Impacts of Growler Field Carrier Landing Practice: Oak Harbor vs. Coupeville

April 2023

What is This About?

The Navy in its expanded Growler EIS and elsewhere has stated that if it moved any Growler field carrier landing (FCLP) operations back from Coupeville to Oak Harbor it would impact a greater number of people. Superficially it may seem that way because there are more homes and people living in Oak Harbor than in the OLF area, and hence, the noise impacts across all of Oak Harbor would be greater. That simple presumption, however, does not hold up for the areas most severely impacted by FCLP practice, as we examine below.

How So?

Because FCLPs are conducted at very low altitude (300 to 800 feet above ground) and because jet noise dissipates (attenuates) much more quickly as jet altitude is reduced (EIS Table 3.1-2)[1], the area 0.5 miles area on either side of the FCLP jet path is the most severely impacted, which we called the *extreme impact area*. The area within the 1.0 mile of the flight path is affected but less acutely. However, the actual FCLP flight paths are frequently wider than those depicted in the EIS (pages A4-15, A4-16, and A4-30), so quite frequently the 1.0-mile area becomes a wild card more impacted by noise than it would if the depicted flight path was consistently followed. We called the 0.5-mile and 1.0-mile areas combined the *impact areas*. Because the areas outside the 1-mile area are much less affected by FCLP operations, the greatest impacts are within the 1-mile area. Hence, we examine those impacted populations at Oak Harbor and Coupeville.

We conducted and report here a runway-by-runway analysis of the populations within each of the six runway impact areas (note, per Navy usage, we apply the term *runway* to mean the entire FCLP loop from bounce to bounce). The population impacts, however, cannot be compared among runways by comparing just the number of overflights on the FCLP path because the population size within the impact areas (0.5 or 1.0 miles) varies among runways. That is, each runway's individual population needs to be part of any metric used to compare

[1] A Growler at a speed of 400 kn and a power setting of 84.5 flying at 200 feet AGL will measure 116 dB on the ground directly under the jet, but will be 77 dB at a mile on either side of the track, or a dissipation of 29 dB or 8-fold less loud (EIS Table 3.1-2). The same jet at 1000 feet will be 104 dB under the jet but will be 84 dB at a mile on either side, or 2-fold less loud. Because FCLPs are conducted within that elevation range, the area beyond a mile from the flight path is not extreme and continues to dissipate rapidly.

population-level impacts of overflights. Table 1 presents the populations for both the 0.5-mile and 1.0-mile areas of each runway, which we derived via EJScreen, an environmental screening and mapping tool developed by the Environmental Protection Agency based on Census Bureau data (https://www.epa.gov/ejscreen).

Table 1. U.S. Census population data for 2020 by Ault Field and OLF runways (largest to smallest) for 0.5-mile and 1.0-mile areas.

Runway	Population[1]	
	0.5-Mile Area	1.0-Mile Area
Ault Field		
Ault 32	**10,430**	**16,924**
Ault 25	**4646**	**5700**
Ault 14	**1861**	**2468**
Ault 07	**1307**	**3608**
OLF		
OLF 32	**2042**	**4607**
OLF 14	**2026**	**2796**

[1] Derived via EJScreen, an environmental screening and mapping tool developed by the Environmental Protection Agency based on U.S. Census Bureau data (https://www.epa.gov/ejscreen).

Associated with each runway is a different population of noise-affected residents. Although the noise at a given runway can be heard at varying levels at other runway impact areas, the noise is extreme only for the area within that 0.5-mile and 1.0-mile zone around the runway's unique FCLP loop or flight path.

Because there are four separate impact areas at Ault versus just two at the OLF, the impacts at the Oak Harbor runways cannot be meaningfully totaled to compare against a total of the OLF runways. The proper comparison is achieved by averaging the impacts for the four Ault Field runways to juxtapose against the average of the two OLF runways.

We note that a relatively small portion of impact areas overlap and residences within those overlap areas therefore experience more overflights and impacts. We did not attempt to

quantify that overlap number simply because it was not relevant, i.e., it does not confound the analysis because each population is an independent unit.

