recommendations on best practices for environmental justice analysis from the Federal Interagency Working Group on Environmental Justice.
- Impacts to seasonal workers and population flux (summer) were added.

1.13.4.12 Transportation

- Section 3.12 was revised to include discussion of seasonal variations in traffic on Whidbey Island, information on the condition of Deception Pass Bridge, and the county emergency evacuation plans.
- Updates were made to Section 4.12.2.1 to include additional information on proposed traffic circles and indirect impacts to public transit.
- Sections 3.12.2.2 and 4.12.2.1 were updated with discussion of traffic safety.
- Sections 3.12 and 4.12 were updated with the most recent traffic counts available from the Washington Department of Transportation.
- Impacts were revised based on changes in Growler personnel and distribution of Navy households.

1.13.4.13 Infrastructure

- Impacts were revised based on changes in Growler personnel and distribution of Navy households.

1.13.4.14 Geological Resources

- Geologic hazards information related to liquefaction, landslides, and earthquakes in Section 3.14 was updated with data on recent seismic activity.

1.13.4.15 Hazardous Materials and Wastes

- Text related to perflourinated chemicals, water well testing, and Navy public outreach efforts was updated with current information.

1.13.4.16 Climate Change and Greenhouse Gases

- Washington State updates were added to Section 3.16.1.3, State Polices Related to Climate Change.
- Section 4.16.2.2, Changes in Greenhouse Gas Emissions for Alternative 1, was updated.
- Clarification was provided on other greenhouse gas emissions (nitrous oxide, methane).

- Quantification and discussion was provided of average emissions per aircraft, per year, and comparison to car emissions.
- The State of Washington's greenhouse gas reduction goals were addressed under the Climate Leadership Act.

1.13.5 Chapter 5: Cumulative

- A discussion on segmentation was added to Section 5.2.
- Table 5-1 was updated with new projects, revised project dates (as appropriate), and additional details.
- Cumulative impacts and indirect effects were updated for Air Quality, Land Use, Biological Resources, and Socioeconomics.

1.13.6 Chapter 6: Other Considerations Required by NEPA

- No substantive revisions were made to Chapter 6.

1.13.7 Chapter 7: References

- To support revised and additional chapter text, a number of additional references have been added.

1.13.8 Appendices

- Appendix A, Aircraft Noise Study (Revised): this appendix was revised, as follows, per changes applied to the noise analysis between release of the Draft EIS and the Final EIS: 1) updating the noise model using the latest version of NOISEMAP (Version 7.3, released March 2017); 2) applying refinements to certain flight profiles/aircraft operating assumptions based upon third-party review of noise modeling inputs; 3) including the 20-percent reduction to FCLP requirements and the associated reduction in FCLP operations that have been applied to the No Action Alternative from the implementation of PLM across the No Action Alternative as well as the action alternatives associated with the Proposed Action; and 4) updating the number of pilots per squadron
- Appendix B, Air Emissions Calculations (Updated): stationary and mobile operations-related emissions data were updated for Alternative 1.
- Appendix C, Federal and State Agency Coordination (Updated): correspondence included for biological, coastal zone resource, and cultural consultations was updated to reflect new correspondence sent and received.
- Appendix D, Transportation Trip Generation Data (No Change): no substantive changes were made.
- Appendix E, Land Use Data, High-tempo FCLP Year (Updated): data were updated per changes made to the noise analysis.
- Appendix F, Environmental Justice Data, High-tempo FCLP Year (Updated): data were updated per changes made to the noise analysis.
- Appendix G, Civilian Airfield Analysis (No Change): no substantive changes were made to this analysis.

- Appendix H, Noise Mitigation (New): this new appendix was compiled to provide an overview of the noise mitigation measures at the NAS Whidbey Island complex.
- Appendix I, Community Health and Learning Review (New): this new appendix includes Island County health factors, local school district test scores and graduation rates, and a comparison of Health Impact Assessments and EISs.
- Appendix J, 2013 Scoping Information (New): this appendix was added to include public outreach items published during the 2013 scoping effort. Items include press releases, newspaper notifications, and public meeting materials.
- Appendix K, 2014 Scoping Information (New): this new appendix was added to include public outreach items published during the 2014 scoping effort. Items include press releases, newspaper notifications, and public meeting materials.
- Appendix L, 2016 Draft EIS Public Information Meetings (New): this new appendix was added to include public outreach items published during the 2016 Draft EIS release effort. Items include press releases, newspaper notifications, and public meeting materials.
- Appendix M, Draft EIS Public Commenting and Response Key (New): this new appendix includes a summary of the public commenting review process, coded comment responses, and an index of all comments with their assigned responses.

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