



# JACKSON HOLE AIRPORT

## Southern Departure Procedure Study

SEPTEMBER 2022

Mead&Hunt



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Southern Departure Procedure Study  
Chair: Valerie Brown

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*The Jackson Hole  
Airport Board*

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# SOUTHERN DEPARTURE PROCEDURE STUDY

## INTRODUCTION/BACKGROUND

Jackson Hole Airport is the only commercial service airport in the U.S. that is located entirely within a national park. It operates in Grand Teton National Park (Park) under a Use Agreement (lease) with the Department of Interior/National Park Service. In addition to being inside the Park, the Airport's surroundings include residential development south and west of the Airport, the National Elk Refuge and Bridger-Teton National Forest south and east of the Airport, and the Town of Jackson to the south/southeast. The Airport is a gateway to both Grand Teton and Yellowstone National Parks.

As background to the information contained in this report, it is critical to understand the very limited role played by the Jackson Hole Airport Board and the other stakeholders participating in this study in the outcome of this effort. In short summary, only the FAA and pilot-in-command control how planes and helicopters operate in the air. The FAA is solely responsible for adopting and implementing approach and departure procedures, including the southern departure procedure that is the subject of this study. While the Airport Board initiated this study and convened the Task Force described below, it ultimately will be up to the FAA to use the information generated in this study and determine how to proceed.

*See **Appendix A** for discussion of applicable laws and legal principles, noise-related requirements, and additional noise abatement measures the Airport Board has adopted, promoted, and considered.*

## History of the Left Turn

Jackson Hole Airport has adopted a Noise Abatement Plan and Rule to help reduce noise intrusion to both Grand Teton National Park and residences south of the Airport. To avoid overflying residences, one of the elements of the Noise Abatement Plan recommends a voluntary turn to the left, of approximate 45-degrees, when departing south. This is a visual flight rules (VFR) departure and is not an instrument departure, meaning it may only be flown during clear weather conditions. This noise abatement procedure is still contained in the Airport's Noise Abatement Plan.

However, as a result of air traffic automation and flight department practices to improve standardization and safety, this turn was effectively discontinued as a standard practice roughly twenty years ago. Today, air traffic and airline/corporate flight departments expect an aircraft to depart on a published instrument (IFR) procedure. IFR procedures are repeatable, predictable, and standardized with the aircraft's flight management system controlling flight.

The voluntary left turn was originally requested at a time when automation was a smaller part of flight controls than it is today. At that time, pilots frequently used visual maneuvers independent of automation.

As automation improved, it could control flight with more precision and efficiency, and with complete contingency planning throughout the flight.

While the shift towards automation has occurred, safety standards have continuously been updated. Now pilots' operating procedures, training, and automation functions all encourage pilots to allow the automation to control the precise path, with the pilot in an active monitoring role. The pilot can always intervene, but it is not encouraged. If the pilot deviates from the published procedure, the workload on the pilot increases as they must then define and input a new course back to the published route, and the automation system can't provide the same level of support.

To summarize, the recommendation for a left turn remains a viable option for aircraft that are flying under purely "visual flight rules," but it was never an automated or IFR procedure. Pilots who fly the VFR left turn on departure recognize they are accepting an individual level of responsibility, and without the full support of automation that is current available to enhance safety.

## Proposal of New Approach and Departure Procedures

In 2018, the Jackson Hole Airport Board conducted a study under 14 CFR Part 150 (Part 150 Study), in an effort to mitigate noise in the Park and other surrounding land areas. The Part 150 Study recommended several noise abatement measures; among them were:

- (a) A new "curvilinear" precision instrument approach from the north which would route aircraft farther to the east and over US Highway 26/89, rather than over the Snake River, and
- (b) A precision instrument departure with an immediate left turn to the south, designed to reduce noise intrusion on residents south of the Airport. The envisioned departure procedure was similar to the visual departure procedure which is requested in the Airport's Noise Abatement Plan. (2018 Jackson Hole Airport CFR Part 150 Study)

The FAA then began to determine the feasibility of designing new approach and departure procedures for the Airport based on the recommendations contained in the Part 150 Study. The FAA designed a curvilinear approach from the north which meets the recommendation of the Part 150 Study. This north approach was implemented in December 2021.

However, the recommendation of the Part 150 Study to design a 45-degree left-turn instrument departure, similar to the historic visual flight-rule path, was determined to not meet current FAA criteria and was, therefore, rejected. The FAA instead developed another instrument procedure for southern departure that it called the KICNE ONE.

*The KICNE ONE Letter from the FAA can be found in **Appendix B**.*

This procedure would result in a slight east turn, a turn back to the west, and then rejoin the existing flight path out of the valley. This procedure would put departing aircraft over newly affected residents, potentially increasing noise intrusion to them. When it became clear that the KICNE ONE could result in potential new noise effects, the Airport requested that the FAA pause implementation of the KICNE ONE departure until public comment had been solicited and considered.

In response to the Airport request, the FAA stated that it would pause the development of the KICNE ONE procedure to allow the Airport time to work with the community to “propose a procedure design to the FAA which meets criteria and is acceptable to all parties.” (FAA, September 2021)

## The Task Force

To facilitate community input on noise issues related to a southern departure procedure, the Airport Board established the Southern Departure Procedure Task Force (Task Force) and retained a team of consultants (Project Team). Their mission was to evaluate the KICNE ONE and a range of alternative southern departure procedure concepts (Concepts), to determine if any of them could result in a safe and efficient procedure that reduced noise on noise sensitive uses (defined as residences, public lands, and other sensitive resources), and was, therefore, acceptable to all parties. Valerie Brown, an Airport Board member, acted as Chairwoman for the Task Force.

*Task Force members are listed in Appendix C.*

The Task Force was comprised of community members that represented public lands and communities around the Airport, including the National Park Service, the Airport Noise and Pollution Action Committee (ANPAC), US Fish and Wildlife Service, US Forest Service, and a pilot who resides south of the Airport. The Project Team was composed of Mead & Hunt, prime consultant; Flight Tech Engineering, departure procedure design; BridgeNet International, noise analysis and evaluation; Jviation-A Woolpert Company, air traffic control considerations; and Bill Kane, facilitator.

## GOALS OF THE STUDY

The following goals of the Task Force were established at the outset:

- ▶ Gain a common understanding of the physical, environmental, and regulatory context for operations at the Airport;
- ▶ Gain a common understanding of the history of flight operations and southern departure options used and considered in the past;
- ▶ Review the Airport’s history of noise abatement as it relates to both northern and southern procedures for commercial and general aviation operations;
- ▶ Identify and prioritize possible improvements to southern departures that will reduce aircraft noise intrusion.

The FAA delayed the KICNE ONE procedure for one year to allow the Airport Board to work with interested parties to “*propose a procedure design to the FAA which meets criteria and is acceptable to all parties.*” Therefore, the guiding ground rule for the Task Force was that “*solutions which optimize for one group at the expense of others will not be carried forward—noise will not shift from one neighborhood to another.*”

## TASK FORCE AND STAKEHOLDER INVOLVEMENT

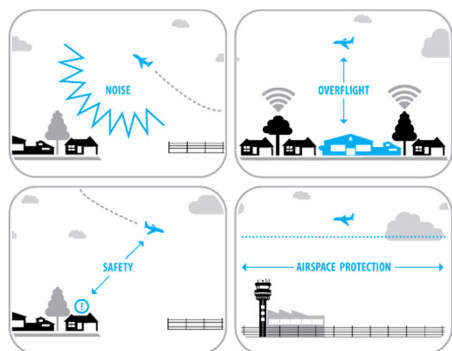
The Task Force held five meetings over the course of the 2022 Study, one each in February, March, April, June, and August. A PowerPoint presentation was provided at each meeting, along with meeting notes, comments received, and Frequently Asked Questions (FAQs) derived from each meeting. Members of the public were invited to attend Task Force meetings, and public comment was taken at the end of each meeting.

*Copies of the presentations, comments received from the community, and the FAQs can be found in **Appendices D, E and F**, respectively.*

To address public comments that were either presented at Task Force meetings or submitted to the project email address, the Project Team compiled a list of frequently asked questions (FAQs) that were posted on the Airport's website and responded in kind. The connection of each Task Force meeting to the departure procedure development process and technical analysis is detailed below.

### Departure Procedure Concept Development Process

As stated earlier, the goal of the Task Force was to solicit community input on the KICNE ONE and other potential departure procedures that would reduce noise intrusion to noise sensitive land uses around the Airport. The objective of the Task Force was to evaluate potential flight procedure concepts to reduce noise intrusion while not shifting noise from one community to another, in order to meet FAA's request "to propose a procedure design to the FAA which meets criteria and is acceptable to all parties."



The Task Force held its first meeting in February 2022 and presented the objectives, ground rules, and organization of the Task Force as well as the history of noise abatement efforts at the Airport and an introduction to flight procedures. The FAA-proposed KICNE ONE procedure was presented along with an explanation of procedure design terminology and criteria. Types of procedures were discussed, including conventional procedures (current ground-based navigation aids), RNAV (area navigation routes that follow defined "waypoints"), and RNP (Required Navigation Performance—routes within a specified "containment area").

Each navigation type requires a different level of equipment on the aircraft, with conventional and RNAV being the most common. RNP routes are usually only flyable by capable airlines aircraft and highly equipped business jets, although more use is anticipated in the future as technology evolves and aircraft become better equipped. It was emphasized that not all aircraft have the same navigation capabilities, and therefore, not all aircraft can fly the same procedures.

Extensive FAA design rules exist to prioritize safety, and they dictate everything from the distance between waypoints, to necessary turn radius, to altitude and speed limitations. All potential procedure designs must follow FAA design criteria and regulations. Additional factors that were considered in the design of potential departure procedures were airline/operator performance factors and Air Traffic Control and traffic deconfliction requirements. In addition, any new procedure is required to go through a National Environmental Policy Act (NEPA) review process conducted by the responsible federal agency to identify potential environmental impacts prior to implementation. In this instance, it would most likely be a

Categorical Exclusion (CatEx) review, which is the lowest level of NEPA analysis which assumes no significant environmental thresholds (such as noise) are exceeded and requires minimal public consultation.

The second Task Force meeting, held in March 2022, focused on the history of noise abatement efforts and programs that the Airport has implemented, beginning with the terms of the 1983 Use Agreement between the Board and the Department of Interior (DOI). This allowed all the members of the Task Force to have a clear understanding of past efforts of the Board in adopting and implementing noise reduction programs for noise-sensitive land uses.

The third Task Force meeting in April 2022 consisted of a presentation of several departure procedure concepts along with the challenges and benefits of each. The Project Team focused on providing concepts that work within the constraints of the valley and that represent a range of options (from west to east) that may result in benefits to all areas of the community.

*The full technical report on the development of departure procedure concepts can be found in **Appendix G**.*

The fourth Task Force meeting was held in June 2022 to present the noise analysis associated with each of the procedure Concepts presented in the third Task Force meeting. The noise analysis used the existing noise measurement site locations, additional temporary noise monitoring sites, and locations of potential interest to predict the current noise levels in comparison to potential changes in noise for each Concept. The FAA's Aviation Environmental Design Tool (AEDT) was used to model potential noise levels at each of these representative locations for each Concept.

The fifth Task Force meeting was held in August 2022 for the purpose of reviewing Concepts and noise analysis to date. At this meeting, the Consultant Team also presented an analysis of a revised departure procedure requested by a Task Force member, along with the accompanying noise analysis, and an alternative way to organize noise analysis also requested by a Task Force member. In addition, comments received subsequent to meeting Four were also presented and addressed.

As described previously, instrument flight procedures are identified by three main types: conventional, RNAV, and RNP. Conventional procedures use ground-based navigation, whereas RNAV and RNP use satellite-based navigation, with RNP being the most sophisticated and precise. Departure RNP's will not be available for widespread use for a number of years.

## FUNDAMENTAL CONSTRAINTS

The Southern Departure Procedure Study identified potential Runway 19 departure procedure concepts that were designed based on the four fundamental constraints described below, all of which must be accounted for at Jackson Hole Airport.

### Surrounding Terrain/Obstacles

The most obvious design limitation encountered is the fact that Jackson Hole Airport lies on the valley floor at 6,451 feet above mean sea level (MSL) with mountain ranges greater than 11,000 feet MSL to the east

and west. This environment constitutes one of the most terrain-challenged airport locations in the world and, as such, severely constrains the resulting possibilities for potential departure procedures.

## **TERPS (Terminal Instrument Procedures) and Navigational Specifications (NavSpec) Design Criteria**

Design criteria are the fundamental rules to which all procedures must adhere. Required climb gradients, terrain clearance requirements, minimum and maximum “leg” lengths, and minimum and maximum bank angles and turn arcs are just a few examples of the myriad of criteria constraints that affected the procedure design. Additionally, criteria such as satellite-based Area Navigation (RNAV) and Required Navigation Performance (RNP) specifications were both assessed.

## **Air Traffic Control (ATC) Procedures**

The procedures used at the Jackson Hole Airport reflect the structure necessary for a mountainous location. Arrival and departure procedures are required to meet stringent criteria for terrain separation and must be in a format all forms of aircraft automation can operate. The procedures used must be incorporated into standard operating agreements so that the air traffic control tower at the airport and the Air Route Traffic Control Center in Salt Lake City have precisely the same understanding of the route and altitudes aircraft will fly.

The automation system that is used to assign departure procedures to aircraft flight plans resides in Salt Lake City. Any procedure changes need to be implemented by that facility and coordinated with the local Jackson Hole Airport tower.

The tower at the Jackson Hole Airport is a “contract tower” which is operated by a contractor rather than FAA personnel. FAA guidance does not allow radar displays in Federal Contract Towers; therefore, the tower at Jackson Hole does not have a radar display. Once aircraft depart and reach an altitude above terrain, and the tower has instructed the pilot to contact the Salt Lake City air traffic facility, a more flexible routing environment exists above the high terrain.

## **Aircraft Equipment and Performance Limitations**

The Airport serves variety of aircraft types representing the entire spectrum of aircraft performance and technology. This includes larger commercial airline operations which are typically higher performing, fly faster, and may have more advanced avionics; large corporate and charter aircraft that are similarly higher performing, but have a wide mix of avionics technology; and, finally, lower performing general aviation piston-powered aircraft that operate at much slower speeds and are almost certainly not RNP capable.

Instrument flight procedures are regularly utilized at Jackson Hole Airport, even when the weather is clear and visibility is unrestricted. This is because of the added safety provided by on-board aircraft technology, and largely as a consequence of each of the above limiting factors. Instrument flight procedures are “coded” procedures that are executed by the aircraft’s on-board Flight Management System (FMS) computers and are coded to the aircraft’s automated flight systems. The alternative coded procedures analyzed by this Study yield precise ground tracks and vertical flight paths that are repeatable with the highest degree of fidelity.



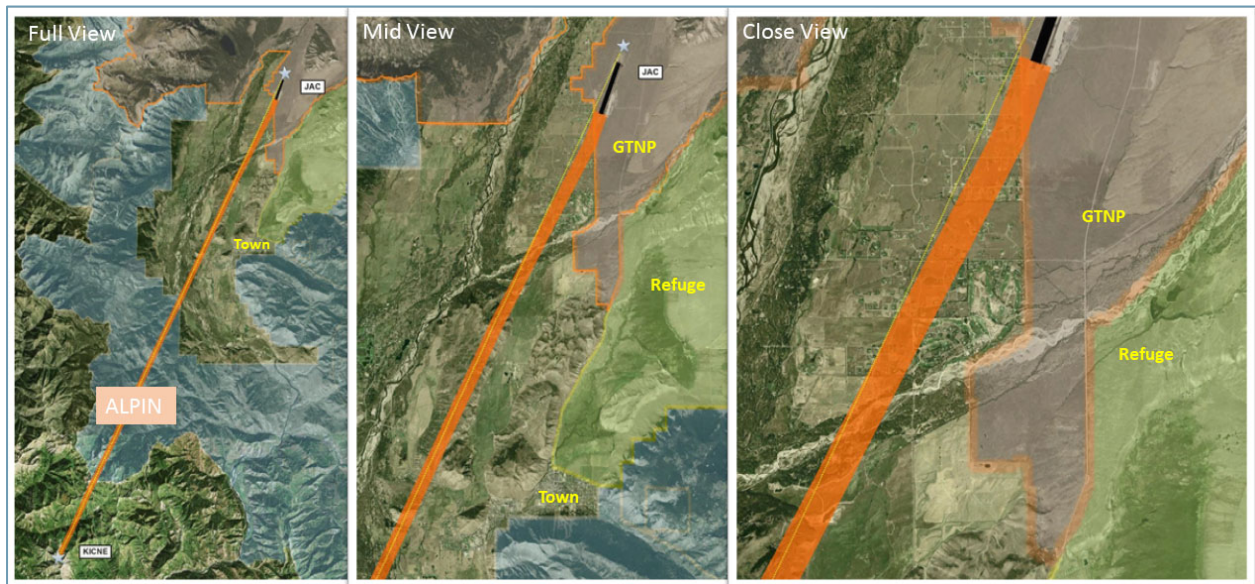
The following procedures and their associated ground tracks represent a range of feasible alternatives for aircraft departing from Runway 19 to the south. These concepts were developed without taking into consideration the resulting noise intrusion to noise-sensitive land uses; the noise was evaluated subsequent to developing a range of feasible concepts.

## Evaluated Concepts

The following graphics visually show each procedure concept and how it compares to the existing ALPIN procedure. They are the existing ALPIN (conventional), the FAA developed KICNE ONE (RNAV), Concept 1-RNAV to the southeast, Concept 2-RNP to the southeast, Concept 3-RNAV to the southwest, Concept 4-RNP to the southwest and Concept 5-RNP to the east (corkscrew). The ALPIN RNAV overlay and the ZIPET departures are essentially the same path as the ALPIN resulting in the same or similar noise effects.

Subsequent to presenting these Concepts, one of the Task Force members requested that the Project Team evaluate a modification to one of the Concepts. Subsequently, a new Concept called the Painter Procedure was modeled. It was determined that while technically possible as a visual departure procedure with a pilot maintaining terrain clearance, it does not meet TERPS standards for publication as a standard instrument departure procedure. This Concept exceeds 15 degree initial course changes, would require 150-165 knot speed limitations with a 25 degree bank and does not meet turn anticipation standards. This Concept was developed as both an RNAV procedure and an RNP procedure, which are also presented below.

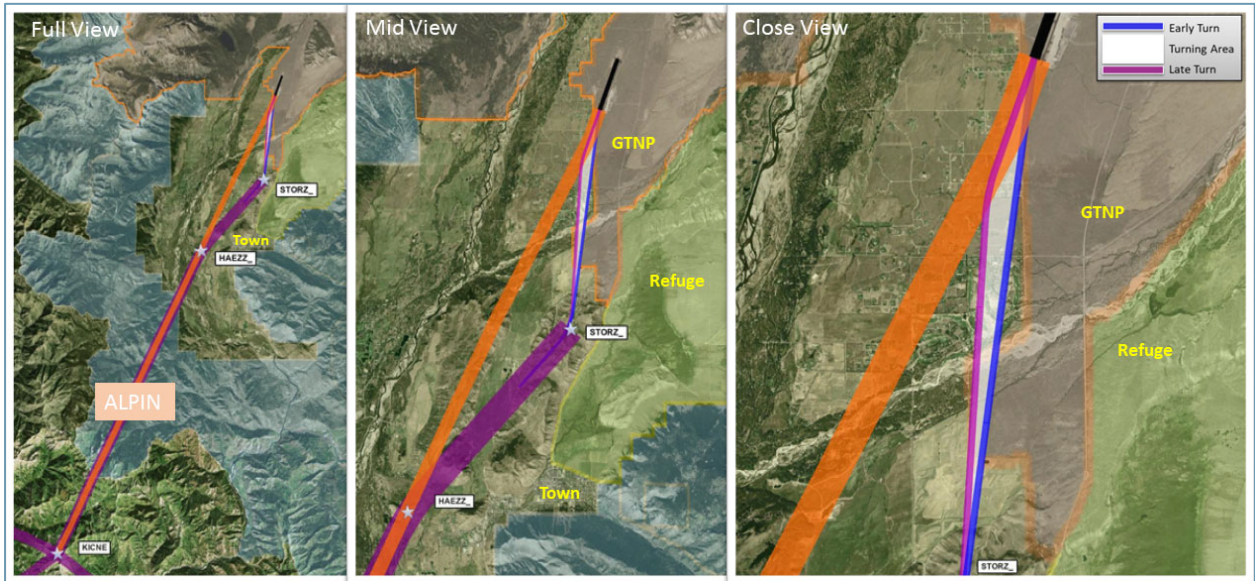
**Figure 1: ALPIN**



Source: FTE and BridgeNet, 2022.

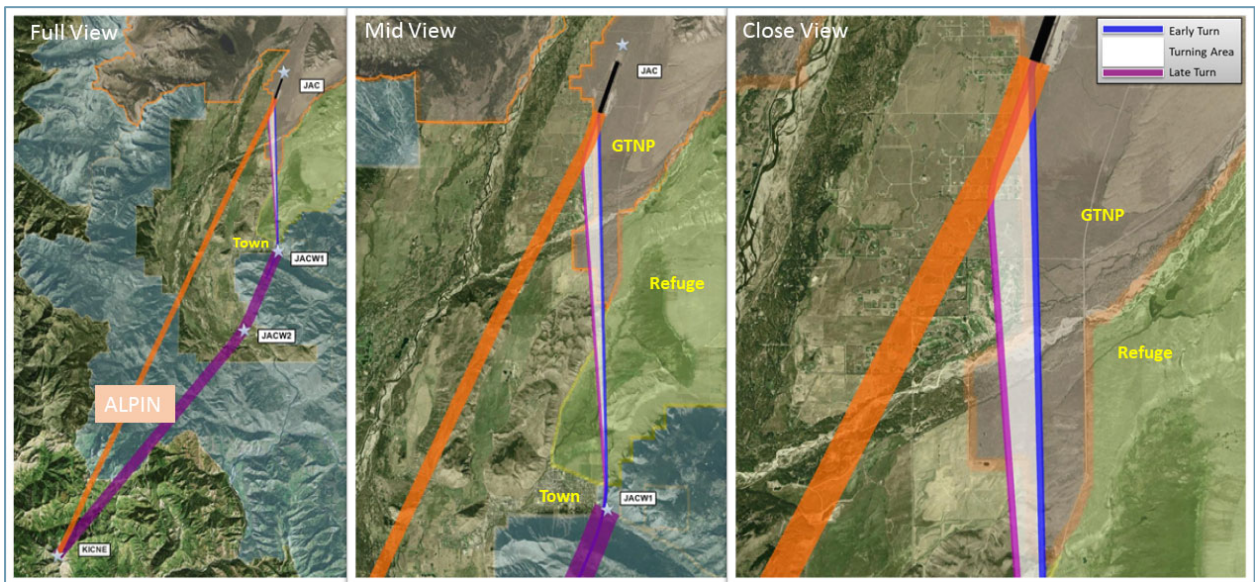


**Figure 2: KICNE ONE**



Source: FTE and BridgeNet, 2022.

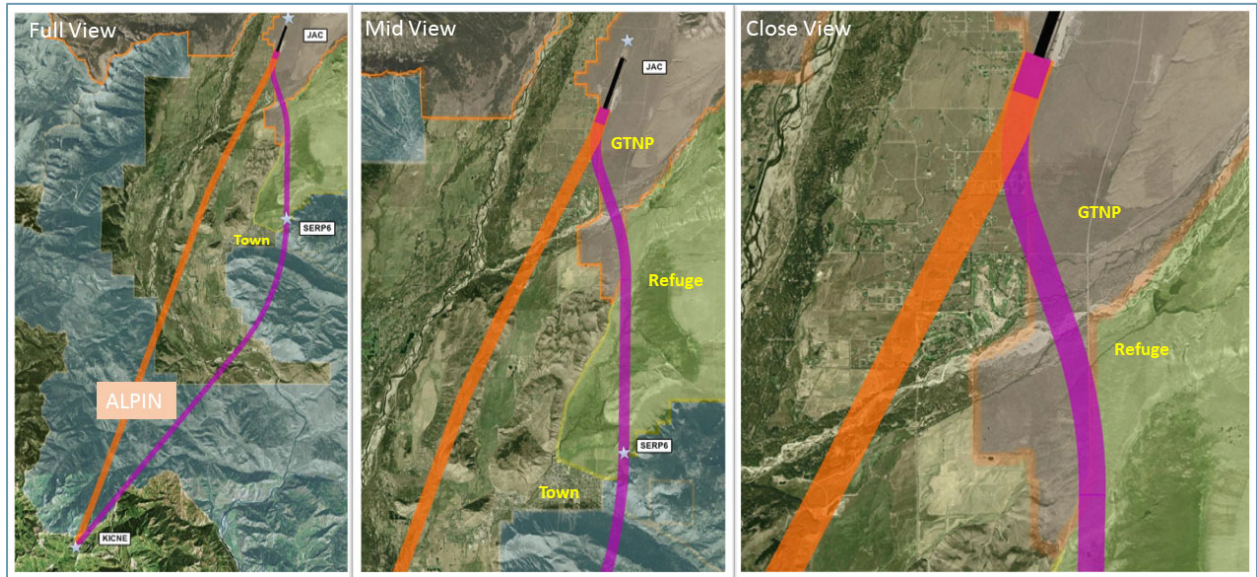
**Figure 3: Concept 1 – RNAV to the southeast**



Source: FTE and BridgeNet, 2022.

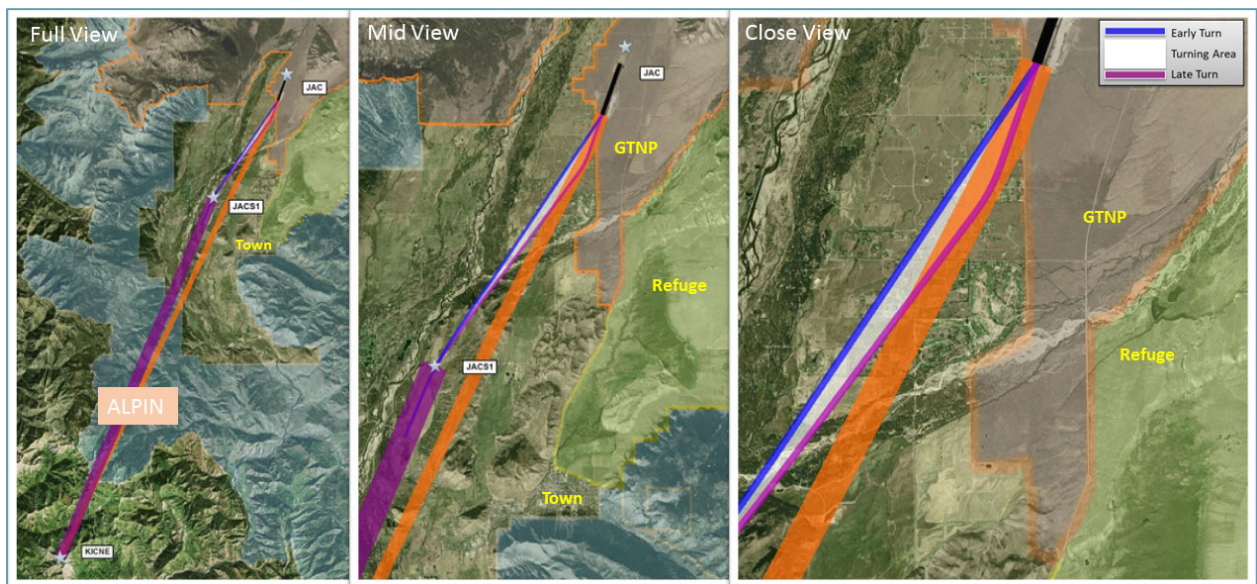


**Figure 4: Concept 2 – RNP to the southeast**



Source: FTE and BridgeNet, 2022.

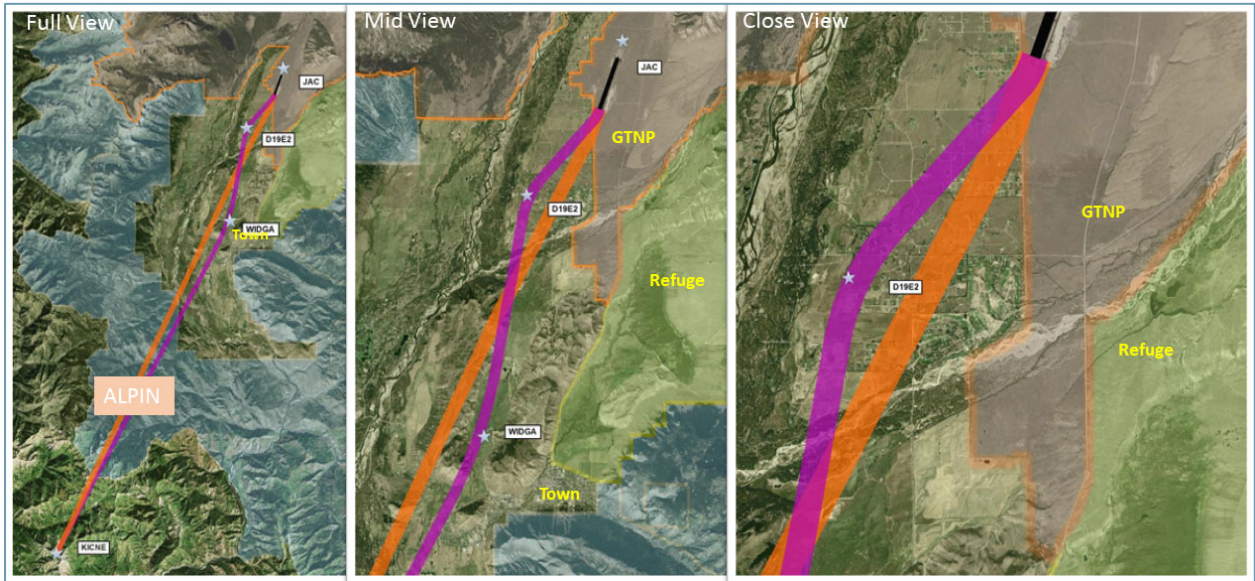
**Figure 5: Concept 3 – RNAV to the southwest**



Source: FTE and BridgeNet, 2022.

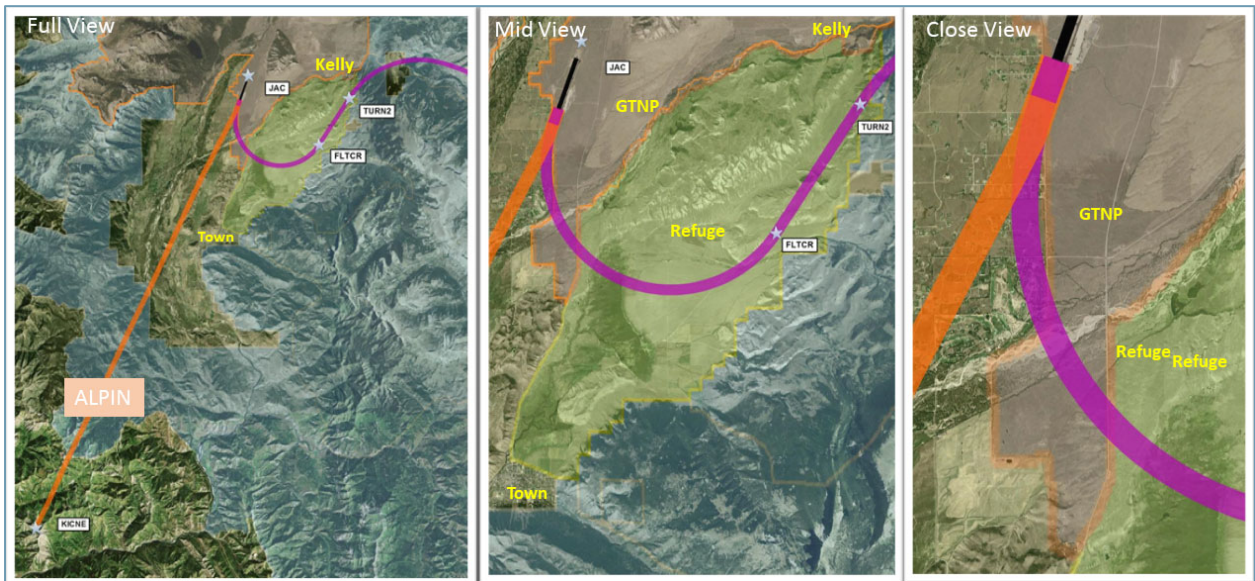


**Figure 6: Concept 4 – RNP to the southwest**



Source: FTE and BridgeNet, 2022.

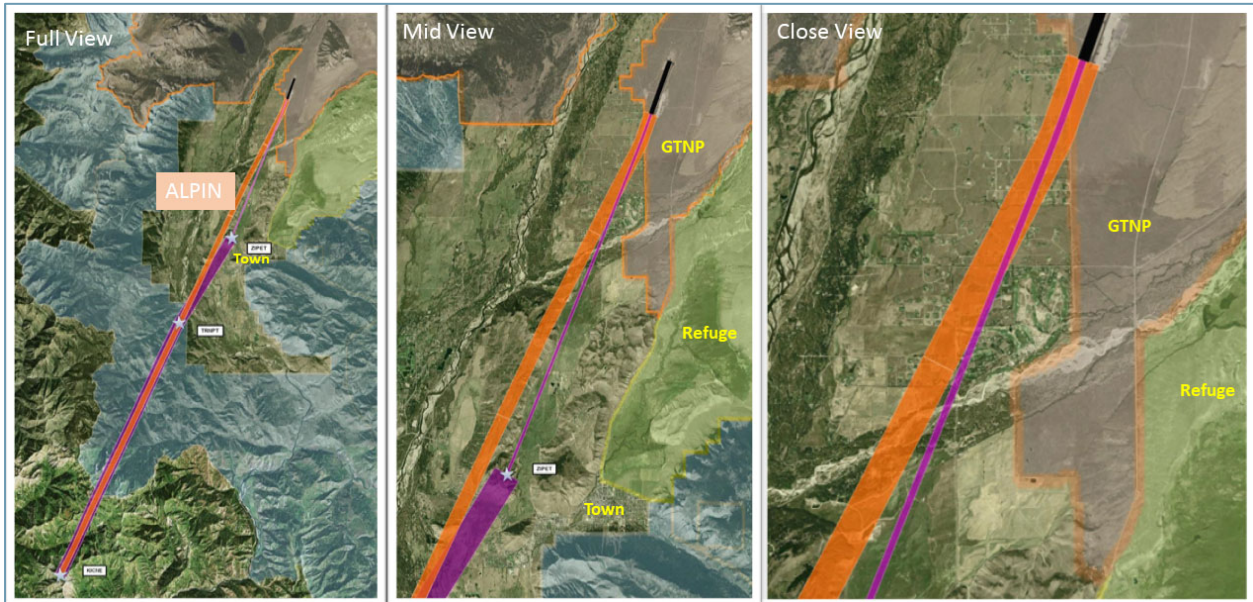
**Figure 7: Concept 5 – RNP to the east (corkscrew)**



Source: FTE and BridgeNet, 2022.

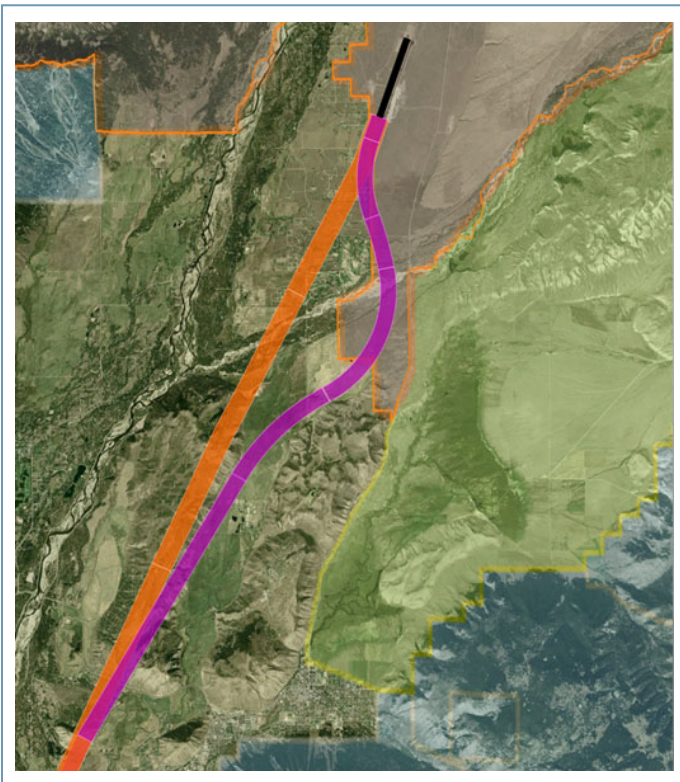


**Figure 8: Concept 6 – ZIPET RNAV**



Source: FTE and BridgeNet, 2022.

**Figure 9: Painter Procedure – RNAV and RNP Proposal**



Source: FTE and BridgeNet, 2022.

## FANNING DEPARTURES - TWO DEPARTURE PROCEDURES

At several points during the Task Force inquiries were made about the potential for “fanning” departures. If a distribution of flight tracks is the goal, achieving that distribution or “fanning” would need to be based on published, programmed departure procedures and not be visual-based or driven with air traffic controller variable assigned headings.

If several departure procedures were established for the Jackson Hole Airport southern departure direction, it would be technically possible to assign those procedures based on aircraft type with detailed air traffic control coordination. For this to happen, more than one departure procedure would have to be developed that would be programable as instrument departure procedures and would meet all necessary climb gradients and terrain clearances. Then, a scheme for assigning the procedures would need to be developed. Terrain consideration at this Airport also limits the range of fanning that might otherwise be possible.

### **EXAMPLE:**

*All Boeing and Airbus aircraft fly procedure 1, and everyone else flies procedure 2*

**OR**

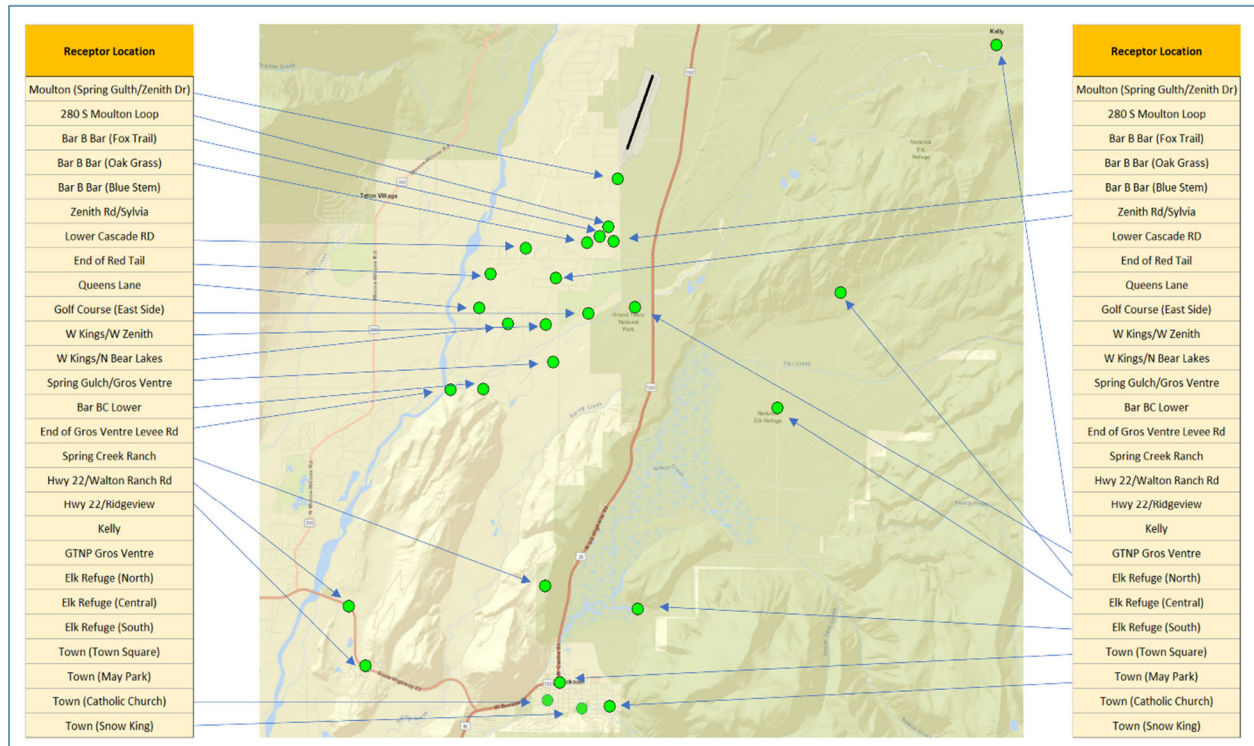
*All jets fly procedure 1, and all propellers fly procedure 2*

In order for this to work, the differences in the procedures would have to be carefully considered. As an example, if procedure 1 has an additional mile of flight in the first ten miles of flight as compared to procedure 2, then air traffic control would have to factor that into the timing of departures. The relative speed of each aircraft would have to be considered against flight track distance. The tower and air traffic control center would have to guard against releasing an equally fast second aircraft behind an aircraft, thus creating an overtake situation. This would be a delicate set of procedures to use. In short, creating a set of procedures to use for fanning departures technically can be accomplished, but the arrangements for using the procedures would need to be very specific and would be difficult to adjust once put in place.

## NOISE ANALYSIS

As part of the evaluation process a noise analysis of each Concept was prepared. The noise analysis used the existing noise measurement site locations, additional temporary noise monitoring sites, and locations of potential interest to predict the current noise levels in comparison to potential changes in noise for each Concept. The FAA’s Aviation Environmental Design Tool (AEDT) was used to model potential noise levels at each of these representative locations for each Concept. While there is a Use Agreement between the DOI and the Airport Board which defines noise compatibility within GTNP, noise from airport operations beyond the boundary of GTNP (i.e., residential areas) is evaluated using guidelines developed by the FAA for land use compatibility. The FAA metric for land use compatibility is the Day-Night Average Noise Level (DNL), a 24-hour measure of the total noise throughout the day with penalties (additional noise added) for nighttime operations. Currently, no residential land uses exist within the FAA-defined threshold level (65 DNL and above) for land uses that might be considered noncompatible. The DNL contour is generated annually based on calendar year operations, with the 2021 contour being the most recent.

**Figure 10: Representative Evaluation Locations**



Source: FTE and BridgeNet, 2022.

However, a person cannot hear a DNL because it is a cumulative measure. Therefore, the maximum noise level (Lmax) generated by an individual aircraft flyover was used to compare noise generated by each Concept. This represents the loudest noise level generated by an aircraft flyover at the specific location. There are many different types of aircraft operating at Jackson Hole Airport generating different noise levels. A representative aircraft was chosen to show the relative change from that aircraft flying the current procedure versus each of the Concepts. The most prominent commercial service aircraft operating at Jackson Hole Airport, the Airbus 319, was used for comparative analysis on departure. The aircraft was assumed to be flying to a nearby destination such as Denver or Salt Lake City. Departure destination is used in that it is reflective of the climb gradient of an aircraft. Aircraft flying longer distances require more fuel and will be heavier. They climb out at a slower rate than aircraft flying shorter distances.

*The noise analysis associated with each procedure concept can be found in **Appendix H**.*

Representative receptor sites were modeled for each departure Concept for ease of comparison (**Figure 10**). These locations were used to predict the change in decibels for each Concept when compared to the existing ALPIN departure. Experience has shown that people notice a change in noise associated with individual flights, either a departure or an arrival. The human ear can discern a change of about 3 dBA, while a 10 dBA change (increase) is perceived to be a doubling of the noise, and a 10 dBA reduction is perceived as a halving of the noise. A 20 decibel increase/decrease is perceived as a four times as loud (or one fourth as loud). Note that decibels are based on the logarithmic scale and not a linear scale.

Based on this information, a color-coded comparison matrix was developed. If there was a -3 to +3 dB change for a Concept in comparison to the ALPIN it was colored grey, for a -4 to -9 reduction it was given



a light green color, for a -10 or greater reduction it was given a dark green. In contrast, if there was a +4 to +9 increase it was given a pink color and for a +10 or greater increase it was given a red color. The Lmax comparative matrix is presented below.

**Figure 11: Lmax Noise Samples – Change Relative to Existing ALPIN**

Receptor Location <i>Aug 21 Update</i>	Ambient Day (L50)	MAXIMUM SINGLE EVENT NOISE LEVEL FROM FLYOVER (LMAX)										CHANGE RELATIVE TO EXISTING ALPIN										Change in Single Event Lmax (dBA) Noise Levels (Departing A319 Aircraft)
		Original Concept #										Original #										
		ALPIN Existing	FAA NCHN S East	CL RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV SL	FAA NCHN S East	CL RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV SL						
Moulton (Spring Gulch/Zenith Dr)	42	85	85	85	85	84	83	85	84	0	0	0	1	2	0	0	0					
280 S Moulton Loop	36	79	81	80	80	76	71	81	78	2	1	1	-4	-4	2	-1	-1					
Bar B Bar (Fox Trail)	35	79	79	77	77	77	71	79	80	0	0	-2	-2	-2	-4	0	1					
Bar B Bar (Oak Grass)	37	80	75	72	71	79	72	75	80	-5	-4	-4	-1	-4	-5	0	0					
Bar B Bar (Blue Stem)	35	74	80	80	80	71	66	80	74	3	3	3	-1	-4	3	0	0					
Zenith Rd/Sylvia	34	77	66	63	60	78	72	64	75	-11	-10	-10	1	-5	-11	-2	-2					
Lower Cascade RD	35	65	58	56	56	69	76	58	64	-7	-9	-9	4	11	-7	-5	-5					
End of Red Tail	35	60	53	51	50	63	69	52	59	-7	-9	-10	3	3	3	-5	-5					
Queens Lane	35	58	52	50	48	63	65	50	57	4	4	-10	5	7	4	-1	-1					
Golf Course (East Side)	42	69	76	71	65	65	59	69	72	7	2	4	4	10	0	3	3					
W Kings/W Zenith	35	72	64	60	56	69	67	59	72	4	-10	-10	-1	-5	-10	0	0					
W Kings/N Bear Lakes	35	66	56	53	50	71	71	53	63	-10	-10	-10	5	5	-10	-4	-4					
Spring Gulch/Gros Ventre	35	68	64	58	55	62	63	57	70	-4	-10	-10	-4	-5	-11	2	2					
Bar BC Lower	35	66	51	48	45	68	67	47	62	-10	-10	-10	2	1	-10	-4	-4					
End of Gros Ventre Levee Rd	35	60	47	45	42	66	61	44	57	-11	-10	-10	0	1	-10	-9	-9					
Spring Creek Ranch	33	51	63	57	53	45	58	36	56	11	6	2	-4	7	-10	5	5					
Hwy 22/Walton Ranch Rd	44	61	55	38	35	66	54	30	55	-4	-10	-10	3	-7	-10	-4	-4					
Hwy 22/Ridgeview	31	68	63	42	39	62	63	31	65	-5	-10	-10	-4	-5	-10	-9	-9					
Kelly	35	31	31	31	31	31	31	55	31	0	0	0	0	0	14	0	0					
GINP Gros Ventre	35	60	69	75	78	57	53	77	61	4	-10	-10	-1	-7	-10	1	1					
Elk Refuge (North)	32	37	38	40	41	37	37	54	37	1	3	4	0	0	-10	0	0					
Elk Refuge (Central)	32	38	42	44	49	38	36	68	39	4	6	11	0	-2	-10	1	1					
Elk Refuge (South)	32	42	50	67	66	38	46	40	45	4	11	14	-1	4	-2	3	3					
Town (Town Square)	46	47	52	59	56	41	52	33	51	3	11	9	-4	3	-10	4	4					
Town (May Park)	42	41	47	66	64	37	46	33	45	3	-10	-10	-4	3	-10	4	4					
Town (Catholic Church)	43	48	53	56	54	42	54	32	52	3	8	6	-5	0	-10	4	4					
Town (Base Snow King)	44	43	48	63	61	38	48	32	47	3	11	14	-5	3	-10	4	4					
Is there noise sensitive land uses with a noticeable decrease in single event noise (-4 to -9 dBA decrease)																						
Is there noise sensitive land uses with a very noticeable decrease in single event noise (+10 dBA or greater)																						
Is there noise sensitive land uses with a noticeable increase in single event noise (+4 to +9 dBA increase)																						
Is there noise sensitive land uses with a very noticeable increase in single event noise (+10 dBA or greater)																						

Source: FTE and BridgeNet, 2022.

The only two Concepts that did not receive a red (10 dB or greater increase) were Concept 3, the RNAV to the west and Concept 6, the ZIPET or RNAV ALPIN overlay, however these concepts did not have a corresponding higher improvement.

As discussed previously, subsequent to the noise analysis, a new Concept, the Painter Procedure, was requested for analysis. The Painter Procedure attempted to simulate the immediate left turn when flying VFR (visual flight rules) which is requested in Jackson Hole Airport’s Noise Abatement Plan. Because the procedure is IFR (instrument flight rules), it would then turn back to the right (to allow it avoid terrain and incursions into the Park, Elk Refuge, Town and Bridger-Teton National Forest) and rejoin the IRF route out of the valley. In addition to the actual procedure design analysis, a similar noise evaluation was prepared using the same criteria for both the RNAV and RNP designs. The Painter Procedure matrix, presented below, shows both red and pink indications, as well as light green and green indications.

After Task Force review of the noise analysis and accompanying matrices, a Task Force member requested that the matrix be recalculated showing the comparison of each Concept to the ambient levels at each receptor site or the ALPIN, whichever is the greatest. In response to this request, actual on-site measurements were conducted at several locations to obtain estimates of ambient noise levels. A matrix was prepared and is presented below. The results are similar with some difference at locations in the Town and other locations that are further from the Airport.

**Figure 12: Lmax Noise Samples – Painter Procedure**

Receptor Location <i>Updated Aug 21</i>	Ambient Day (L50)	LMAX MAXIMUM			CHANGE	
		ALPIN Existing	PAINTER RNAV	PAINTER RNP	PAINTER RNAV	PAINTER RNP
Moulton (Spring Gulth/Zenith Dr)	42	85	84	85	-1	0
280 S Moulton Loop	36	79	75	80	-4	1
Bar B Bar (Fox Trail)	35	79	71	77	-8	-2
Bar B Bar (Oak Grass)	37	80	67	71	-13	-9
Bar B Bar (Blue Stem)	35	74	76	80	2	6
Zenith Rd/Sylvia	34	77	58	60	-19	-17
Lower Cascade RD	35	65	54	56	-11	-9
End of Red Tail	35	60	49	50	-11	-10
Queens Lane	35	58	49	49	-9	-9
Golf Course (East Side)	42	69	66	65	-3	-4
W Kings/W Zenith	35	72	58	56	-14	-16
W Kings/N Bear Lakes	35	66	53	52	-13	-14
Spring Gulch/Gros Ventre	35	68	65	61	-3	-7
Bar BC Lower	35	66	57	58	-9	-8
End of Gros Ventre Levee Rd	35	60	53	55	-7	-5
Spring Creek Ranch	33	51	58	54	7	3
Hwy 22/Walton Ranch Rd	44	61	55	59	-6	-2
Hwy 22/Ridgeview	31	68	64	67	-4	-1
Kelly	35	31	31	31	0	0
GTNP Gros Ventre	35	60	78	78	18	18
Elk Refuge (North)	32	37	42	42	5	5
Elk Refuge (Central)	32	38	46	46	8	8
Elk Refuge (South)	32	42	46	44	4	2
Town (Town Square)	46	47	51	47	4	0
Town (May Park)	42	41	45	42	4	1
Town (Catholic Church)	43	48	52	48	4	0
Town (Base Snow King)	44	43	46	43	3	0
is there noise sensitive land uses with a noticeable <b>decrease</b> in single event noise (-4 to -9 dBA decrease)						
Is there noise sensitive land uses with a very noticeable <b>decrease</b> in single event noise (+10 dBA or greater)						
Is there noise sensitive land uses with a noticeable <b>increase</b> in single event noise (+4 to +9 dBA increase)						
Is there noise sensitive land uses with a very noticeable <b>increase</b> in single event noise (+10 dBA or greater)						



**Figure 13: Lmax Noise Samples – Change Relative to Highest Between Existing ALPIN or Ambient**

Receptor Location <i>Aug 22 Update</i>	Ambient Day (LS0)	MAXIMUM SINGLE EVENT NOISE LEVEL FROM FLYOVER (LMAX)									CHANGE RELATIVE TO HIGHEST OF EXISTING ALPIN OR AMBIENT													
		Original Concept #	1			2			3			Original #	1			2			3					
		ALPIN Existing	FAA RNP SE S East	CS RNP SE S East	CS RNP SE S West	CS RNP SW S West	CS RNP SW S West	CS RNP East Corbscrew	CS ZPET RNP St	FAA RNP SE S East	CS RNP SE S East	CS RNP SE S East	CS RNP SW S West	CS RNP SW S West	CS RNP East Corbscrew	CS ZPET RNP St	FAA RNP SE S East	CS RNP SE S East	CS RNP SE S East	CS RNP SW S West	CS RNP SW S West	CS RNP East Corbscrew	CS ZPET RNP St	
Moulton (Spring Gulch/Zenith Dr)	42	85	85	85	85	84	83	85	84	0	0	0	0	-1	-2	0	-1							
280 S Moulton Loop	36	79	81	80	80	76	71	81	78	2	1	1	1	-1	8	1	1							
Bar B Bar (Fox Trail)	35	79	79	77	77	77	71	79	80	0	-2	-2	-2	4	5	1								
Bar B Bar (Oak Grass)	37	80	75	72	71	79	72	75	80	-5	-4	-4	-1	-4	5	0								
Bar B Bar (Blue Stem)	35	74	80	80	80	71	66	80	74	6	6	6	-1	-4	6	0								
Zenith Rd/Sylvia	34	77	66	63	60	78	72	64	75	-11	-10	-10	1	-5	-10	-2								
Lower Cascade RD	35	65	58	56	56	69	76	58	64	-7	-9	-9	4	11	-9	-1								
End of Red Tail	35	60	53	51	50	63	69	52	59	-7	-9	-9	3	9	4	-1								
Queens Lane	35	58	52	50	48	63	65	50	57	4	4	4	6	7	4	-1								
Golf Course (East Side)	42	69	76	71	65	65	59	69	72	7	7	4	-4	-10	4	3								
W Kings/W Zenith	35	72	64	60	56	69	67	59	72	-4	-10	-10	-1	-9	-10	0								
W Kings/N Bear Lakes	35	66	56	53	50	71	71	53	63	-10	-10	-10	3	5	-10	-9								
Spring Gulch/Gros Ventre	35	68	64	58	55	62	63	57	70	-4	-10	-10	-4	-5	-10	2								
Bar BC Lower	35	66	51	48	45	68	67	47	62	-15	-10	-10	2	1	-10	-4								
End of Gros Ventre Levee Rd	35	60	47	45	42	66	61	44	57	-13	-10	-10	4	1	-10	4								
Spring Creek Ranch	33	51	63	57	53	45	58	36	56	-16	-4	-4	7	4	7	-10	5							
Hvvy 22/Walton Ranch Rd	44	61	55	38	35	66	54	30	55	-4	-10	-10	5	-7	-10	-4								
Hvvy 22/Ridgeview	31	68	63	42	39	62	63	31	65	-5	-10	-10	-6	-5	-10	-9								
Kelly	35	31	31	31	31	31	31	55	31	-4	-4	-4	-4	-4	-10	-4								
GTNP Gros Ventre	35	60	69	75	78	57	53	77	61	1	1	1	0	0	0	0								
Elk Refuge (North)	32	37	38	40	41	37	37	54	37	1	1	1	0	0	0	0								
Elk Refuge (Central)	32	38	42	44	49	38	36	68	39	2	4	11	0	-2	-10	1								
Elk Refuge (South)	32	42	50	67	66	38	46	40	45	4	10	10	-4	4	-2	3								
Town (Town Square)	46	47	52	59	56	41	52	33	51	3	10	4	-6	5	-10	4								
Town (May Park)	42	41	47	66	64	37	46	33	45	1	10	10	-5	4	-10	7								
Town (Catholic Church)	43	48	53	56	54	42	54	32	52	3	6	6	-4	4	-10	4								
Town (Base Snow King)	44	43	48	63	61	38	48	32	47	4	10	10	4	4	-10	3								

Is there noise sensitive land uses with a noticable **decrease** in single event noise (-4 to -9 dBA decrease)

Is there noise sensitive land uses with a very noticable **decrease** in single event noise (+10 dBA or greater)

Is there noise sensitive land uses with a noticable **increase** in single event noise (+4 to +9 dBA increase)

Is there noise sensitive land uses with a very noticable **increase** in single event noise (+10 dBA or greater)

**Change in Single Event Lmax (dBA) Noise Levels (Departing A319 Aircraft)**

- +10 dBA or greater increase
- +4 to +9 dBA increase
- 3 to +3 dBA change
- 4 to -9 dBA decrease
- 10 dBA or greater decrease

Source: FTE and BridgeNet, 2022.

*To summarize, each Concept would result in the shifting of noise over newly affected noise sensitive areas as compared to the existing ALPIN procedure.*

## FINDINGS

The Task Force met five times over a seven-month period to evaluate potential southern departure procedures in an attempt to achieve the stated purpose of identifying a new southern departure procedure, which would meet FAA criteria and be acceptable to all parties. This was a challenging assignment given the existing noise sensitive uses surrounding the Airport. Nonetheless, several Concepts were developed and evaluated to determine if they could achieve the desired results. A Summary of the findings identified are as follows:

- ▶ With today’s technology there is no procedure which meets FAA criteria and is acceptable to all parties.
- ▶ RNP procedures are not likely to be available for many of the aircraft for a 5-year time period.
- ▶ There are air traffic constraints in turning left because there is a mix of arrivals and departures in the same airspace.
- ▶ There are air traffic constraints with fanning.

- ▶ All new procedures modeled would result in a noticeable movement of noise from one noise sensitive area to another.
- ▶ Public land managers expressed opposition to procedures that turn left and thus increase noise over GTNP, Elk Refuge, or National Forest properties.

## ANCILLARY QUESTIONS/COMMENTS RAISED DURING THE STUDY

Several other concerns were raised that did not pertain to the purpose of the Southern Departure Procedure Study but were more general. These concerns and responses to them are summarized below.

### Accuracy of ADD Limits

*Concerns about the accuracy of the equivalency computation, and whether the Average Daily Departure (ADD) limits of the Airport's Noise Rule have been exceeded.*

The Use Agreement sets cumulative noise limits of 55 Ldn and 45 Ldn at locations within the Park. To meet these limits, the Board adopted a Noise Abatement Rule in March 1985 which considered the B-737-200 as the “base class” aircraft. Under this Rule, no more than 6.85 average daily departures (ADDs) of the base class aircraft, averaged quarterly, and no more than 6.5 ADDs averaged annually, may operate at the Airport. If an aircraft is quieter than the base class aircraft, it may operate in greater numbers based on an “equivalency” formula. Since 1985, ADDs have been calculated quarterly by the Airport. Based on the equivalency formula, the ADDs at the Airport were 4.05 for the first quarter of 2022, and 3.77 measured on an annual basis for 2021. ADDs reached as high as 5.62 for the third quarter of 2021. The formula for calculating ADDs is set forth in the Airport's Noise Rule, the number and type of operations are public information, and the Airport's calculations may be verified. It should be noted that the ADD limits apply to commercial service aircraft only and not general aviation aircraft.

### Compatibility of Residences South of the Airport

*Concerns that residences south of the airport are no longer “compatible,” and the Airport is therefore violating the terms of the Use Agreement.*

Though compatibility is a goal toward which the Board works, the Use Agreement does not require that JAC “must be compatible with adjacent lands.” Rather, Paragraph 4(e) of the Use Agreement required the Board to complete a revised noise abatement plan, based on FAA regulations (14 CFR Part 150). The primary objective of the plan was to ensure that airport operations remained compatible with the Park. A secondary objective of the plan was to “seek to ensure” that aircraft noise exposure would be reasonably compatible with other adjacent land uses. Nothing in the Use Agreement requires that Airport operations “must” remain compatible with adjacent land uses, only that the plan “seek to ensure” such compatibility. Though the Use Agreement does not require compatibility with surrounding land uses, FAA's threshold for incompatibility with noise sensitive uses (i.e., residences) is the 65 Ldn noise contour. No residences adjacent to the Airport are located within this contour. The data upon which the contour is calculated is public information and may be verified. The Airport generates an annual 65 DNL contour based on calendar year operations.

## Emissions and Pollution

*Concerns about aircraft engine emissions and associated pollution.*

The Airport has no legal authority to regulate engine emissions from aircraft in flight or to designate routes of flight. To protect public health, the U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards for outdoor pollutants. The Wyoming DEQ, which administers the air quality program, has determined that Teton County meets air quality standards for all of those pollutants. We rely on those air quality standards to protect the public health. In addition, EPA sets emission standards for aircraft engines, and FAA sets certification requirements for those engines to show compliance those standards. All aircraft operating at JAC must meet those standards.

## Teton County Noise Regulations

*Concerns that aircraft noise is violating Teton County noise regulations.*

Aircraft noise could never be a violation of Teton County's land use regulations. The federal government has preempted the areas of both air traffic control and regulation of aircraft noise at its source. Therefore, no local or state laws apply to noise generated by an aircraft in flight. In fact, page 6-53 the Teton County Land Development Regulations states "Aviation shall be exempt from the noise standards in Section 6.4.3."

## Runway Extension

*Concern that by trading away its land in the 1970s, the Airport "bought" a right to extend the runway or move it to the north, but has failed to do so.*

If the runway were located farther to the north, aircraft which arrive from or depart to the south would be higher over adjacent residences to the south and less noise would be experienced. However, the Airport Board has never owned any land to "trade" for a right to move or extend the runway; the Airport has always been located on land owned by the Federal government. The Use Agreement expressly prohibits a runway extension or relocation without approval of the Department of the Interior, and that is highly unlikely since it would result in a corresponding increase in noise over noise sensitive areas of the Park.

## Voluntary Curfew

*Concern that the Airport is not "enforcing" the voluntary curfew or making it "mandatory."*

Based on today's circumstances, the Airport Board cannot enforce the curfew or make it mandatory. In 1990, Congress passed the Aviation Noise and Capacity Act (ANCA) which phased out noisier Stage 2 aircraft, but also prohibited local airports from imposing noise or capacity restrictions. A mandatory curfew would be just such a restriction. No exceptions exist for airports in national parks or near residential areas. Only the few airports which had curfews prior to 1990 are "grandfathered" and allowed to continue their enforcement. A mandatory curfew would require FAA approval. Though FAA has a process to achieve approval, no Airport has ever received such approval and our FAR 150 studies have determined that our Airport is not even eligible for such approval. The Board will continue to consider options for the voluntary curfew.

## Left Turn Procedure Historically Not Opposed

*In its Part 150 Study, the Airport Board previously supported the design of an IFR procedure calling for an immediate 45-degree turn to the left upon south departure and NPS did not then oppose it. Why then did NPS oppose such a procedure now, and why might JAC not support such an IFR procedure now?*

The Board's 2018 request to FAA to consider the design of an IFR procedure calling for an immediate 45-degree turn to the left upon southern departure was based on a logical assumption in the Part 150 Study that such a turn would have noise benefits to residences south of the Airport. However, neither the Part 150 Study nor FAA's design of its proposed KICNE One procedure, comprehensively studied the noise impacts of such IFR procedures on all affected noise sensitive areas, including GTNP.

The Southern Departure Task Force comprehensively studied an array of possible southern IFR departure procedures, and the noise effect of each such procedure on a number of sensitive land uses. This revealed that procedures which call for turns to the left upon southern departure would result in significant increases in noise in certain areas of GTNP. It is our understanding that, based on that knowledge, NPS cannot support any such IFR procedure.

The Airport Board must be mindful that its agreement with NPS, under which JAC is operated within the Park, provides in part that it will develop and implement mitigation measures "as may be available to reduce environmental impacts on the Park to the lowest practicable levels consistent with the safe and efficient operations of the Airport."

## General Aviation Facility Development

*Request to not increase the size or attractiveness of GA facilities.*

The next steps on development of general aviation facilities are being considered by the Airport Board. Decisions have not yet been made regarding this issue.

# APPENDICES



# APPENDIX A:

## NOISE WHITE PAPER



# JACKSON HOLE AIRPORT

## AIRCRAFT NOISE 101 LEGAL CONSTRAINTS, 1983 AGREEMENT REQUIREMENTS & BOARD INITIATIVES

September 2022

### Introduction

While the Jackson Hole Airport is unique among commercial service airports in the United States in that it operates in a national park, the Airport is subject to the same federal laws and legal principles regarding the regulation of aircraft and aircraft noise as any other commercial service airport. The Airport has several noise restrictions currently in place that were adopted in conformance with these laws and principles; however, the Board's authority to adopt additional mandatory restrictions is extremely limited. This paper summarizes (I) applicable laws and legal principles, (II) the noise-related requirements of the 1983 Agreement between the U.S. Department of the Interior and the Airport Board, and (III) the additional noise abatement measures the Airport Board has adopted, promoted and considered.

### I. Summary of Legal Principles

Local regulation of aircraft and aircraft noise at the Jackson Hole Airport is tightly restricted by a series of overlapping laws and legal principles adopted and revised since the 1970s. While difficult to summarize succinctly, the law in this field has the following benchmarks:

- A. Local governments and airport operators are strictly prohibited from regulating aircraft in flight. The regulation and management of airspace, aircraft and pilots has been and remains within the exclusive jurisdiction of the federal government, through the Federal Aviation Administration.<sup>1</sup> More specifically, the FAA manages airspace and shares responsibility for the operation of aircraft with the pilot-in-command. For this reason, the Board cannot prescribe mandatory arrival or departure procedures, including mandating a left turn for southerly departures.
- B. A limited and relevant exception to this general rule is that air tours over units of the National Park System are managed in cooperation with the National Park Service.<sup>2</sup> The application of special requirements for air tours over Grand Teton National Park depends in part on whether the overflight is for sightseeing purposes, the number of air tours, and other factors. At present, the development of an Air Tour Management Plan for the Park has not been triggered by actual or proposed air tour overflights, and such overflights are

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<sup>1</sup> 49 U.S.C. § 40103(a)(1) (“The United States Government has exclusive sovereignty of airspace of the United States.”); *id.* §40103(b)(1) (“The Administrator of the Federal Aviation Administration shall develop plans and policy for the use of the navigable airspace and assign by regulation or order the use of the airspace necessary to ensure the safety of aircraft and the efficient use of airspace.”); *id.* § 40103(b)(2) (“The Administrator shall prescribe air traffic regulations on the flight of aircraft (including regulations on safe altitudes) . . .”).

<sup>2</sup> 49 U.S.C. § 40128 (Overflights of National Parks).



subject only to an FAA advisory to maintain 2,000 feet AGL over park lands, along with requirements of the 1983 Agreement described below.

- C. Prior to 1990, airport proprietors had greater flexibility to impose local regulations at the airport in order to abate aircraft noise. This legal principle, known as the “proprietor’s exception,” initially was recognized by the courts and later enacted in law.<sup>3</sup> Several airports around the country adopted nighttime curfews and other noise-related restrictions pursuant to the proprietor’s exception. This was the legal environment in which the Board entered into the 1983 Agreement with the Department of the Interior.
- D. In 1990, Congress enacted the Airport Noise and Capacity Act (“ANCA”), severely constraining airports’ ability to impose new noise and access restrictions.<sup>4</sup> As examined below, ANCA imposed separate requirements for the restriction of “Stage 2” aircraft, which could be adopted without FAA approval, and the restriction of “Stage 3” aircraft, which requires FAA approval. In keeping with the principle that new laws should not apply retroactively, ANCA excluded from its scope those noise and access restrictions previously adopted pursuant to the proprietor’s exception.<sup>5</sup> This includes the 1983 Agreement at JAC, along with the Noise Abatement Plan and Noise Abatement Rule adopted in 1985. However, ANCA completely shut the spigot for new restrictions affecting Stage 3 aircraft; the FAA has not approved a single Stage 3 restriction under ANCA at any airport in the country in the 30+ years since ANCA was enacted.<sup>6</sup> Of particular note, helicopters are stage-rated and thus protected by ANCA.
- E. There is a distinct set of principles regarding the regulation of aircraft operations at an airport on the basis of safety, rather than noise. Although the Airport Board has limited authority to adopt and implement safety-based restrictions, the FAA has reserved for itself the role as final arbiter of whether particular aeronautical activities are unsafe and thus subject to airport regulation.<sup>7</sup> As a practical matter, the FAA rarely concludes that aeronautical activities are so unsafe as to justify airport regulation.

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<sup>3</sup> See *National Aviation v. City of Hayward*, 418 F. Supp. 417 (N.D. Cal. 1976) (court found mandatory curfew adopted by airport proprietor was not preempted); 49 U.S.C. § 41713(b) (“Except as provided in this subsection, a State, political subdivision of a State, or political authority of at least 2 States may not enact or enforce a law, regulation, or other provision having the force and effect of law related to a price, route, or service of an air carrier that may provide air transportation under this subpart. . . . This subsection does not limit a State, political subdivision of a State, or political authority of at least 2 States that owns or operates an airport served by an air carrier holding a certificate issued by the Secretary of Transportation from carrying out its proprietary powers and rights.”).

<sup>4</sup> 49 U.S.C. §§ 47524 – 57534.

<sup>5</sup> 49 U.S.C. § 47524(d); 14 C.F.R. § 161.3 and § 161.7.

<sup>6</sup> In addition to ANCA, the Airport Board also has contractually committed to the FAA to make the Airport available for aeronautical use on reasonable conditions and without unjust economic discrimination. 49 U.S.C. § 47107(a)(1) and AIP Grant Assurance No. 22(a). Violation of the AIP Grant Assurances, without corrective action, results in withholding of grant funds, suspension of eligibility for future grants, and perhaps repayment of past grants.

<sup>7</sup> AIP Grant Assurance No. 22(i) (“The sponsor may prohibit or limit any given type, kind or class of aeronautical use of the airport if such action is necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public.”); FAA Order 5190.6B, *Airport Compliance Manual*, § 14.3 (2021) (“In all cases, the FAA is the final arbiter regarding aviation safety and will make the determination regarding the reasonableness of the sponsor’s proposed measures that restrict, limit, or deny access to the airport.”).

## II. The 1983 Agreement

In 1950, Congress enacted the Airports In Parks Act authorizing the Secretary of the Interior, individually or in cooperation with local governments, “to acquire and improve . . . airports in or in close proximity to national parks when it was necessary to the proper performance of the Department’s functions.”<sup>8</sup> Prior to 1983, the Airport operated in the Park pursuant to this Act under a series of permits granted by the Department of the Interior to the Town and County, and later to the Airport Board itself.

In 1980, negotiations began for a longer-term lease from the Department of the Interior.<sup>9</sup> A long-term lease was supported by the Wyoming Congressional Delegation, the Governor and the Wyoming Legislature. In 1983, after a thorough review, the Secretary of the Interior signed the *Agreement Between the United States Department of the Interior and the Jackson Hole Airport Board* (“1983 Agreement”). The 1983 Agreement assured the Airport’s long-term existence in Grand Teton National Park, in exchange for, among other things, certain noise limitations which were established to help ensure compatibility with the Park.

### A. Cumulative and Single Event Limits

In the 1983 Agreement, the Board agreed to maintain two cumulative noise standards based on Ldn (now referred to as DNL), which is a day-night weighted measure of cumulative noise. Airport operations may not exceed a level of 45 Ldn west or north of a specified map line. Neither may Airport operations generate a 55 Ldn noise contour which protrudes into the boundary of the defined “noise sensitive” areas of the Park.

The Board also agreed to prohibit operations of aircraft at the Airport which generate single event noise on approach of 92 dBA or higher. This is measured by comparison to an FAA publication which gives certificated noise levels on approach, but not departure, of various types of aircraft. To enforce this standard, the Town of Jackson subsequently passed an ordinance requiring compliance with the single event noise standard, violation of which is punishable by fine or imprisonment.<sup>10</sup> There have been no violations of the single event limit in recent memory.

### B. Noise Abatement Plan and Noise Abatement Rule

The Board also agreed to adopt a new noise abatement plan which would “ensure that future Airport operations are controlled in such a manner that aircraft noise exposures will remain compatible with the purposes of Grand Teton National Park and will result in no significant increases in cumulative or single event noise impacts on noise sensitive areas of the Park.” An ancillary purpose of the required noise abatement plan was to “seek to ensure that airport operations are conducted in such manner that aircraft noise exposure will be reasonably compatible with adjacent land uses.” To guide adoption of this Plan, the Board performed a noise study under FAA’s Part 150 regulation.

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<sup>8</sup> 64 Stat. 27, 16 U.S.C. § 7(a) through (e) (The “Airports in Parks Act”).

<sup>9</sup> A long-term agreement is needed in part as a condition of receiving federal grants. *See* 14 C.F.R. § 152.103(a)(4)(ii).

<sup>10</sup> Jackson Municipal Code, § 12.16.130(A).

After this study, the Board adopted a Noise Abatement Plan which fulfilled the requirement of the 1983 Agreement. To enforce the cumulative noise limits of the 1983 Agreement, the Board also adopted a rule which limits to 6.5 the average daily departures ("ADDs") of the B-737-200 "base aircraft" from the Airport (averaged annually) and 6.85 daily departures (averaged each calendar quarter). Increases in the number of commercial service operations may only be accomplished by substituting quieter "new generation" aircraft. The number of new quieter aircraft which may be added is based on an equivalency formula. If the ADD limit will be exceeded, the Board may reduce the number of proposed commercial airline flights and allocate "slots" between those airlines proposing to serve the Airport, as necessary to adhere to the cumulative noise limits.<sup>11</sup> To date, the cumulative noise limits have not been exceeded, and the ADDs have remained well below the limit specified in the Rule. In 2020, the ADDs decreased to 3.41 due to the pandemic and the quieter fleet mix. In 2021, the ADDs increased to 3.77 as commercial service returned.

The Noise Abatement Plan also requests that airlines operating commercial jet aircraft schedule arrivals and departures between 0700 and 2130. This requirement has been placed in the Board's agreements with all airlines, and it has been voluntarily accepted.<sup>12</sup>

### C. Avoidance of Noise Sensitive Areas of the Park

The 1983 Agreement requires the Board to take reasonable measures within its authority to notify aircraft operators to avoid noise-sensitive areas of the Park, and encourage pilots taking off or approaching from the north to maintain a course east of US Highway 26/89 north of Moose. It also requires the Board to insert in all applicable subcontracts and to reasonably enforce a provision which prohibits commercial scenic, charter and training operations over the designated noise sensitive areas of the Park, except when weather or safety dictate otherwise.

### D. Preferential Runway Designation

The 1983 Agreement also provides that Runway 01 (from the south) shall be the preferred arrival runway and Runway 19 (to the south) shall be the preferred departure runway, when safety permits its use. In 2020, 83% of aircraft utilized the preferred departure runway (Runway 19 departing to the south) and 16% of aircraft utilized the preferred arrival runway (Runway 01 landing from the south). Notwithstanding the preferential runway designation, the prevailing wind direction is from the south, so for safety reasons the primary traffic flow remains departures to the south and arrivals from the north.

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<sup>11</sup> Western and Frontier Airlines jointly proposed to operate 7.3 ADDs of B-737 aircraft at the Airport during the summer of 1985. Pursuant to the Board's rule, and over the airlines' objections, the Board reduced the number of proposed flights and proposed to allocate slots between the two airlines, so as to strictly limit to 6.5 the number of ADDs at the Airport. The airlines voluntarily reduced the number of flights proposed, and as a result, it has never been necessary to implement the slot allocation rule.

<sup>12</sup> As summarized below, the Board later expanded this voluntary curfew to include general aviation aircraft. These aircraft are requested to not arrive at the Airport after 2330 or before 0600, and to not depart after 2200 or before 0600.

#### E. Low Flying Aircraft

The Board must maintain records of complaints of aircraft operating below the FAA's airspace advisory of 2,000 feet above ground level over Grand Teton National Park and notify the FAA Flight Standards Office of all such complaints.

#### F. The Third Amendment to the 1983 Agreement

In May 2011, the Board entered into a Third Amendment to the 1983 Agreement, which extended its term for up to 20 years. This Amendment added a new paragraph 4(i) to the Agreement which provides that in addition to meeting the cumulative and single event noise standards:

[T]he Board shall seek to further reduce noise and other negative environmental impacts associated with the Airport. The Board will act in good faith and in coordination and cooperation with the National Park Service to develop and implement such reasonable and cost-effective mitigation measures as may be available to reduce environmental impacts on the Park to the lowest practicable levels consistent with the safe and efficient operations of the Airport, and with applicable law and contractual obligations.

The Third Amendment did not specify the initial mitigation measures necessary to comply with this requirement. However, in a contemporaneous letter the Park Service expressed its view that the Board will have initially complied with this requirement if it undertook nine actions enumerated in the letter. Each of these actions has been undertaken, many as outlined in Section IV below.

#### G. Current Legal Status

For the reasons explained in Section I, the specific and mandatory noise abatement measures contained in the 1983 Agreement (as well as the 1985 Noise Abatement Plan and Noise Abatement Rule) are “grandfathered” under ANCA because the mandatory restrictions were in effect prior to November 1990, when ANCA was enacted, and have been continuously maintained.<sup>13</sup> This protection allows the Board to continue to enforce the noise-related provisions of the 1983 Agreement. Federal law also allows airports to adjust local requirements to make them *less* restrictive while still receiving grandfather protection.<sup>14</sup> However, the inverse to this rule also is true: any *new* noise or access restrictions or changes to an existing restriction to make it *more* restrictive are subject to ANCA and can be adopted and implemented only with FAA approval. Of note, the definition of “noise or access restriction” is very broad.<sup>15</sup>

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<sup>13</sup> 49 U.S.C. § 47524(d) (“Subsections (b) and (c) of this Section do not apply to - . . . (3) an intergovernmental agreement including an airport noise or access restriction in effect on November 5, 1990.”).

<sup>14</sup> *Id.* § 47524(d)(4) (excluding “a subsequent amendment to an airport noise or access agreement or restriction in effect on November 5, 1990, that does not reduce or limit aircraft operations or affect aircraft safety.”).

<sup>15</sup> 14 C.F.R. § 161.5 (“Noise or access restrictions means restrictions (including but not limited to provisions of ordinances and leases) affecting access or noise that affect the operations of Stage 2 or Stage 3 aircraft, such as limits on the noise generated on either a single-event or cumulative basis; a limit, direct or indirect, on the total number of Stage 2 or Stage 3 aircraft operations; a noise budget or noise allocation program that include Stage 2 or Stage 3 aircraft; a restriction imposing limits on hours of operations; a program of airport-use charges that has the direct or

One important nuance is that, in order to be grandfathered, the specific restriction must either be explicit in the 1983 Agreement (or the Noise Abatement Plan or Rule) or, at a minimum, clearly contemplated. The FAA previously has advised that noise restrictions (like a mandatory curfew) designed and intended to satisfy noise standards included in a pre-ANCA agreement may not be grandfathered.<sup>16</sup> As a result, although objectives and standards in the 1983 Agreement may be grandfathered, specific restrictions to implement such objectives and standards are not grandfathered unless included expressly in the 1983 Agreement (or the 1985 Noise Abatement Plan and Rule) or clearly contemplated at the time.

There are several negative consequences that might result from violating ANCA: (i) a court may prohibit a restriction from being implemented (on the basis that a restriction that violates ANCA is preempted);<sup>17</sup> (ii) the Airport Board might be found in violation of the 1983 Agreement and/or revenue bond agreements (both of which require the Board to operate the Airport in compliance with law); (iii) FAA might suspend the Board's eligibility to receive AIP grants and/or impose and use Passenger Facility Charges.

### **III. The Airport's Post-ANCA Noise Initiatives**

Though the Board is prohibited by ANCA from adopting new mandatory noise or access restrictions without FAA approval, the Board has been able to implement many post-ANCA noise measures. These measures have been implemented through either voluntary compliance or direct FAA assistance. None has required FAA approval under ANCA.

#### **A. Voluntary Curfew**

Although a curfew on commercial jet aircraft was included in the 1985 Noise Abatement Plan, the curfew was later expanded by the Board to also include General Aviation aircraft. Again, the Board is prohibited by ANCA from imposing a mandatory curfew at the Airport or imposing fines and or incentives for compliance. Nonetheless, the Board adopted and encourages compliance with a voluntary curfew. This curfew requests pilots not to land between 11:30 p.m. (2330) and 6:00 a.m. (0600) or take off between 10:00 p.m. (2200) and 6:00 a.m. (0600) and to observe this curfew unless an emergency exists.

The Airport makes curfew information widely available through its website, an insert for pilot notebooks, air traffic control broadcasts, aeronautical publications, and other materials typically used by pilots for flight planning. Pilots also are advised that the Airport and tower are not staffed overnight, fire/rescue and other services are not available during this period, and in winter, the runway, taxiway, and ramp are not plowed after the last scheduled passenger flight arrives.

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indirect effect of controlling airport noise; and any other limit on Stage 2 or Stage 3 aircraft that has the effect of controlling airport noise.”).

<sup>16</sup> See Letter from N. Garaufis, FAA Chief Counsel, to Rep. James Rogan, at 2 (May 13, 1999) (“Evidence is not available to show that the city’s proposed airport noise restrictions were contemplated by or that they were specifically included in either of the two agreements under discussion . . .”).

<sup>17</sup> 49 U.S.C. § 47526; *Friends of East Hampton Airport, Inc. v. Town of East Hampton*, 841 F.3d 133 (2d Cir. 2016) (court held that ANCA applies to all airports regardless of whether the airport receives grant funding under the AIP and that noise restriction adopted in violation of ANCA is preempted).

Commercial operations are handled a bit differently. As noted above, the 1983 Agreement required adoption of a Noise Abatement Plan. The Plan requests that scheduled operations only occur after 7:00 a.m. (0700) and before 9:30 p.m. (2130) each day. The Board's agreements with the airlines provide that scheduled flights delayed by weather, air traffic or mechanical failures may operate until 11:30 p.m. (2330). If a scheduled flight is unable to arrive the previous night, it may also be rescheduled to arrive between 6:00 a.m. (0600) and 7:00 a.m. (0700) the next morning - if early arrival is necessary to maintain that day's schedule.

If a general aviation aircraft lands or departs during curfew hours, Airport staff receives a report from Flight View, showing N-numbers and time of aircraft operations at the Airport. Staff then identifies the addresses of companies that operated during curfew hours (with the exception of life-flights). For any aircraft that do not conform to the voluntary curfew, staff sends them a notification letter. After finding the cause of the violation, Airport staff attempts to follow up with the person who submitted a complaint.

Any person may report an aircraft operation outside of the voluntary curfew times or for any other noise event by calling (307) 201-5014. This is a 24/7 voicemail box that emails staff the message. Airport staff will then take the information, log it and report back if so requested. The report may also be filed through the Airport's website, which allows the interested party to look up the aircraft online and note its flight track.

#### B. Stage 2 Ban

In 2003, Congress enacted legislation authorizing the Board to ban the lighter Stage 2 aircraft that were not, at that time, subject to a nationwide phaseout.<sup>18</sup> Pursuant to this legislation, on June 20, 2004, the Board enacted a rule prohibiting the operation of Stage 2 aircraft. At the time, these Stage 2 aircraft generated the highest single event noise levels in the valley. Under the Town of Jackson Municipal Code, violations of this rule will result in a mandatory court appearance and fines.<sup>19</sup> These aircraft were subsequently phased out throughout the country.

#### C. Upgraded Noise Monitoring System

In 2004, the Board upgraded its noise measurement program by installing a permanent noise monitoring system. The system consists of six permanent monitors which collect noise data continuously year-round. Four of the six sites are located in the Park to monitor noise levels in more sensitive areas. The upgraded noise monitoring system records the continuous noise level every second, calculates noise events from aircraft and other noise sources, and determines the DNL noise level as required in the 1983 Agreement. The permanent noise monitoring system

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<sup>18</sup> Vision 100 – Century of Aviation Reauthorization Act, Pub. Law 108-176, § 825(a) (2003) (“Notwithstanding chapter 475 of title 49, United States Code, or any other provision of law or regulation, a sponsor of a commercial service airport that does not own the airport land and is a party to a long-term lease agreement with a Federal agency (other than the Department of Defense or the Department of Transportation) may impose restrictions on, or prohibit, the operation of Stage 2 aircraft weighing less than 75,000 pounds, in order to help meet the noise control plan contained within the lease agreement. A use restriction imposed pursuant to this section must contain reasonable exemptions for public health and safety.”).

<sup>19</sup> Jackson Municipal Code, § 12.16.130(B).

enhancement provides year-around noise data, noise data associated with individual events and data at additional sites of interest in the Park and the surrounding community.

#### D. BI-6 Radar Installation

In 2008, the FAA installed a Beacon Interrogator Type 6 radar system (BI-6) at the Airport. The noise monitoring system was then upgraded to utilize the radar and flight information from the BI-6. This provided information on the flight path and type of each individual aircraft. The BI-6 radar data connection now allows for the noise monitoring system to correlate an aircraft noise event to the aircraft which is actually causing the event. This provides a more accurate measurement of the aircraft DNL noise level, and to identify operations that generate higher noise levels. This also allows the Board to more precisely model the flight paths around the Airport and identify operations that deviate from preferred paths

#### E. NextGen Approach from the North

The Board worked extensively with the FAA and the Park Service to provide a “NextGen” satellite-based precision arrival procedure from the north that makes the landing path safer and shorter, while avoiding most noise sensitive areas of the Park. NextGen is an umbrella term for the FAA's ongoing transformation from a ground-based to a satellite-based system of air traffic management. NextGen is designed to increase safety while reducing adverse environmental effects. Because routes are more direct, there are reductions of delays both in the air and on the ground. These benefits reduce carbon emissions, fuel consumption and noise.

A NextGen approach to Runway 19 was implemented by the FAA in March 2013. When it was sanctioned and adopted, it was the first instrument procedure in the United States with a curved approach component designed for noise abatement purposes. The Global Positioning System approach is being used by approximately 94% of jet aircraft flying Instrument Flight Rules approaches to Runway 19 (72% of all Runway 19 jet arrivals).

#### F. Required Navigation Performance (RNP) Approach

An even newer flight procedure at the Airport for arrivals from the north has been designed to include noise abatement goals developed within the most recent Part 150 Study. This new procedure was published by FAA in December 2021 and provides noise abatement benefits by shifting noise even further to the east over Highway 89 and away from the core areas of the Park, while also providing for reductions in CO2 emissions. This procedure is also vertically optimized so that an aircraft flying the procedure will continuously descend at near idle power. However, this new procedure may only be flown by aircraft having the necessary navigational equipment as well as pilot training of use of the technology. Currently, it is estimated that about 40% of the commercial jet aircraft and 10% of the corporate jet aircraft operating at the Airport could fly this procedure. As when the NextGen procedure was first implemented, initial use is low, but its usage should increase over time and is expected to become the dominate arrival procedure at the Airport.

### G. Fly Quiet Program

Fly quiet programs are custom-tailored environmental compliance plans to encourage airlines, business jet operators (single and fractional owners) and private pilots to operate as quietly as possible at an airport. The primary purpose of a fly quiet program is to foster a participatory approach to complying with existing noise abatement procedures and objectives by including stakeholders in the process from the beginning.

The development of a Fly Quiet Program for the Airport was approved by FAA in the most recent Part 150 Noise Study, and the inaugural Fly Quiet Program debuted in 2021. Under this Program each airline and corporate jet operator with a minimum number of flights is graded and ranked on its performance; these scores are then made available to the public via the Airport's website, newsletters and publications. It also shows whether an operator is working to improve its performance and ranking. The overall goal of the program is to influence airlines and corporate operators to fly as quietly as possible at the Airport, and over the Park and adjacent lands

### H. Southern Departure Procedures Study

In late 2021, the Board convened stakeholders and engaged a team of consultants to undertake a Southern Departure Procedure Study. The purpose of the Study is to further investigate the feasibility of a procedure for southern departures that could reduce noise in the community. The Study was designed to determine if one or more such alternative procedures are reasonable and in the best interest of the entire community, and if so, to conceptually design and submit them to the FAA. The intent of the Study is to build upon the well-developed existing noise abatement program at the Airport and look for ways to further reduce noise without shifting noise over others, using the most current technology.