What the Population Impact Index Revealed

We computed the population impact index for each of the six runways under two FCLP allocation scenarios:

1. ***ROD Scenario****:* Current FCLP allocations for Ault and OLF under the Record of Decision (ROD) (Appendix Table A.1 and A.3).
2. ***Reversed ROD Scenario****:* Hypothetical reversal of the ROD such that the allocation for OLF becomes the allocation for Ault and visa versa (Appendix Table A.2 and A.4).

To examine the impacts for each runway, we developed an impact metric that combined runway population size and number of annual FCLP overflights, i.e., the ratio of the number of overflights to the population in the impact area. The quotient, annual overflights per person in the impact area, was then multiplied by 100 to provide the *impact index*[2]. The impact index for each runway was then averaged across the four Ault Field runways, the two OLF runways, and all six runways to facilitate comparing the two scenarios (ROD vs. Reversed ROD).

Those comparisons unsurprisingly show that under the Reverse ROD Scenario the impacts go up at Oak Harbor and down at Coupeville. The opposite occurs under the ROD Scenario (Tables 2 and 3). That was to be expected. However, the question is whether the overall impacts for the combined populations of Oak Harbor and Coupeville would increase under the Reverse ROD, as argued by the Navy.

Our findings do not support that argument. The overall impact indexes for Oak Harbor and Coupeville combined reveal a very little difference between the ROD and Reversed ROD scenarios. The overall indexes the 0.5-mile area actually went down a bit from 118 for the ROD Scenario to 108 for the Reverse ROD (Table 2). The difference was negligible for the 1.0-mile area: 64.3 for the ROD Scenario versus 65.4 for the Reverse ROD (Table 3). Hence, the noise

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[2] The multiplier was applied only to make the index comparisons easier to discern the differences among runways; it did not alter those differences.

impacts experienced by the Whidbey Island residents severely impacted by FCLPs would be very nearly the same or slightly less under the Reverse ROD Scenario.

Given that Ault Runway #32 is so infrequently used for FCLPs, some may considered it to be a bit of an outlier. So, we removed it and calculated the overall averages for the three other Ault runways (i.e., #07, #14, #25) and the two OLF runways. Here too the scenario differences are very small, showing, if anything, a slight reduction in the overall impact index under the Reverse ROD (see Appendix Tables A.1 to A.4).

A few other impact differences are relevant. The impact index for the most impacted OLF runway is far greater under the ROD Scenario than it is for the most impacted Ault runway under the Reverse ROD Scenario. That is, for the 1.0-mile area, the impact index for most impacted OLF runway under the ROD Scenario is 180.1 (OLF #32) versus 144.0 for Ault (#14) under the Reverse ROD. For the 0.5-mile area the impact index for most impacted OLF runway is 406.2 (OLF #32) under the ROD Scenario versus just 191.0 for Ault (#14) under the Reversed ROD Scenario. In other words, the ROD Scenario inflicts more severe impacts on the major OLF runway than does the Reverse ROD on the major Ault runway.

Given the above, the Navy's conclusion that Whidbey Island impacts would be exacerbated if the ROD was vacated or reversed is simply not correct. Instead, we conclude that reversing the FCLP allocations—i.e., 5900 at OLF and 23,700 at Ault—would not alter the impacts on the overall population, or if anything, would effect a small decrease in the impacts.

In addition, reversing the FCLP allocations would reduce cancellations so frequently necessary at OLF due to weather conditions. That is, the Navy claims it is so very critical that wind direction for FCLP practice mimic carrier landing conditions, where landings and takeoffs are always into the wind. It even lists wind direction as a criterion for siting an OLF. At the OLF wind direction is predominantly out of the west from April to September, i.e., crossing the runway. That means that important training requisite is frequently not met at the OLF or, alternatively, that wind direction forces cancellation of planned practice—e.g., 39% of the scheduled OLF practice days were canceled in 2022. Many of those cancellations would not be necessary at Ault Field, where runway #25 would facilitate landings and takeoffs into the westerly wind.

Table 2. Impact indexes for the 0.5-mile impact areas at Ault Field and OLF runways for the ROD Scenario and the Reversed ROD Scenario, arranged from highest to lowest impact.