\* \* \* \*





# APPENDIX B:

FAA LETTER





U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Northwest Mountain Region  
Office of the Regional Administrator

2200 S. 216th Street  
Des Moines, Washington 98198

September 29, 2021

Mr. James P. Elwood  
Executive Director  
Jackson Hole Airport Board  
P.O. Box 159  
Jackson, WY 83001

Dear Mr. Elwood:

Thank you for your letter dated August 30, 2021. You expressed your appreciation for the new departure and approach procedures to the north of Jackson Hole Airport and asked the Federal Aviation Administration (FAA) not to implement the departure procedure to the south (KICNE ONE).

To clarify any misunderstanding in your August 30 letter, we did work with you and your team to make changes to the KICNE ONE departure procedure up until the Instrument Flight Procedures Information Gateway submission deadline of January 2, 2021, for the October 2021 publications. We shared with you that, under current criteria, we could not meet the recommendations of the Airport's Part 150 study. The STORZ waypoint was placed as far east as criteria would allow. The waypoint itself was necessary as a point where aircraft would turn to closely realign with the current departure procedures and also minimize flight over the Grand Teton National Park. You and your team agreed to the FAA proceeding with the proposed KICNE ONE departure design with the left turn instead of the design that followed the current departure procedures.

During meetings held with you and your team on September 10, 2020, October 30, 2020, and January 8, 2021, community engagement was discussed. You were informed that the FAA would virtually (due to the COVID-19 public health emergency protocols) brief the National Park Service, airport board, and communities on the proposed procedures. According to meeting notes, at no time was there a request, nor an agreement, to solicit public comments on the proposed procedures since, by definition in FAA Order 1050.1, Paragraph 5-6, the limited changes to the existing procedures are categorically excluded and thus do not require an environmental assessment. In general, due to the fact that projects analyzed pursuant to a categorical exclusion do not create significant impacts and therefore result in a more expedited review, there is not a public outreach process. The community engagement that was agreed upon was to inform the public (virtually) of the changes being proposed and answer clarifying questions. The community briefing was to be completed in September 2021. Due to the Airport's request that the FAA not implement the procedure, the briefing will, of course, not occur.

Our goal, and congressional mandate, remains to modernize and enhance the National Airspace System with the transition to performance based navigation. As the airport sponsor of the procedure, we feel it would have been more constructive to have had your concurrence and support of the implementation of KICNE ONE. Therefore, per your August 30 letter, we will terminate the development of the KICNE ONE procedure. This will allow you the time to work with your community to propose a procedure design to the FAA which meets criteria and is acceptable to all parties. A new design will also require a new environmental review. We ask that a feasible alternative for KICNE be delivered to the FAA through the Instrument Flight Procedures Information Gateway no later than one year from today.

We appreciate the opportunity to review and respond to your concerns. If you have any further questions, please feel free to reach out to my office at (206) 231-2001.

Sincerely,

*David C. Suomi*

David C. Suomi  
Regional Administrator  
Northwest Mountain Region

# APPENDIX C:

## TASK FORCE MEMBERS



# TASK FORCE MEMBERS

Task Force Members	
Name	Organization
Valarie Brown, Chairwoman	Airport Board
Jeremy Barnum	Grand Teton National Park
Sally Painter	ANPAC Representative
Frank Durbian	US Fish and Wildlife Service, National Elk Refuge
TJ McCann	South of Airport Resident
Todd Stiles	US Department of Agriculture, Bridger-Teton National Forest





# APPENDIX D:

## POWERPOINT PRESENTATIONS



# **Southern Departure Study**

Jackson Hole Airport

Study Input Taskforce Meeting  
February 10, 2022



# Agenda

- Introduce Taskforce and Consultant Team
- How we got here
- Purpose of Study
- Purpose of Study Input Taskforce
- Summary

# Study Input Taskforce (SIT)

- Valerie Brown, Jackson Hole Airport Board – Taskforce Chair
- TJ McCann, Community Pilot
- Frank Durbian, US Fish & Wildlife
- Jeremy Barnum, National Park Service
- Todd Stiles, US Forest Service
- Sally Painter, ANPAC



# Consultant Team

## Project Organization



## SOUTHERN DEPARTURE PROCEDURE STUDY JACKSON HOLE AIRPORT

### PROJECT TEAM

- MH Mead & Hunt
- FTE Flight Tech Engineering
- BNI BridgeNet International
- JV Aviation
- DW Design Workshop



**PROJECT PRINCIPAL**  
Ryk Dunkelberg, ESQ. MH



**PROJECT MANAGER**  
Kate Andrus, AICP, LEED GA MH



**FLIGHT PROCEDURES**  
Alec Seybold FTE



**FLIGHT PROCEDURES**  
Richard Scott FTE



**NOISE MODELING AND MONITORING**  
Paul Dunholter BNI



**AIR TRAFFIC CONSIDERATIONS**  
Greg Dyer JV



**FACILITATOR**  
Bill Kane DW



# Taskforce Objectives

- Gain a common understanding of the physical, environmental, and regulatory context for operations at the Airport.
- Gain a common understanding of the history of flight operations and southern departure options used and considered in the past.
- Review the Airport's history of noise abatement as it relates to both northern and southern procedures for commercial and general aviation operations.
- Identify and prioritize possible improvements to southern departures that will reduce aircraft noise intrusion.
- Target August 2022 to provide findings to the Airport Board.





# Ground Rules

- Please be recognized by the facilitator when you wish to speak.
- We will hold questions to logical stopping points in the interest of maintaining an uninterrupted flow of information. We will try our best to avoid rabbit holes.
- We are constituted as a Taskforce whose job it will be to discuss southern departure options and prioritize potential for improvements.
- The Chairman of the Taskforce represents the Airport Board and is our conduit for presenting the findings going forward.



# House Keeping

- We will start and stop on time. Please be prompt and ready to go at the appointed start time. We will respect everybody's time and strive to live within the allocated meeting times.
- Seek first to understand and then to be understood.
- This is a cooperative working group—not an adversarial proceeding. Everyone will be heard, and all opinions and views will be respected.
- Remember to concentrate on the issue, not the person.
- Solutions which optimize for one group at the expense of others will not be carried forward—noise will not shift from one neighborhood to another.
- We will try to minimize acronyms where possible, but many cannot be avoided.



# Organization of Study Input Taskforce

- Anticipate 4 meetings over the 8-month period.
- Receive public comment at conclusion of each meeting and for two weeks thereafter at: [southerndepartureprocedurecomments@jhairport.org](mailto:southerndepartureprocedurecomments@jhairport.org).



## How we got here

- Airport and FAA instituted a noise abatement left turn in the early 80's.
- Due to terrain issues and updates to FAA standards and procedures, this was eliminated approximately 20 years ago.
- The Airport completed a 14 CFR Part 150 Study in 2019 that recommended implementation of the historic left turn, or similar using NexGen Technology. The Study also recommended new approaches from the north.
- FAA evaluated and designed, and then implemented the northern approaches in Dec 2021.



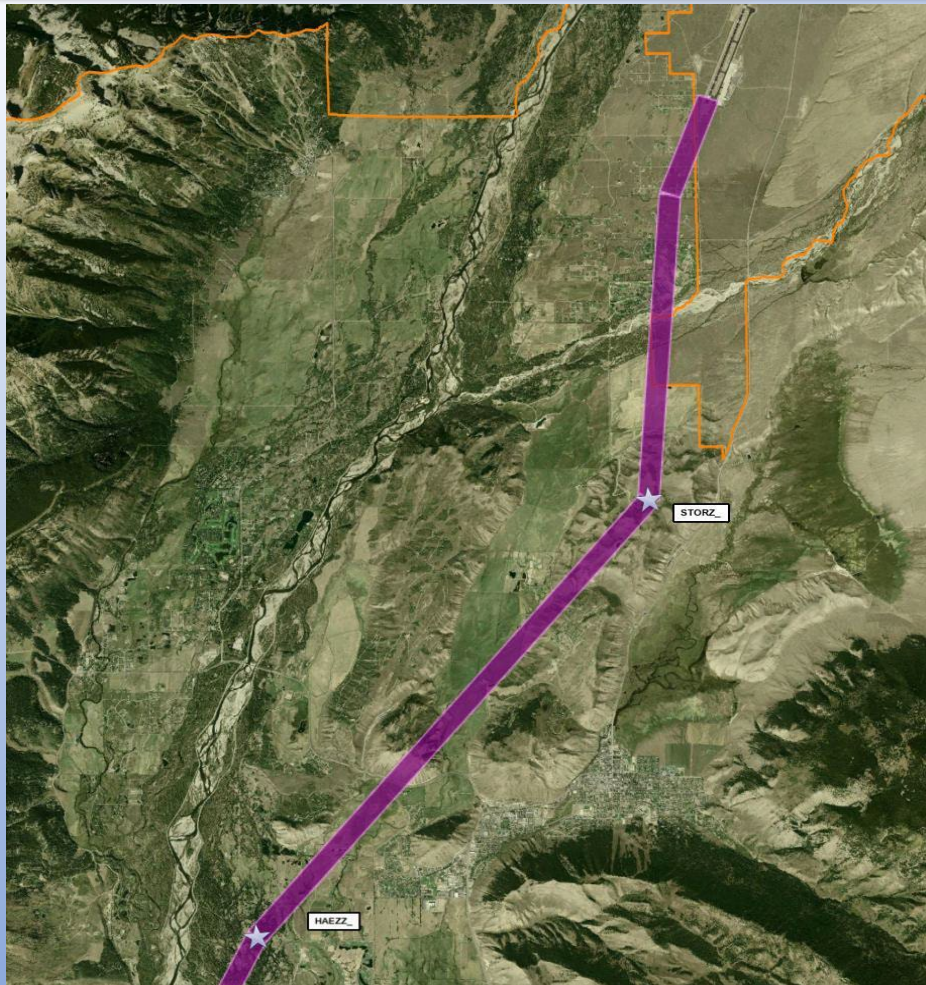
## How we got here

- In response to the southern departure, FAA developed a proposed procedure, the KICNE ONE. Per current criteria, they could not fully mirror the historic left turn.
- Airport requested that FAA pause implementation of KICNE ONE to allow for additional technical analysis and community outreach; therefore, the development of the taskforce.
- FAA requested any additional analysis be presented through their portal with a target of September 2022.





# Graphic of KICNE ONE Proposed Departure





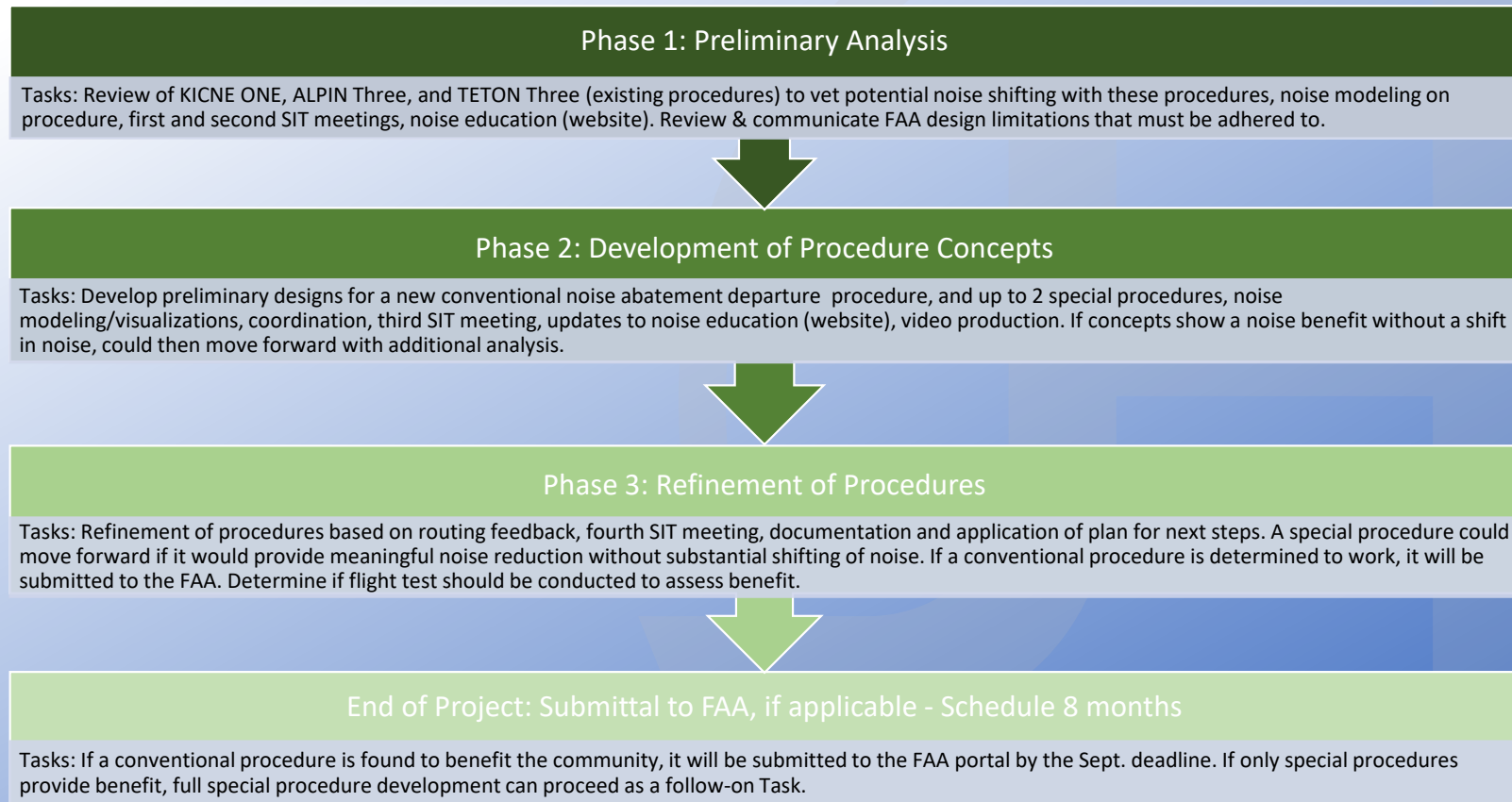


# Southern Departure Parameters

- FAA criteria and protocols must be followed.
- Only procedures to be considered are those that could benefit the entire community and are likely to be flown.



# Study Process



# Instrument Flight Procedures versus Visual Procedures

## *Why the focus on Instrument Procedures?*

- Standard Operating Procedures for Air Carriers, Charter Operators, and Corporate/Business jets require flights to be conducted under Instrument Flight Rules (IFR) regardless of weather conditions. This necessitates the development of Instrument Procedures rather than visual maneuvers.
- Because of the technological revolution in Flight Deck technology, Instrument Procedures provide unprecedented precision, fidelity, and safety otherwise unavailable to the Flight Crew.



# Flight Procedure Evaluation

- As the flight procedure specialist for the project (Flight Tech) will bring our knowledge of specialized design solutions that have been implemented at similar mountain airport locations to the Jackson Hole Airport.
- Not all aircraft have the same navigation capabilities. For example, each aircraft type has a different onboard navigation computer (i.e., Conventional radio based vs GPS based).
- Extensive FAA design rules exist which dictate everything from distance between waypoints, necessary turn radius, altitude & speed limitations and more.
- In addition to FAA design standards there are numerous Airline/Operator performance factors (climb performance and emergency procedures) that must be accounted for as well as Air Traffic Control & traffic deconfliction requirements.



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

National Policy

**ORDER  
8260.3E**

Effective Date:  
09/17/2020

**SUBJ:** United States Standard for Terminal Instrument Procedures (TERPS)

This order prescribes standardized methods for designing and evaluating instrument flight procedures (IFPs) in the United States and its territories. It is to be used by all personnel responsible for the preparation, approval, and promulgation of IFPs. These criteria are predicated on normal aircraft operations and performance.



# Desired Assessment Outcome

The Departure Procedure Evaluation will analyze the following navigation methods for Runway 19 with the goal of finding the most noise friendly path:

- 1) The assessment of a new conventional instrument departure procedure (using land based radio nav aids). This will utilize existing nav aids located on and off the airport and will provide access to the widest range of aircraft.
- 2) Assessment of a new GPS satellite based departure using Area Navigation. This will utilize GPS waypoints in the sky to guide aircraft from point to point. Similar to conventional, it will have a high rate of usability by a wide range of aircraft.
- 3) Development of a new Advanced Navigation instrument departure procedure utilizing curved path technology. This will utilize a technology called Required Navigation Performance (RNP). It requires special aircraft equipage and authorization and therefore is usually developed as a special procedure. Initially limited to commercial airline fleets, but use will expand over time as newer aircraft models are integrated in to the fleet.



# Types of Flight Procedures

- The navigation capabilities of each aircraft have a high degree of variability.
- These navigation specifications can split in to three groups:
  - Conventional (Radio based)
  - Area Navigation (RNAV GPS/DME)
  - Required Navigation Performance (RNP)
- Each navigation type requires a different level of equipage.
- Conventional and RNAV are the most common.
- RNP are usually only useable by airline and highly equipped business jets.

## NEXT GEN Components: RNAV/RNP

Moving to Performance-Based Navigation

### Conventional

Today's airways connect ground-based navigation aids



Limited Design Flexibility

### RNAV

Area Navigation (RNAV) routes follow defined "waypoints"



Increased Airspace Efficiency

### RNP

Required Navigation Performance (RNP) routes within specified "containment area"

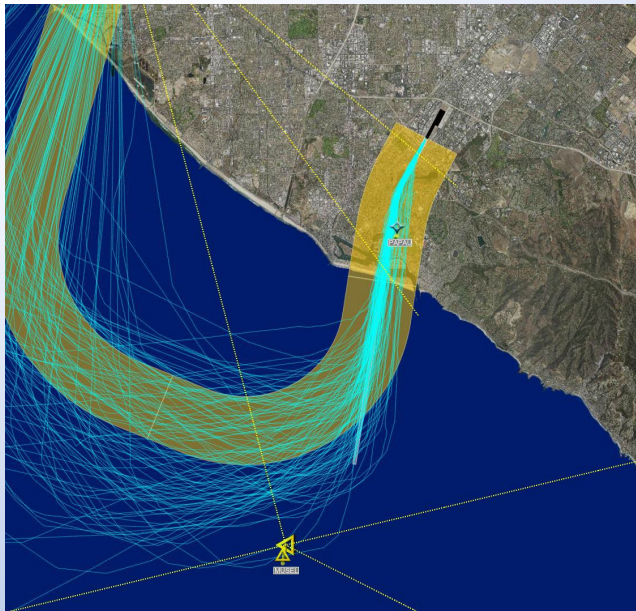


Optimize Use of Airspace

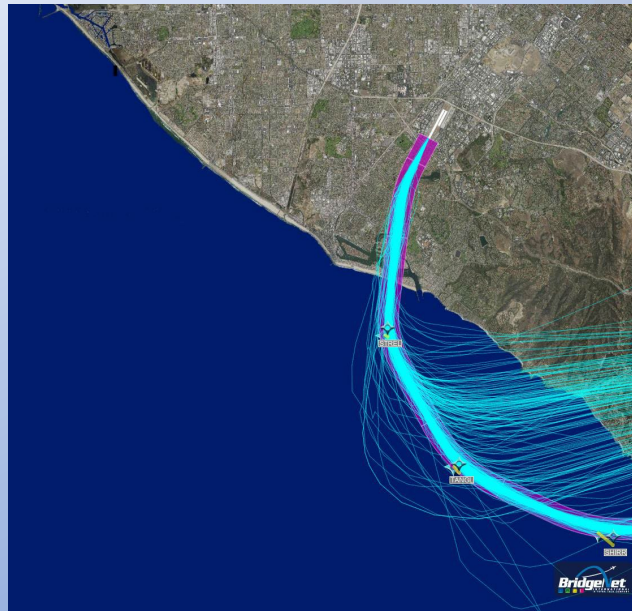
Source: Federal Aviation Administration

# Examples: Types of Flight Procedures

In practical application - Each Navigation method results in a different containment area with RNP procedures resulting in the least variability.



Conventional



RNAV



RNP





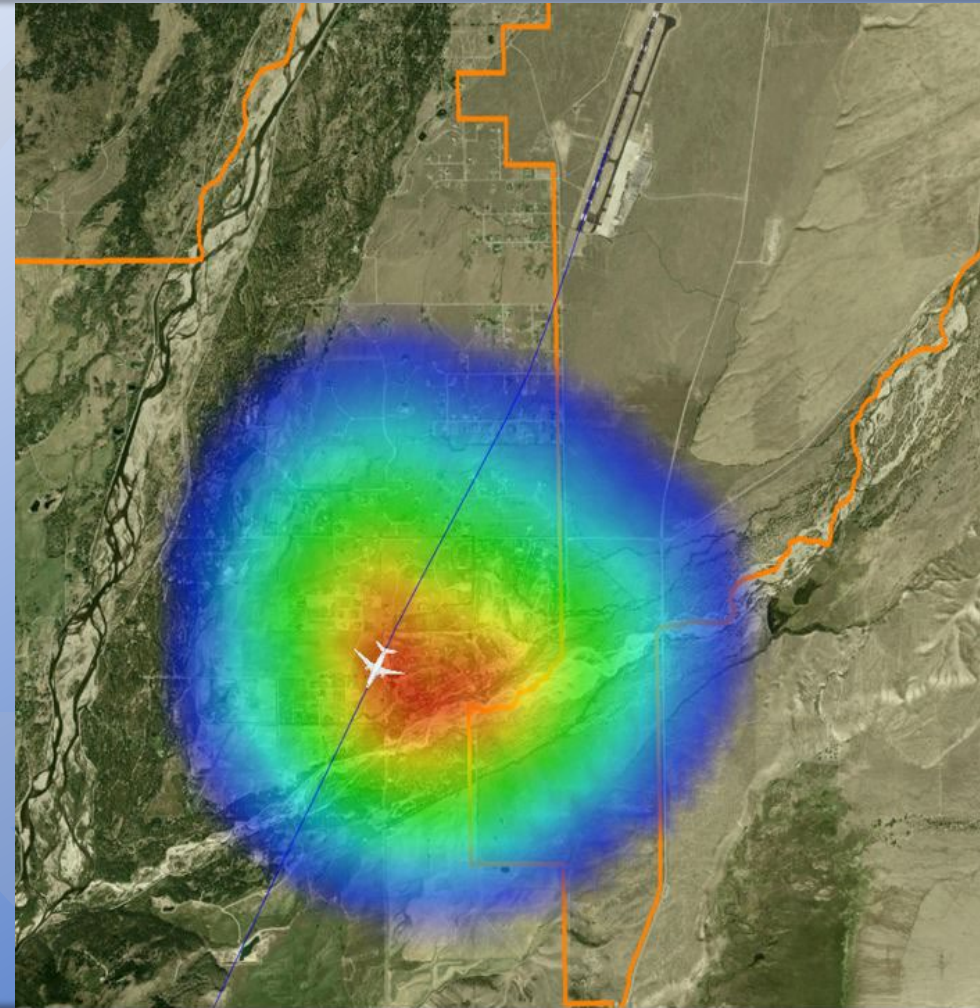
# Flight Procedure Evaluation Steps

1. Data collection and assessment will include:
  - Review of FAA Design and aircraft navigation limitations specific to JAC.
  - Collection and review of noise sensitive locations.
  - Review of existing or future Air Traffic Control preferences and limitations (FAA Enroute facility & Local Tower).
  - Review of Air Carrier & Business Jet Operating limitations.
  
2. Once the design constraints are established, the Flight Procedure team will begin assessment of new departure procedure paths based on allowable FAA standards.
  - Performed using the same software as the FAA.
  - Will share the results in future meetings to collect additional feedback and apply necessary refinements of procedures..



# Noise Analysis

- ❖ Create existing baseline with monitoring data
  - Use data to show typical aircraft flying the current procedure.
  - Single event noise levels for permanent and temporary sites at representative locations.
- ❖ Potential Procedure Evaluation
  - Model single event levels and the range in change may occur with the potential alternative procedures.
- ❖ If possible, have an operator test fly preferred alternatives



Graphic shows a 2D representation of a 3D flight for single event noise levels. For reference, this is just an example of the type of noise analysis visuals that will be completed in the study.



# Summary

- Next Step: Initiate analysis and evaluation of possible procedures.
- Next Meetings
  - Meeting 2, Common Ground - week of March 21, 2022.
  - Meeting 3, Procedure Concepts - approximately the week of April 18, 2022.
  - Meeting 4, Procedure Refinement - approximately the week of August 1, 2022.
- Questions/Comments?

# **Southern Departure Study**

Jackson Hole Airport

Study Input Taskforce Meeting #2

March 24, 2022



# Setting the Stage

- Meeting Summary: Review history and current efforts in noise abatement
- Purpose: Understand the history of noise reduction strategies implemented to date and how it fits within the Southern Departure Procedure Scope
- Common Ground - Airport Noise Abatement
  - Airport is operated with constant attention to noise and the airports' unique location
  - Noise concerns are a fundamental element in the daily operation of the airport
- We are open to comments, questions and suggestions on all noise elements
  - First priority remains commitment to providing a southern departure response by August 22
  - The Airport is focused on continuous improvement





# Agenda

- History and Background
  - FAA and Department of Interior Conditions
  - General Use Agreement Conditions
- How is noise evaluated?
  - DNL - Cumulative Metrics
  - Thresholds - FAA and Department of Interior
  - Supplemental Single Event Metrics
- Efforts since the Use Agreement with Department of Interior
- How has noise changed?
- Fly Quiet Program Highlights
- Future: How does it link to Southern Departure Study/Taskforce?



# Agenda

- **History and Background**
  - FAA and Department of Interior Conditions
  - General Use Agreement Conditions
- How is noise evaluated?
  - DNL - Cumulative Metrics
  - Thresholds - FAA and Department of Interior
  - Supplemental Single Event Metrics
- Efforts since the Use Agreement with Department of Interior
- How has noise changed?
- Fly Quiet Program Highlights
- Future: How does it link to Southern Departure Study/Taskforce?





# History and Background

## Unique Elements - FAA and Department of Interior

- **FAA Standards**
  - Public use airport
    - Airport has no control over number/type of aircraft (except as limited by the Use Agreement)
    - FAA has total jurisdiction over where and how aircraft can fly
- **Department of Interior Standards**
  - Jackson Hole Airport is the only commercial service airport located entirely in a National Park
  - The Department of Interior is the Airport's lessor
    - Airport operates under the 1983 Use Agreement executed between Department of the Interior (DOI) and the Airport Board
    - Use Agreement contains the terms of a Noise Abatement Program and a Noise Control Plan



# History - Use Agreement Highlights

- 1983 Use Agreement
  - Requires Airport Board to “*incorporate new prudent and feasible technological advances which would allow further reduction in noise impact on Grand Teton National Park*”
    - 14 Code of Federal Regulations (CFR) Part 150 Studies provides framework
  - 2011 Amendment: Adds requirement to work with National Park Service (NPS) to develop and implement reasonable and cost-effective mitigation measures to reduce environmental effects on the Park



# Agenda

- History and Background
  - FAA and Department of Interior Conditions
  - General Use Agreement Conditions
- How is noise evaluated?
  - DNL - Cumulative Metrics
  - Thresholds - FAA and Department of Interior
  - Supplemental Single Event Metrics
- Efforts since the Use Agreement with Department of Interior
- How has noise changed?
- Fly Quiet Program Highlights
- Future: How does it link to Southern Departure Study/Taskforce?



# How is noise evaluated? - DNL

- How is noise evaluated by FAA?
  - Aircraft noise is modeled using the FAA approved noise model, the Aviation Environmental Design Tool (AEDT), to model all operations occurring at the Airport on an annual basis
  - Expressed in DNL Metric
- Cumulative Noise Metric
  - Day-Night Average Sound Level (DNL): An annual average cumulative noise level expressed as noise contours around an airfield, with a “penalty” for each operation between 10 p.m. and 7 a.m.
  - Required by FAA and all Federal agencies addressing aircraft noise
  - Not what people actually hear when an aircraft flies over



# How is noise evaluated? – What is DNL?

**DNL**  
Day-Night Average Sound Level

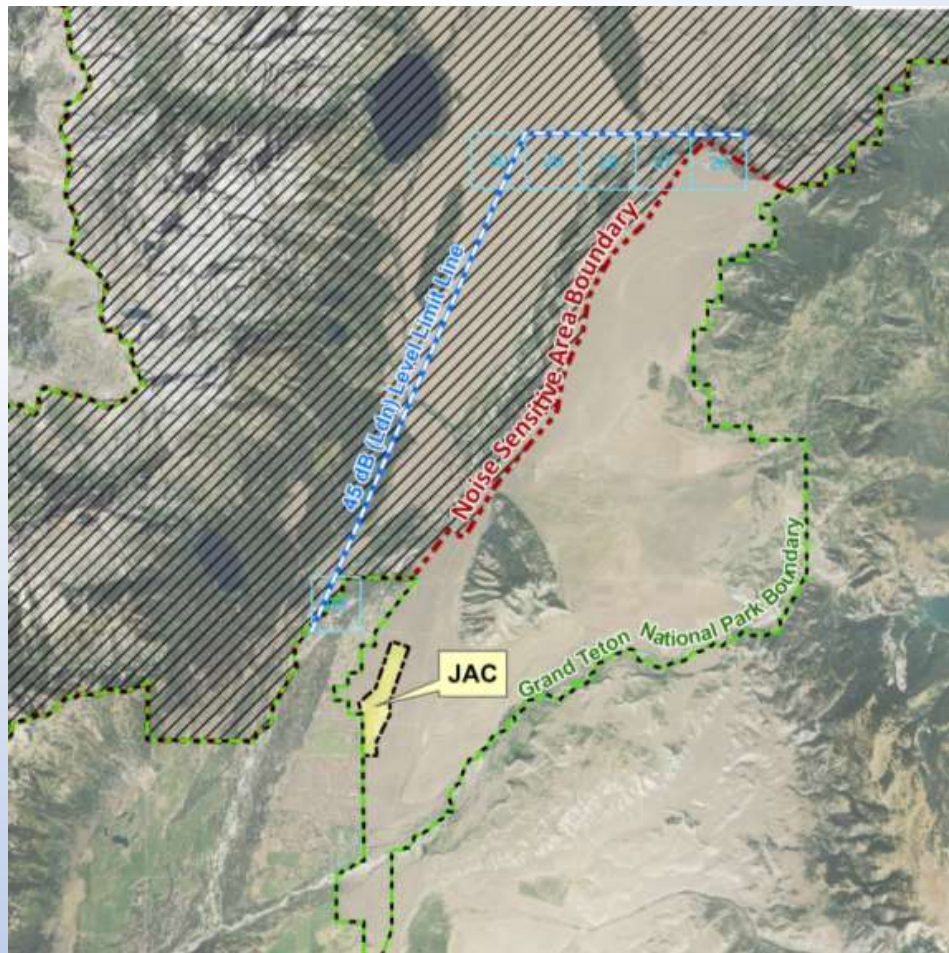


# How is noise evaluated? – FAA Thresholds

- **FAA – Control and Thresholds**
  - FAA has jurisdiction over where and how aircraft can fly
  - 65 DNL level as the threshold level for land use compatibility (i.e. residences)
    - Used for National Environmental Policy Act (NEPA) and Part 150 Studies



## DOI Thresholds - Critical Area and Noise Sensitive Boundaries



Existing Airport Access Restrictions:  
Use Agreement with the DOI limits  
overall noise in the Park

- Critical Area Boundary
  - 45 day-night average sound level (DNL)
- Noise Sensitive Area Boundary
  - 55 DNL as measured north of the Airport as the Moose monitoring site



# How is single noise evaluated?

- Single Event Noise Metric

- Noise associated with a single aircraft flyover and usually identified as Lmax (dBA). The event which most people react to, but there are no FAA defined Lmax thresholds for compatibility
- Aircraft noise is monitored using noise monitors around the Airport
- One of the cornerstones of the voluntary Fly Quiet Program
- *This is how procedure alternatives will be evaluated in the Southern Departure Procedure Study*



# Agenda

- History and Background
  - FAA and Department of Interior Conditions
  - General Use Agreement Conditions
- How is noise evaluated?
  - DNL - Cumulative Metrics
  - Thresholds - FAA and Department of Interior
  - Supplemental Single Event Metrics
- **Efforts since the Use Agreement with Department of Interior**
- How has noise changed?
- Fly Quiet Program Highlights
- Future: How does it link to Southern Departure Study/Taskforce?



# Airport Board Efforts Since the Use Agreement

- GA Operations: **Voluntary** curfew restricting both late-night and early morning
- Commercial Operations: Contractual restrictions limiting scheduled late-night and early morning operations
- Partnership with FAA to develop new noise abatement flight procedures
- Noise monitoring/flight tracking system update
  - Track adherence to existing and future noise abatement procedures
  - Monitor Use Agreement compliance
  - Monitor metrics to enhance the system over time
  - Installation of BI-6 radar and local ADS-B surveillance to enhance flight track monitoring
- Development of Fly Quiet Program
- Conducted four (4) 14 CFR Part 150 Airport Noise Compatibility Studies

*To our knowledge, no other Airport our size has implemented such an ambitious noise reduction program.*

## 2021 Activities

- Implementation of Fly Quiet Program
- Education for all users on Fly Quiet Program
- Tracked Fly Quiet data of over 400 users of the Airport
- Participated with FAA in the *implementation* of new arrival flight procedures from the north to reduce noise, per the Part 150 Study (initiated Dec 2, 2021)
- Installed additional noise monitors south of the Airport to obtain more detailed data on existing and potential new southern departures



# Agenda

- History and Background
  - FAA and Department of Interior Conditions
  - General Use Agreement Conditions
- How is noise evaluated?
  - DNL - Cumulative Metrics
  - Thresholds - FAA and Department of Interior
  - Supplemental Single Event Metrics
- Efforts since the Use Agreement with Department of Interior
- How has noise changed?
- Fly Quiet Program Highlights
- Future: How does it link to Southern Departure Study/Taskforce?

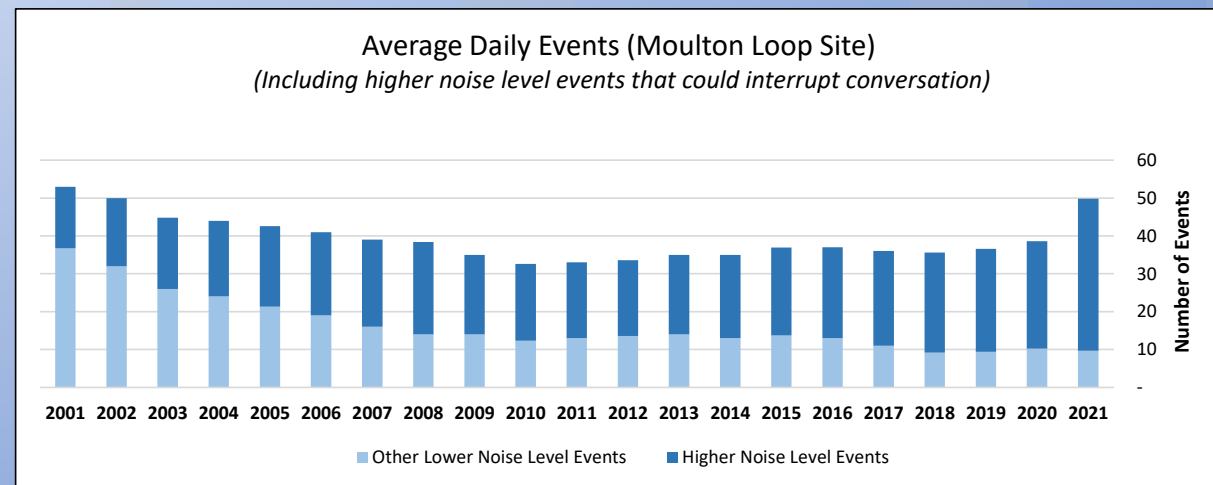
# How has Noise Changed?

- How operational factors have changed over time
  - Increase in jet operations
  - Night operations are minimal with the airport's night restrictions (less than 1 per night)
  - Preferred runway direction of use has stayed about the same
  - Flight paths to the south predominantly hold runway heading
  - Flight paths to the north have shifted eastward away from the center of the park
  - Aircraft fleet has gotten quieter over time
  - DNL has remained relatively steady



# Noise Summary

- Noise generated by the airport on a DNL scale has remained steady even with increased operations the airport has seen over the past several years





# FAA Airspace Modernization

Conventional: ~100% of aircraft can fly



VIDEO

RNAV: ~95% of aircraft can fly



VIDEO

RNP: ~40% of commercial and  
~20% of corporate aircraft can fly



VIDEO

# Historical Departure Flight Track Evolution

## Southern Departures

Current Conventional



VIDEO

Historical 80s and early 90s



VIDEO

## Northern Departures

Current Conventional

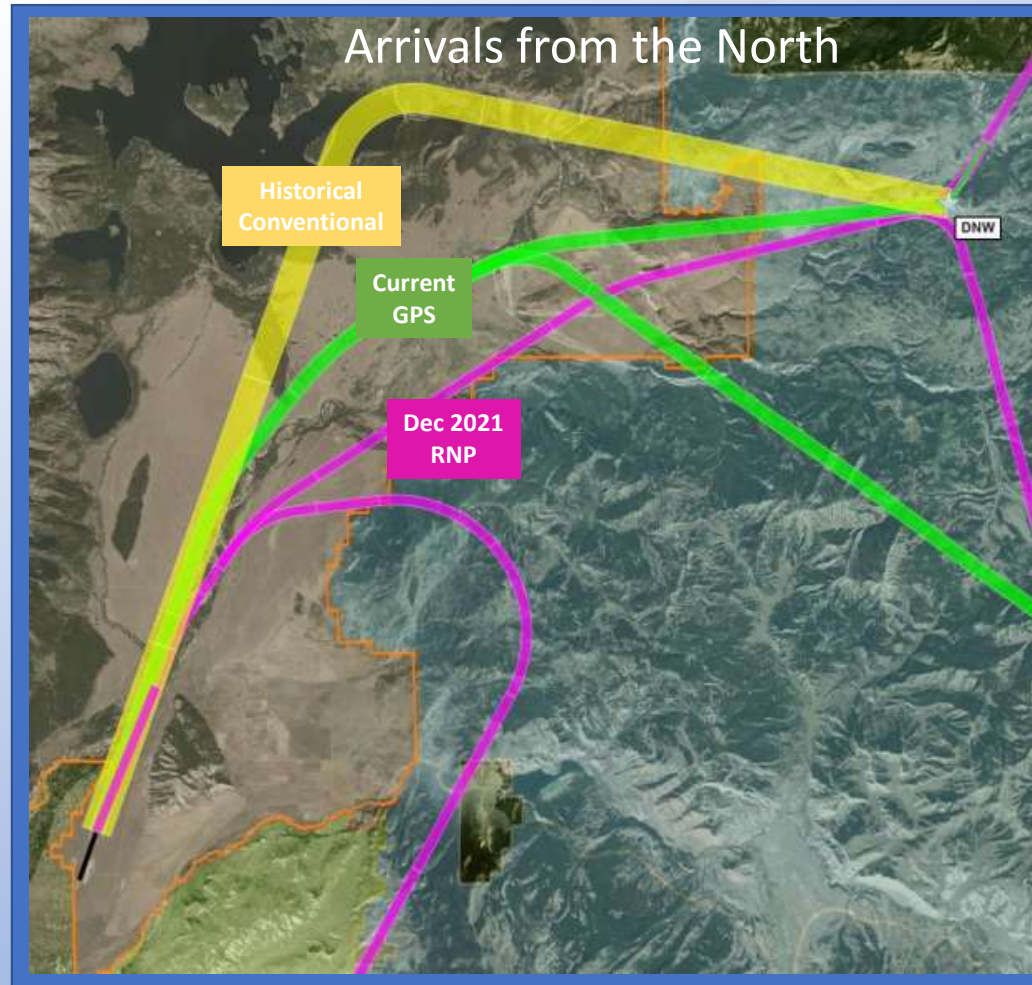


New RNAV (Dec 2021)





# Historical Arrival Flight Track Evolution





# Departure Procedure: Left Turn Request and KICNE







# Agenda

- History and Background
  - FAA and Department of Interior Conditions
  - General Use Agreement Conditions
- How is noise evaluated?
  - DNL - Cumulative Metrics
  - Thresholds - FAA and Department of Interior
  - Supplemental Single Event Metrics
- Efforts since the Use Agreement with Department of Interior
- How has noise changed?
- **Fly Quiet Program Highlights**
- Future: How does it link to Southern Departure Study/Taskforce?



## Goal of Fly Quiet

*Encourage operators to fly as quietly as possible with the quietest available aircraft and adhere to the Airport's noise abatement programs to minimize noise impacts*





# Fly Quiet Program Elements and Bonuses

ELEMENTS	Goal	Measure
<b>Fleet Quality</b>	Acknowledge/encourage operators to fly the quietest aircraft	<ul style="list-style-type: none"> <li>• FAA Aircraft Certificated Stage Noise Level</li> <li>• Stage 5 is highest</li> </ul>
<b>Minimize Higher Noise Events</b>	Minimize the highest aircraft noise events from individual overflights	<ul style="list-style-type: none"> <li>• Track % higher noise events per total operations</li> <li>• Zero high events the highest score (100%)</li> </ul>
<b>Minimize Violation of Voluntary Curfew</b>	<p>Rated upon number of times an operation occurred during the voluntary curfew hours</p> <p>11:30 pm to 6:00 am for arrivals 10:00 pm to 6:00 am for departures</p>	<ul style="list-style-type: none"> <li>• Number of flights in curfew hours</li> <li>• <u>Low score</u> is based upon <u>greater number</u> of curfew violations</li> <li>• Zero curfew operations is highest score (100%)</li> </ul>
<b>Flight Procedure Compliance</b>	Three procedures evaluated with results combined into one score	<ul style="list-style-type: none"> <li>• Rated on % of flights following procedure goal</li> <li>• Full compliance is the highest score (100%)</li> </ul>

BONUSES	Goal	Measure
<b>Quiet Fleet Bonus</b>	Acknowledge/encourage operators that operate the very quietest aircraft	<ul style="list-style-type: none"> <li>• Aircraft that are at least 10 dB higher than the Stage 5 standard. Up to 5 points for percent of fleet that is Stage 5+</li> </ul>
<b>Fly RNP Bonus</b>	Flying the new RNP procedure <i>Starting in 2022</i>	<ul style="list-style-type: none"> <li>• Rated on % of flights flying procedure goal for Full compliance is the highest score (5 bonus points)</li> </ul>



# Fly Quiet Scoring

- Scoring System

- Results scaled on a 0-100% scoring system
- **100%** is considered the best possible in each category
- Overall best score is the highest average of all 4 categories

- Notifications and Acknowledgements

- Both Best and Poor operators in each category and most improved

FLY QUIET RATING	FLY QUIET
FQ Top Tier	90% - 100%
FQ Compliant	70% - 90%
FQ Non Compliant	0% - 70%

CATEGORY OF JET OPERATOR	CLASSIFICATION BY NUMBER OF ANNUAL OPERATIONS
Commercial and Regional Jet Airlines	Minimum of 6 operations
Part 135 Business Jets (fleets, fractional ownership)	-Operators with 30 or more flights -Operators with less than 30 -Minimum of 6 operations
Single Jet Owner/ Operator (i.e., N1234)	-Operators with 30 or more flights -Operators with less than 30 -Minimum of 6 operations



## Fly Quiet Summary

- Shows a continued overall trend of improvement or steady compliance with Fly Quiet metrics.
  - **Fleet Quality** shows trends in greater use of newer generation (quieter) aircraft and less of the older (louder) Stage 2 and Stage 3 aircraft
  - Aircraft are following the **flight procedure goals** with greater than 90% compliance and showing trends of increased compliance
  - The percentage of **higher noise level events** per operation are reducing as older technology aircraft leave the fleet
  - The number of **voluntary curfew hours** violations of jet flights continues to be low

*Looking at how to weight the number of jet operations (not accounted for in Fly Quiet) which can result in increased community annoyance; however, those aircraft are operating in a quieter manner.*



# Agenda

- History and Background
  - FAA and Department of Interior Conditions
  - General Use Agreement Conditions
- How is noise evaluated?
  - DNL - Cumulative Metrics
  - Thresholds - FAA and Department of Interior
  - Supplemental Single Event Metrics
- Efforts since the Use Agreement with Department of Interior
- How has noise changed?
- Fly Quiet Program Highlights
- Future: How does it link to Southern Departure Study/Taskforce?

# Focus on what Airport can control

- Outside of Airport Control
  - Operations have increased, both corporate and commercial service
  - Airport has no control over number and type of aircraft (except as limited by the Use Agreement)
  - FAA has total jurisdiction over where and how aircraft can fly
- Within Airport Control
  - Voluntary Programs
    - Fly Quiet Programs
    - Use of technology to develop flight procedures (i.e. Southern Departure Procedure Study)

# Summary – Continuous Improvement

## Future Actions Include:

- Additional Fly Quiet Enhancements
  - Emphasis on promoting noise sensitive flight procedures with airlines and other users
- Evaluation of Southern Departure Procedures
  - **Next Steps: Presenting preliminary procedure concepts (April meeting!)**
- Questions and Discussion



# Southern Departure Study

Jackson Hole Airport

Study Input Task Force Meeting #3

April 28, 2022



# Agenda

- Introductions and Purpose of the Meeting
- Overview of Existing Southern Departure Procedures
- Review of Terrain and Procedure Constraints
- Presentation of Preliminary new Southern Departure Procedure Concepts
- Facilitated Discussion



# Setting the Stage

- Review of six preliminary departure route concepts
  - Study will not propose simply moving noise from one neighborhood to another
  - There is no voting, but we want to focus the discussion on pros and cons and any potential revisions
  - Work to identify any concepts which are “nonstarters” and should be screened out from further design analysis or noise modeling
  - Identify concepts that offer the most promise
  - Move forward with more detailed design/noise analysis for discussion at next meeting
- Facilitated discussion relative to concepts
  - Federal partners and implications for wildlife and park management
  - Neighborhood representatives
- Questions welcome throughout the presentation!
  - Questions/ideas outside the scope meeting saved in the project parking lot

# Review of Existing Conditions

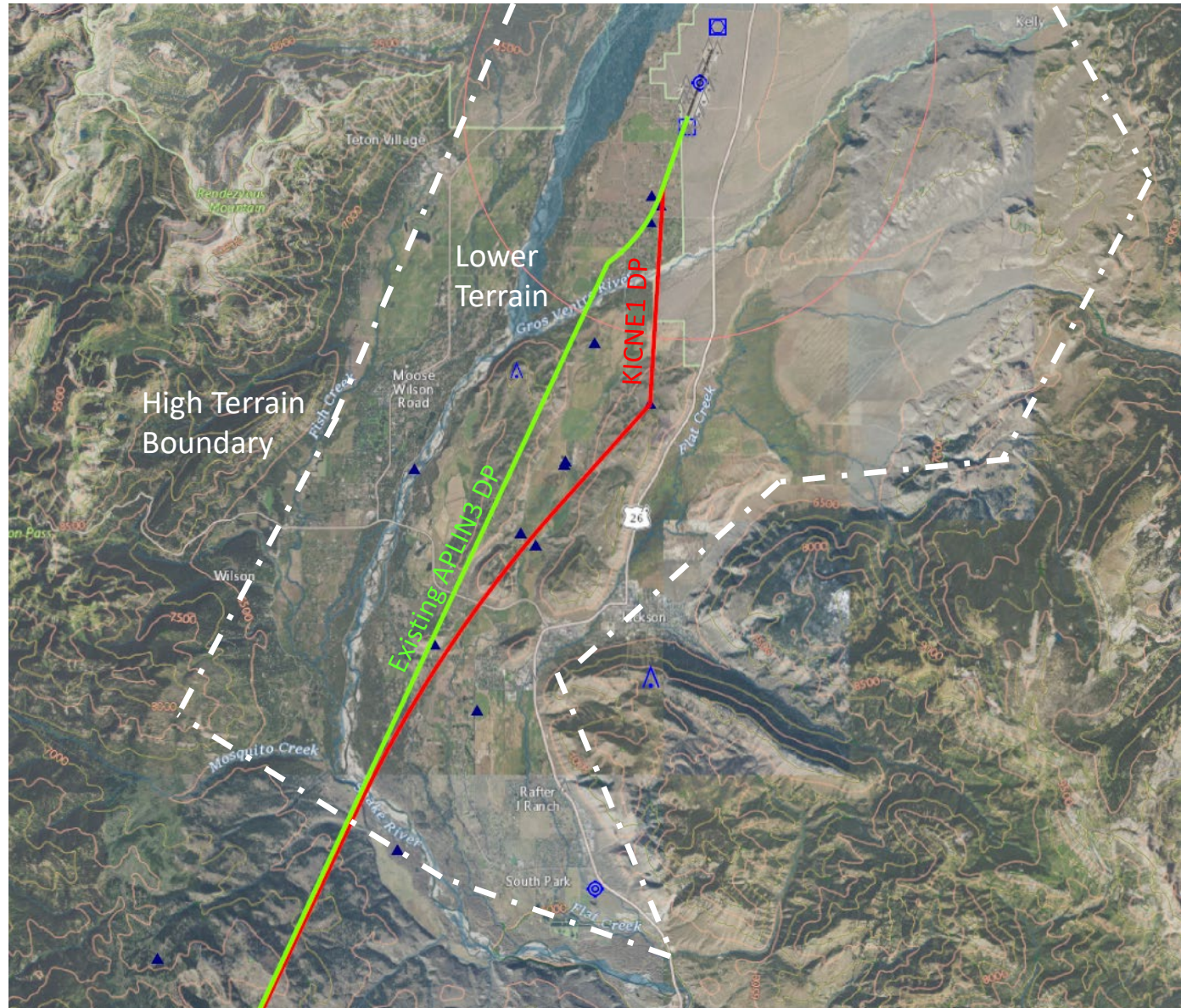
- Current Southbound (Runway 19) departure assignments.
  - Note: Southern departures utilize Runway 19 –which is based on the magnetic orientation of the runway centerline in relation to magnetic north.
- Procedure design constraints
- Air Traffic Control Considerations (ATC)
- Initial Climb Altitudes before turning



# Terrain Constraints

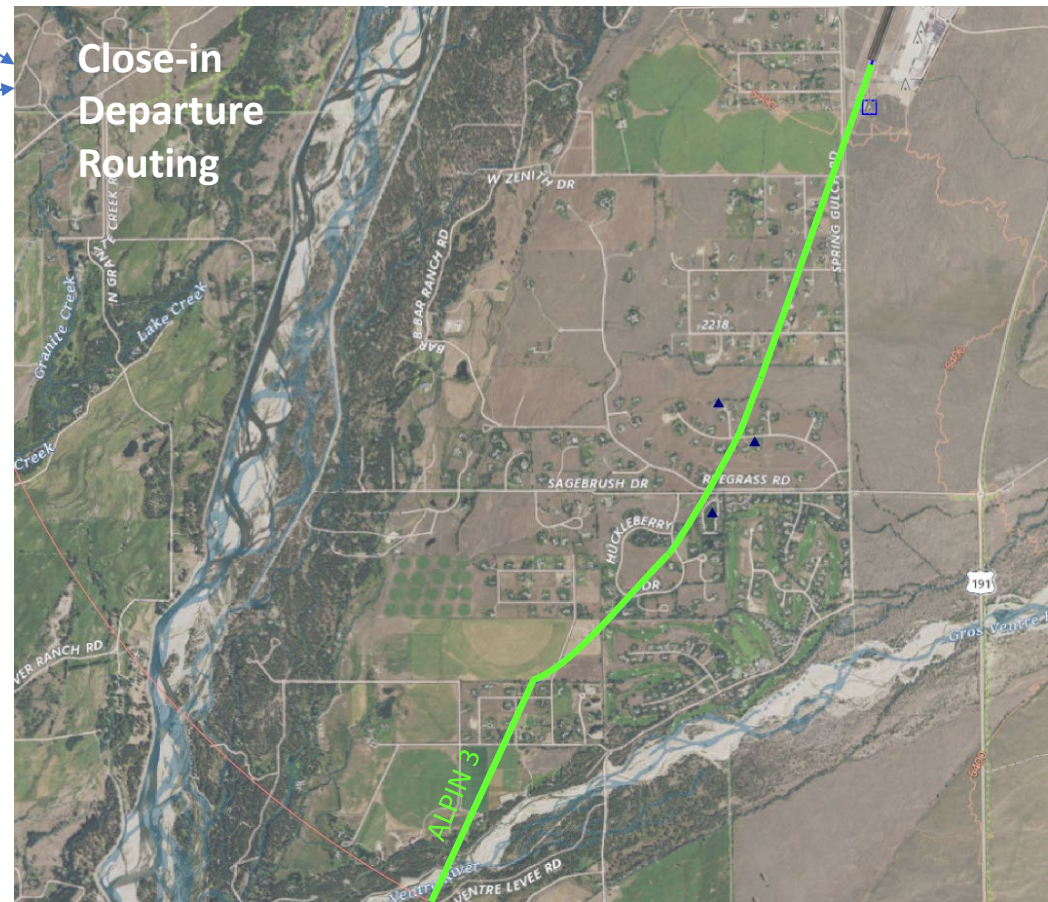
## Design Considerations:

- Developing departures starts with identifying an Initial Climb Area (ICA)
- The closer to mountainous terrain - the more likely turbulence is for the aircraft and passengers





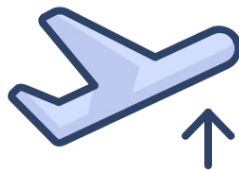
# Current ALPIN 3 & TETON 3 Departures (Radio Nav)





# Altitude Requirements

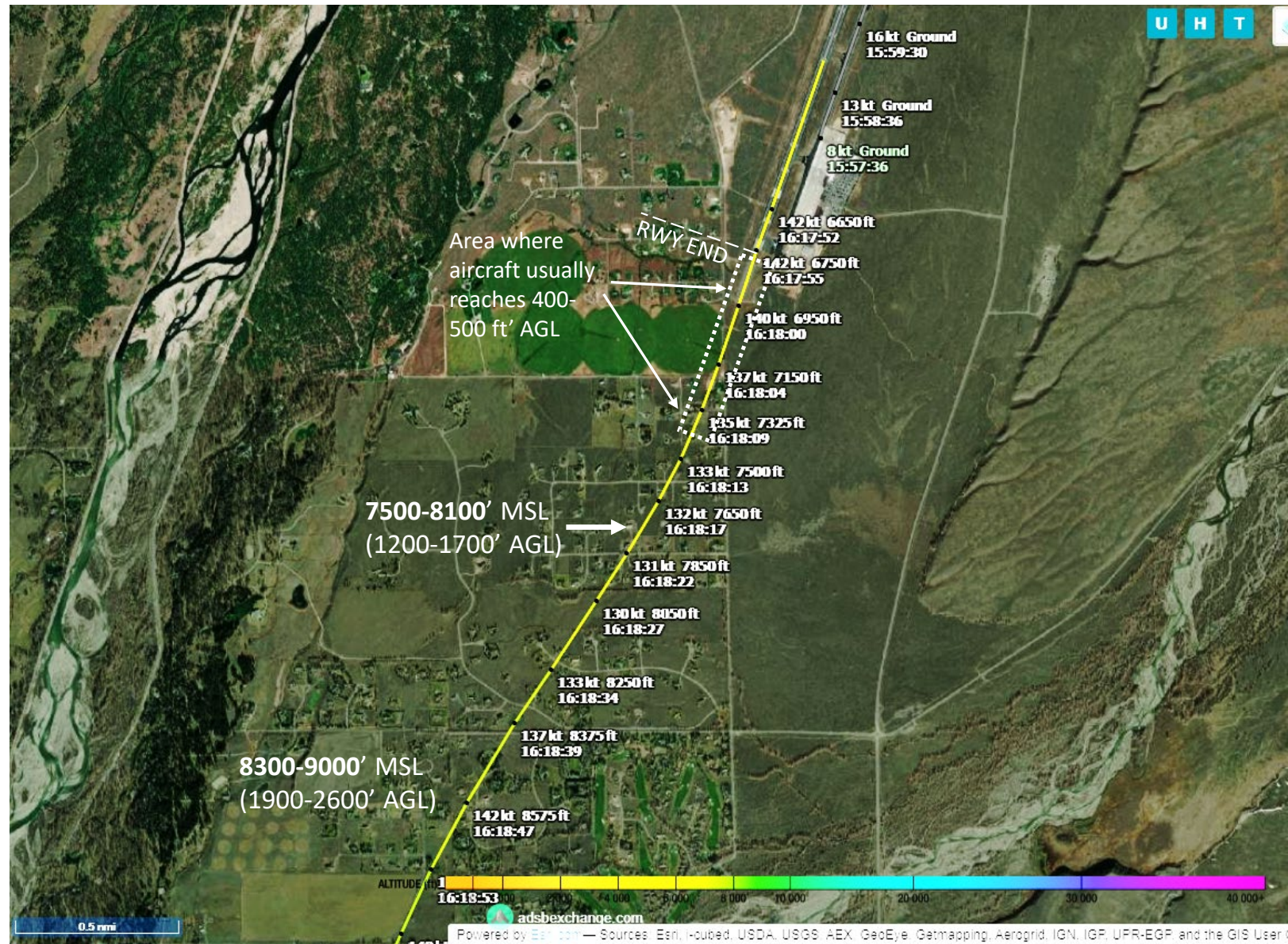
- When applying standard FAA design rules, aircraft must be allowed to climb to an altitude between 400 ft (radio nav) to 500 ft (RNAV/GPS) Above Ground Level (AGL) before the initial turn is made.
- **Why?** This accounts for climb rate differences between aircraft.
- Higher performance aircraft will reach this point quicker and thus begin their turn closer to the runway.





# ALPIN 3 DP Radar Tracks

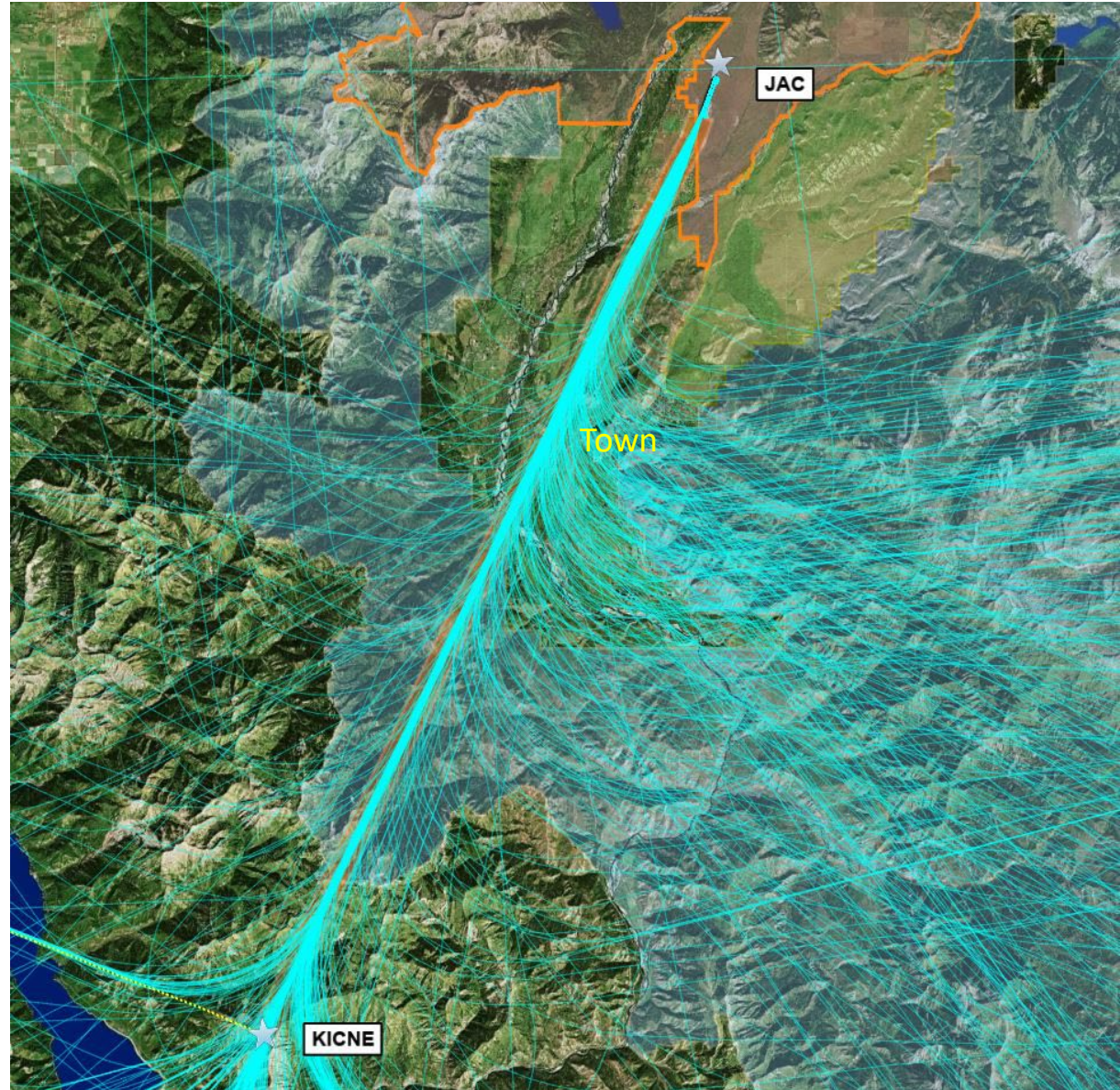
- Example of Actual aircraft flying the current ALPIN3 Conventional Departure.
- Aircraft are usually at altitude of 11,000-13,000 ft (4,600-6,600' AGL) when adjacent to Town of Jackson.





# ALPIN 3 Departure Tracks

- Image depicts the actual routes aircraft take when departing the airport.
- Higher performing aircraft are often vectored (turned) off the departure towards their destination by Air Traffic Control (ATC) when possible, to save time and mileage.
- Aircraft must reach an altitude of 12,000-14,000 ft before they can be vectored by ATC.





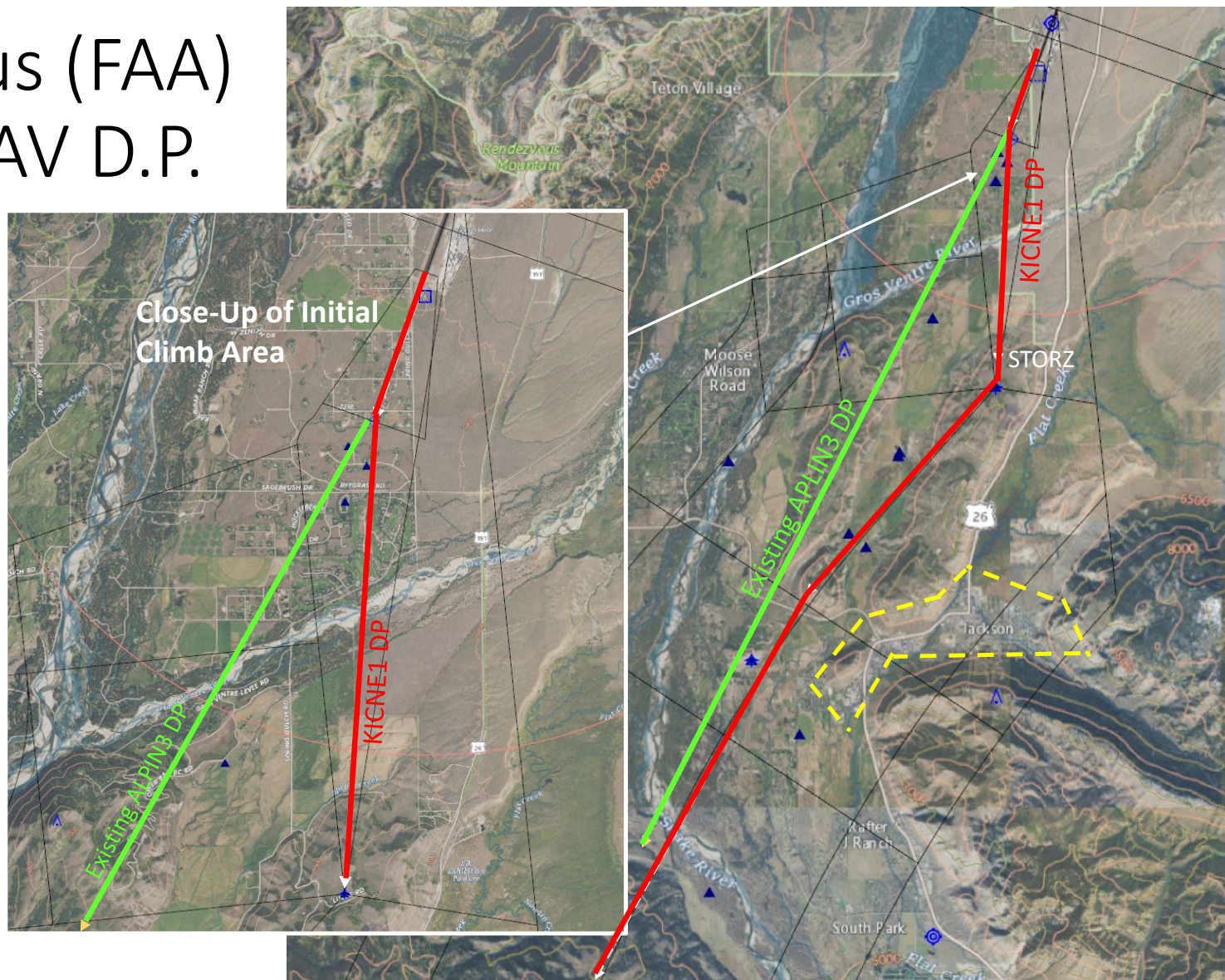


## Fanning Considerations— ATC Perspective

- RWY 19 currently only has a single (common) departure route.
- To create lateral path diversity at lower altitudes One solution is to implement multiple departure procedures that could possibly diversify the initial departure routing over different points in the valley.
- The route must be programmed in the aircraft nav system.
- Each successful procedure will establish the best low-level route, a precise climbing path above terrain, and a connection with the en-route environment.

# Recap - Previous (FAA) KICNE ONE RNAV D.P.

- Originally designed and proposed by the FAA during 2020-2021.
- Currently on hold and is NOT scheduled to be published.
- Was an attempt to route the initial departure route as far east of the departure runway as possible.





# Recap - Design Standards for new Concepts

- There is no one size fits all solution to eliminate noise from RWY 19 Departures due to the proximity of nearby housing to the airport.
- FAA design rules and navigation best practices must be observed. Aircraft can't handle abrupt, or knife edge turns and must abide by certain system and performance limitations.
- The (rule-based) design software we use ensures aircraft can fly the procedure as designed and without overshooting waypoints based on the design speed.
- The new procedures represent feasibility assessments to explore the range of possibilities and are not final.



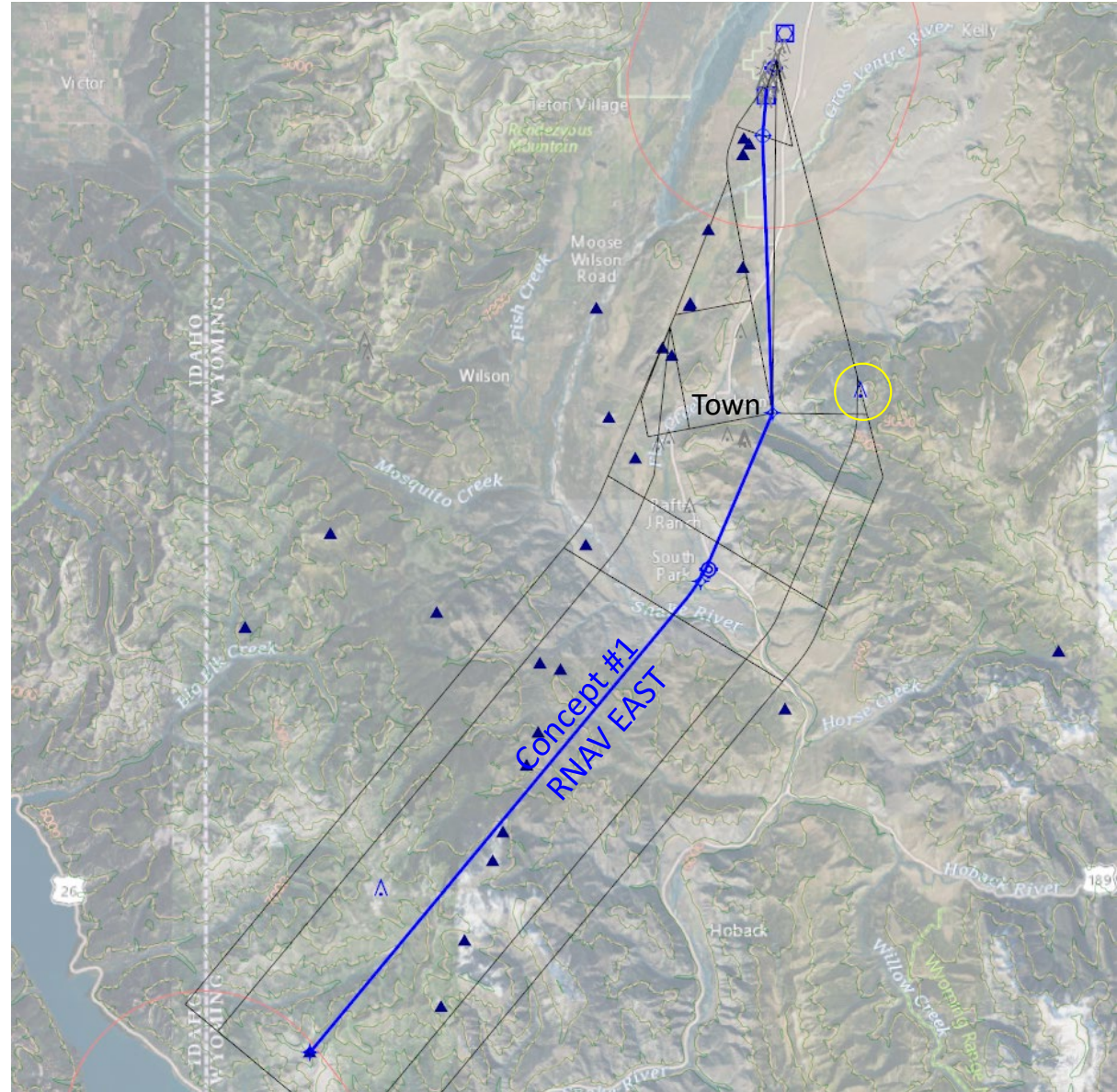


## New RWY 19 Departure Concepts

- The following procedures represent the range of possible solutions while working within the ATC and terrain constraints of the valley.
- They observe the requirement that the first turn must occur not less than 400-500 ft above ground.
- Designs account for the wide range of Aircraft that could use the procedures:
  - General Aviation (Personal aircraft– piston & small turbine aircraft)
  - Charter & Private Jet Operations
  - Scheduled Airline & Cargo Operations
- While not widely useable yet - Advanced Concepts were also assessed in preparation for continuing technology improvements of the fleet.

# Concept #1 RNAV DP – EAST SHIFT

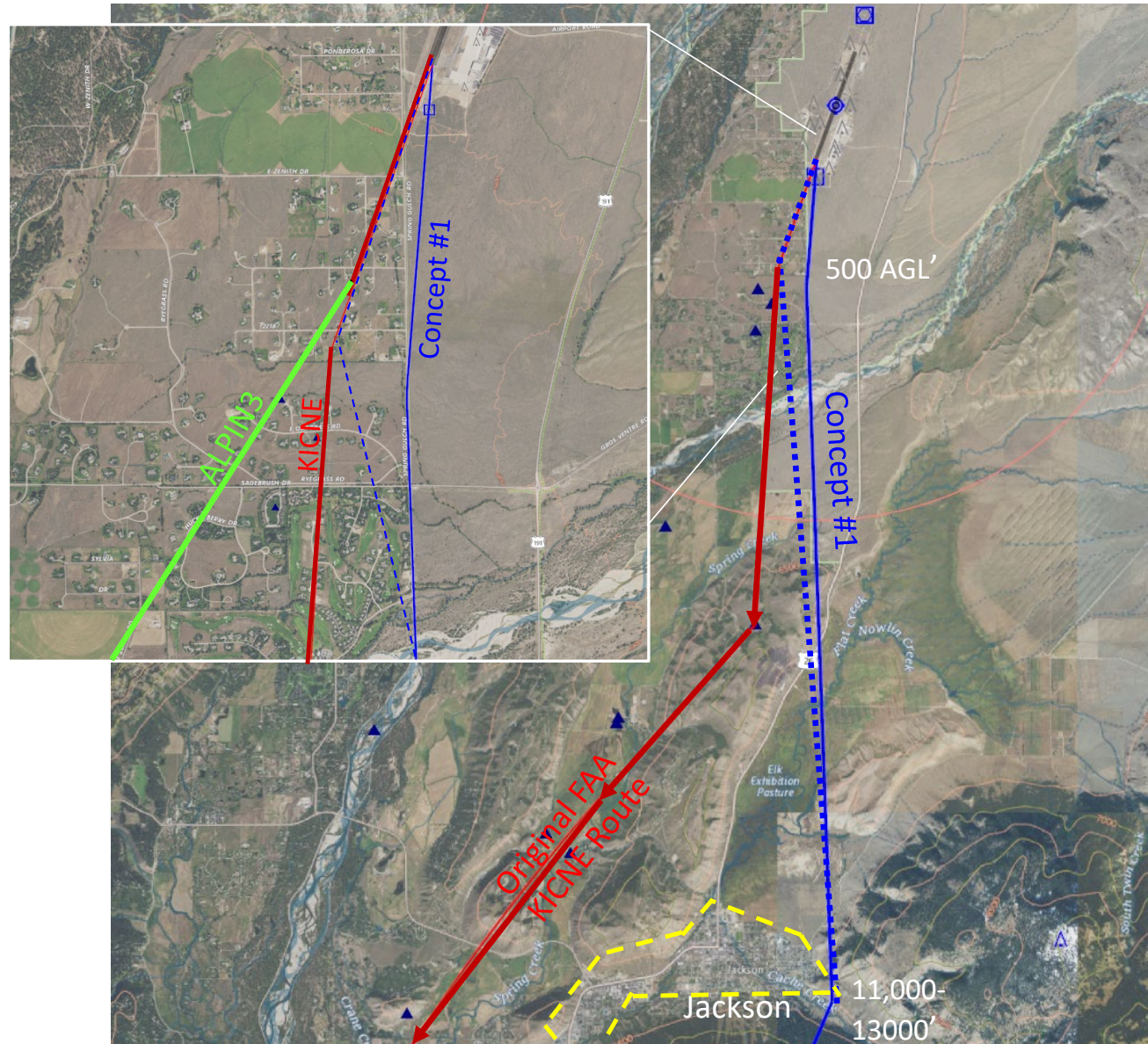
- Modifies the the original FAA KICNE Proposal by shifting the initial course to the eastern extent
- Terrain on the eastern edge of the procedure (yellow circle) requires a higher than standard climb rate (529 ft/nm to 10200')





# Concept #1 RNAV DP – EAST SHIFT

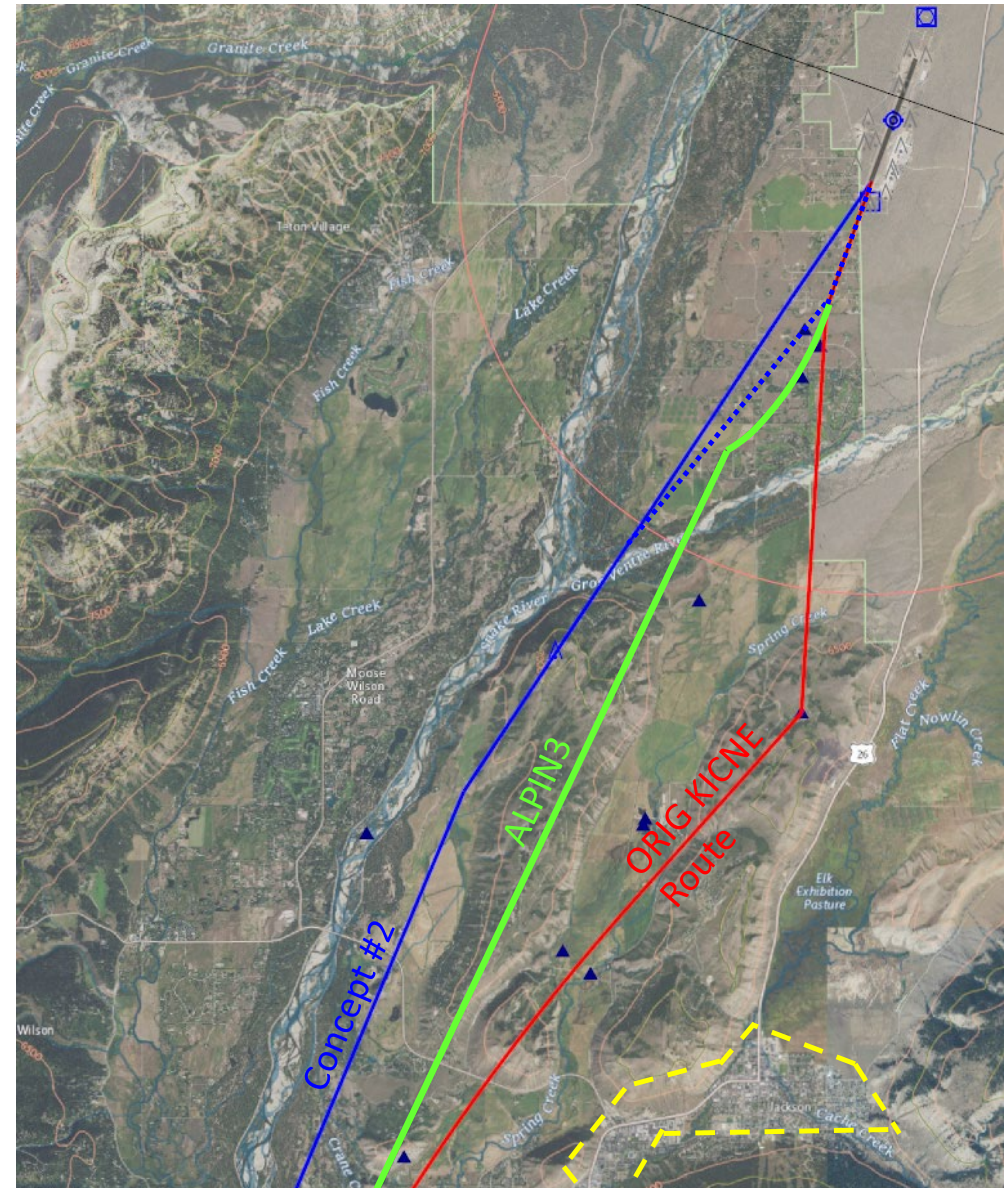
- RNAV procedures requires a 500' initial climb segment
- Routes aircraft to the East of populated areas.
- Overflies Elk Refuge instead and reduces overflight of core valley areas.
- Crosses to the East of Jackson (town center) as opposed to West of town center.
- Elevation AGL Snow King/Refuge





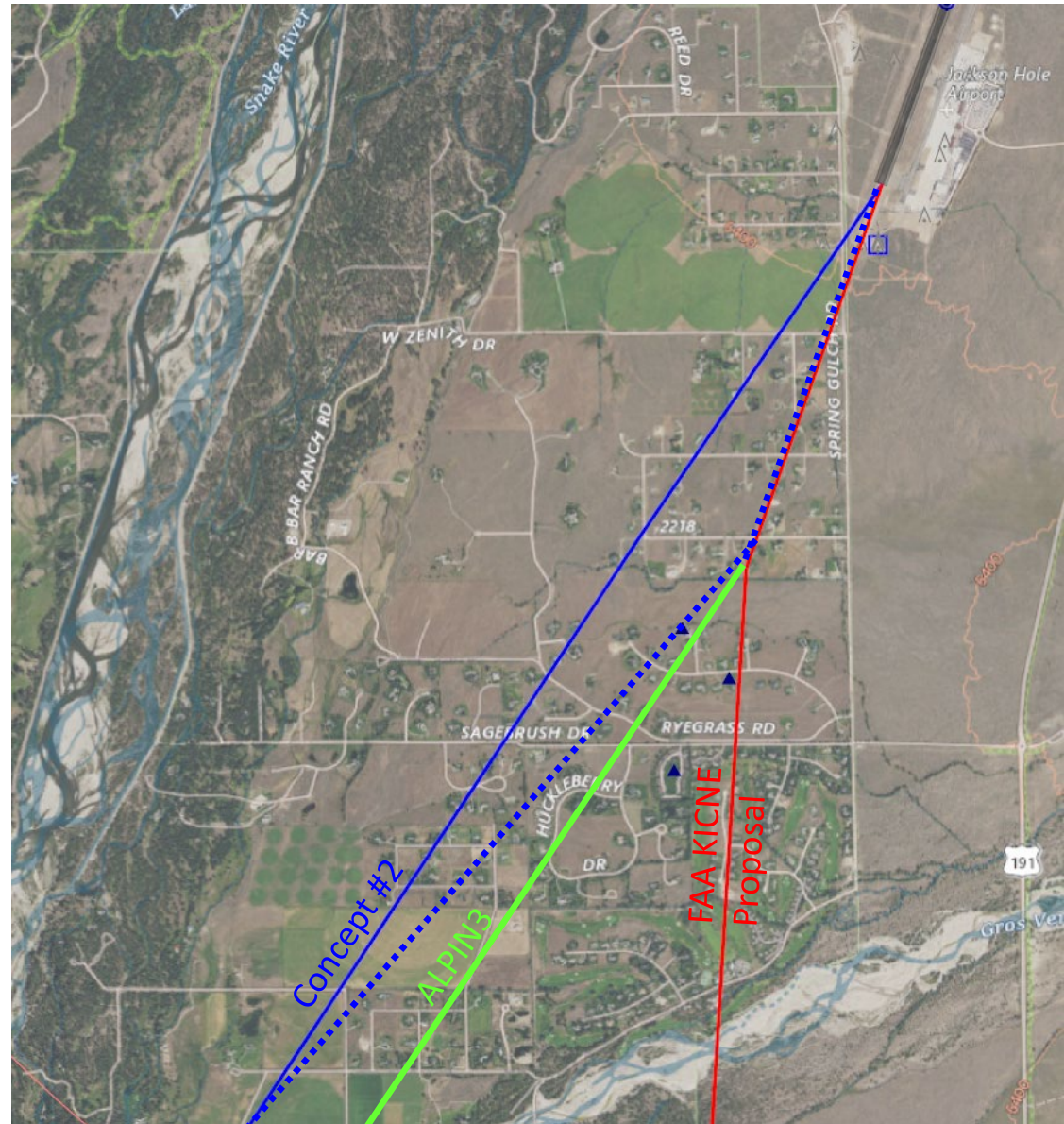
## Concept #2 RNAV DP— WEST SHIFT

- Similar to existing ALPIN 3 with slightly more southwestern initial routing.
- While closer, route avoids direct overflight of Snake River.



# Concept #2 RNAV DP - WEST SHIFT

- Close-in view
- Dashed blue line indicates worst case climb rate.

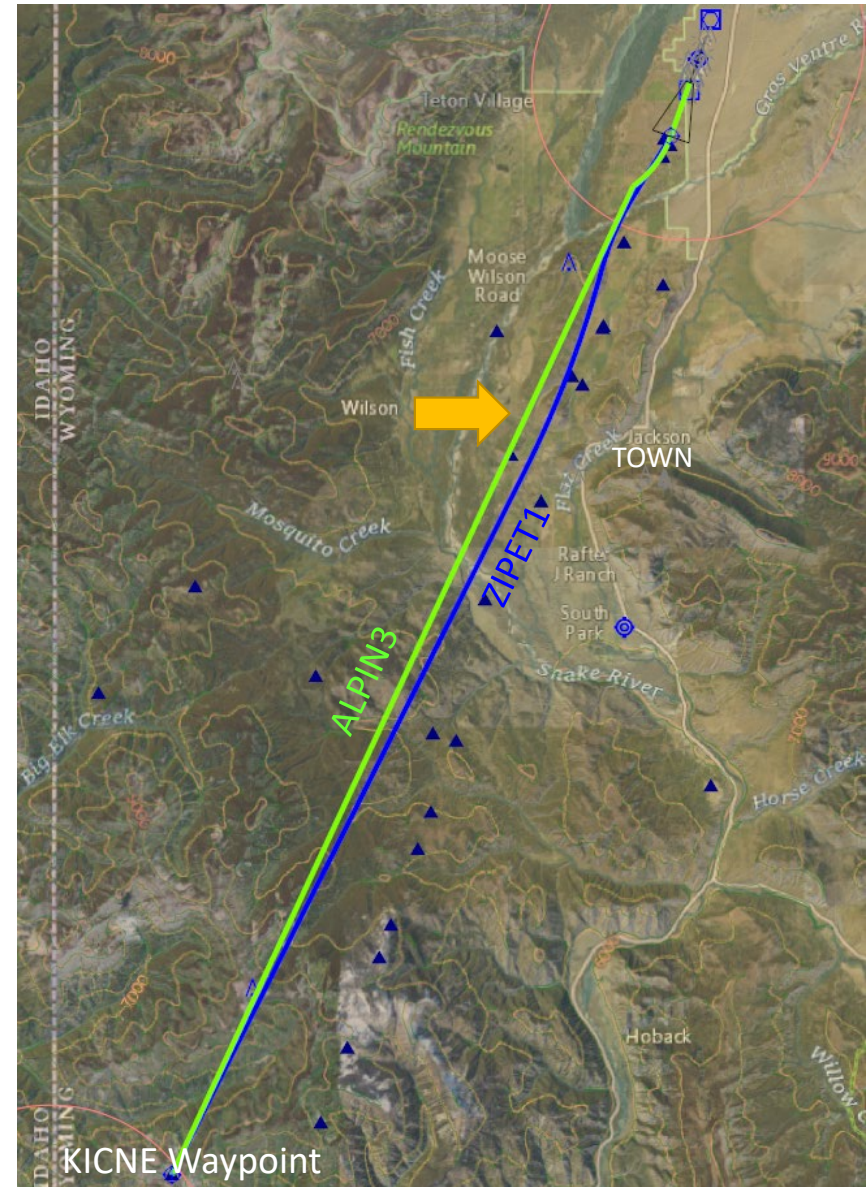




# Concept #3

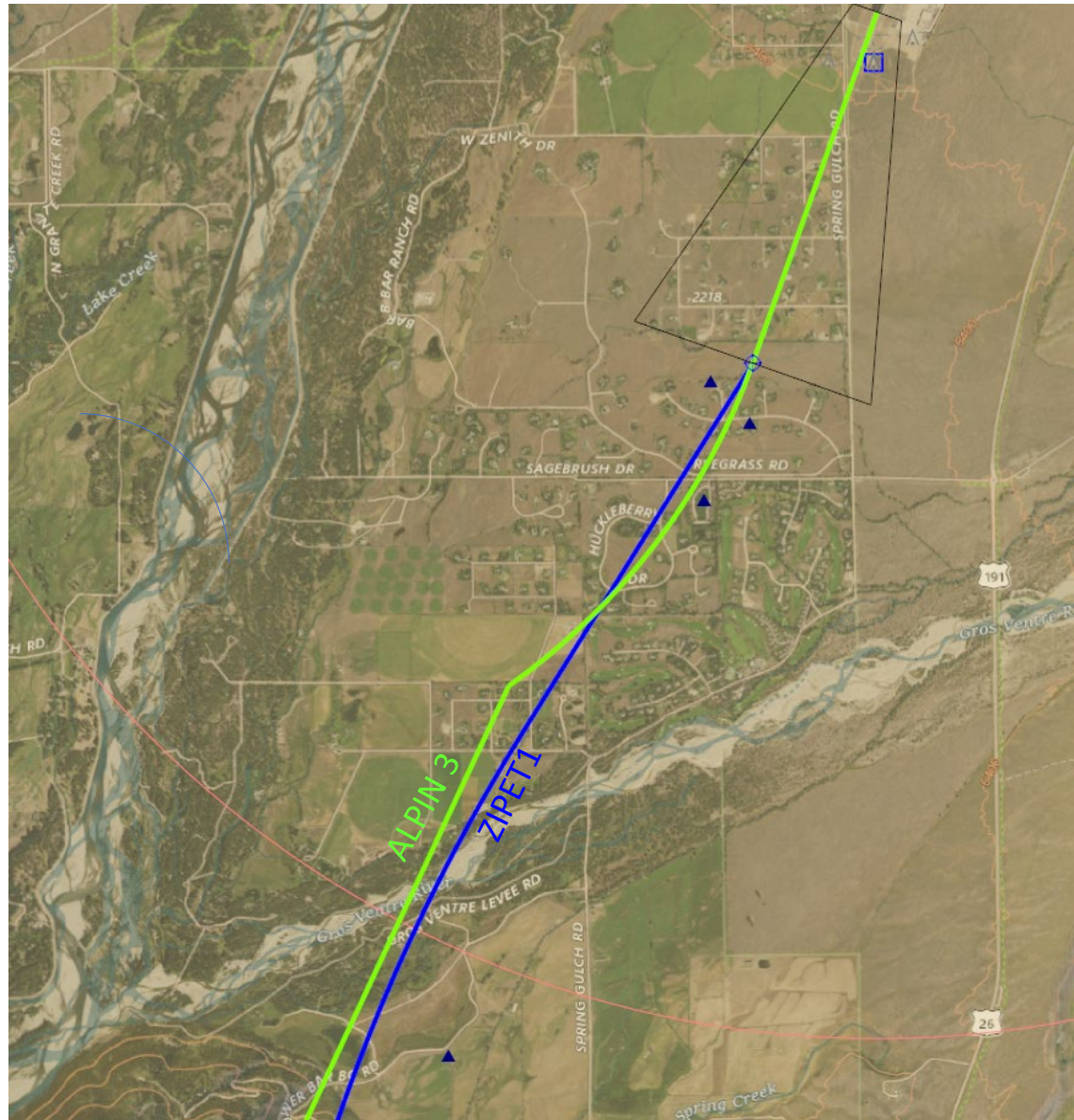
## ZIPET ONE RNAV

- Provides a simple RNAV overlay of the current ALPIN3 (Radio Nav) Departure.
- Has a slight turn mid-valley (between the two ridgelines) to help prevent direct overflight of the ridgelines (marked by orange arrow).
- Ends at the current KICNE Waypoint.
- Avoids overflight of Town.



# Concept #3 ZIPET ONE RNAV

- Close-up view of initial climb area.
- Distance between the two paths does not exceed 800 ft of lateral distance.
- Easily flyable by all aircraft types.
- Provides redundancy for use during outages of ground-based nav aids used in ALPIN3.





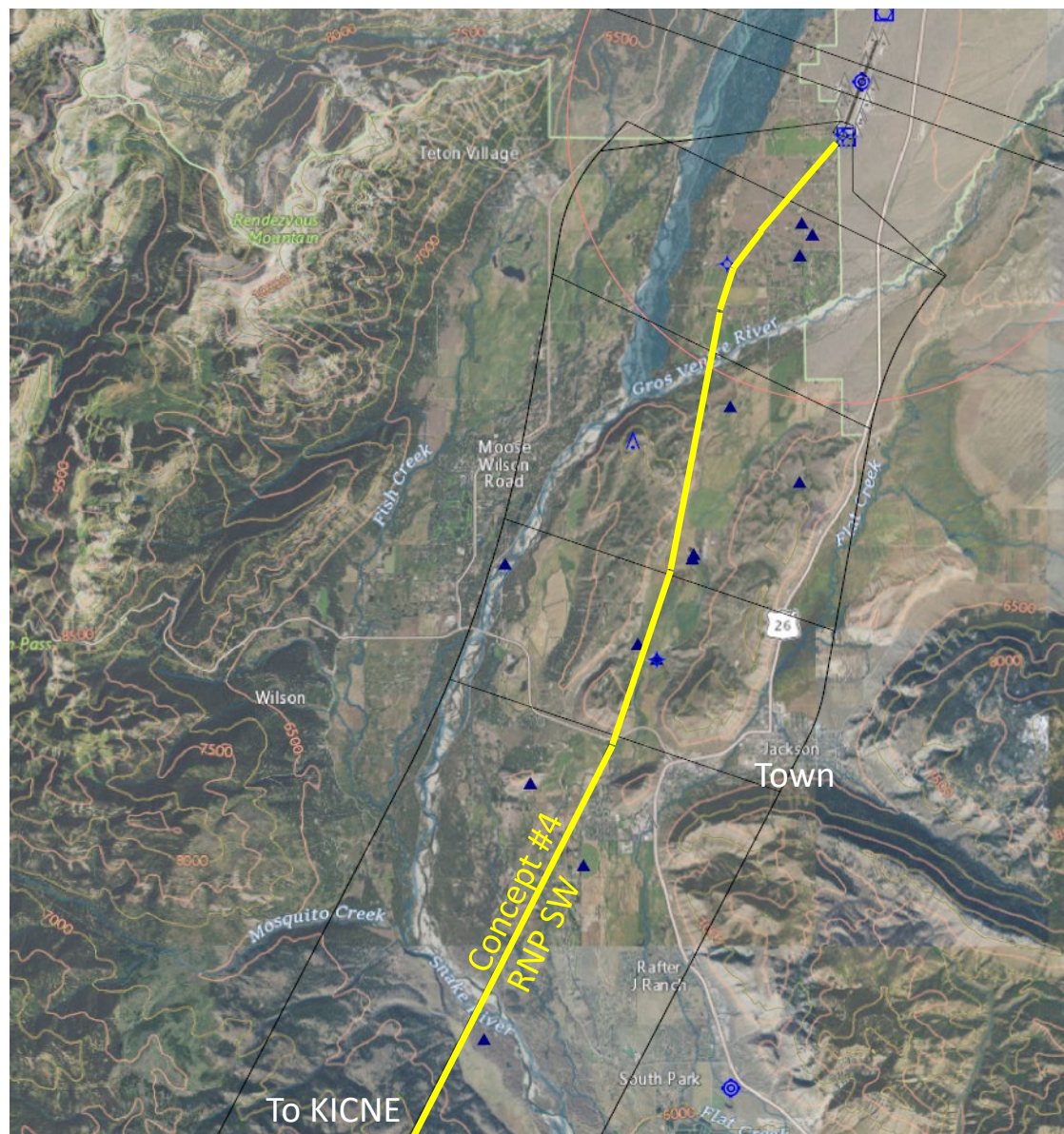


# Advanced Concepts

- Departure Procedures may require Modifications to Standards (FAA Waivers).
- Some procedures utilize Required Navigation Performance – Authorization Required (RNP-AR) which is useable by some airlines, but not by the wider general aviation and business jet fleet.
- May limit the number of operators/aircraft who can utilize the procedures.
- Use may be limited initially due to advanced equipage requirements, but over time as aircraft technology improves, use could increase.

## Concept #4: Immediate Turn to Southwest

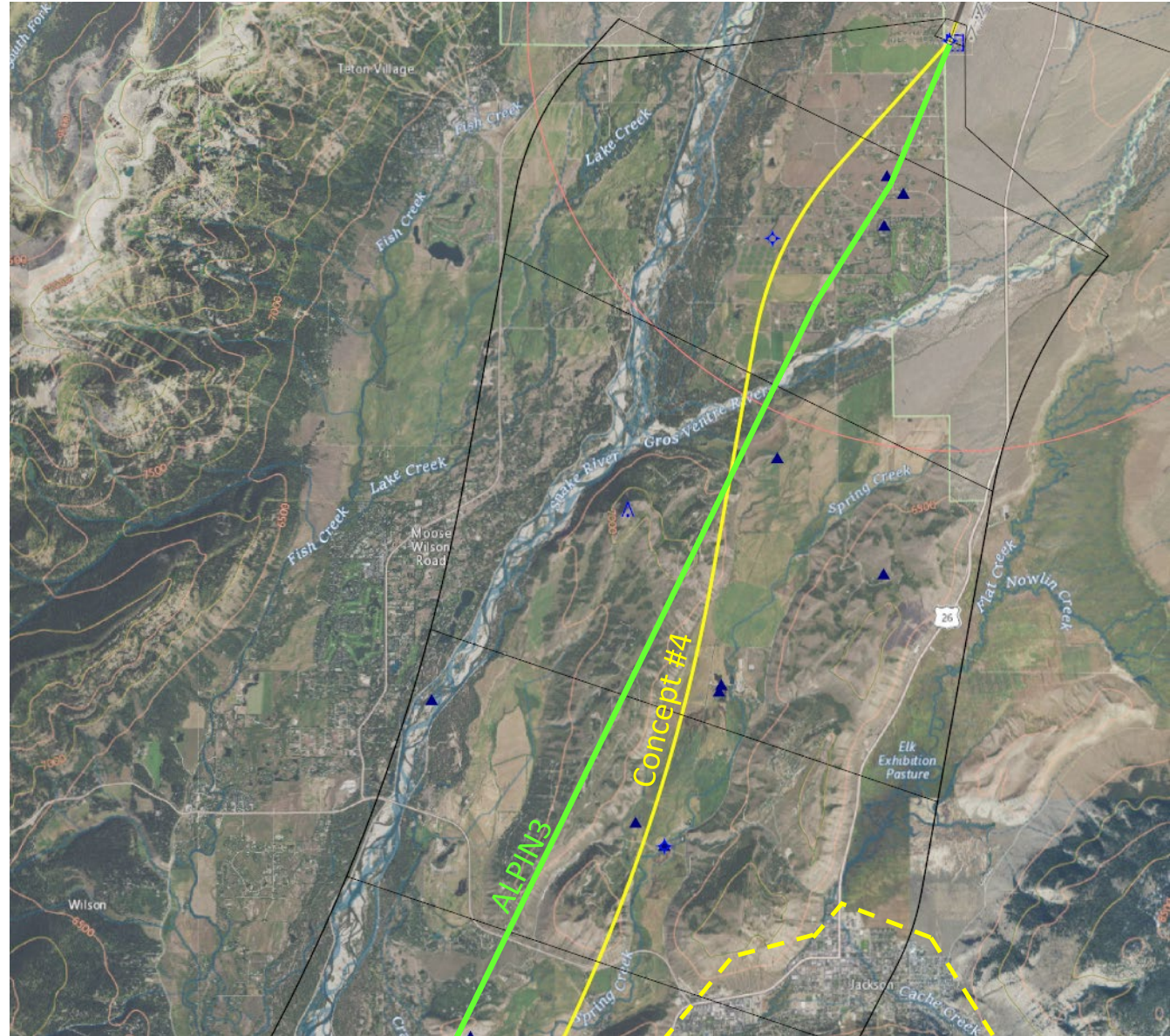
- Advanced RNP design.
- Requires early turn to the southwest, then rejoins ALPIN3 route.
- Would require waivers which could limit use.
- Other than the early (non-standard) turn, it utilizes navigation methods that are easily achievable by a most aircraft.
- Terrain optimized and has a relatively low Climb Rate Requirement (329 ft/nm to 8100)





# Concept #4 Cont. Immediate Turn to Southwest

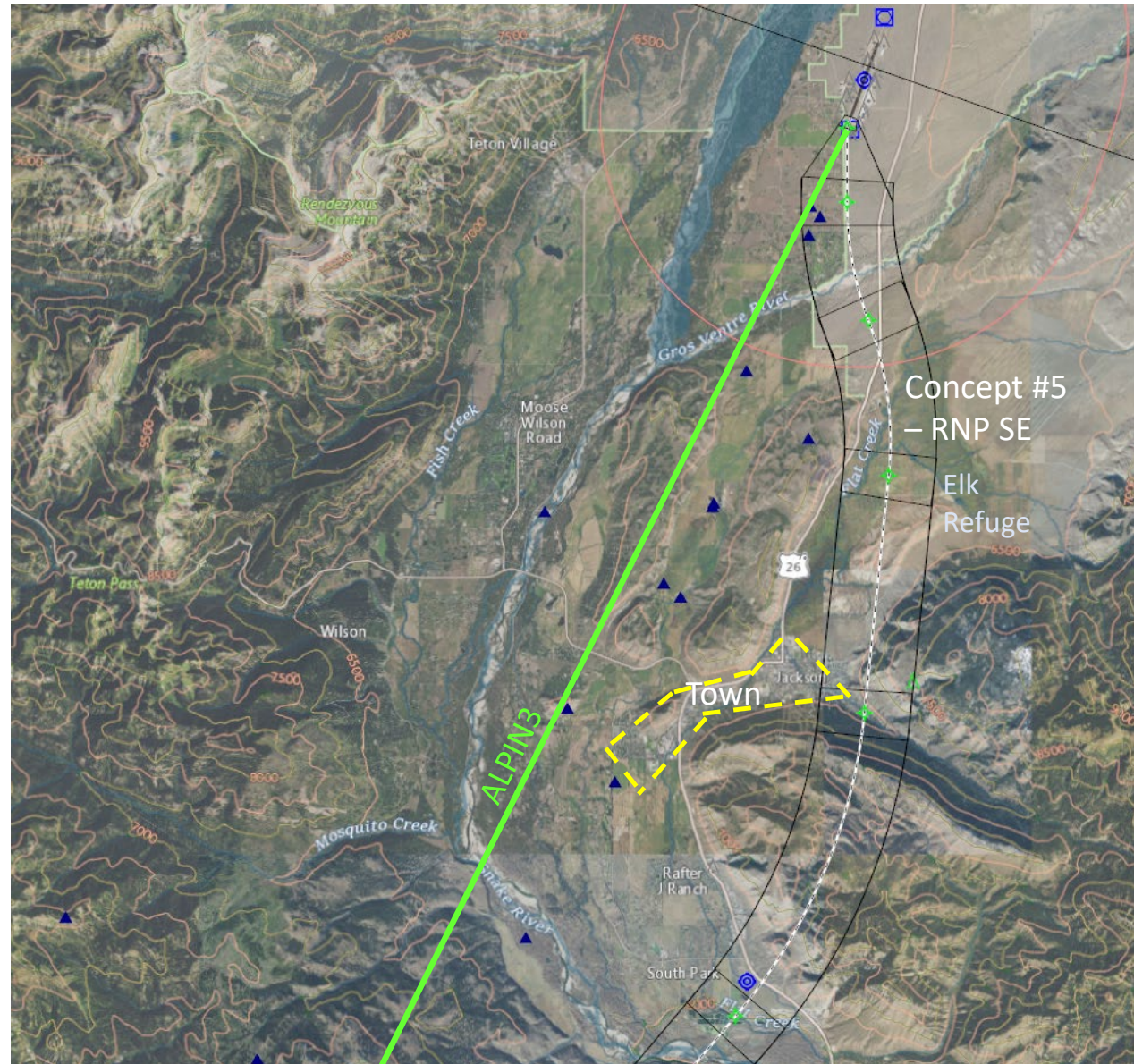
- Close-in View
- Eventually joins similar path as the ALPIN3 departure once down valley





## Concept #5: Immediate Turn to Southeast

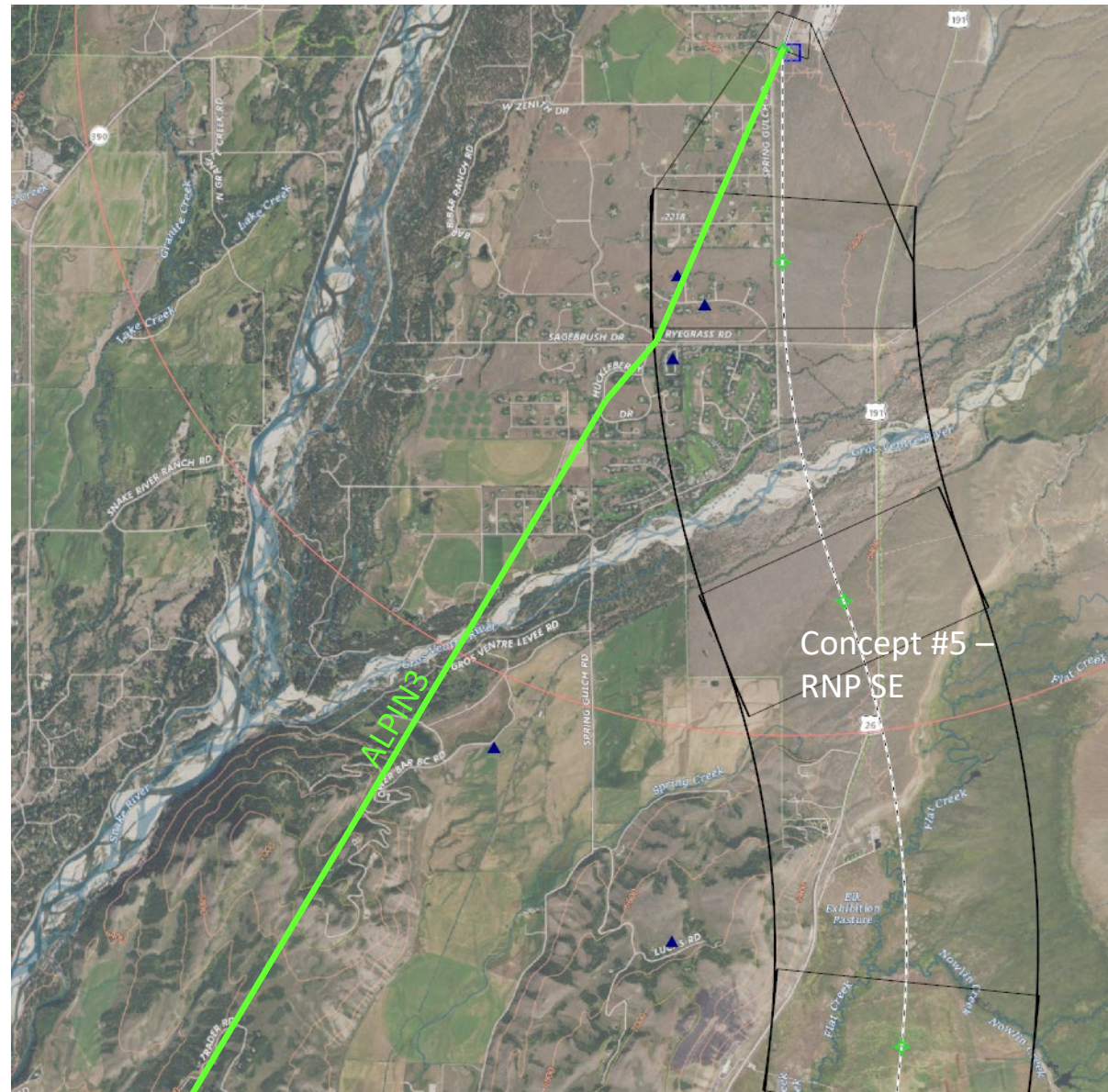
- Limited to the most advanced aircraft due to curved path technology.
- Requires Waivers due to Early Turn.
- Avoids majority of valley.
- Overflies Elk Refuge and mountainous terrain sooner.





## Concept #5 Cont. Immediate Turn to Southeast

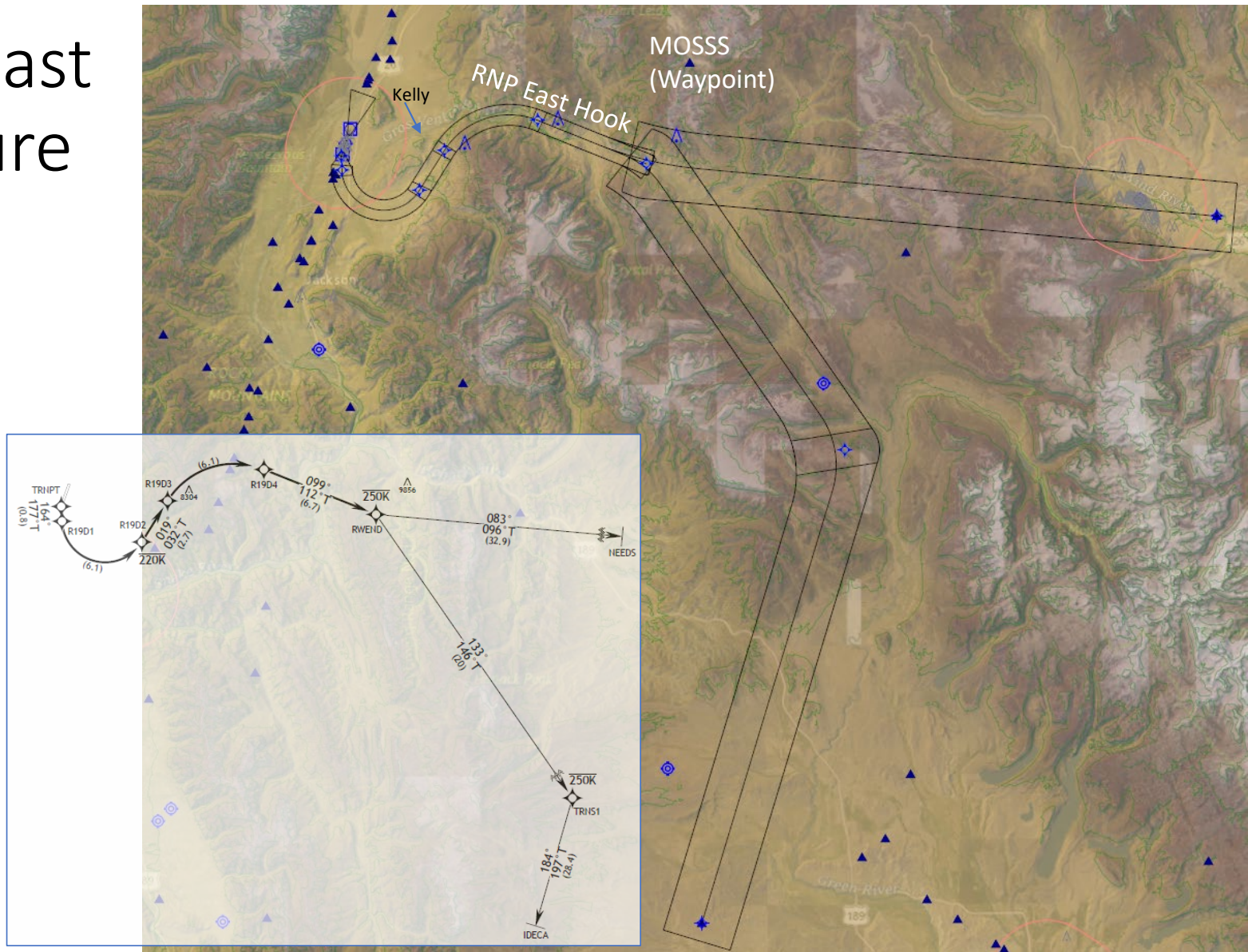
- Avoids direct overflight of communities directly South of Airport
- Could produce a different noise profile as aircraft begins a low-level turn to the southeast.





# Concept #6: East Hook Departure

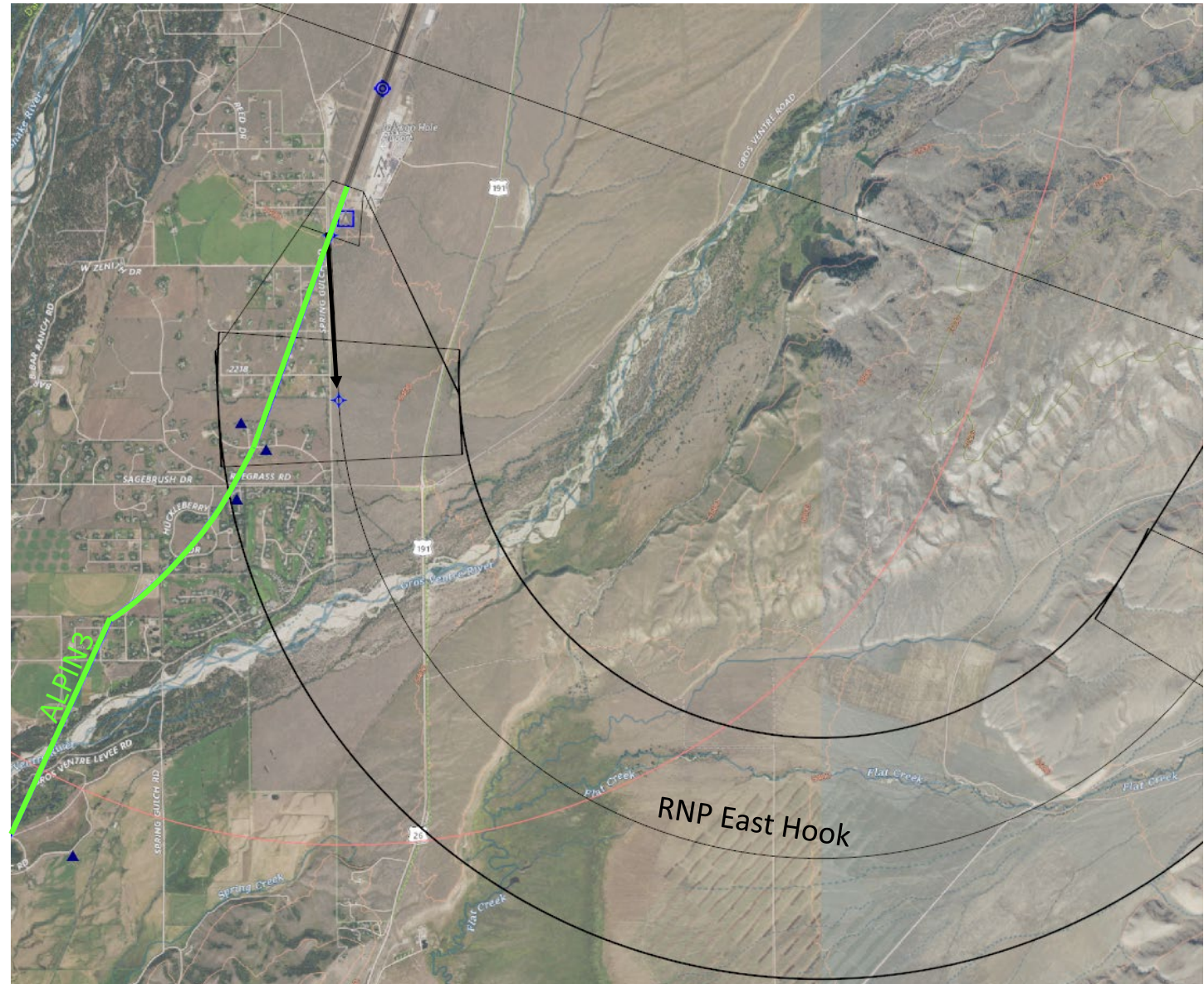
- Utilizes Advanced RNP Navigation to route departing aircraft away from the Jackson Valley.
- Presents ATC challenges due to the turn towards oncoming arrival flows.





# Concept #6 Cont.. East Hook Departure

- Close-in view of immediate departure area.
- Requires a turn at runway end.
- Green line indicates existing ALPIN Departure
- Could be limited to summer months





## Next Steps

- Revision of concepts based on comments
- Noise analysis of concepts moving forward
- Potential Next meetings: June 29<sup>th</sup> & August 16<sup>th</sup>
  - *Focus of next meeting will be using the noise analysis of refined concepts to further narrow procedures to potentially submit to FAA in September*



# Thank you

- Questions, Comments & Discussions



# South Departure Flight Procedure Evaluation

Jackson Hole Airport  
June 29, 2022



## Presentation Outline

The presentation will show the operational and noise analysis results through a series of questions and answers based upon information requested by the committee



# Questions?

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
- ❖ What are the air traffic constraints with turning left?
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?
- ❖ How would these options be studied in the Environmental Process?
- ❖ Summary and Next Steps





# Question 1

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
- ❖ What are the air traffic constraints with turning left?
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?
- ❖ How would these options be studied in the Environmental Process?
- ❖ Summary and Next Steps



# Flight Procedures

	PROCEDURE						
	ALPIN Existing	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew
Type of Procedure	CONV	RNAV	RNAV	RNP	RNAV	RNP	RNP

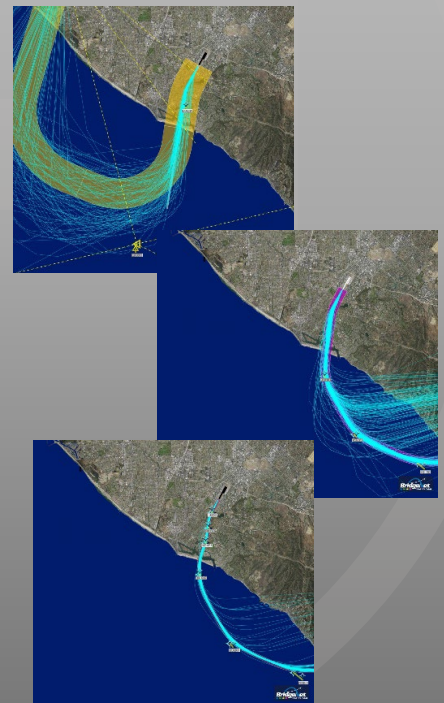
**Note: Concepts were reordered in this presentation to group procedures by location (west, east and corkscrew).**

**CONVENTIONAL** – The current ALPIN is a **conventional** procedure that uses a ground-based radio signal NAVAID to provide aircraft positional guidance. The FAA is replacing these procedures with modern RNAV satellite-based procedures. Many of these conventional procedures will remain for some period of time as backup procedures or for use by smaller non RNAV equipped aircraft.

**RNAV** – RNAV procedures are satellite-based procedures that use the signal from GPS to provide guidance flying GPS defined waypoints. The RNAV concepts at JAC involve flying runway heading to an altitude of around 500 feet and then turning and flying to the first and subsequent waypoints. Flights will show a variation in the initial turn due to the differences in climb rates until reaching the first waypoint where then the path becomes more concentrated.

**RNP** – RNP is a type of RNAV procedure that allows an aircraft to fly a straight or curved path with a very high level of precision. They are more commonly used for arrivals with only limited use for departures at airports where the very high precision provides added value. To fly an RNP procedure, an aircraft must be equipped with the technology, the pilot trained in using the technology and the operator has a reporting system on its use. An aircraft flying an RNP will generally fly the exact path of the procedure in a very precise manner. Departure RNP's not be available in significant numbers for a number of years.

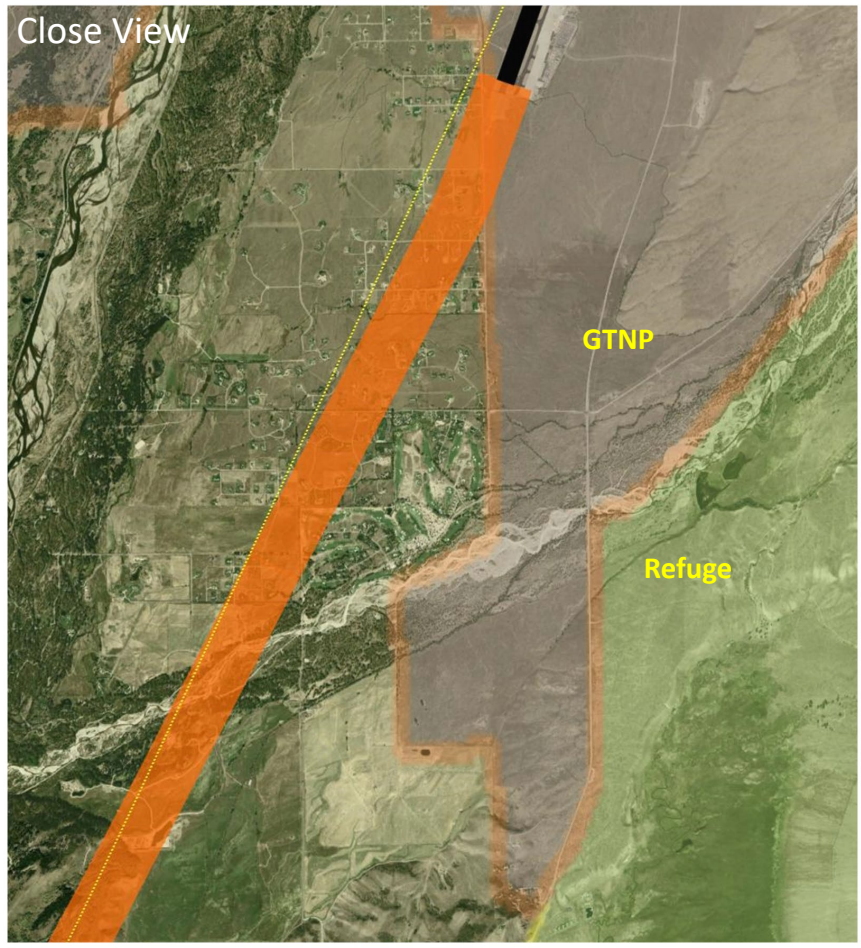
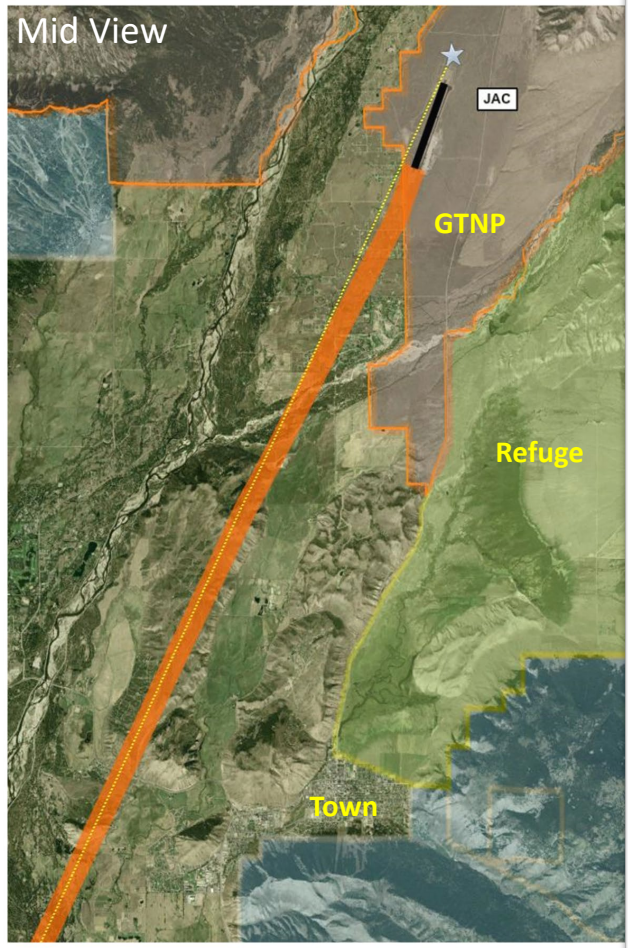
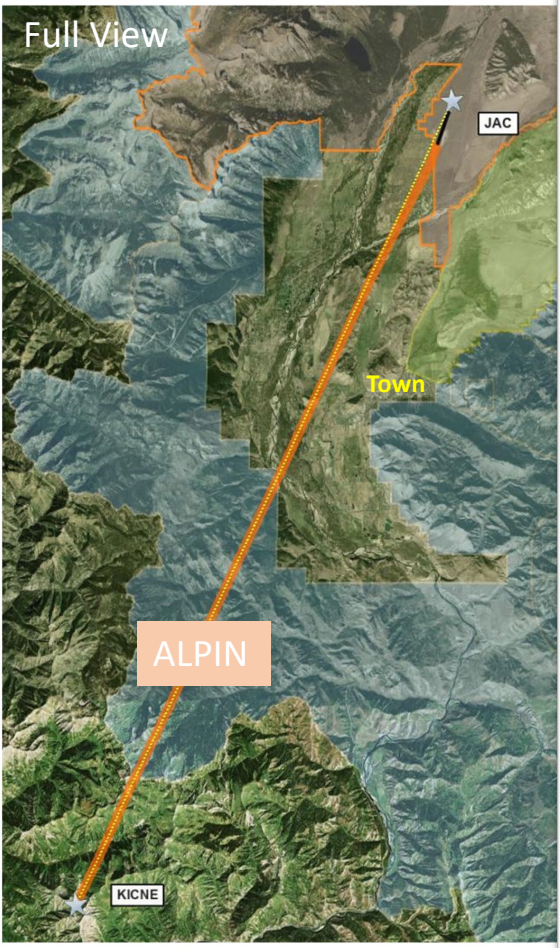
*Note: All three types of procedures require the aircraft to fly runway heading to approximately 500 feet before the initial turn.*







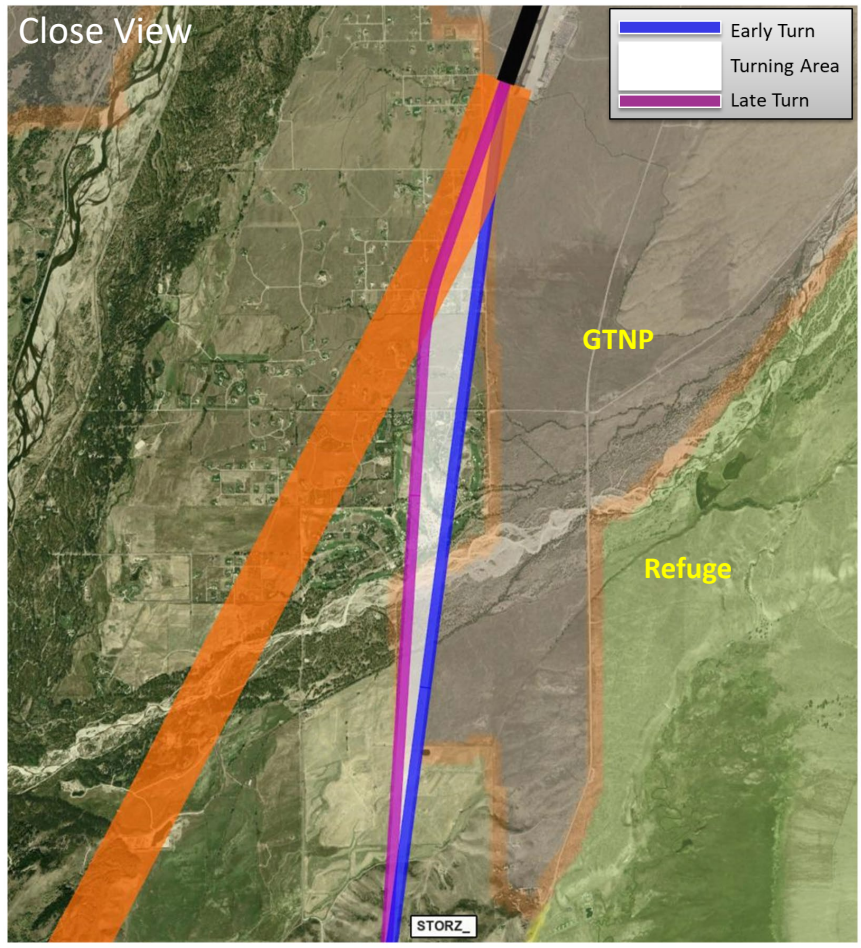
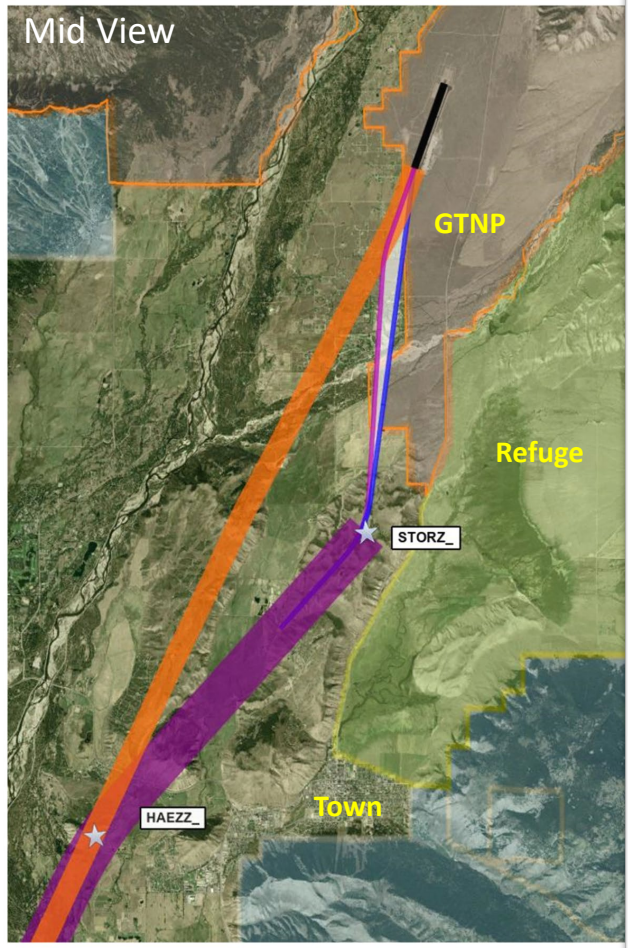
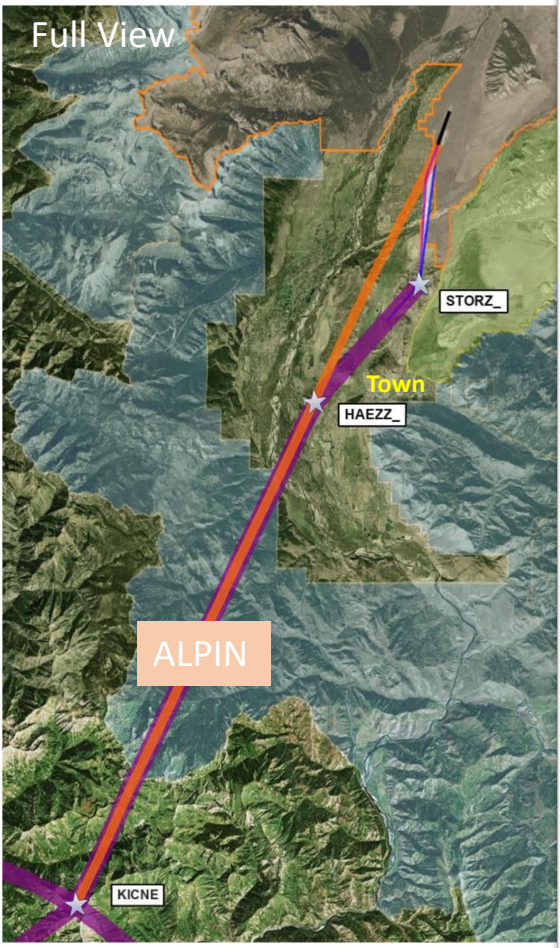
# Existing ALPIN





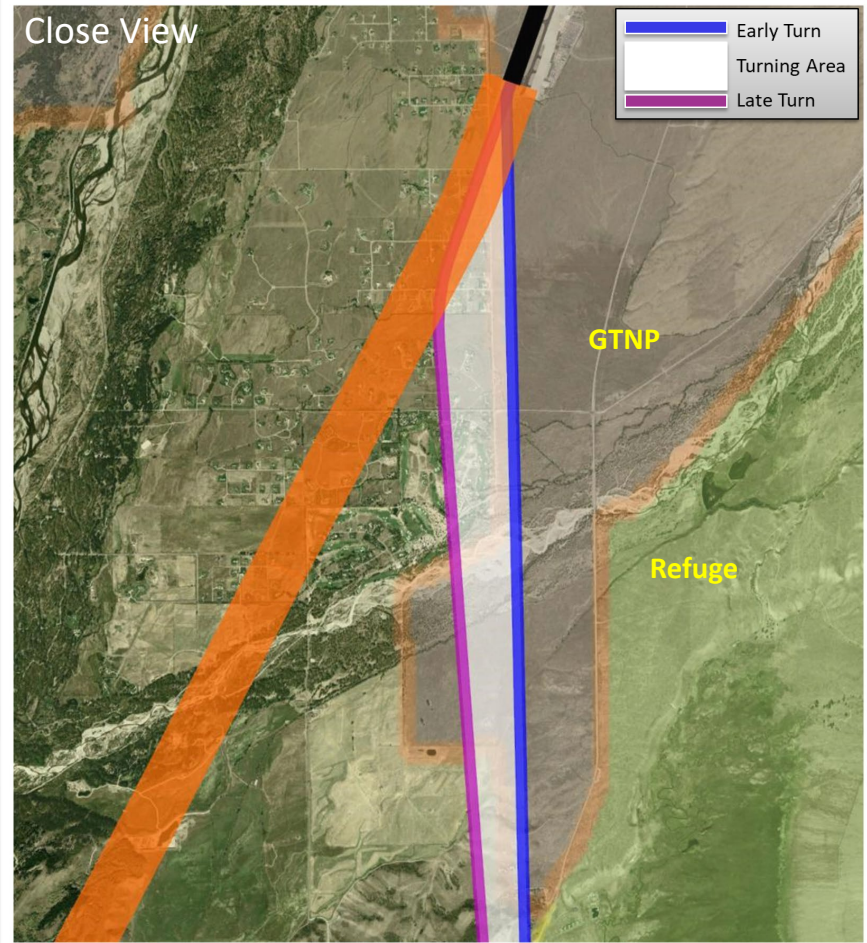
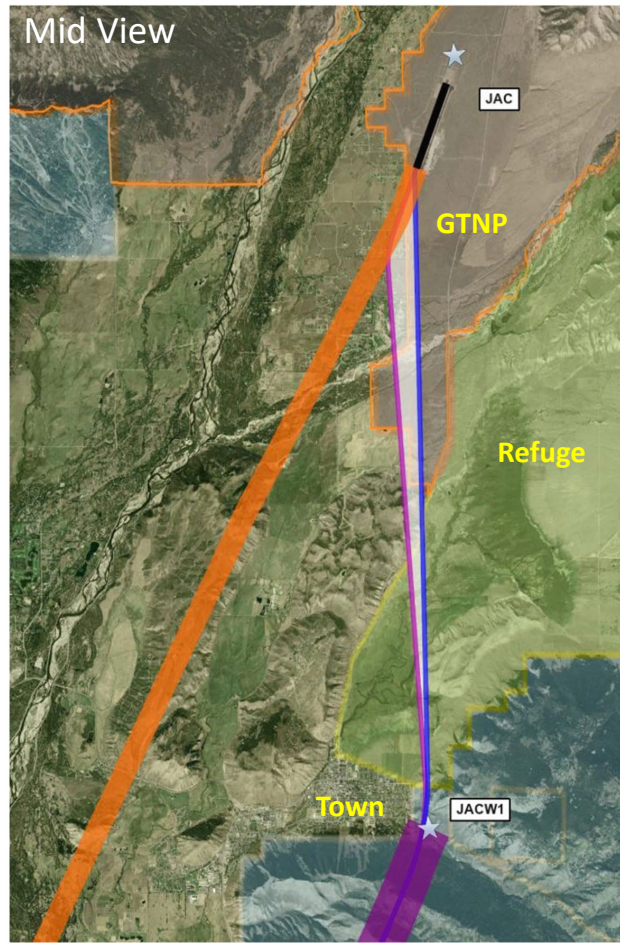
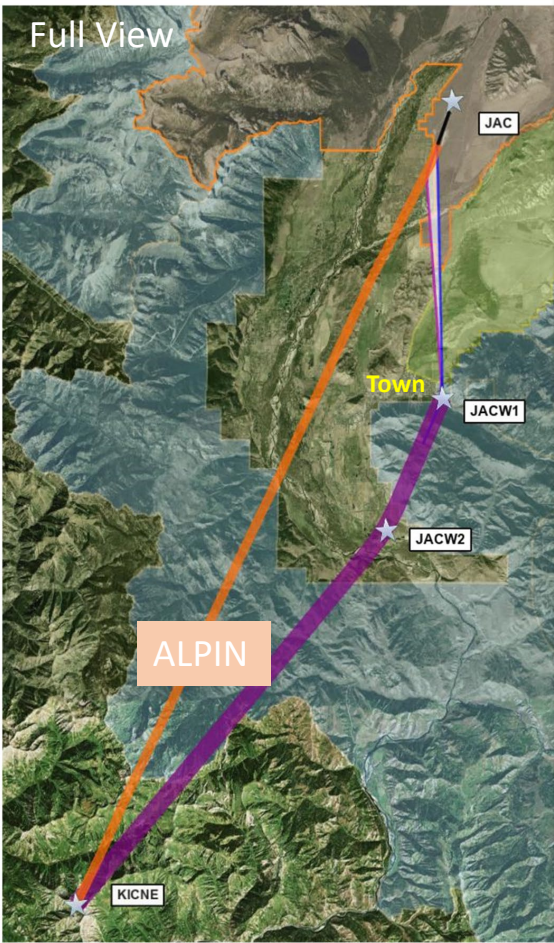


# FAA KICNE ONE (RNAV)





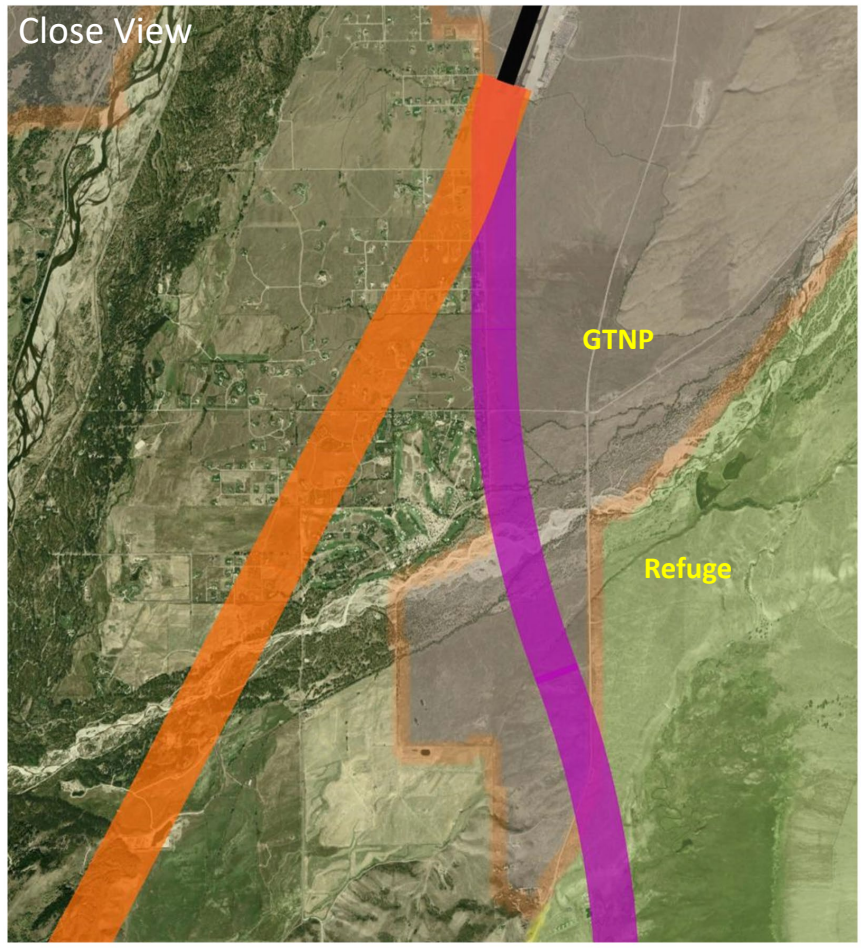
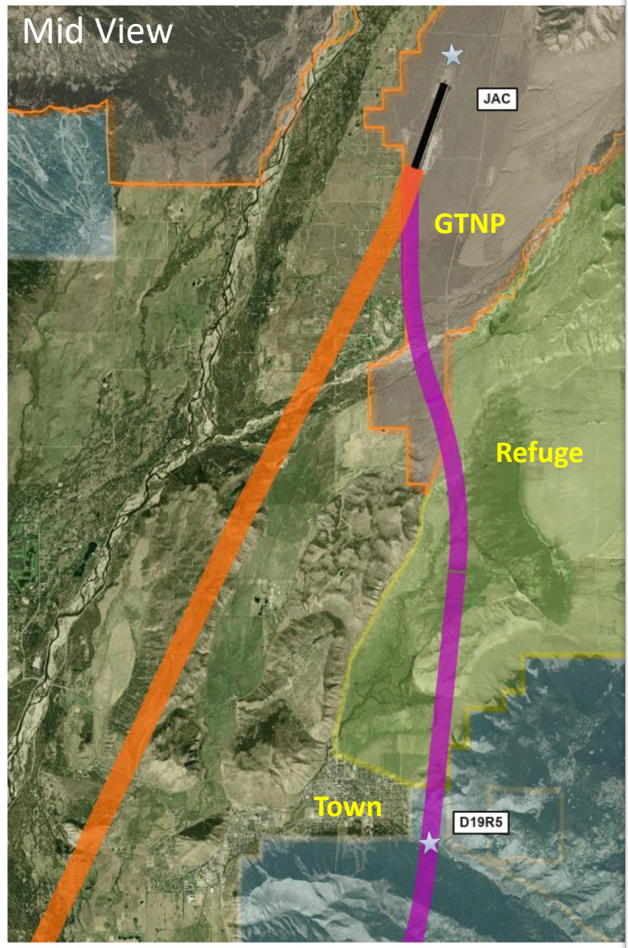
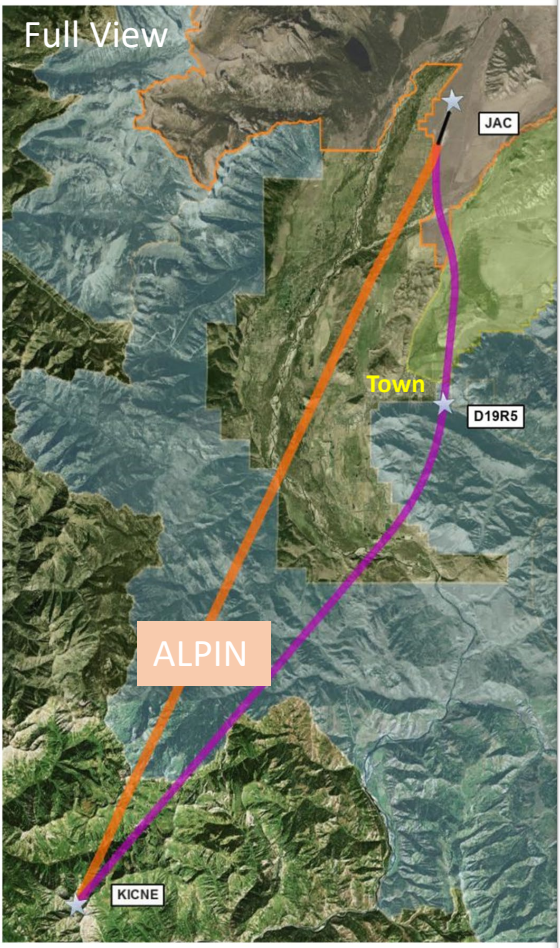
# C1 RNAV to Southeast







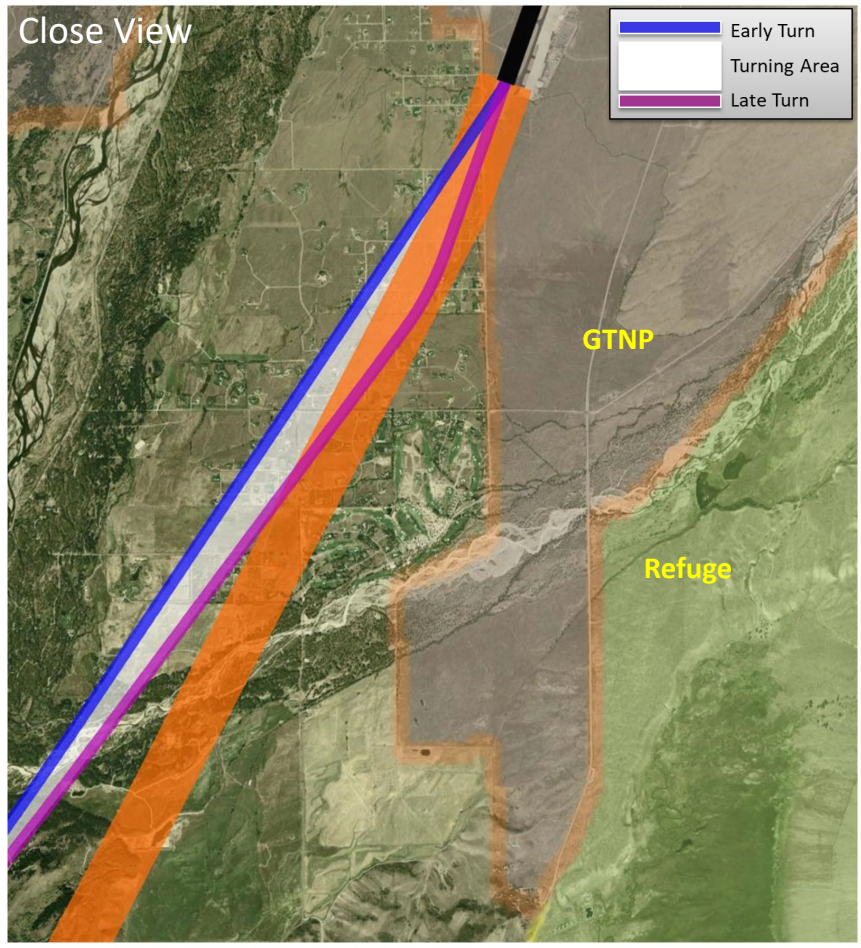
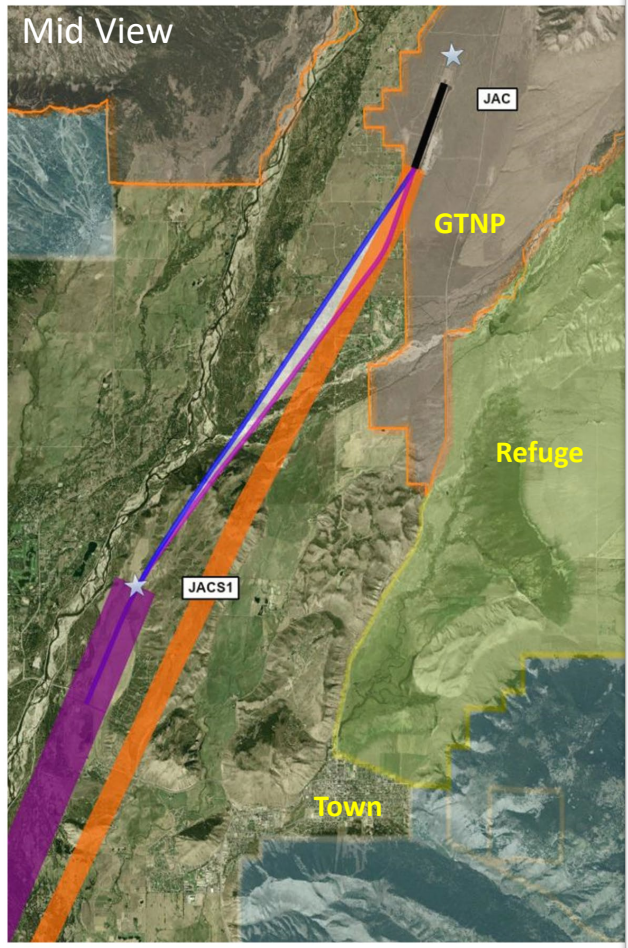
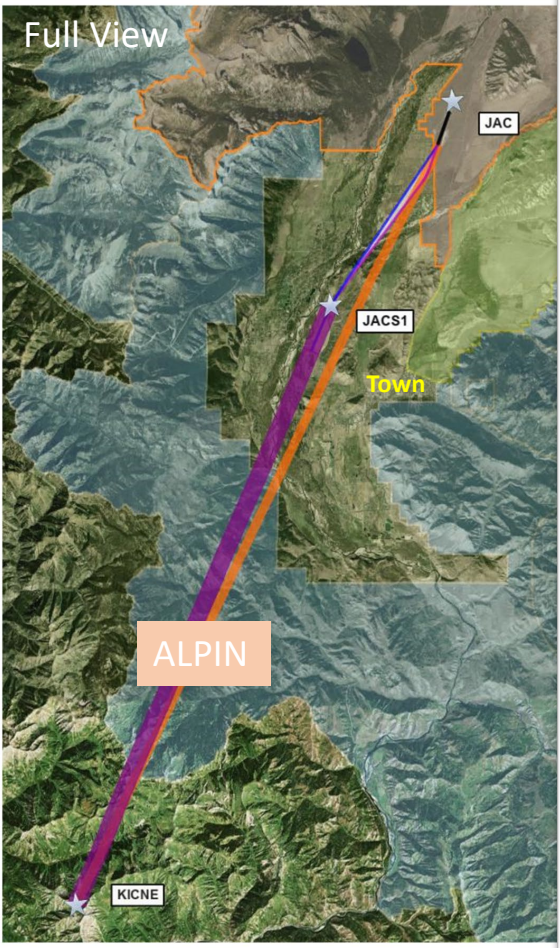
# C2 RNP to Southeast







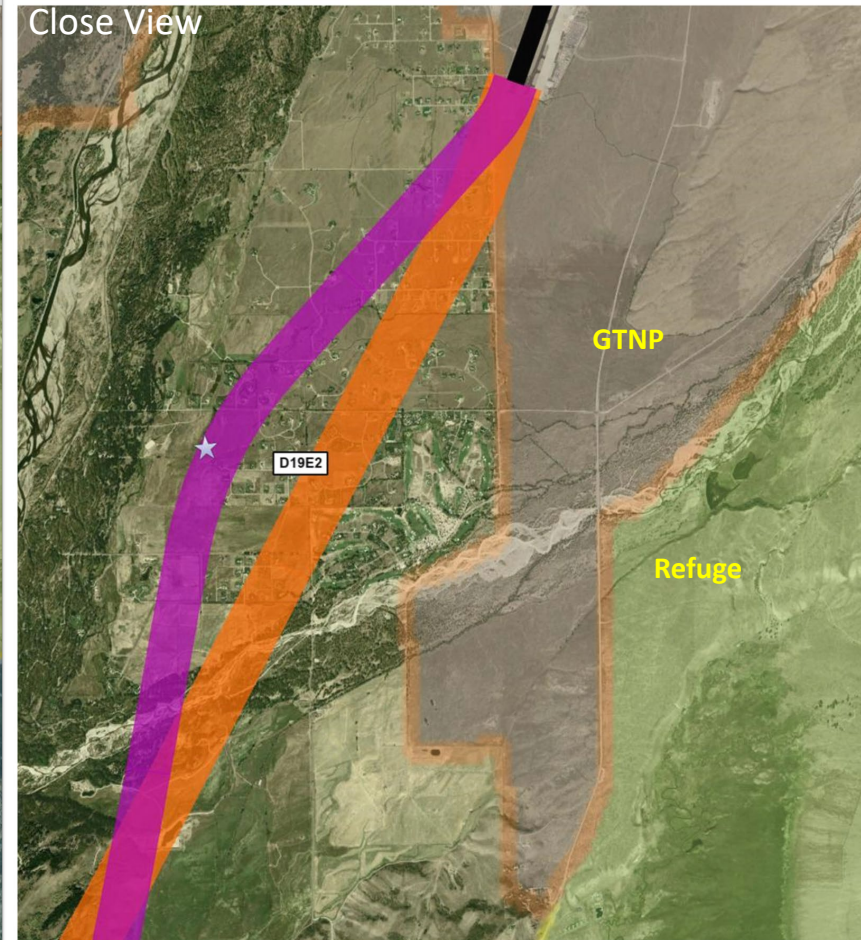
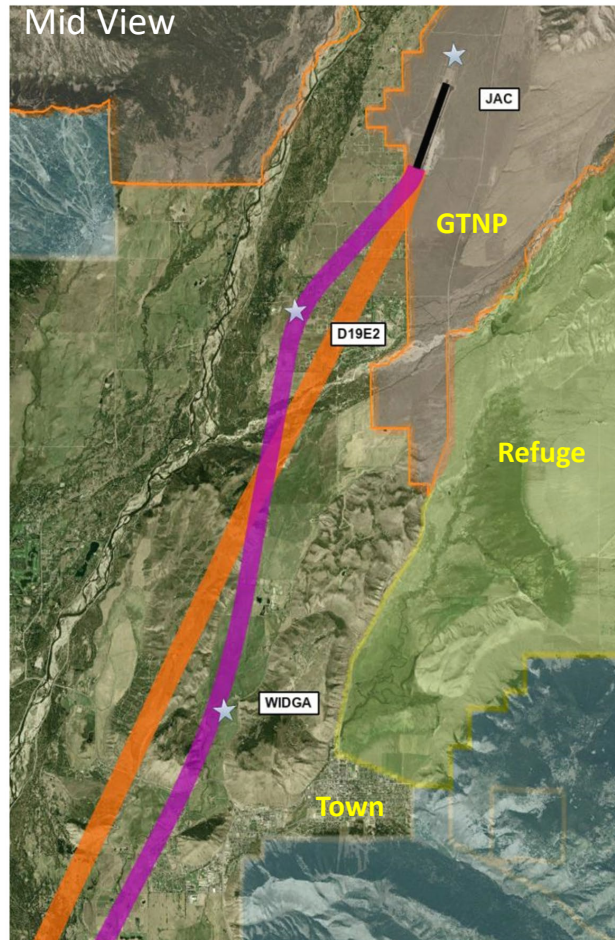
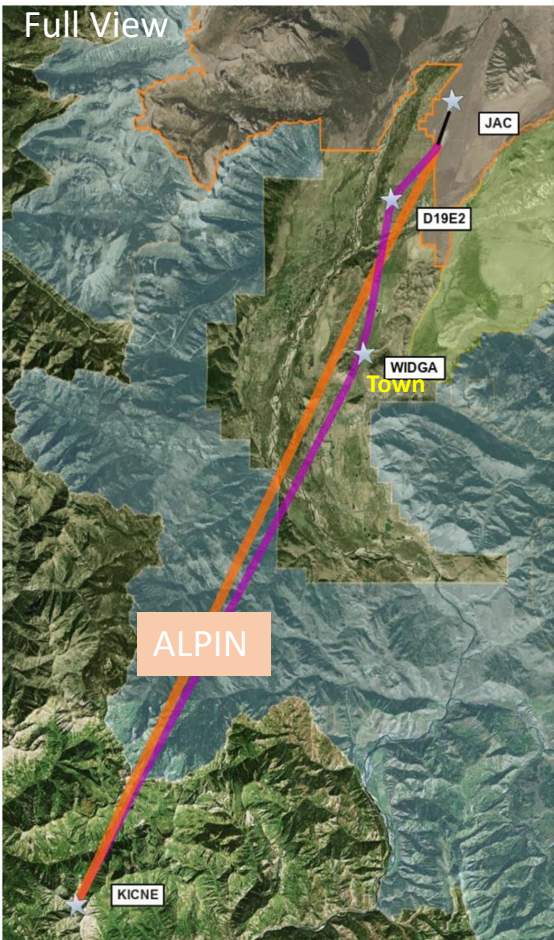
# C3 RNAV to Southwest







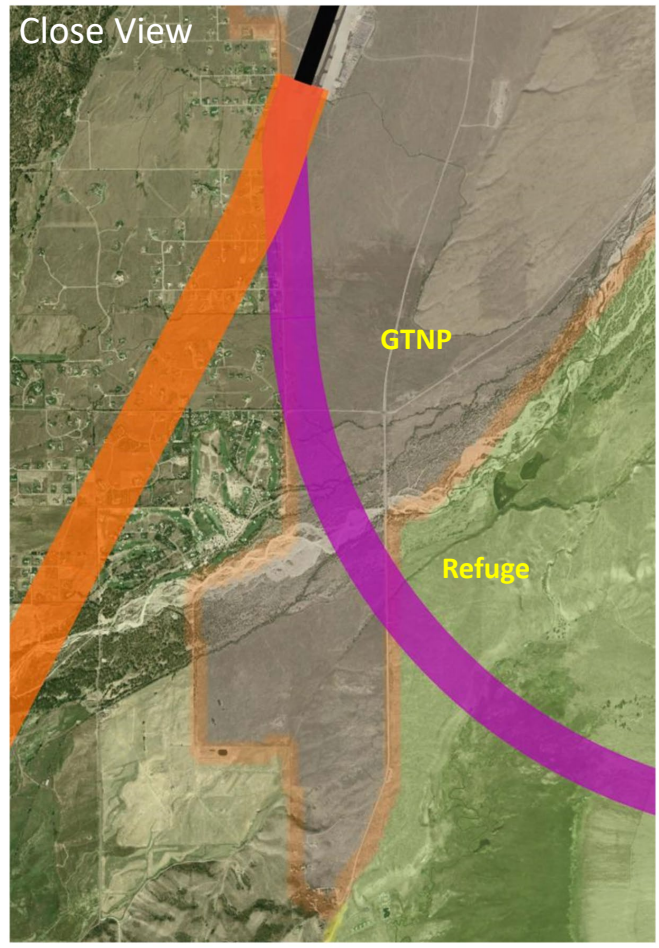
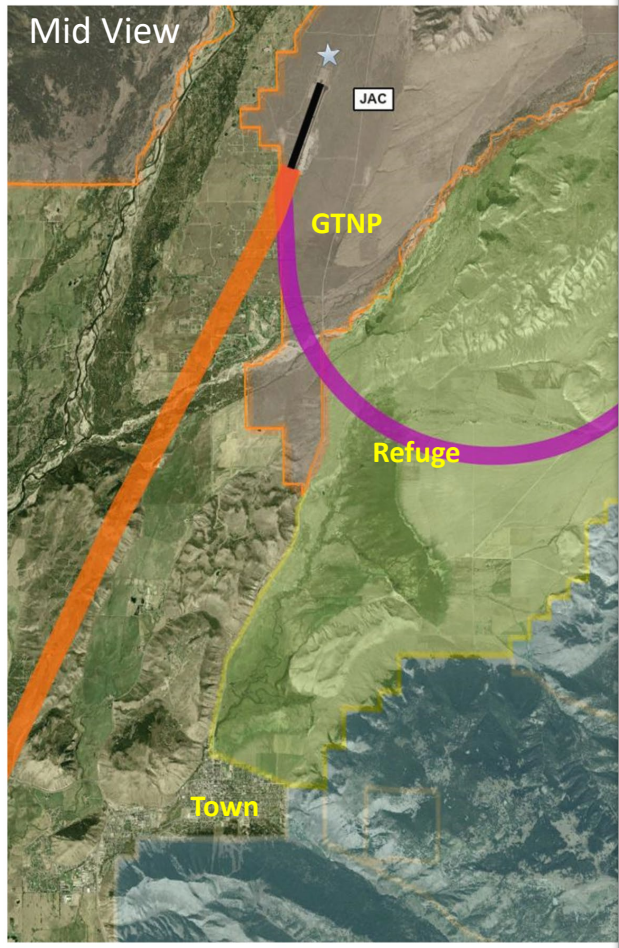
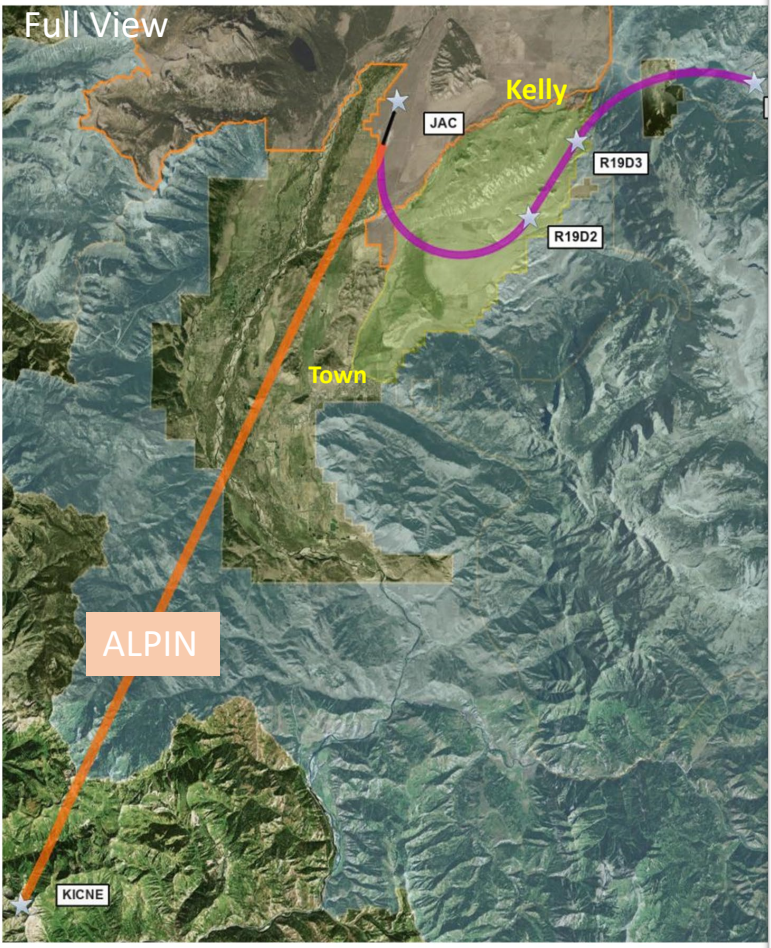
# C4 RNP to Southwest







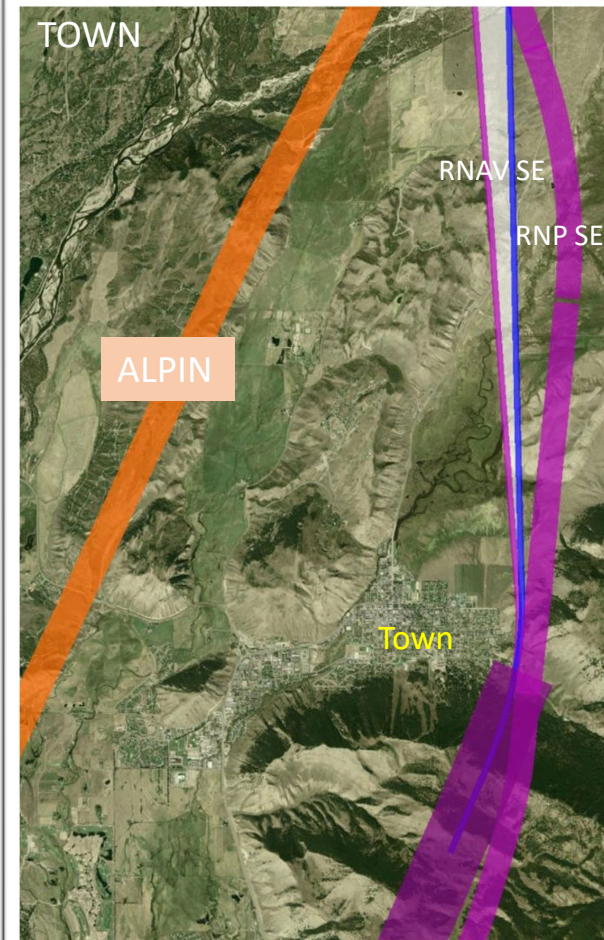
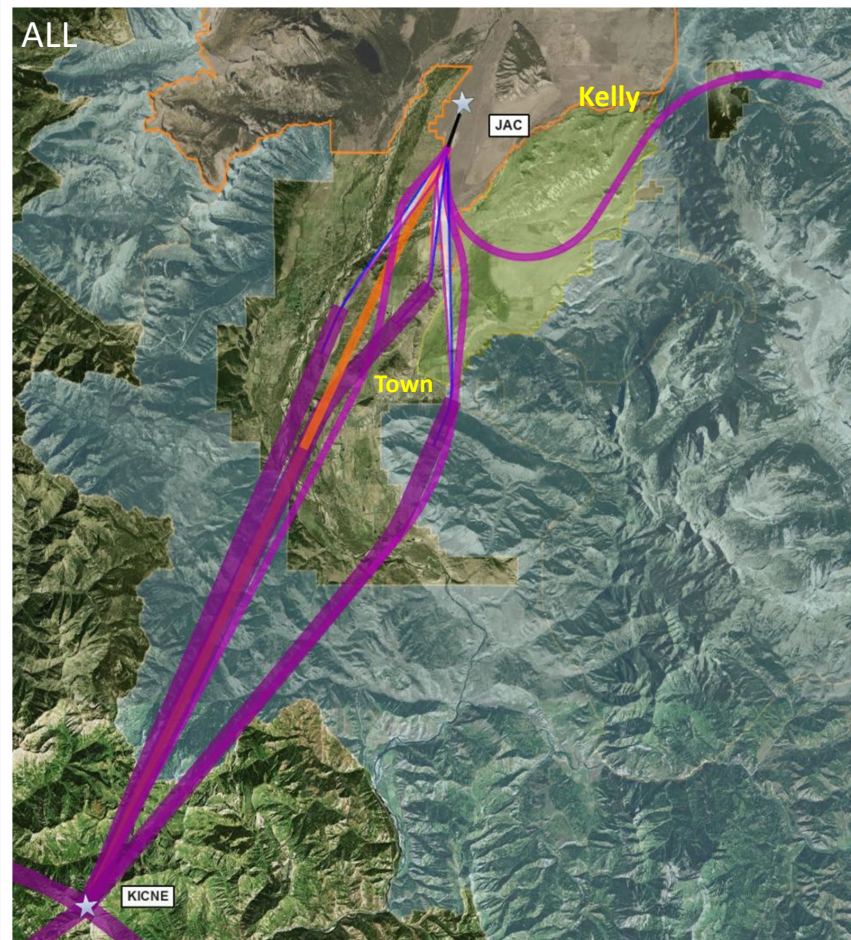
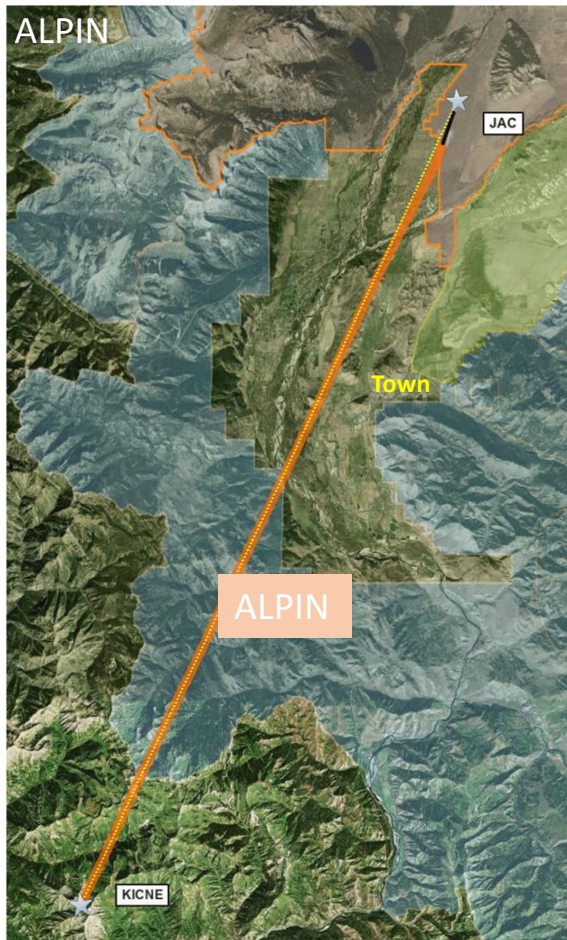
# C5 RNP to East (Corkscrew)







# All Procedures



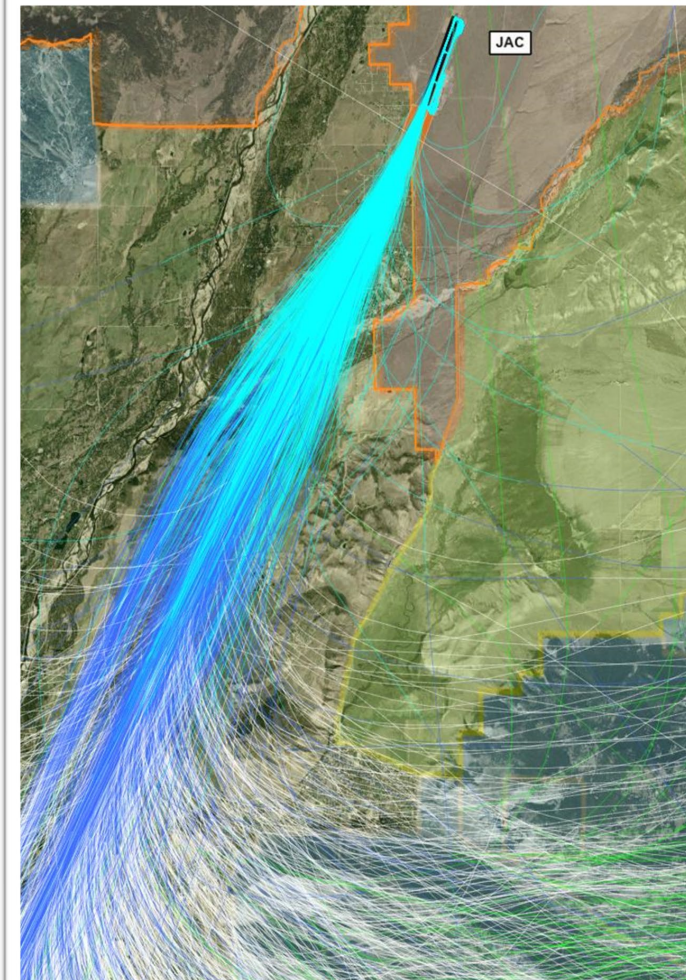
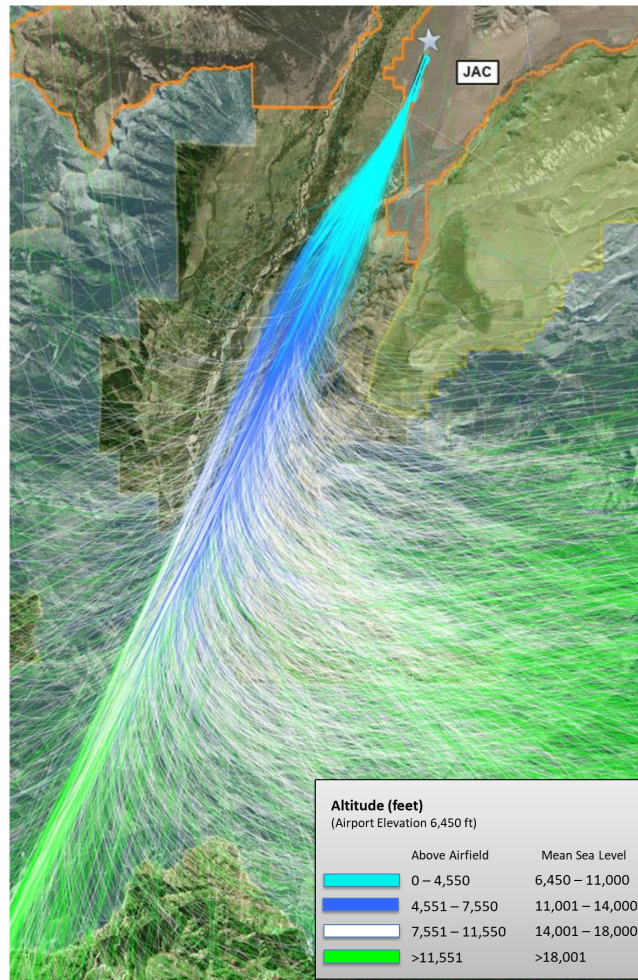
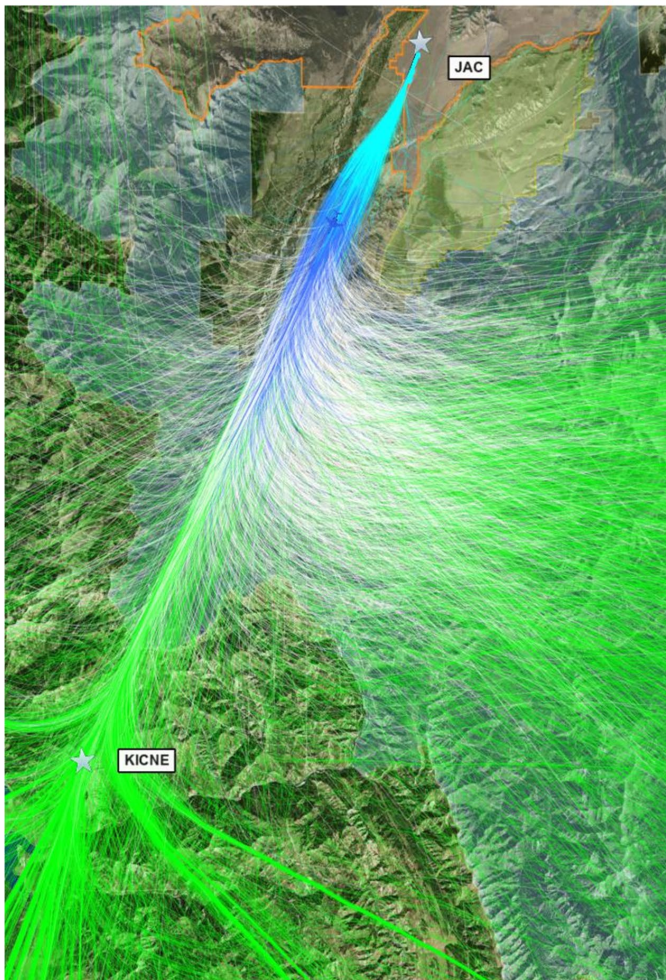


## Question 2

- ❖ What are the proposed flight procedure options?
- ❖ **What altitude are aircraft flying today?**
  - Where over the ground do they reach 500 feet?
  - What altitude are aircraft when abreast of the Town?
  - What altitude do aircraft turn to the east?
- ❖ What are the air traffic constraints with turning left?
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?
- ❖ How would these options be studied in the Environmental Process?
- ❖ Summary and Next Steps



# Radar Tracks Colored by Altitude







# Existing Altitudes (ALPIN Departure Procedure)

Distance Description (General)	Distance From from Runway End	ALL JETS		BUSINESS JETS ONLY		ALL JETS
		Avg Altitude (feet) Above Airport Elev	Avg Altitude (feet) Above Sea Level	Avg Altitude (feet) Above Airport Elev	Avg Altitude (feet) Above Sea Level	% 500 feet Above Airport Elev
	<i>Airport Elev.</i>	6,450	--	6,450	--	
Runway End (South)	0.0	197	6,647	225	6,675	5%
Spring Gulch Road	0.5	687	7,137	674	7,124	72%
Moulton Loop South Road	1.0	1,220	7,670	1,146	7,596	99%
Bar B Bar Subdivision	1.5	1,710	8,160	1,601	8,051	100%
Sage Bush Road	2.0	2,161	8,611	2,058	8,508	100%
Gros Ventre River	3.0	2,967	9,417	2,980	9,430	100%
Bar B C Subdivision	4.0	3,681	10,131	3,860	10,310	100%
Tangent to Spring Creek Ranch	6.0	5,018	11,468	5,460	11,910	100%
Hwy 22 (Tangent to Town of Jackson)	8.0	6,291	12,741	6,859	13,309	100%

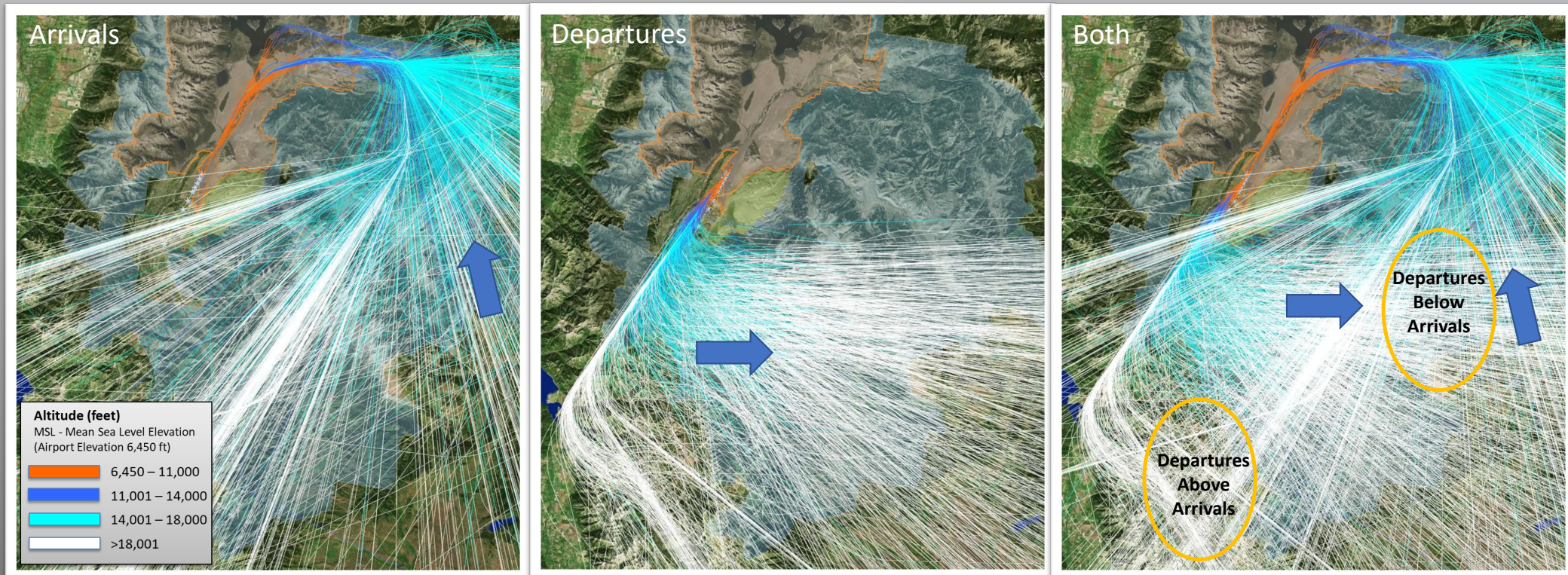


# Questions?

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
- ❖ **What are the air traffic constraints with turning left?**
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?
- ❖ How would these options be studied in the Environmental Process?
- ❖ Summary and Next Steps