0.5-Mile Impact Area			
ROD Scenario		**Reversed ROD Scenario**	
Runway	**Impact Index[1]**	**Runway**	**Impact Index[1]**
OLF 32	406.2	Ault 14	191.0
OLF 14	175.5	Ault 07	190.4
Ault 14	47.6	Ault 25	125.0
Ault 07	47.4	OLF 32	98.9
Ault 25	31.1	OLF 14	43.7
Ault 32	0.2	Ault 32	1.1
Runway Averages			
OLF only	290.9	OLF only	71.3
			Difference: -219.6
Ault only	31.6	Ault only	127.2
			Difference: +95.6
Combined	**118.0**	**Combined**	**108.5**
			Difference: -9.5

[1] See Appendix Tables A.1 and A.2 for further details.

Table 3. Impact indexes for the 1.0-mile impact areas at Ault Field and OLF runways for the ROD Scenario and the Reversed ROD Scenario, arranged from highest to lowest impact.

1.0-Mile Impact Area			
ROD Scenario		**Reversed ROD Scenario**	
Runway	**Impact Index[1]**	**Runway**	**Impact Index[1]**
OLF 32	180.1	Ault 14	144.0
OLF 14	127.1	Ault 25	101.9
Ault 14	35.9	Ault 07	69.0
Ault 25	25.4	OLF 32	44.8
Ault 07	17.2	OLF 14	31.7
Ault 32	0.1	Ault 32	7.0
Runway Averages			
OLF only	153.6	OLF only	38.3
			Difference: -115.3
Ault only	19.7	Ault only	79.1
			Difference: +59.4
Combined	**64.3**	**Combined**	**65.4**
			Difference: +1.1

[1] See Appendix Table A.3 and A.4 for further details.

Navy's Fallback

While the above upends Navy's impacts argument, their fallback is that it could not move Growler FCLPs back to Ault Field because it would create air space issues with other aircraft stationed at Naval Air Station Whidbey Island (NASWI). Assuming it does complicate runway use, increased complexity does not necessarily mean it is not doable.

Freedom of Information Act data from the Navy reveals that in 2019 the Navy conducted 19,424 FCLP operations at the OLF, while during the first half of 2019 it conducted nearly 11,000 FCLP operations at Ault Field (note: COER did not receive information for the second half of the year, but surely that 11,000 was significantly increased). So, it does appear that the Reverse ROD scenario is not as impossible as the Navy may suggest.

Furthermore, Table 4 not only depicts the lopsided transition of FCLPs from Ault to the OLF, it also raises question about the EIS statement that flight simulators and "magic carpet" would reduce the number of FCLPs pilots need to perform.

Pre-ROD there were 82 Growlers stationed at NASWI conducting 17,400 FCLP operations at Ault and the OLF, or 212 FCLP operations per Growler (212 ÷ 82). Post ROD, however, there were 118 Growlers stationed at NASWI conducting 28,600 FCLP operations, or 242 operations per Growler, directly the opposite of what the Navy rhetoric seemed to promise. So something is amiss here.

But, if the pre-ROD 212 operations/Growler were applied to the 118 Growlers post-ROD, then the total FCLP operations would be 25,016 or nearly 3600 fewer operations. That is not a trivial number, and if applied, it would certainly reduce the impacts on Whidbey residents.

Table 4. Pre and post ROD operations data derived from EIS Tables 2.3-1 and 2.3-2.

Airfield	Pre-ROD	Post-ROD[1]	Difference	Percent Change over No Action
Total of All Aircraft Operations				
Ault Field	78,200	88,000	+9,800	11% increase
OLF	6,500	24,100	+ 17,600	271% increase
Total FCLP Ops by Growlers				
Ault Field	11,300	5,900	- 5,400	48% decrease
OLF	6,100	23,700	+ 17,600	288% increase

[1] The number of Growlers stationed at NASWI increased 33% from 82 to 118.