# Air Traffic Interactions







# Questions?

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
- ❖ What are the air traffic constraints with turning left?
- ❖ **How would the noise change and what is the potential perception?**
- ❖ What is the noise from an individual flight on each procedure?
- ❖ How would these options be studied in the Environmental Process?
- ❖ Summary and Next Steps








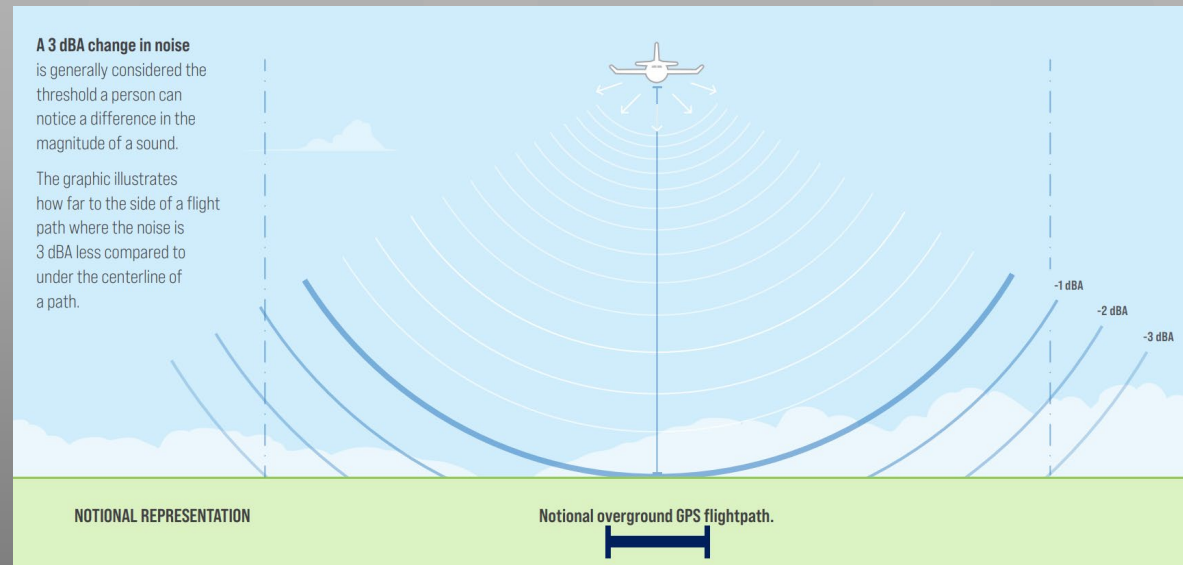


# Evaluation of Change

- ❖ The evaluation is based on **single event dBA** sound of a single flight and not a cumulative **DNL**. Changes in DNL are scaled very differently.
- ❖ Changes of noise of 3 dBA or less is considered the threshold of what the human ear can detect.
- ❖ Change of a dBA noise of 10 dBA is perceived as a doubling or half of noise.
- ❖ Increases are more noticed the decreases.
- ❖ Changes of less than 3 dBA not considered
- ❖ Changes of 3 to 9 dBA are considered a noticeable change
- ❖ Changes of 10 dBA or more are considered a very noticeable

**Change in Single Event Lmax (dBA) Noise Levels**  
(Departing A319 Aircraft)

	+10 dBA or greater increase
	+ 4 to +9 dBA increase
	-3 to + 3 dBA change
	-4 to -9 dBA decrease
	-10 dBA or greater decrease

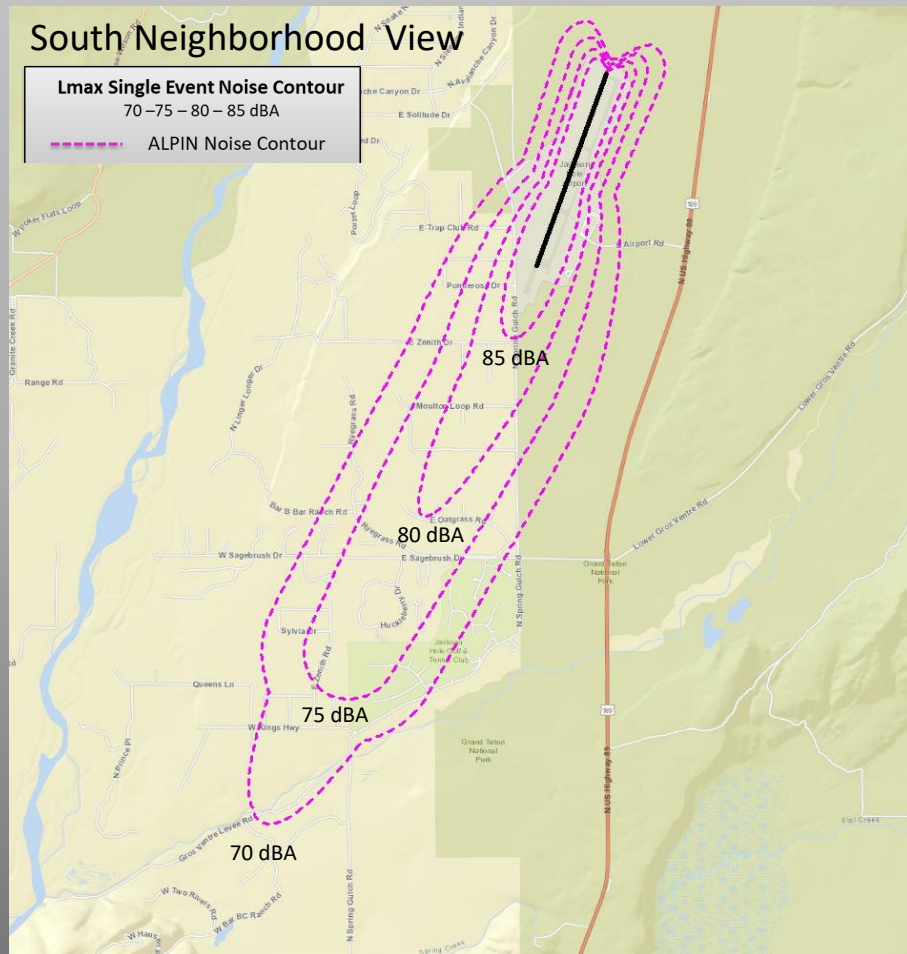




# Questions?

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
- ❖ What are the air traffic constraints with turning left?
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?**
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# Lmax Noise Contour – Existing ALPIN

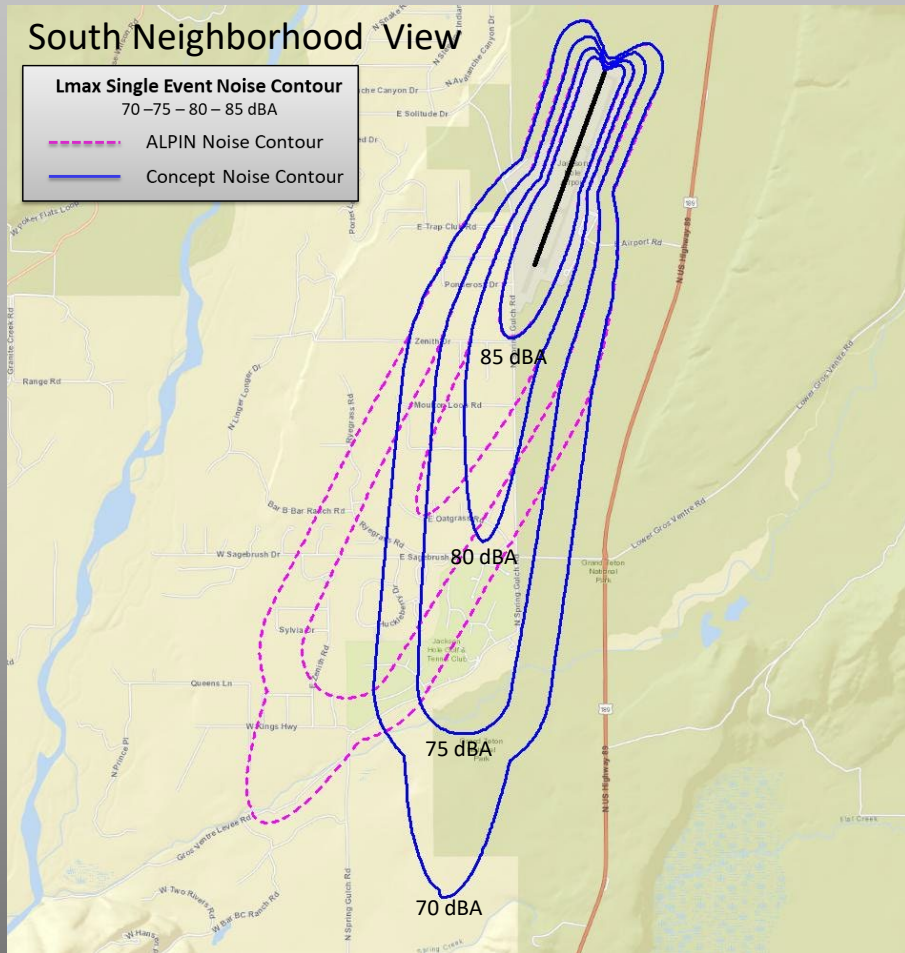


- ❖ Single Event Noise Contour of an Individual Flight (dBA Noise Level)
- ❖ FAA's AEDT Noise Model
- ❖ A319 Departure to Denver

Notational Noise Single Event Footprint  
(Click on video to play)



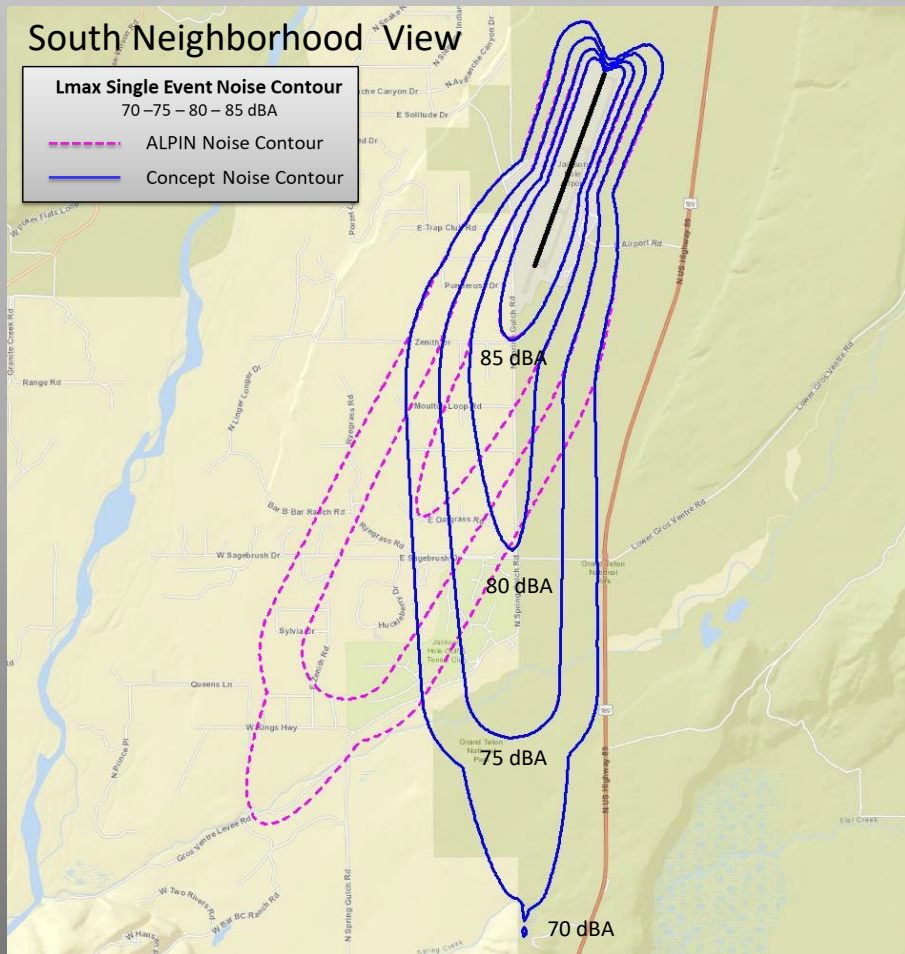
# Lmax Noise Contour – FAA KICNE



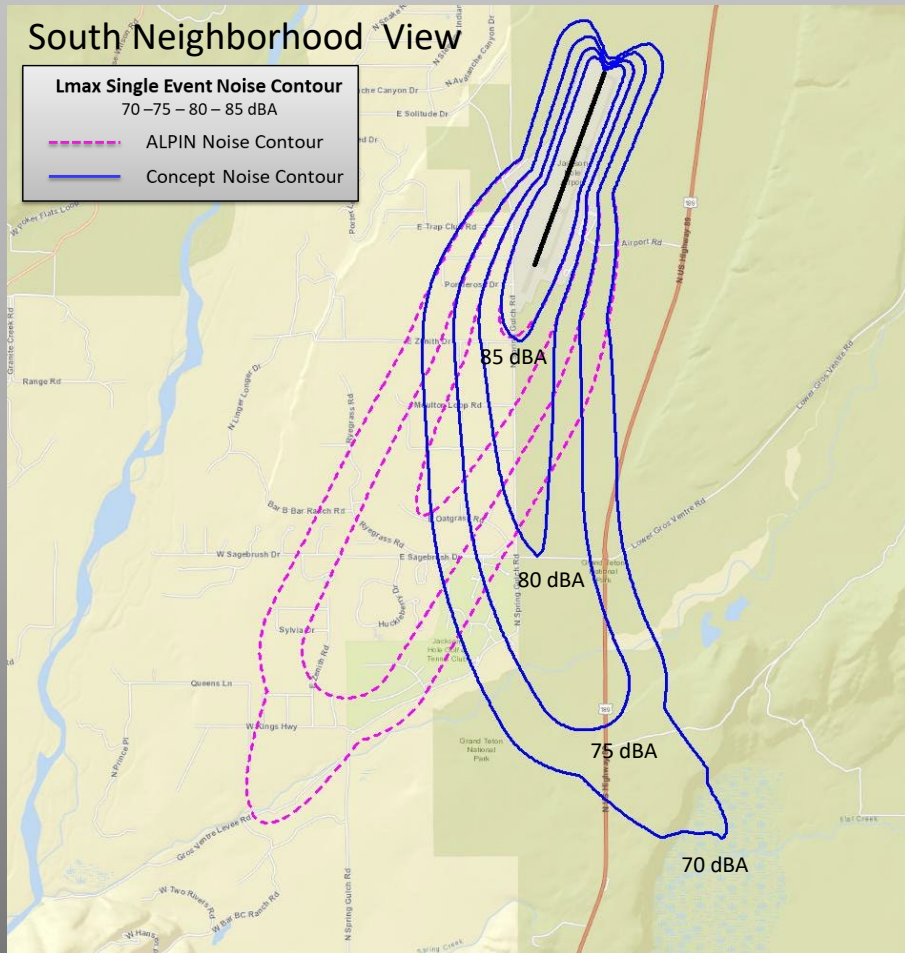




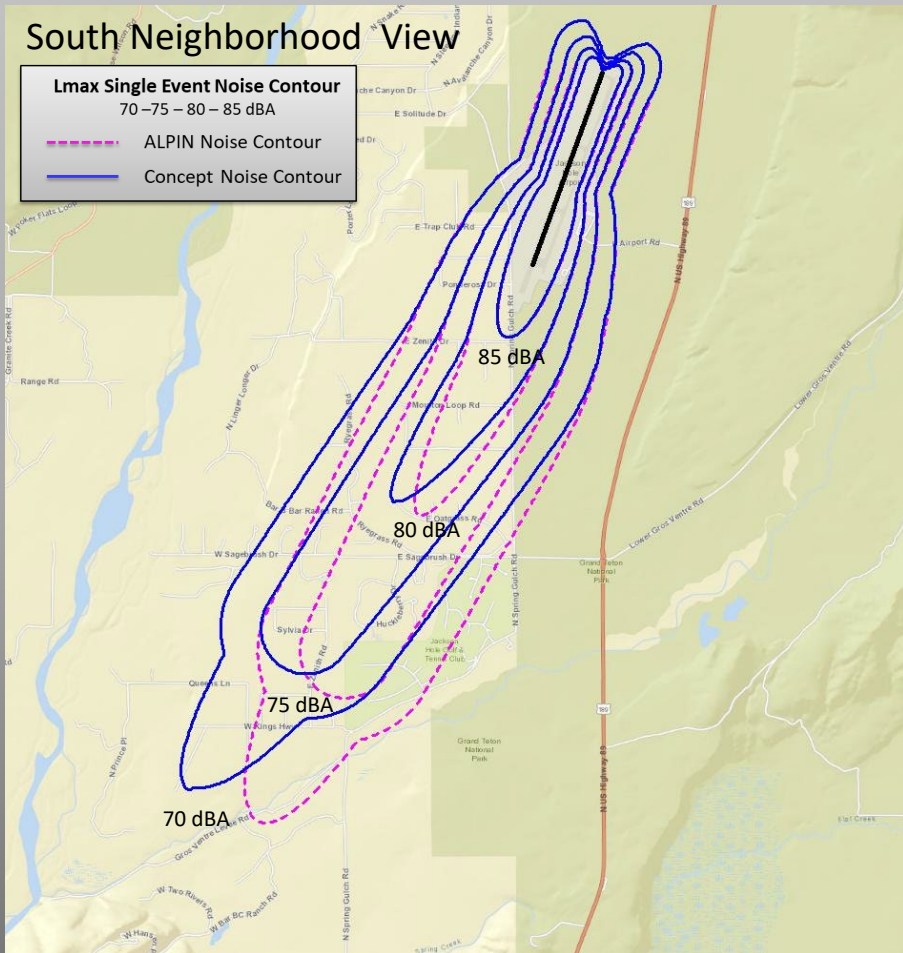
# Lmax Noise Contour – C1 RNAV to Southeast



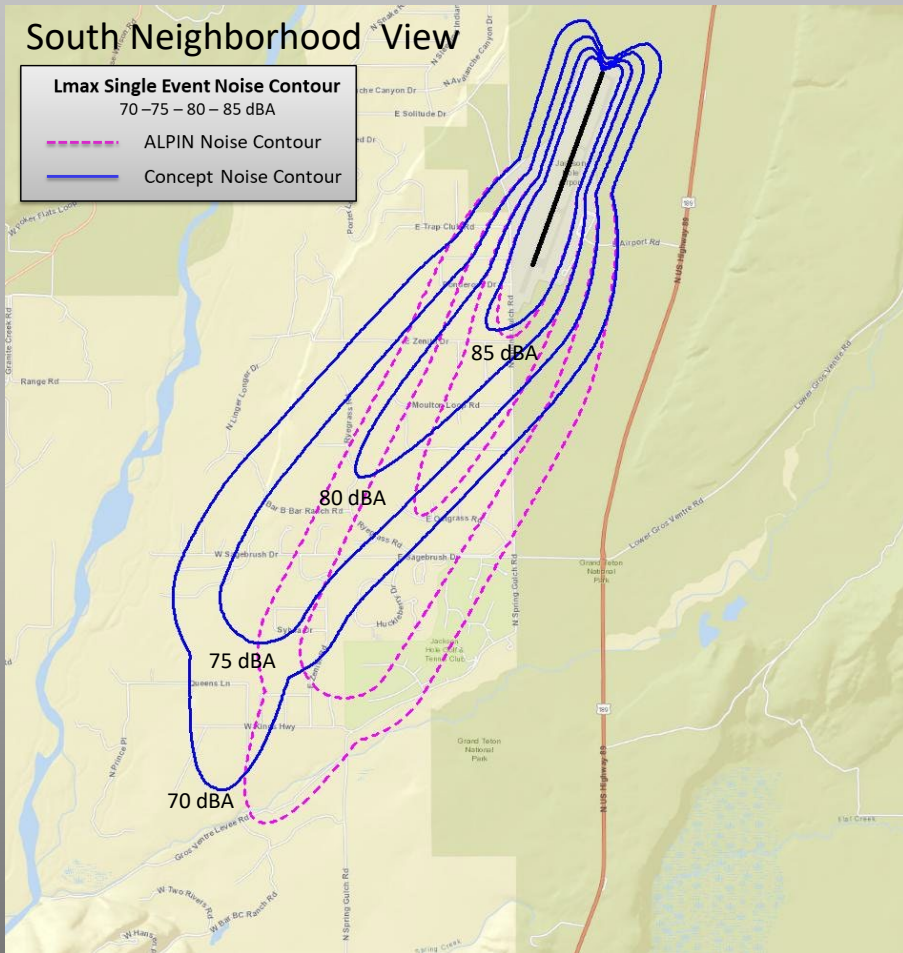
# Lmax Noise Contour – C2 RNP to Southeast



# Lmax Noise Contour – C3 RNAV to Southwest

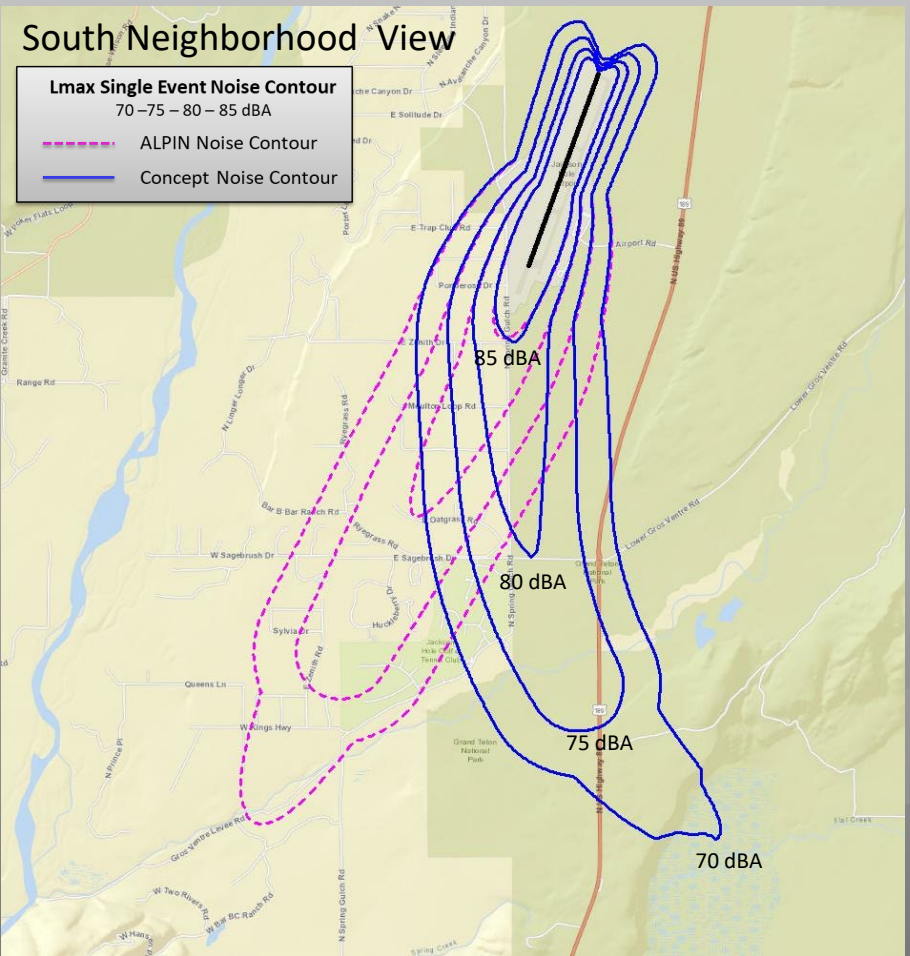


# Lmax Noise Contour – C4 RNP to Southwest





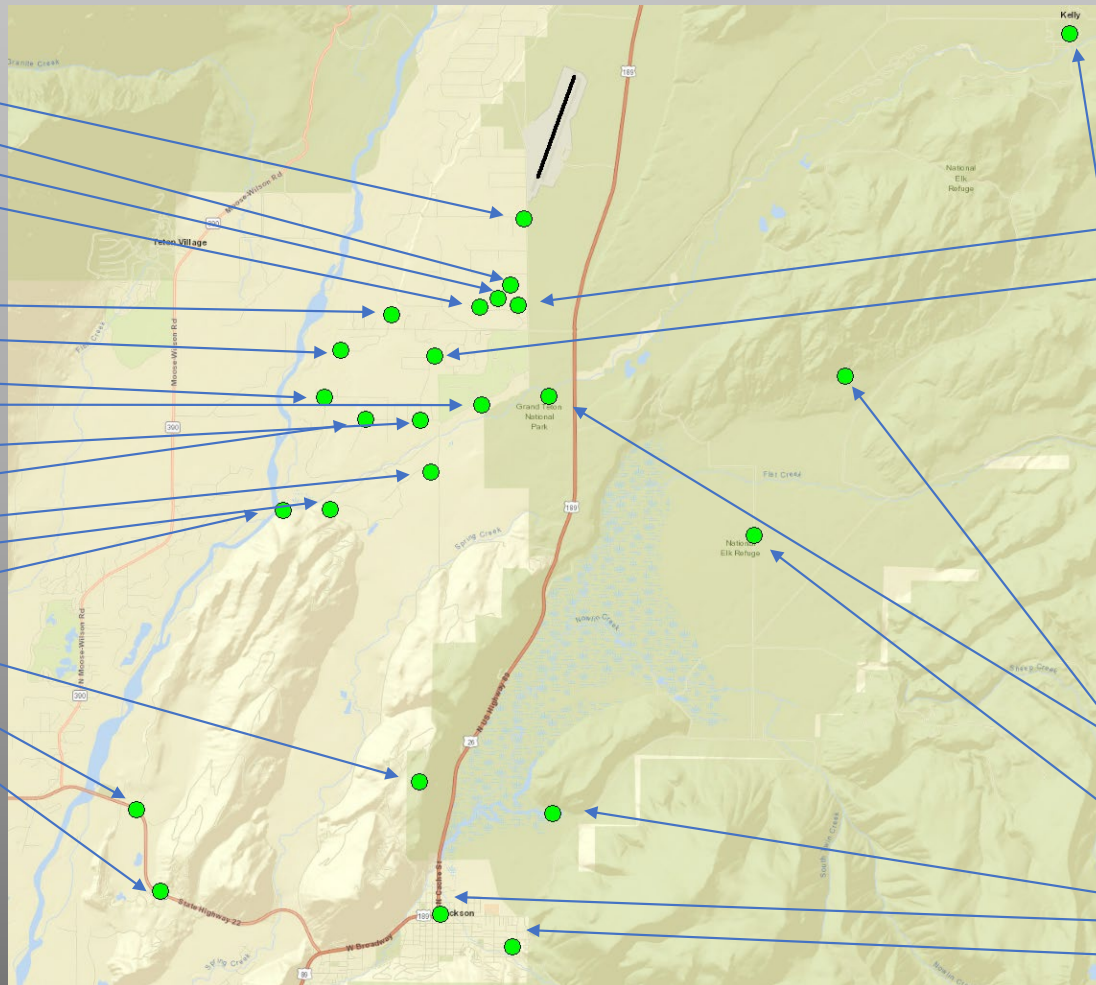
# Lmax Noise Contour – C5 RNP to East (corkscrew)





# Representative Evaluation Locations

Receptor Location
Moulton (Spring Gulth/Zenith Dr)
280 S Moulton Loop
Bar B Bar (Fox Trail)
Bar B Bar (Oak Grass)
Bar B Bar (Blue Stem)
Zenith Rd/Sylvia
Lower Cascade RD
End of Red Tail
Queens Lane
Golf Course (East Side)
W Kings/W Zenith
W Kings/N Bear Lakes
Spring Gulch/Gros Ventre
Bar BC Lower
End of Gros Ventre Levee Rd
Spring Creek Ranch
Hwy 22/Walton Ranch Rd
Hwy 22/N Bar Y
Kelly
GTNP Gros Ventre
Elk Refuge (North)
Elk Refuge (Central)
Elk Refuge (South)
Town (Town Square)
Town (May Park)



Receptor Location
Moulton (Spring Gulth/Zenith Dr)
280 S Moulton Loop
Bar B Bar (Fox Trail)
Bar B Bar (Oak Grass)
Bar B Bar (Blue Stem)
Zenith Rd/Sylvia
Lower Cascade RD
End of Red Tail
Queens Lane
Golf Course (East Side)
W Kings/W Zenith
W Kings/N Bear Lakes
Spring Gulch/Gros Ventre
Bar BC Lower
End of Gros Ventre Levee Rd
Spring Creek Ranch
Hwy 22/Walton Ranch Rd
Hwy 22/N Bar Y
Kelly
GTNP Gros Ventre
Elk Refuge (North)
Elk Refuge (Central)
Elk Refuge (South)
Town (Town Square)
Town (May Park)



# Lmax Noise Levels at Sample Locations

Receptor Location	ALPIN	FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East	FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East
	Existing	S East	S East	S East	S West	S West	Corkscrew	S East	S East	S East	S West	S West	Corkscrew
Moulton (Spring Gulth/Zenith Dr)	85	85	85	84	84	83	84	0	0	-1	0	-2	0
280 S Moulton Loop	79	81	80	78	76	71	78	2	1	0	-2	-8	-1
Bar B Bar (Fox Trail)	79	79	77	74	77	71	74	0	-2	-5	-3	-9	-5
Bar B Bar (Oak Grass)	80	75	72	70	79	72	69	-5	-8	-10	-1	-8	-11
Bar B Bar (Blue Stem)	74	80	80	79	71	66	79	6	6	6	-3	-8	5
Zenith Rd/Sylvia	77	66	63	61	78	72	60	-11	-15	-16	1	-5	-17
Lower Cascade RD	65	58	56	55	69	76	55	-7	-9	-10	4	11	-10
End of Red Tail	60	53	51	50	63	69	50	-7	-9	-10	3	8	-11
Queens Lane	58	52	50	48	63	65	48	-7	-9	-10	5	6	-11
Golf Course (East Side)	69	76	71	67	65	59	65	7	2	-2	-4	-10	-4
W Kings/W Zenith	72	64	60	57	69	67	56	-9	-12	-15	-3	-6	-16
W Kings/N Bear Lakes	66	56	53	51	71	71	50	-10	-13	-15	5	5	-16
Spring Gulch/Gros Ventre	68	64	58	56	62	63	54	-4	-9	-11	-6	-5	-13
Bar BC Lower	66	51	48	46	68	67	45	-15	-18	-20	2	1	-21
End of Gros Ventre Levee Rd	60	47	45	43	66	61	42	-13	-16	-17	6	0	-18
Spring Creek Ranch	51	63	57	53	45	58	35	11	5	2	-6	6	-17
Hwy 22/Walton Ranch Rd	61	55	38	36	66	54	29	-6	-23	-25	5	-7	-32
Hwy 22/N Bar Y	66	64	39	38	63	60	28	-1	-26	-28	-3	-5	-37
Kelly	31	31	31	31	31	31	55	0	0	0	0	0	24
GTNP Gros Ventre	60	69	75	78	57	53	77	10	16	18	-2	-6	18
Elk Refuge (North)	37	38	40	40	37	37	54	1	3	3	0	-1	17
Elk Refuge (Central)	38	42	44	50	38	36	67	4	6	12	-1	-2	29
Elk Refuge (South)	42	50	67	66	38	46	39	8	25	24	-4	4	-3
Town (Town Square)	47	52	59	57	41	52	32	6	12	11	-5	6	-15
Town (May Park)	41	47	66	65	37	46	32	5	24	23	-5	5	-9
Is there noise sensitive land uses with a noticable <b>decrease</b> in single event noise (-4 to -9 dBA decrease)													
Is there noise sensitive land uses with a very noticable <b>decrease</b> in single event noise (+10 dBA or greater)													
Is there noise sensitive land uses with a noticable <b>increase</b> in single event noise (+4 to +9 dBA increase)													
Is there noise sensitive land uses with a very noticable <b>increase</b> in single event noise (+10 dBA or greater)													

**Change in Single Event Lmax (dBA) Noise Levels**  
(Departing A319 Aircraft)

- +10 dBA or greater increase
- + 4 to +9 dBA increase
- 3 to + 3 dBA change
- 4 to -9 dBA decrease
- 10 dBA or greater decrease



## Questions?

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
- ❖ What are the air traffic constraints with turning left?
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?
- ❖ **How would these options be studied in the Environmental Process?**
- ❖ Summary and Next Steps





# Any Change in Procedure Environmental Review

- ❖ Must comply with NEPA.
  - Uses FAA criteria for flight procedure changes
- ❖ Must comply with strict regulations with respect to GTNP and the Elk Refuge



# Questions?

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
- ❖ What are the air traffic constraints with turning left?
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?
- ❖ How would these options be studied in the Environmental Process?
- ❖ **Summary and Next Steps**

# Summary and Next Steps

## ❖ Summary

- RNP procedures are not likely to be available for much of the aircraft for a 5-year time period
- There are air traffic constraints in turning to the left
- Any of the new procedure result in a noticeable movement of noise from one noise sensitive area to another

## ❖ Next Steps

- Taskforce absorbs and reviews this new information
- Provide questions and comments by July 11<sup>th</sup>
- Begin preparing board draft of taskforce work for review at August meeting

# Southern Departure Study

Jackson Hole Airport

Task Force Meeting # 5  
August 16, 2022





# Agenda

- ❖ Meeting Purpose
- ❖ Review of Options
- ❖ Task Force Comments Received Since Last Meeting
- ❖ Summary
- ❖ Task Force Discussion
- ❖ Next Steps
- ❖ Public Comment



# Task Force Process

- ❖ Airport Board requested time to evaluate reasonable and feasible options to the KICNE 1 departure procedure
- ❖ Airport Board assembled consulting team composed of aircraft procedure designers, aircraft noise specialists, air traffic specialists, pilots and environmental specialists.
- ❖ Designed and evaluated seven Southern Departure Options, conforming to FAA design criteria and standards
- ❖ Evaluated noise effects for each Option, transparent process
- ❖ Considered comments from the public and responded to comments from Task Force members



# Agenda

- ❖ Meeting Purpose
- ❖ Review of Options
- ❖ Task Force Comments Received Since Last Meeting
- ❖ Summary
- ❖ Task Force Discussion
- ❖ Next Steps
- ❖ Public Comment



## Meeting Purpose

The presentation will present the evaluated Options for a revised departure procedure to the south along with the noise associated with each Option as it relates to noise sensitive land uses.





## Task Force Objectives/Guidelines from the Board

- ❖ Identify and prioritize possible improvements to southern departures that will reduce aircraft noise intrusion. *(Task Force Meeting #1 on February 10, 2022, Slide 5)*
- ❖ Solutions which optimize for one group at the expense of others will not be carried forward—noise will not shift from one neighborhood to another. *(Task Force Meeting #1 on February 10, 2022, Slide 7)*
- ❖ This includes all noise sensitive uses including public lands.

As stated in the third amendment to the Use Agreement, dated May 19, 2011, the Airport shall work to *“develop and implement such reasonable and cost effective mitigation measures as may be available to reduce environmental impacts on the Park to the lowest practicable levels consistent with the safe and efficient operations of the Airport, and with applicable law and contractual obligations.”*



# Agenda

- ❖ Meeting Purpose
- ❖ **Review of Options**
- ❖ Task Force Comments Received Since Last Meeting
- ❖ Summary
- ❖ Task Force Discussion
- ❖ Next Steps
- ❖ Public Comment



# Flight Procedures

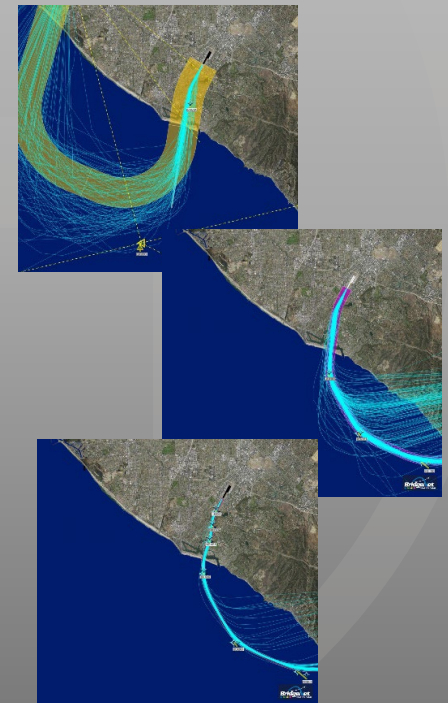
ALPIN	FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East	C6 ZIPET
Existing	S East	S East	S East	S West	S West	Corkscrew	RNAV St
<b>Original Concept #</b>		<b>1</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>3</b>

**CONVENTIONAL** – The current ALPIN is a **conventional** procedure that uses a ground-based radio signal NAVAID to provide aircraft positional guidance. The FAA is replacing these procedures with modern RNAV satellite-based procedures. Many of these conventional procedures will remain for some period of time as backup procedures or for use by smaller non RNAV equipped aircraft.

**RNAV** – RNAV procedures are satellite-based procedures that use the signal from GPS to provide guidance flying GPS defined waypoints. The RNAV concepts at JAC involve flying runway heading to an altitude of around 500 feet and then turning and flying to the first and subsequent waypoints. Flights will show a variation in the initial turn due to the differences in climb rates until reaching the first waypoint where then the path becomes more concentrated.

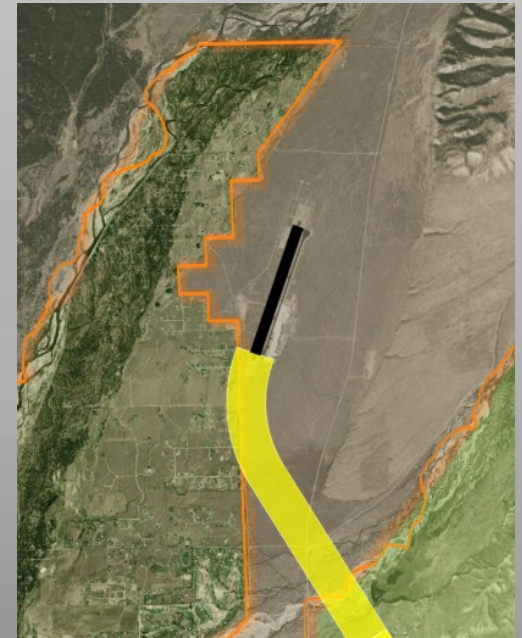
**RNP** – RNP is a type of RNAV procedure that allows an aircraft to fly a straight or curved path with a very high level of precision. They are more commonly used for arrivals with only limited use for departures at airports where the very high precision provides added value. To fly an RNP procedure, an aircraft must be equipped with the technology, the pilot trained in using the technology and the operator has a reporting system on its use. An aircraft flying an RNP will generally fly the exact path of the procedure in a very precise manner. Departure RNP's not be available in significant numbers for a number of years.

*Note: All three types of procedures require the aircraft to fly runway heading to approximately 500 feet before the initial turn.*



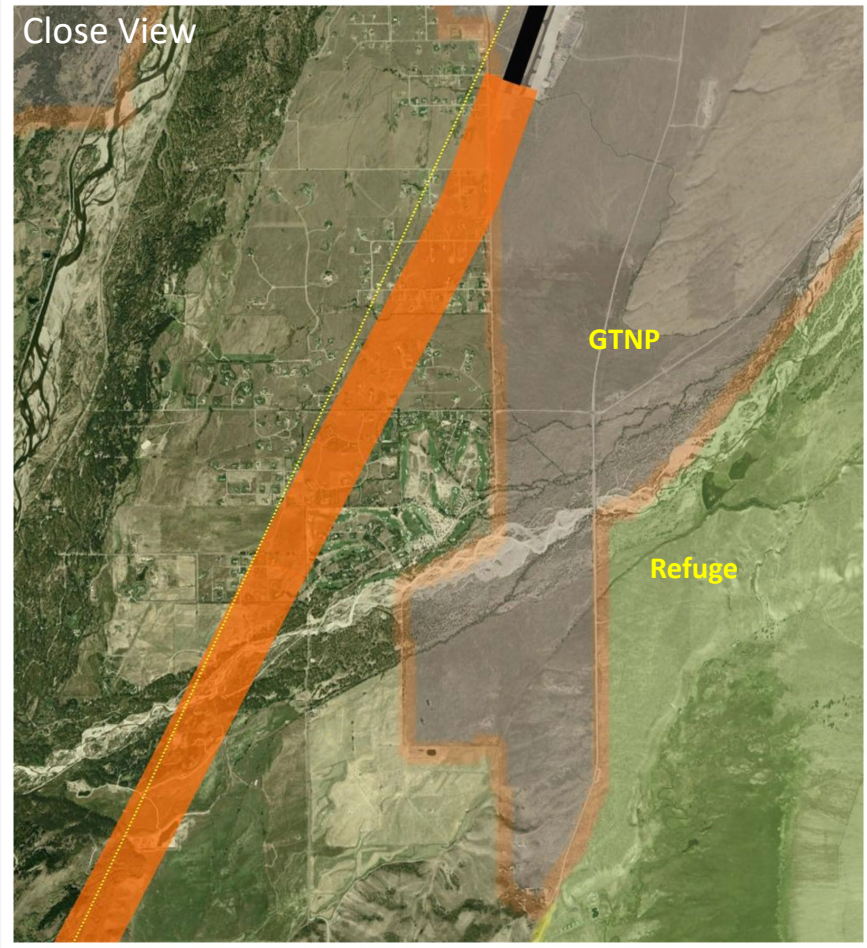
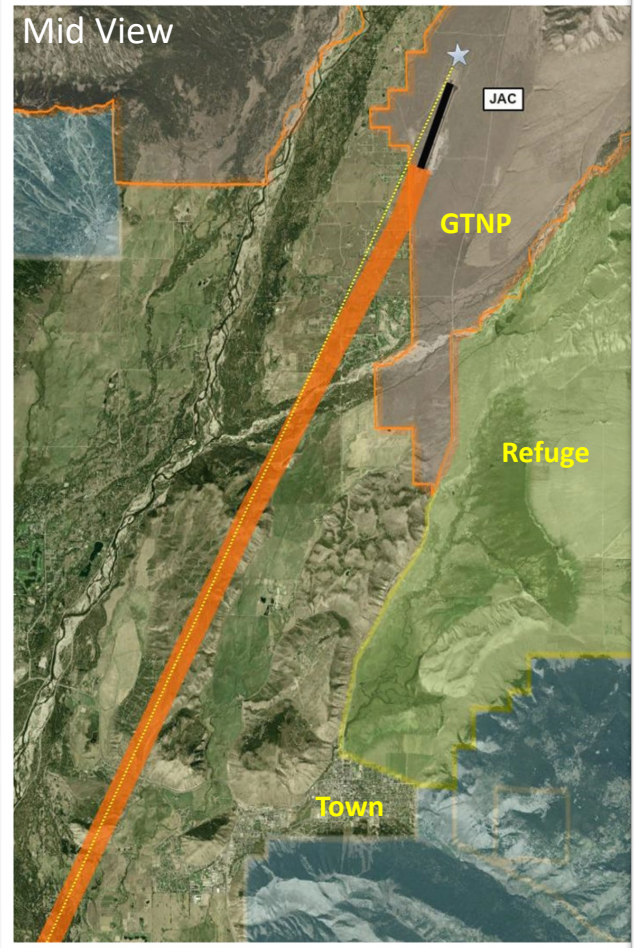
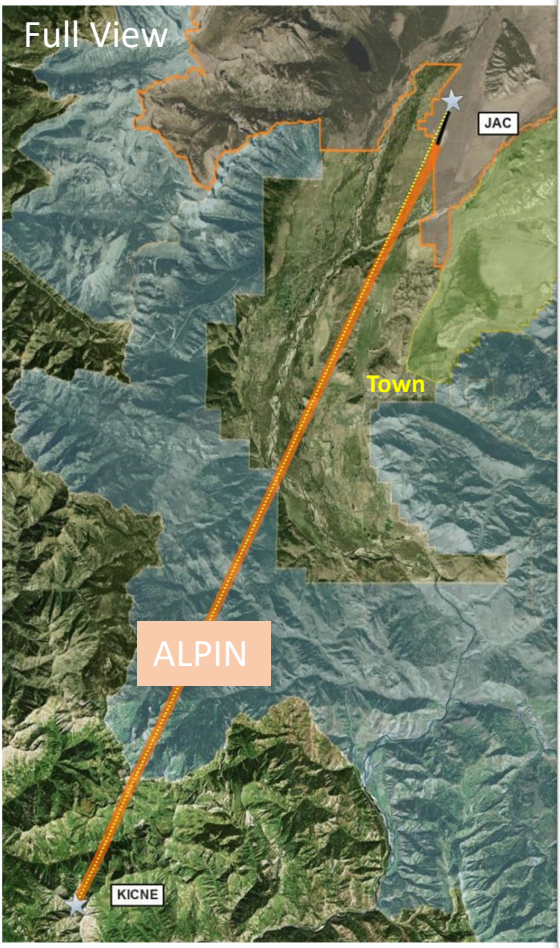
# Historical Noise Abatement Left Turn

- ❖ Historically aircraft made an unguided left turn on departure when departing on Visual Flight Rules (VFR) conditions
- ❖ As a result of air traffic automation and flight department practices to improve standardization and safety, this turn was effectively discontinued roughly 20 years ago
- ❖ Today, Air Traffic and Flight Departments expect an aircraft to depart on a published – instrument flight procedure
- ❖ As part of the Part 150 (completed in 2018) the Board proposed the development of a left turn departure procedure
- ❖ The FAA evaluated a new potential path KICNE, which was paused for additional community input
- ❖ The Southern Departure Task Force assessed noise for the KICNE, as well as other procedure routing options





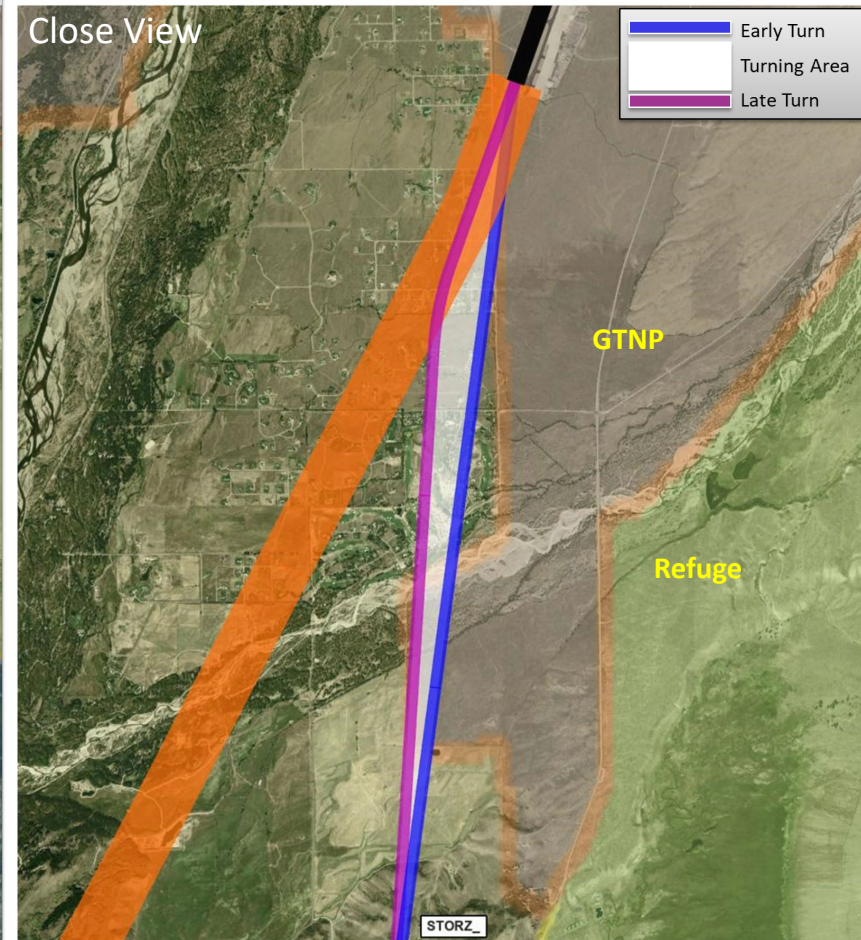
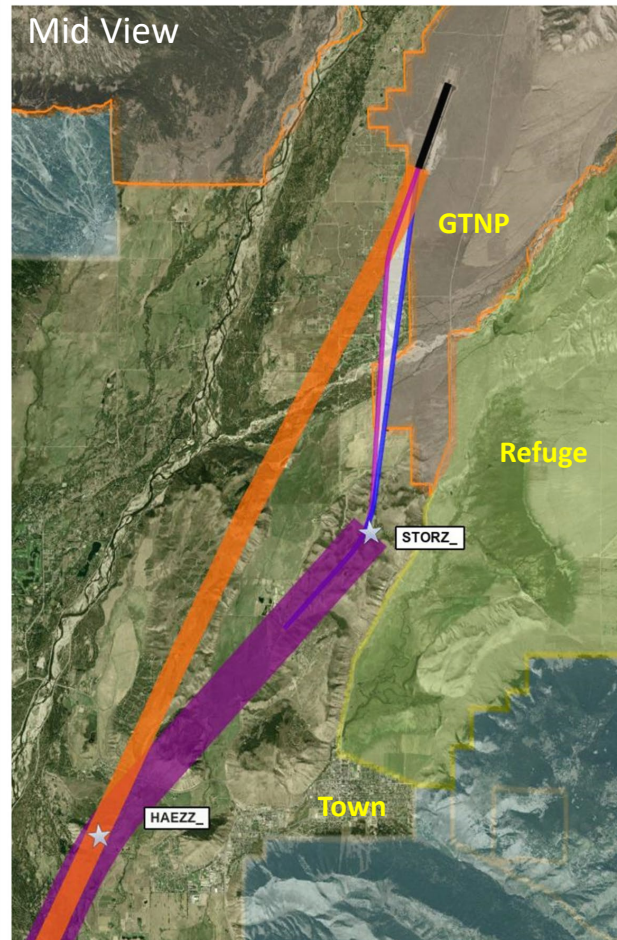
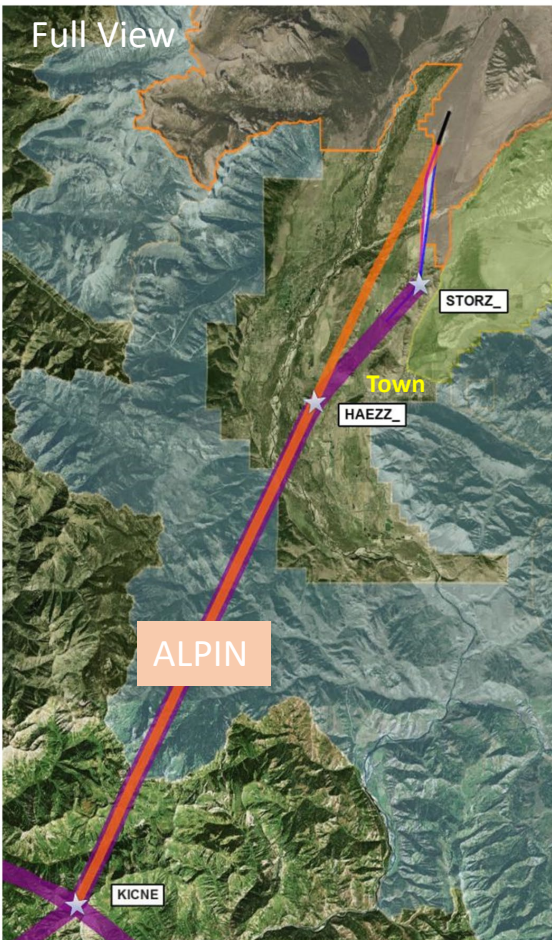
# Existing ALPIN and RNAV Overlay





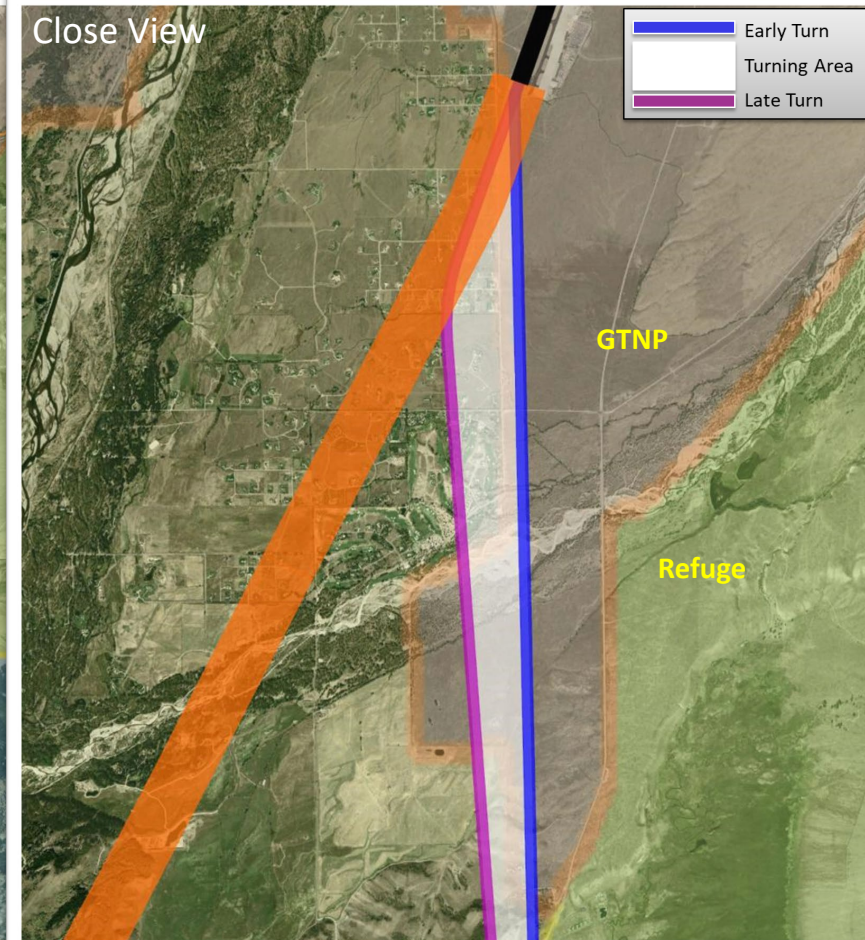
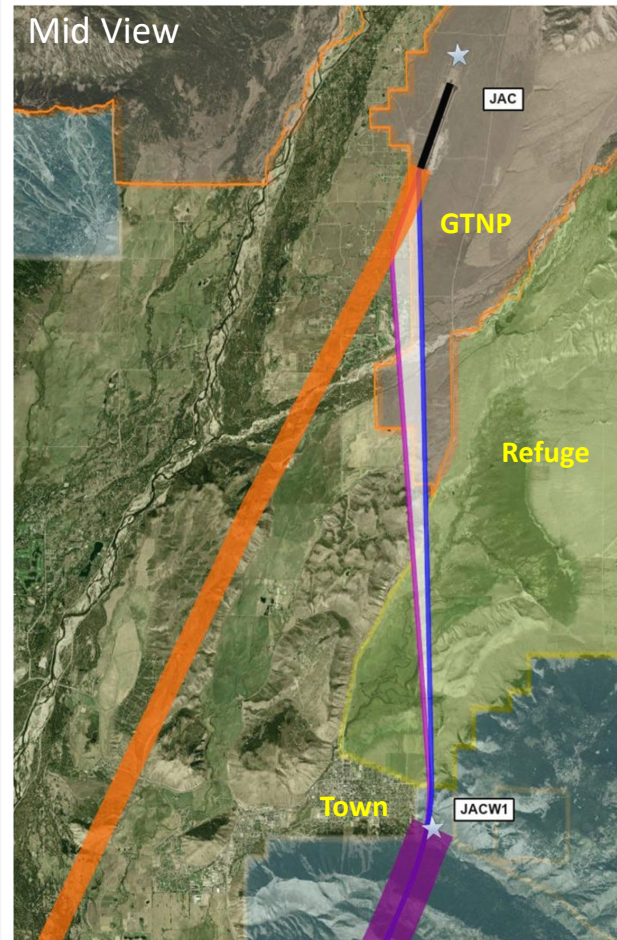
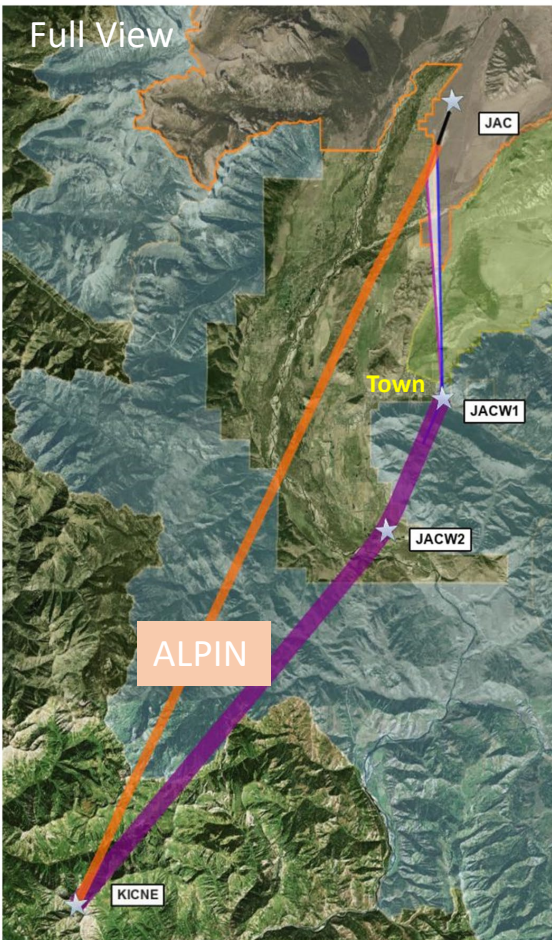


# FAA KICNE ONE (RNAV)



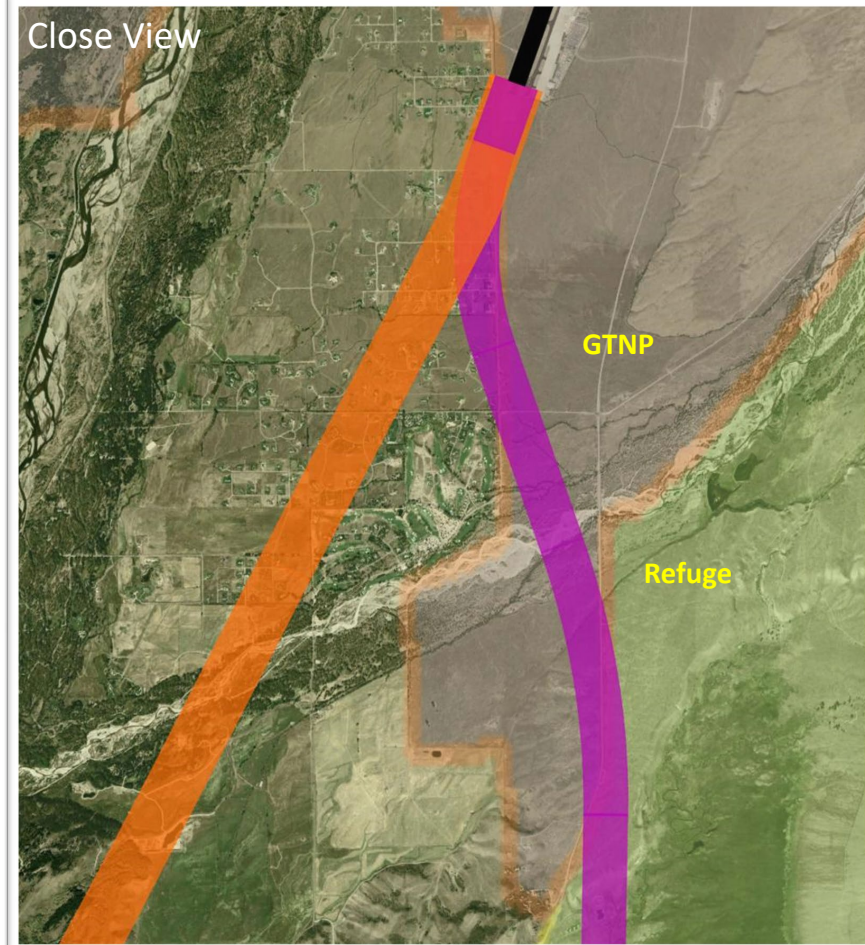
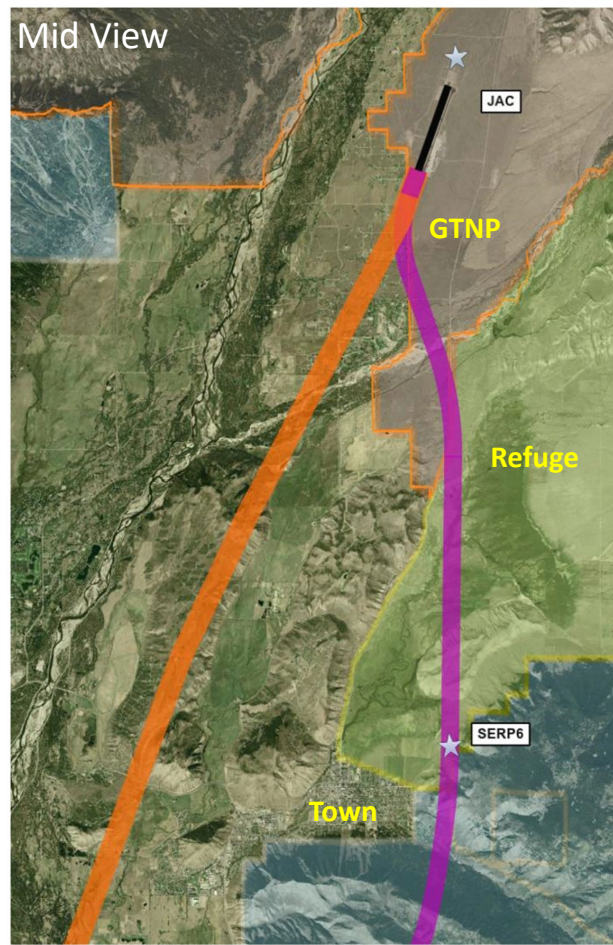
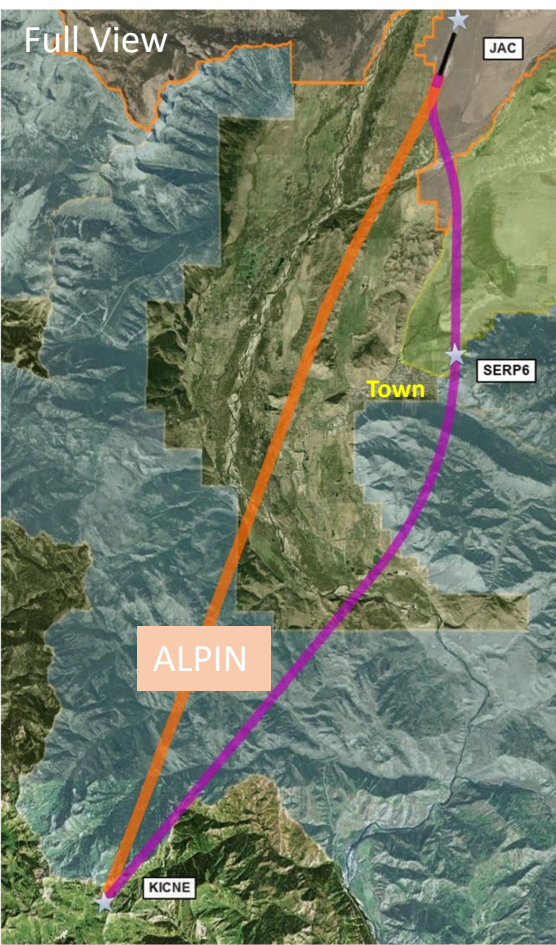


# C1 RNAV to Southeast (Concept #1 RNAV DP – East Shift)



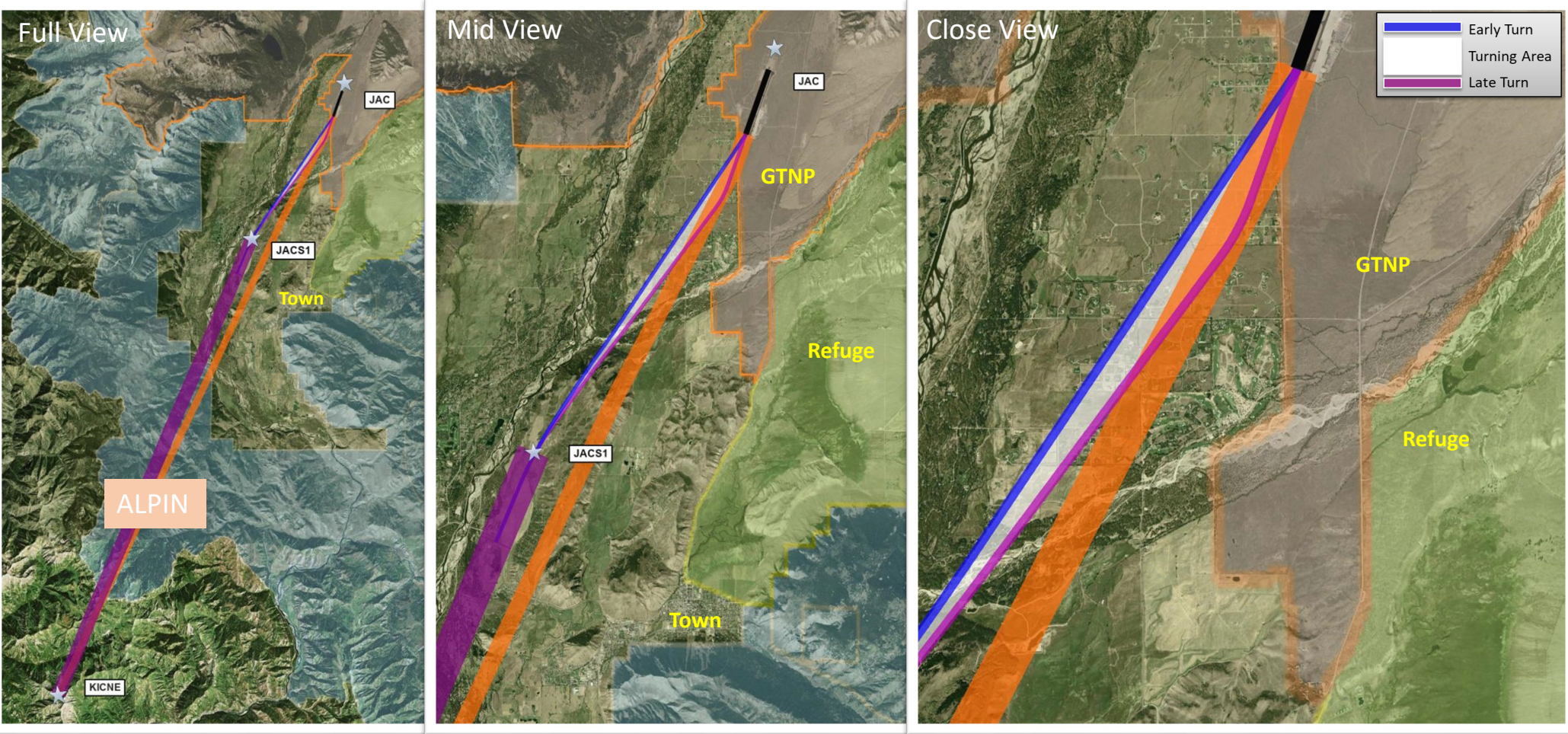


# C2 RNP to Southeast (Concept #5 Immediate Turn to Southeast)



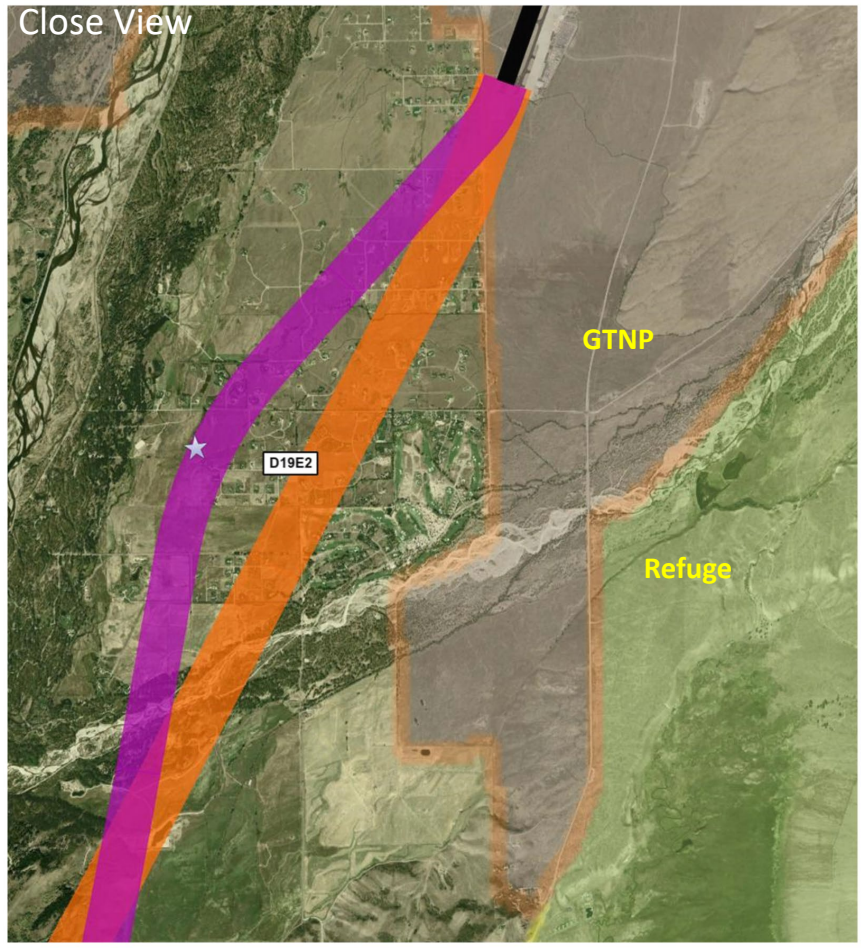
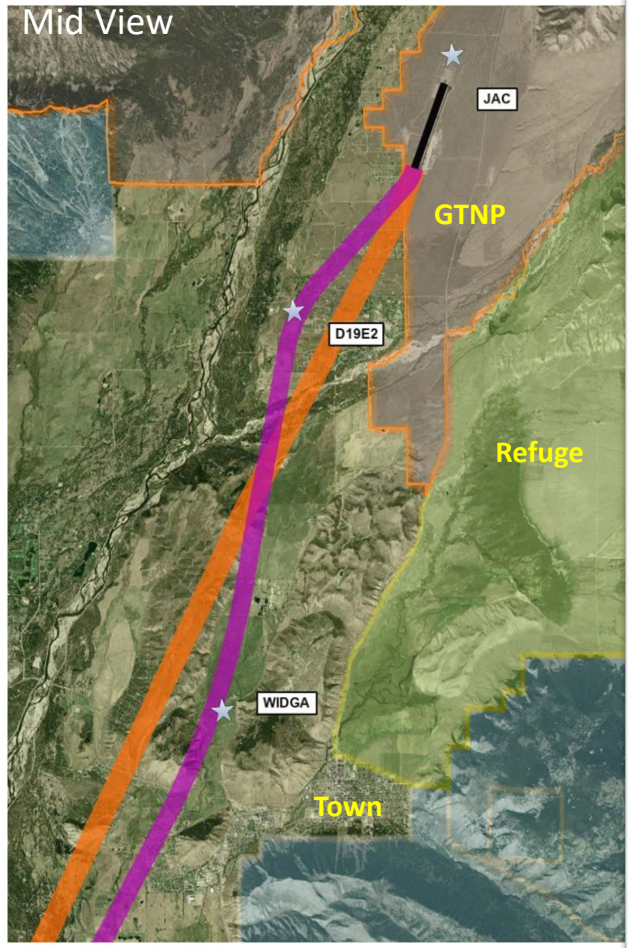
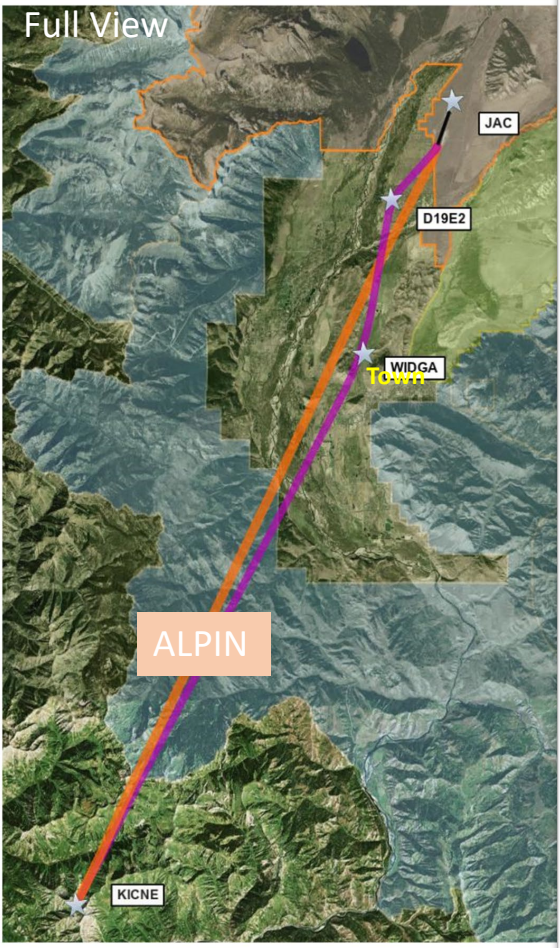


# C3 RNAV to Southwest (Concept #2 RNAV DP – West Shift)



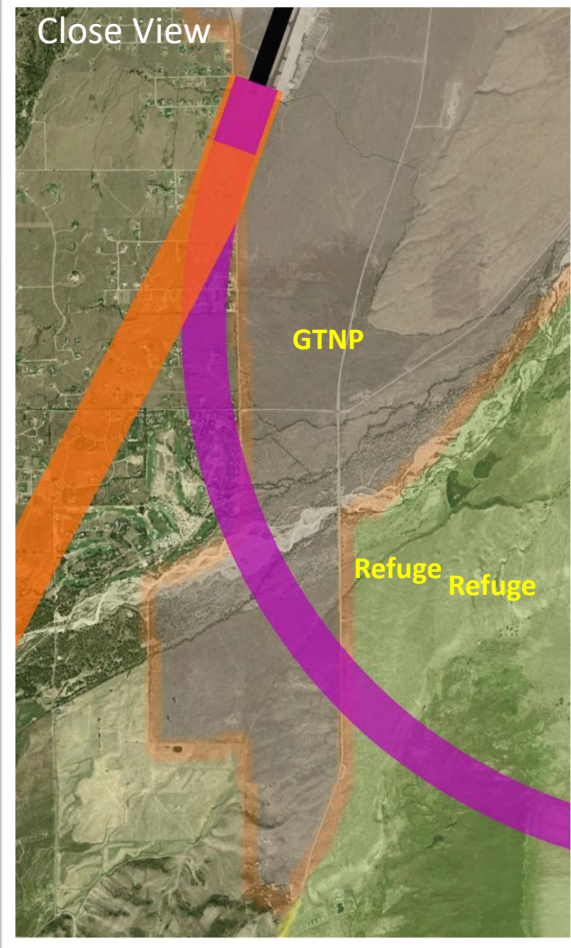
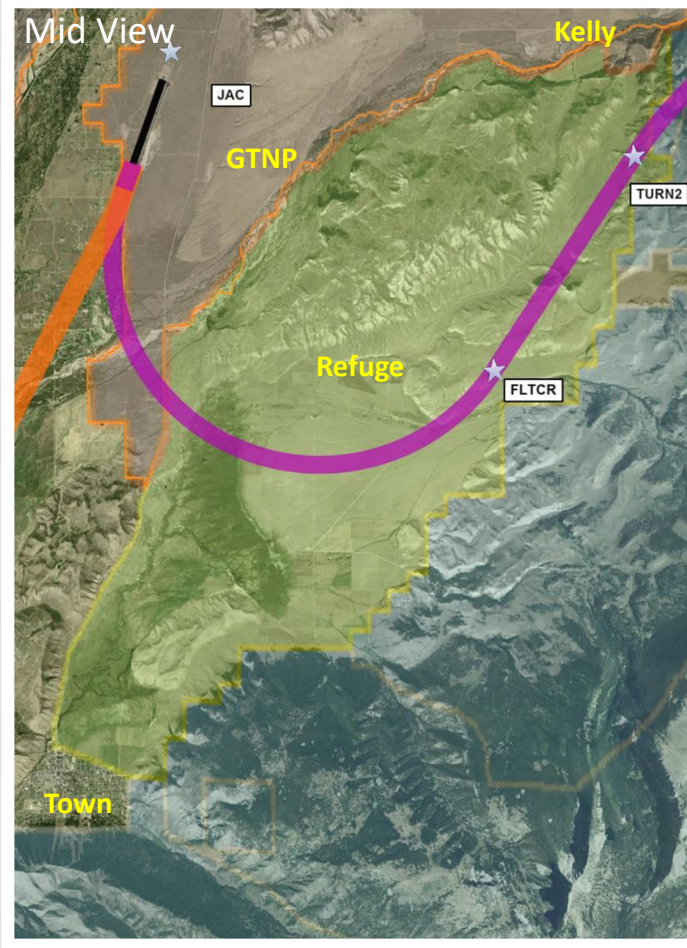
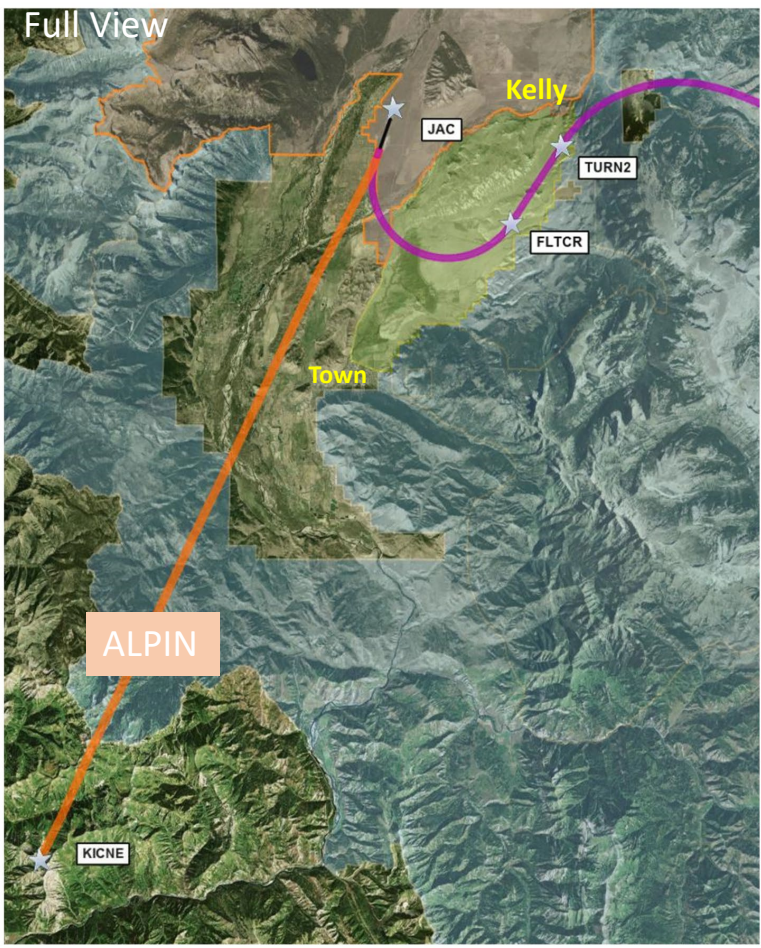


# C4 RNP to Southwest (Concept #4 Immediate Turn to Southwest)





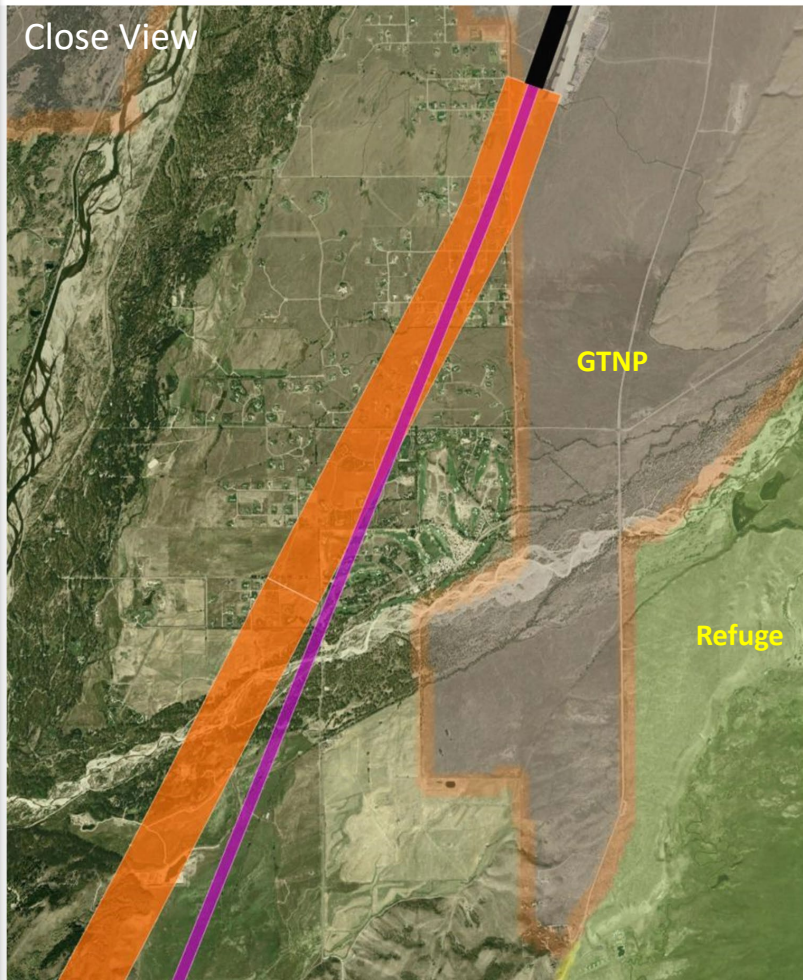
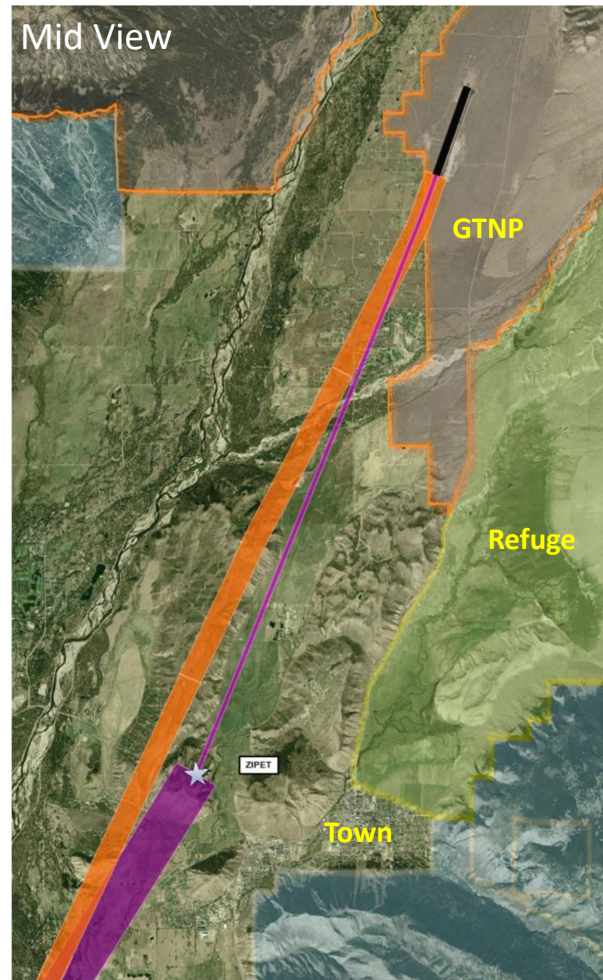
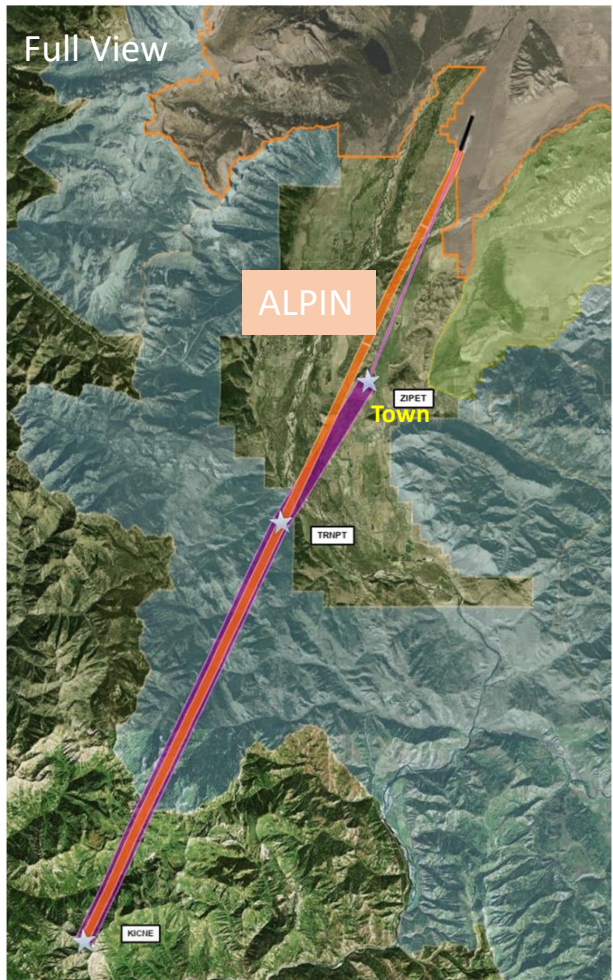
# C5 RNP to East (Concept #6 East Hook Departure/Corkscrew)







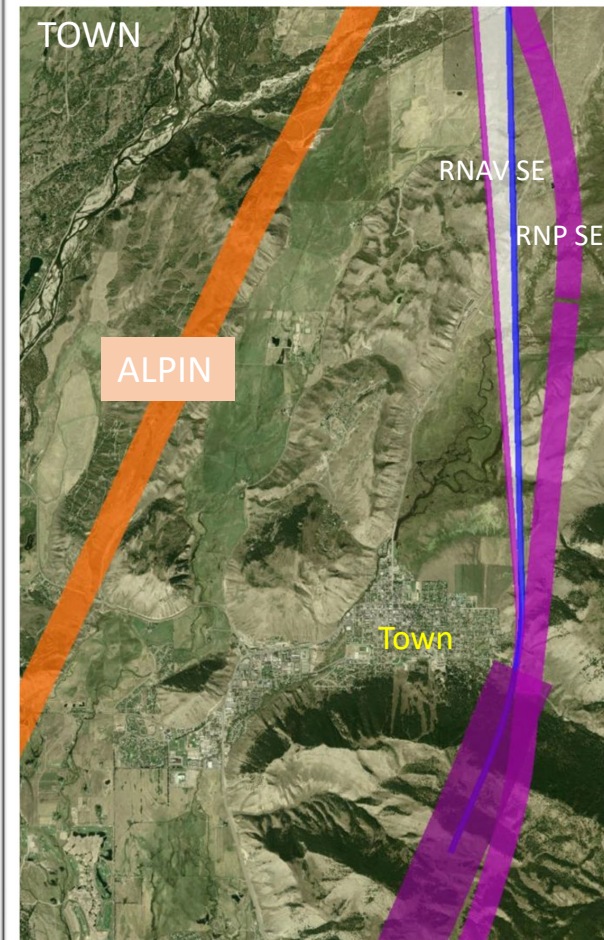
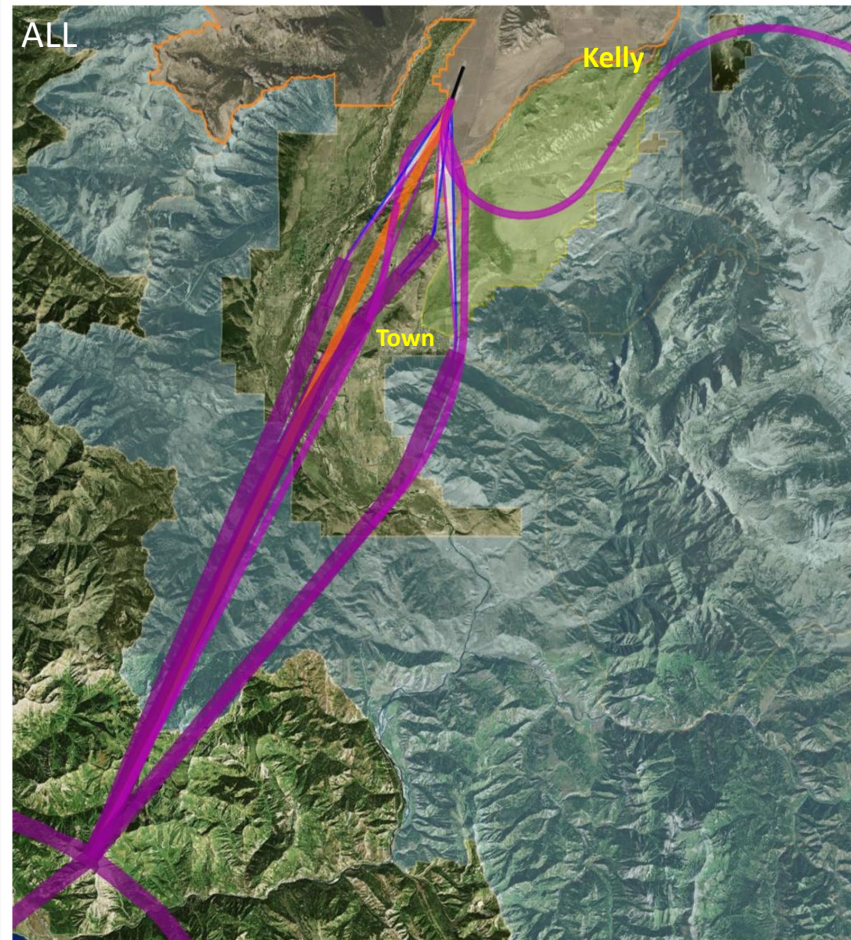
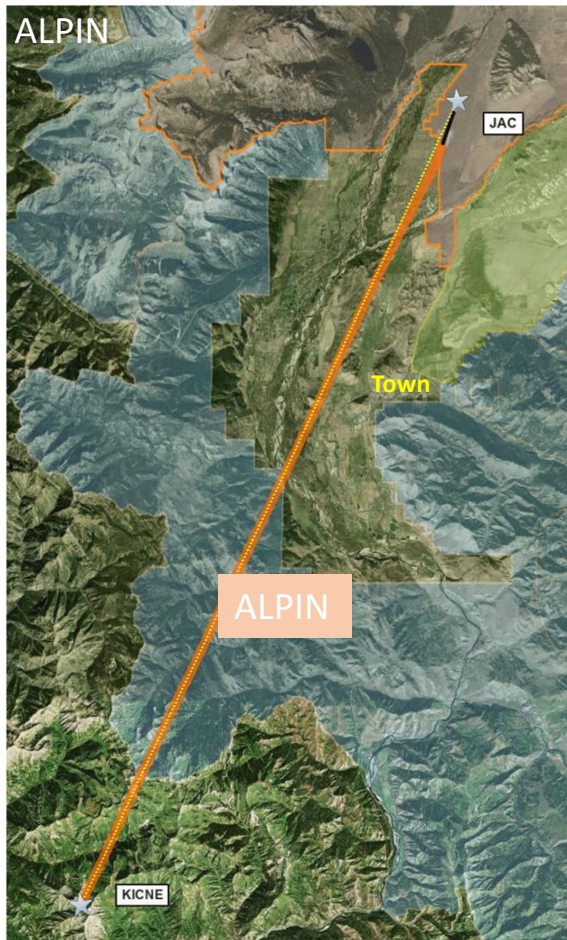
# C6 ZIPET RNAV (Concept #3)







# All Procedures





# Agenda

- ❖ Meeting Purpose
- ❖ Review of Options
- ❖ **Task Force Member Comments Received Since Last Meeting**
- ❖ Summary
- ❖ Task Force Discussion
- ❖ Next Steps
- ❖ Public Comment



## Task Force Member Comments Summarized

- ❖ TJ McCann—No magic southern departure route. The current ALPIN THREE and the proposed RNAV overlay remains the most efficient way to route aircraft away from the Jackson Hole Airport to the south without shifting the noise footprint to other neighborhoods or Grand Teton National Park.
  
- ❖ **Thank you for your comment. No response needed.**





## Task Force Member Comments Summarized

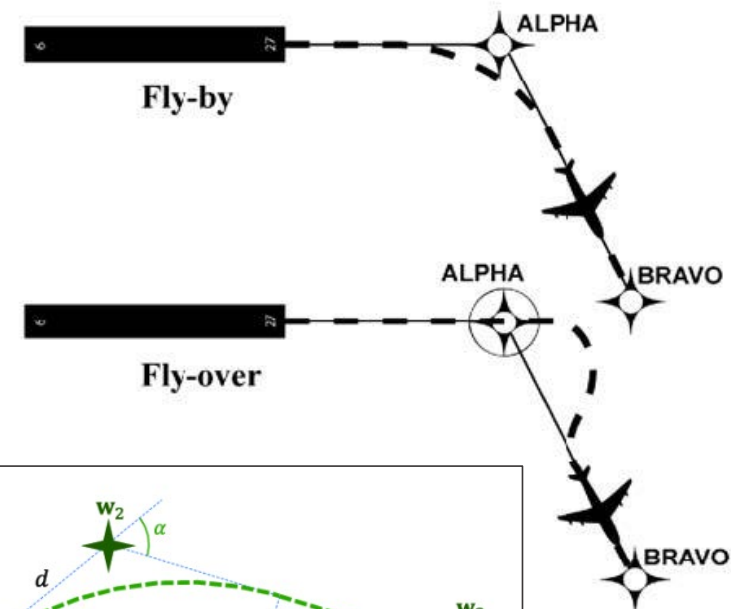
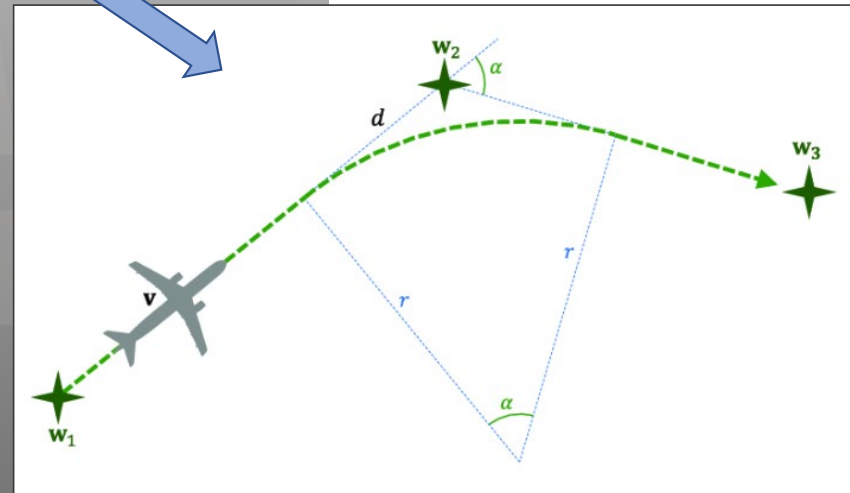
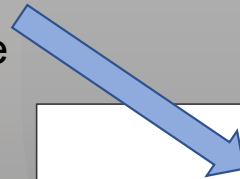
❖ Sally Painter—The original FAA approved flight route (KICNE) had a left turn than a right turn to join the track down the valley. Could we modify the Concept 1 flight path with a slightly more easterly left turn upon take off, flying over the gap between Hwy 89 and Spring Gulch, then a right turn to go between the Gros Ventre buttes, staying away from the Elk Refuge and town?

❖ **Thank you for your comment. An in-depth analysis of this routing was performed and detailed in the following technical slides.**



# Turn Anticipation Recap

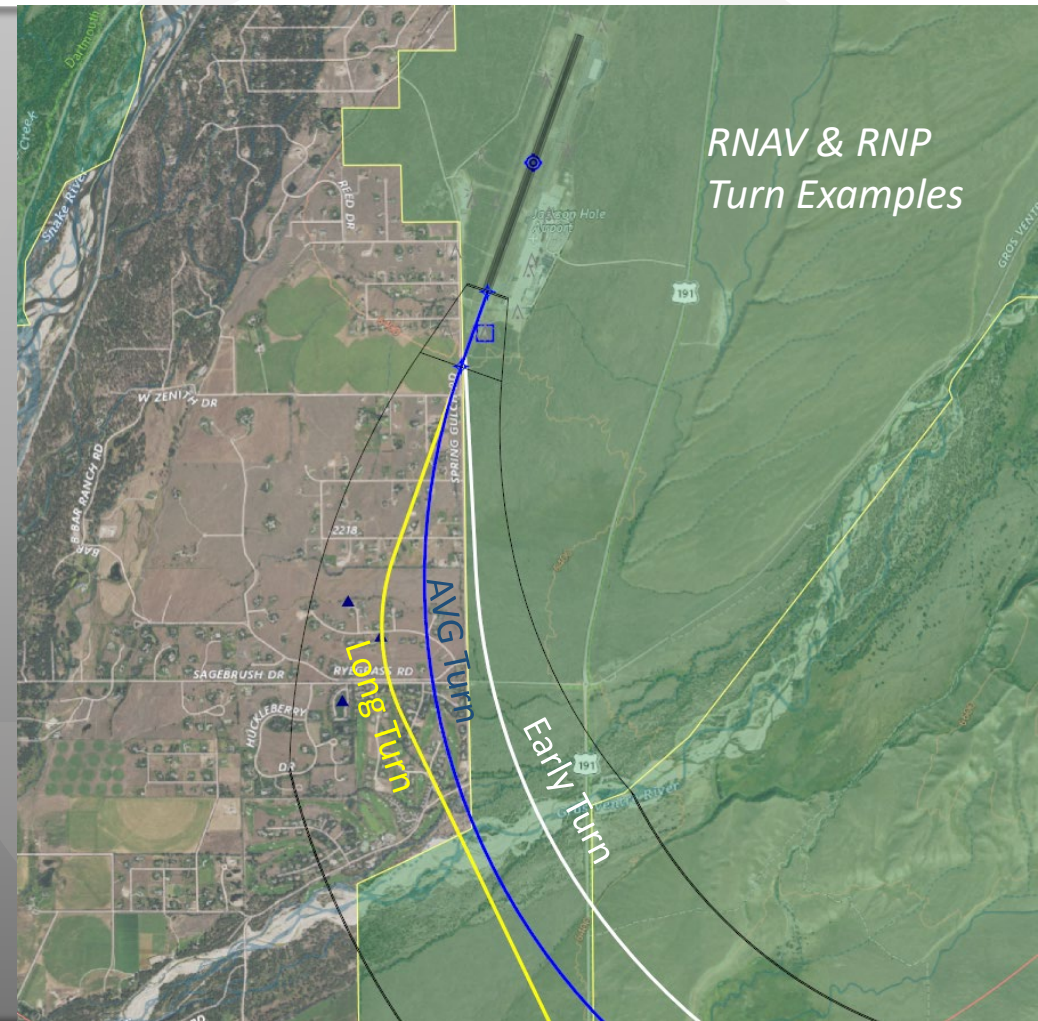
- ❖ Area Navigation (GPS) Procedure design requires '**Distance in Turn Anticipation**' (DTA) assessments to be performed and adhered to.
- ❖ This provides room for the aircraft to start turning in advance of the GPS waypoint and then enough area to roll out of the turn before reaching the next waypoint.
- ❖ DTA buffers ensure aircraft can fly the turn points without excessive bank angles or maneuvering and accounts for varying wind & environmental conditions.





# Flight Track Variability

- ❖ Aircraft reach 500 ft above ground level at different distances from the runway end
- ❖ This can lead to different flight tracks depending on the segment type and navigation used – such as RNAV

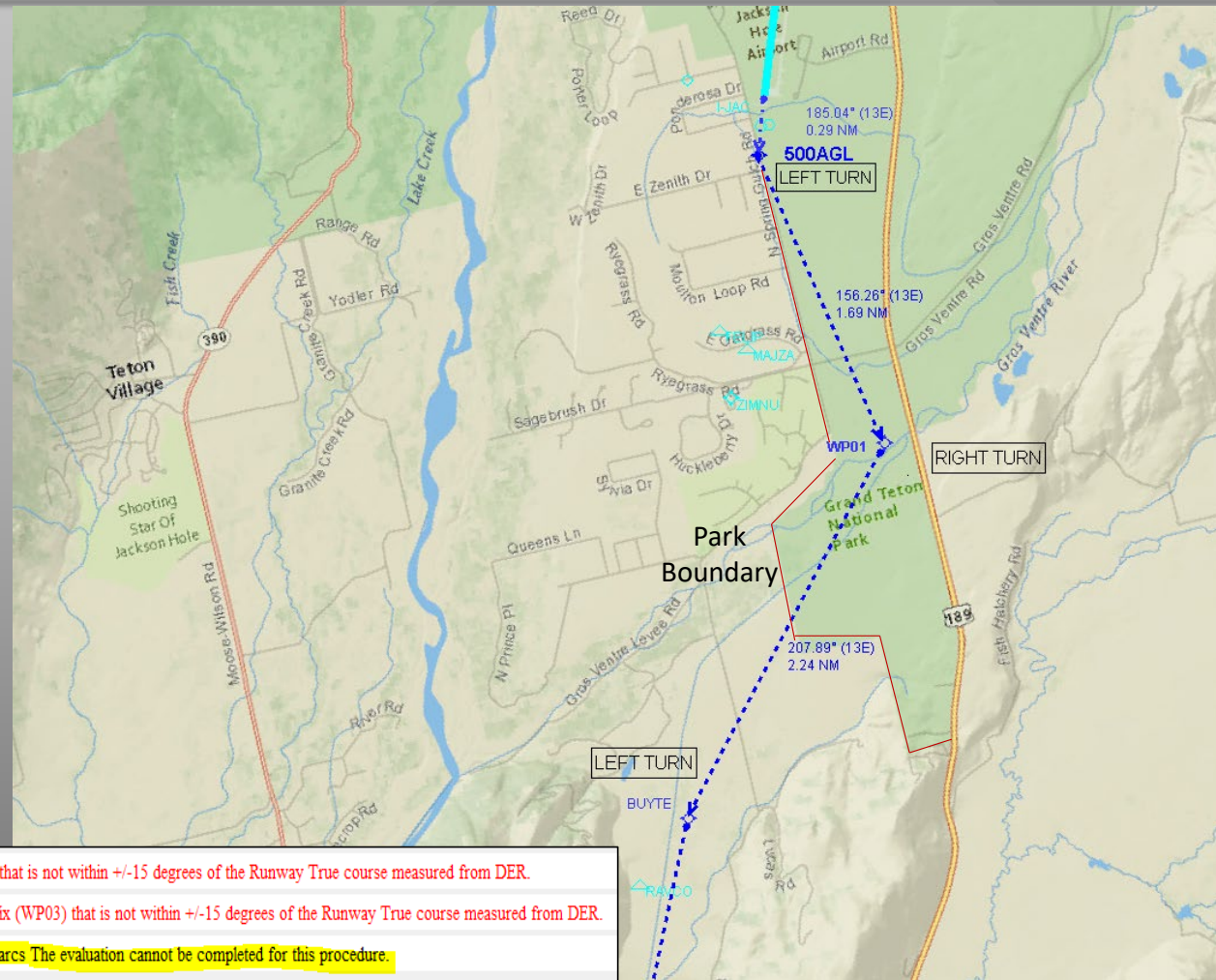






# PAINTER REQUEST - RNAV PROPOSAL

- ❖ New design exceeds 15-degree initial course change limitation.
- ❖ Would require ~140-150 Knot speed limitation which is not practical for most jet aircraft.
- ❖ Does not meet turn anticipation standards which prevents design within FAA criteria for IFR Departures.

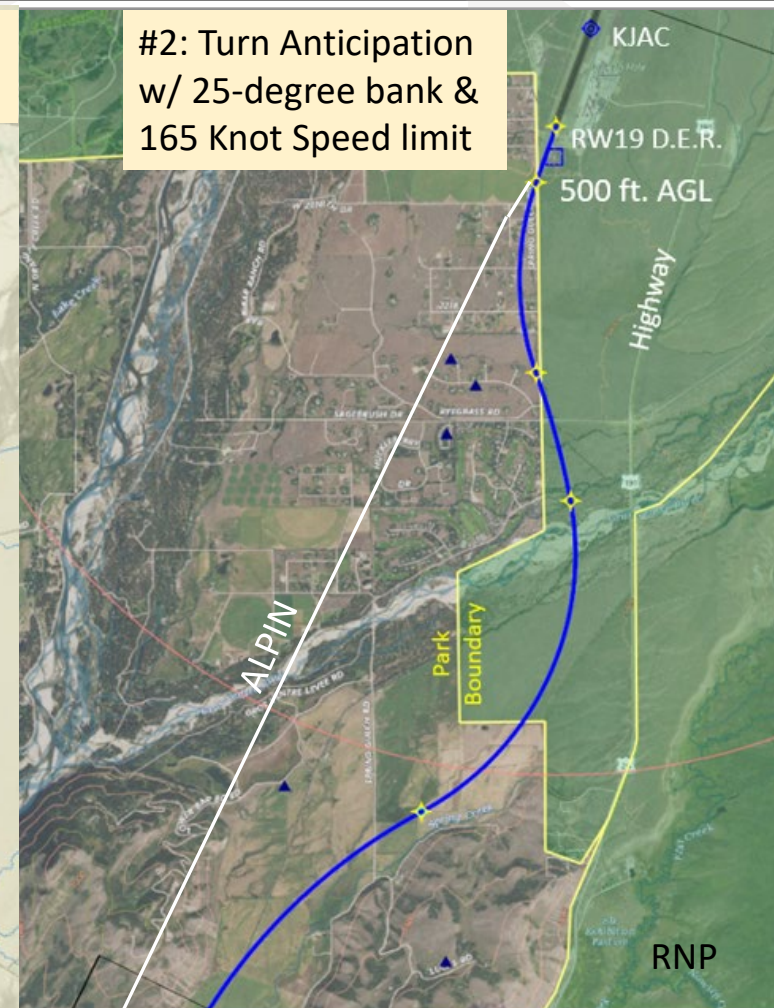
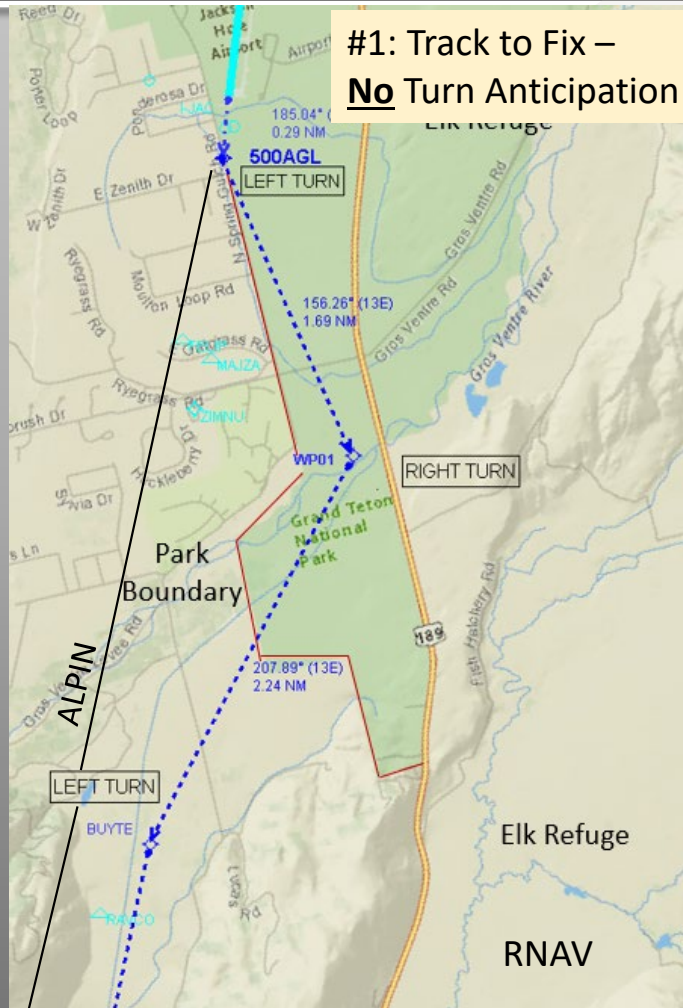


## Example of FAA Design Criteria Violations:

- RDO75: [Waiver Required] The route beginning at RW19 and ending at ZIPET has a DF-DF leg sequence (joined at WP03) that is not within +/-15 degrees of the Runway True course measured from DER.
- RDO82: [Waiver Required] The route beginning at RW19 and ending at ZIPET begins with a CF or DF leg terminating at a fix (WP03) that is not within +/-15 degrees of the Runway True course measured from DER.
- RDO36: In the route beginning at RW19, the DF leg ending at WP04 is not allowed. The DF fix is located inside of the turn arcs. The evaluation cannot be completed for this procedure.

# RNAV vs RNP-AR Comparison

- ❖ Attempting to replicate the former visual path using standard turn anticipation rules requires conversion to Advanced RNP, 25-degree bank angles, and lower than standard speed limitations.
- ❖ With Turn Anticipation the actual path will still result in overflight of certain housing





## Task Force Member Comments Summarized

❖ Sally Painter—Please recalculate the presented (noise) table to provide 2 alternative renditions:

(1) Add a column showing the estimated, current ambient noise at each location (absent the impact of existing flights), calculate the difference between ambient noise and the maximum noise at that location due to the existing and each proposed new flight path, and use that difference to redraw the presented colored table.

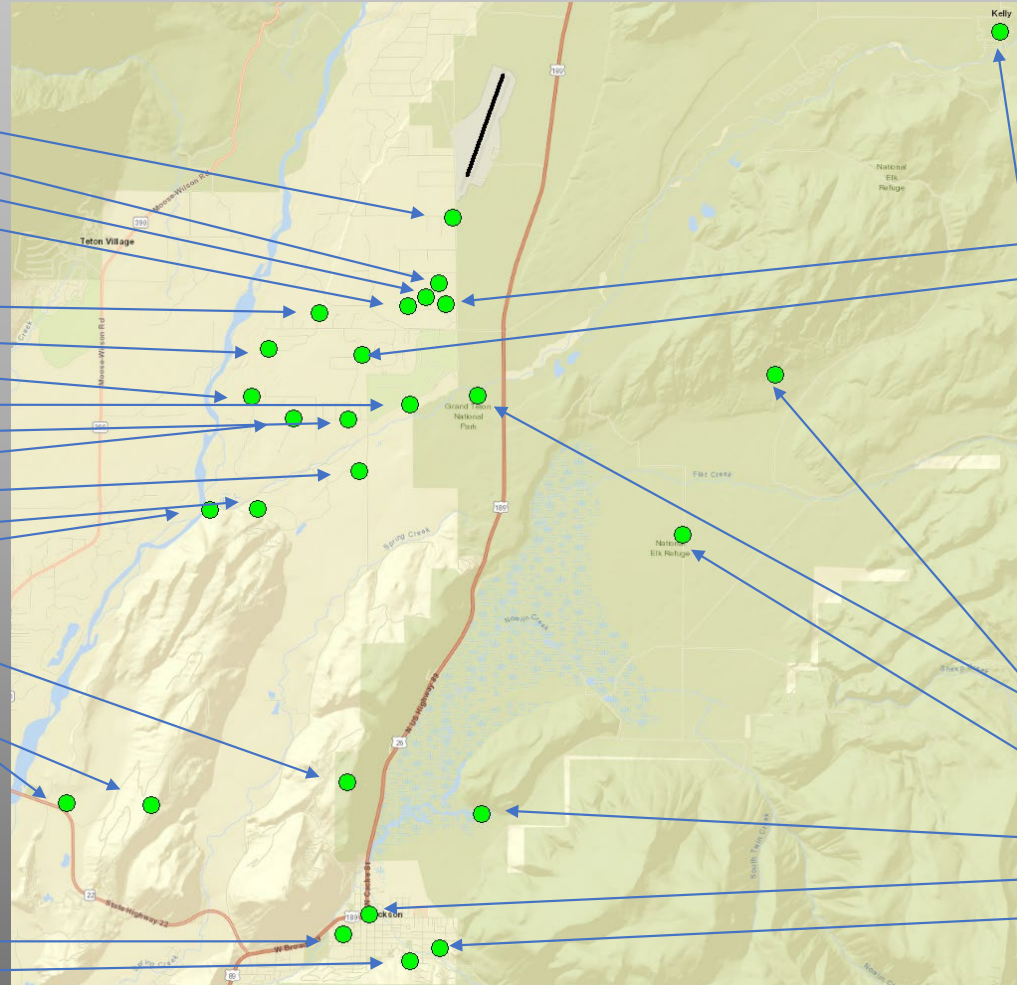
**Additional monitoring was completed to gather ambient levels at specific locations. We have added a column to the grid that illustrates ambient noise level (L50) at each location.**





# Representative Evaluation Locations

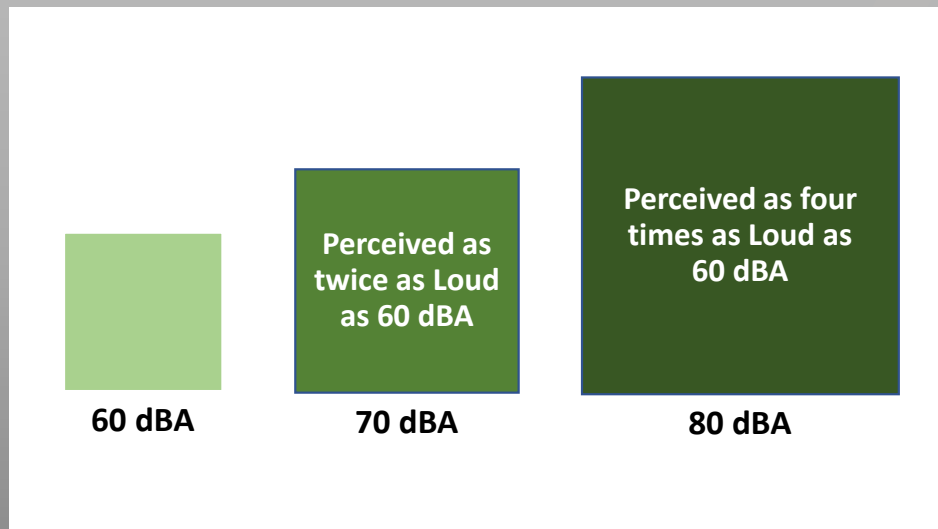
Receptor Location
Moulton (Spring Gulth/Zenith Dr)
280 S Moulton Loop
Bar B Bar (Fox Trail)
Bar B Bar (Oak Grass)
Bar B Bar (Blue Stem)
Zenith Rd/Sylvia
Lower Cascade RD
End of Red Tail
Queens Lane
Golf Course (East Side)
W Kings/W Zenith
W Kings/N Bear Lakes
Spring Gulch/Gros Ventre
Bar BC Lower
End of Gros Ventre Levee Rd
Spring Creek Ranch
Hwy 22/Walton Ranch Rd
Hwy 22/Ridgeview
Kelly
GTNP Gros Ventre
Elk Refuge (North)
Elk Refuge (Central)
Elk Refuge (South)
Town (Town Square)
Town (May Park)
Town (Catholic Church)
Town (Snow King)



Receptor Location
Moulton (Spring Gulth/Zenith Dr)
280 S Moulton Loop
Bar B Bar (Fox Trail)
Bar B Bar (Oak Grass)
Bar B Bar (Blue Stem)
Zenith Rd/Sylvia
Lower Cascade RD
End of Red Tail
Queens Lane
Golf Course (East Side)
W Kings/W Zenith
W Kings/N Bear Lakes
Spring Gulch/Gros Ventre
Bar BC Lower
End of Gros Ventre Levee Rd
Spring Creek Ranch
Hwy 22/Walton Ranch Rd
Hwy 22/Ridgeview
Kelly
GTNP Gros Ventre
Elk Refuge (North)
Elk Refuge (Central)
Elk Refuge (South)
Town (Town Square)
Town (May Park)
Town (Catholic Church)
Town (Snow King)



# Example Lmax (dBA) Noise Levels



- ❖ It generally takes a change of 3 dBA or greater to be perceived
- ❖ An increase of 10 dBA is generally perceived as doubling of the sound.
- ❖ An increase of 20 dBA is four times as loud.
- ❖ Combining Sounds
  - Adding two sounds at 60 dBA increases the noise to 63 dBA
  - Adding a sound of 60 dBA to a sound of 70 dBA increases the noise to 70.4 dBA

Note: This information presents dBA sounds. DNL is a very different noise metric that is not represented here.

# Lmax Noise Levels at Sample Locations

## Change Relative to Existing ALPIN

Receptor Location <i>Aug 11 with C4 and C5 Update</i>	Ambient Day (L50)	MAXIMUM SINGLE EVENT NOISE LEVEL FROM FLYOVER (LMAX)								CHANGE RELATIVE TO EXISTING ALPIN																	
		Original Concept #	1		5		2		4		6		3		Original #	1		5		2		4		6		3	
		ALPIN Existing	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St				
Moulton (Spring Gulch/Zenith Dr)	42	85	85	85	85	84	83	85	84	0	0	0	0	-2	0	-1											
280 S Moulton Loop	36	79	81	80	80	76	71	81	78	2	1	2	-2	-8	3	0											
Bar B Bar (Fox Trail)	35	79	79	77	77	77	71	79	80	0	-2	-3	-3	-9	0	0											
Bar B Bar (Oak Grass)	37	80	75	72	71	79	72	75	80	-5	-8	-9	-1	-8	-5	0											
Bar B Bar (Blue Stem)	35	74	80	80	80	71	66	80	74	6	6	6	-3	-8	7	0											
Zenith Rd/Sylvia	34	77	66	63	60	78	72	64	75	-11	-15	-17	1	-5	-13	-2											
Lower Cascade RD	35	65	58	56	56	69	76	58	64	-7	-9	-9	4	11	-7	-1											
End of Red Tail	35	60	53	51	50	63	69	52	59	-7	-9	-10	3	8	-8	-2											
Queens Lane	35	58	52	50	48	63	65	50	57	-7	-9	-11	5	6	-9	-1											
Golf Course (East Side)	42	69	76	71	65	65	59	69	72	7	2	-4	-4	-10	0	3											
W Kings/W Zenith	35	72	64	60	56	69	67	59	72	-9	-12	-16	-3	-6	-13	-1											
W Kings/N Bear Lakes	35	66	56	53	50	71	71	53	63	-10	-13	-16	5	5	-13	-3											
Spring Gulch/Gros Ventre	35	68	64	58	55	62	63	57	70	-4	-9	-13	-6	-5	-10	2											
Bar BC Lower	35	66	51	48	45	68	67	47	62	-15	-18	-21	2	1	-19	-4											
End of Gros Ventre Levee Rd	35	60	47	45	42	66	61	44	57	-13	-16	-18	6	0	-17	-4											
Spring Creek Ranch	33	51	63	57	53	45	58	36	56	11	5	1	-6	6	-13	5											
Hwy 22/Walton Ranch Rd	44	61	55	38	35	66	54	30	55	-6	-23	-26	5	-7	-31	-6											
Hwy 22/Ridgeview	31	68	63	42	39	62	63	31	65	-5	-26	-29	-6	-5	-37	-3											
Kelly	35	31	31	31	31	31	31	55	31	0	0	0	0	0	24	0											
GTNP Gros Ventre	35	60	69	75	78	57	53	77	61	10	16	18	-2	-6	17	1											
Elk Refuge (North)	32	37	38	40	41	37	37	54	37	1	3	4	0	-1	17	0											
Elk Refuge (Central)	32	38	42	44	49	38	36	68	39	4	6	11	-1	-2	30	1											
Elk Refuge (South)	32	42	50	67	66	38	46	40	45	8	25	24	-4	4	-2	3											
Town (Town Square)	46	47	52	59	56	41	52	33	51	6	12	9	-5	6	-14	4											
Town (May Park)	42	41	47	66	64	37	46	33	45	5	24	22	-5	5	-8	4											
Town (Catholic Church)	43	48	53	56	54	42	54	32	52	5	9	6	-5	6	-16	5											
Town (Base Snow King)	44	43	48	63	61	38	48	32	47	5	20	18	-5	5	-11	4											

**Change in Single Event Lmax (dBA) Noise Levels**  
(Departing A319 Aircraft)

- +10 dBA or greater increase
- + 4 to +9 dBA increase
- 3 to + 3 dBA change
- 4 to -9 dBA decrease
- 10 dBA or greater decrease

Is there noise sensitive land uses with a noticeable **decrease** in single event noise (-4 to -9 dBA decrease)

Is there noise sensitive land uses with a very noticeable **decrease** in single event noise (+10 dBA or greater)

Is there noise sensitive land uses with a noticeable **increase** in single event noise (+4 to +9 dBA increase)

Is there noise sensitive land uses with a very noticeable **increase** in single event noise (+10 dBA or greater)


*Note: dB ratio increase is same regardless of starting level*



# Lmax Noise Levels at Sample Locations

## Change Relative to Highest between Existing ALPIN or Ambient

Receptor Location <i>Aug 11 with C4 and C5 Update</i>	Ambient Day (L50)	MAXIMUM SINGLE EVENT NOISE LEVEL FROM FLYOVER (LMAX)								CHANGE RELATIVE TO HIGHEST OF EXISTING ALPIN OR AMBIENT																	
		Original Concept #	1		5		2		4		6		3		Original #	1		5		2		4		6		3	
		ALPIN Existing	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St				
Moulton (Spring Gulch/Zenith Dr)	42	85	85	85	85	84	83	85	84	0	0	0	0	-2	0	-1	0	0	0	-2	0	0	0	0	-1		
280 S Moulton Loop	36	79	81	80	80	76	71	81	78	2	1	2	-2	-8	3	0	0	0	0	0	0	0	0	0	0		
Bar B Bar (Fox Trail)	35	79	79	77	77	77	71	79	80	0	-2	-3	-3	-9	0	0	0	0	0	0	0	0	0	0	0		
Bar B Bar (Oak Grass)	37	80	75	72	71	79	72	75	80	-5	-8	-9	-1	-8	-5	0	0	0	0	0	0	0	0	0	0		
Bar B Bar (Blue Stem)	35	74	80	80	80	71	66	80	74	6	6	6	-3	-8	7	0	0	0	0	0	0	0	0	0	0		
Zenith Rd/Sylvia	34	77	66	63	60	78	72	64	75	-11	-15	-17	1	-5	-13	-2	0	0	0	0	0	0	0	0	-2		
Lower Cascade RD	35	65	58	56	56	69	76	58	64	-7	-9	-9	4	11	-7	-1	0	0	0	0	0	0	0	0	-1		
End of Red Tail	35	60	53	51	50	63	69	52	59	-7	-9	-10	3	8	-8	-2	0	0	0	0	0	0	0	0	-2		
Queens Lane	35	58	52	50	48	63	65	50	57	-7	-9	-11	5	6	-9	-1	0	0	0	0	0	0	0	0	-1		
Golf Course (East Side)	42	69	76	71	65	65	59	69	72	7	2	-4	-4	-10	0	3	0	0	0	0	0	0	0	0	3		
W Kings/W Zenith	35	72	64	60	56	69	67	59	72	-9	-12	-16	-3	-6	-13	-1	0	0	0	0	0	0	0	0	-1		
W Kings/N Bear Lakes	35	66	56	53	50	71	71	53	63	-10	-13	-16	5	5	-13	-3	0	0	0	0	0	0	0	0	-3		
Spring Gulch/Gros Ventre	35	68	64	58	55	62	63	57	70	-4	-9	-13	-6	-5	-10	2	0	0	0	0	0	0	0	0	2		
Bar BC Lower	35	66	51	48	45	68	67	47	62	-15	-18	-21	2	1	-19	-4	0	0	0	0	0	0	0	0	-4		
End of Gros Ventre Levee Rd	35	60	47	45	42	66	61	44	57	-13	-16	-18	6	0	-17	-4	0	0	0	0	0	0	0	0	-4		
Spring Creek Ranch	33	51	63	57	53	45	58	36	56	11	5	1	-6	6	-15	5	0	0	0	0	0	0	0	0	5		
Hwy 22/Walton Ranch Rd	44	61	55	38	35	66	54	30	55	-6	-23	-26	5	-7	-31	-6	0	0	0	0	0	0	0	0	-6		
Hwy 22/Ridgeview	31	68	63	42	39	62	63	31	65	-5	-26	-29	-6	-5	-37	-3	0	0	0	0	0	0	0	0	-3		
Kelly	35	31	31	31	31	31	31	55	31	-4	-4	-4	-4	-4	10	-4	0	0	0	0	0	0	0	0	-4		
GTNP Gros Ventre	35	60	69	75	78	57	53	77	61	10	16	18	-2	-6	17	1	0	0	0	0	0	0	0	0	1		
Elk Refuge (North)	32	37	38	40	41	37	37	54	37	1	3	4	0	-1	17	0	0	0	0	0	0	0	0	0	0		
Elk Refuge (Central)	32	38	42	44	49	38	36	68	39	4	6	11	-1	-2	30	1	0	0	0	0	0	0	0	0	1		
Elk Refuge (South)	32	42	50	67	66	38	46	40	45	8	25	24	-4	4	-2	3	0	0	0	0	0	0	0	0	3		
Town (Town Square)	46	47	52	59	56	41	52	33	51	6	12	9	-5	6	-14	4	0	0	0	0	0	0	0	0	4		
Town (May Park)	42	41	47	66	64	37	46	33	45	5	24	22	-5	4	-9	3	0	0	0	0	0	0	0	0	3		
Town (Catholic Church)	43	48	53	56	54	42	54	32	52	5	9	6	-5	6	-16	5	0	0	0	0	0	0	0	0	5		
Town (Base Snow King)	44	43	48	63	61	38	48	32	47	4	19	17	-6	4	-12	3	0	0	0	0	0	0	0	0	3		

**Change in Single Event Lmax (dBA) Noise Levels**  
(Departing A319 Aircraft)

- +10 dBA or greater increase
- + 4 to +9 dBA increase
- 3 to + 3 dBA change
- 4 to -9 dBA decrease
- 10 dBA or greater decrease

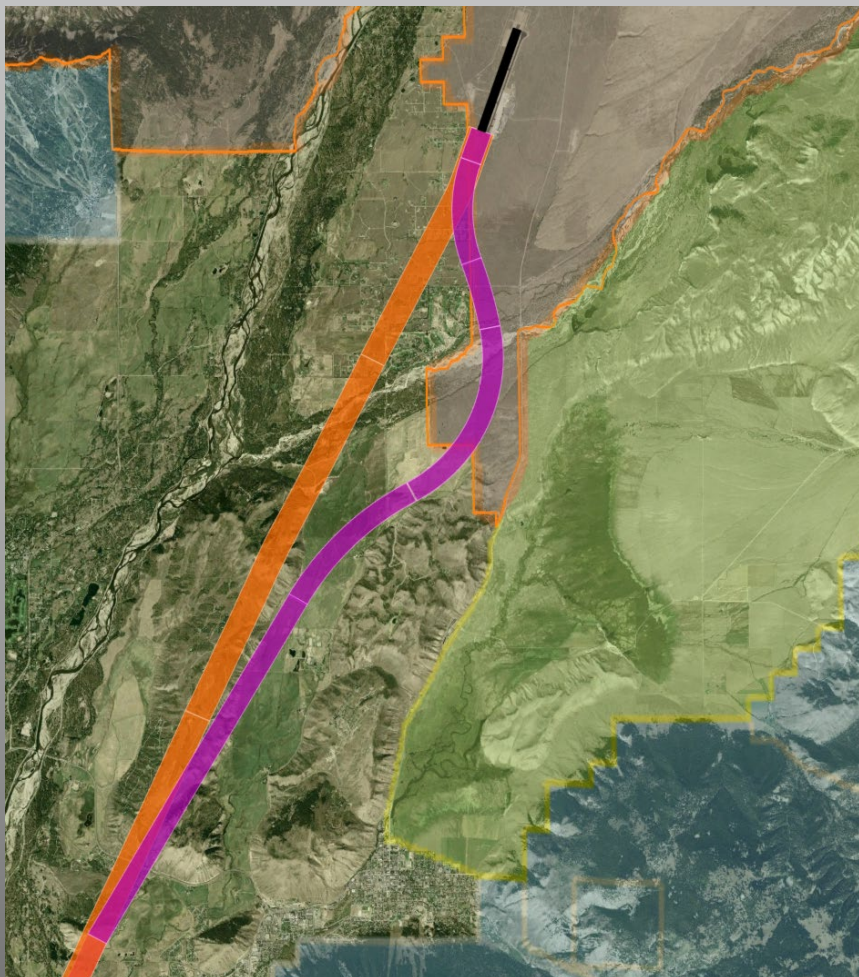
Is there noise sensitive land uses with a noticeable **decrease** in single event noise (-4 to -9 dBA decrease)

Is there noise sensitive land uses with a very noticeable **decrease** in single event noise (+10 dBA or greater)

Is there noise sensitive land uses with a noticeable **increase** in single event noise (+4 to +9 dBA increase)

Is there noise sensitive land uses with a very noticeable **increase** in single event noise (+10 dBA or greater)


# PAINTER REQUEST – RNAV AND RNP PROPOSAL



Receptor Location <i>Updated Aug 11</i>	Ambient Day (L50)	LMAX MAXIMUM			CHANGE	
		ALPIN Existing	PAINTER RNAV	PAINTER RNP	PAINTER RNAV	PAINTER RNP
Moulton (Spring Gulch/Zenith Dr)	42	85	84	85	0	0
280 S Moulton Loop	36	79	75	80	-3	2
Bar B Bar (Fox Trail)	35	79	71	77	-8	-3
Bar B Bar (Oak Grass)	37	80	67	71	-13	-9
Bar B Bar (Blue Stem)	35	74	76	80	2	6
Zenith Rd/Sylvia	34	77	58	60	-19	-17
Lower Cascade RD	35	65	54	56	-11	-9
End of Red Tail	35	60	49	50	-11	-10
Queens Lane	35	58	49	49	-10	-9
Golf Course (East Side)	42	69	66	65	-3	-4
W Kings/W Zenith	35	72	58	56	-14	-16
W Kings/N Bear Lakes	35	66	53	52	-13	-14
Spring Gulch/Gros Ventre	35	68	65	61	-3	-6
Bar BC Lower	35	66	57	58	-9	-8
End of Gros Ventre Levee Rd	35	60	53	55	-8	-6
Spring Creek Ranch	33	51	58	54	7	3
Hwy 22/Walton Ranch Rd	44	61	55	59	-6	-2
Hwy 22/Ridgeview	31	66	64	67	-4	-1
Kelly	35	31	31	31	0	0
GTNP Gros Ventre	35	60	78	78	18	18
Elk Refuge (North)	32	37	42	42	5	5
Elk Refuge (Central)	32	38	46	46	7	8
Elk Refuge (South)	32	42	46	44	4	2
Town (Town Square)	46	47	51	47	4	1
Town (May Park)	42	41	45	42	4	1
Town (Catholic Church)	43	48	52	48	4	1
Town (Base Snow King)	44	46	46	43	4	1
is there noise sensitive land uses with a noticeable <b>decrease</b> in single event noise (-4 to -9 dBA decrease)						
Is there noise sensitive land uses with a very noticeable <b>decrease</b> in single event noise (+10 dBA or greater)						
Is there noise sensitive land uses with a noticeable <b>increase</b> in single event noise (+4 to +9 dBA increase)						
Is there noise sensitive land uses with a very noticeable <b>increase</b> in single event noise (+10 dBA or greater)						

**Change in Single Event Lmax (dBA) Noise Levels (Departing A319 Aircraft)**

- +10 dBA or greater increase
- +4 to +9 dBA increase
- -3 to +3 dBA change
- -4 to -9 dBA decrease
- -10 dBA or greater decrease



## Task Force Comments Summarized

❖ Sally Painter—Please recalculate the presented (noise) table to provide 2 alternative renditions:

(2) Add a column showing the estimated, current maximum noise at each location (absent the impact of existing flights), calculate the difference between the existing maximum noise and the maximum noise at the location due to the existing and each proposed new flight path, and use that difference to redraw the presented colored table.

**A maximum noise level (such as a loud car event, separate from aircraft events) will not be included in the analysis because it is not a reasonable comparison in that all sites will occasionally have higher noise events. It is not possible to have a consistent comparison between Maximum noise levels values.**



## Task Force Comments Summarized

- ❖ Jeremy Barnum - When looking at impacts to the Park, the concepts have impacts on Kelly (in the park), Gros Ventre (in the park), and the Elk Refuge North, specifically on the Gros Ventre River (part of the Wild and Scenic River System) and the Gros Ventre campground, which is the biggest campground in the park. **Four of the six procedures would result in increased noise on areas of the Park. In the interest of transparency and a productive conversation, the Park would have serious reservations about those concepts, but particularly the corkscrew option would result in a large impact. With red impacts (10 dBA impacts or greater) for that concept, it would be substantial. It would be a regression, not progression to shift more noise to the Park. The Park would oppose Concept 5 and have serious concerns about Concepts 1 and 2, as well.** It is important to consider that when discussing options of compromise, it needs to be taken within the context of the big picture challenges - noise not just to the south, increased visitors, encroachment into areas, climate change- because all of these factors can degrade public lands and are part of the compromise.

*As stated in the third amendment to the Use Agreement, dated May 19, 2011, the Airport shall work to “develop and implement such reasonable and cost effective mitigation measures as may be available to reduce environmental impacts on the Park to the lowest practicable levels consistent with the safe and efficient operations of the Airport, and with applicable law and contractual obligations.”*

- ❖ **Thank you for your comment.**



# Task Force Comments Summarized

- ❖ Sally Painter – Could we consider fanning or “spreading the wealth” as a possibility?
- ❖ **Fanning: utilizing multiple established departure procedures that are sorted by aircraft type or destination direction**
- ❖ **Not a dynamic decision by the tower – departure track assignment is built into the air traffic control automation**
- ❖ **The control tower and the flight crew are the authorities for operational decision-making**
- ❖ **Any fanning will require broader community input (which is relevant for any flight procedure changes)**



## Task Force Comments Summarized

- ❖ Sally Painter: Does JAC believe it complies with the “compatible lands” clause and, if so, why?

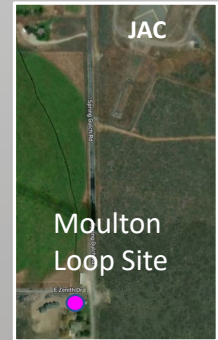
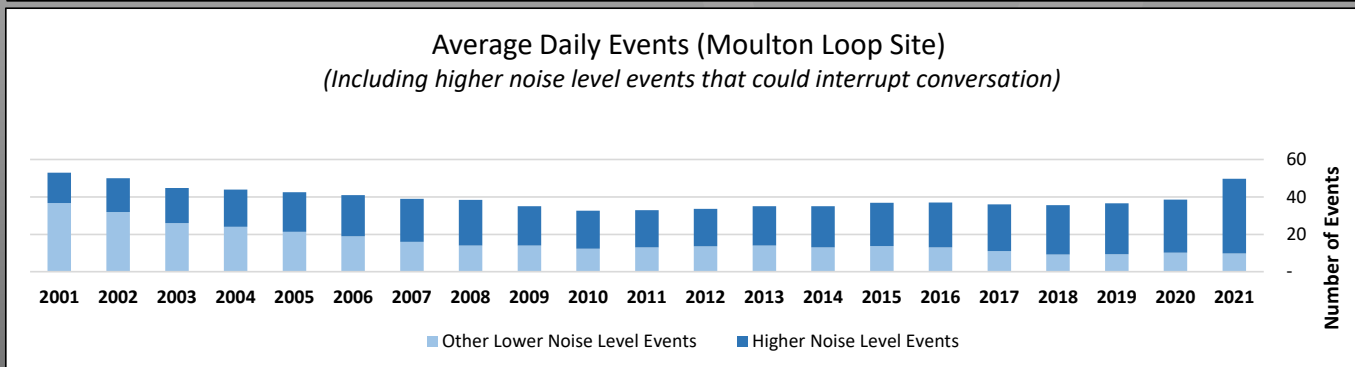
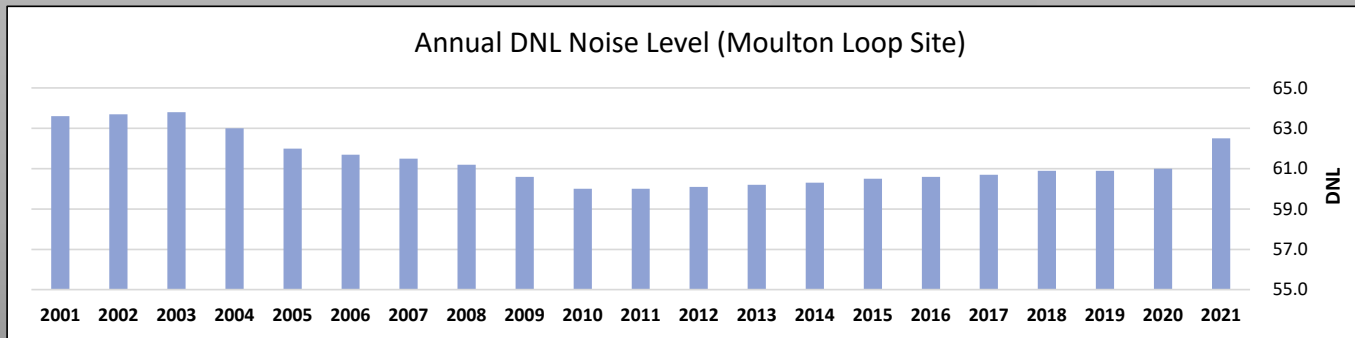
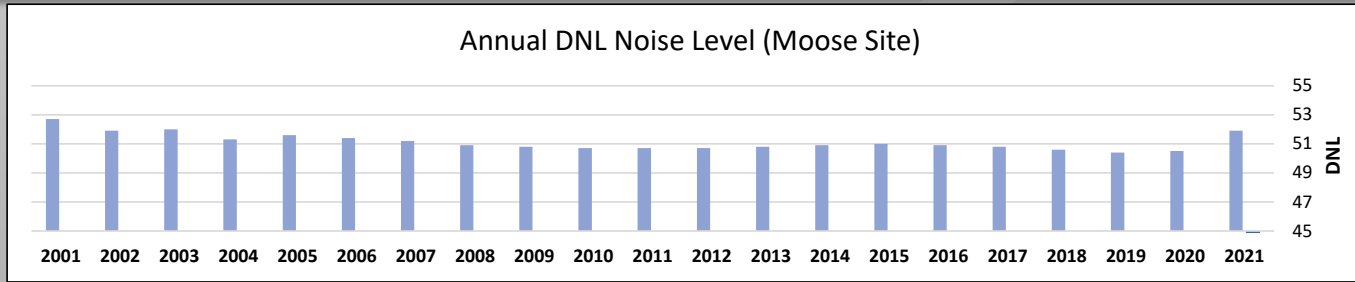
**Yes, JAC believes it is in compliance. Though this is a goal toward which the Board works, the 1983 Use Agreement does not require that JAC “must be compatible with adjacent lands.” Rather, the Agreement required the Board to complete a revised noise abatement plan. The primary objective of the plan was to ensure that airport operations remained compatible with the Park, and not result in significant noise increases in noise sensitive areas of the Park. An additional objective of the plan was to “seek to ensure” that aircraft noise exposure would be reasonably compatible with other adjacent land uses. In this vein, an FAR (Federal Aviation Regulations)\* Part 150 Study was completed, and the Board adopted the noise abatement plan in March 1985. This plan was submitted to and accepted by the Department of the Interior, thus fulfilling this requirement of the 1983 Agreement.**

**FAR Part 150 is FAA’s process for studying and giving surrounding land uses notice of forecast airport noise. FAA’s standard for compatibility is 65 DNL for noise sensitive uses. Today, there are no residences near the Airport which are within the 65 DNL noise contour.**

\*FAR is now organized under CFR (Code of Federal Regulations).



# Historical Changes in DNL Noise Levels



*This data reflects updated modeled noise results of full year annual operations using the most recent version of the FAA AEDT, the FAA official noise model, for all years. This noise analysis uses a common methodology and the most advanced technology available to accurately compare year over year trends.*





## Task Force Comments Summarized

- ❖ **Sally Painter:** Does JAC believe it complies with the flight limitation clause and, if so, why?

**The 1983 Use Agreement contains no limit on the number of flights. Rather, compatibility with the Park is measured by a single event noise limit, and two cumulative noise limits. The 2011 Amendment to the Use Agreement added an additional requirement, that the Board work to “reduce environmental impacts on the Park to the lowest practicable levels” consistent with safe and efficient Airport operations and applicable law.**

**The Average Daily Departures (or ADD) limit is a mechanism adopted by the Board to enforce the cumulative noise limits. This ADD limit is based on equivalency with the noisier “base class” of aircraft which were operating at the Airport in 1985. This limit on the number of aircraft does not go into effect unless and until a cumulative noise limit has been reached. In fact, because of federal preemption, this limit on the number of flights cannot go into effect unless and until a cumulative noise limit is reached.**



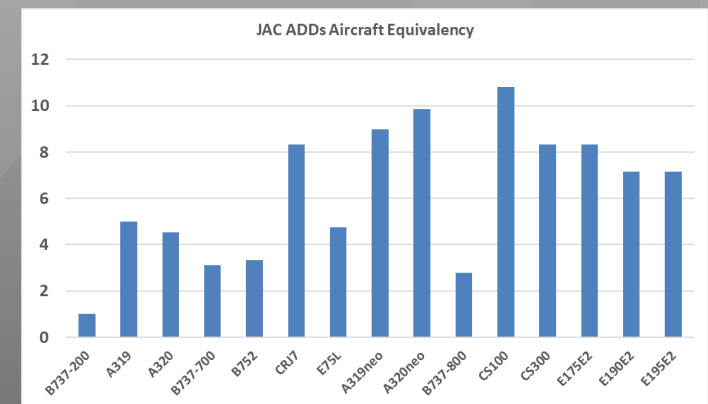
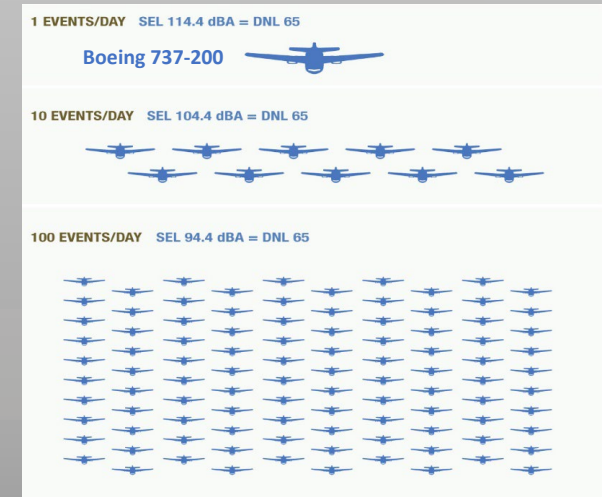
# ADDs and Equivalency

- ❖ The Airline Access Plan provides a mechanism for the Airport to continue to meet the DNL noise limits with the Park.
- ❖ The Board adopted a Noise Abatement Rule in March 1985 which considered the B-737-200 as the “base class” aircraft (which was the aircraft that operated at JAC at the time).
- ❖ This rule is similar to how the Access Plan at John Wayne Airport works. John Wayne and Jackson Hole are the only two airports in the country that have such restrictions
- ❖ Under this Rule, no more than 6.85 daily departures of the base class aircraft, averaged quarterly, and no more than 6.5 daily departures averaged annually, may operate at the Airport.
- ❖ If an aircraft is quieter than the base class aircraft, it may operate in greater numbers based on an “equivalency” formula that is similar to the equivalence in DNL.

2019	2020	2021	2022
Q1 2019 – 4.66	Q1 2020 – 3.86	Q1 2021 – 3.89	Q1 2022 – 4.05
Q2 2019 – 3.09	Q2 2020 – 1.01	Q2 2021 – 3.44	Q2 2022* - .31
Q3 2019 – 5.93	Q3 2020 – 5.05	Q3 2021 – 5.62	
Q4 2019 – 2.86	Q4 2020 – 3.71	Q4 2021 – 2.15	
2019 Annual – 4.14	2020 Annual – 3.41	2021 Annual – 3.77	

\*Runway Closure Majority of Q2 2022

## Same DNL Equivalency



## Additional Questions that have come to the Task Force

- ❖ May Airport curfew be made mandatory or enforced?
- ❖ May Airport extend the hours of the voluntary curfew?
- ❖ Will replacement of antiquated GA facilities increase noise?
- ❖ Do Teton County noise regulations apply to aircraft?
- ❖ May the Airport limit or control jet aircraft emissions?



## Additional Questions

### ❖ May Airport curfew be made mandatory or enforced?

Unfortunately, the answer is no, based on today's circumstances. In 1990, Congress phased out noisier Stage 2 aircraft, but also prohibited local airports from unilaterally imposing noise or capacity restrictions. A mandatory curfew would be just such a restriction, and the Airport is required to comply with law. No exceptions exist for airports in national parks or near residential areas. Such an exception would need congressional action. Only the few airports which had curfews prior to 1990 are "grandfathered" and allowed to continue their enforcement. This includes Washington National Airport's which was adopted in the early 1980s. A mandatory curfew would require FAA approval. Although the FAA has a process to achieve approval, no Airport has received such approval, and our Part 150 studies have determined that our Airport is not even eligible for any such approval.





## Additional Questions

❖ May Airport extend the hours of the voluntary curfew?

**Yes. The Task Force Chair will discuss this with the Board.**



## Additional Questions

- ❖ Will replacement of antiquated GA facilities increase noise?

**The Board has not made a decision to expand GA hangar facilities. The Board will carefully consider noise in making any such decisions.**



## Additional Questions

❖ Do Teton County noise regulations apply to aircraft?

**No. The Federal government has preempted the areas of both air traffic control and regulation of aircraft noise at its source. Therefore, no local or state laws apply to noise generated by an aircraft in flight. In fact, page 6-53 the Teton County Land Development Regulations states “Aviation shall be exempt from the noise standards in Section 6.4.3.”**



## Additional Questions

### ❖ May the Airport limit or control jet aircraft emissions?

To protect public health, the U.S. Environmental Protection Agency has established National Ambient Air Quality Standards for outdoor concentrations. Pollutants of concern include ozone (O<sub>3</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>x</sub>), nitrogen dioxide (NO<sub>x</sub>), particulate matter of two sizes (2.5 and 10 micron) and lead (Pb). The Wyoming DEQ, which administers the air quality program, has determined that Teton County meets air quality standards for all of those pollutants. We rely on those air quality standards to protect the public health.

Jet engines emit pollutants just as cars and trucks do. Under the federal Clean Air Act, the U.S. Environmental Protection Agency sets emission standards for aircraft engines, and FAA sets certification requirements for those engines to show compliance with EPA's standards. All aircraft operating at JAC must meet those standards. Local governments, including airports, are prohibited from adopting their own standards or otherwise regulating aircraft emissions.





## As A Reminder!

- ❖ Any procedure change must comply with NEPA.
  - Uses FAA criteria for flight procedure changes
  - FAA or contractor will prepare the document
- ❖ Must comply with contractual obligations with respect to GTNP
- ❖ Must get input from affected citizens for any new flight path that moves noise from one affected area to the other



# Agenda

- ❖ Meeting Purpose
- ❖ Review of Options
- ❖ Task Force Comments Received Since Last Meeting
- ❖ **Summary**
- ❖ Task Force Discussion
- ❖ Next Steps
- ❖ Public Comment



# Summary

## ❖ Summary

- The Task Force has studied seven different concepts and completed extensive analysis
- All concepts developed based on FAA design criteria and safety standards, including Task Force member recommended procedure
- RNP procedures are not likely to be available for many of the aircraft for a 5-year time period
- All of the new procedures result in a noticeable movement of noise from one noise sensitive area to another



# Agenda

- ❖ Meeting Purpose
- ❖ Review of Options
- ❖ Task Force Comments Received Since Last Meeting
- ❖ Summary
- ❖ Task Force Discussion**
- ❖ Next Steps
- ❖ Public Comment





# Task Force Discussion



# Agenda

- ❖ Meeting Purpose
- ❖ Review of Options
- ❖ Task Force Comments Received Since Last Meeting
- ❖ Summary
- ❖ Task Force Discussion
- ❖ **Next Steps**
- ❖ Public Comment



# Next Steps

## ❖ Next Steps

- Consolidate Task Force Discussion Points
- Draft Report to Board
- Board Presentation
- Board Discussion, Decision and Recommendation



# Agenda

- ❖ Meeting Purpose
- ❖ Review of Options
- ❖ Task Force Comments Received Since Last Meeting
- ❖ Summary
- ❖ Task Force Discussion
- ❖ Next Steps
- ❖ **Public Comment**





# Public Comment



❖ Please use the airport website for concerns. Click the “Community” tab and then the “Contact” tab.

## Noise Concerns

### Live Flight Map

To better address noise concerns, we suggest filling out [this Noise Form](#) using the information available on the live flight map above.

To file a noise complaint with the Federal Aviation Administration, please click [here](#).

## Operational Concerns

Please email [community@jhairport.org](mailto:community@jhairport.org) for concerns and inquiries that do not involve airport/aircraft noise.



# APPENDIX E:

## COMMENTS RECEIVED PERTAINING TO SDP





# COMMENTS RECEIVED

Contact Info/Date	Comment
<p>Steve Elam  <a href="mailto:steve.elam@gmail.com">steve.elam@gmail.com</a>            925-858-5151            2/9/2022</p>	<p>If you need input from an operator's standpoint I'd be glad to offer any assistance needed. I've been a pilot for 50 years and flew as a professional corporate pilot, worldwide, for 45 years. I've accumulated over 28,000 hours of flying, 24,000 of it in jet aircraft. Over my many years and hours flying to many varied destinations, all over the world, I've encountered local procedures, that while legal on paper, prove challenging, if not borderline dangerous when actually flown.</p> <p>I've been a resident of Jackson since 2007 and purposely avoided purchasing a home north of town because of the airport noise. I understand the concern.</p>
<p>Mark Landis  <a href="mailto:landis.mark@yahoo.com">landis.mark@yahoo.com</a>            617.777.2725            2/9/2022</p>	<p>On publishing the top performers, you noted on the 3rd, the possibility of publishing the best performers. Is there a reason why you don't do that right at the airport terminal at the baggage claim (or next to the GA ramp)? Everyone on a commercial flight walks past the area, and would likely see and read the publication as they are standing around more so than the public paper.</p> <p>On the departure and technology advances... as with NexGen, it is the constant noise that becomes problematic. The railroad track concept creates a constant problem that in my opinion make the noise impact problem worse. The noise impact for those impacted becomes constant instead of just a more dispersed noise impact. Increasing flight traffic only exacerbates this problem. On the departure procedure (which I gather you're discussing the Alpin Three), is it possible to change the departure procedure to HOMVA instead of the current routing - 200 to intercept the 192 to KIKNE (or make the intercept turn closer to the 192 - say a 195)? Or fly RW heading until 1500' AGL before initiating the turn. Either would keep some pressure off the neighborhoods to the south. Looking at the departure track slide from the 3rd, the turn to 200 is being initiated almost immediately after takeoff, placing those flights directly over the neighborhoods at a lower (louder) altitude, instead of the flights climbing on runway heading which would obviously offset the departure track from the neighborhoods immediately to the south (or at least have them at a higher AGL when the flights are transitioning above the neighborhoods). Given the ongoing decommissioning of VORs, changing the departure procedure to HOMVA would seem to be a more long term feasible solution.</p>
<p>Dana Buchwald  <a href="mailto:debuchwald@gmail.com">debuchwald@gmail.com</a>            2/12/2022</p>	<p>I can't believe this is happening. These people bought their homes next to an airport. To me, that comes with the obligation of tolerating noise associated with airplanes. If we are looking into flight paths. The planes fly over my neighborhood too, near the Jackson middle school. Can we re-route all the planes?</p>
<p>ANPAC  <a href="mailto:airportnoisejh@gmail.com">airportnoisejh@gmail.com</a>            2/25/2022</p>	<p>We are very encouraged by the establishment of the Task Force and the top notch consultants and members of the community who are committed to reducing aircraft noise south of the airport. We are interested in learning more about the RNP navigation system. Specifically, what percentage of commercial planes are equipped to use RNP? Business and private planes?</p> <p>Will pilots need special training to use this navigation system?</p>
<p>Joan Anzelmo  <a href="mailto:anzelmojoan@gmail.com">anzelmojoan@gmail.com</a>            3/24/2022</p>	<p>To: The Task Force</p> <p>I live in the direct southern departure and southern approach flight paths. These comments regard the southern approach flights, they too are having major impacts to residents. I gladly volunteer to have you place a noise monitoring device on my property.</p> <p>Background</p> <p>In the spring of 2020 Classic Air Med, a UT based company and a Delaware registered LLC was given a permit to base at JAC and serve a multi-state area for medical flights. They have no limits and can fly 24/7.</p>

Contact Info/Date	Comment
	<p>When this company started flying in and out of Jackson in 2020 I began to be awakened most every night in the middle of the night. Their fixed wing aircraft is VERY LOUD.</p> <p>Shortly afterwards, another med air company, Mt Air Medical LLC, also received a permit to base at JAC and serve a multi-state area.</p> <p>Both of these aviation companies had membership campaigns almost like Timeshare presentations to gather clients all over the West as a part of their business models.</p> <p>MT Air has since sold their plane and is not operating at JAC.</p> <p>However Classic Air Med is. On March 7, 2022, at 3:30 am, I must have been in a very deep sleep and I was so jolted awake by such a loud plane overhead that I jumped out of bed in a total fright and fell to the floor injuring myself.</p> <p>I subsequently stayed up as it was not possible to fall asleep after this abrupt and frightening awakening. To be awakened from a deep sleep like this on a recurring basis has the potential to negatively impact my health. And while the planes waking me up from deep sleep can be frightening enough, March 7 is the first time the loud plane noise caused me to jump out of bed in fear and fall.</p> <p>On Feb. 26, I was also awakened at 2:30 am by Classic Air Med. On Feb 27, I was awakened by a private jet not respecting the voluntary curfew.</p> <p>My house is in the approach flight path and the departure flight path. The approaching planes fly directly over my roof and fully light up my rooms at night.</p> <p>My biggest concern is Classic Air Med is not flying local people or visitors out of Jackson. It is flying to other states on a medical call and then returning here in the middle of the night.</p> <p>Eastern Idaho Regional Medical Center also flies here to medically evacuate people but they are based in IF. They are the long time medical air ambulance most often used for Jackson locals and visitors who need a medical ambulance.</p> <p>With the non-stop growth of commercial and private aviation at JAC, it seems that it is not appropriate or necessary to give a permit to Classic Air Med., a company using the airport to make money at the only jet airport in a national park, but primarily serving other states.</p> <p>Thank you.</p> <p>Joan Anzelmo 270 E Cottonwood Drive Jackson, WY</p>
<p>Irene Greenberg <a href="mailto:irenefgreenberg@gmail.com">irenefgreenberg@gmail.com</a> 3/28/2022</p>	<p>Subject: airport noise abatement</p> <p>Please treat noise abatement from the Jackson Hole airport as a very serious matter. I have lived here for 25 years and, until the last 4-5 years, the noise has been tolerable. It no longer is. Help your neighbors to live the lives we intended when we moved here.</p> <p>Irene Greenberg</p>
<p>Sally Painter <a href="mailto:sallypainter529@gmail.com">sallypainter529@gmail.com</a> 3/29/2022</p>	<p>At our most recent Task Force meeting, Jim Elwood suggested that "fanning" flights heading south on departures might be a way of relieving the noise over homes that experience the most disruption. The context was in discussion about a possible RNC flight path.</p> <p>Would you kindly request that the aviation designers consider this should they not be able to identify a route that offers relief to all?</p> <p>Thank you</p>
<p>Mac Tichenor <a href="mailto:mtichenor@quadw.org">mtichenor@quadw.org</a> 4/6/2022</p>	<p>Hello. We operate an aircraft that flies into Jackson about 10 times per year. I'm aware of the Fly Quiet program and have seen some of the reports displayed in presentations of the Southern Departure Task Force and others (example below) but they are usually just the first or last page of the full report and it's often not clear what period is being reported. Are the full reports available to the public and/or to aircraft operators? If so, how are they accessed?</p> <p>Thank you.</p>

Contact Info/Date	Comment
	Mac Tichenor
ANPAC <a href="mailto:airportnoisejh@gmail.com">airportnoisejh@gmail.com</a> 5/9/2022	<p>Dear Members of the Task Force:</p> <p>On behalf of more than 650 supporters South of JAC, ANPAC thanks every one of you for your hard work in identifying six potential new flight paths south of the airport. We genuinely applaud your efforts to identify and implement a new departure flight path.</p> <p>Consistent with the stated task force goal of “finding possibilities for amending the southerly departure routing to provide the least impact for the greatest number of folks in the valley,” we offer the following, preliminary thoughts on the options presented at the Task Force meeting on April 28, 2022.</p> <p>We strongly endorse Concept #1 (RNAV DP-East Shift) because it directly and successfully addresses the current problem and is the easiest to implement. No waivers are needed, and the new route could be implemented as soon as the FAA’s approval is secured. This flight path reduces noise over the approximately 1000 homes near and south of the airport, as planes overfly houses at 1000 ft (or less) above ground level (AGL). In contrast, planes flying the Concept #1 route will reach an altitude of 5,000-7000 ft AGL over the elk refuge and the east side of town, and about 4000-6000 ft above Snow King. Aircraft noise is significantly less noticeable at those levels.</p> <p>ANPAC does not endorse Concept #2 (RVAV DP West Shift) or Concept #3 (Zipet One RNAV) because neither provides relief to homes south of the airport and both shift noise to the west (as they hew closely to Alpin 3), affecting both the Snake River and homes on the West Bank, including Teton Village, John Dodge, and Tucker Ranch.</p> <p>Nor do we endorse Concept #4 (Immediate turn to Southwest) which crosses over Moulton Loop and other homes and then crosses back over neighboring homes south of the airport as it flies East. It does not address the increasing and intolerable noise levels over affected communities south of JAC. (And, to the extent that it requires an FAA waiver it will extend the process.)</p> <p>We are supportive of Concept #5 (Immediate Turn to Southeast) which reduces overflights of populated areas. We understand that nearly all commercial aircraft and many private planes are already equipped with the necessary advanced navigation equipment. In terms of waivers for the early turn, we acknowledge that increased navigational accuracy is required; however, we understand the technology is such that this should not be a problem.</p> <p>Finally, we are particularly supportive of taking necessary steps to find ways to implement Concept #6 (East Hook Departure) because it avoids population centers across the valley and major airlines already widely use the required advanced RPN navigation equipment. In doing so, it offers the best, most secure solution for future anticipated growth in numbers and frequency of aircraft. While some ATC adjustments would be required, we understand this is achievable. We recognize that there are some particular flight challenges with tower capacity like that of JAC but understand that there is a way to work around those issues.</p> <p>In closing, subject to upcoming noise study results to be reported on at the June 29 Task Force meeting we urge immediate adoption of Concept #1 and further exploration of Concepts #5 and #6.</p> <p>With deep appreciation for your efforts to reduce noise over our communities, ANPAC</p>
Sally Painter <a href="mailto:sallypainter529@gmail.com">sallypainter529@gmail.com</a> 5/10/2022	<p>Hi Valerie and Jim,</p> <p>I hope you are both well.</p> <p>I want to let you know that ANPAC has sent a couple of emails to the Task Force via the southern departures email. The first one is to comment on the proposed flight paths. Several members of our group felt that it was important to express ANPAC's position on each of the concepts.</p> <p>The second email is an inquiry about how the noise information for each of the new routes will be gathered. It would be great if this email could be sent to Mead &amp; Hunt. If at all possible, we would love to hear their answers prior to our next meeting.</p> <p>At the first Task Force meeting, it was said that questions/comments would be assembled, addressed and made accessible for all to view. I know that at the last couple of meetings, these inquiries were distributed to the Task Force members but I don't believe that they were answered, at least not publicly. Will that be happening in the future?</p> <p>Thanks</p>



Contact Info/Date	Comment
	Sally
ANPAC <a href="mailto:airportnoisejh@gmail.com">airportnoisejh@gmail.com</a> 5/10/2022	<p>Dear Members of the Southern Departure Task Force,</p> <p>Thank you for your hard work in preparing proposals for the new flight paths in an effort to reduce noise for homes south of the airport. On behalf of our 650 plus supporters, your efforts are greatly appreciated and vital in view of the marked increase in the frequency of flights and the amount of noise that homes south of the airport have been increasingly subjected to.</p> <p>In reviewing a discussion question from the Task Force meeting on April 28th regarding how a noise analysis would be completed for the proposed flight paths, Paul Dunkholter replied that historical data, FAA models and data from several noise monitors around the airport would be used. Would you please provide answers to the following questions:</p> <ol style="list-style-type: none"> <li>1) How recently were the FAA noise models you'll be using developed and are they based upon current aircraft? It is our understanding from the Task Force discussion that an adjustment would be needed to compare these models to "how loud planes are today" and that there was a need to validate the models based on data from the existing flight path noise. Could you please address these questions and share any additional information on the FAA models which will be used for predicting noise from each of the proposed flight paths?</li> <li>2) Data for historical noise reports has been based on information gathered from monitors along the current ALPIN 3 flight route. How will you determine noise impact along the proposed routes ("flight path concepts") if no monitoring has been done in those areas?</li> <li>3) Could you clarify the number and locations of permanent noise monitors currently in place for residences south of the airport? Actual data from these monitors would seem an extremely important piece of information rather than relying on models or historical data alone in order to give an accurate picture of the impact of the noise on the homes.</li> <li>4) Also in the discussion, it was mentioned that noise evaluation for each proposed path would take into account the number of people in that region. As part of that evaluation will you also take into account the fact that homes close to the airport where plane altitude is much lower (possibly 500 feet or less) experience much more severe noise than in surrounding areas where planes have reached higher altitudes (5000 feet or greater). Perhaps this could be accomplished by weighting the noise factor by the distance the plane is from the ground? We urge the task force to consider those homes living in close proximity to the airport as of critical importance in selecting the best flight path for relief from the noise.</li> <li>5) Finally, could you please give additional information on how the seasonality affects noise, i.e. is more thrust required in hotter summer months, is altitude reached more slowly etc. and will you factor in that noise is infinitely more bothersome in summer months when people are outside. As mentioned at the meeting – perhaps seasonal flight paths could be considered, providing relief to the homes south of the airport at the most critical time of year when residents spend more time outside.</li> </ol> <p>Thank you again for your commitment and we look forward to your reply.</p> <p>Sincerely, ANPAC</p>
Sally Painter <a href="mailto:sallypainter529@gmail.com">sallypainter529@gmail.com</a> 5/10/2022	<p>Hi Valerie and Jim,</p> <p>I hope you are both well.</p> <p>I want to let you know that ANPAC has sent a couple of emails to the Task Force via the southern departures email. The first one is to comment on the proposed flight paths. Several members of our group felt that it was important to express ANPAC's position on each of the concepts.</p> <p>The second email is an inquiry about how the noise information for each of the new routes will be gathered. It would be great if this email could be sent to Mead &amp; Hunt. If at all possible, we would love to hear their answers prior to our next meeting.</p> <p>At the first Task Force meeting, it was said that questions/comments would be assembled, addressed and made accessible for all to view. I know that at the last couple of meetings, these inquiries were distributed to the Task Force members but I don't believe that they were answered, at least not publicly. Will that be happening in the future?</p>

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	<p>Thanks</p> <p>Sally</p>
<p>Mike Gumport  <a href="mailto:magumport@att.net">magumport@att.net</a>  732-221-0172  5/18/2022</p>	<p>Valerie:</p> <p>Thank you for your thoughtful response to ANPAC's early May emails stating its opinion of the 6 presented alternative southern departure options and its questions on how the next stage (noise analysis) will be conducted. And thank you for the excellent work of the Southern Departure task force thus far.</p> <p>However, your note (below) emphasizes that ANPAC is mistaken in saying the goal of the Task Force is "to provide the least [noise] impact for the greatest number of folks in the valley". As a member of ANPAC's executive team, I personally want to be clear that the statement to which you object is not an ANPAC statement. Rather, the statement you find objectionable is from Bill Kane, Southern Departure Task Force coordinator (see 7:40 mark of 3/24/22 2nd Task Force meeting).</p> <p>I would also like to call to your attention the 2/10/22 statement (57:30 mark) of task force member and flight procedures designer Alex Seybold: "[Our] goal is to try to find the most noise friendly path we can."</p> <p>Personally, I believe the objective as stated by Bill Kane is fine shorthand. The same goes for Alex Seybold's statement. When you imply that the mission goal as stated by mission team members is wrong, it gives the impression something is amiss with the process.</p> <p>The fact is, airplanes make noise, and any change in the southern departure flight path will shift that noise. So, when you say that "solutions which optimize noise for one group at the expense of others will not be carried forward", then, until airplanes are silenced, your repeated emphasis that your goal is to avoid shifting noise seems to me to set expectations unrealistically high. By promising to offend no one, you may end up offending everyone. Only the status quo will surely avoid a shift in noise. I cannot believe the status quo is your objective after so much time and money has been spent on this effort.</p> <p>I agree that you face a complicated and difficult task. But, in beginning that task, I hope you, Bill Kane, Alex Seybold and all other team members will get on the same page as to the objective of the Southern Departure Task Force, avoid the unfortunate confusion of offering multiple mission statements, and, instead, prepare the public with a single, realistic statement that, in the end, advances a new flight departure path as a satisfactory compromise.</p> <p>For instance, maybe you mean to say that no stakeholder will find a perfect solution, but the team's goal is to balance the competing demands of stakeholders to produce the most equitable result possible that will support the continued, satisfactory operation of JAC and its ongoing future growth? Just a thought.</p> <p>Regards,</p> <p>Mike</p>
<p>Ann and Joseph Wenger  <a href="mailto:jsphwenger@gmail.com">jsphwenger@gmail.com</a>  6/27/2022</p>	<p>To Whom It May Concern:</p> <p>We have read and followed the developments concerning airport noise in the neighborhoods south of the airport. We would like to thank all those involved for working to ameliorate this situation. Most of this appears to be aimed towards redirection of take-offs to the south, and we applaud that work. We hope that the result helps most people and does not make it worse for some. In our particular location concept #1 would actually be worse for us. Concepts #3 and #6 would be about the same as we have now. Concepts #2, 4 and 5 might improve things a bit. But what is good for our location might not be better for other locations.</p> <p>We would like to put forth a question, comment, what have you. Has there ever been a discussion recently about maximizing the number of flights that take off to the north when wind is not a factor? That, to us, would be the most effective way to reduce populated neighborhood noise. If effects to wildlife is the reason for traffic to the south, we don't buy it. The wildlife are everywhere--in the park and in our neighborhoods (they don't know or care about the park boundary). Our observation over 15 years living here, is that they don't care about the noise. If people visiting the parks is the reason, they are just visiting and would only experience the noise for the part of the day that they are near the airport--a very short period of time, and the noise would not spoil their visit in any lasting way. We live here all the time and catch all the noise every single day.</p> <p>Better enforcement of the 11 PM to 7 AM airport closing time would help as well. One can tell that general aviation doesn't seem to know and/or care about the schedule.</p>

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	<p>We had heard a rumor that the park did not want take-offs to the north. It sounds like, though, that this has not been part of the current discussions concerning airport noise. Everyone seems to be just treating this as a 'given'.</p> <p>We're wondering if getting park officials in on this might be a help. The airport was there before the park. The increased air traffic, to this extent, obviously did not exist when this agreement was reached. "When the facts change, decisions should be changed". The increased air traffic benefits the park with more visitors and causes us to the south big problems. Maybe there can be a trade-off.</p> <p>Every little bit of traffic diversion to the north, when wind is not a factor, would help. It's just a suggestion, kind of 'thinking outside the box', for you all to consider.</p> <p>Thank you for your consideration,</p> <p>Ann and Joseph Wenger 255 E. Cottonwood Dr. Jackson Hole Golf and Tennis</p>
<p>Walter Schobel <a href="mailto:schobeld3@comcast.net">schobeld3@comcast.net</a> 6/29/2022</p>	<p>Comment/Question from Today's Meeting</p> <p>a. For the Environmental Analysis, who is paying for it. Since the Airport is requesting this project to take place, the FAA may request that they fund the Environmental Assessment or potentially an Environmental Impact Statement. I would just make sure to determine upfront who is paying for this and it is not just hearsay. These Analysis can become really expensive.</p> <p>b. It was mentioned that the Environmental Analysis may take 12 to 18 months. Based upon some of the feedback from today's telcon it may take even longer. Maybe as long as 2 or more years depending upon what the task force recommends and the feedback from the public and federal/state agencies. As an example, they mentioned today that they would need a Section 4 consultation with the USFWS. I am more familiar with a Section 7, but both require 90 days for an opinion after submission and if something is not adequately addressed, it will be returned and it may restart the clock again. A lot of agencies are short staffed for the amount of requests the come in, so what is published vs what is the actual timelines are, may be skewed. You may want to query the FAA on the average time to process these types of request.</p> <p>Walter Schobel 7600 H-C Dr #1998 Jackson Wy</p>
<p>Mike Gumport <a href="mailto:magumport@att.net">magumport@att.net</a> 7/1/2022</p>	<p>Valerie:</p> <p>It appears the attached chart from today's Southern Departure Task Force presentation will be used as a key input in any decision on a new JAC flight path.</p> <p>Do I correctly understand it? The chart's first column ("ALPIN Existing") reports Lmax at 47 db at the Town Square. I interpret that 47 db reading to be the computer estimated maximum noise at the Town Square from flights of medium loud jets flying the existing ALPIN course. Is that correct?</p> <p>I ask because it occurs to me that the ambient noise level at Town Square (the intersection of Broadway and Cache) from 9 am – 7 pm might easily be somewhere between 50 db (the sound of moderate rainfall) and 70 db (the sound of city car traffic)*. Absent any aircraft, peak decibels at that location might well reach the 60 – 75 db range (a passing truck or motorcycle might hit those levels). The important point is that, if I am interpreting the data correctly, airplanes today flying ALPIN and generating 47 db peak at the intersection of Cache and Broadway currently probably go virtually unnoticed. Again, if I understand the data correctly, then this same observation would be true at Town Square for any of the proposed alternative flight paths: none would produce a significant increase in noticeable noise.</p> <p>For instance, C2 RNAP (originally called Concept 5) in the attached chart is reported to move LMax decibels at the town square up from 47 db today to 57 db. While a 10 point db change is extremely meaningful if the ambient sound is at 0 db, if the ambient sound is at 50-70 db with preexisting peak sound events at 60-75 db, the change in sound from the new flight path might again be no more perceptible at Town Square than flights on ALPIN today.</p> <p>So, the table as presented appears fundamentally flawed. To allow the Task Force to make a well informed decision on the cost/benefit of a new southern departure flight path, then, ignoring noise from the existing flight path, I urgently request the committee to direct its consultants to calculate 2 alternative presentations of this table for consideration in the final decision process....</p>

Contact Info/Date	Comment
	<p>...ALTERNATIVE TABLE 1</p> <p>...1) add a column showing estimated existing daytime average ambient sound absent any flights at each site.</p> <p>...2) recalculate the right hand side (colored side) of the table based on the difference resulting from a) Lmax due to the Lmax caused by the new flight path minus b) the existing ambient sound as reported in step 1 above.</p> <p>...ALTERNATIVE TABLE 2</p> <p>...1) add a column showing estimated existing daytime Lmax absent any flights at each site.</p> <p>...2) recalculate the right hand side (colored side) of the table based on the difference resulting from a) Lmax due to the Lmax caused by the new flight path minus b) the existing Lmax as reported in step 1 above.</p> <p>In my opinion, these 2 alternative presentations will give a far better understanding of the burden each location will be asked to shoulder from any new flight path, a sort of “zero budget” approach. I may be wrong, but I believe many areas now highlighted as “red zones” will switch to “green” in this relook at the analysis. Each location and the Task Force as a whole can then decide if one new flight path solution is particularly fair and reasonable. It is an approach that would encourage compromise.</p> <p>ALSO – of course, the Elk refuge is enormous (30,000? acres) as is GTNP. It would be helpful if, in addition to reporting a sound reading taken from directly under the aircraft, a sound reading 1 mile away was also reported. I suspect that would show little impact on most of the Refuge.</p> <p>As we move to a conclusion, I hope you will keep in mind that someone being asked to bear the burden of a little new noise is entirely different from asking existing sufferers (the residents immediately south of JAC) to journey on without relief beneath an insufferable racket. I was saddened to hear, in light of your “no shift” noise mandate, Task Force Coordinator Bill Kane sheepishly retract his entirely reasonable statement of his understanding of his mission statement (“...[to consider] possibilities for amending southerly departure routing to provide the least [noise] impact for the greatest number of folks in the valley”), a mission statement echoed by flight path designer Alex Seybold (“[Our] goal is to try to find the most noise friendly path we can”). It is a sad state of affairs when a committee’s workers find their understanding of their mission at odds with their chairperson. In any case, it seems obvious that, if there is to be any meaningful change, then compromise is needed, so I was especially dismayed that no advocate for compromise emerged from the Task Force leadership. Your own strong remonstrations at the notion flights might go near your home in the May Park neighborhood was especially disheartening. Not leading by example, that much is for sure. So, I am becoming pessimistic on the likelihood the \$235,000 JAC is spending on this project will result in any substantial progress. I hope in the few weeks remaining you prove me wrong and can forge a consensus within the Task Force for compromise to back meaningful change.</p> <p>Thanks.</p> <p>Mike</p> <p>Michael Gumport</p> <p>455 Francis Way</p> <p>732-221-0172</p> <p>magumport@att.net</p> <p>*DB sound equivalents as reported by <a href="https://www.commodious.co.uk/knowledge-bank/noise/measuring-levels">https://www.commodious.co.uk/knowledge-bank/noise/measuring-levels</a>.</p>
<p>Sally Painter/ ANPAC</p> <p><a href="mailto:sallypainter529@gmail.com">sallypainter529@gmail.com</a></p> <p>7/5/2022</p>	<p>As ANPAC’s Task Force delegate, I am forwarding to you a request I received from my Executive Committee in their capacity representing 675 residents immediately south of JAC.</p> <p>We believe the grid presented (“Lmax Noise Levels at Sample Locations”) at the 6/29/22 presentation gives an imperfect understanding of the noise impact of possible new flight paths because it fails to consider pre-existing ambient and pre-existing maximum noise conditions.</p> <p>Please recalculate the presented table to provide 2 alternative renditions:</p>