Appendix A:
Calculation of Impact Indexes

Appendix Table A.1. Impact Indexes under the ROD Scenario for Ault Field and the Outlying Field (OLF) for the area 0.5 miles on either side of the Growler FCLP flight path. (ROD is Record of Decision)

FCLP Usage % by Runway[1]		**(A) 2020 Census Population[2]**	**(B) Number of Overflights per Year**	**(C) Overflights per person per year (B)/(A)**	**Impact Index[3] (C)(100)**
Ault Field [Total airfield FCLP operations from FEIS = 5900 (Table 2.3-2)]					
#07	21%	1307	620	0.474	47.4
#14	30%	1861	885	0.476	47.6
#25	49%	4646	1446	0.311	31.1
#32	1%	10,430	30	0.002	0.2
Average for 4 Ault Runways					31.6
Outlying Field [Total airfield FCLP operations from FEIS = 23,700 (Table 2.3-2)]					
#14	30%	2026	3555	1.755	175.5
#32	70%	2042	8295	4.062	406.2
Average for 2 OLF Runways					290.9
Ault + Outlying Field [Total airfield FCLP operations from FEIS = 29,600 (Table 2.3-2)]					
Average for All 6 Runways					**118.0**
All minus Ault #32					**141.6**

[1] The percentages in the EIS (Tables A3-2 and A3-3, pages A3-5 and A3-6) were separate for night and day and had to be averaged into one for day/night. That totaled to over 100% so reduced to not overstate Column B; they may therefore be off a point or so, but not significant.

[2] Population counts by runway were from Appendix Table A.1.

[3] The ratio of overflights to population is multiplied by 100 to simply make the comparative differences in the impact indexes easier to judge.

Appendix Table A.2. Impact Indexes under the Reverse ROD Scenario for Ault Field and the Outlying Field (OLF) for the area 0.5 miles on either side of the Growler FCLP flight path. (ROD is Record of Decision)

FCLP Usage% by Runway[1]		**(A) 2020 Census Population[2]**	**(B) Number of Overflights per Year**	**(C) Overflights per person per year (B)/(A)**	**Impact Index[3] (C)(100)**
Ault Field [Total airfield FCLP operations from FEIS = 23,700 (Table 2.3-2)]					
#07	21%	1307	2489	1.904	190.4
#14	30%	1861	3555	1.910	191.0
#25	49%	4646	5807	1.250	125.0
#32	1%	10,430	119	0.011	1.1
Average for 4 Ault Runways					127.2
Outlying Field [Total airfield FCLP operations from FEIS = 5900 (Table 2.3-2)]					
#14	30%	2026	885	0.437	43.7
#32	70%	2042	2065	0.989	98.9
Average for 2 OLF Runways					71.3
Ault + Outlying Field [Total airfield FCLP operations from FEIS = 29,600 (Table 2.3-2)]					
Average for All 6 Runways					**108.5**
All Runways minus Ault #32					**130.2**

[1] The percentages in the EIS (Tables A3-2 and A3-3, pages A3-5 and A3-6) were separate for night and day and had to be averaged into one for day/night. That totaled to over 100% so reduced to not overstate Column B; they may therefore be off a point or so, but not significant.

[2] Population counts by runway were from Appendix Table A.1.

[3] The ratio of overflights to population is multiplied by 100 to simply make the comparative differences in the impact indexes easier to judge.

Appendix Table A.3. Impact Indexes under the ROD Scenario for Ault Field and the Outlying Field (OLF) for the area 1.0 miles on either side of the Growler FCLP flight path. (ROD is Record of Decision)

FCLP Usage % by Runway[1]		**(A) 2020 Census Population[2]**	**(B) Number of Overflights per Year**	**(C) Overflights per person per year (B)/(A)**	**Impact Index[3] (C)(100)**
Ault Field [Total airfield FCLP operations from FEIS = 5900 (Table 2.3-2)]					
#07	21%	3608	620	0.172	17.2
#14	30%	2468	885	0.359	35.9
#25	49%	5700	1446	0.254	25.4
#32	1%	16,924	30	0.001	0.1
Average for 4 Ault Runways					19.7
Outlying Field [Total airfield FCLP operations from FEIS = 23,700 (Table 2.3-2)]					
#14	30%	2796	3555	1.271	127.1
#32	70%	4607	8295	1.801	180.1
Average for 2 OLF Runways					153.6
Ault + Outlying Field [Total airfield FCLP operations from FEIS = 29,600 (Table 2.3-2)]					
Average for All 6 Runways					**64.3**
All Runways minus Ault #32					**77.2**

[1] The percentages in the EIS (Tables A3-2 and A3-3, pages A3-5 and A3-6) were separate for night and day and had to be averaged into one for day/night. That totaled to over 100% so reduced to not overstate Column B; they may therefore be off a point or so, but not significant.