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	<p>1. Add a column showing the estimated, current ambient noise at each location (absent the impact of existing flights), calculate the difference between ambient noise and the maximum noise at that location due to the existing and each proposed new flight path, and use that difference to redraw the presented colored table.</p> <p>2. Add a column showing the estimated, current maximum noise at each location (absent the impact of existing flights), calculate the difference between the existing maximum noise and the maximum noise at that location due to the existing and each proposed new flight path, and use that difference to redraw the presented colored table.</p> <p>I make this request with the utmost urgency. No Task Force member should draw any conclusions until this important, supplemental material is delivered. Otherwise, lacking accurate data and analysis, the Task Force will be operating on misleading information.</p> <p>We appreciate your efforts and look forward to your response in the very near future to allow all task force members adequate time to fully grasp the new information.</p> <p>Regards, Sally Painter</p>
<p>T.J. McCann <a href="mailto:tjmccann@mac.com">tjmccann@mac.com</a> 7/6/2022</p>	<p>Dear Valerie and Jim,</p> <p>I would like to provide a few comments based on the noise information presented to the Task Force at our June 29th meeting.</p> <p>First, and perhaps most important, it is becoming increasingly clear that there is no magic southern departure route that provides relief for ALL residents (and Grand Teton NP) south of the airport. Be it turns to the East or turns to the West, any of the new proposed departures provides relief to some homeowners while increasing noise for others. Please keep in mind that one of the principal tenants of this task force was "Solutions which optimize for one group at the expense of others will not be carried forward - noise will not shift from one neighborhood to another (meeting one slide deck, slide 7)."</p> <p>Everyone who has lived south of the airport for any appreciable amount of time has had to endure an increase in noise due to the ever increasing number of flight operations in and out of Jackson Hole Airport. We all purchased our homes knowing the location of the current departure path.</p> <p>Any turns to the East increases noise over Blue Stem, Jackson Hole Golf and Tennis, Grand Teton NP, National Elk Refuge, Spring Creek Ranch and the Town of Jackson by a noticeable to very noticeable amount. Turns to the West increase noise for those on Lower Cascade, Red Tail, Queens Lane, Zenith, and Spring Creek Ranch. So the question becomes, why should I and my neighbors on Blue Stem endure a noticeable increase from 74 to 80dBA or more, just so someone else can enjoy a decrease of a similar amount?</p> <p>One significant item missing from the June 29th package was the RNAV overlay of the existing ALPIN THREE departure. This procedure needs to be added to the August 16th meeting package and presented to the board for forwarding to the FAA.</p> <p>The FAA wants to implement a RNAV departure to the South. If we do not provide the above, then I fear that the KICNE ONE departure may be forced upon us by the FAA. I think we all agree that proposal shifts the most noise over the most other neighborhoods, Grand Teton National Park, and Spring Creek Ranch. Both the GTNP Gros Ventre and Spring Creek Ranch locations are to the east of the proposed flight path (and they are both red). Had there been evaluation locations in the Golf and Tennis neighborhoods under the projected flight path, we would certainly be seeing even more red.</p> <p>I am not sure why there has been so little discussion on the RNAV and RNP departures to the Southwest. That RNAV to the Southwest flight path affects the smallest population of any of the proposals. But, once again, it does shift the noise footprint from one group of residents to another. And while there are fewer of them, are they not just as important as everyone else?</p> <p>I thought we would be going into this meeting hearing a lot more about the "fanning" concept, though that seemed to have had some cold water thrown on it as well. Greg makes a good point about the ATC issues of assigning different departures to different aircraft with different performance characteristics. While certainly possible, it's really not as easy as it seems, and will certainly be less efficient than the current departure procedure. It's probably also unlikely the FAA is going to approve three different departures (West, Straight, and East) just so we can fan what amounts to being a relatively small number of departures.</p>

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	<p>So in conclusion, the current ALPIN THREE and the proposed RNAV overlay remains the most efficient way to route aircraft away from the Jackson Hole Airport to the south without shifting the noise footprint to other neighborhoods or Grand Teton NP. This allows aircraft to climb away from the airport following a straight (shortest) path direct to KICNE and on course to their destination. And unfortunately, none of the other proposed procedures would "benefit the entire community (meeting one slide deck, slide 12)".</p> <p>I would be interested in your thoughts on the above.</p> <p>Thank you - T.J. T.J. McCann Jackson Hole, WY</p>
<p>Sally Painter <a href="mailto:sallypainter529@gmail.com">sallypainter529@gmail.com</a> 7/12/2022</p>	<p>Dear Valerie, Jim and fellow Task Force members,</p> <p>As I give further thought to the flight route concepts, I believe that there is a way to alleviate noise in the areas south of the airport without imposing it on others. The original FAA approved flight route (KICNE) had a left turn then a right turn to join the track down the valley. Could we modify the Concept 1 flight path with a slightly more easterly left turn upon take off, flying over the gap between Hwy 89 and Spring Gulch, then a right turn to go between the Gros Ventre buttes, staying away from the Elk Refuge and town? This route would not negatively impact any stakeholder who is not already impacted by flights over their homes. In fact, it would bring relief to hundreds of residents south of the airport as well as the Jackson Hole Golf and Tennis Club.</p> <p>Would you kindly forward this proposal to the consultants: Alec and Rich at FlightTech, Greg Dyer at Woolpert and Ryk &amp; Paul at Mead &amp; Hunt? I believe that we all want to explore every possible alternative as we get closer to the deadline.</p> <p>I look forward to hearing from you.</p> <p>Sincerely, Sally Painter Task Force member</p>
<p>Sally Painter <a href="mailto:sallypainter529@gmail.com">sallypainter529@gmail.com</a> 7/22/2022</p>	<p>Dear Valerie and Jim,</p> <p>I am following up on the status of the two emails that I sent to you recently.</p> <p>On July 5th, I requested that two additions to the Noise Impact Report, which was distributed at the June 29th meeting, be made. It is critically important that the information distributed to the Task Force includes accurate and comprehensive data from which the members can evaluate the noise impacts of proposed flight routes.</p> <p>On July 12th, I also sent a request to have our consultants evaluate a modification to the Concept 1 flight route. We sincerely hope that the slight modification suggested is satisfactory as we believe it should be particularly since no stakeholder would be adversely affected by its implementation.</p> <p>Have our consultants had an opportunity to work on these? What is their status? I trust that we will have this information distributed to the other Task Force members prior to our next meeting so they will have the time to study and digest it before August 16th.</p> <p>Thank you for your consideration and I look forward to hearing from you.</p> <p>Sincerely, Sally Painter, Task Force member</p>

Contact Info/Date	Comment
<p>Kathryn Turner  <a href="mailto:kathryn@turnerfineart.com">kathryn@turnerfineart.com</a>  7/25/2022</p>	<p>Jim,</p> <p>I was born and raised in Jackson and have lived at Teton Shadows on Sagebrush Drive for 15 years. I have seen the airport grow from a dirt runway and a buck and rail fence as a terminal to what it is today. As with all change, this has been a mixed bag.</p> <p>In my 15 years living at Sagebrush Drive, the increase in airport noise over the past couple of years has been unbelievable and extremely hard to bare. I am a fine art painter who creates my paintings in my home studio now with almost constant noise from airplanes. It's awful.</p> <p>But what's worse is the noise at night significantly compromising our sleep. More and more planes are flying over earlier in the morning and later at night. July 23rd two different planes landed to the south both after 10:30pm. They were so low and so loud, they startled me! I realize the voluntary curfew for arrivals is 11:00pm (which is too late regardless in my opinion) but if the planes are arriving from the south, I feel that the curfew should be 10 pm at the latest. Departures to the south should be 7 am.</p> <p>As a kid, I remember when the flight schedule was rearranged each year to accommodate the strutting grouse when they were doing their mating dance on the runway because it was recognized that the runway was built directly on their leks or mating ground. These days are long past and barely remembered. I can't imagine what's become of the grouse with this incredibly huge impact the airport is currently making in noise and pollution.</p> <p>I hope you and all the flight community remember that the airport is located in a National Park and with that comes special responsibilities.</p> <p>Sincerely,  Kathryn M. Turner  TURNER FINE ART</p>
<p>Kathryn Turner  <a href="mailto:kathryn@turnerfineart.com">kathryn@turnerfineart.com</a>  8/1/2022</p>	<p>This morning at 2:30 am my neighbors and I were all startled awake by a plane at this ungodly hour.</p> <p>sincerely,  Kathryn M. Turner  TURNER FINE ART</p>
<p>Mary Kaufmann  <a href="mailto:mary.kaufmann@icloud.com">mary.kaufmann@icloud.com</a>  8/3/2022</p>	<p>Good Morning Jim Elwood, Valerie Brown Chair of the Southern Departure Task Force, Members of the Southern Departure Task Force, Jackson Hole Airport Board of Directors, Superintendent Jenkins GTNP and Grady Stone FAA,</p> <p>I am writing you because the last two mornings there have been very early flights departing the airport - on August 2nd there was one that crossed over my home at 5:45am and a second one at 6:17am and today, August 3rd another plane crossed over my home at 6:20am, as I write this at 6:53am another plane is going over my home. Shortly after 7:00am there will be four more commercial flight departures and two more between 7am and 8am! This is eight planes in roughly two hours - do you want a blender going off in your ear approximately every 15 minutes for two hours? There are sometimes up to 60 arrivals in a day between commercial and private flights and nearly as many as departures - this is untenable for those of us living under the flight path!</p> <p>In reviewing the Fly Quiet program I see that the voluntary curfew times are - 11:30pm - 6:00am for arrivals and 10:00pm to 6:00am for departures. So we have about 6 1/2 hours of uninterrupted sleep each night - this is totally unacceptable. As I recall the JAC Airport Board has requested commercial operators to not land after 10pm and not take-off before 7am due to airport staffing.</p> <p>Is this still in effect, or has it changed changed? Can this request also apply to private aircraft?</p> <p>I find the voluntary curfew hours to favor the airlines rather than the community that the airport is a part of. If commercial or private aircraft abide by the published curfew hours - they not penalized as part of the Fly Quiet program - so you are sanctioning late night flights and early arrivals to the detriment of nearby residents. Thanks for the consideration!</p> <p>With the increase in frequency of commercial flight traffic (48% increase in flights from 2018 to 2021) and the increasing number of private flights - regardless of the supposed 'reduced noise' of the newer airplanes</p>

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	<p>- a plane going over head at 1,000 feet elevation is very loud, registering about 85 db - particularly when your ambient noise is about 35 db! Yes! This is enough to wake you.</p> <p>I ask that you:</p> <ol style="list-style-type: none"> <li>1. Change the voluntary curfew hours to 10pm - 7am</li> <li>2. Enforce financial penalties on aircraft, private and commercial, that do not abide by the curfew.</li> <li>3. There are viable flight paths that avoid the homes south of the airport and would eliminate this ongoing daily aggravation - why can't you endorse one of those flight paths that would benefit the residents living near the airport?</li> </ol> <p>And, if you aren't willing to take these actions, why not? Your current policies serve the airlines at the cost of residents around the airport.</p> <p>Thank you, I look forward to your reply.</p> <p>Mary Kaufmann Mary Kaufmann mary.kaufmann@icloud.com</p>
<p>Michael Gumport <a href="mailto:magumport@att.net">magumport@att.net</a> 8/3/2022</p>	<p>Mary –</p> <p>Thank you for copying me on your note regarding JAC curfew hour violations. Yes, I agree, 1) JAC curfew hours should be longer, 2) curfew violations should incur monetary penalties, 3) a new southern departure flight path should be approved. Also, GTNP through the U.S. Interior Department in coordination with the FAA should move to enforce the flight limitation clause of JAC's lease.</p> <p><b>CURFEW</b></p> <p>I understand some airports enforce significant monetary penalties on flights that violate curfews and/or force planes to divert to other airports during curfew hours. Am I wrong? Even were monetary penalties / diversions to be the exception rather than the rule, why is it impossible for JAC to achieve this given JAC's unique status as the only airport in a national park? JAC's 1983 Use Agreement revision stated JAC assure "aircraft noise will be reasonably compatible with other adjacent land uses". It is not at all clear to me that JAC worked with Teton County to acquire land and zoning south of the airport compatible with the dramatic increase in flight growth. Enforcement of an adequate curfew would mitigate the harm to homeowners immediately south of JAC.</p> <p><b>NEW SOUTHERN DEPARTURE FLIGHT PATH</b></p> <p>It would be nice if the \$235,000 allocated to the Southern Departure Task Force actually produced positive results (a new flight path that provides relief to residential neighborhoods immediately south of JAC). For that to happen, the Task Force Chair will need to inspire all parties to compromise, but, so far, that has not happened. To the contrary, the Chair has inspired all parties to dig in to support entrenched positions with the promise that "noise will not shift", contradicting her own staff. Of course, there can be no change in the flight pattern unless noise shifts. Hopefully, worst case, the FAA-approved KICNE 1 flight path will be the fallback if the Chair fails to forge a consensus to advance any of the many other proposed alternatives.</p> <p><b>JAC COMMERCIAL JET DEPARTURE LIMITS</b></p> <p>So far as I can see, the 2010 JAC lease extension with the U.S. Department of the Interior as advised by GTNP limits commercial jets to under 7 "737-200 noise equivalent" departures per day on average. Again, am I wrong? Otherwise, with close to 30 scheduled commercial jet departures per day, it is hard for me to believe that JAC is in compliance with its lease. Who calculates "noise equivalent departures" and what formula do they use to grade "noise equivalence"?</p> <p>Unless the 2010 lease agreement has been amended (I do not find a relevant amendment), it seems highly plausible that compliance with lease terms would require JAC to reduce the number of commercial jet flights. Again, as a national park, I would think GTNP through the U.S. Department of the Interior in</p>



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	<p>coordination with the FAA could have lease terms enforced. The likely, consequent, substantial reduction in commercial jet flights would provide relief to both the residential neighborhoods south of JAC and Moose, where noise is also at unacceptable levels.</p> <p>It is perfectly possible that JAC will argue that the limitation on the number of commercial flights does not apply so long as decibels are below the required limit in defined noise sensitive areas around the park. However, that is not how the lease is written. The noise sensitive limitation is one requirement, and the limitation in the number of flights is another requirement. The flight limitation clause helps assure the noise restriction clause (whose limits we are now approaching) will never be violated.</p> <p>ALSO</p> <p>As you are aware, JAC is also planning a substantial expansion of general aviation facilities. I am highly skeptical that more general aviation facilities will reduce noise as some have suggested (by reducing turnaround flights) and would urge you to stay on top of this issue.</p> <p>Regards, Mike</p> <p>- From my iPhone Michael A. Gumport 455 Francis Way Jackson, WY 83001 Tel. - 732-221-0172 Email - magumport@att.net</p>
<p>Dianne Budge <a href="mailto:Dianne@budgkelly.com">Dianne@budgkelly.com</a> 8/4/2022</p>	<p>I live approximately a mile and half South West of the airport and every morning starting at 6 AM we have had private jets flying directly over our house. Every day 2-3 before 7AM and by 7:30 it is constant private and commercial flights coming directly over. We have small children and elderly folks that are wakened by these flights. That is not right. We have a right to peace and quiet this early in the morning. It used to be there were NO flights before 7:30 and no later than 9:30. What happened?</p> <p>Last summer, I was walking our neighborhood with my granddaughter and a commercial jet flew over and spewed liquid exhaust all over us. Scared me. Don't you care? About people? Our health with all the exhaust spraying over us all day?</p> <p>When we built our home 22 years ago, there were no planes flying over our house. Again, we are 1 ½ miles SW. Not too close. There were no planes in site of our property. The few planes flew East of the residential areas over the park. There was only Delta Skywest, United and some private prop planes now it feels like we are in LA or Chicago with several flights a day from commercial jets coming in from all parts of the US and then all the privates. This has to STOP. And why on earth you ever changed that flight pattern is ridiculous. And pilots just do what they please. We cannot have a conversation when a plane flies over.</p> <p>This has to stop. And NO MORE hangars. I say get rid of all of them. The privates can fly into ID Falls, Driggs, Alpine, Afton and drive to Jackson. They should not have a free for all to come in whenever they feel like it whatever time of day or night. We do have rights and presently we are having our air rights violated and our health is compromised.</p> <p>We expect peace and quiet at our home like it was in 1999. No airplanes, commercial jets and private jets flying over. I don't believe our airport was ever meant for that. And the subsidies need to stop for the commercial airlines unless they can follow strict guidelines to fly East over the park and elk refuge. And there should NEVER be a private jet unless they can adhere to those same strict rules.</p> <p>Dianne and Chad Budge</p> <p>Budgekelley Realty Group <a href="http://www.budgerealestate.com">www.budgerealestate.com</a></p>

Contact Info/Date	Comment
	<p>dianne@budgekelley.com</p> <p>80 W Broadway</p> <p>Jackson WY 83001</p> <p>m: 307.413.1362</p>
<p>Stacy Riddick</p> <p><a href="mailto:momontheho@mac.com">momontheho@mac.com</a></p> <p>8/4/2022</p>	<p>Good afternoon Jim Elwood, Valerie Brown Chair of the Southern Departure Task Force, Members of the Southern Departure Task Force, Jackson Hole Airport Board of Directors, Superintendent Jenkins GTNP and Grady Stone FAA,</p> <p>I am writing to you to bring your attention to the ridiculous noise associated with early morning flights that has increased over the last several days!! There have been VERY early flights departing the JAC airport - on August 2nd there was one that crossed over my home at 5:45am and a second one at 6:17am and today, August 3rd another two planes crossed over my home at 6:20am and 6:53am. Starting at 7:08am there will be four more commercial flight departures before 8am! This is eight planes in roughly two hours - and is not environmentally friendly for a multitude of reasons. There are sometimes up to 60 arrivals in a day between commercial and private flights and nearly as many as departures - this is untenable for those of us living under the flight path!</p> <p>In reviewing the Fly Quiet program I see that the voluntary curfew times are - 11:30pm - 6:00am for arrivals and 10:00pm to 6:00am for departures. So we have about 6 1/2 hours of uninterrupted sleep each night - this is totally unacceptable. As I recall the JAC Airport Board has requested commercial operators to not land after 10pm and not take-off before 7am due to airport staffing.</p> <p>Is this still in effect, or has it changed changed? Why is this not also applicable to private aircraft?</p> <p>I find the voluntary curfew hours to favor the airlines rather than the community that the airport is a part of. If commercial or private aircraft abide by the published curfew hours - they are not penalized as part of the Fly Quiet program - so you are sanctioning late night flights and early arrivals to the detriment of nearby residents. I would really appreciate your consideration to this.</p> <p>With the increase in frequency of commercial flight traffic (48% increase in flights from 2018 to 2021) and the increasing number of private flights - regardless of the supposed 'reduced noise' of the newer airplanes - a plane going over head at 1,000 feet elevation is very loud, registering about 85 db - particularly when your ambient noise is about 35 db! This wakes me up EVERY morning!!</p> <p>I ask that you:</p> <ol style="list-style-type: none"> <li>1. Change the voluntary curfew hours to 10pm - 7am</li> <li>2. Enforce financial penalties on aircraft, private and commercial, that do not abide by the curfew.</li> <li>3. There are viable flight paths that avoid the homes south of the airport and would eliminate this ongoing daily aggravation - why can't you endorse one of those flight paths that would benefit the residents living near the airport?</li> </ol> <p>And, if you aren't willing to take these actions, why not? Your current policies serve the airlines at the cost of residents around the airport.</p> <p>Thank you, I look forward to your reply.</p> <p>Stacy Riddick</p> <p>Your NEWtrition, LLC</p> <p>Rodan+Fields</p>
<p>Brenda Cubbage</p> <p><a href="mailto:bcubbage@cbsattorneys.com">bcubbage@cbsattorneys.com</a></p> <p>8/4/2022</p>	<p>Good afternoon,</p> <p>I am a homeowner at Teton Shadows Condominiums, situated just south of the airport.</p> <p>I write in full support of the modified flight path proposed by ANPAC that diverts flights slightly east then south between East &amp; West Gros Ventre Buttes. Upon careful study, not only has this flight path been used in the past, but it avoids residential areas south of the airport and has been deemed a safe route by the FAA.</p>

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	<p>The number of flights taking off from the airport has increased dramatically in the last several years by both commercial and private flights, and the high decibel levels that accompany each flight are deafening. There seems to be little to no enforcement of any existing curfews for take-offs and landings, and curfews need to be beefed up and enforced. The noise definitely impacts the enjoyment of my property and my neighbors' properties at Teton Shadows multiple times a day and into each evening.</p> <p>Noise is not the only problem. Air pollution from unexpended jet fuel exhaust is a health hazard, and will only get worse over time. The airport's expansion plans for private plane facilities is very concerning because it will only add to the existing problems.</p> <p>I urge all of you to take the concerns of residential homeowners seriously and realize the significant impacts this situation has on the quality of life for homeowners south of the airport.</p> <p>Thank you for your consideration.</p> <p>Brenda T. Cubbage Teton Shadows Condominiums Jackson, WY</p>
<p>Karen Pakstis</p> <p>NOTE: NOT SENT TO SDP ADDRESS</p> <p><a href="mailto:kpaksesq@gmail.com">kpaksesq@gmail.com</a></p> <p>8/4/2022</p>	<p>To All:</p> <p>My name is Karen Pakstis and my husband and I live in Panorama Estates which is a few miles south of JH Airport. I am writing to express my alarm and grave concern over the current flight path for commercial and private jet traffic which is directly over our home. This flight path is creating significant safety issues and causing excessively loud noise at all hours of the early morning, afternoon, evening and late night.</p> <p>Airport records show that there were over 40,000 private jet flights and more than 6,000 commercial flights to Jackson Hole in 2021. Additionally, and by way of example for this year, we were awakened by 2 private jets that flew over our home at 5 a.m. on August 2, and 1 private jet flew over our home at 12:15 a.m. on August 3 and was traveling so low that its flashing lights lit up our bedroom. I was completely unnerved by that experience and was unable to sleep for several hours afterwards.</p> <p>It is well documented that most accidents and fatalities take place during take off/climb and approach/landing because that's when planes are closest to the ground and in a more vulnerable configuration than during other flight phases. The same is true for falling aircraft debris. Knowingly authorizing a take off and landing flight path directly over residential neighborhoods when there are alternative flight paths available is highly alarming to me and rather incomprehensible. I am imploring you to please change the flight path so that aircraft are not taking off or approaching the airport directly over people's homes.</p> <p>Please help. Thank you.</p> <p>Regards, Karen A. Pakstis</p> <p>Sent from my iPad</p> <p>Regards, Karen A. Pakstis</p>
<p>Lori Moffett</p> <p><a href="mailto:lori.moffett@yahoo.com">lori.moffett@yahoo.com</a></p> <p>8/5/2022</p>	<p>We live on Zenith Rd, just south of the airport, and would love to have peaceful enjoyment of our house and our yard. It is not possible to have peaceful enjoyment of our home when planes are flying over our house throughout the day, every day. Most municipalities (including Teton County) have Noise Ordinances to protect communities from excessive noise. While the 60 or so decibel noise level of planes flying over our house is less than the 80 decibel threshold in Teton County's noise ordinance, the noise from planes over our house is throughout the day every day. We and hundreds of our neighbors never get a break.</p> <p>We strongly urge you to advocate for the modified flight path that has been proposed by ANPAC. It diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight</p>

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	<p>pattern used in the late 90s that avoids the homes south of the airport and has been deemed as a safe route by the FAA.</p> <p>Moreover, JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those airlines and planes that violate the curfew including privates. It would be nice to not be woken up in the morning by planes or to go to sleep at night without the disturbance as well.</p> <p>Thank you very much for your advocacy and support, Lori Moffett</p>
<p>Christi Yannelli  <a href="mailto:christiyannelli@gmail.com">christiyannelli@gmail.com</a>  8/5/2022</p>	<p>Hello All,</p> <p>My name is Christi Yannelli. My husband and I live at 815 Moulton Loop near the airport. I am writing you each to respectfully ask that you PLEASE consider changing the current flight path to the reasonably modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA. The noise has become worse every year and will continue to do so. As our tourism industry blows up and our airport expands, it has made living near the airport very unpleasant and exactly what one is trying to avoid while living in Jackson. We live here for the clean air, the beauty that surrounds us, the peace and quiet and so many more reasons. However, so much of this has dramatically changed over the years with the increase in flights. We can't even sleep with our windows open in the heat of the summer without being woken up multiple times by low flying planes directly above our home.</p> <p>Some of you might be thinking that those of us that purchased homes near the airport knew what we were signing up for and to a degree, you are correct. However, that argument does not stand with the current increase in both commercial and private planes over the past few years. Commercial flights alone have increased by 48% from 2018-2021 and this increase has been extremely noticeable. Not only is the huge increase in noise a concern, but also the long term effects to our health from jet fuel exhaustion. The smell of jet fuel, especially in the winter, is very thick and nauseating.</p> <p>When my husband and I moved into our home at 815 Moulton Loop many years ago, we had wildlife all of the time frequenting our property. Everything from moose, bison, elk, deer and occasionally bears. Every year we have noticed the amount of wildlife drastically decreasing. My husband and I both feel that this is due to the major increase in both the sound and environmental pollution. Some days over 50 flights go over our home at elevations of 500-1500 ft and the db levels rise from 35-40 to the high 80's when flights are overhead, making it impossible to hold a conversation in person or on a phone until the plane has completely passed.</p> <p>This issue of the the noise and air pollution from the airport is already a large concern for all residents who live near the airport, but it is only going to get worse. We kindly ask you to please hear our concerns and put yourself in our shoes. It really makes a huge difference in the quality of life and health for all who are affected by this. And it could easily be mitigated by a change in flight path. Thank you for your time and we look forward to seeing what is decided.</p> <p>Sincerely,  Christi Yannelli &amp; Alan Yannelli  815 Moulton Loop Rd.</p>
<p>Sandy Rudo  <a href="mailto:sandyrudo@gmail.com">sandyrudo@gmail.com</a>  8/5/2022</p>	<p>Hello--</p> <p>My husband and I have owned a home in Moulton Loop since 2000. From 2000 until now the number of planes that depart and land at the Jackson Airport has noticeably increased. When we first purchased our home we were told that pilots were asked to modify their flight path to the south in a way that avoids flying directly over the homes in our area. Clearly that no longer is the flight path that is used (if it was ever used) since we can stand outside and see the planes go over our house, one after the other. with no deviation to avoid going over our housing area. We are affected very personally by the number of flights, the size of the plane, and the time of day that the flights come and go. I have been told that the number of commercial flights increased 48% from 2018-2021 and that there is an expected increase in private planes as well. Is there no end in sight to the increases in both private and commercial flights? In the 22 years that we've been here, we've seen no obvious efforts by the airport to address any of the concerns that we and other homeowners have had. Meetings and phone calls, yes, but no concrete action to address the issues. And in the meantime, with the increased number of flights, there is more and more noise pollution as well as air pollution.</p> <p>These are some other suggestions that we support:</p>



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	<ul style="list-style-type: none"> <li>• Limiting the curfew (currently 11:30-7:00am for landings and 10pm-6am for departures) to 10pm – 7am for landings and departures. Recently flights have departed as early as 5:30am and landed as late as 2:30am!</li> <li>• As we understand JAC's lease from GTNP, it limits JAC to under 7 commercial jet departures per day at certain db levels (before adjustment for the fact that some jets are quieter than others). Currently, JAC is running nearly 30 commercial flights per day.</li> <li>• Add financial fines to the Fly Quiet program.</li> <li>• Oppose JAC's planned substantial expansion of hangars, facilities and lounges geared to support growth in private aviation.</li> <li>• Seasonal flight paths – an eastern path over the refuge in the summer when weather is clear and no animals are on the refuge.</li> <li>• Have an Airport Board member appointed from the residential community south of JAC.</li> </ul> <p>Thank you for your attention to our concerns.</p> <p>Sandy and Neil Rudo 830 Moulton Loop Jackson, WY</p>
<p>John Shilling <a href="mailto:john@johnshillingcpa.com">john@johnshillingcpa.com</a> 8/5/2022</p>	<p>To all involved:</p> <p>I have been an owner for 17 years of 200 Sylvia Drive, a part of the Panorama Estates approximately 4-5 miles southwest of the airport. In this time, we have seen airport traffic noise increase significantly. Here are some of our observations:</p> <ol style="list-style-type: none"> <li>1. The number of flights has increased significantly.</li> <li>2. Recently, they appear to bank slightly to significantly west when departing in a southerly direction.</li> <li>3. Planes rarely veer east.</li> <li>4. We are very concerned about the increased pollution from unexpended jet fuel and related health effects. My wife and I are 68 and 67.</li> <li>5. Recently there have been more flights departing before 6am, most likely private planes.</li> <li>6. As a private pilot that is not current, I know there is no flight risk to planes that might be required to veer more toward highway 26 when departing south AND there are no homes east of highway 26.</li> </ol> <p>Based upon the above observations it seems absurd to delay a mandate to respect the needs and desires of homeowners currently affected by common flight paths. The FAA has endorsed a reasonable easterly change. There is no reason not to change other than stubbornness.</p> <p>If the John Wayne Airport (SNA) in California can mandate a significant, and sometimes scary power reduction when taking off over Newport Harbor, certainly JAC can accommodate a slight easterly direction shift. And at the moment I write this, another commercial jet has loudly taken off clearly veering west of a straight line south departure.</p> <p>Sincerely, John Shilling 200 Sylvia Drive Jackson, WY 83001 510-551-5974</p>
<p>Tucker Smith <a href="mailto:onthirim@wyoming.com">onthirim@wyoming.com</a> 8/5/2022</p>	<p>Dear Southern Departure Task Force:</p> <p>We live south of the airport in Moulton Loop. The ever increasing airplane noise is of great concern to us. The low altitude of the planes over our area exacerbates the problem. A slight diversion to the east would help by moving the flight path away from the populated subdivisions. By the time the flights reach the vicinities of the Elk Refuge and town their altitude should be sufficient to alleviate undue noise problems.</p>

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	<p>Elk and other wildlife in our area pay little attention to the flights, so I don't see that it would affect the Elk Refuge at much higher altitudes.</p> <p>Please be a good neighbor and help alleviate our common problem.</p> <p>Thank you.</p> <p>Tucker and Jean Smith</p>
<p>philip preston  <a href="mailto:Philip.Preston@comcast.net">Philip.Preston@comcast.net</a>  8/5/2022</p>	<p>Hi everyone,</p> <p>I sincerely hope you will be able to minimize the noise associated with our airport.</p> <p>We all need to minimize our impact on this wild place and the noise levels are far greater than when I bought here 32 years ago.</p> <p>Sincerely,  Philip Preston  950 Glacier  Solitude</p>
<p>Mark Messana  <a href="mailto:messanamark@gmail.com">messanamark@gmail.com</a>  8/5/2022</p>	<p>Dear Jackson Hole Airport Stakeholders:</p> <p>Today ANPAC emailed community members encouraging them to write to you in support of a slight change to the east then south of the southern departure. Despite all the studies that were undertaken and very specific route names ANPAC seems to be influencing members to support the proposed and rejected ALPIN3 KICNE1. We all know that this route change simply shifts the problem from one set of homes to another set of homes. This process should not be a competition to see who can rally the most emails to support a route change in favor of some homes but to the detriment of others. I strongly <b>OPPOSE</b> their proposal to shift the current Southern Departure in their vaguely described terms. I fully support the Airport Boards stated objective to consider new routes that would benefit the greater community at large and anything short of that should be rejected in favor of maintaining status quo. Like many homeowners, I made purchasing decisions based on in place routes and did not plan for a competition among neighbors to see who could rally the most support in changing routes to their own benefit.</p> <p>Respectfully,  Mark Messana  6070 Junegrass Road  Jackson, Wyoming</p>
<p>Kathi Haschke  <a href="mailto:bry5105@msn.com">bry5105@msn.com</a>  8/5/2022</p>	<p>To Whom It May Concern:</p> <p>We are residents of the Moulton Loop neighborhood in close proximity to the Jackson Hole Airport. My husband and I are writing to urge you to please look at the current flight pattern and consider a slight adjustment in the direction of the path. My husband is an anesthesiologist who works many long hours. Getting sleep is very important for his career and health. The airplane noise is becoming intolerable as the planes fly directly over our residence. Back in the 90s, when the path was more to the east, it was much more tolerable. I understand that there has been close to a 50% increase in flights over the past several years with the Jackson Hole area becoming more and more popular to tourists. Along with this, private flights are becoming more and more numerous with an airport expansion planned. With close to 50 flights a day, we worry about the health effects on our family and nearby neighbors with the exhaust from all of the fuel from the planes.</p> <p>Please consider a directional change in your flight path. We love the area and want to enjoy the natural beauty that this area is known for without worrying about all of the above. Your consideration is greatly appreciated. Thanks so much,</p> <p>Kathi Haschke  Dr. Randall Haschke</p>

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<p>Luc Vincent</p> <p><a href="mailto:lvincent@gmail.com">lvincent@gmail.com</a></p> <p>8/5/2022</p>	<p>Hi,</p> <p>I strongly support the efforts by the ANPAC committee to improve quality of life in the South of Airport subdivisions by common sense actions and considerations of the alternative flight paths.</p> <p>My wife and I are residents of Fairway Estates, South of the Airport. We are constantly subjected to air traffic noise at close range and frequently have to stop our activities and conversations until a plane passes over. This is worse for me since I work from home, and my video meetings are regularly interrupted when a plane flies overhead.</p> <p>On top of that, there is of course a significant concern with pollution from jet fuel and its adverse environmental and health effects.</p> <p>The air traffic has clearly increased over time. The takeoff and landing hours are frequently unreasonable - like recently in the middle of the night. We strongly support the adoption of alternative flight paths that would lower the noise over our community. We also strongly support an enforced 10pm-7am curfew for both landings and departures.</p> <p>It is also crazy that this is even a debate, when reasonable alternatives have been presented by ANPAC. I am disappointed that so little action has been taken by Airport, City, Teton County, FAA and GTNP officials ever since the seriousness of this issue was brought up over the past year or two. Please do something!</p> <p>Thanks,</p> <p>Luc Vincent</p>
<p>Phil Harrington</p> <p><a href="mailto:harrington.phil@outlook.com">harrington.phil@outlook.com</a></p> <p>8/5/2022</p>	<p>Dear Jackson Hole Airport Stakeholders:</p> <p>I received an email today from ANPAC email urging me to write you in support of their efforts to change the current airport departure routing. I strongly OPPOSE their proposal to shift the current Southern Departure. I am a fulltime resident of the Golf &amp; Tennis neighborhood, bought my home knowing full well that I would be living adjacent to an airport and the Southern Departure flight path, and assumed the number of aircraft using the airport would increase over time. I have to assume this was also the case with every member of the ANPAC committee – at least four of whom appear to have moved here within the past 10 years.</p> <p>Despite their public comments to the contrary, I believe the ANPAC committee members are primarily hoping to shift the current departure route (ALPIN3 KICNE) to the proposed and rejected ALPIN3 KICNE1 departure simply in order to move departures away from their homes. The map below shows the location of the ANPAC Committee members' homes relative to the current departure (green) and ALPIN3 KICNE1 (red).</p> <p>In my opinion, the best course of action is for the Airport and FAA to do nothing to change the current Southern Departure. To do otherwise would be to favor a vocal group of residents to the detriment of less vocal, but equally affected residents, all of us living north of town and having purchased homes knowing exactly what we were buying and where.</p> <p>Respectfully,</p> <p>Phil Harrington 6040 Golden Currant Jackson, WY 83001 307-699-5000</p> <p>Phil Harrington (C) 307-699-5000</p>
<p>Gaile Gordon</p> <p><a href="mailto:gaile.gordon@gmail.com">gaile.gordon@gmail.com</a></p> <p>8/5/2022</p>	<p>Hello - I would like to add my voice to the efforts by the ANPAC to improve the quality of life in the south of airport subdivisions by common sense actions and considerations of the alternative flight paths. As residents of Fairway Estates, my husband and I hear the air traffic at close range and frequently have to stop our activities and conversations until a plane passes over. The air traffic has clearly increased over time, and the hours of the plane take off and landings sometimes include unreasonable times - like recently in the middle of the night. We strongly support the adoption of alternative flight paths that would lower the noise over our community. We also strongly support an enforced 10pm-7am curfew for both landings and</p>

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	<p>departures. It is disappointing that so little action seems to have come from the extra attention paid to this serious issue in the past year.</p> <p>Gaile Gordon</p>
<p>Paul Beaupre  <a href="mailto:pnbeaupre@gmail.com">pnbeaupre@gmail.com</a>  8/5/2022</p>	<p>Since the airport has reopened the noise is much worse than what it had been. I live in -B- on the direct landing and takeoff flight path. About 60 times per day, we cannot hear ourselves talk in the backyard during takeoffs and landings. I am concerned for the wildlife that utilize the corridors around my home and for my hearing and my wife's hearing. Please press the FAA for a safe new takeoff flight pattern. Thank you for your consideration of this matter. Paul Beaupre MD</p> <p>Sent from my iPhone</p>
<p>Al Dorsett  <a href="mailto:aldorsett@aol.com">aldorsett@aol.com</a>  8/5/2022</p>	<p>To Those Involved in JAC Policy Making:</p> <p>My name is Allen Dorsett and I live south of JAC in Golf Creek Ranch. I purchased my home here 4 years ago and NEVER could have imagined the impact that the airport's continued development would have on my quality of life. I believe that the flight statistics show that the number of flights roaring DIRECTLY OVER MY HOME has doubled in the past 4 years. Additionally, seemingly unrestricted night flights ever more regularly scream over my home in the middle of the night. I can't believe that this growing abuse of the properties south of JAC can continue without legal actions being taken at some point. The massive uptick in commercial flights combined with the even more massive uptick in private aircraft using JAC is more than many of us are willing to take.</p> <p>Please seriously consider moving the airport's flight paths (both incoming and outgoing) as far east as is possible. This current truly intolerable situation has seriously impacted my home and my overall love for Jackson. The noise pollution combined with whatever other pollutants these massive aircraft are "crop dusting" us with is simply unacceptable.</p> <p>Please take serious steps to address this very real problem ASAP.</p> <p>Formerly Joyful Jackson Resident (permanent resident)  Allen Dorsett  525 East Golf Creek Lane, #34  Jackson, WY 83001  Cell: 303 333 2600</p>
<p>Elizabeth Carlson  <a href="mailto:carlson307@gmail.com">carlson307@gmail.com</a>  8/5/2022</p>	<p>To Whom It May Concern,</p> <p>I live at 610 Moulton Loop Road, in the northwestern corner of Moulton Loop. When I bought my property in 1995 I never even heard an airplane, much less have one fly over my house as multiple large ones now do daily.</p> <p>In the last 10 years the airport noise over my home has become intolerable. It has affected the value of my property. When planes fly directly overhead, all talking must stop. It interrupts everything from telephone conversations to talking to family face to face inside my home.</p> <p>Some days over 50 flights go out over homes at elevations of 500-1500 ft and the db levels rise from 35-40 to the high 80's when flights are overhead, inhibiting enjoyment of my property and severely damaging my hearing.</p> <p>I understand the number of private flights is set to increase, and that commercial flights increased by 48% from 2018-2021. The noise must stop. It is 2022 and I cannot hear myself think over the constant airplane noise.</p> <p>A reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA. That is equivalent to my purchase of this property in the 1990s. This is the minimum of what should be done.</p> <p>Further, I believe JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those airlines and planes that violate the curfew including privates.</p>



Contact Info/Date	Comment
	<p>I hope this email will finally get someone to listen to the homeowners and put some noise abatement in place. As an airport in a National Park, I would not have thought the noise would be allowed to get this out of control. As a Park neighbor, I expect more.</p> <p>Respectfully,  Elizabeth Hammond Carlson  610 Moulton Loop Rd  PO Box 2045  Jackson, WY 83001  307-690-5714</p>
<p>Audrey Burrell McIntosh  <a href="mailto:audrey.b.mcintosh@gmail.com">audrey.b.mcintosh@gmail.com</a>  8/5/2022</p>	<p>I live at 900 N. Ponderosa near the airport. Increase in flights and noise has become very loud this summer. I am concerned about noise, pollution, and animals being effected. I understand that there is an increase in private jets; plans for expansion of this facility — I am concerned.</p> <p>Our neighborhood is proposing:</p> <ul style="list-style-type: none"> <li>• A reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA.</li> <li>• JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those airlines and planes that violate the curfew including privates.</li> </ul> <p>Thank you for all that you do.</p> <p>Best,  Audrey Burrell McIntosh  900 N. Ponderosa  Jackson, WY</p>
<p>Linda Markovits  <a href="mailto:thomasm10@sbcglobal.net">thomasm10@sbcglobal.net</a>  8/6/2022</p>	<p>I Live in Jackson Hole Golf and Tennis under the flight path of the airport</p> <p>The Increase in flights and noise has become intolerable - commercial flights alone have increased by 48% from 2018-2021</p> <p>Some days over 50 flights go out over our homes at elevations of 500-1500 ft and the db levels rise from 35-40 to the high 80's when flights are overhead, We can hear the extremely loud sounds inside our home! We can barely walk the dog its so loud</p> <p>We are concerned about pollution from unexpended jet fuel exhaust and the unknown health effects form breathing jet exhaust.</p> <p>The recent increase in private flights and the planned expansion of the private facility at JAC in the coming years which will add even more noise and jet exhaust pollution</p> <p>A reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA.</p> <p>JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those airlines and planes that violate the curfew including privates.</p> <p>Thank you  Linda Markovits</p>
<p>Lori Moffett</p>	<p>I'd like to submit a correction please. Per the chart below, the decibel level at our house is at 77 on the current flight path (I incorrectly indicated 60+ below). The dBA level in our neighborhood is nearly at the</p>

Contact Info/Date	Comment
<a href="mailto:lori.moffett@yahoo.com">lori.moffett@yahoo.com</a> 8/6/2022	<p>county noise ordinance level of 80. Don't we deserve the same protections as the rest of Teton County? Please consider the constant disturbance that our neighborhood is enduring.</p> <p>Thank you.</p>
Sally Painter <a href="mailto:sallypainter529@gmail.com">sallypainter529@gmail.com</a> 8/6/2022	<p>Dear Valerie, Jim and fellow Task Force members,</p> <p>ANPAC members have recently held informal discussions with a number of senior United Airlines and Delta Airlines pilots as well as FAA officials about the modified flight path ANPAC has proposed. The opinions of these experts are based on long experience and an informal review of the JAC territory. Because of their employment, they have asked that their names not be used.</p> <p>While any flight path may be unacceptable to someone, the current flight path is unacceptable to hundreds of homeowners south of the airport. We have suggested that a southern departure flight path that initially follows Concept #1 or Concept #5 south, runs parallel to Highway 89 to just past the Gros Ventre River and then bears slightly west would be the most acceptable compromise. The slight westward turn would begin somewhere between the East and West buttes and then rejoin the current flight path southward.</p> <p>If Alec had more fully explained the studies he undertook and why he concluded commercial jets CANNOT follow the described compromise course, our advisors might better understand the difficulty he believes he has encountered. As we near the deadline of August 16th, the Task Force has a responsibility to look at any possible solution. We would like to see this proposed flight path receive the same vetting the other proposed flight tracks have received.</p> <p>Also, will the noise study update (comparing noise from proposed new flight paths to ambient noise at key locations) be completed soon so we have ample time to digest the results?</p>
Robert Vignaroli <a href="mailto:rviggie@yahoo.com">rviggie@yahoo.com</a> 8/6/2022	<p>We live in Teton Sage subdivision roughly under the 205 degree radial. As a former pilot based at the Jackson Hole Airport private and commercial flights were encouraged to adjust our departure to the left as soon as possible after take off to avoid excessive noise to the residences in the area. Due to the economics of fuel cost the suggestion was eliminated and flight patterns are now strait out with no regard for homeowners.</p> <p>The SID (Standard Instrument Departure) puts the major part of the airport departures almost directly over our residence. Not only does the increased air traffic produce abnormal noise they are effecting our air quality. There is no viable reason to not have the departures during visual flight conditions make a small left deviation away from as many residences as possible.</p> <p>We entirely support the ANPAC Committee efforts to improve the air traffic impact we and other homeowners in the vicinity endure.</p> <p>Robert R. and Sandra J. Vignaroli</p>
Chet Nastala <a href="mailto:topgolfdoc@yahoo.com">topgolfdoc@yahoo.com</a> 8/6/2022	<p>Dear JH Airport Board and Noise Mitigation Committee team:</p> <p>Thank you for all your efforts to mitigate the sound pollution, light pollution, and carbon-based pollution associated with recent increases in JH air traffic. We are new neighbors in the Jackson area north of town in the Elk Ridge subdivision off Sagebrush road. We have been coming to JH for years and now are building our retirement home in this area north of town.</p> <p>Our lot in is the center of the subdivision, very close to the flight path where noise levels are very high with each aircraft ranging from 70 up to 90 decibels. This is distinction to our primary residence in San Antonio, which is in close proximity to the airport, in a highly populated area where flight noise is generally less than 60 dB. Many maneuvers are done in this area to mitigate sound in urban subdivisions. Even though we are as close to the runways in Texas, the sound levels from air traffic do not reach the dB that we routinely hear in Jackson Hole. I'm sure that many of San Antonio's mitigating efforts are responsible for the reduction in decibels. I hope that you can learn from San Antonio's prior mistakes and how they corrected them.</p> <p>As a physician, I have been exposed to high decibel noise (60-80dB bursts) from Operating room equipment over 33 years leading to severe hearing loss over time. Hearing loss is one of the most common afflictions worldwide affecting over 2 billion individuals and is worsened by noise exposure. I would greatly appreciate exploring all possible maneuvers which may lower the decibel surges associated with take-off and landing around the JH Airport.</p> <p>Thank you for all your efforts,            Chet &amp; Carla Nastala</p>

Contact Info/Date	Comment
	<p>6630 N Vista Lane (under construction)</p> <p>Jackson, WY 83001</p> <p>206 Elizabeth Rd</p> <p>San Antonio TX 78209</p>
<p>Laura Doak</p> <p><a href="mailto:laurabqdoak@gmail.com">laurabqdoak@gmail.com</a></p> <p>8/6/2022</p>	<p>My name is Laura Doak, and I have been the owner of 755 Moulton Loop, near the airport, since 2011.</p> <p>Our family has become increasingly concerned about the escalating noise and flights above our home. We have young kids, and the load noise, low elevations and huge increase in the number of flights are a daily issue for us, especially in the summer months. The number of private flights has particularly increased, and those planes seem to arrive and depart at all hours of the day.</p> <p>For a long time, we have wondered why flights do not depart over the parkland between the highway and Spring Gulch Road. We understand that ANPAC has proposed a reasonable, modified flight path used in the 1990s that avoids homes south of the airport.</p> <p>Please consider making some reasonable modifications—including the modified flight path (MOST IMPORTANT), preference for northward departures and arrivals, noise policies (machines running at the airport at all hours), limitations on private flights and tighter curfews.</p> <p>I appreciate your consideration and would be pleased to answer any questions or do anything I can to help progress solutions to these problems.</p> <p>Thank you.</p> <p>Regards,</p> <p>Laura Doak</p> <p>755 Moulton Loop</p> <p>Jackson, WY 83001</p>
<p>Michael Doak</p> <p><a href="mailto:md@griffinhighline.com">md@griffinhighline.com</a></p> <p>8/6/2022</p>	<p>Dear Jim / Meg / Chip / Jeremy / Grady / Jonathan / Mark,</p> <p>My name is Michael Doak, and I have been the owner of 755 Moulton Loop, near the airport, since 2011.</p> <p>Our family has become increasingly concerned about the escalating noise and flights above our home. We have young kids, and the load noise, low elevations and huge increase in the number of flights are a daily issue for us, especially in the summer months. The number of private flights has particularly increased, and those planes seem to arrive and depart at all hours of the day.</p> <p>For a long time, we have wondered why flights do not depart over the parkland between the highway and Spring Gulch Road. We understand that ANPAC has proposed a reasonable, modified flight path used in the 1990s that avoids homes south of the airport.</p> <p>Please consider making some reasonable modifications—including the modified flight path (MOST IMPORTANT), preference for northward departures and arrivals, noise policies (machines running at the airport at all hours), limitations on private flights and tighter curfews.</p> <p>I appreciate your consideration and would be pleased to answer any questions or do anything I can to help progress solutions to these problems.</p> <p>Thank you.</p> <p>Regards,</p> <p>Michael Doak</p> <p>755 Moulton Loop</p> <p>Jackson, WY 83001</p>

Contact Info/Date	Comment
<p>Greg &amp; Elizabeth Gerhard  <a href="mailto:greg.k.gerhard@gmail.com">greg.k.gerhard@gmail.com</a>  8/6/2022</p>	<p>It has come to my attention that the airport is considering a change to take off patterns that will alleviate the noise over housing. My home is in the East Zenith subdivision, address 425 Frances Way, Jackson, WY 83001.</p> <p>Any change will be good for us as the current take off passes almost directly over our home. Making conversation impossible on the phone or otherwise when a jet is taking off.</p> <p>Please vote for the reduction in noise by having flight re-routed to over SR89 were the noise will be reduced to road area.</p> <p>Sincerely  Greg &amp; Elizabeth Gerhard</p>
<p>William A. Apel  <a href="mailto:waabiotech@gmail.com">waabiotech@gmail.com</a>  8/6/2022</p>	<p>Dear Mr. Elwood,</p> <p>I am a resident of the Bar-B-Bar subdivision located south of the airport. I am writing this e-mail to express my dismay with the airport. It is difficult to imagine a worse neighbor - the airport has polluted my neighborhood's groundwater with toxic compounds. This groundwater is our only source of drinking water. Furthermore, our air is being polluted with exhaust discharges from low altitude aircraft, and the noise from aircraft landing and taking off directly over my home at all hours of the day and night is absolutely intolerable. I am tired of being unable to carry on a conversation in my home and yard because of the noise from the frequent and ever increasing stream of commercial and private aircraft flying a few hundred feet above my home. I am especially weary of being awoken in the dead of the night by aircraft taking off and landing. I have owned my home for over two decades and during that time, the above noted problems have constantly increased with no apparent end in sight.</p> <p>I am asking for the airport to re-route its flight path to the east to avoid flying at low altitudes directly over the subdivisions immediately south of the airport. When I first moved into my house, the flight path was further east and this greatly helped reduce aircraft noise pollution. I am also requesting that the airport impose a strict curfew on arriving and departing flights. Active hours from 7:00 a.m. to 10:00 p.m. would be reasonable.</p> <p>As a side note, in the few minutes it has taken to write this e-mail, 5 aircraft have flown directly over my house on final approach to the airport. Ridiculous!!!</p> <p>Sincerely,  William A. Apel</p>
<p>Dean Spatz  <a href="mailto:dspatz@watasso.com">dspatz@watasso.com</a>  8/6/2022</p>	<p>Dear Airport Board and Task Force,</p> <p>I am writing to express my deep concern about the increased noise and frequency of flights that are flying right over my home in -B- HOA, at 180 Sandreed Rd. We bought this property in 2009 and heard at that time that the number of flights was restricted and that the flights were going to be taking a slight turn to the east (I recall 15 degrees) after takeoff. I was told this had been the previous flight pattern and it seemed to work well.</p> <p>Well, we are now 13 years later and the number of flights has increased exponentially to where we have planes overhead every half hour or so all day, not just in the morning and late afternoon. Some of these planes are much larger and louder than before and it is hard to carry on a discussion with someone. This was not the case 10 years ago. It seems like many of the planes are lower to the ground than they used to be, and this increases the noise and vibration.</p> <p>I am also concerned about the number of private planes that seem to be landing and taking off much more frequently. Can't they use a shorter runway than the big planes and thus be higher as they go over us? Of course, a little more easterly pattern would have them going over open land. I was also under the impression that the number of private planes was to be restricted and that their take off and landing times were restricted to 7 am to 11 pm. I have had planes go over us at 5:20 am this year.</p> <p>Thank you for your consideration,  Dean and Carol Spatz</p> <p>D. Dean Spatz</p>



Contact Info/Date	Comment
	<p>PMB 429            PO Box 30000            Jackson, WY 83002            Tel: 307-732-3435            Cell: 612-801-2850</p>
<p>Jack Howe  <a href="mailto:cahowe44@gmail.com">cahowe44@gmail.com</a>            8/6/2022</p>	<p>My wife and I have lived south of the airport near the intersection of Sagebrush and Spring Gulch for over 20 years. We have seen the air traffic grow and grow and then explode. Flights are departing earlier and arriving later. It makes me wonder if anyone in authority realizes the impact on our community. How does this noise and air pollution stack up against the commitments in the comprehensive plan? Even with all the increase with private aircraft, I've seen where the FBO is looking to expand facilities and services. What justifies that? Is it just about money?</p> <p>The community deserves a real effort on the part of authorities to mitigate the impact of the airplane traffic. Reasonable and safe steps should be taken to reduce the airplane noise with the goal being to achieve the greatest beneficial impact for the largest number of residents. I understand that the studies are complete that give you the guidance you need to improve this situation. I truly hope you do it.</p> <p>Respectfully,            Jack and Carrie Howe</p>
<p>Fausone, William  <a href="mailto:William.Fausone@colliers.com">William.Fausone@colliers.com</a>            8/6/2022</p>	<p>Dear Airport Board, Southern Departure Task Force &amp; GTNP</p> <p>My wife and I have lived on Stone Creek Lane off Kings Highway for the past 9 yrs. When we purchased our property, I investigate the number of daily commercial flights, which at the time was approximately 8-9 per day. The number of private flights was less than that. In the past 9 yrs. the number of flights has increased 3X, and the noise level has become intolerable, greatly inhibiting our quiet enjoyment of our home. The expansion of flights both commercial and private at JAC is very concerning, when is enough, enough!</p> <p>I appreciate the Southern Departure Task Force's work and have learned more than I ever wanted to know about FAA rules, noise levels and aviation issues. I understand that one of the Task Force's objectives is to not shift noise from one area to another, however moving a noise level at 500 -1500' from one neighborhood to another at 5,000' is not the shifting noise to another neighborhood. There have been a couple of flight path proposals that sift the path to the east and spares the homes south of the airport the noise of flights overhead. A flight path that leaves the airport and heads east, crosses the Gros Ventre and then turns west to go between the East and West Gros Ventre buttes would be preferable.</p> <p>Could there be separate winter and summer flight paths? Summer in Jackson means the windows are open and we all spend much of the day and early evening outdoors. Limiting the flights over our homes during the summer could be a nice COMPRISE, remember when compromise was how issues were resolved. Maybe an eastern path over the Elk Refuge when there are no animals in there.</p> <p>I would strongly urge the Task Force and Airport Board to strictly enforce the curfew for landings and departures to 10 pm – 7 am. This summer there have been private flights leaving as early as 5:05 am and regularly about 6:30 am. There is no need for a private flight to leave before 7 am.</p> <p>Maybe stiff financial penalties need to be utilized to get the attention of the private flights that seem to have a total disregard for their neighbors. If we cannot use the financial stick how about publishing the names and tail numbers of the planes that violate the curfew. Maybe the private owners would change their behavior if they were publicly shamed.</p> <p>Again, I greatly appreciate all the time and effort that the Board and Task Force have invested in this topic. I hope that it's not simply an exercise to appease the southern neighbors and no changes are enacted.</p> <p>William M. Fausone            bill.fausone@colliers.com            Mobile: + 1 847 309 6007</p>
<p>Steve Malashock  <a href="mailto:sjshock@aol.com">sjshock@aol.com</a></p>	<p>Hello. My name is Steve Malashock and I live off of Sagebrush Road in the Teton Shadows community. I have lived here for 14 years. In that time frame I have experienced an exorbitant increase in noise from the</p>

Contact Info/Date	Comment
8/6/2022	<p>airport. Initially, there were flight hours which was observed so at least there was no noise during normal sleeping hours. That has disappeared over the past several years. Just this past week, there was a large plane flying overhead at 6:20 am. Planes land well past 11:00 pm. In that same period of time, it seems as if the flight patterns have changed. There never were so many flights taking off or landing over the subdivision. If my memory serves me correctly, many years ago there was an article in the Daily stating that the flight patterns were going to change so they would be less over the park, protecting the animals. A follow-up article revealed that the change of flight patterns also was a cost savings to the airlines. I can attest that I have not seen a single mule deer or moose that spend time in our yard ever get frightened by the planes flying overhead. However, that is not the case for us humans. Not only is there an intolerable amount of noise, eg around 9:00pm when many private and commercial flights arrive, but there must also be some environmental impact from all that jet fuel exhaust.</p> <p>The increase in the number of commercial flights is one thing because it used to be for just 6-8 weeks in season. But that is no longer the case. With added airlines and additional flights from the existing airlines, the noise is nonstop. With Covid, the number of private flights seems to never end, no matter which day of the week or time of the day. There are times we can't even hear our TV due to the noise from incoming planes. With so much open space uninhabited space, it seems ridiculous to me that the flight patterns have to be right over our residences. Some landing planes are so low that the numbers on the plane can be read. With talk of the pending expansion of JAC in the coming years, it will only mean there is more room for more flights. Not acceptable.</p> <p>As I understand it, ANPAC has proposed a modified flight path that takes planes over the Gros Ventre buttes and stays away from the residential areas. I would like to go on record that I agree with that proposal. Now if the "quiet hours" between 10 (or even 11)pm and 7 am could be put in place and then enforced, it is my opinion things would be a whole lot better for those of us living near the airport. I am in agreement also with fining those airlines and crews for not adhering to the criteria, however I am unsure what would be done with those fines as it doesn't help those of us that experience the intolerable nuisance these airlines and crews create.</p> <p>Please accept ANPAC's proposal for a new flight pattern taking flights away from flying over our heads!</p> <p>Thanks You, Steve Malashock Teton Shadows</p>
<p>Greg Taylor <a href="mailto:gnt7@yahoo.com">gnt7@yahoo.com</a> 8/6/2022</p>	<p>To Whom it May Concern,</p> <p>I'm a resident of the Teton Sage subdivision, just south of the airport off of Sagebrush. I moved into my house in late 2017. Since then, the airport noise we have to deal with has increased substantially. I have heard that commercial flights have increased almost 50% in the past 3 years. There are many days during peak periods where every few minutes a fight is taking off. The noise is so high any communication has to be halted until the plane passes over. it is irritating and annoying - a complete downer. Another unfortunate aspect of a plane passing over there is a distinct smell of jet fuel or exhaust, or maybe both. I wonder what kind of impact this will have in the long term on both us humans and the wildlife.</p> <p>While I am a relatively new member of the community, I know all of the points above have been on the radar of everyone who lives in my subdivision. They tell me there is a modified flight path for take off that would reduce the issues described above. Why can't this be implemented, or maybe said better, why has it not been implemented? Especially when I am told this flight was used in the past.</p> <p>This is all only going to get worse. Please make the changes listed above - it isn't that hard.</p> <p>Gregory N. Taylor 513-607-3535 gnt7@yahoo.com</p>
<p>Karin ? <a href="mailto:karin@mcquillan.com">karin@mcquillan.com</a> 8/6/2022</p>	<p>Dear Mr. Elwood,</p> <p>My family has lived on Queens Lane south of the airport since 2000. The level of airport noise has crossed a line in recent years from a normal increase in traffic to an excessive and detrimental one. we have had almost a 50% increase in flights in the last three years, and the air traffic policy has not changed to keep pace with this new order of traffic. The airplane noise over our house every day is now like a deafening roll of thunder that stops you in your tracks. I could tell the difference in our air quality for the period this spring when the airport was temporarily closed.</p>

Contact Info/Date	Comment
	<p>We are grateful that so many people have been working hard on practical solutions to this problem. Obviously, any shift in flight path will create some detriment to other houses and areas. The goal obviously must be to find the least noisy path to benefit the most people. Sensible compromise. GTNP cannot be given a veto over any eastward shift in flights.</p> <p>A modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA.</p> <p>The Task Force consultants published, in our opinion, a flawed noise study which did not consider the ambient noise in town and Highway 89 GTNP which neutralizes noise impact. flights over town at altitudes over 6,000 feet are much less noisy and fair than severely penalizing the homes south of JAC with flights at 500-2,000 feet.</p> <p>JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those airlines and planes that violate the curfew including privates.</p>
<p>Teresa Shilling  <a href="mailto:teresashilling@me.com">teresashilling@me.com</a>  8/7/2022</p>	<p>To all involved:</p> <p>I have been an owner for 17 years of 200 Sylvia Drive, a part of the Panorama Estates approximately 4-5 miles southwest of the airport. In this time, we have seen airport traffic noise increase significantly. Here are some of our observations:</p> <ol style="list-style-type: none"> <li>1. The number of flights has increased significantly.</li> <li>2. Recently, they appear to bank slightly to significantly west when departing in a southerly direction which puts them directly over our development.</li> <li>3. Planes rarely veer east over open space.</li> <li>4. We are very concerned about the increased pollution from unexpended jet fuel and related health effects.</li> <li>5. Recently there have been more flights departing before 7am which I believe are mostly private planes, but I am continually being woken up by the 7am commercial flights. This summer I find myself apologizing to our guests for these early morning flights!</li> </ol> <p>As a private pilot myself, I know there is no flight risk to planes that might be required to veer more toward highway 26 when departing south AND there are no homes east of highway 26. This flight path would be the easiest solution for all involved.</p> <p>Based upon the above observations it seems absurd to delay a mandate to respect the needs and desires of homeowners currently affected by common flight paths. The FAA has endorsed a reasonable easterly change. There is no reason not to change other than stubbornness.</p> <p>If the John Wayne Airport (SNA) in California can mandate a significant, and sometimes scary power reduction when taking off over Newport Harbor, certainly JAC can accommodate a slight easterly direction shift. And at the moment I write this, another commercial jet has loudly taken off clearly veering west of a straight line south departure.</p> <p>Sincerely,  Teresa Shilling  Sent from my iPad</p>
<p>Charles Hutson  <a href="mailto:cfhutson@gmail.com">cfhutson@gmail.com</a>  8/7/2022</p>	<p>Dear Jackson Hole Airport Stakeholders,</p> <p>A few days ago we received an email from ANPAC encouraging us and our community members to write you in support of a slight change to the east then south of the southern departure. Despite all the past (and ongoing?) studies undertaken and very specific route names, ANPAC appears to be trying to influence our community members to support the proposed and REJECTED ALPIN3 KICNE1.</p> <p>We all know that this route change simply shifts the problem from one set of homes to another set of homes, <b>NOT solving the problem!!</b></p> <p><b>I strongly and UTTERLY OPPOSE their proposal to shift thew current Southern departure in their opaque terms.</b> I continue to <b>FULLY SUPPORT</b> the Airport Board's stated objective to consider new routes that would benefit the community north of town at-large. Anything otherwise and short of that should be rejected.</p>

Contact Info/Date	Comment
	<p><b>The status quo should be maintained until a more broadly applicable solution is reached.</b></p> <p>Sincerely,  Charles Hutson  6160 Prickly Pear Lane  Jackson, WY 83001</p>
Bruce M. Bowen <a href="mailto:brucembowen@gmail.com">brucembowen@gmail.com</a> 8/7/2022	<p>Everyone,</p> <p>I received a email from ANPAC requesting my concurrence with moving flights to the east of their current place. As far as I know there has been no completed study as to safety and the issues relating to the departure flight path. I want to be clear I AM NOT IN FAVOR of what ANPAC is proposing. None of us like the noise from the increased air traffic. Everyone who owns property around the airport has know about these issues for a long time its just increased traffic that has made it worse lately.</p> <p>My biggest concern is safety, although I am not an expert, it would seem that executing a left turn during takeoff would be more dangerous that going straight. It seems we should be in no hurry to change anything until such time as the issue has been studied in detail and the study sent to all concerned parties. Since the FAA is responsible for safety (I believe)I would be interested in what they have to say without the political wrangling that seems to be taking place locally.</p> <p>Sincerely,  Bruce M. Bowen  6120 Prickly Pear Lane  Jackson, WY 83001</p>
Robin M. Devine <a href="mailto:robinmarydevine@yahoo.com">robinmarydevine@yahoo.com</a> 8/7/2022	<p>I am asking each one of you to take the necessary steps to help me &amp; my family live with the current air traffic problem over my home. Please do whatever is in your power to make my home safe from noise &amp; air pollution.</p> <p>I have lived north of town since 1988 &amp; I can not believe the amount for planes flying over my Vista Lane home in the Elk Ridge subdivision..Why isn't the flight pattern used in the 90's being followed?</p> <p>Let me tell you ... when I am inside my home I can hear the planes flight over &amp; when I am outside &amp; planes fly over my house I can't have a conversation , my dog barks &amp; my grandchildren if sleeping are woken &amp; crying. Just a horrible situation to be showered with jet fuel exhaust.</p> <p>Isn't the health of my family &amp; the people north of town important to you? Why can't this be corrected?</p> <p>What we don't need any more private flights or expansion to the airport!</p> <p>Please HELP ....this is no way to live</p> <p>Robin M. Devine</p>
Laura Skidmore <a href="mailto:lwskidmore@iclouid.com">lwskidmore@iclouid.com</a> 8/7/2022	<p>Dear JH Airport Board and Southern Departure Task Force Members,</p> <p>I regret that my schedule does not allow me to attend the Southern Departure Task Force Meeting on Tuesday, August 16. I would like to thank you for the consideration you are giving to changing flight patterns from JAC. As a neighbor on Vista Lane (Elk Ridge Subdivision) I would also like to express concerns regarding JAC air traffic.</p> <p>Our home, along with many others does not have air conditioning. Summer temperatures allow us to sleep with the windows open to cool the house overnight. Unfortunately this increases noise levels from aircraft. The voluntary curfew seems to be incurring many violations. I would encourage an actual curfew of 10:00 pm to 7 am for arrivals and departures with limited exceptions for emergencies. Noise is also a concern when we want to be outdoors in the daytime. Conversations must cease when an airplane passes over. Flight path changes and an overall limitation of commercial and general aviation flights would be ideal. I am forced to tolerate the noise or try to plan outdoor meals and leisure around the flight schedule. Given the proximity, long term effects of noise and pollutants is also a concern. I am attaching photos of planes taken from inside my home. Some are zoomed, however it is still possible to identify the tail or read "Delta" on the bottom of the plane when looking up as they pass. It is also possible to see an exhaust plume.</p>



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	<p>From JacksonHoleAirport.com—"The Jackson Hole Airport is located within the Grand Teton National Park at the base of the spectacular Teton mountain range. This majestic location creates amazing experiences and demands environmental stewardship and sustainable practices from us all." "Jackson Hole Airport (JH) was established at its present location in the 1930's and is the only commercial airport in the United States located inside a National Park. The Airport underwent a major terminal remodel and expansion in 2009 and 2013 and continues to work with the Grand Teton National Park, Teton County and the Town of Jackson to support the local community and protect the environment." You can't please everyone, but you can live up to being a good neighbor, practicing these principles and continually monitor how to improve operations including modified flight paths, limiting traffic, instituting a curfew and reducing pollutants.</p> <p>Excerpted from the Southern Departure Study, Jackson Hole Airport, Study Input Taskforce Meeting February 10, 2022—"Solutions which optimize for one group at the expense of others will not be carried forward, noise will not shift from one neighborhood to another." (slide 7-Housekeeping) Slide 34—Any Change in Procedure Environmental Review: Must comply with NEPA-Uses FAA criteria for flight procedure changes; Must comply with strict regulations with respect to GTNP and the Elk Refuge. I wasn't able to determine exactly what these statements mean. The first statement seems to counter the intent of the study—any flight path change will cause a shift in noise. I believe the question is—Does the change reduce noise in general and make noise concerns more equitable? Regarding the second statement, of course we want to comply with the FAA and have safe flights. Given that JAC is in the national park, GTNP and park visitors (who likely flew into the airport) must have an expectation of some intrusion of air traffic and also tolerate air traffic noise. Opposition to new flight paths based on noise at one location (the GTNP sign beside the highway) is not equitable if it reduces noise in multiple neighborhoods. Visitors taking photos come and go in minutes, neighboring home owners are exposed to noise and pollutants on a continual basis. If this is a true concern, it is certainly easier to relocate one sign than hundreds of homes. The spectacular views afforded on arrival to JAC and convenience to Grand Teton National Park and Jackson, should be considered to offset any disturbances to park visitors.</p> <p>JAC neighbors have chosen their homesite based on proximity to the park and the outstanding views. Perhaps the problem of noise and air pollution could have been averted if the Airport Board had the foresight to buy additional property in the flight path south of JAC. Given that homes are still being built in the JAC neighborhood, this is guaranteed to be an ongoing issue unless or until a neighborly solution is achieved.</p> <p>Your neighbor,  Laura Skidmore  (note the appearance of an exhaust plume and the tilt of the wings in the third photo)</p>
<p>Doug Skidmore  <a href="mailto:DougSkidmore@skidmore-sales.com">DougSkidmore@skidmore-sales.com</a>  8/7/2022</p>	<p>Good evening.</p> <p>My name is Doug Skidmore and we own property in Elk Ridge. Aircraft using ALPINE departure procedures do not usually fly directly over our home, but the noise is loud enough that I must ask whomever I'm talking to wait until the plane noise has subsided.</p> <p>I don't see any information or data about the impact of noise on wildlife. I just see positional statements about what can't be done about reducing noise in one area if it increases noise in another. Yet the airport and the park have collaborated to get the Arrival procedures from the North changed and approved by the FAA. I'm not an expert, but I'm pretty sure that if you change the flight path, the noise will move with the new flight path. This fact raises the question about what science are we using to decide where 'noise' can move to and where it's detrimental to move it. It's a big assumption that 10 Db of noise in one area is as much of a nuisance as another.</p> <p>In my opinion, this noise-shifting statement is an unusual tenant for a Task Force that is supposed to work on making the noise problem better for all stakeholders (equal?). I agree that would be the ideal solution - overall noise reduction, but with that statement as part of the Task Force, it is going to limit the variety of creative solutions that are generated.</p> <p>I also know that property owners south of the airport are being denied full enjoyment of their property when they are disturbed by airplane noise and fumes. Increased air traffic, both commercial and private, will only make the problem worse.</p> <p>I understand we are trying to balance how much wildlife is impacted by all of us, but I would like to see the science behind this because it's talked about as if noise is very bad for the wildlife. We know it impacts people living around airports as the FAA has regulations and programs in place to reduce noise if the Airport board would choose to implement them. Perhaps the committee has reviewed this. If that's the case, wouldn't the best option be to reduce the number of planes, cars, trucks, and people that disturb the wildlife in the Park? Essentially limit the number of people, cars, trucks, planes, campers, and park visitors. I guess I'm skeptical that an occasional airplane has a greater impact on wildlife that is able to move away from the noise we humans create if it chooses to.</p>

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	<p>Teton County allowed homes to be built in the area south of the airport at a time when air traffic was lower, and I think the County and the city stand to benefit from increased air traffic. It seems to me that the Airport, the NPS, and the County are telling us that wildlife is more important than the great people that live, work, and own &amp; operate local businesses.</p> <p>One obvious solution, given the noise shifting restriction, is just to limit the air traffic in and out so the noise levels do not increase until there is a better solution. Perhaps with better equipment and technology. If the stakeholders of Public Lands are concerned about the impact on wildlife, this seems to be a reasonable compromise.</p> <p>Thank you for reading this somewhat disorganized plea for reducing airport noise.</p> <p>Good luck and I trust that you will work to make the situation better for ALL stakeholders by developing solutions that prevent noise increases in the short term and reduce the noise in the long term.</p> <p>Doug Skidmore</p>
<p>Robert Painter  <a href="mailto:robertpainter221@gmail.com">robertpainter221@gmail.com</a>  8/8/2022</p>	<p>On Wednesday August 3, my wife and I tested positive for Covid so we were home all day. At 6:15 AM that morning the first plane departed south. Throughout the day and evening 74 planes, both commercial and private took off, flying over our home, making any rest impossible.</p> <p>Ninety percent of these planes took off and made approximately a twelve degree turn to the west taking them over a great number of homes in -B-, Teton Shadows, Jackson Golf and Tennis, and even part of Bar BC.</p> <p>If these same planes would do a twelve degree turn east, traveling just east of Spring Gulch Road, continuing over holes 9 &amp; 10 of Jackson Golf &amp; Tennis (at this point the planes would be approximately 2,000 feet high) and then travel out over open ranchland, it would offer relief from the noise for hundreds of residents.</p> <p>This proposed departure path would minimize the noise generated by planes departing to the south to 85 percent of the residents living south of the airport (Decibel readings ranged from 68.1 to 90.2 decibels over our home on Wednesday).</p> <p>This seems like a very easy solution to the increasing noise and pollution problems these aircraft are causing local residents.</p> <p>On Sunday August 7 there were 79 airplanes that departed south. This is intolerable!</p> <p>Robert Painter</p>
<p>Jim and Tracy Fish  <a href="mailto:JFish@wm.com">JFish@wm.com</a>  8/8/2022</p>	<p>To whom it may concern:</p> <p>My family has lived in Wyoming for almost 90 years. My grandparents lived in Casper, Cody and Jackson at various times from the 1940s until they each passed away. My Mom was the first woman from the state of Wyoming to attend Stanford University. My uncle, Rod Everett, has lived in Jackson since 1975. My sister and her husband have lived in Jackson since 1990. We have owned our property in Solitude since 2004. The Everett Family has a lot of history in Wyoming and in Jackson specifically. And we have always understood the importance of having an airport in the valley. I have flown in and out of the Jackson airport for over 40 years and have seen the excellent changes made to the facilities over that time. The airport is a good thing for the town of Jackson and for the residents. With that said, in the past few years, the number of departures and the corresponding level of noise, particularly in the morning and late evening, has become increasingly disturbing. Even living in Solitude, we hardly used to notice the noise from the airport. Yet over the past few years, the noise levels seemed to have increase significantly due to much greater air traffic. Just this summer following the reopening of the airport, the noise has seemed incredibly excessive. In talking to our neighbors, they feel the same way. While we understand growth, there is no justification for the almost 50% increase in commercial flights since 2018. And while I don't have the numbers, it seems as if the private aviation traffic has increased by an even higher percentage. I would ask that this group consider the following:</p> <ul style="list-style-type: none"> <li>• Limiting the curfew (currently 11:30-7:00am for landings and 10pm-6am for departures) to 10pm – 7am for landings and departures. Recently flights have departed as early as 5:30am and landed as late as 2:30am!</li> <li>• As we understand JAC's lease from GTNP, it limits JAC to under 7 commercial jet departures per day at certain db levels (before adjustment for the fact that some jets are quieter than others). Currently, JAC is running nearly 30 commercial flights per day.</li> <li>• Add financial fines to the Fly Quiet program.</li> </ul>

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	<ul style="list-style-type: none"> <li>• Oppose JAC's planned substantial expansion of hangars, facilities and lounges geared to support growth in private aviation.</li> <li>• Seasonal flight paths – an eastern path over the refuge in the summer when weather is clear and no animals are on the refuge.</li> <li>• Have an Airport Board member appointed from the residential community south of JAC.</li> </ul> <p>Again, we understand the need to growth in Jackson and we all enjoy the luxury of having a small airport that services our town. However, I would ask that we not let noise pollution become an out-of-control problem by allowing an excessive amount of air traffic (Comm and Private) into the Jackson Hole Airport.</p> <p>Thank you for your consideration.</p> <p>Jim and Tracy Fish (and the Everett Family)</p>
<p>Stacy Riddick</p> <p>riddicks@sbcglobal.net</p> <p>8/8/2022</p>	<p>Good afternoon Jim Elwood, Valerie Brown Chair of the Southern Departure Task Force, Members of the Southern Departure Task Force, Jackson Hole Airport Board of Directors, Superintendent Jenkins GTNP and Grady Stone FAA,</p> <p>I am writing to you to bring your attention to the ridiculous noise associated with early morning flights that has increased over the last several days!! There have been VERY early flights departing the JAC airport - on August 2nd there was one that crossed over my home at 5:45am and a second one at 6:17am and today, August 3rd another two planes crossed over my home at 6:20am and 6:53am. Starting at 7:08am there will be four more commercial flight departures before 8am! This is eight planes in roughly two hours - and is not environmentally friendly for a multitude of reasons. There are sometimes up to 60 arrivals in a day between commercial and private flights and nearly as many as departures - this is untenable for those of us living under the flight path!</p> <p>In reviewing the Fly Quiet program I see that the voluntary curfew times are - 11:30pm - 6:00am for arrivals and 10:00pm to 6:00am for departures. So we have about 6 1/2 hours of uninterrupted sleep each night - this is totally unacceptable. As I recall the JAC Airport Board has requested commercial operators to not land after 10pm and not take-off before 7am due to airport staffing.</p> <p>Is this still in effect, or has it changed changed? Why is this not also applicable to private aircraft?</p> <p>I find the voluntary curfew hours to favor the airlines rather than the community that the airport is a part of. If commercial or private aircraft abide by the published curfew hours - they are not penalized as part of the Fly Quiet program - so you are sanctioning late night flights and early arrivals to the detriment of nearby residents. I would really appreciate your consideration to this.</p> <p>With the increase in frequency of commercial flight traffic (48% increase in flights from 2018 to 2021) and the increasing number of private flights - regardless of the supposed 'reduced noise' of the newer airplanes - a plane going over head at 1,000 feet elevation is very loud, registering about 85 db - particularly when your ambient noise is about 35 db! This wakes me up EVERY morning!!</p> <p>I ask that you:</p> <ol style="list-style-type: none"> <li>1. Change the voluntary curfew hours to 10pm - 7am</li> <li>2. Enforce financial penalties on aircraft, private and commercial, that do not abide by the curfew.</li> <li>3. There are viable flight paths that avoid the homes south of the airport and would eliminate this ongoing daily aggravation - why can't you endorse one of those flight paths that would benefit the residents living near the airport?</li> </ol> <p>And, if you aren't willing to take these actions, why not? Your current policies serve the airlines at the cost of residents around the airport.</p> <p>Thank you, I look forward to your reply.</p>
<p>Kerry T. Winterer</p> <p><a href="mailto:kwinterer@cox.net">kwinterer@cox.net</a></p>	<p>To members of the Southern Departure Task Force, members of the JAC Airport Board, FAA Regional Director, and other interested and concerned parties:</p>

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8/8/2022	<p>I am President of the Teton Shadows Homeowners Association representing sixty-eight homeowners located on Sagebrush Drive just south of the airport. I have discussed with our members their concerns about the escalating noise from arrivals to and departures from the Jackson Hole Airport. As president of the Association, I believe I can speak for all owners in expressing their concerns.</p> <p>The increase in noise from overflights of our neighborhood has become intolerable. I am told that commercial flights have increased by almost 50% from 2018-2021. That coupled with increasing numbers of private aircraft has greatly increased the noise of aircraft passing overhead. I am also told that some days over 50 flights pass over our area at low elevations with db levels rising to the high 80s, and I believe those numbers based on my own observations and flight counts. This is not just a passing nuisance; during the day, the frequency of flights and their noise make it impossible to continue a conversation in person or on a phone, and interrupts television viewing.</p> <p>I have been a Zoom participant in the last two meetings of the Task Force, and I want to recognize its work in trying to find a solution to this situation. I believe one flight path being considered as a solution diverts flights east and then south between East and West Gros Ventre buttes. Speaking for the Teton Shadows Homeowners Association, I strongly encourage you to consider this route. This is a flight path that was used in the late 90s and avoids flying directly over Teton Shadows and all the homes directly south of the airport. I understand this route is considered a safe route by the FAA.</p> <p>Thank you for your work on this issue and your consideration of our concerns. I will be attending the next Task Force meeting by Zoom.</p> <p>Please contact me with any questions or if there is anything I can do to help this process.</p> <p>Sincerely,  Kerry T. Winterer  President, Teton Shadows Homeowners Association  470 E. Sagebrush Drive, Unit A  Jackson, WY 83001  kwinterer@cox.net  402-578-4343</p>
Steve Lundberg  SLundberg@slwip.com  8/8/2022	<p>Dear Task Force,</p> <p>We are owners of the home at 6638 Ryegrass Road, Jackson. As you are likely aware, the flight path for southern departures from the JAC goes essentially goes directly over our home and over the homes of a great number of others in our neighborhood and adjoining neighborhoods. As the number of flights in and out of the airport increases with increasing development and population, the jet noise increasingly detracts from the quiet enjoyment of our property. It is not hard to foresee continued growth of the area and the resulting increase in noise having a major negative impact on the value of real estate in our neighborhood and surrounds.</p> <p>I have been told there are alternative flight paths that assure aviation safety standards are met but would greatly reduce the noise impact on residents.</p> <p>I strongly urge you to vote to change the flight path so it no longer passes unnecessarily low over our residential area.</p> <p>Best,  Steven Lundberg and Frances Essien  6638 Ryegrass Road,  Jackson  Wyoming</p>
Irene Greenberg  irenefgreenberg@gmail.com  8/8/2022	<p>I have lived in -B- for 23 years. Until the last few years the airport noise and traffic was tolerable. The increase in volume, noise, and irresponsible flight-paths has become intolerable at this point. I can't imagine that the park service ever would have granted the airport property if they could have seen this future.</p>



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	<p>In the past, flights often went out to the east, totally missing coming over our subdivisions and no flights EVER came or went between the hours of 10pm and 6am. Since the airport has re-opened I've been awakened by a plane taking off at least ten times -- probably more -- between 5am and 5:45am. That's totally inexcusable. We need to go back to the old policies and have some respect for the people living in this area.</p> <p>The airport, both the commercial and private sides of it, needs to have some controls -- the people who live in this area should receive the same respect and consideration being shown to the people flying in and out. It's time to strike a balance and say no to more noise, more flights and more of what is the easiest way for the airport to be run.</p> <p>Irene Greenberg</p>
<p>Jennifer Pietenpol</p> <p>jpietenpol@gmail.com</p> <p>8/9/2022</p>	<p>Dear Fellow Teton County Residents,</p> <p>Let me start this email by sharing that I grew up in a family of pilots and spent much of my childhood at my grandfather's airport. My grandfather designed, built, and flew experimental aircraft. As a result, I love planes and airports and have spent much time flying. However, I think the air traffic into and out of JAC has become unhealthy for humans and wildlife.</p> <p>I live near the airport in the Bar-B-Bar subdivision on the wildlife migration corridor and under the JAC flight path. Over the years I have lived in Bar-B-Bar, I have noticed an increase in the flights, and the air traffic noise has become overbearing, and for some, I am sure intolerable. Data indicate that commercial flights have increased by 48% from 2018 to 2021, and there has also been an increase in private plane traffic. The latter is of great concern to me. Many days over 50 planes (commercial and private) fly over our house at low elevations (500 ft to 1500 ft), and it is loud and has an impact on wildlife in the area, not to mention increasing pollution, and jet fuel exhaust has health effects on living creatures including humans.</p> <p>One could argue that the commercial jets give an important "return" for the noise and environmental impact they create; that is, with each flight, typically &gt;100 people are brought to Jackson and the surrounding national parks and wilderness areas, and those individuals catalyze local economic development and hopefully they also gain an appreciation and respect for the wildlife and wilderness in the area. In contrast, private jets bring significant noise and exhaust and typically only a handful of people with each flight. I am concerned about any increase in the private aviation business at JAC in the coming years. Therefore, I urge you to consider a quota on the number of flights each day and strict reinforcement of the curfew (10 pm to 7 am) with steep fines. This summer, on multiple evenings I have heard planes landing after 11 pm and when I check the flight tracker, with rare exception, they are private jets.</p> <p>ANPAC proposed a reasonably modified flight path that diverts flight slightly east and then south between East &amp; West Gros Ventre Buttes. This historical flight pattern used in the late 90s avoids the homes south of the airport and has been deemed a safe route by the FAA. It would be great if the latter could be reconsidered.</p> <p>Thank you for taking the time to read my email and for your consideration.</p> <p>Sincerely,</p> <p>Jennifer Pietenpol</p> <p>6825 N Timothy Road; prior to this, 55 E Sandreed Road</p>
<p>Jane Malashock</p> <p><a href="mailto:jmmshock@aol.com">jmmshock@aol.com</a></p> <p>8/9/2022</p>	<p>We started visiting Jackson 20 years ago, and we fell in love with the area. We decided to look for a 2nd residence here. We looked all over--north, south, West bank, and Idaho.</p> <p>We kept coming back to the north of town area. We liked that it was all residential and yet close to town, close to the parks,</p> <p>and as well close to where we knew we would be volunteering and enjoying many things. So we bought out in the</p> <p>JH Golf &amp; Tennis area. It has been a wonderful place and we know many people and love it.</p> <p>However that quality of life and loving the area has changed dramatically with the new flight pattern.</p> <p>We remembered flying in here always from the north or northeast, and how pretty it was coming by the Tetons. We were not</p>

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	<p>worried about being close to the airport, as at that time it was never an issue. That has all changed for the WORSE!!!</p> <p>Imagine, having an airplane come in over your place of residence, that you can clearly see, read the numbers on, and have it shake your residence. On summer days with windows open, or trying to have dinner on your deck, all conversation has to stop during landings and departures. Once I was setting the table, and with the cupboard open, a glass actually fell out and broke, due to the vibrations. NOT GOOD!</p> <p>Our best friends here, who do not live in this area, cannot believe what we have to put up with now. And on top of it,</p> <p>as I write this, we were awakened this past Saturday night by a flight at 3:30 am!!! Add to that all of the privates who make tons of noise as well, the air traffic increasing so much-- it's ridiculous!!</p> <p>Please do something about this. I'm sure you would not like to live like this this!</p> <p>Jane Malashock</p>
<p>Lee Morava  <a href="mailto:LMorava@gresha.mpartners.com">LMorava@gresha.mpartners.com</a>  8/9/2022</p>	<p>All,</p> <p>I am a resident/property owner at Bar-B-Bar Ranch, a subdivision of homes just south of the airport. With the increased attractiveness of the wider Jackson area during and after COVID, there has been a marked increase in flights in and out of the airport. And a corresponding increase in noise and air pollution.</p> <p>Please take this as my full support for the work of ANPAC to adjust the flight paths of departing planes to the safe left turn and also a reduction in flight schedules.</p> <p>Grand Teton National Park should learn the lessons of the Grand Canyon National Park and the slow creep of helicopter flights and noise – something that now mars all visits to that are of the park. Please help us save our part of paradise.</p>
<p>Joan Anzelmo  anzelmojoan@gmail.com  8/9/2022</p>	<p>I have greatly appreciated all the work that the Southern Departure Task Force has done along with the airport staff and partner organizations. I realize it represents a massive amount of work.</p> <p>Having lived near the airport since 1995, first at Moose, later on Sagebrush Drive and now on Cottonwood Drive in the direct approach and landing flight path, I have lots of first hand experience with noise and the exponential growth of aircraft and aircraft related noise.</p> <p>The impact of so many commercial and private planes landing and taking off is really impacting my daily activities.</p> <p>When planes fly directly over my house, which is a daily occurrence 365 days of the year, I cannot hear phone conversations or in person conversations. If I am listening to music or tv, I cannot hear what I am trying to listen to. When I am attending virtual meetings via zoom, I often miss what someone is saying due to aircraft noise. If I am working outside in my yard, I often wear ear plugs so as to lessen the aircraft noise volume, as it can be so loud, even painful.</p> <p>Overnight and on a frequent recurring basis, I am abruptly awakened by planes either not observing the voluntary curfew or medical flights. In March, 2022, I was in a deep sleep and awakened so abruptly by an exceptionally loud plane that it frightened me to the degree that I jumped out of bed and fell onto the floor injuring myself. Sometimes a plane on approach seems to be so low and loud, that occasionally I move to another spot in my house, for fear the plane could crash. This happened this past weekend with the Alaska Airlines jet heading to land, It was so much louder and visibly lower that I moved to a different spot for fear it was too low.</p> <p>Until about five years ago, I knew by living near the airport that there would be aircraft noise. However, having lived here since 1995, I never imagined that so many airline companies would be added to daily airport operations, and that so many more private aircraft would be using the airport. The exponential growth is making living near the airport very unpleasant due to the aircraft noise.</p> <p>Additionally, the growth of companies that are allowed to base at the airport as medical flights, yet serve multiple states, not the Greater Jackson area, has really increased the nighttime flying. These flights wake me up every time they take off or land. This was never a problem until about 3 years ago. I do not understand why an airport located inside of a national park has to allow planes to base here to serve multiple states. Fly here - Yes, but to base here - No. Some of these medical flight companies have a business model that requires memberships to make a medical flight affordable and require large</p>