[2] Population counts by runway were from Appendix Table A.1.

[3] The ratio of overflights to population is multiplied by 100 to simply make the comparative differences in the impact indexes easier to judge.

Appendix Table A.4. Impact Indexes under the Reverse ROD Scenario for Ault Field and the Outlying Field (OLF) for the area 1.0 miles on either side of the Growler FCLP flight path. (ROD is Record of Decision)

FCLP Usage% by Runway[1]		**(A) 2020 Census Population[2]**	**(B) Number of Overflights per Year**	**(C) Overflights per person per year (B)/(A)**	**Impact Index[3] (C)(100)**
Ault Field [Total airfield FCLP operations from FEIS = 23,700 (Table 2.3-2)]					
#07	21%	3608	2489	0.690	69.0
#14	30%	2468	3555	1.440	144.0
#25	49%	5700	5807	1.019	101.9
#32	1%	16,924	119	0.007	7
Average for 4 Ault Runways					79.1
Outlying Field [Total airfield FCLP operations from FEIS = 5900 (Table 2.3-2)]					
#14	30%	2796	885	0.317	31.7
#32	70%	4607	2065	0.448	44.8
Average for 2 OLF Runways					38.3
Ault + Outlying Field [Total airfield FCLP operations from FEIS = 29,600 (Table 2.3-2)]					
Average for All 6 Runways					**65.4**
All Runways minus Ault #32					**78.5**

[1] The percentages in the EIS (Tables A3-2 and A3-3, pages A3-5 and A3-6) were separate for night and day and had to be averaged into one for day/night. That totaled to over 100% so reduced to not overstate Column B; they may therefore be off a point or so, but not significant.

[2] Population counts by runway were from Appendix Table A.1.