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	<p>geographic areas to make them profitable. This does not seem to be something the Jackson Airport should give them a permit to base here.</p> <p>Clearly all the neighborhoods would like to see the airport do all it can to reduce aircraft noise and insist the private planes adhere to the voluntary curfew. I would also urge the JAC Board to not permit medical planes serving out of state areas to base at the airport.</p> <p>Thank you.</p> <p>Joan Anzelmo</p>
<p>Elizabeth Gerhard  <a href="mailto:epdgerhard@gmail.com">epdgerhard@gmail.com</a>  8/9/2022</p>	<p>Good Beautiful Day in Jackson,</p> <p>First thank you for all the time you spend on the issues at the airport.</p> <p>We bought our 3 acres in E. Zenith II in 1994. We thought the airport was noisy then.</p> <p>NOW the noise is out of control! I just got back from riding my bike to the mailboxes along King's highway. In a matter of 10 minutes, 4 very loud jets crossed the path that I was riding. It is obnoxious, unpleasant and could easily be tackled if the airport requires all South departures move to a flight pattern directly towards Jackson.</p> <p>We are only 2.5 miles as the crow flies from the airport.. planes can be high in altitude when they cross directly over our house. They are dumping toxic fuel as they fly over us. One can not even have a conversation when the huge commercial and private planes are flying over. This occurs constantly in the summer.</p> <p>The noise can rattle our windows at 7 a.m. or as late as 10 pm.</p> <p>Let these planes move their trajectory over the open field south of the airport, (there are very few animals in that section of the park) and not turn west towards the mountains which are occupied by so many people.</p> <p>Planes headed towards town will reach such a high altitude that the noise will be minimal to town and to the National Elk Refuge.</p> <p>As years go by, we all can easily assume that the increase in more jets will happen This is unfair to all homeowners in this corridor where currently the jets fly over and are harassing us down below with such noise and pollution.</p> <p>If you can NOT make a permanent change right now, how about a mandated 2 month study of flight patterns over the south of town?</p> <p>If airlines do not comply there will be an exorbitantly huge cash penalty for noncompliance at each violation by the jets.</p> <p>Something must be done. Now is the time, when this has been so studied.</p> <p>Thank you for your time and consideration,</p> <p>Elizabeth Gerhard  425 Francis Way  307-733-4966</p>
<p>Sandi Izzarelli  <a href="mailto:Sandi.i@bccutilities.com">Sandi.i@bccutilities.com</a>  8/9/2022</p>	<p>August 9, 2022</p> <p>Re: JAC Airport Noise, Traffic &amp; Pollution</p> <p>To whom it may concern:</p> <p>We are writing as concerned homeowners that have lived in the Grand View Estates subdivision since 2015, which is south of JAC. In 2008, prior to moving to GVE, we bought a residence in Bar B Bar, also south of the airport. We continued to choose to live north of town because at the time we did not have the</p>

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	<p>issues that we are dealing with today as it relates to airport traffic and the planned expansion at JAC and we are concerned with the trajectory in which the airport appears to be heading.</p> <p>There are so many flights, not just commercial flights but what seems to be an excessive number of private flights as well, that this has become an issue with the day-to-day enjoyment of our property. There has been a considerable increase in flights, aircraft noise and pollutants with no end in sight, resulting in many concerns about our property and life here in the valley, some of which we have detailed below.</p> <ul style="list-style-type: none"> <li>• The low elevation of the planes utilizing the current flight paths over our neighborhood during arrivals and departures combined with the high decibels of many of the aircraft are so intolerable that we have to stop our conversations and wait for the aircraft to pass as we cannot hear one another speak. This happens not only when we are outside enjoying our property with family and friends but we often have to do the same inside our home.</li> <li>• The jet fuel exhaust pollutants are not only bad for the environment but are likely to cause long term health effects and are of concern and should not be discounted.</li> <li>• We understand there are arrival and departure curfews but we have noticed more and more private and commercial flights departing and arriving earlier in the mornings and later in the night. Imagine what it feels like to be abruptly awakened by the roar of an aircraft over your head in the middle of the night or the early morning hours. We would like to see the curfews enforced as well as the enforcement of the number of commercial and private flights contractually allowed.</li> <li>• We ask that you add at least one resident to the board that lives south of the airport that could provide first-hand knowledge and constructive debate in regard to the effects the airport has on our lives and our properties. This addition would seem to be a worthy asset to the community and the board.</li> <li>• Finally, we would appreciate your support to approve a flight path proposed by ANPAC that would move the departure and arrival routes to accommodate the residences that are being so negatively impacted by the current and future operations at JAC.</li> </ul> <p>We hope that you consider our concerns as property owners as you move through the process of planning for the valley and that you keep in mind what it must be like to live in such a special environment yet on a daily basis having to deal with the negative effects of planes roaring directly overhead.</p> <p>Thank you for your time and consideration,</p> <p>Sandi Izzarelli &amp; Brian Holdgate 5555 N. Stone Creek Lane</p>
<p>Lynn P. Larson <a href="mailto:llarson819@gmail.com">llarson819@gmail.com</a> 8/9/2022</p>	<p>Dear Decision Makers:</p> <p>First, thank you for studying and working through this very important and critical question of collateral noise from the Jackson Airport departure/arrival plane traffic impacting the lives of those who live in and visit Jackson Hole and Grand Teton National Park(GTNP).</p> <p>I did attend the July 29th Airport Task Force Committee meeting and heard first hand the issues surrounding the possible change to a new flight path. All presenters were very thorough in explaining the data, technical implications and limitations. I am hopeful a solution can be made to improve or limit the negative flight noise impact on our everyday lives.</p> <p>As for impact, it is totally unsettling to be woken at 5:45am and reminded at 6:17am that planes depart nearby (August 2, 2022). The daily 7am plane departures are expected. Airport plane departure noise regularly interrupt discussions (with a stressful flinch) and pause phone conversations in our home and yard. And, I have even witnessed moose ears perk up with overhead plane departures. I am regularly reminded on bikes rides on SageBrush Drive and on the bike path in GTNP or in a backswing at Jackson Hole Golf &amp; Tennis that departures come quickly especially on Saturday's with commercial and private jets.</p> <p>Please consider the all possibilities and act on a plan to improve or limit the current negative impact of flight noise on all our lives - all that live nearby or enjoy this beautiful GTNP and surrounding neighborhoods.</p> <p>Sincerely, Lynn P. Larson 55 Stinnett Drive Jackson, WY</p>



Contact Info/Date	Comment
	llarson819@gmail.com
<p>Bettina Whyte  <a href="mailto:bwhyte@bmwconsult.com">bwhyte@bmwconsult.com</a>  8/9/2022</p>	<p>I have lived in the Teton Cascades subdivision at 545 W Sagebrush Drive for the last 13 years. For the last three years, the noise level from planes has increased dramatically. When I moved to this location, there were substantially fewer planes, both commercial and private, flying overhead. Now the number of flights has increased to a point that they wake me up in the morning and the noise continues all day long until late into the night. Some days there are over 50 flights! The noise has frankly become intolerable. Most days I cannot even sit outside on my patio and have a conversation with another person or speak on the phone. And now this true even inside my home. The number of private jets now flying in and out of JAC at all hours of the day and late into the night has just exacerbated the problem.</p> <p>I urge you to accept the recommendations of the ANPAC Committee, such as:</p> <ul style="list-style-type: none"> <li>• Moving the flight path as recommended by ANPAC.</li> <li>• Limiting the curfew – I have heard planes land as late as 2:30am and planes departing before 6am. Yes, they wake me up!</li> <li>• Add financial fines to the Fly Quiet Program.</li> <li>• Oppose the substantial expansion planned to support more private aviation – or – enforce rules which include a ban on excessive noise levels and prohibit the use of leaded aviation fuel.</li> <li>• Limit the number of commercial and private jets which can depart from JAC each day.</li> <li>• Include a member on the Airport Board from the residential community south of JAC.</li> </ul> <p>I urge you to please consider those of us who must live with this untenable noise and to approve the recommendations made by ANPAC.</p> <p>Thank you.  Bettina M. Whyte</p>
<p>Virginia Lynch Dean  <a href="mailto:floradean@gmail.com">floradean@gmail.com</a>  8/9/2022</p>	<p>Hi I live in Fairway Estates on buckwheat Circle there has been an increase in night time flights. There has been times I have sat upright in bed the plane flies low at 2am or 3am and more than once a week. Increase in flights and noise has become intolerable - commercial flights increased by 48% from 2018-2021. Some days over 50 flights go out over homes at elevations of 500-1500 ft and the db levels rise from 35-40 to the high 80's when flights are overhead, inhibiting enjoyment of your property. I am concerned about pollution from unexpended jet fuel exhaust and ensuing health effects. I am concerned about the recent increase in private flights and the planned expansion of that facility at JAC in the coming years which will add more noise. A reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA. JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those airlines and planes that violate the curfew including privates.</p> <p>From a concerned citizen,  Virginia Lynch Dean  cell: 203.331.6710  203.255.5353</p>
<p>Janet Andre  <a href="mailto:janet.andre@hotmail.com">janet.andre@hotmail.com</a>  8/9/2022</p>	<p>To Whom This Matter Concerns,</p> <p>I spend my winter in Jackson at the Golf Creek Ranch. The primary reason we purchased the property in 2005 was for the view and serenity. We didn't have this level of traffic above our townhome until a few years ago. It is disheartening to go hiking at the Golf and Tennis Club and not be able to talk to the person standing next to you, until the plane is well past. On one Saturday afternoon in February we timed the planes taking off at about every 10 to 15 minutes for 2 hours. We have such a beautiful place and it is nerve wracking to have the level of noise and frequency we experience. I fear longer term the frequency and noise will give our area just south of the airport a terrible review. I wonder why recommended changes are not be tried to give us some peace and quiet?</p>

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	<p>Regards, Janet</p>
<p>Donna Clark  bdclark10@charter.net  8/9/2022</p>	<p>We live at 50 Sylvia Drive in Panorama Estates. I am sure 99% of planes taking off fly directly over our house. When we moved from town up North we knew we were moving near the airport and would expect planes to fly near our home. The reality is the air traffic has increased dramatically in 16 years.</p> <p>We are concerned about the noise from so many planes but we are more concerned about the emissions being dumped on us.</p> <p>When there was a low cloud cover Saturday we could watch the emissions being dumped on our property as our children and grandchildren were here visiting. We are so concerned about what is happening to our health.</p> <p>As we understand there is a very simple fix to this problem when a safe alternative flight path exists. We encourage you to use the flight path!</p> <p>We were both born and raised in Jackson and hope for our quality of life to get better when the flight path is implemented!</p> <p>I would welcome you to install a noise and emissions monitor on our property. Do you even track emissions?</p> <p>Thank you for your time and understanding, Blake and Donna Clark</p>
<p>Jim Bierman  JBierman@foley.com  8/9/2022</p>	<p>To whom it may concern:</p> <p>I have owned a home in Golf &amp; Tennis Estates since 1997, with our prime residence in McLean, VA, spending as much time here in Jackson Hole as possible. Our home in McLean is near the Potomac River and about equally distant between Ronald Reagan National Airport (DCA) and Dulles International Airport (IAD), and, thus, I am quite familiar with efforts to relieve airport noise upon surrounding communities, with exigencies such as National Parks (The George Washington Memorial Parkway, Great Falls National Park, various Civil War battlefields and the like) being involved. I mention that only because following some of the meetings thus far, I have heard a bit too much of what can't be done, because of the airport's location. I can assure you, it's not as complicated as the situation described above, and I am certain there is a workable solution that is better than the existing one.</p> <p>As noted at one of the meetings, the take-off flight path was changed a number of years ago, presumably because of the crash into Sheep's Mountain (the Sleeping Indian). Obviously, safety is of prime concern, but there is a huge amount of space between that mountain and the airport, i.e. a turn to the east and then to the south, with several routes suggested, could shift the noise away from many homes without any diminution in safety. Please make that happen. Best,</p> <p>James N. Bierman Partner/Retired</p>
<p>CAROL FLICK  swtpc@aol.com  8/9/2022</p>	<p>To those making critical decisions for the future of our Jackson Hole neighborhoods:</p> <p>We have been residents in East Zenith for 22 years. We are very disappointed and concerned with the continuing increase in air traffic over our community. The noise from all the air traffic, which according to flight radar was 93 flights yesterday, is out of control!! Has it just all become about money with the airport letting in as many private jets as can pay and allowing a significantly higher number of commercial jets than was agreed to take off and land in the 2010 lease extension?</p> <p>We are concerned about the noise pollution, the jet fuel, and our general piece of mind in this growing interminable noisy environment.</p> <p>Please, at the very least, move the flight patterns to the East so that all this excessive noise does not continue to impact the residents who have lived here for years and have played a significant part in Jackson being the awesome place that everybody and their brother now wants to visit.</p> <p>It would also be really nice if there could be some maximums in air traffic that could be adhered to!!</p> <p>Please don't fall victim to the urge to bring in more traffic, noise and pollution than this beautiful area can handle just for the sake of a few more tourism dollars.</p> <p>I appreciate your time and look forward to some smart decisions on Jackson's future.</p>

Contact Info/Date	Comment
	Carol Flick
Ian Wattenmaker  ian.wattenmaker@gmail.com  8/9/2022	<p>Dear Friends,</p> <p>I recently bought a home in Bar-B-Bar.</p> <p>Before purchasing the home I looked up scheduled JAC commercial flight departures and arrivals and timed my October visits to evaluate the impact of these flights on the property. Now that I have lived in the house through this summer, I realize that I greatly underestimated the adverse impact of the JAC flights.</p> <p>I especially did not appreciate the high volume of private jets into and out of JAC. Also the number of commercial flights is clearly greater seasonally than it was in October. It proved difficult to get a handle on how disruptive the JAC flights are over Bar B Bar without living here through several seasons.</p> <p>Having been here for 10 months now, I have a full appreciation of how the JAC flights are very loud and very low as they pass over our community; the flights have a pronounced adverse effect on the quality of life at my home and within the community at large.</p> <p>I understand the great value of commercial flights to the area for both the economic benefit of JH and for visitors to access the beauty of the GTNP area. Each commercial flight brings a large number of visitors to our area. However, the same is not true of private flights into JAC.</p> <p>I ask that you do whatever you can to mitigate the harmful impact of flights over the communities near the airport. The following suggestions would go a long way to improving the well-being of your fellow JH residents who reside near JAC:</p> <ol style="list-style-type: none"> <li>1) Limit private flight activity from JAC - and certainly do not expand it under any circumstances;</li> <li>2) Move flight paths towards the east to reduce the impact on the communities adjacent to JAC;</li> <li>3) Enforce a strict limit (not optional) regarding no flights between 10 pm and 7 am - except for allowing delayed commercial flights to land after 10 pm.</li> </ol> <p>In sum, the flight activity in the communities south of JAC has become intolerable. It has significantly impaired the enjoyment of property owners in the communities near JAC. I ask that you please do what you can to help us, while of course still supporting commercial flight activity to JAC. I am confident that there is room for reasonable and safe mitigation of the detrimental effects on adjacent communities.</p> <p>My best,  Ian Wattenmaker  Bar-B-Bar resident</p>
Peter Safir  psafir@cov.com  8/9/2022	<p>My name is Peter Safir and my wife and I own property in the Elk Ridge subdivision off of Sagebrush Road.. Aircraft using ALPINE departure procedures regularly fly near our home and the noise is loud enough that it interferes with normal conversation even inside when the windows are open. . I don't know all the science behind the discussions regarding the flight paths, but I am familiar with efforts at other airports to limit flight times, number of flights and flight noise that can materially improve the noise situation for homeowners living near airports. We also reside in Washington DC and National Airport has taken many steps to improve noise abatement in an area where there are many more daily flights. In addition to altering flight paths, a key feature is strictly limiting the periods during the day and night when takeoffs and landings are permitted. In Jackson we have definitely been impacted by the increased number and frequency of flights since we purchased our lot in 2000 and strongly encourage you to take some action to reduce the impact on us as well as the wildlife we cherish.</p> <p>Thank you for your efforts.  Peter Safir</p>
Neil Rudo  neilrudo@gmail.com  8/9/2022	<p>I live on Moulton Loop, south of the airport. I am writing to express my extreme displeasure with the airport. We could not have a more noxious neighbor. I have owned my house since 2000 and the level of noise and the number of flights has increased dramatically in that time interval. The noise has become intolerable. The number of flights has increased almost 200% in that time interval and it appears that the airport would like to increase the flights over our houses even more. Perhaps instead of planning for more private jet facilities, a more intelligent plan would be to ban private aviation in this environmentally sensitive</p>

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	<p>area altogether. Is allowing arrivals and departures in the middle of the night sensible? Even major urban facilities ban traffic between 1030 PM and 7 AM.</p> <p>If the noise problems were not noxious enough, our "good" neighbors at the airport have contaminated many of the wells south of the airport with the moronic "practice" fire drills using toxic chemicals instead of water for practice. Not only is the problem of ground water contamination upon us, the air pollution over our homes from aviation exhaust is a very real problem. Ground water contamination with aviation fuel is also a real health issue. Is the airport or its neighbors aware of how many carcinogens are in jet fuel?</p> <p>While everyone has been polite protesting the noise issue with little real response, noone that I am aware of has addressed the probability that while those issues are important, the environmental and health problems caused by the negligent management at the airport in the past and future may well bring about a landslide of litigation addressing the very real health and environmental consequences of the airport's environmental contamination of the air and ground water. I doubt that the litigation would be limited to the institution. Real individual people might well be held personally liable.</p> <p>I would suggest that the airport and Park Service get very serious addressing not only the noise, but also the environmental and health plague that the airport has become, and as well appears to be on a path to compound these problems. Noise, while an immediate issue, is important. The elephant in the room is the very real health and environmental consequences of ongoing negligence by the airport administration directed operations. The liability will not only be institutional but individual as well. More flights will only bring more contamination and pollution with health consequences to man and beast.</p> <p>I am writing in the hope that people will take the problems outlined above seriously with serious solutions, not just looking to alternate flight paths. The problems are potentially catastrophic and demand urgent serious solutions with flight limitations at the very least.</p> <p>Thank you for taking the time to read my email.</p> <p>Neil D Rudo MD, PhD</p>
<p>david moffett</p> <p>david.moffett@me.com</p> <p>8/9/2022</p>	<p>We live on Zenith Rd, just south of the airport, and would love to have peaceful enjoyment at home. However, it is not possible to have peaceful enjoyment at home when planes are flying over our house throughout the day, every day. Most municipalities (including Teton County) have Noise Ordinances to protect communities from excessive noise. In fact, the 77 or so decibel noise level (see chart below) of planes flying over our house is nearly at the 80 decibel threshold in Teton County's noise ordinance, and the noise from planes over our house is throughout the day every day. We and hundreds of our neighbors never get a break.</p> <p>We strongly urge you to advocate for the modified flight path that has been proposed by ANPAC. It diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90s that avoids the homes south of the airport and has been deemed as a safe route by the FAA.</p> <p>Moreover, JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those airlines and planes that violate the curfew including privates. It would be nice to not be woken up in the morning by planes or to go to sleep at night without the disturbance as well.</p> <p>Thank you very much, David Moffett</p>
<p>Michael Glover</p> <p>glovermichaele@yahoo.com</p> <p>8/9/2022</p>	<p>We are writing to convey our concerns with the ever increasing noise and air pollution from the Jackson Hole Airport and its effect on surrounding communities.</p> <p>We live approximately 2 miles due west of the airport runway in the Owl Creek subdivision where we've owned a home for the last dozen years.</p> <p>We live below the bench among the trees which historically helped protect us from the airport noise. But the situation has changed dramatically over time with the significant increase in both the number of daily flights and the larger size of many of the aircraft, both commercial and private alike.</p> <p>It is now routine to be blasted by the noise of revving jet engines starting with the cluster of morning commercial flights that begin at 7 am — and earlier for private jets — and to have the noise continue throughout the day from up to 30 commercial flights plus routinely an even larger number of private jets. And while the airport this summer did add a small berm on the west side of the runway, it may help to shield the large number of private jets from inquisitive eyes but it has had no discernible effect on the noise.</p> <p>The negative impact from the dramatic growth in the number of flights is not limited to those of us who are west of the runway, but also extends to areas both south and north of the runway. South of the runway, we</p>



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	<p>are members of Golf and Tennis and have friends who live in the area so have experienced first hand just how loud and constant the noise has become due to the increased number and larger size of extremely low flying aircraft taking off or on approach to land. And north of the runway, we have experienced the same impact when kayaking or fishing in the river, and when hiking or cycling in Grand Teton National Park or surrounding Forest Service land, which impairs the park experience for both residents and visitors.</p> <p>Of course, the impact of the dramatic increase in the number and size of planes taking off and landing is not limited to noise pollution. The increase in jet fumes added to the air — where it is trapped in the valley between the peaks — also contributes to the haze that obscures views and undermines air quality. And the increase in flights continues to draw in more and more visitors to the valley when we lack the resources to deal with current levels and the situation continues to worsen.</p> <p>We strongly support taking steps to limit the impact of the larger number and size of commercial and private jets taking off and landing at the airport, which are undermining what makes the valley special for residents and visitors alike.</p> <p>Among other things, we support: 1) modifying flight paths to minimize the effect on communities surrounding the airport; 2) strictly enforcing time limits to minimize early morning and evening noise levels; 3) capping flight levels and ending efforts to promote still further increases in the number and size of flights, which provide no benefit to local residents and only add to the noise and further burden an already overtaxed community.</p> <p>Thank you.</p> <p>Sincerely, Kathleen and Michael Glover</p>
<p>Alison Lee</p> <p>alisonjhlee@mac.com</p> <p>8/9/2022</p>	<p>I am writing to express my concern with the increasing number of flights at the airport in Jackson Hole and the flight paths used by aircraft.</p> <p>I have lived in the neighborhood of the airport, in Owl Creek subdivision, for over 20 years. Over the years, I have witnessed the increase in flights at the airport, but recent times have seen a truly dramatic increase in activity. Between 2018 and 2021, commercial flights increased by 48%; there are times when over 50 flights a day fly over homes at elevations of 500 to 1,500 feet resulting in noise levels of over 80 decibels. Flights leaving after 10pm are frankly antisocial. We do not tolerate these noise levels from our neighbors on the ground, especially after 10pm, and we should not have to tolerate them overhead.</p> <p>Beyond the noise levels, there is the added problem of unexpended jet fuel exhaust polluting our healthy environment.</p> <p>I am particularly concerned about the recent increase in private flights and the planned expansion of that facility at the Jackson Hole Airport in the coming years which will add more noise and more pollution.</p> <p>There are steps that can be taken to mitigate the problems the airport is inflicting on its neighbors:</p> <ul style="list-style-type: none"> <li>• A reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA.</li> <li>• The airport should implement a tighter curfew from 10pm to 7am for all arrivals and departures, both commercial and private, and penalize planes that violate the curfew.</li> </ul> <p>I have been a good neighbor and good client of the Jackson Hole Airport for 25 years, I would like to see JAC return the courtesy and treat all its neighbors with consideration and respect.</p> <p>Regards, Alison Lee</p>
<p>Scott Smith</p> <p>shsmith@resortside.com</p> <p>8/9/2022</p>	<p>Dear Ladies and Gentlemen:</p> <p>I appreciate everything you can do in order to mitigate the noise and pollution that results from the proximity of the airport to our property. We lived at 255 Spruce Drive for 11 years and are currently building and planning a move to 6655 Upper Cascades Drive in order to move further west to get further away from the noise created by jet aircraft overhead. Please alter flight paths to keep low flying noisy and polluting aircraft away from our homes.</p>

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	<p>We also appreciate your continued efforts to monitor and correct the PFAS pollution issue.</p> <p>Please keep us informed.</p> <p>Thank you, Scott and family</p>
<p>James Kewley jim@kewley.com 8/9/2022</p>	<p>Gentlemen:</p> <p>We bought a condo in 2008 at Teton Shadows, approximately 2 miles south of the Jackson Hole airport. It is a lovely area except for the heavy aircraft traffic we endure daily. We've paused many a conversation with a neighbor due to the deafening roar above us. While we don't see particulate matter raining down upon us, we assume that many of the pollutants coming from the engines of the airplanes are in the air that we breathe.</p> <p>It would seem that a simple solution to this situation would be to divert the air traffic over areas free of residential housing and ANPAC has been pursuing that solution for some time, as you know.</p> <p>We strongly support ANPAC and encourage you to do whatever you can in your position of authority to find a solution to this serious situation.</p> <p>Thank you for your consideration.</p> <p>Sincerely, Judy and Jim Kewley Glacier A Teton Shadows Condominiums Jackson, Wyoming</p>
<p>Dean Haefner <a href="mailto:deanhaefner@hotmail.com">deanhaefner@hotmail.com</a> 8/10/2022</p>	<p>My family has lived south of the airport for almost 25 years. The level and frequency of airplane noise has increased in recent years to a point that conversation inside and outside our home remains difficult when planes fly over.</p> <p>When we built our current home in the year 2000 we did not anticipate a 10-fold increase in airplane traffic with arrivals and departures increasing from approximately a dozen a day in 2000 to more than 120 a day this year. Please work to find the least noisy flight path to benefit the most people.</p> <p>I have seen a flight path proposal that shifts the path to the east and decreases the noise of flights overhead in our area. A modified flight path that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes is a historical flight pattern used in the late 90's that avoids the homes south of the airport and deemed as a safe route by the FAA. This flight path avoids residential areas south of the airport during takeoff and landing and remains safer in the event of an emergency. At a minimum, while we work toward a long-term solution, please implement the KICNE 1 flight path previously approved by the FAA now.</p> <p>Please address our concerns with a change in flight path.</p> <p>Sincerely, Dean Haefner 6606 Rye Grass Road</p>
<p>Sally Painter sallypainter529@gmail.com 8/10/2022</p>	<p>Hi Valerie –</p> <p>There are very few days left until the final Task Force meeting. From a meeting with TJ McCann, we have learned that TJ believes that flight path Concept #6 (and #5) as drawn by Alec is wrong or misleading. According to TJ, commercial jets will not follow the center line of those paths but instead fly well west of Spring Gulch and pass nearly directly over his home at 6795 N Blue Stem Road, a lot at the extreme</p>

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	<p>northeastern end of Bar-B-Bar. TJ has also told many Golf &amp; Tennis residents that, contrary to the engineering drawing, planes flying these designed paths will pass close to their homes, too, instead of, as drawn by Alec, passing significantly east of their homes (well east of Spring Gulch). It is important that we all hear clarification from Alec before next week's meeting so that all Task Force members are dealing with an agreed set of facts and have time to digest those before any further discussion.</p> <p>Also, Mike Gumpert provided you 2 lease clauses. Would you update me on JAC's position regarding these 2 clauses? They seem to bear directly upon the flight path issue and the level of noise...</p> <p>...The first clause, from the 1983 Use Agreement, indicated that, from a noise standpoint, JAC flights must be compatible with adjacent lands. While flights may have been compatible years ago, given the dramatic increase in flight volume, they are no longer compatible today (in 2018, DN decibels in Moulton loop according to JAC's own reports were within 1 or 2 points of the FAA maximum guideline of 65; with flight volume by 2021 48% higher, noise today is almost certainly significantly above the guideline and headed still higher). Accordingly, if noise is incompatible with land use then, by application of this clause, it would appear that flights MUST NOT depart JAC over the adjacent residential lands immediately to the south. Instead, flights departing to the south MUST turn east in order to, insofar as possible, remain in GTNP airspace until over land compatible with air traffic noise. If, by necessity, a few homes remain below the flight path and suffer unacceptable noise, that is a matter for further discussion/adjudication but does not change the basic fact that all other incompatible land and homes must be avoided. This clause, on its face, appears dispositive: At the earliest possible moment, an easterly turn on southerly takeoff is the only alternative aside from i) a reduction in the number of flights, ii) a lengthening of the northern end of the runway to allow takeoff further from the adjacent residential land, or iii) an acquisition by JAC of residential land and homes immediately to the south.</p> <p>...The second clause, from JAC's 1985 Noise Abatement plan as continued in the JAC/US Interior Dept. 2010 Agreement Extension, places a limit of under 7 daily commercial jet departures on average (after adjustment for the "noisiness" of planes relative to a 737-200). Nearly 30 commercial jet departures per day are now taking place. After the noise adjustment formula is applied, where does JAC stand today versus the daily flight limit? An answer to this question also bears upon the question at hand regarding the southerly departure flight track.</p> <p>I hope all Task Force members will receive answers to these 3 questions, i.e.:</p> <ul style="list-style-type: none"> <li>. 1) Does Alec stand by his Concept 5 &amp; 6 drawings of the flight path during the initial few miles of the takeoff phase?</li> <li>. 2) Does JAC believe it complies with the "compatible lands" clause and, if so, why?</li> <li>. 3) Does JAC believe it complies with the flight limitation clause and, if so, why?</li> </ul> <p>I think that these are critical issues/questions that should be part of the Task Force's final meeting. If they cannot be answered by then, I urge a delay of a few days in the next meeting so that all Task Force members can be informed of JAC's answers prior to their being asked to advise on any decision for a new flight path.</p> <p>Thanks very much for reading this and I look forward to hearing from you.</p> <p>Regards, Sally</p>
<p>Michael Gumpert magumpert@att.net 8/10/2022</p>	<p>Valerie –</p> <p>I left you some material relevant to the decisions you face as chair of the Southern Departure Task Force. Here again are the 2 key quotes PLUS active links to the source documents.</p> <ul style="list-style-type: none"> <li>• Paragraph 4e of the April 27th, 1983 Use Agreement revision entered into between JAC and the Secretary of the Interior includes a "compatible use" clause that states[i]:</li> </ul> <p>"The revised plan shall also seek to ensure that airport operations are conducted in such a manner that aircraft noise exposure will be reasonably compatible with other adjacent land uses"</p> <ul style="list-style-type: none"> <li>• JAC's 2010 Lease Extension includes a "flight limitation" clause that states[ii]:</li> </ul> <p>"To ensure compliance with the agreement's DNL contour requirements to control cumulative noise, the noise abatement plan established a limit on the number of commercial jet operations. The limit was 6.5 average daily departures averaged annually, and 6.85 average daily departures averaged each calendar</p>

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	<p>quarter, for the Boeing 737-200, a model that was then in operation at the airport. Greater numbers of operations are allowed only if quieter aircraft are used, based on an equivalency formula."</p> <p>You indicated you would present these documents to JAC's attorneys. I have copied other key JAC decision makers. I look forward to hearing the attorneys' opinion and reasoning on whether or not these clauses apply and whether or not JAC is in compliance. In particular...</p> <p>...As I indicated, as a layman, my opinion is JAC is not in compliance with the Use Agreement. Reading JAC's own 2018 report on noise at Moulton Loop and after consideration of the 2018-2021 48% increase in the number of flights, it appears to me that noise exceeds FAA guidelines, and, consequently planes departing JAC are prohibited by the "compatible use" clause from exiting GTNP airspace onto/over this residential adjacent land. Is there some reason the "compatible use" clause does not apply? If flying over some portion of this land is now necessary (because of JAC's failure to acquire this land or have it appropriately zoned, or because JAC placed its runway too far to the south, or because JAC's runway is not long enough), then, by application of the "compatible use" clause, aircraft must minimize overflight of these adjacent lands by executing an easterly turn as quickly as practicable to exit the adjacent lands, return to GTNP airspace, and journey on southwards until an appropriate exit from GTNP airspace is possible. That may or may not be adequate remedy for all occupants of the effected lands suffering damages, but it is a required first step. Or, alternatively, if you are certain that, aside from excess noise, other claims of incompatibility are without merit (for instance, claims for pollution and health damages which some residents assert JAC willfully disregards), a substantial cutback in the number of permitted flights might be contemplated as a remedy. Again, just my opinion.</p> <p>...I am also quite interested in the formula and manner of its application to calculate compliance with the "flight limitation" clause. While this clause limits the number of daily commercial jet departures on average to under 7, JAC currently flies about 28 commercial jet departures per day. Does this clause not apply? Otherwise, under what sort of application of a noise adjustment formula does JAC calculate it is in compliance with the "flight limitation" clause?</p> <p>I hope JAC as a good neighbor will resolve the issue of excessive noise and pollution in the residential area immediately to its south.</p> <p>Regards,</p> <p>Mike  Michael Gumport  455 Francis Way  Jackson, WY 83001  732-221-0172  magumport@att.net</p>
<p>Mike Goelzer  <a href="mailto:mike@goelzer.org">mike@goelzer.org</a>  8/10/2022</p>	<p>Dear Mr. Elwood, Southern Departure Task Force, Ms. Brown, JAC Airport Board, Mr. Jenkins, Director Stone, Mr. Schecter, Mr. Barron,</p> <p>I live south of the airport (at Jackson Hole Golf &amp; Tennis, off Spring Gulch) and I'm writing to encourage you to adopt one of the alternate southern departure paths that has been proposed. I'm a year-round Jackson resident and the sound of airplanes has been an ever increasing problem these past few years, and one that seems likely only to get worse in the coming years based on the population growth in our area.</p> <p>Flight noise is a constant problem, and the planes are flying so low at the time they are over me that I'm also concerned about the health effects of so much jet fuel exhaust exposure.</p> <p>It is my understanding that one of the proposals on the table (the one endorsed by ANPAC, a local neighborhood group I'm in touch with about this issue) is a modified flight path that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes, was used in the late 90's, avoids the homes south of the airport and has been deemed as a safe route by the FAA. I really hope you'll consider adopting this route.</p> <p>It would also help somewhat to impose a 10pm flight curfew with penalties for violators (both commercial and private), though the route change is overall more impactful to me.</p>



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	<p>Thank you,</p> <p>Michael Goelzer</p> <p>6155 N Junegrass Rd, Jackson</p>
<p>Patty Lummis</p> <p><a href="mailto:patty@lummismail.com">patty@lummismail.com</a></p> <p>8/10/2022</p>	<p>Hello everyone,</p> <p>We are writing to comment on the southern departure route from the airport as it is under review. We own at 2620 Trader Road in the Gros Ventre North HOA. And, we are very disturbed by the frequent noise from airplanes taking off to the south. The terrain rises at Gros Ventre North from the valley floor and so while the altitude of planes relative to the runway might seem high, the noise is much worse than you might expect. The number of planes – both commercial and private – has increased dramatically over time and routing has shifted west. The noise is not just bothersome – it has become truly unpleasant to be outside during the active times. Sometimes at our house, there are 6 or more nearby flights per hour with noise levels lasting over a minute and ranging from 70-85 decibels -- equivalent to a garbage disposal, a construction power tool or a motorcycle.</p> <p>One of the joys of living in the JH community is the sense that we are all, in fact, part of an ecosystem. In Jackson, people watch out for one another and the environment. The JH Airport needs to operate as a 'good citizen' of Jackson Hole and find the least noisy path possible to benefit the most people. We ask that you:</p> <ul style="list-style-type: none"> <li>• Move the departure route to one of the identified and safe routes to the east.</li> <li>• Limit private flights into and out of JH Airport</li> <li>• Enforce the 10 pm – 7 am curfew on flights.</li> </ul> <p>We support moving the southern departure route to the east. This route, which is deemed safe by the FAA, will allow planes to reach an altitude where the noise is greatly diminished before passing over residential areas.</p> <p>We also suggest that you reflect on the airport's impact. Currently, we believe that your system is designed to favor ever higher volumes of air traffic, and to ignore the impact of the high level of noise for many Jackson residents. We ask that you reconsider the overall approach to be more consistent with the community values of peace and quiet—which helped to motivate many of us in coming to Jackson Hole.</p> <p>Patty and John Lummis</p>
<p>Doreen Wise</p> <p><a href="mailto:doreenjameswise@gmail.com">doreenjameswise@gmail.com</a></p> <p>8/11/2022</p>	<p>Greetings.</p> <p>My husband and I are in residence in Jackson four to six months annually. We love it here! And plan to keep our current home in Golf and Tennis for the rest of our lives, leaving it to our children for their continued health and joy. We are committed to this community...</p> <p>While we love the convenience of living so near to the airport, we find that each year the air traffic moving directly over our home has become more relentless. The noise and air quality do indeed affect our life outside, and now more and more, inside.</p> <p>I have flown on business from any number of busy airports; I know of many communities' adaptations made to continue safe travel, but also, to promote life quality for both humans and wildlife. We want to see some very aggressive consideration and implementation of similar and creative adaptations here.</p> <p>We support the work of the citizens group, ANPAC, moving to work cooperatively with your team for change. Please know that they have our confidence and financial support.</p> <p>Doreen James Wise, MSN, EdD.</p> <p>Frank R. Crapitto</p> <p>6075 N. Junegrass Road</p> <p>832-275-9538.</p>
<p>ANTHONY LASUZZO</p>	<p>My name is Anthony Lasuzzo and I live in the Teton Shadows complex south of the airport. I'm writing this letter to ask that the airport board as well as related agencies please do something about the noise and pollution I have endured due to an increasing number of flights in and out of the Jackson airport. I bought my home in 2007 and at that time I was aware of occasional flight noise over my home but at that time</p>

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<a href="mailto:alaszuzo@aol.com">alaszuzo@aol.com</a> 8/11/2022	<p>there were few daily commercial flight and very few private flights. Today the number of commercial flights have dramatically increased and the private flight are almost continuous on some days. When I purchased my home, flights didn't start until after 7:00am and never either landed or took off after 9:00pm. Now I am awoken from flight noise as early as 6:00am and as late as 2:00am.</p> <p>This situation has become intolerable.</p> <p>I am aware that there is a flight path that does avoid homes South of the airport. A flight path that was used in the late 90's. Please reimplement this flight path so those of us who live south of the airport will once again have the peace and quiet we moved here to enjoy. Also, please implement a tighter curfew for arrival and departures to 10:00pm and 7:00am.</p> <p>We realize the number of daily flights, both commercial and private are only going to increase. Our community needs the Airport Board, the FAA, the town of Jackson, and the National Park Service as well as the Southern Departure Task Force to do something positive for the homeowner living South of the airport.</p> <p>Thanks for your attention to this issue,</p> <p>Anthony Lasuzzo  Cathedral Unit B  Teton Shadows  Jackson Wy.</p>
Karin McQuillan <a href="mailto:karin@mcquillan.com">karin@mcquillan.com</a> 8/11/2022	<p>Dear JHAC:</p> <p>I live south of the airport and the noise and air pollution has become increasing disruptive to normal life. According to JAC's 2010 Lease Extension, under 7 commercial jet departures per day on average are permitted. Can you tell me how many flights a day we are having now?</p> <p>JAC's Use Agreement from the early '80's requires the airport's noise to be compatible with adjacent land. The enormous growth in air traffic is not compatible with homes south of JAC. Can you please explain your interpretation of the use agreement?</p> <p>In accordance with the Use Agreement, JAC must remain in GTNP airspace until it finds an appropriate exit point. That requires an easterly turn upon takeoff. A more easterly take off was used in the late 90's that avoided more homes than the current paths and was deemed safe by the FAA. Can you explain why we cannot return to a more easterly route?</p> <p>GTNP has expressed the desire for flights to go over not a single additional inch of park land. They permitted increase in airport size and now, breaking previous agreements, want the entire burden to be on neighborhoods. That is not fair. Compromise must include all concerned. Can you please explain what gives the GTNP veto power over following past use agreements with neighboring homeowners?</p> <p>Thank you for a reply.</p> <p>Yours truly,  Karin McQuillan</p>
Lori Moffett <a href="mailto:lori.moffett@yahoo.com">lori.moffett@yahoo.com</a> 8/11/2022	<p>We live north of town and are constantly bothered by the steady stream of planes flying over our house. It was heaven when the airport was closed earlier this year. We enjoyed the same peace and quiet that everyone else in Jackson takes for granted day in and day out. Jackson is clearly getting more crowded each and every year, so this will only get worse. We urge you all to please do what you can to ensure that the flight path is moved so that everyone in Jackson can enjoy Jackson! Thank you!</p>
Jamie Monroe <a href="mailto:monore@utaheyecenters.com">monore@utaheyecenters.com</a> 8/11/2022	<p>Dear Mr. Elwood,</p> <p>My family lives adjacent to the airport at 505 Moulton Loop. The beauty that surrounds us is incredible, but our experience living here is severely negatively impacted by the noise generated by the airport. The increase in flights and noise has become intolerable. Commercial flights have increased by 48% from</p>

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	<p>2018-2021. Some days over 50 flights go out over homes at elevations of 500-1500 ft, and the db levels rise from 35-40 to the high 80's when flights are overhead, inhibiting enjoyment of our property.</p> <p>We are also concerned about pollution from unexpended jet fuel exhaust and potential negative health effects.</p> <p>The recent increase in private flights and the planned expansion of that facility at JAC in the coming years which will add more noise from air traffic. Currently, we must pause our conversations or stop the news/TV programs because of planes flying overhead. Any increase in flights will create constant disruption.</p> <p>A reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA. Please enact this proposed flight pattern.</p> <p>JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those airlines and planes that violate the curfew including privates. Only by instituting penalties will you get compliance.</p> <p>Please stop ruining our spectacular natural environment with escalating noise pollution!</p> <p>Respectfully,</p> <p>Jamie M Monroe, MD</p> <p>505 Moulton Loop</p> <p>Jackson, WY 83001</p> <p>802-361-3504</p>
<p>HEIDI and Steve MAMEROW</p> <p><a href="mailto:heidianeidsteve@aol.com">heidianeidsteve@aol.com</a></p> <p>8/11/2022</p>	<p>When my wife and I purchased our property at 320 Moulton Loop Rd just southwest of the Jackson Hole airport 17 years ago, there were far fewer planes flying overhead. Now the planes are so numerous, especially the private jets, you would think we lived in a much larger city. I can't tell you how many times a day and in the evening our conversations are interrupted by loud planes. If we are outside talking with our friends, we literally have to stop talking for several minutes until the planes pass. Some of these flights come in at ridiculously low elevations over our home as we are in the direct flight path to and from the runway. They seem to be barely above the treetops. In the summer our windows are open at night to let the cool air in and the other night, my wife was woken up at 2:10 am due to a private jet landing! There needs to be fines assessed for planes landing between 10 pm and 7 am.</p> <p>There are alternative departure routes available including one proposed by ANPAC that veers slightly east then south between West and East Gros Ventre buttes. This route over the park would have negligible impact on wildlife as well as the town of Jackson. This is especially true in the summer when less wildlife are on the refuge. This is a safe and effective way to alleviate the concerns and challenges we face regarding noise and air pollution over our subdivision. Planes flying overhead in our neighborhood includes a wildlife corridor as well! No one seems to be concerned about that though.</p> <p>We implore you to please consider our request to implement a more suitable plan for departures and landing at the Jackson airport and please do not allow takeoffs and landings between 10 pm and 7 am other than emergencies.</p> <p>Sincerely,</p> <p>Steve and Heidi Mamerow</p>
<p>Chris Hens</p> <p><a href="mailto:chris@tetongp.com">chris@tetongp.com</a></p> <p>8/11/2022</p>	<p>Folks-</p> <p>My wife, Julie, and I built our home here in Teton Sage back in 1998. The airport noise disturbance for our first 10 or so years was nominal, given the eastern departure route and the limited number of flights per day. When the flight departure path was changed in the mid-late 2000's, however, our daily lives were completely upended. The situation has grown exponentially worse over the past several years, with the significant increase in the number of flights and the expansion of flight arrival and departure hours.</p> <p>A minimum of 30-50 planes each day roaring over our heads has had a massive negative impact on our quality of life in Jackson. Here are just some of the effects:</p> <ul style="list-style-type: none"> <li>• We cannot hold conversations or enjoy any outside activities while jets are blasting overhead.</li> <li>• We must keep our doors and windows closed at all times because of the the 80+db noise level.</li> </ul>

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	<ul style="list-style-type: none"> <li>• When trying to conduct business calls from home, even with doors and windows closed, we must mute ourselves every 4-5 minutes due to the level of noise.</li> <li>• EVERY SINGLE DAY we are awaked by early morning flights, from as early as 5:30am.</li> <li>• Some nights we are kept awake by flights arriving/departing as late as 11pm.</li> </ul> <p>We try not to even think about the potential health impacts of jet emissions on our community, but these reports paint a grim picture for those of us now directly under the JAC flight path:</p> <p><a href="http://www.teddingtonactiongroup.com/2019/12/07/are-emissions-from-aircraft-harmful-or-not/">http://www.teddingtonactiongroup.com/2019/12/07/are-emissions-from-aircraft-harmful-or-not/</a></p> <p><a href="https://ec.europa.eu/environment/integration/research/newsalert/pdf/long_term_exposure_to_aircraft_emissions_421na1_en.pdf">https://ec.europa.eu/environment/integration/research/newsalert/pdf/long_term_exposure_to_aircraft_emissions_421na1_en.pdf</a></p> <p><a href="https://ehjournal.biomedcentral.com/articles/10.1186/s12940-020-00690-y">https://ehjournal.biomedcentral.com/articles/10.1186/s12940-020-00690-y</a></p> <p>In particular, this citation from within the above report about the dangers of aircraft emissions particles in nearby communities:</p> <p>“The particle counts increased 18–26 fold at locations near the airport, downwind, and 4-fold at locations up to 1 km from the airport. Results show that particle number increased with the number of flights and decreased with the distance to the airport [91].”</p> <p>It seems patently obvious to us that returning to the eastern flight path that was in place for years with no evidence of detriment to the Park or Town, is the solution to the massive negative impact on our homes directly south of the Airport. Having read through and listened to the briefs, meetings, comments and updates related to ANPAC and the Southern Departure Task Force, it appears our interests are being disregarded. With comments like “you knew about the airport before you bought there” and (sic) “we don’t want Park visitors first experience to be impacted by jet noise”, you can understand why we might think there is a bias.</p> <p>Our long-term, active participation in the Jackson community, socially and commercially, (in addition to our significant tax contributions) enables the funding of town and county services which support and enhance the lives of ALL residents and visitors. Not returning the mandatory flight path to its original eastern route, will send a clear message to our community south of the airport: the massive negative impact on our lives is less important than the unproven potential influence on transient visitors.</p> <p>We ask that you make the right and simple decision to appreciate our contributions and importance to the Jackson community by returning the JAC southern departure route to it’s least-harmful eastern track.</p> <p>Thank you for your consideration.</p> <p>Chris Hens</p>
<p>John McQuillan  <a href="mailto:john@mcquillan.com">john@mcquillan.com</a>  8/11/2022</p>	<p>Dear Friends of Jackson and our Airport-</p> <p>I am writing to you to make an appeal to fairness.</p> <p>All of us who live and work in Jackson have benefited from the growth and expansion of the airport, just as we have benefited from the many improvements and enhancements to our life here, in Town, in the Park, and elsewhere.</p> <p>At the same time, we are all bearing the burdens of increased road traffic, higher real estate taxes and rents, crowding in the Park, etc.</p> <p>We have lived at Queens Lane for 22 years now, and like everyone in Jackson we have experienced these benefits and these burdens. The difference for us and our neighbors is that we are bearing a disproportionate burden of the noise and air pollution from departures from the airport, because the planes depart over our neighborhood. We do not think it is fair that one neighborhood experiences so much of the negative impact of the airport.</p> <p>I need not impress upon you that the increase in this negative impact has been gigantic over the past few years. We are now having disruptive noise overhead more than 10 times as frequently as a decade ago. What was once an occasional annoyance is now a serious ongoing problem interfering with conversations, business and medical phone calls, and peaceful enjoyment of our Jackson surroundings. This is a really big frustrating problem for us.</p> <p>We are confident that there are more equitable solutions at hand for routing the departing planes, if only the parties involved approach the challenge in a spirit of fairness and compromise. We hope that the Park will agree to having flights depart to the east, over public lands that are not residential lands. We hope that the</p>



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	<p>Airport will return to the Noise Abatement Procedure that was enacted by the FAA calling for “a left 45 degree turn as soon as practical after takeoff to avoid overflight of the residential areas. Proceed on course after reaching 8,500 MSL. Avoid northwest climbs over GTNP.”</p> <p>Many thanks for your dedicated work to making Jackson and our airport better, John McQuillan</p>
<p>Kathryn Turner <a href="mailto:kathryn@turnerfin.eart.com">kathryn@turnerfin.eart.com</a> 8/12/2022</p>	<p>Jim,</p> <p>We all benefit from the Jackson Hole Airport but we have all felt it's impact. I am asking you to provide leadership &amp; compassion in how it effects our lives.</p> <p>Allow me to introduce myself. I am born part of a 4th generation Jackson Hole ranching family that is now a concession of Grand Teton National Park. I am on the board of the Jackson Hole Wildlife Foundation and a former board member of the Grand Teton Association. This valley has always been my home and I am saddened to see how our collective values of conservation and preservation of the natural world has seemed to have changed especially in regard to the JH Airport.</p> <p>In my 14 years living full time on Sagebrush Drive, the increase in airport noise over the past couple of years has been unbelievable and unbearable. I am a full-time fine art painter who paints landscapes and wildlife from my home studio but now I am force to create my artwork with unrelenting noise from airplanes. It's awful.</p> <p>At my home, I've measured the average noise levels created by the departing planes to be around 77-86 decibels. This is far beyond what's considered the safe level of 68db. With each of these loud flights, according to research, there is harm done. For the first time in my life, I have noticed depression, the inability to concentrate, lack of productivity, irritability and anxiety. I now wear noise canceling earplugs for the entire day inside my own home in order to work. This is ultimately ineffective- planes fly so low they shake my entire home. I can't even imagine what effects this level of constant noise has on the natural world.</p> <p>The noise is most unbearable at night making a full night's sleep impossible. More and more planes are flying over earlier in the morning and later at night. The current curfew policy of 11:30- 6 am is completely unacceptable. The hours are too late and it's voluntary. Not ok. Mandate a humane curfew.</p> <p>A flight plan eastward is advertised on the airport website in recognition of noise abatement. But that's not what's happening. Why? Where's the transparency? All flights that I see are proceeding straight south over our residential area flying so low that I can see the rivets!</p> <p>Please return the flightpath to the east- it's the right thing to do. A reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA. According to their website, the airport claims their motto to be “People Helping People.” With little to no noise abatement efforts for neighbors, I doubt that.</p> <p>Also limit the volume of planes. The number of flights going over my home is intolerable. There are limits to how many campers are allowed at campsite 15 in Leigh Lake, there are limits to the number of launches our rafting company can do on the north stretch of the Snake river. But, are there any limits to the number of planes being permitted to fly in and out of Grand Teton National Park? With a 48% increase in commercial flights from 2018-2021 plus an astounding level of private planes going overhead, I really wonder. How does this increase of flights impact our infrastructure? Our air quality, our water quality? Do we really want the only airport inside a national park to grow exponentially?</p> <p>As a kid, I remember when the flight schedule was rearranged each year to accommodate the strutting grouse when they were doing their mating dance on the runway because it was recognized that the runway was built directly on their lek or mating ground. Those days are long past and barely remembered. I can't imagine what's become of the grouse with this incredibly huge impact the airport is currently making in noise, pollution and unbelievable volume of flights. It saddens me greatly to see how our values have seemed to have changed in Jackson Hole from prioritizing the needs of the natural world to instead serving “progress”.</p> <p>Why does this all matter?</p> <p>I believe if we take care of Mother Nature, she will take care of us. The Greater Yellowstone Ecosystem is our golden goose. Our whole economy is based on it. I believe we could be killing her and it's death by 1000 cuts. The way I see it, filling the skies with loud airplanes is a big gash.</p> <p>Sincerely, Kathryn Turner</p> <p>In the time it took me to compose this, 18 jets flew directly over my roof</p>

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	<p>1:15pm</p> <p>1:20pm</p> <p>1:28pm</p> <p>1:31pm</p> <p>1:41pm</p> <p>1:46pm</p> <p>1:59pm</p> <p>2:04pm</p> <p>2:12pm</p> <p>2:24pm</p> <p>2:38pm</p> <p>2:46pm</p> <p>2:51pm</p> <p>3:13pm</p> <p>3:25pm</p> <p>3:36pm</p> <p>3:39pm</p> <p>3:42pm</p> <p>3:46pm</p> <p>3:50pm</p> <p>It's probably time to let the Press and the larger Jackson Community know what's really happening with our local airport.</p> <p>Kathryn M. Turner TURNER FINE ART</p>
<p>Kathryn Turner</p> <p><a href="mailto:kathryn@turnerfineart.com">kathryn@turnerfineart.com</a></p> <p>8/12/2022</p>	<p>Jonathan,</p> <p>We all benefit from the Jackson Hole Airport but we have all felt it's impact. I am asking you to provide leadership on how it effects our community.</p> <p>As you well know, I am born part of a 4th generation Jackson Hole ranching family that is now a concession of Grand Teton National Park. I am on the board of the Jackson Hole Wildlife Foundation and a former board member of the Grand Teton Association. This valley has always been my home and I am saddened to see how our collective values of conservation and preservation of the natural world has seemed to have changed especially in regard to the JH Airport.</p> <p>In my 14 years living full time on Sagebrush Drive, the increase in airport noise over the past couple of years has been unbelievable and unbearable. Now, when in my home studio working on my paintings I am force to create artwork with unrelenting noise from airplanes. It's awful.</p> <p>At my home, I've measured the average noise levels created by the departing planes to be around 77-86 decibels. This is far beyond what's considered the safe level of 68db. With each of these loud flights, according to research, there is harm done. For the first time in my life, I have noticed depression, the inability to concentrate, lack of productivity, irritability and anxiety. I now wear noise canceling earplugs for the entire day inside my own home in order to work. This is ultimately ineffective- planes fly so low they shake my entire home. I can't even imagine what effects this level of constant noise has on the natural world.</p> <p>The airport officials respond to our complaints with, "Well, you should have known better when you bought property near the airport." Our understandable outrage is a result of what feels like a bait and switch from the airport on three levels.</p>

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	<p>1.The flight plan has changed</p> <p>2. The volume of flights has skyrocketed to unbelievable numbers</p> <p>3.The “curfew” is voluntary with laughable hours.</p> <p>Flight Plan Needs to be Changed Back</p> <p>A flight plan eastward is advertised on the airport website in recognition of noise abatement. But that’s not what’s happening. Why? Where’s the transparency? All flights that I see are proceeding straight south over our residential area with 3000 residents flying so low that I can see the rivets!</p> <p>The flight path needs to be returned to the east- it’s the right thing to do. A reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90’s that avoids the homes south of the airport and has been deemed as a safe route by the FAA. According to your website, the airport claims to be “People Helping People.” With such little noise abatement efforts for neighbors, I doubt that.</p> <p>Limit the volume of flights.</p> <p>The number of flights going over our homes is intolerable. This is a National Park! There are limits to how many campers are allowed at campsite 15 in Leigh Lake, there are limits to the number of launches the TX rafting company can do on the north stretch of the Snake river. There’s a limit to the height of the airport terminal. But, are there any limits to the number of planes being permitted to fly in and out of Grand Teton National Park? With a 48% increase in commercial flights from 2018-2021 plus an astounding level of private planes going overhead, I really wonder. How does this increase of flights impact our infrastructure? Our air quality, our water quality? Do we really want the only airport inside a national park to grow exponentially?</p> <p>The “Curfew”</p> <p>The noise is most unbearable at night making a full night’s sleep impossible. More and more planes are flying over earlier in the morning and later at night. The current curfew policy is only voluntary with the hours of 11:30- 6 am. Not ok. This needs to change.</p> <p>As a kid, I remember when the flight schedule was rearranged each year to accommodate the strutting grouse when they were doing their mating dance on the runway because it was recognized that the runway was built directly on their lek or mating ground. Those days are long past and barely remembered. I can’t imagine what’s become of the grouse with this incredibly huge impact the airport is currently making in noise, pollution and unbelievable volume of flights. It saddens me greatly to see how our values have seemed to have changed in Jackson Hole from prioritizing the needs of the natural world to instead serving “progress”.</p> <p>Why does this all matter?</p> <p>I believe if we take care of Mother Nature, she will take care of us. The Greater Yellowstone Ecosystem is our golden goose. Our whole economy is based on it. I believe we could be killing her and it’s death by 1000 cuts. The way I see it, filling the skies with loud airplanes is a big gash.</p> <p>Sincerely, Kathryn Turner</p> <p>In the time it took me to compose this, 18 jets flew directly over my roof</p> <p>1:15pm 1:20pm 1:28pm 1:31pm 1:41pm</p>

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<p>Shelly and Joe Mazzeo  <a href="mailto:shellymaz@gmail.com">shellymaz@gmail.com</a>  8/12/2022</p>	<p>The noise is intolerable. We have lived on Moulton Loop for seven years. During that time our HOA board has spoken to airport representatives every year about the noise. We feel like we have been 'grinned' at every year, having been told that things were being worked on to improve the situation ... and every year it gets worse.</p> <p>Breathing in toxic emissions and being subjected to never-ending deafening noise- these have serious health consequences.</p> <p>The suggestion that was made to have planes take off farther east over the elk refuge in the summer makes perfect sense. It is a viable first step and needs to be fought for!</p> <p>That there is an airport in a national park in the first place that caters mostly to private jets is troubling in and of itself - and to be told that the park doesn't want flights over park land?? ... what did they expect when they placed an airport in the national park?? ... and what about the incoming flights from the northeast flying over park land?? Nothing here makes sense except opposing any JHA lease renewal in the future!!!</p> <p>It boils down to just this: there is no regard for the people suffering in our community. We need change NOW! Our health and well-being trumps the arguments being made from the various factions who want to maintain the status quo. It doesn't affect them.</p> <p>Thank you for the opportunity to share our concerns,  Shelly and Joe Mazzeo</p>
<p>Kirit Joshi  <a href="mailto:kirit.joshi@outlook.com">kirit.joshi@outlook.com</a>  8/12/2022</p>	<p>Dear Jim and Jackson Hole Airport Team,</p> <p>I live in the airport vicinity off Sagebrush Road and wanted to share with you my deep concern on the perpetually ever-increasing level of noise pollution from flights arriving and departing from Jackson Hole airport. It is progressively becoming intolerable to have a tranquil family gathering in the garden with the constant barrage of jet engine noise raining upon the conversations. There has been an almost 50% increase of flights in the last 4 years with further aspirations to increase the volume. This past Sunday over 120 flights buzzed over our heads elevating the noise level from 35-40dB to 80+dB - halting the enjoyment of our property. Measuring the noise level on our mobile phones has become a constantly depressing occurrence at our gatherings. But the concerns don't stop there, we have already had to deal with the water pollution from the airport and now we worry about the pollution from unexpended jet fuel exhaust and</p>



Contact Info/Date	Comment
	<p>ensuing health effects. In addition to the increasing commercial traffic, private flights are also on the up and any expansion to accommodate more of the same only exacerbates the problem.</p> <p>We recognize that a reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA. In addition to adopting this proposal, we would also strongly encourage the Airport Management team to implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those commercial airlines and private planes that violate the curfew.</p> <p>Over the long run we would propose to further reduce the volume of traffic at Jackson Hole airport and expand Idaho Falls as an alternative.</p> <p>Thank you for your consideration</p> <p>Sincerely, K Joshi</p>
<p>Marianne and Bob Caplan <a href="mailto:mkcaplan@comcast.net">mkcaplan@comcast.net</a> 8/12/2022</p>	<p>To The Jackson Hole Airport Noise Task Force,</p> <p>We live in the Bar B Bar neighborhood near the airport. When we bought our house here we did so knowing that we were in the flight path for take-offs and landings but then it was worth the trade-off to be in one of the most beautiful places on Earth and have the opportunity to have elk, moose, deer, etc in our yards. Over these past years the increase in flights and noise has made living here very uncomfortable and difficult to even relax. When we have our children, grandchildren, (taking naps), and friends staying here we often have to apologize now for the awful loud noise of a plane seeming to be almost touching our house. Conversations and outdoor entertaining are difficult and frustrating. Commercial flights have increased by 48% from 2018-2021. That doesn't even include the increase in private jets. Our sanctuary in this magical place has become loud and even jolting.</p> <p>We are also concerned about pollution from unexpended jet fuel exhaust and the effects this can have on our health, especially for someone that has lung cancer or other pulmonary illnesses.</p> <p>A reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA. JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those airlines and planes that violate the curfew including privates.</p> <p>Thank you for trying to figure out a solution that could benefit the most people.</p> <p>Sincerely, Marianne and Bob Caplan</p>
<p>Chris Norwine <a href="mailto:chris@twoocean.com">chris@twoocean.com</a> 8/12/2022</p>	<p>To all enclosed,</p> <p>My wife and I are in the process of building our permanent residence at 7450 N. O'Rourke Way in the Idrone Subdivision of Moulton Loop. We live in Jackson full time and are looking forward to taking delivery of our newly completed home sometime next summer. We purchased the lot and closed in December of 2020 and since that time have become increasingly concerned around the traffic and resulting noise emanating from the airport. I frequently go to the property to check on progress of the build but to also monitor the airport noise. Just the other week I was up at the site and heard 4 airplanes (2 private, 2 commercial) take off in the span of 25 minutes and all registering 80+ decibels for some period of time. How do you live in that kind of that environment peacefully?</p> <p>I understand in hearing from other neighbors that the consistency of noise has gotten exponentially worse in recent years given the increase in private and commercial traffic. I was shocked to learn that on Sunday August 7th there were 123 departures and landings according to website Flight Radar 24. I have two children (14 and 11) that will be living with us full time as part of our family and I must say that I'm concerned very much about our quality of life and long term effects the constant airline traffic might have on our family. I fear that even though we have ordered double pane windows (that's what we could afford), we'll be subjected to constantly annoying airplane noise at all hours of the day and night. I have also paid very close attention to the PFAS chemical that has found its way into the groundwater as a direct consequence of the airport.</p>

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	<p>I ask that the airport and those enclosed in this email seriously consider changing the southern departure routes in a manner that will lessen the noise implications to those residing just south of the airport and increase everyone's quality of life. Taking southbound traffic over uninhabited state and park land would positively impact a dire situation with respect to noise. I know those at the NPS might balk at this suggestion but I would remind them that the animals migrate through all of our properties which is directly under the flight path and don't seem to be bothered by any of the aircraft noise.</p> <p>We all live in Jackson Hole to take in the serenity and pristine aspects of this special place but the increase in traffic as well as the proposed additional capacity that I understand is being contemplated for private aircraft will make our living situation untenable. I also ask the airport enact a strict curfew with monetary penalties for non-compliance from 10pm until 7am which hopefully would have a positive impact on those living in close proximity to JAC.</p> <p>Thank you for your consideration, Chris Norwine Owner 7450 N. O'Rourke Way</p>
<p>Brandon and Kay Baker <a href="mailto:bbaker2020@gmail.com">bbaker2020@gmail.com</a> 8/13/2022</p>	<p>To: Task Force:</p> <p>Again, we stress the need to continue to work with the Jackson Hole airport board and the FAA to direct planes to depart east, and avoid the noise that increases every year.</p> <p>Our parents were one of the first homeowners in Moulton Loop, in 1979. At that time, there were very few planes in or out of Jackson. Today, it is eroding the quality of life with the constant roar of planes.</p> <p>We also are very much in favor of time restrictions of take offs and landings, voluntary or not!</p> <p>We are very much against any additional flight paths directed westbound.</p> <p>Please pass these comments on.</p> <p>Best regards, Brandon and Kay Baker 455 Moulton Loop Jackson, WY 83001</p>
<p>Karl Lyon <a href="mailto:karlylon@hotmail.com">karlylon@hotmail.com</a> 8/13/2022</p>	<p>I am a homeowner in Jackson south of the runway. Since the resumption of flights the aircraft noise directly over my home has increased to an abusive level. I am no longer able to enjoy a conversation with my neighbors on my deck without having to pause while an aircraft roars overhead; I am no longer able to sleep-in past 6:30 a.m. on a Sunday because flights disrupt my rest.</p> <p>The level and frequency of noise HAS INCREASED over the past 5 years.</p> <p>Some flights are making visible efforts to gain altitude or veer east over the elk refuge, and I appreciate those efforts. However, other flights, especially smaller aircraft, appear to delight in skimming the rooftops right over my home. I don't know if this is the result of ignorance or simple lack of consideration.</p> <p>MY REQUEST:</p> <p>Would you please consider enforcing:</p> <ul style="list-style-type: none"> <li>• That aircraft arrivals and departures occur no earlier than 8 a.m. and no later than 8 p.m.</li> <li>• That aircraft endeavor to use flight paths and altitude patterns to minimize noise over residential areas</li> </ul> <p>THE CONSEQUENCE:</p> <p>If there is no change to the present pattern of aircraft noise over my home, I will be compelled to sell and move away from Jackson Hole.</p> <p>This will be a very sad consequence for my wife and for me. We felt we had found our retirement nirvana and forever home when we moved here eight years ago; but this change in airport noise will drive us out.</p> <p>Thank you for your attention and consideration.</p>

Contact Info/Date	Comment
	Karl Lyon
<p>Christa Haussler  <a href="mailto:christa.haussler@gmail.com">christa.haussler@gmail.com</a>  8/14/2022</p>	<p>Dear Jim and Jackson Hole Airport Team,</p> <p>I write to you to share my concerns on the level of noise pollution from the ever increasing number of planes arriving and departing from Jackson Hole Airport. We live just south of the airport on Sagebrush Road. It is almost impossible to sit outside in the property or have a sleep in disturbed by the roar of the jet engines. We moved to retire in Jackson and thought we had gotten away from the noise of the large cities and it is disheartening to see that the situation here is getting worse as each year progresses. We understand from neighbors that there has been an increase of almost 50% in flights during the last 4 years. In addition to the increasing commercial traffic, private flights are also on the increase.</p> <p>We recognize that a reasonable modified flight path has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. This is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA. In addition to adopting this proposal, we would also strongly encourage the Airport Management team to implement a tighter curfew from 10pm-7am for all arrivals and departures and penalize those commercial airlines and private planes that violate the curfew.</p> <p>Yours Sincerely,  Christa</p>
<p>art miller  <a href="mailto:1360m1@gmail.com">1360m1@gmail.com</a>  8/14/2022</p>	<p>Dear Jackson Hole Airport Stakeholders,</p> <p>I live North of town, in the Jackson Hole Golf and Tennis development. I am President of the Jackson Hole Golf and Tennis "Homesites" HOA.</p> <p>To be crystal clear- ANPAC does not represent the JHGT Homesites community.</p> <p>I have been living in this great community full time for the past eleven years. Like many of my neighbors, I have noticed the increased air traffic and the noise associated with that increase. However, I purchased my property with the knowledge of its close proximity to the Jackson Hole Airport.</p> <p>It appears that the main goal of the ANPAC Committee is to shift the Southern departure route away from the committee members homes.</p> <p>It is quite unfortunate that there is no easy, fair method to shift the air traffic from all homes South of the airport. Shifting the noise from one group of homeowners to another is not a solution.</p> <p>The Airport Board's decision to form the Southern Departure Task Force is a step in the right direction. Keeping in mind the task force principal tenant "Solutions which optimize for one group at the expense of others will not be carried forward-noise will not shift from one neighborhood to another".</p> <p>The current departure route remains the most equitable way to route aircraft South from JAC.</p> <p>Sincerely,  Arthur Miller  Jackson Hole WY</p>
<p>Michael Gumport  <a href="mailto:magumport@att.net">magumport@att.net</a>  8/14/2022</p>	<p>Southern Departure Task Force: I meant to include you earlier in this response (below) to one of the letters you received.....M. Gumport</p> <p>-----</p> <p>From: MG Network &lt;magumport@att.net&gt;  Date: Saturday, August 13, 2022 at 5:40 PM  To: Phil Harrington &lt;harrington.phil@outlook.com&gt;  Cc: Phil Harrington &lt;pharrington7@gmail.com&gt;  Subject: My view on JAC's Task Force Process</p> <p>Hi Phil:</p>

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	<p>I saw your letter to the Southern Departure Task Force. I understand your position.</p> <p>As background, noise on Francis where I live is an annoyance but not too bad. Flights often go directly overhead (the ALPIN3 flight path is within a few hundred feet of my home; according to Task Force maps, APLIN3 meets Kings at Deyo, further west than you have drawn it) at an altitude of about 2,500 feet.</p> <p>That said, just 3 observations...</p> <p>...1. All ANPAC committee members strongly support a new flight path that moves flights as far east of Spring Gulch as possible. Our group has not advocated in favor of KICNE. Some of the routes explored by the Task Force would push flights several hundred yards east of Spring Gulch by the time Spring Gulch turns southwest, and this eastward push in the flight path would be especially true for all the private jets which now account for about half of all air traffic.</p> <p>...2. I personally have not taken any position on KICNE.</p> <p>...3. If the Task Force fails to elicit compromise from all parties (residents south of JAC, GTNP, residents in Town, the Town itself) to form a consensus in favor of a new flight path, I do not know what happens. KICNE was approved by the FAA after, as I understand it, a 3 year process. According to correspondence from the FAA, no additional public comment is required, and it was the FAA's stated intention that KICNE be implemented. The FAA reluctantly agreed to a "pause" last September at JAC's request but asked that JAC deliver a better plan by September, 2022. Again, ANPAC had no part in the KICNE approval process and favors other, easterly departures that would provide the maximum benefit to the residents south of JAC. But, if no better flight path is delivered to the FAA by JAC, I do not know whether the FAA or JAC has the final say. Do we stick with the status quo (ALPIN3)? Or does the FAA prevail (KICNE)?</p> <p>If you want "no change", it seems likely that is what you will get especially if you advocate for it. The Task Force needed real leadership to achieve the compromise necessary for positive change, but that has not occurred. In my opinion, the Chair had already made up her mind before any studies were done and the \$235,000 allocated to the Task Force at this point appears a total waste. The emphasis on "no shift in noise" rather than "community benefit" just encouraged all entrenched interests to dig deep to stay put. Two of many examples of bias:</p> <ul style="list-style-type: none"> <li>. 1) in "noise studies", aircraft noise of 90 decibels in Moulton Loop (the sound from pushing a gas lawn mower) is presented as equally bad as 55 decibels in Town (below the level of a quiet conversation). Both are coded as "RED".</li> <li>. 2) The Use Agreement under which JAC operates mandates that noise from JAC operations be compatible with adjacent lands, but the Task Force Chair views this as an aspirational goal rather than the firm prescription that it is. Noise at Moulton Loop is now above FAA guidelines (though the Chair has revised 20 years of historical noise data lower; I cannot say how or why).</li> </ul> <p>So, I do understand your personal concern. As I look at flight paths, it is conceivable that new easterly flight paths might be within 2,500 feet of your home at an altitude of roughly 2,000 feet whereas currently flights might be 3,500 feet from your home at a similar altitude. Still, do not confuse ANPAC's motives. The 48% increase in flights during the past 3 years has been a tremendous change and part of an ongoing trend, and people in the Moulton Loop area are suffering enormous physical and emotional pain. They have just claims for relief. I believe it is perfectly possible that, in the course of time, some residents will become ill and JAC will face suits which will be bad for us all (ultimately, who will cover the damages?). Despite outstanding views, that neighborhood's value is going down.</p> <p>In short, I hope you will understand ANPAC has no interest in KICNE, is working especially hard for residents in Moulton Loop, East Oatgrass, Ryegrass and Sagebrush who are suffering enormously from the growth of JAC, and believes an easterly move in the flight path would be good for our entire neighborhood resulting long run in better property values for all (do you really think airplanes flying directly over the neighborhood, wherever exactly they may be, is good for your property?).</p> <p>It would be great if we could all compromise to find a path best for the entire community. Just my opinion. But, in any case, no, I am not working to implement KICNE.</p> <p>Best to You and Kathie, Mike Michael Gumpert 455 Francis Way Jackson, WY 83001</p>



Contact Info/Date	Comment
	732-221-0172 magumport@att.net
Rocky & Nancy Barber <a href="mailto:rockybar1@aol.com">rockybar1@aol.com</a> 8/14/2022	<p>To the Southern Departure Task Force:</p> <p>My wife and I are just one of the hundreds of homeowners south of the airport that have been most impacted by the increased traffic inbound/outbound at JAC.</p> <p>We live a little over 3 miles south of the end of the runway in the Jackson Hole Golf &amp; Tennis Estates We bought our house several years ago being fully cognizant of the noise from aircraft.</p> <p>However, the increase in traffic since then has led us to the following complaints.</p> <p>1) 2-3 weeks ago I was awakened a little after 2 am in the morning by an airplane landing from the south.</p> <p>That wasn't the first time this occurred this summer either.</p> <p>A week ago I was awakened at 6:15 am by a plane taking off.</p> <p>I have lived near many smaller airports in my life, and Jackson is one of the few that allows planes to land seemingly at any hour. If they have an emergency we understand, but this was almost certainly not the case here (I think both were private jets).</p> <p>but late night/ early morning planes should have to land from the north.</p> <p>Why cant a strict curfew be instigated from 10pm to 7am so our sleep isn't interrupted, sometimes in the middle of the night.</p> <p>2) Flight path. I am somewhat older and knows several pilots that remember the old take-off path.</p> <p>I also know that a plane crashed into Sleeping Indian over 25 years ago, but this was a slow moving, huge prop plane that did not have the benefit of modern technology.</p> <p>I think the airport should open up the possibility of using a more easterly route for planes and pilots that have the navigation equipment and pilot experience to make the rapid climb to the southeast.</p> <p>Planes already do climb rapidly and are usually at 7500-8000 ft when they go directly over our house They would simply have to turn left at the end of the runway and continue to climb to over 11,000.</p> <p>I know this puts the planes out over the Elk Refuge, and would lead to some disturbance when the elk are there.</p> <p>I would think a reasonable compromise would be to have the takeoff pattern be seasonal.</p> <p>Planes would take off and turn left from April to November when the elk are not there.</p> <p>Most homeowners are likely to be inside Dec.-March anyway and would be less impacted by the noise.</p> <p>3) Just this morning, a small single engine airplane literally buzzed our house. It was under 500 ft.</p> <p>The noise was so loud that I honestly thought he was going to crash onto the golf course.</p> <p>Why cant noisy aircraft (whether private or commercial) have to pay a steep landing/take-off fee.</p> <p>Over time this would probably all but eliminate these kind of planes.</p> <p>Some commercial jets are much quieter than others. The loud ones measure 85 dB on my iPhone.</p> <p>Same thing goes. Even steeper fee.</p> <p>This would benefit the airport and the nearby homeowners.</p> <p>Lastly, do aircraft jettison unwanted fuel before landing? Isn't that illegal?</p> <p>I certainly breath better when it has rained (I have a moderately respiratory compromised).</p> <p>We moved here for fresh clean air.</p> <p>The increasing amount of exhaust fumes (and unused fuel?) are a serious health hazard and undermining the attractiveness of Jackson,</p>

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	<p>or more correctly, undermining the attractiveness of Jackson Hole Golf &amp; Tennis estates.</p> <p>I will be in the audience at the Wort on Tuesday and hope to hear that the airport is willing to consider some compromises with its neighbors.</p> <p>Rocky &amp; Nancy Barber</p>
<p>Jenny Cordina  <a href="mailto:jennycordina@gmail.com">jennycordina@gmail.com</a>  8/14/2022</p>	<p>Dear Southern Departure Task Force,</p> <p>My husband and I have property in Bar-B-Bar, just south of the airport, that is incredibly special. We are, however, very concerned about the increase in flights and noise coming into JAC (we've learned that commercial flights increased by 48% from 2018-2021) as well as the associated pollution (both in the air and ground). With the number of flights into JAC likely only to increase (both commercial and private), we would very much appreciate your consideration of us as neighbors to the airport, to work with our community to ensure that JAC doesn't become a place that only tourists want to be, but that we have a thriving community, including those of us that live south of the airport. We believe we have a right to enjoy our property and that the airport should work with the community to ensure that all can enjoy this very special place.</p> <p>Fortunately, there are several practical ways to mitigate (or at least manage) these issues. First, one such tangible option is to leverage the modified flight path that has been proposed by ANPAC that diverts the flights slightly east then south between East &amp; West Gros Ventre buttes. Given this is a historical flight pattern used in the late 90's that avoids the homes south of the airport and has been deemed as a safe route by the FAA, this seems like a logical approach to managing some of the noise issues. We believe that using this flight path when possible is in the best interests of all, as it ensure a safe route to and from the airport and maintains a safe and quiet living condition for the airport's neighbors.</p> <p>Second, implementing a modified curfew from 10pm-7am for all arrivals and departures and then penalizing those airlines and planes that violate the curfew, including privates, would go a long way to supporting a more liveable situation and compromise between our neighborhoods and the airport.</p> <p>We ask that you (and others that are deciding these matters) genuinely consider your neighbors and act in the best interest of our community in Jackson, WY. As property owners in Jackson, WY, we believe first consideration should be given to those that have made the investment in the Jackson community.</p> <p>Thank you for your consideration.</p> <p>Best,  Jenny Cordina &amp; Shubham Singhal  Ryegrass LLC</p>
<p>scott guenther  <a href="mailto:scottguenther@yahoo.com">scottguenther@yahoo.com</a>  8/14/2022</p>	<p>Hello,</p> <p>My family and I are full time Teton County residents residing in the Ponderosa Subdivision near the Jackson Airport and we are well aware of the increase in flight traffic, both commercial and private, as well as the increase in the associated noise and pollution levels in our time of residency. While we made a conscious decision to reside near the airport, we do think it is reasonable to set some limits on noise pollution levels, flight numbers and frequency, and operating hours of the airport in consideration of residents, park visitors, and park wildlife. Just as Grand Teton National Park (Park) considers restrictions and has taken actions on backcountry access (ie: winter closures), trailhead parking restrictions (ie: String Lake), and commercial operations (ie: concession and CUA operations), to name just a few, we ask that the Park, Teton County elected officials, and airport managers also consider impacts associated with increased airport traffic. To that end we support the following:</p> <ul style="list-style-type: none"> <li>• The Park and JAC should agree on desired conditions and reasonable thresholds and mange the airport within those limits. These limits should be transparent and shared with the community.</li> <li>• The Park and JAC could consider charting the noise pollution from the different types of aircraft that land/take off. Some of the smaller private planes are exponentially louder than the large commercial airlines. Consider restrictions on the type of aircraft that can land/take-off and/or the number of landings/departures from a certain model as a way to mitigate the noise pollution. JAC is inside a national park, and the Park is not required to allow every aircraft- especially if some degrade the resource significantly more than others.</li> </ul>

Contact Info/Date	Comment
	<ul style="list-style-type: none"> <li>• JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures of commercial aircraft and private planes and penalize those airlines and private jets that violate the curfew. Consideration for flights outside of curfew hours can be given to air medical and Park resource flights.</li> <li>• JAC should take actions to minimize additional airport noise during curfew hours to include requiring the use of electric power generators as opposed to the fuel driven and much louder auxiliary power units, among other mitigations, to decrease ground noise where possible. Mitigating ground noise 24 hours a day should be a goal of the Park and JAC.</li> <li>• JAC should consider flight paths that minimize human and wildlife impacts from noise pollution and unexpended jet fuel exhaust that may create a health hazard.</li> <li>• The Park and JAC should have a clear understanding of the desired conditions before the planned expansion of the private aircraft facility occurs as this will only increase the current impacts. "If you build it they will come."</li> <li>• JAC should include an airport board member from the residential community adjacent to the airport.</li> </ul> <p>We appreciate your consideration of these mitigations, and others that you are pursuing, and look forward to continued discussions to find reasonable solutions to the increasing disturbances associated with airport activities.</p> <p>Thank you, Scott Guenther</p>
<p>Kate Wilmot <a href="mailto:krwilmot@gmail.com">krwilmot@gmail.com</a> 8/14/2022</p>	<p>Hello,</p> <p>My family and I are full-time Teton County residents residing in the Ponderosa Subdivision near the Jackson Airport and we are well aware of the increase in flight traffic, both commercial and private, as well as the increase in the associated noise pollution levels in our time of residency. While we made a conscious decision to reside near the airport, we do think it is reasonable to set some limits on noise pollution levels, flight numbers and frequency, and operating hours of the airport in consideration of residents, park visitors, and park wildlife. Just as Grand Teton National Park (Park) considers restrictions and has taken actions on backcountry access (ie: winter closures), trailhead parking restrictions (ie: String Lake), and commercial operations (ie: concession and CUA operations), to name just a few, we ask that the Park, Teton County elected officials, and airport managers also consider impacts associated with increased airport traffic. To that end we support the following</p> <ul style="list-style-type: none"> <li>• The Park and JAC should agree on desired conditions and reasonable thresholds and manage the airport within those limits. These limits should be transparent and shared with the community.</li> <li>• The Park and JAC could consider charting the noise pollution from the different types of aircraft that land/take off. Some of the smaller private jets are exponentially louder than the large commercial airlines. Consider restrictions on the type of jet that can land/take-off and/or the number of landings/departures from a certain model as a way to mitigate the noise pollution. JAC is inside a national park and the Park is not required to allow every aircraft- especially if some degrade the resource significantly more than others.</li> <li>• JAC should implement a tighter curfew from 10pm-7am for all arrivals and departures of commercial aircraft and private planes and penalize those airlines and private jets that violate the curfew. Consideration for flights outside of curfew hours can be given to air medical and Park resource flights.</li> <li>• JAC should take actions to minimize additional airport noise during curfew hours to include requiring the use of electric power generators as opposed to the fuel driven and much louder auxiliary power units, among other mitigations to decrease ground noise where possible. Mitigating ground noise 24 hours a day should be a goal of the Park and JAC.</li> <li>• The Park and JAC should have a clear understanding of the desired conditions before the planned expansion of the private aircraft facility occurs as this will only increase the current impacts. "If you build it they will come."</li> <li>• JAC should include an airport board member from the residential community adjacent to the airport.</li> </ul> <p>We appreciate your consideration of these mitigations, and others that you are pursuing, and look forward to continued discussions to find reasonable solutions to the increasing disturbances associated with airport activities.</p> <p>Thank you,</p>

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	Kate Wilmot																				
Michael Gumpport <a href="mailto:magumpport@att.net">magumpport@att.net</a> 8/15/2022	<p>Southern Departure Task Force:</p> <p>I requested a study of flight path noise versus ambient noise. I understand you will present such a study at the 8/16/22 Task Force meeting, but ANPAC's representative cautions me that the ambient noise reported in town in the study is dramatically lower than our own measurements of ambient noise in town.</p> <p>A good study of flight noise versus ambient sound (without any reference to noise from the current ALPIN flight path) would be a useful perspective, and I hope you will review your ambient noise readings and produce such a study.</p> <p>Meanwhile, I have looked at all the proposed flight paths (attached). I have color coded locations by noise as follows using what I am told are Task Force draft ambient measurements.</p> <table border="0"> <tr> <td style="text-align: center;">---AREA NOISE-----</td> <td style="text-align: center;">----COLOR CODE-----</td> </tr> <tr> <td>. If LMAX &lt;=60 dB</td> <td>white (BEST)</td> </tr> <tr> <td>. If LMAX &gt; 61 decibels</td> <td></td> </tr> <tr> <td>.    if 1-10 above ambient</td> <td>yellow</td> </tr> <tr> <td>.    if 11-20 above ambient</td> <td>tan (may appear as orange)</td> </tr> <tr> <td>.    if 21-30 above ambient</td> <td>pink (may appear as violet)</td> </tr> <tr> <td>.    if &gt;= 31 above ambient</td> <td>red (WORST)</td> </tr> <tr> <td>. Except that: No site under 65 dB LMAX receives a color code worse than yellow</td> <td></td> </tr> <tr> <td>.                No site under 70 dB LMAX receives a color code worse than tan (may appear as orange)</td> <td></td> </tr> <tr> <td>.                No site under 75 dB LMAX receives a color code worst than pink (may appear as violet).</td> <td></td> </tr> </table> <p>I color coded Concept 3 as a proxy for the current ALPIN flight path.</p> <p><b>RESULTS</b></p> <p>As I review the results, I make 5 observations...</p> <p>...1. Unsurprisingly, the brunt of noise is borne by homes in the residential section immediately south of JAC.</p> <p>...2. Concept 4 provides some relief to the northernmost residential neighborhood, but westerly turn concepts 2 &amp; 4 spread significant noise across a broad swathe of homes extending far to the south and west.</p> <p>...3. The "Painter" concepts provide the greatest relief to the most areas.</p> <p>...4. Easterly turn concepts 1, 5 and 6 all provide some significant relief to residential areas south of JAC (compared to Concept 3 as a proxy for the current ALPIN flight path). If ambient noise is understated (as ANPAC believes), then the chart overstates the impact of concept 1 &amp; 5 on town and flight path concepts 1 &amp; 5 may have a negligible impact on town.</p> <p>...5. By taking into consideration ambient noise and, most importantly, the absolute level of noise, the zones painted "RED" in the east and south in earlier Task Force noise study presentations largely disappear. There is little to no significant aircraft noise in these areas especially after consideration of ambient noise with the exception of the GTNP Gros Ventre measurement point. With regard to the GTNP Gros Ventre measurement point, the "compatibility" clause under which JAC operates now or soon will preclude overflights of non-compatible residential lands immediately south of JAC. Flights will need to remain in GTNP airspace until reaching a "compatible" exit point, and this fact should be borne in mind in considering any flight path.</p> <p><b>CONCLUSION</b></p> <p>The Task Force should give favorable consideration to the "Painter" proposals and concepts that turn to the east. Concepts that turn to the west should be rejected.</p> <p>Regards,  Michael Gumpport  455 Francis Way</p>	---AREA NOISE-----	----COLOR CODE-----	. If LMAX <=60 dB	white (BEST)	. If LMAX > 61 decibels		.    if 1-10 above ambient	yellow	.    if 11-20 above ambient	tan (may appear as orange)	.    if 21-30 above ambient	pink (may appear as violet)	.    if >= 31 above ambient	red (WORST)	. Except that: No site under 65 dB LMAX receives a color code worse than yellow		.                No site under 70 dB LMAX receives a color code worse than tan (may appear as orange)		.                No site under 75 dB LMAX receives a color code worst than pink (may appear as violet).	
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Contact Info/Date	Comment
	Jackson, WY 83001 magumport@att.net
Michael Gumport <a href="mailto:magumport@att.net">magumport@att.net</a> 8/15/2022	<p>Southern Departure Task Force:</p> <p>I have been in correspondence with JAC attorney Mike Morgan. He confirms the items I refer to as “flight limitation” clauses remain in full effect and govern JAC’s operations. However, I was left with some questions which were not answered, and the “flight limitation” clause may have a bearing on the selection of a southerly departure flight path.</p> <p>Mr. Morgan asserts that JAC’s board may allocate slots above the “flight limitation”. From whom does JAC receive that authority?</p> <p>Mr. Morgan writes that, after adjustment for the “equivalency formula”, average daily scheduled commercial departures were 4.05 in 1Q22, 3.77 for 2021 overall, and 5.62 in 3Q21, below the required limits in all cases. Since the necessary calculations have been performed, the data is available to you. Please provide the detailed 3Q21 “equivalency” calculation that supports your report that “noise-equivalent” average daily scheduled commercial aircraft or jet departures were 5.62. Please include...</p> <p>...total number of departures by each type and configuration of scheduled commercial aircraft</p> <p>...FAA noise certification for the base class and configuration Boeing 737-200</p> <p>...FAA noise certification for each type and configuration of scheduled commercial aircraft departure from JAC</p> <p>...the formula used to calculate “noise equivalency”</p> <p>...the “noise equivalency” assigned to each type and configuration of scheduled commercial aircraft that departed JAC</p> <p>...number of days in the quarter</p> <p>...names of all flight operators included in the tally</p> <p>...the calculation showing the grand total of actual scheduled commercial aircraft flights and “noise equivalent” total flights (5.62)</p> <p>...the total number of unscheduled and/or non-commercial aircraft departures that you excluded from your calculation</p> <p><b>QUESTIONS ON THE METHOD OF CALCULATION</b></p> <p>According to the FAA’s AC36-1H document, noise ratings applied to Boeing’s 737-200 vary substantially from one Boeing 737-200 configuration to the next. Which Boeing 737-200 configuration did you elect to use as the base for calculating noise equivalency? Would your conclusion that JAC is below the “flight limitation” strictures be different if you had selected the least favorable (quietest) Boeing 737-200 configuration as the benchmark for your calculation?</p> <p>The FAA’s AC36-1H document provides 3 EPNdB (effective perceived noise) readings for certificated aircraft, TO, SL, and AP (which I take to mean “takeoff”, “sideline”, and “approach”). The latest publication I find is for 4/24/12 (footnote 1 below). I assume there must be a more recent listing of noise ratings. Could you please provide a link to the source document that supports your assignment of a noise rating to each type and configuration of aircraft?</p> <p>In calculating “noise equivalency”, did you give any consideration to sideline (SL) noise which, I presume, occurs on both takeoff and approach?</p> <p>The “flight limitation” clause refers to both “all scheduled commercial aircraft” and “commercial jet [departures]”. For an aircraft or jet to be “commercial”, must it be owned by a major airline, or is production by a commercial manufacturer and FCC certification sufficient for an aircraft or jet to be “commercial”? For a flight to be “scheduled”, is filing of a flight schedule sufficient? NetJets-like services and charter companies may be private, but, are there any circumstances under which a plane flown by these private operators would be considered a “scheduled commercial aircraft” or “commercial jet” and need to be included in your tally for calculating noise-equivalent, scheduled commercial aircraft or jet departures from JAC?</p> <p>Thank you.</p>