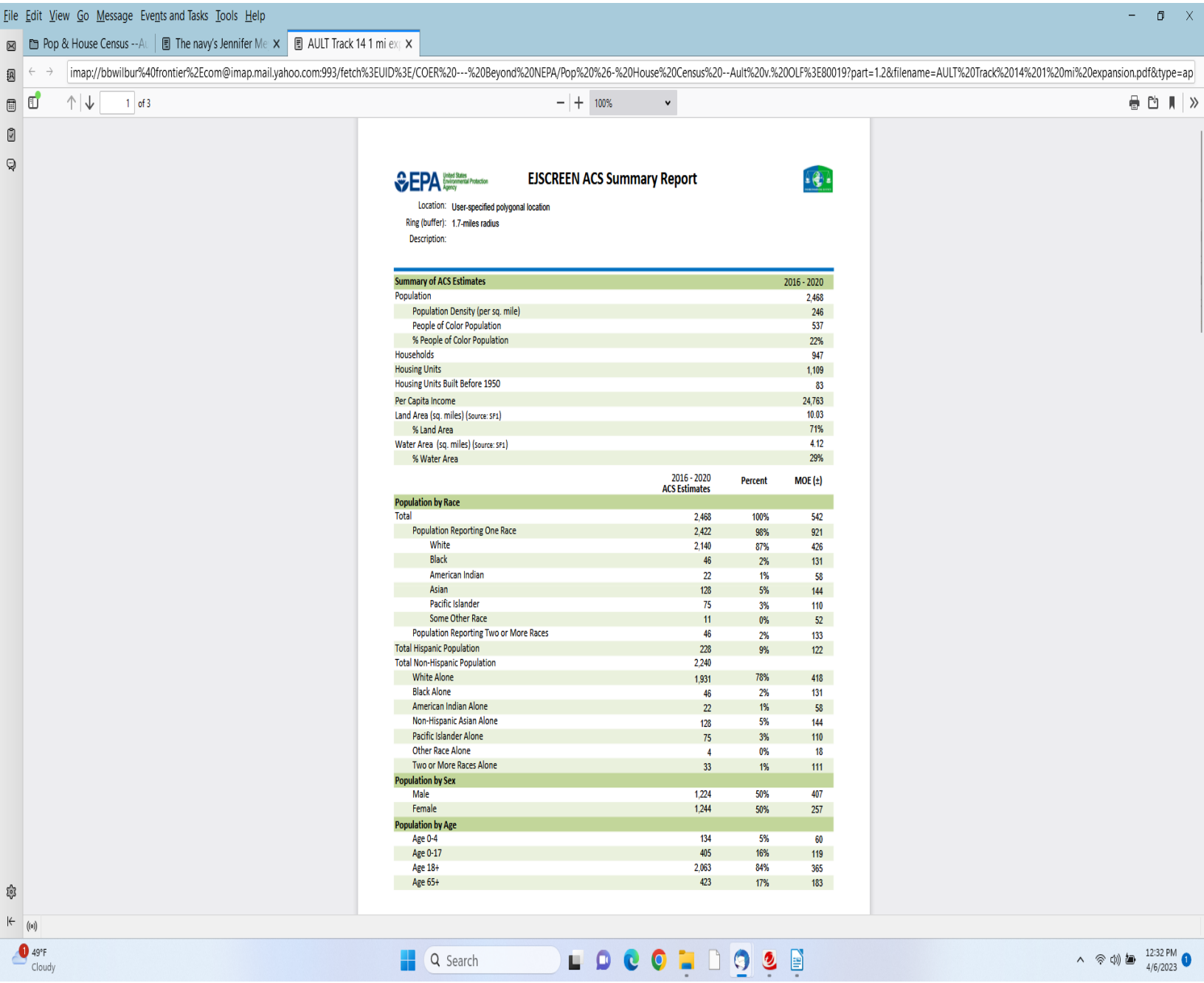
[3] The ratio of overflights to population is multiplied by 100 to simply make the comparative differences in the impact indexes easier to judge.

Appendix B:

Example of Derived Population Reports and Maps via EJScreen

Appendix Figure B.1. EJScreen map of severe Growler noise impact area (green highlight) 0.5 miles on both sides of the field carrier landing practice loop for Runway #14 at Ault Field, Navy Air Station Whidbey Island.

Appendix Table B.1. EJScreen report for severe Growler noise impact area shown in Appendix Figure B.1.



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EPA United States Environmental Protection Agency

EJSCREEN ACS Summary Report

Location: User-specified polygonal location
Ring (buffer): 1.7-miles radius
Description:

Summary of ACS Estimates	2016 - 2020
Population	2,468
Population Density (per sq. mile)	246
People of Color Population	537
% People of Color Population	22%
Households	947
Housing Units	1,109
Housing Units Built Before 1950	83
Per Capita Income	24,763
Land Area (sq. miles) (Source: SF1)	10.03
% Land Area	71%
Water Area (sq. miles) (Source: SF1)	4.12
% Water Area	29%

	2016 - 2020 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	2,468	100%	542
Population Reporting One Race	2,422	98%	921
White	2,140	87%	426
Black	46	2%	131
American Indian	22	1%	58
Asian	128	5%	144
Pacific Islander	75	3%	110
Some Other Race	11	0%	52
Population Reporting Two or More Races	46	2%	133
Total Hispanic Population	228	9%	122
Total Non-Hispanic Population	2,240		
White Alone	1,931	78%	418
Black Alone	46	2%	131
American Indian Alone	22	1%	58
Non-Hispanic Asian Alone	128	5%	144
Pacific Islander Alone	75	3%	110
Other Race Alone	4	0%	18
Two or More Races Alone	33	1%	111
Population by Sex			
Male	1,224	50%	407
Female	1,244	50%	257
Population by Age			
Age 0-4	134	5%	60
Age 0-17	405	16%	119
Age 18+	2,063	84%	365
Age 65+	423	17%	183

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Search

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