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	<p>Regards, Mike Michael Gumport 455 Francis Way Jackson, WY 83001 732-221-0172 magumport@att.net</p> <p>(1) 4/24/12 FAA AC36-1H noise classification of aircraft, <a href="https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_36-1H.pdf">https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_36-1H.pdf</a></p>
<p>Michael Gumport <a href="mailto:magumport@att.net">magumport@att.net</a> 8/15/2022</p>	<p>Southern Departure Task Force:</p> <p>I have been in correspondence with JAC attorney Mike Morgan, but he did not reply to my question on whether JAC was in compliance with the “compatibility” clause that governs JAC’s operations. This clause has a clear bearing on any southerly departure flight path.</p> <ul style="list-style-type: none"> <li>• Paragraph 4e of the April 27th, 1983 Use Agreement revision entered into between JAC and the Secretary of the Interior includes a “compatible use” clause that states with respect to filing a noise abatement program[i]:</li> </ul> <p>“The revised plan shall also seek to ensure that airport operations are conducted in such a manner that aircraft noise exposure will be reasonably compatible with other adjacent land uses”</p> <p>My opinion is JAC is not in compliance with the 1983 Use Agreement’s compatibility strictures. Reading JAC’s own, definitive, exhaustively researched 2018 report on noise at Moulton Loop (about 63 DNL decibels or more with a clear uptrend over the 28 years reported; see graph below) and after consideration of the 2018-2021 48% increase in the number of flights reported by JAC, it appears to me that noise in adjacent residential land now almost certainly substantially exceeds FAA guidelines (65 DNL decibels). Consequently, it would seem that planes departing JAC are prohibited by the “compatible use” clause from exiting GTNP airspace onto/over this incompatible adjacent residential land.</p> <p>Compliance with the “compatible use” clause does NOT mean simply filing paperwork for a noise abatement program. It means just what it says: taking action to seek to assure compatible use. It is not aspirational. It is a directive.</p> <p>While years ago the residential land south of JAC may have been compatible with JAC’s operations, the “compatible use” clause appears to me now dispositive: planes on southerly departures from JAC MUST turn east as soon as practicable to avoid flying over incompatible residential land, exit the area, return to GTNP airspace, and journey on southwards until an appropriate exit from GTNP airspace is possible. If overflight of some portion of incompatible residential land remains necessary (because of JAC’s failure to acquire this land or have it appropriately zoned, or because JAC placed its runway too far to the south, or because JAC’s runway is not long enough), aircraft still must minimize overflight of incompatible adjacent residential land by executing an easterly turn as quickly as practicable. Insofar as JAC has expanded to such a degree that, even after an easterly turn, overflight of some incompatible land will continue, claims of continuing damages may be settled or adjudicated by those effected. If JAC is certain that, aside from excess noise, other claims of incompatibility are without merit (for instance, claims for pollution and health damages which some residents assert JAC willfully disregards), a substantial cutback in the number of permitted flights might be contemplated as possibly under some circumstances an adequate alternative remedy.</p> <p>Let me know if i) you believe the “compatible use” clause does not apply or ii) is not violated or iii) if you disagree that the only partial remedy (other than a reduction in air traffic) is an easterly turn away from the incompatible residential land.</p> <p>Regards, Mike Michael Gumport 455 Francis Way Jackson, WY 83001</p>

Contact Info/Date	Comment
	<p>732-221-0172</p> <p>magumport@att.net</p> <p>PER JAC DEFINITIVE 2018 REPORT: NOISE AT MOULTON LOOP FROM 1990 TO 2018 ROSE FROM 59 DECIBELS TO OVER 63 DECIBELS; FAA LIMIT IS 65 DECIBELS; SUBSEQUENTLY, FLIGHTS ROSE 48%</p> <p>source: 2018 JAC Annual Noise Report, p. 4-22, <a href="https://228k3g4ee2bb2v3oe82te2b2-wpengine.netdna-ssl.com/wp-content/uploads/2021/03/jac-2018-annual-noise-report.pdf">https://228k3g4ee2bb2v3oe82te2b2-wpengine.netdna-ssl.com/wp-content/uploads/2021/03/jac-2018-annual-noise-report.pdf</a>.</p> <p>[i] Compatible Use of Adjacent Lands source: April 27th, 1983 JAC Agreement Revision, pp 4-5, <a href="https://228k3g4ee2bb2v3oe82te2b2-wpengine.netdna-ssl.com/wp-content/uploads/2021/07/Use-Agreement.pdf">https://228k3g4ee2bb2v3oe82te2b2-wpengine.netdna-ssl.com/wp-content/uploads/2021/07/Use-Agreement.pdf</a>.</p>
<p>Kathryn Turner</p> <p><a href="mailto:kathryn@turnerfineart.com">kathryn@turnerfineart.com</a></p> <p>8/15/2022</p>	<p>Jim,</p> <p>Yesterday, I took some decibel readings inside my home while flights are going over my home.</p> <p>I live at Teton Shadows. These readings were taken in my studio where I try to paint my paintings.</p> <p>A week ago, I took some noise readings outside while trying to work outside on my deck.</p> <p>I wish to share the results with you.</p> <p>First, let me start by mentioning that the average ambient decibel level inside my home is 23.4 db</p> <p>The noise level when flights are flying overhead climbs as high as 83.9db INSIDE with the average level inside 71.9db. No wonder my home shakes when these flights fly over!</p> <p>According to my readings, the average noise level outside during flights is 81.2db with a max reading of 91.5db</p> <p>That's a problem! That's loud!</p> <p>Since the FAA then weights noise readings 10x's for any flights after 10pm and before 7 am, can you stand behind your voluntary curfew of 11:30pm-6 am in good conscience? Can you stand behind the current southern departure flight path knowing this impact it is making on our lives, every day, all day?</p> <p>Under separate cover, I will send you the recordings of these readings.</p> <p>Thank you,</p> <p>Kathryn M. Turner</p> <p>TURNER FINE ART</p>
<p>Stacy Riddick</p> <p><a href="mailto:momonthego@mac.com">momonthego@mac.com</a></p> <p>8/15/2022</p>	<p>Dear Jim, Meg, Chip, Grady, Jonathan and Mark, and Committee,</p> <p>I emailed each of you this morning about a 6:07 flight that took off directly over my house at 130 Stinnett. I then started to record the flights and their times after that. There were 16 flights between 6:00 and 10:30 this morning!!</p> <p>6:07</p> <p>7:07</p> <p>7:10</p> <p>7:28</p> <p>7:31</p> <p>7:35</p> <p>8:09</p> <p>8:13</p> <p>8:29</p> <p>10:01</p>

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	<p>10:07</p> <p>10:13</p> <p>10:6</p> <p>10:19</p> <p>10:24</p> <p>10:34</p> <p>I stopped recording at this point.</p> <p>It is obvious that none of you live in the vicinity of the airport or this noise and the constant dumping of diesel fuel byproducts. Otherwise this would be of grave concern to you. You need to visit our area and live through this unacceptable experience to actually appreciate why we are so upset and want the flight pattern altered.</p> <p>Stacy Riddick 130 Stinnett</p>
<p>Margaret McCarthy</p> <p><a href="mailto:m2mccarthy@gmail.com">m2mccarthy@gmail.com</a></p> <p>8/15/2022</p>	<p>August 14, 2022</p> <p>Dear Airport Noise Task Force Committee Members:</p> <p>We would like to first thank you for serving on this important committee and taking the time to address the many challenging issues related to airport noise in Jackson Hole.</p> <p>We recognize that one of the greatest drivers of this challenge has been the tremendous increase in aviation traffic in and out of Jackson Hole. And of course we understand that it is impossible to stop the increase in private and commercial traffic. We believe the only way to provide a win-win for all stakeholders is to focus not on the increase in the volume of traffic but upon the much needed and thoughtful rerouting of traffic.</p> <p>By mandating a flight path that does not go over residential communities, especially when there is vast uninhabited land to fly over, we believe that all parties will benefit and those residents will no longer be concerned with noise and environmental pollution.</p> <p>We appreciate your consideration on a successful resolution to these challenges. I am confident that y'all will come up with a reasonable solution for all stakeholders.</p> <p>With sincere appreciation, Margaret McCarthy</p>
<p>Don Sider</p> <p><a href="mailto:dsider@siderlaw.com">dsider@siderlaw.com</a></p> <p>8/15/2022</p>	<p>To the Respective Persons Having a Say in the Jackson Hole Airport Flight Patterns,</p> <p>Good Evening.</p> <p>My name is Don Sider. My wife, Carole and I, built our house in 1997-1998 as we welcomed into life our newborn child, Elizabeth, who is now 24 years old.</p> <p>When we chose our lot in the Bar B Bar subdivision, we had studied for days, weeks and months, the flight patterns, as we knew we wanted the north of town location, but feared the airport noise.</p> <p>Our lot at 315 Oatgrass, was at that time, well west and clear of any flight paths.</p> <p>We relied on the flight paths and the customs, at that time, for departing flights to bank east at take off and circle around the valley gaining altitude, and finally exiting toward their intended destination.</p> <p>We love our home and our Jackson Hole community. We are not opposed to others also moving to Jackson for the same enjoyment. But, the rerouting of the flight path to the west, and now almost always directly over our home for the takeoffs of the big commercial jets and the loudest private jets, has us greatly concerned about our future in the Valley. Each takeoff sounds like a freight train is going to hit our home. Our home shakes on some of the planes going overhead; directly overhead.</p> <p>We recognize there may not be a perfect solution, and that what may be accommodative to us and our immediate neighbors, might be an infringement on others.</p>



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	<p>But, there has to be a better path forward, than that which we have now been experiencing in the few couple of years, that is getting worse, with each new summer.</p> <p>We believe that a re route to the east, over the non-occupied and non-used part of Grand Teton Park, would not be an endangerment to the animals, and would re implement something close to the level of quiet that we enjoyed for so many years, and that we relied on when we purchased our lot and built our home. We now pay exorbitant taxes on our home, yet we no longer enjoy the quiet enjoyment of our home; we share it with Delta, American, United, Alaska and hundreds of private "airlines".</p> <p>We respectfully ask your help in reducing the level of noise pollution and inconvenience that we are now living under, most hours of every day.</p> <p>There must be something better than the status quo.</p> <p>Thank you for your service to our community.</p> <p>Don and Carole Sider 315 Oatgrass Rd. Jackson, WY 83001</p>
<p>Mike Murray <a href="mailto:mike@pmmurray.com">mike@pmmurray.com</a> 8/16/2022</p>	<p>Ladies and Gentlemen,</p> <p>I write to you all today in an effort to encourage a shift in the flight path of aircraft departing JAC to the South. I am a resident of Bar B Bar which rests just West of the runway pavement by less than 10,000 linear feet.</p> <p>I chose to buy in this area, near an airport, so this email is not just me complaining about the obvious. It is more importantly a professional opinion that the departure flight course, the SID (s), can and should be adjusted West for several reasons.</p> <p>I myself am a pilot for American Airlines and have been for 25 years. My father was a pilot for American Airlines for 36 years and a Navy veteran A4 pilot. So this discussion is close to me in many ways.</p> <p>With high terrain to the West and winds favoring the South runway most times, I appreciate the logic of South, straight-out departures. I grew up near SNA-John Wayne airport in Orange County, California and there was and is a consistent discussion, argument and protest about aircraft noise, curfew etc. However, there has also been a successful change in the SID's, tightening of the curfews, weight limitations of the aircraft, noise abatement procedures and noise monitoring (with violations) that have proven highly successful. Aircraft depart safely on runway heading to 1 mile DME (off a much shorter runway) and safely reduce power at 800AFL and begin a safe standard rate turn to the South East to avoid homes. By doing so, aircraft travel down Back Bay until reaching the coastline at which time they may accelerate and climb. This departure procedure reduces noise, saves fuel, reduces environmental impacts, increases engine life and mitigates potential spent fuel, or for that matter FOD, from reaching the homes below.</p> <p>JAC airport is within 10,000 feet of my property as I mentioned above. My property rests on a 100 acre migration corridor that is home to thousands of wildlife that depend on a safe environment. These beautiful animals make their way through our land each day to find refuge in this area; to feed, hydrate and populate. The noise from the current departures, coupled with the spent fuel exfoliating to the water table below creates a hazard for these creatures. In fact, ponds are no longer permissible as you may know within 10,000 feet of the airport due to real environmental damages.</p> <p>A polite shift in the SID's to the East (including VFR departures at end of runway), coupled with a more Easterly shift in the STAR's to JAC could and should be doable. If ATC could keep the arrivals slightly higher from the West over the Range and more Easterly before starting their turn to the South once well North East of JAC would work. This type of arrival is normal for most South runways with long approach courses including SNA. Like Bar B Bar, the neighborhood of Dover Shores in Newport Beach lies just West of RWY 20R and they now enjoy much quieter departures due to a shift East and South in the most used SID's.</p> <p>As an airline pilot, safety is paramount. Everything in the email above is with safety in mind. I actually think a more Easterly SID would be more safe as the terrain is much lower to the South East. Once above MVA (just South of Alpine), the aircraft could start their turns West to join their airways. Additionally, with the Snake River to the West and the ponds that border it, there is a much higher likelihood of bird strike to the West than to the East.</p>

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	<p>If nothing else, please try a temporary test of this abbreviated departure and monitor its noise and climate impacts. Please introduce noise abatement with monitoring and posted violations. I believe, in the end, this could be a success for our neighbors, both humans and wildlife, that live West of JAC and hope for a quieter, safer existence.</p> <p>Thank you for your time....</p> <p>P. Michael Murray</p>
<p>Michael Gumport  <a href="mailto:magumport@att.net">magumport@att.net</a>  8/17/2022</p>	<p>Jim:</p> <p>I sit on ANPAC's executive committee, but I write this note personally to you and JAC's board as a local resident. It may not reflect ANPAC's views.</p> <p>Regarding today's final meeting of the Southern Departure Procedure Input Taskforce (SIT), I observe...</p> <p><b>THE POSITIVES – AREAS OF AGREEMENT</b></p> <ul style="list-style-type: none"> <li>• Flight Limitations - Local residents and multiple SIT team members expressed general agreement that, if legally permitted, then a limitation on the number of flights makes sense insofar as it reduces noise.</li> <li>• Flight Fanning - SIT's FAA-experienced advisor indicated it is perfectly feasible to approve multiple flight paths and have automated departure route assignment (for instance, assignment by type of plane or by destination) subject to tower and pilot final determination. Fanning would reduce noise over any single area except for those homes immediately adjacent to the airport.</li> <li>• ANPAC Favored Flightpath – Flightpath designers indicated the “Painter RNP” was safe and feasible although it is unlikely to be flown by a large number of planes for an indefinite period, perhaps 5-7 years. Denver and Eagle Vail both have RNP departure flight paths. RNP is the way of the future.</li> <li>• Noise Shifting – For the first time, Chair Valerie Brown indicated that, if a consensus emerged, then a new flightpath would be recommended even if it shifted noise.</li> <li>• Strengthened Curfew – An extended curfew with exploration of any and all possibilities for encouraging compliance appeared to have near universal support.</li> <li>• Seasonal Flight Paths – The possibility of seasonal flight paths appeared to gain at least some modest traction.</li> <li>• Other Ideas – Upon review, a 1,700' extension of the runway to the north appears a viable idea that would allow flights to better avoid incompatible use of residential lands.</li> </ul> <p>2</p> <p><b>SUMMARY OF RECOMMENDED ACTION ITEMS (discussed in detail below)</b></p> <p>Immediately –</p> <ol style="list-style-type: none"> <li>I. Review contract rights to consider 1,700' northern extension of runway</li> <li>II. Conduct and release independent, 3rd party audit to determine if JAC is in compliance with its “Adjacent Compatible Lands” restriction</li> <li>III. Conduct and release independent, 3rd party audit to determine if JAC is in compliance with its “Flight Limitation” restrictions</li> <li>IV. Consider actions to strengthen/lengthen/enforce curfew</li> <li>V. Review pollutants specific to aircraft engines and consider responses</li> </ol> <p>Then –</p> <ol style="list-style-type: none"> <li>VI. Move forward on Painter RNP flight path with fanning as a long term future plan</li> <li>VII. Move forward on one additional southerly departure that can be flown more immediately; for reasons explained, in addition to the Painter RNP, concepts #1, #5, and #6 merit serious consideration by the board.</li> </ol> <p><b>DISCUSSION OF RECOMMENDED ACTION ITEMS</b></p> <p><b>I. NORTHERLY RUNWAY EXTENSION PERMIT</b></p> <p>In 1979 JAC purchased from the National Park Service the right to extend the runway in the northerly direction to 8,000'. JAC paid for this permit by giving land to the National Park Service and promising a</p>

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	<p>noise abatement plan. It is possible the runway was subsequently extended, but, in any case, the runway now measures 6,300'. It appears JAC may have the right to extend the runway another 1,700' to the north. Doing so would give aircraft on southerly departures an additional 1,700' of taxiway enabling them to gain altitude and make a turn earlier before going over adjacent residential land.</p> <p>"Another permit was issued on August 1, 1979. This permit reduced the land area of the airport from 760 acres to 533 acres, but reconfigured the airport boundary so that a northerly runway extension to 8,000 feet could be accommodated. The 1979 permit also called for the Jackson Hole Airport Board to develop a voluntary noise abatement plan to route aircraft away from noise-sensitive areas of Grand Teton National Park."<sup>1</sup></p> <p>Recommendation: Conducting a review of the status of the northerly runway extension is an important first step because it potentially will affect all southerly departures. If built, it could relieve pressure on adjacent residential lands to the south.</p> <p><b>II. COMPATIBLE USE CLAUSE</b></p> <p>Under the 1983 Use Agreement Revision between JAC and the Secretary of the Interior, JAC is obligated to operate "compatibly" with adjacent lands.</p> <p>"The revised plan shall also seek to ensure that airport operations are conducted in such a manner that aircraft noise exposure will be reasonably compatible with other adjacent land uses"<sup>2</sup></p> <p>3</p> <p>JAC's legal advisor underscores the distinction that JAC must only "seek to ensure" compatibility and opines that filing a noise abatement plan is sufficient to fulfill this obligation. JAC's acoustic advisors assert the immediately adjacent residential lands fall below the 65 DNL reading that the FAA defines as "compatible", and, in support of his position, has revised all historical noise data at Moulton Loop lower (under 61 dB in 2018; a declining trend since 2001).<sup>3</sup></p> <p>Nonetheless, JAC's definitive 2018 noise report shows noise at Moulton Loop was 64 decibels and on a rising trend since 1990.<sup>4</sup> In the E. Zenith Drive neighborhood closer to JAC, noise is undoubtedly significantly worse. In 2018, the number of annual commercial landings was 4,322 compared to 6,4097 in 2021, an increase of 48% in three years.<sup>5</sup> It would appear extraordinarily likely that noise in the residential sections now is incompatible with residential use, and the filing of paperwork in no way amounts to action to "ensure" compatibility.</p> <p>Recommendation: An audit by an independent third party of JAC's compliance with its required compatibility with adjacent residential lands is needed because, if JAC is not in compliance, then this clause is dispositive: planes on southerly departures from JAC MUST turn east as soon as practicable to avoid flying over incompatible residential land; they MUST return to GTNP airspace at the earliest opportunity to exit the incompatible area and then journey on southwards until an appropriate exit from GTNP airspace is possible.</p> <p>If overflight of some portion of incompatible residential land remains necessary (because of JAC's failure to acquire this land or have it appropriately zoned, or because JAC placed its runway too far to the south, or because JAC's runway is not long enough), aircraft still must minimize overflight of incompatible adjacent residential land by executing an easterly turn as quickly as practicable. Insofar as JAC has expanded to such a degree that, even after an easterly turn, overflight of some incompatible land will continue, claims of continuing damages may be settled or adjudicated by those effected. If JAC is certain that, aside from excess noise, other claims of incompatibility are without merit (for instance, claims for pollution and health damages which some residents assert JAC willfully disregards), a substantial cutback in the number of permitted flights might be contemplated as possibly under some circumstances an adequate alternative remedy.</p> <p><b>III. FLIGHT LIMITATION CLAUSES</b></p> <p>An independent, 3rd party auditor should review the "flight limitation" clauses under which JAC operates, all the more so in light of the broad community's desire to explore whether noise could be reduced by limiting flights., JAC's 1983 "Use Agreement" required a noise abatement plan, and that plan was established in 1985. This noise abatement plan was grandfathered: it did not fall subject to the 1990 Airport Noise and Capacity Act's (ANCA's) assertion of control, and it continued in effect in the September 2010 JAC Agreement Extension Final Environmental Impact Statement ("EIS"). The 2010 EIS underlies the May 18, 2011 Lease Extension. In discussions, JAC attorney Mike Morgan confirms the "Flight Limitation Clauses" remain in effect.</p> <p>The 2010 EIS was prepared by the Park Service and describes the noise requirements under which JAC did and would operate, stating:</p>

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	<p>"As part of the 1985 noise abatement plan, a maximum of 6.5 average daily departures are allowed by the 'Base Class' aircraft, a Boeing 737-200. As stated in the noise abatement plan, 'If an aircraft is quieter than the 'Base Class' aircraft, it</p> <p>4</p> <p>may operate in greater numbers based on an 'equivalency' formula. The limitation applies to all scheduled commercial aircraft having published noise levels above 86 dBA on approach and above 74.5 dBA on departure."<sup>6</sup></p> <p>-----</p> <p>"As required by the 1983 agreement, the Jackson Hole Airport Board updated the airport's noise abatement plan in accordance with Title 14, Part 150 of the Code of Federal Regulations (Part 150). The revised plan, which is in Appendix D of this final environmental impact statement, was approved by the Federal Aviation Administration and adopted by the Board on March 14, 1985.</p> <p>To ensure compliance with the agreement's DNL contour requirements to control cumulative noise, the noise abatement plan established a limit on the number of commercial jet operations. The limit was 6.5 average daily departures averaged annually, and 6.85 average daily departures averaged each calendar quarter, for the Boeing 737-200, a model that was then in operation at the airport. Greater numbers of operations are allowed only if quieter aircraft are used, based on an equivalency formula."<sup>7</sup></p> <p>In the 8/16/22 presentation, Task Force advisors represented that "noise equivalent" departures (5.62 in 3Q21) were below the required limits. Their representations are insufficient.</p> <p>What is "equivalent" noise? On the one hand, Task Force advisors indicated that a 10 decibel decrease in sound is perceived as a halving of noise, a 20 decibel decrease in sound is perceived as a 75% reduction in noise.<sup>8</sup> Yet, on the other hand, advisors indicated that if a departing plane were 10 decibels quieter than a "base Boeing 737-200", then they count that departure on a noise equivalent basis as just 1/10th of a plane, and, if a plane is 20 decibels quieter than a "base Boeing 737-200", then they count it as 1/100th of a plane.<sup>9</sup> Who determines and administers the exact terms of the noise equivalency formula?</p> <p>Just how noisy is the "base" plane? An FAA certification publication lists 61 Boeing 737-200 configurations each with a different EPNdB (effective perceived noise) rating for TO (take off), SL (side line), and AP (approach).<sup>10</sup> These 737-200's carry TO certifications ranging from 83.7 EPNdB to 102.0 EPNdB. Which configuration should be used as the "base" (I would argue the quietest)? Similarly, each type of plane departing JAC is available in multiple configurations, and these each have different decibel ratings. In applying the equivalency formula, is care taken to apply it to each individual plane's exact configuration? Is SL noise taken into account?</p> <p>To exactly which planes must this limitation be applied? The "flight limitation" clause refers to both "all scheduled commercial aircraft" and "commercial jet [departures]". For an aircraft or jet to be "commercial", must it be owned by a major airline? Is production by a commercial manufacturer and FCC certification sufficient for an aircraft or jet to be "commercial"? For a flight to be "scheduled", is filing of a flight schedule sufficient? NetJets-like services and charter companies may be private, but, are there any circumstances under which a plane flown by these operators would be considered a "scheduled commercial aircraft" or "commercial jet" and need to be included in the tally for calculating noise-equivalent, scheduled commercial aircraft or jet departures from JAC?</p> <p>5</p> <p>To fully address these questions and determine whether JAC is in compliance with its "flight limitation" restrictions, an independent, 3rd party audit is required. All data should be released for public inspection. This data of necessity should include...</p> <ul style="list-style-type: none"> <li>• total number of departures by each type and configuration of scheduled commercial aircraft</li> <li>• FAA noise certification for the base class and configuration Boeing 737-200 including an explanation for the chosen configuration</li> <li>• FAA noise certification for each type and configuration of scheduled commercial aircraft departure from JAC</li> <li>• the formula used to calculate "noise equivalency"</li> <li>• the "noise equivalency" assigned to each type and configuration of scheduled commercial aircraft and/or commercial jet that departs JAC</li> <li>• number of days in the quarter</li> <li>• names of all flight operators included in the tally</li> </ul>



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	<ul style="list-style-type: none"> <li>• the calculation showing the grand total of actual scheduled commercial aircraft and/or commercial jet flights and “noise equivalent” total flights</li> <li>• the total number of unscheduled and/or non-commercial aircraft departures that JAC asserts should be excluded from the calculation and the reason for their exclusion</li> </ul> <p>Recommendation: Conducting an independent, third party audit of compliance with JAC’s flight limitation restriction is important because, if JAC is not in compliance, it must reduce flight departures. The Task Force broadly supported reduced noise even if it meant reduced flights. Whether or not JAC must reduce flight departures due to application of the noise limitation clauses, alternative southerly departure routes should still be considered.</p> <p>THE NEGATIVES – AREAS OF DISGREEMENT</p> <ul style="list-style-type: none"> <li>• No Consensus – The group failed to agree on a single best course of action with regard to a new southerly departure procedure.</li> <li>• Pollution – The issue of pollution was raised by interested residents. JAC indicated 1) the U.S. EPA has standards for a variety of pollutants and the Wyoming DEQ administers the program and determines Teton County meets air quality standard for those specified pollutants. Also, the EPA sets emissions standards for aircraft engines, and the FAA certifies engines meet those standards. JAC’s answer does not appear directly responsive to the question of the specific pollutants emitted by aircraft engines immediately over residential neighbors, including lead and the complex hydrocarbons from jet engines. Residents indicated crops from local gardens were inedible, tasting of aircraft fuel.</li> </ul> <p>COMMENTS ON PROCESS</p> <p>The assignment was extraordinarily difficult (and thankless), and the chair coordinated an enormous effort to generate data and respond to questions. Still, it did not succeed in fostering compromise. The effort was not a success. By all rights, confidence in the process would have been better secured if SIT had been led by an independent party unaffiliated with JAC and someone without risk of being in one of the potential flight paths.</p> <p>6</p> <p>JAC’s board created the Southern Departure Procedure Input Taskforce (SIT) to determine if one or more alternative procedures were reasonable and in the best interest of the entire community. The board also asked SIT to look for ways to further reduce noise without shifting noise over others. ANPAC was delighted to be asked to participate in JAC’s \$235,000 effort.</p> <p>Southern Departure Task force member and flight procedures designer Alex Seybold described the job this way: “[Our] goal is to try to find the most noise friendly path we can.”<sup>11</sup> Leaders of the design effort also stated they would be using the number of “loud noise events” as the key measurement criteria they aim to minimize, a criteria that seemed a reasonably good starting point.</p> <p>At the opening of the 2nd meeting, the goal as stated by Bill Kane, task force coordinator, was to consider “possibilities for amending southerly departure routing to provide the least impact for the greatest number of folks in the valley.”<sup>12</sup> That is a goal ANPAC fully supports.</p> <p>Even as late as today’s meeting (8/16/22), JAC attorney Mike Morgan stated the goal was to find a “better southern departure”. A goal I certainly shared.</p> <p>Unfortunately, SIT’s Chair pointedly contradicted Seybold and Kane to emphasize that “noise will not be shifted”. As stated by any number of observers throughout this process and again today, a goal not to “shift noise” is a goal to do nothing. By contradicting her staff and advocating an impossible goal, the Chair only encouraged intransigence instead of leading the group to the compromise necessary by all. Today, at last, the Chair stated if compromise and a consensus could be reached, then noise could be shifted, but it was the first anyone had heard the word compromise, and the attempt at leadership came far too late.</p> <p>In addition, the data presentation and data revision process did not inspire confidence:</p> <ul style="list-style-type: none"> <li>• The initial take-off phase (the first few miles) for Concepts 1, 5, and 6 were, without announcement or explanation, revised from east of Spring Gulch to west of Spring Gulch. I believe that, rather than reflecting the expertise of the design group, this revision was to appease a single member of the Task Force.</li> <li>• 20 years of data for noise at Moulton Loop were revised<sup>13</sup>. It made Moulton Loop look quieter and eliminated the uptrend in noise over time. It totally contradicted the definitive work on noise at Moulton Loop that JAC published in its 2018 Noise Report<sup>14</sup>. This gross disparity undermines confidence in all JAC reported noise studies.</li> <li>• Ambient noise presentations raised serious questions about accuracy. For instance, ambient noise at the Town Square is reported as 46 dB<sup>15</sup>. This measurement was taken in the center of the square, furthest</li> </ul>

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	<p>from the busy corners. The Task Force's acoustics expert suggested after the meeting that, if the monitor had been placed at the busy corners, noise probably would have been measured at around 55 dB. ANPAC itself measured noise at the Town Square as 65 dB at 11:56 am 8/14/22 using Decibel X Pro v. 9.5.0.</p> <ul style="list-style-type: none"> <li>Noise was presented graphically in a manner which led to instant bias and intransigence. The methodology used painted town "red" (BAD) and part of the Elk Refuge "red" (BAD)16 and was extremely influential to GTNP's thinking. As a result of the methodology, the Task Force's town representative shot down any flights towards town, where she resides,</li> </ul> <p>7</p> <p>and GTNP in particular objected to any flights over the park. Yet, the absolute noise from flights over these areas would be negligible, especially if an accurate ambient sound report were taken into consideration. Attached is an alternative presentation that looks at the absolute level of noise that clearly shows 1) neighborhoods immediately south of JAC take the brunt of all noise, 2) a change in flight path to the west (concepts #2 and #4) would place significant noise over numerous neighborhoods, and 3) the Painter RNP (a flight path for the long term future) affects the least neighborhoods followed by the eastward concepts #1, #5 and #6, and these 4 flight paths are the ones that merit serious consideration by the board.</p> <p>Regards,</p> <p>Mike</p> <p>Michael Gumport 455 Francis Way Jackson, WY 83001 732-221-0172 magumport@att.net</p>
<p>Kathryn Turner <a href="mailto:kathryn@turnerfineart.com">kathryn@turnerfineart.com</a> 8/17/2022</p>	<p>Valerie and the JAC Airport Board,</p> <p>You started yesterday's task force meeting claiming to be empathetic to what we residents south of the airport are experiencing. At the meeting, didn't feel that you are.</p> <p>It's curious to us that there has been no noise monitoring at the 90 densely populated Teton Shadows and Golf Creek homes that are located directly below the Southern Departure Flight Path. Without data, how can you know what's going on?</p> <p>I tried to explain our day-to-day experience at yesterday's meeting but got cut off. So now I have a better idea- I would like to invite you to spend a day at my home. Best I can, I've invested in designing my home studio to be a creative sanctuary and I would like to welcome you to it. Come and bring a special project you care about, one that you hope will contribute to the greater good and we can work side by side. Me on my artwork, you on your project that requires concentration.</p> <p>You can directly hear and feel for yourself the impact of hundreds of planes flying directly overhead at 72-91decibels.</p> <p>I am happy to make you a beautiful lunch that we can enjoy on the back deck with a view of the mountains. There, you can view the planes flying so low overhead that you can see the rivets. You can learn what that feels like and their frequency.</p> <p>This is a real offer and I hope you or anyone from the Board takes me up on it. Jim, you are certainly also invited!</p> <p>Since no one who lives in this area is serving on the airport board, It is important that you directly see, hear and feel what's going on as you make your decisions.</p> <p>What day works for you this month?</p> <p>Hope to see you soon,</p> <p>Kathryn M. Turner TURNER FINE ART</p>
Darrell Hawkins	Hi,

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<a href="mailto:jhdqcakes@gmail.com">jhdqcakes@gmail.com</a> 8/17/2022	<p>I live at 330 Moulton Loop Rd.</p> <p>I was at the meeting 8/16 but had to leave due to an emergency.</p> <p>Is the task force still planning to meet? It seemed as though there were no compromises that would be accepted by the 3 public lands reps.</p> <p>I had some suggestions but if the work of the task force is completed, I won't take the time to compose and submit them.</p> <p>Thanks,  Darrell Hawkins  Jackson/Riverton Wy DQ, Grill &amp; Chills</p>
Michael Gumport <a href="mailto:magumport@att.net">magumport@att.net</a> 8/18/2022	<p>"Mr. Morgan:</p> <p>As an observer, on 8/16/22 I provided JAC's board my own view (attached) of the findings of the Southern Departure Procedure Study Input Taskforce (SIT) including 7 suggested action items. I requested confirmation of receipt and distribution, but I did not receive it. After no response to a second request, I resolved to recommend to ANPAC at their next meeting that they consider establishing a fund to pursue legal action against JAC. I am one member of the ANPAC executive committee and have no idea whether ANPAC will accept my advice.</p> <p>I was extremely disappointed 8/17/22 that SIT Chair Valerie Brown summarized the results of SIT to JAC's board as being...</p> <p>...1) no consensus was reached on any alternative flight path.</p> <p>...2) a "Painter RNP" flight path was considered but found to be unfeasible.</p> <p>...3) extending the voluntary curfew was favored.</p> <p>...4) hanging banners at JAC recognizing airlines that respect the curfew is a good idea.</p> <p>...5) the issue of flight limitations was raised.</p> <p>The information the SIT Chair provided to the JAC board is incomplete and in one case simply incorrect. Specifically...</p> <p>...1) SIT's experts advised that adding another flightpath would allow "fanning", an important finding.</p> <p>...2) SIT's experts found the Painter RNP flightpath both feasible and safe though RNP departures are the solutions of the future so airlines might take a considerable period of time before being equipped and trained to fly it.</p> <p>...3) ANPAC discovered and brought to SIT's attention that JAC operates under "flight limitation" clauses. Yesterday's presentation did not adequately inform JAC's board of the full range of unresolved issues relating to the application of the "flight limitation" clauses.</p> <p>...4) ANPAC discovered and brought to SIT's attention that JAC operates under a "compatible use" clause. Yesterday's summary to the board made no mention of the "compatible use" clause nor of issues raised relative to acoustic studies pertinent both to the application of the "compatible use" clause and the analysis of alternative flight paths. Also, answers to pollution and health questions were incomplete, are relevant to the "compatible use" clause, and may entail substantial liabilities for JAC.</p> <p>...5) ANPAC discovered JAC has bought and paid for the right to extend its runway to 8,000'; this right's status and its implications for a southerly departure flight path have gone totally unanswered.</p> <p>I hope you will inspire JAC's board to more fully explore the many open questions on the application of the "compatibility" and "flight limitation" clauses, consider the implications of the "fanning" advice, review what might be accomplished by JAC availing itself of its right to extend the runway, assure pollution is eliminated, and provide public responses so that I can in good conscience withdraw my recommendation that ANPAC pursue legal remedies.</p> <p>Thank you. Out of respect for Jim Elwood's personal time, I have not copied him on this note.</p> <p>Regards,</p>

Contact Info/Date	Comment
	<p>Mike</p> <p>Michael Gumpert</p> <p>455 Francis Way</p> <p>Jackson, WY 83001</p> <p>732-221-0172</p> <p>magumpert@att.net"</p>
<p>Kathryn Turner</p> <p><a href="mailto:kathryn@turnerfinanceart.com">kathryn@turnerfinanceart.com</a></p> <p>8/21/2022</p>	<p>"Jim and the airport board,</p> <p>I can't sleep tonight because planes are flying over my home so loud and so low, they keep waking me up. 10:34pm, and 10:45pm What would it take to make the curfew reasonable? Please please please I am begging you -kathryn turner Sent from my iPhone"</p>
<p>Darrell Hawkins</p> <p><a href="mailto:jhdqcakes@gmail.com">jhdqcakes@gmail.com</a></p> <p>8/23/2022</p>	<p>"Thanks to Tucker Smith for his comments and suggestions.</p> <p>I wrote a few notes at the meeting but was called away before the public commentary where I could air them:</p> <ol style="list-style-type: none"> <li>1. Can we provide incentives to pilots that take a more easterly or westerly course avoiding airspace above the affected homes?</li> <li>2. Can we institute an airport tax to fund noise mitigation efforts undertaken by affected homeowners?</li> <li>3. If the task force is now defunct, this might be a moot point, but could we not have had an FAA member or a physician as part of the task force?</li> <li>4. A continuing challenge is cell phone conversations in our area which are exacerbated when aircraft are overhead. Can we investigate opportunities to place cell towers at the airport enhancing local cell service if feasible?</li> <li>5. Are there distinctions between regulations which govern commercial and private aircraft? I seemed to recall that it might be possible or at least easier to route private aircraft on a more easterly or westerly course. If so, how could that be undertaken?</li> <li>6. Could those of us that are affected receive compensation in the way of airport perks? Parking/TSA/etc.</li> <li>7. Have any studies been undertaken to ascertain if there are negative health consequences from such continued exposure to the 85 decibel noise level?</li> </ol> <p>Thanks,</p> <p>Darrell Hawkins</p> <p>380 Moulton Loop Road</p> <p>On Mon, Aug 22, 2022 at 10:18 AM Tucker Smith &lt;ontherim@wyoming.com&gt; wrote:</p> <p>Dear Southern Departure Task Force:</p> <p>It appears from your last meeting that the majority view is to not change the flight path, which seems to have been your position from the beginning. This process has been a total waste of time and money with its only goal to appear to be doing something to placate the affected sub-division residents.</p> <p>I am not an aviation engineer but I do have a degree in mathematics. Isn't it true the present flight path turn to the right causes more noise, burns more fuel, and gains less altitude than a straight path? In fact the path of least resistance would be to drift to the east due to the prevailing westerly winds.</p> <p>The positions (against moving the flight path) of the Fish and Wildlife and National Park representatives is compromised by allowing the airport in the Park in the first place. The wildlife do not recognize the Park boundary and seem to prefer the sub-divisions. The migration corridor goes between the affected sub-divisions.</p> <p>The obvious solution that affects the least number people and wildlife is a flight path just to the east of Spring Gulch Road.</p>



Contact Info/Date	Comment
	Tucker Smith Moulton Loop "
Kathryn Turner <a href="mailto:kathryn@turnerfineart.com">kathryn@turnerfineart.com</a> 8/23/2022	<p>"Regarding the negative impact of noise on human health, this is what studies say:</p> <p>""Noise pollution adversely affects the lives of people. Noise Induced Hearing Loss (NIHL) is the most common and often discussed health effect of noise, but studies have revealed that exposure to continuous or high levels of noise can cause several adverse health effects. It can damage psychological health; excessive noise level has been linked to the occurrence of aggressive behavior, constant stress, and fatigue. Loud noise hampers sleeping pattern resulting in fatigue, reduction in performance and may lead to sleep disorders. These in turn can cause more severe and chronic health issues later in life. High level of noise has been reported to affect the cardiovascular system.""</p> <p>This is a study that explains specifically how, why noise has such a negative impact on the cardiovascular system. Quite technical <a href="https://www.researchgate.net/profile/Victor-Nna/publication/314947286_The_Possible_Mechanisms_through_Which_Dietary_Protein_Increases_Renal_Blood_Flow_and_Glomerular_Filtration_Rate/links/5c2de1c792851c22a35718e1/The-Possible-Mechanisms-through-Which-Dietary-Protein-Increases-Renal-Blood-Flow-and-Glomerular-Filtration-Rate.pdf">https://www.researchgate.net/profile/Victor-Nna/publication/314947286_The_Possible_Mechanisms_through_Which_Dietary_Protein_Increases_Renal_Blood_Flow_and_Glomerular_Filtration_Rate/links/5c2de1c792851c22a35718e1/The-Possible-Mechanisms-through-Which-Dietary-Protein-Increases-Renal-Blood-Flow-and-Glomerular-Filtration-Rate.pdf</a></p> <p>An article on how noise pollution effects humans as well as wildlife <a href="https://education.nationalgeographic.org/resource/noise-pollution">https://education.nationalgeographic.org/resource/noise-pollution</a></p> <p>An international article with some disturbing data on how noise effects children. <a href="https://pdfs.semanticscholar.org/c0fb/8e0224e560d8ebb259bba70f9f23de8a6cc4.pdf">https://pdfs.semanticscholar.org/c0fb/8e0224e560d8ebb259bba70f9f23de8a6cc4.pdf</a></p> <p>""In one case performed in 1995, heart rate and blood pressure was measured of 1,542 children and their age is of 3-7 years old in areas with traffic noise was greater than 60 dB. The study showed that the children had a greater mean diastolic and stolic bloodpressure and higher heart rate than in quite areas. 95th percent of the children have high blood pressure (Ristovska and Lekaviciute, 2013). ""</p> <p>There's actually a lot of research out there . Airports are known to be major sources of air, water and noise pollution but addressing this is largely voluntary. As the JH Airport expands, I urge everyone to educate themselves on the impact of noise on your health and the safety of our community and environment. The way I see it, this is an opportunity to get involved and insist decision-makers act in ways that protect our lives and this precious natural resource.</p> <p>Take care, Kathryn M. Turner TURNER FINE ART"</p>
Neil Rudo <a href="mailto:neilrudo@gmail.com">neilrudo@gmail.com</a> 8/23/2022	<p>"In follow to my previous email with regard to airport noise and pollution I would suggest that the airport and its officers face real individual and institutional liability issues with regard to airport noise and health issues generated by the airport's negligent control of ground water contaminants and noise., I am enclosing a recent article about a direct link between those contaminants (PFOS) and liver carcinoma..... <a href="https://www.jhep-reports.eu/article/S2589-5559(22)00122-7/fulltext">https://www.jhep-reports.eu/article/S2589-5559(22)00122-7/fulltext</a>. I again would suggest that the airport board get very serious about noise abatement and ground water contamination before the board is made to consider these issues more forcibly. I would suggest that a reverse osmosis filter is a lame first attempt at reconciliation. Real economic and health issues exist due to both the noise and the ground water contamination with PFOS chemicals. In my estimation, the present approach to these issues has been woefully inadequate. Will the national park service, the EPA and the courts have to be involved before the board takes seriously the real problems the ""airport"" has perpetrated on its neighbors? Will an angry coalition of airport neighbors be necessary before flights are routed north with equal distribution to south ingress and departures? Will the number of private flights be limited instead of increased?I have been told that flights leaving to the north in the morning cannot be accomplished due to wind...Really? Wind in the morning? Please do not tell the homeowners that flights over the elk refuge will damage the elk without scientific justification for that claim, which I suspect is totally disingenuous as I am unable to find any scientific substantiation for that claim. Will lawyers be necessary to extract compensation for economic loss due to noise pollution and carcinogenic chemicals being put into the ground water? It appears that will will be the ultimate outcome of the present discussion. ""Voluntary"" noise reduction rules for the airport clearly are useless. Reverse osmosis filters are also nearly useless. How many lawyers do the individual members of the airport board want to meet?</p>

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	<p>On Tue, Aug 9, 2022 at 4:23 PM neil Rudo &lt;neilrudo@gmail.com&gt; wrote:</p> <p>I live on Moulton Loop, south of the airport. I am writing to express my extreme displeasure with the airport. We could not have a more noxious neighbor. I have owned my house since 2000 and the level of noise and the number of flights has increased dramatically in that time interval. The noise has become intolerable. The number of flights has increased almost 200% in that time interval and it appears that the airport would like to increase the flights over our houses even more. Perhaps instead of planning for more private jet facilities, a more intelligent plan would be to ban private aviation in this environmentally sensitive area altogether. Is allowing arrivals and departures in the middle of the night sensible? Even major urban facilities ban traffic between 1030 PM and 7 AM.</p> <p>If the noise problems were not noxious enough, our ""good"" neighbors at the airport have contaminated many of the wells south of the airport with the moronic ""practice"" fire drills using toxic chemicals instead of water for practice. Not only is the problem of ground water contamination upon us, the air pollution over our homes from aviation exhaust is a very real problem. Ground water contamination with aviation fuel is also a real health issue. Is the airport or its neighbors aware of how many carcinogens are in jet fuel?</p> <p>While everyone has been polite protesting the noise issue with little real response, noone that I am aware of has addressed the probability that while those issues are important, the environmental and health problems caused by the negligent management at the airport in the past and future may well bring about a landslide of litigation addressing the very real health and environmental consequences of the airport's environmental contamination of the air and ground water. I doubt that the litigation would be limited to the institution. Real individual people might well be held personally liable.</p> <p>I would suggest that the airport and Park Service get very serious addressing not only the noise, but also the environmental and health plague that the airport has become, and as well appears to be on a path to compound these problems. Noise, while an immediate issue, is important. The elephant in the room is the very real health and environmental consequences of ongoing negligence by the airport administration directed operations. The liability will not only be institutional but individual as well. More flights will only bring more contamination and pollution with health consequences to man and beast.</p> <p>I am writing in the hope that people will take the problems outlined above seriously with serious solutions, not just looking to alternate flight paths. The problems are potentially catastrophic and demand urgent serious solutions with flight limitations at the very least.</p> <p>Thank you for taking the time to read my email.</p> <p>Neil D Rudo MD, PhD"</p>
<p>Sally Painter  <a href="mailto:sallypainter529@gmail.com">sallypainter529@gmail.com</a>  8/23/2022</p>	<p>"Hi guys,</p> <p>First of all, I would like to thank you for all of the work you put into the flight path alternatives for the Southern Departures Task Force. Your designs and explanations were top notch. While we did not find that ""magic bullet"" as Valerie calls it, I believe that there is hope in the future.</p> <p>Alec ~ you had a brief conversation with my husband after the last meeting in which you discussed re-looking at the Painter RNAV as an option, flying just east of Spring Gulch Road. Have you had an opportunity to do that? As you know, we have a deadline of Sept 21st and I'm just doing everything I can to find something that will mitigate the noise here and ""calm the storm"". As you saw in the many letters and attendance at the August 16th meeting, there are hundreds of unhappy people ~ and guess who they are looking to for an answer. Yup, that would be me and the ANPAC committee. Can you help?</p> <p>Best,  Sally"</p>
<p>Mike Gumport  <a href="mailto:magumport@att.net">magumport@att.net</a>  8/24/2022</p>	<p>"Mike:</p> <p>Thanks to you, Ryk, Jim and Dan for the time spent with me and Jeffrey today.</p> <p><b>MOST IMPORTANTLY:</b> After discussion of questions pertinent to 5 open issues (below), I stressed that the Task Force had surfaced an extremely constructive fact, namely, an experienced FAA advisor to the Task Force sees no problem approving a 2nd flight path rather than just an alternative flight path. Aircraft would be ""programmatically"" assigned to one flight path or another. Whatever JAC's board ultimately approves, 2 flight paths instead of one would relieve many homes from a constant stream of traffic.</p> <p>Regarding questions pertinent to the 5 open issues that we also reviewed:</p>

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	<p>...1. Yes, I would appreciate your looking into whether the 45 degree easterly “noise abatement” turn is listed in “Jepperson” which I understand is the pilot’s bible on flight procedures. If there is any way for the tower to urge pilots to fly this path when conditions allow, that, too, would be terrific.</p> <p>...2. Thank you for the discussion on what I refer to as the “Flight Limitation” clauses. Thank you for the providing the information on the exact model/configuration of B737-200 that is used as the “base model” for calculating conformance. I believe you said the base model (whose designation I missed) is certified at about 90 decibels on takeoff. The FAA lists 61 B737-200’s with “TO” (take off) certifications ranging from 83.7 decibels to 102.0, so 90 decibels would be about in the middle. I believe you said Paul Dunholter performs the compliance calculation. In any ongoing dispute, it would be necessary to have an independent, 3rd party review the calculation to, among other things,...</p> <p>.....a. assure each regulated plane’s configuration and decibel rating is properly recorded.</p> <p>.....b. assure the formula is properly applied. For instance, in the 8/16/22 “5th Task Force Presentation”, p. 28 states a 10 decibel decrease is perceived as a halving of noise; p. 38 of that same report indicates that, in applying the equivalency formula, a 10 decibel decrease is treated as a 90% reduction in noise (allowing a 10x increase in the number of planes). In creating the formula, which is specified: perceived noise or the amplitude of sound waves?</p> <p>.....c. consider whether, in the “Flight Limitation” clauses’ references to “all scheduled commercial aircraft” and “commercial jet” departures, these could ever be interpreted to include, for instance, NetJet flights or other aircraft now possibly improperly excluded from the calculation. Are these “commercial”? Are they “scheduled”?</p> <p>...3. With regard to our discussion of what I refer to as the “Compatible Use” clause, thank you for telling me that reported DNL levels are the result of models and model revisions. In any dispute, an independent third party would need to take actual noise measurements to determine if JAC were in compliance with the “Compatible Use” clause. These measurements, in addition to being taken on all sides of Moulton Loop, would also need to include readings along E. Zenith Drive. If JAC were in violation (which you represent is not the case), you suggested having JAC purchase insulation and/or triple pane windows for effected residents would generally be considered a sufficient remedy. However, in wide open Jackson where people live outside, I am not sure what might be viewed as a sufficient remedy elsewhere (for instance, in an apartment house) would hold true here. Most importantly, if JAC is in violation of the “Compatible Use” clause, then, arguably, aircraft on southerly departures from JAC must to the extent practicable remain in GTNP airspace until reaching a suitable exit point over compatible land. If JAC were in violation of the “Compatible Use” clause, an easterly turn on southerly departures would be mandatory.</p> <p>...4. As we discussed, ANPAC yesterday received a note from a physician in the Moulton loop area who is deeply distraught at the health dangers posed by air pollution from aircraft and water pollution from the airport itself. At the final Task Force meeting, another resident from the area reported that she was forced to trash crops from her garden when her grandchildren complained they tasted like jet fuel. P. 44 of the 8/16/22 Task Force presentation referenced EPA air quality standards monitored by the Wyoming DEQ and aircraft engine emission standards established by the EPA. I am not a physician or environmental engineer, but, as best I can tell, this page is not responsive to whether the actual types of emissions from aircraft engines are being monitored and whether they are causing actual damage to residents’ health. You should be aware that the physician who wrote to ANPAC is suggesting JAC is willfully negligent in frivolously disregarding residents’ health.</p> <p>...5. We reviewed the history of JAC’s land lease and runway rights. Complicated.</p> <p>Also, Jeffrey Cohen raised the uncertainty posed by whether or not the FAA intended to approve KICNE if JAC does not propose a better alternative and asked how JAC’s board was dealing with this uncertainty and potential outcome.</p> <p>And, in referencing a chart of absolute noise, I reminded you that a westerly flight path would place noise over more residential homes including those near the scenic Snake.</p> <p>Thank you again.</p> <p>Regards, Mike Michael Gumport"</p>

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<p>Michael Gumport  <a href="mailto:magumport@att.net">magumport@att.net</a>  8/26/2022</p>	<p>"Mike:</p> <p>Thank you again for our meeting earlier this week. Did I state strongly enough my belief that recognizing the good news that came out of the Task Force (that 2 flightpaths could be used) would be a big step forward and open a path to an eventual compromise? Of course, a compromise will satisfy no one, but it ought to be big improvement from the status quo. As you are aware, residents south of JAC represent they suffer beneath a growing burden of economic and health consequences as one plane after another flies immediately overhead.</p> <p>But the "new news" here is that you inspired me to review JAC's 3/14/85 Revised Noise Abatement Plan ...</p> <p>QUESTION 1: Is the 3/14/85 Noise Abatement Plan still in effect? Has it been modified or superseded? If so, by what amendments or subsequent agreements?</p> <p>QUESTION 2: The copy of the 3/14/85 Noise Abatement Plan document available on the internet (<a href="https://228k3g4ee2bb2v3oe82te2b2-wpengine.netdna-ssl.com/wp-content/uploads/2022/01/Noise-Abatement-Plan.pdf">https://228k3g4ee2bb2v3oe82te2b2-wpengine.netdna-ssl.com/wp-content/uploads/2022/01/Noise-Abatement-Plan.pdf</a>) is missing "Attachment #1". Attachment #1 is the Town of Jackson Ordinance 309 which establishes penalties for single event noise impacts including those on residential areas in the vicinity of JAC. Ordinance 309 was established prior to ANCA and forms an integral adjunct to the 1985 Revised Noise Abatement Plan. Are you aware of the status of Ordinance 309 and its enforcement? I believe some residents in the E. Zenith Drive and Moulton Loop area are measuring single event aircraft noise well over 80 decibels within their homes and well over 90 decibels on their land.</p> <p>QUESTION 3: Section 3 states in part:</p> <p>.....Can JAC abandon/fail to enforce Section 3 of its Noise Abatement Plan without nullifying all other exceptions to ANCA that it received ("grandfathered" rules and regulations)?</p> <p>.....Do JAC's contracts with air carriers comply with the Section 3 requirements that oblige carriers to recognize the preferred southern departure flightpath and mandate carriers request pilots fly the preferred, noise abatement flightpath, conditions permitting?</p> <p>.....In the event air carriers do not comply with the request to fly the preferred, noise abatement southern departure flightpath, does JAC itself fully conform to the long list of mandated reporting procedures enumerated in the rest of Section 3?</p> <p>QUESTION 4: Section 6 includes a detailed complaint system including section 6.C. describing a "feedback system". Do you believe JAC has fulfilled all its reporting and record keeping obligations including specifically those listed in this section?</p> <p>QUESTION 5: Section 7 represents JAC makes "educational efforts". Do you believe JAC has continuously fulfilled the educational efforts it represents it undertakes, including, for instance, in 7.A.1, prominently displaying noise abatement procedures on the taxiway and, in 7.B.1., requesting national publishers including Jeppersen, among several others, distribute JAC's noise abatement procedure?</p> <p>QUESTION 6: The 1985 Noise Abatement Plan Supplement A represents...</p> <p>.....The 2010 JAC EIS precedent to the 2011 Lease Agreement Extension showed (p. 97) the 65 DNL extending out from the runway to beyond Sagebrush, well into the residential neighborhood south of JAC. I understand recalculations since then have been based largely on computer simulations rather than actual measurements. Did JAC work with Teton County to achieve Supplement A's represented goals, for instance, with regard to the land south of JAC</p> <ol style="list-style-type: none"> <li>1) "Transferable Development Rights"</li> <li>2) downzoning to a density of 1 unit per 6 acres</li> <li>3) establishment of noise easements for developments within the 65 Ldn contour</li> <li>4) adding building code requirements to attenuate noise</li> </ol> <p>Were these 4 and other represented goals actually achieved? If JAC failed to achieve its stated goals with Teton County, does JAC take the position that, because Teton County failed to act, JAC is in any way relieved of its liability for excess noise and/or pollution in incompatible adjacent lands?</p> <p>...QUESTION 7: At our meeting this week, we discussed what I term the "Noise Limitation" clauses under which JAC operates. The 3/14/85 Noise Abatement Plan includes as an attachment the JAC Board Noise Abatement Rule of 3/14/85. I find the base class aircraft noise on departure is 87.3 dBa and on approach 91.6 dBa (p. 2). Upon review, I find the calculation does indeed seem to say a plane that is 10 decibels more quiet than the base plane (using the smaller difference whether it is upon approach or departure) will be counted as equivalent to only 1/10 of a base plane (consistent with the Task Force 8/16/22 presentation, p. 38, and your own representation). Since JAC recognizes elsewhere in its presentations (p. 28 of its 8/16/22 Task Force presentation, for instance) that a 10 decibel decrease is perceived by the</p>



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	<p>human ear as only a halving in perceived noise, I wonder if the formulation of this equation could be open to dispute. In any case, I would want to see the detail of the calculation for 3Q21 which placed noise equivalency at 5.62 (p. 38 of the 8/16/22 presentation).</p> <p>Thanks again.</p> <p>Mike Michael Gumpport"</p>
<p>Michael Gumpport <a href="mailto:magumport@att.net">magumport@att.net</a> 8/26/2022</p>	<p>"Mike: ANPAC was recently copied on an email to JAC from Dr. Rudo on Moulton Loop (see below). Dr. Rudo called attention to chemical pollution from JAC in addition to excessive noise. I am just writing to bring to your attention a story from today's Wall Street Journal on the EPA's proposed action on PFOS, a substance mentioned by Dr. Rudo presumably because JAC does use now or did use in the past this "forever chemical".</p> <p><a href="https://www.wsj.com/articles/epa-aims-to-label-two-forever-chemicals-as-hazardous-11661518800?mod=Searchresults_pos1&amp;page=1">https://www.wsj.com/articles/epa-aims-to-label-two-forever-chemicals-as-hazardous-11661518800?mod=Searchresults_pos1&amp;page=1</a></p> <p>Regards, Mike"</p>
<p>Michael Gumpport <a href="mailto:magumport@att.net">magumport@att.net</a> 8/26/2022</p>	<p>"Mike: As a final note for the day, I thought these 2 Wall Street Journal stories would interest you.</p> <p>One is about the use of leaded aviation fuel. Aspiring to be a leader in environmental stewardship, I thought JAC should be out in front on this...</p> <p>...<a href="https://www.wsj.com/articles/private-aviation-struggles-to-move-past-leaded-fuel-11657450802">https://www.wsj.com/articles/private-aviation-struggles-to-move-past-leaded-fuel-11657450802</a></p> <p>The second is about a homeowners association in Colorado that won a partial victory against an airport's noise...</p> <p>...<a href="https://northglenn-thorntonsentinel.com/stories/rock-creek-hoa-finds-a-win-in-lawsuit-against-rmma,394594">https://northglenn-thorntonsentinel.com/stories/rock-creek-hoa-finds-a-win-in-lawsuit-against-rmma,394594</a></p> <p>Regards, Mike"</p>
<p>Michael Gumpport <a href="mailto:magumport@att.net">magumport@att.net</a> 8/26/2022</p>	<p>"Under Question 7, I should have written: "The 2010 JAC EIS precedent to the 2011 Lease Agreement Extension showed (p. 97) the 65 DNL as of 2008 extending out from the runway to beyond E. Zenith Drive [NOT Sagebrush]". Since 2008, flights are up substantially and residents indicate noise is up substantially. I understand DNL drawings are largely based on computer models, not measurements. I would want to see 1) an up-to-date measurement (not model) of the 65 DNL contour, and 2) understand how single event noise stands relative to the Town of Jackson Ordinance 309's stated limits.</p> <p>Mike Gumpport"</p>
<p>Michael Gumpport <a href="mailto:magumport@att.net">magumport@att.net</a> 8/26/2022</p>	<p>"Mike: First, some old news...</p> <p>...Again, thank you for inspiring me to review the 3/14/85 Noise Abatement Plan (see <a href="https://228k3g4ee2bb2v3oe82te2b2-wpengine.netdna-ssl.com/wp-content/uploads/2022/01/Noise-Abatement-Plan.pdf">https://228k3g4ee2bb2v3oe82te2b2-wpengine.netdna-ssl.com/wp-content/uploads/2022/01/Noise-Abatement-Plan.pdf</a> ). I found it raised real questions with regard to JAC's compliance with regard to the Preferential Departure Procedure, for instance, whether JAC, as mandated, requires scheduled air carriers to contractually commit to compliance as well as whether JAC adheres to the many, related procedural steps (signs at the end of the taxiways, for instance, and a thorough compliance tracking and complaint system). Also, it appears to me there is an open question as to whether the "noise equivalence" equation is</p>

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	<p>mis specified or actually misrepresented what it does: it definitely does NOT correctly adjust for equivalent perceived noise.</p> <p>...In presentations and discussions, considerable emphasis has been placed on the 65 DNL contour. As I have stated, given the major revisions in presented data (comparing, for instance, the 2018 Noise Report's Table 4-22 to the 8/16/22 Task Force presentation p. 36 which revised noise at Moulton Loop retrospectively 3 decibels lower for 2018 and, in general, lower throughout a 20 year revision period), it would take actual noise measurements by an independent 3rd party to convincingly establish the 65 DNL contour line. DNL during the busy winter and summer seasons is almost certainly substantially above the reported annual number.</p> <p>Now, some "new news"....</p> <p>...I would like to bring to your attention the FAA's 1050.1F 2/20 Desk Reference (v.2) chapter 11 on "Noise and Noise-Compatible Land Use" (see <a href="https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_policy_guidance/policy/faa_nepa_or_der/desk_ref/media/11-noise.pdf">https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_policy_guidance/policy/faa_nepa_or_der/desk_ref/media/11-noise.pdf</a> ). Many sections of this FAA document appear pertinent to the current dispute, but, especially notably, while DNL contours are affirmed to be the primary metric for aircraft noise exposure, other metrics are recognized as useful. Consider the excerpted Exhibit 11-2 and associated text below:</p> <p>Since speech and sleep disturbance are two of the principal complaints of residents immediately south of JAC, this section of the "Noise and Compatible Land Use" chapter appears relevant, but it seems likely that consideration of all of the supplemental metrics above would better report the situation than using the DNL alone.</p> <p>I hope you will recognize the serious and pressing dispute with regard to, at a minimum, the prohibition on excessive noise contained in the "compatible use of adjacent lands" clause. That dispute on noise in lands adjacent to JAC (the southern residential area) extends to disagreement not only on the accuracy of reported (and revised) DNL measurements but also to even whether supplemental metrics are necessary to understand the full extent of the problem. The real point is, authorization and implementation of a 2nd flight path, a solution surfaced by the Southern Departure Task Force, offers the possibility of substantially ameliorating the noise situation and, to at least some significant degree, might render the discussion of excess aircraft noise in residential neighborhoods moot.</p> <p>Regards, Mike"</p>
<p>Bill Fausone <a href="mailto:bill.fausone@colliers.com">bill.fausone@colliers.com</a> 847 309 6007 Date not recorded</p>	<p>Valarie,</p> <p>First off, THANK YOU for "volunteering" for the Airport Board and specifically heading up the SDTF. I can't imagine the time commitment you and the other Task Force members are putting in; we all appreciate it.</p> <p>I finally finished watching the SDTF meeting of March 24 must say it was riveting viewing all 2 hrs and 44 min. The consultants were very good and helped dumb down the technical materials. Couple of comments:</p> <p>The voluntary Fly Quiet Program for the southern departure route, I suggest a quarterly public recognition of those that comply with whatever is ultimately agreed upon. Personally, I would go with the stick vs carrot but do understand the politics of your approach vs mine.</p> <p>The use of DNL really doesn't make a lot of sense as it's an average of multiple factors over an entire year. I believe the consultants are going to look at the DNL monthly which may look dramatically different given the seasonality of our tourism. May also want to look at L-Max during peak travel months. L Max is something we can all relate to vs DNL.</p> <p>Is it possible to enter into a contract with NetJets similar to a commercial carrier? They fly 4,000 flights in &amp; out of JAC which is probably more than the commercial carriers in total. To treat each of their jets as an independent flight would be like treating each UA, Delta, or AA flight as a separate independent jet.</p> <p>Can the JAC Board increase landing fees for private jets to a level where some may consider using Driggs or Afton?</p> <p>Thanks again. William M. Fausone</p>
<p>Michael Potter <a href="mailto:michael@paradigmventures.com">michael@paradigmventures.com</a></p>	<p>Michael Potter 510 East Sagebrush Drive #7-4</p>

Contact Info/Date	Comment
<a href="mailto:paradigmventures@gmail.com">paradigmventures@gmail.com</a> Date not recorded	<p>Shoshone A  Jackson WY 83001</p> <p>Dear Airport Noise Task Force Committee Members:</p> <p>This is an extremely challenging initiative that you have generously signed up for.</p> <p>We believe that winter traffic allows for more flexibility on routing since neighbors are generally indoors.</p> <p>Those aircraft that are not outfitted with advanced avionics to allow re-routing should be banned from Jackson airport.</p> <p>For safety reasons those with less advanced avionics can be routed to other airports.</p> <p>Routing should not be voluntary, but mandatory.</p> <p>There should be an incentive system in place to encourage good behavior.</p> <p>We appreciate your consideration on a successful resolution to these challenges.</p> <p>Best wishes,  Michael Potter</p>

# APPENDIX F:



## FAQS





# Southern Departure Procedure Task Force

## Purpose of the Study

The purpose of the Southern Departure Procedure Study (the "Study") is to further investigate the feasibility of a procedure for southern departures that could reduce noise for the entire community south of the Jackson Hole Airport (the "Airport"), while taking into consideration other noise sensitive areas such as the Elk Refuge. The Study will determine if one or more such procedures are feasible and, if so, the Airport will move forward to conceptually design them. The intent of the Study is to build upon the well-developed existing noise abatement program in place at the Airport and, using the most current technology, look for ways to further reduce noise at noise sensitive area without shifting noise over others.

In connection with the Study, the Departure Procedure Study Input Task Force (the "SIT") was organized to provide input and consultation on the process. The SIT meetings will be used to obtain stakeholder input, address questions and ensure understanding of the Airport's and FAA's roles. It will also identify the challenges of designing such procedures relative to FAA standards and criteria, and constraints to flying certain procedures. The work of the SIT will be completed at the end of the Study.

There are three distinct phases of the Study, as shown in the following graphic. The end goal is submittal of the procedures to the FAA portal.



## Phase 1: Preliminary Analysis

Tasks: Review of KICNE ONE, ALPIN Three, and TETON Three (existing procedures) to vet potential noise shifting with these procedures, noise modeling on procedure, first and second SIT meetings, noise education (website). Review & communicate FAA design limitations that must be adhered to.



## Phase 2: Development of Procedure Concepts

Tasks: Develop preliminary designs for a new conventional noise abatement departure procedure, and up to 2 special procedures, noise modeling/visualizations, coordination, third SIT meeting, updates to noise education (website), video production. If concepts show a noise benefit without a shift in noise, could then move forward with additional analysis.



## Phase 3: Refinement of Procedures

Tasks: Refinement of procedures based on routing feedback, fourth SIT meeting, documentation, and application of plan for next steps. A special procedure could move forward if it would provide meaningful noise reduction without substantial shifting of noise. If a conventional procedure is determined to work, it will be submitted to the FAA. Determine if flight test should be conducted to assess benefit.



## End of Project: Submittal to FAA, if applicable - Schedule 8 months

Tasks: If a conventional procedure is found to benefit the community, it will be submitted to the FAA portal by the September deadline. If only special procedures provide benefit, full special procedure development can proceed as a follow-on Task.



## Background

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The Jackson Hole Airport is the only airport in the United States with regular commercial service located entirely within a national park. The Airport operates under the 1983 Use Agreement between the US Department of the Interior and the Jackson Hole Airport Board (“1983 Agreement”), which restricts certain activities and facilities, and imposes stringent noise and other environmental standards. In compliance with the 1983 Agreement, and in many cases going beyond the requirements of the 1983 Agreement, the Airport Board has implemented a range of mitigation measures which are described below. Specifically, the 1983 Agreement required the development of a Noise Abatement Plan. The primary objectives of the Noise Abatement Plan as stated in the 1983 Agreement were “to ensure that future airport operations are controlled in such a manner that aircraft noise exposure will remain compatible with the purposes of Grand Teton National Park and will result in no significant increase in cumulative or single event noise impacts on noise sensitive areas of the Park.” The 1983 Agreement also creates a critical area boundary, into which the 45 DNL noise contour cannot extend, and a noise sensitive boundary into which the 55 DNL noise contour cannot extend. The noise control plan must utilize “the latest in noise mitigation technology and procedures, and must “be developed in a comprehensive study to consider all of the relevant environmental, economic, and operational considerations.”

The 1983 Agreement and Noise Abatement Plan contain the following conditions and noise abatement measures:

- **Noise measurement at the Moose location cannot exceed 55 DNL annually,**
- **A defined Critical Area Boundary within the Park of 45 DNL, and**
- **Aircraft single event noise on approach cannot exceed 92 dBA (as defined by the approach dBA level from FAA Advisory Circular 36-3H).**

To meet the above requirements of the 1983 Agreement, the Airport Board developed an Airline Access Plan. The Airport Board would be barred from creating something like the Airline Access Plan today, because local noise and access restrictions were significantly curtailed under the Airport Noise and Capacity Act of 1990 (“ANCA”). Importantly, the Airline Access Plan is considered “grandfathered”, meaning not subject to the limits of ANCA, because it was adopted under the 1983 Agreement and ANCA was not intended to limit preexisting noise rules. But, this also means that the Airport Board could not amend the Airline Access Plan to make it more restrictive, since any such measures would not be grandfathered and would trigger ANCA.

The Airline Access Plan placed a limit on the number of operations of commercial jet aircraft which could occur at the Airport. (The limit on operations was determined to be the noise equivalent of 6.5 Average Daily Departures of the 737-200/D17 aircraft.) Increases in operations could only be accomplished by substituting these aircraft with the quieter, new





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## Background Information

generation aircraft, which at that time were just entering service. The Airline Access Plan also requires commercial jet aircraft to schedule arrivals between 0700 and 2130.

Major sections of the Noise Abatement Plan include maximum noise level limit, cumulative noise standards, aircraft operating procedures, operations specifications amendment for scheduled passenger service airlines, requirements for aeronautical contractors, noise complaint/inquiry report system, and educational efforts. The Airport Board requires compliance with the contents of the Noise Abatement Plan in all operating agreements with air carriers and commercial general aviation operators.

Additionally, because of an Act of Congress obtained specifically for the Jackson Hole Airport, since 2004 the noisier Stage II aircraft have not been permitted to operate at the Airport. As mentioned, FAA approval would be required for any additional noise or capacity restrictions at the Airport.

These noise abatement measures, and improvements to these measures, are tracked annually as listed below. See sections below for greater detail.

- **Summary of Noise Measurements and Modeling**
  - **Noise Monitoring System Updates**
  - **Day Night Level (DNL)**
  - **Annual Average Daily Departure**
  - **Single Event Levels and Preferential Runway Use**
  - **Voluntary Curfew**
  - **Summary of Noise Monitoring Results and Trends**

The requirements in the 1983 Agreement are further augmented by the Airport through continuous reevaluation to identify potential improvements. This has historically been done through the 14 Code of Federal Regulations (CFR) Part 150 Noise Compatibility Study, which allows the Airport to review alternatives to reduce noise. Review of departure procedures was one of the recommendations in the previous Part 150 Study.

The FAA has been developing satellite-based procedures for Jackson Hole Airport. One of these approach procedures was implemented at the Airport to shift flights arriving from the north further away from the noise sensitive areas of the National Park, and thus reducing noise levels in the Park. Since then, the FAA developed the KICNE ONE south departure procedure. Because, data was unclear on what effects this procedure would have on the community, the Airport initiated the Southern Departure Procedure Study at its own cost. This Study seeks to determine the potential changes in noise that would result from implementation of KICNE ONE, and if that procedure or another procedure could provide the community with noise reduction benefits.



## **Frequently Asked Questions**

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Frequently asked questions about noise, noise analysis, and procedure development are included below. These are to assist the SIT members with background knowledge that will be helpful in Task Force discussions. The team also can provide further definition of terms during meetings, as needed.

### **What is a visual based procedure?**

Up until the 1990s, there was a higher use of “visual” procedures. In these visual procedures, a pilot did not have the benefit of a pre-defined track to avoid terrain, and instead they were given an option to accept responsibility for terrain clearance when there was good visibility. With advances in flight deck automation systems, and the increased set of options that come with an automation system that is constantly calculating back-up plans in the background, commercial flights are now expected to stay on routes that the flight deck automation can guide. This means less pilot discretion and more safety assurances.

### **What is the history of the visual left turn and connection to this study?**

The FAA instituted a noise abatement left turn in the early 1980s. Due to terrain issues and updates to the FAA standards and procedures, this left turn procedure was eliminated approximately 20 years ago. In 2019 the Airport completed a 14 CFR Part 150 Study that recommended the implementation of the historic left turn or a similar procedure using NextGen technology. In response, the FAA developed a proposed procedure called the KICNE ONE. Per current criteria, the KICNE ONE could not fully mirror the historical left turn. Due to questions about potential noise impacts of the KICNE ONE, the Airport requested that the FAA pause the implementation of KICNE ONE to allow for additional analysis and community outreach. This Task Force was created as part of the analysis process.

### **Why “instrument” procedures?**

In the past when pilots navigated mostly by tuning into ground-based electronic signals, pilots had to conservatively plan to factor in any variations in the signal. This meant flight paths were planned with 4-mile buffers on each side of the planned path. At times, especially in mountainous areas where the terrain limits the line of sight for electronic navigation signals, the available flight paths could be limited.

Up until the 1990s, that scenario set up conditions where pilots might elect to use “visual” procedures instead. In essence, they were saying, “I see the terrain, I will fly so as to safely climb above it.” In that way they could save time and fuel by going more directly to their destination.



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## Background Information

However, as automation capabilities improved on board the aircraft, safety planners focused more and more on the abilities of a good automation plan to work in the background and to always calculate back-up plans for the pilot. As the flight progresses, the automation system now calculates thousands of back-up plans that are rarely used. It is always considering the aircraft weight, the winds, the distance from an airport, the terrain, etc., to make sure that if there ever is an indicator to the pilot that something isn't right, the pilot immediately has good options to choose from. While automation systems were improving, navigation technology was improving as well. GPS (Global Positioning System) and other forms of navigation now allow the pilot and the on-board automation system to know the precise location of the aircraft in more detail than was available in the 1980s.

The combination of flight deck automation and increased precision of navigation now means flight procedures are built to achieve the right balance of terrain clearance, energy/fuel efficiency, and operational back-up plans all the time. The safety balance of those concerns remains the same whether it is visual conditions or instrument conditions. Airlines typically train pilots to fly procedures where the automation is connected to the continuous planned track of the aircraft at all times. This maximizes the efficiency and the decision-support tools available to the pilot.

The payoff for this approach is the incredible safety of U.S. aviation. In the 1980s and 1990s the aviation community liked to emphasize that air travel was the safest form of transportation, and it was. But the industry recognized a need to continually improve, and the safety levels of today have increased over an order of magnitude since the 1980s-1990s. The FAA standard is now "one in a billion." This means the goal of the system is to reduce the likelihood of a major accident to one in a billion flights. When arrival and departure procedures are being built, they are building not only well thought out paths to/from an airport, they are building safety into the system.

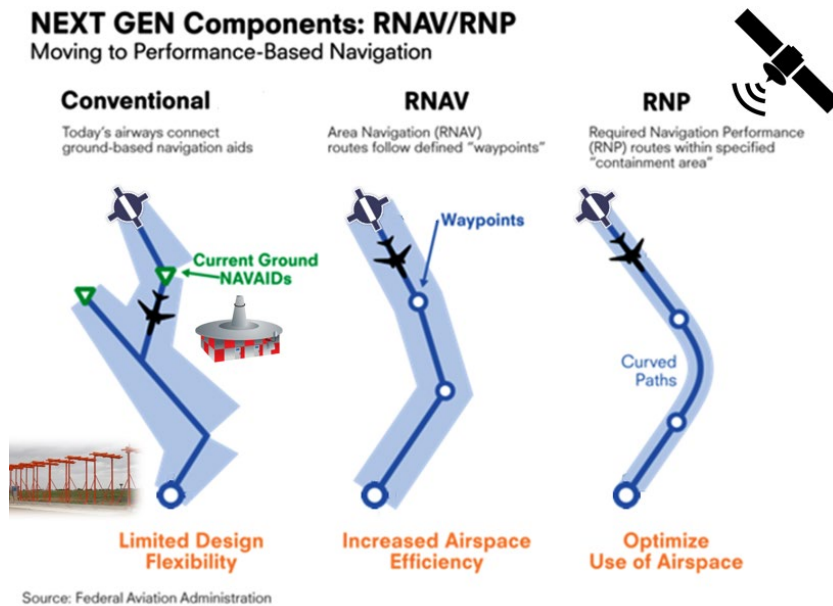


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## Background Information

### What is NextGen?

The Next Generation Air Transportation System (NextGen) is the FAA-led modernization of America's air transportation system to make flying safer, more efficient, and more predictable. To understand NextGen, it's helpful to understand instrument procedures. The navigation capabilities of each aircraft have a high degree of variability. These navigation specifications can generally be split into three groups: Conventional (radio based), Area Navigation (RNAV), or Required Navigation Performance (RNP) (detailed in the graphic below). RNP are generally only useable by airlines and highly equipped business jets, but provide the most optimized and efficient use of airspace.



### What needs to be considered when looking at developing procedures?

When designing a new arrival or departure procedure, there are multiple goals. The list of goals has become longer as automation systems have advanced, and all the goals need to be addressed to design a good procedure. Usually, a procedure is designed with all the goals in mind and then conducted in flight simulators to ensure all the different functions work together to achieve the desired result.

Procedure criteria include the following:

**Climb to Altitude:** Before commencing a turn, aircraft flying an Instrument Flight Rules (IFR) departure procedure must reach an altitude of 400 feet Above Ground Level (AGL) for conventional radio navigation and 500 feet AGL for Area navigation (GPS) procedures.





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## Background Information

**Required Terrain Clearance:** Minimum terrain and obstacle clearance based on sloping and flat surfaces is required for various segments of the approach. A procedure needs to consider the climb rates for different types of aircraft in different weather conditions (slower climbs in hot weather) to achieve the minimum required amount of space between the aircraft and the ground. Unfortunately, terrain doesn't generally follow a straight path, so we must balance the track of the procedure with the best clearance available over the ground.

**Aircraft Performance:** When assigning higher than standard climb gradients (to ensure the aircraft clears terrain) the procedure must consider a wide range of different aircraft performance capabilities. Different aircraft types climb at different rates based on engine thrust and additional environmental factors such as temperature, pressure, and winds. There are also bank angle limitations set by the aircraft certification rules that govern how steep of a turn can be accomplished.

**Flight Management System Execution:** Modern day flight procedures utilize predefined paths that the pilots can load from the aircraft's onboard computer system also known as the Flight Management System. All new procedures are designed to be fully "fly-able" by the onboard automation systems. This means they must meet specific computer programming language referred to as ARINC 424.

**Contingency Procedures:** For Part 121 and 135 (commercial operations), the pilot must ensure a viable path is available in the case of a mechanical issue such as an engine failure. When designing a procedure, not only must the normal procedure be considered, but also the back-up procedure as well. The consideration of the back-up procedure in many cases is what limits a procedure element such as climb gradient or bank angle. A back up procedure considers what happens at any point if an engine has a problem during takeoff and climb out. All the systems must automatically have the necessary guidance and power to execute a return maneuver to safely land at the airport, including necessary safety margins for terrain clearance.

**Ground Track:** There are typically community desires to create procedures that tie into desired ground tracks (areas on the ground that correspond to more compatible land uses). Understanding how the aircraft automation navigates is key to developing a viable procedure that can be used across a wide variety of aircraft.

**Fly by versus a flyover:** Each waypoint designed into a flight procedure is coded in the automation system to achieve flight guidance the aircraft automation will understand. One of the variations in the waypoint programming tells the aircraft automation to get as close as it can to flying "over" the exact waypoint or if it the turn can be rounded off and thus the point can be a "fly by" point and just pass close to it.



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## Background Information

Instrument flight procedures show straight lines between points, but aircraft don't turn instantaneously and therefore some rounding off of flight paths occurs at waypoints involving turns. If the programming declares a point as a "flyby" point, then the aircraft will anticipate the need for the turn and begin the turn prior to the waypoint, rounding off the turn to the inside and completing the turn near the waypoint. If it's declared a "flyover" point, then the aircraft will get to the point before beginning the turn and therefore the rounded off turn happens after the waypoint.

**Turn Anticipation:** When designing procedures using standard Track to Fix (TF) legs and fly by waypoints, a specific amount of distance is needed to complete the turn within the desired obstacle containment area. The amount of distance required for the aircraft to be able to complete the turn without overflying the waypoint is called Turn Anticipation.

**Connecting to higher altitude en-route environment:** A departure procedure must create a safe track, based on an assumed climb rate for the aircraft, to navigate automatically and get to approximately 14,000' (south of Jackson) in order to be above terrain, and allow air traffic controllers to control the flight from there. Everything below 14,000' has to be programmed into a procedure based on a calculated safe climbing route.

A departure procedure also must inform the automation on board the aircraft of the exact track to be flown and evaluated, so that if an engine problem occurs at any point, there is a back-up plan from that point to the airport. This adds complexity and limits options as to what can be flown when high terrain is present.

### How is aircraft noise evaluated?

In 1981, the Federal Aviation Administration (FAA) formally adopted the Day Night Average Sound Level (DNL) as the primary measure for determining exposure of individuals to airport noise. Day Night Average Sound Level is the annual, 24-hour average sound level, in decibels, obtained from the accumulation of all noise events, with the addition of 10 decibels to weighted sound levels from 10:00 P.M. to 7:00 A.M. The weighing of nighttime events accounts for the fact that noise events at night are more intrusive when ambient levels are lower and people are trying to sleep. The 24-hour DNL is annualized to reflect noise generated by aircraft operations for an entire year and is identified by "noise contours" showing levels of aircraft noise.

DNL is the most widely accepted descriptor for aviation noise because of the following characteristics: DNL is a measurable quantity; DNL can be used by airport planners and the public who are not familiar with acoustics or acoustical theory; DNL provides a simple method to compare the effectiveness of alternatives; and DNL is based on survey data regarding the reactions people have to noise. However, additional recent survey data has shown how differently people can perceive noise. That perception of noise is what this Study will try to address by primarily using single event noise metrics, described below in more detail.



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## Background Information

### **Can you take seasonality into consideration with DNL?**

Yes, we currently can run seasonal contours (Summer and Winter), and do that in the annual noise report. Contours do fluctuate over the year. Over time, seasonal fluctuations as Jackson Hole have gone down as the seasons are starting to extend. You can look at these seasonal fluctuations in the noise report. However, seasonal contours are not an appropriate method of analyzing noise impacts, as you need to do a cumulative year long average. (See response below on separate, non-DNL noise analysis which will be used for this Study).

### **For this Study, are other noise metrics used?**

Sometimes the Day Night Average Sound Level (DNL) metric used in Federal noise studies is criticized because it represents the steady state of noise over a 24-hour period for an entire year, which can seem to downplay noise events that can have large effects on residential populations and does not accurately portray what people actually hear on a day-to-day basis. This Study will present data with single event metrics (such as Lmax) to help illustrate what people hear with a flyover.

Because of the unique location of the Jackson Hole Airport within Grand Teton National Park, this Study takes into account additional considerations that are required by the 1983 Agreement between the Department of the Interior and the Board.

### **Can you take seasonality into consideration with the noise analysis for this Study?**

Yes. The permanent noise monitoring sites continuously measure noise throughout the year. The data at these sites will be used to show the seasonal difference in noise. The primary factors that can affect the noise generated by an aircraft are temperature, wind speed, and load factors. Data at the two permanent noise monitors can be used to show the relative difference in the measured noise levels in each of the seasons.

### **Can you give us more information on how seasonality affects noise? Can a seasonal path be considered?**

Typically, during summer, higher temperatures require aircraft take longer to climb and get to the 500 feet above ground level, when a turn can be initiated. Seasonal paths could be considered, and the team recognizes that summer months are important to the community, with value on outside life, as well as the considerations of wintering grounds for the elk during winter months. Ultimately, the FAA will make the final decision on the procedures, however the study team will investigate a procedure that is used primarily during the summer season under clear weather conditions.



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## Background Information

### **How does noise monitoring and noise modeling differ and how will they be included in the study?**

Evaluation of the noise levels from potential procedures is done through modeling using the FAA's standard Aviation Environmental Design Tool (AEDT), which is updated frequently to account for current aircraft, operational considerations and modeling enhancements. The current version is AEDT 3e, which was just released on May 9, 2022. Monitoring can help to validate the modeling through using actual data compared to the modeled information to ensure that the modeled noise is consistent with the actual measured on the ground noise. The model can then be used to predict noise at any location around the airport and for the various flight procedures under consideration. The analysis will also present information as to how often each of the different procedures might be flown.

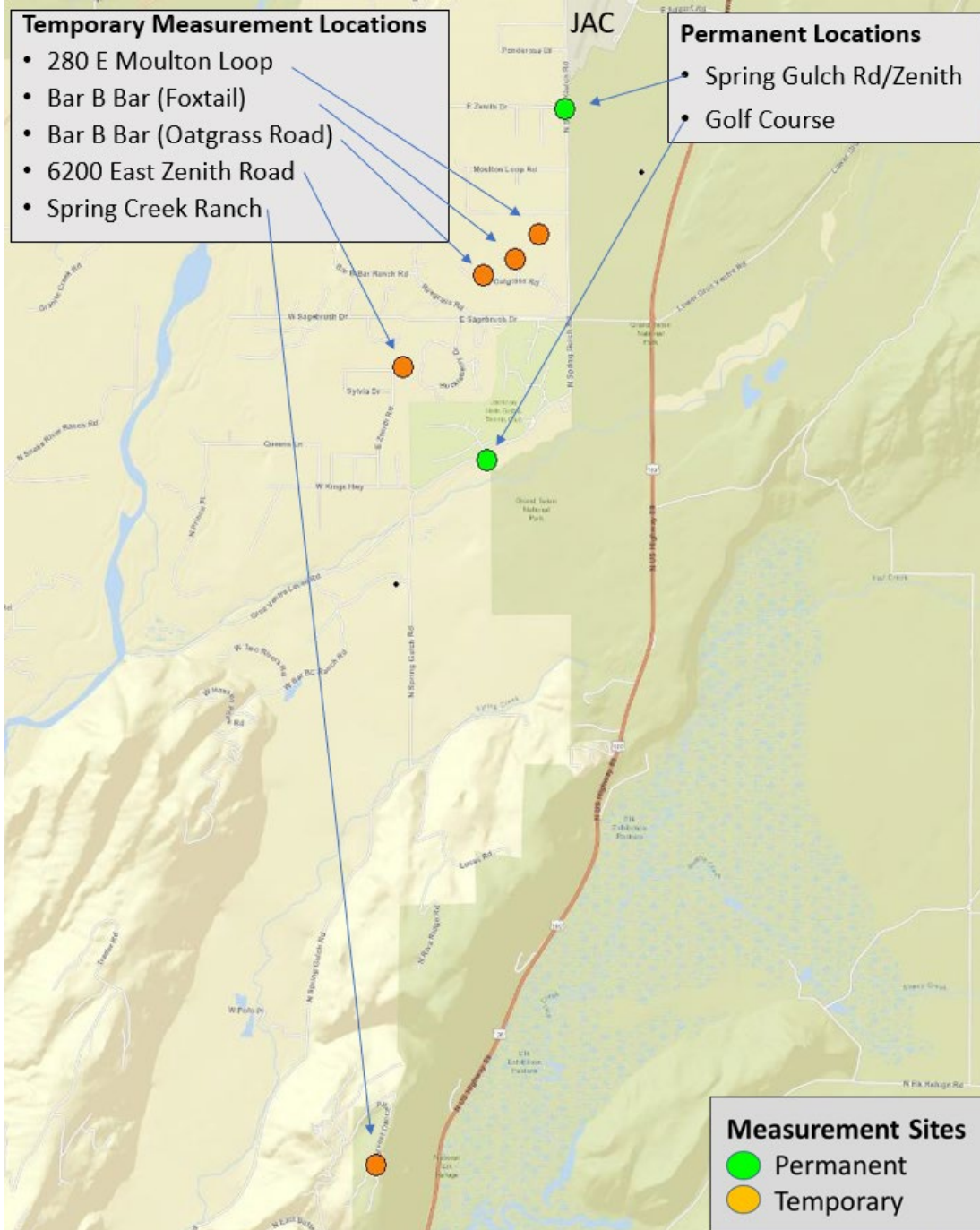
Modeling will be done in terms of single event maximum noise level contours and predicting the noise at representative locations at various points around the valley. The data presented will show the current single event noise levels and the predicted changes with the various procedure options. The modeling takes into account how high an aircraft is above ground level, the flight path flown and the load of the aircraft.

The Airport has a comprehensive noise modeling program in place and has so for many years. In response to recent comments, additional monitors were temporarily added south of the Airport to help supplement this data and will be used to vet the modeling results. The data will be used to vet modeling results but will be removed as they have provided the needed data for this Study. The southern noise monitoring locations are included in the map below. The temporary sites are shown in Orange. The two permanent sites to the south are shown in Green. These sites are part of a broader noise monitoring system of permanent monitors and also assist in the evaluation of the Fly Quiet Program.



## Background Information

### Southern Noise Monitoring Locations – Permanent and Temporary





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## Background Information

### **The area has very low ambient noise, is there a threshold that accounts for the change, as compared to ambient noise levels?**

The valley has very low ambient noise levels. Currently, the thresholds for non-compatibility for residential structures is based on the DNL (cumulative noise metric). However, as noted above, it does not reflect what people hear when an aircraft flies over, and the perception of noise can definitely be increased when the ambient noise levels are low. While there are no thresholds relative to this, this is one of the reasons why we will be analyzing impacts with single event metrics.

### **What percentage of aircraft can fly RNP?**

We don't know with exact certainty the percentage of aircraft currently operating at the Airport which are equipped with RNP. Most newer aircraft and those now coming into service are equipped. We estimate that about 40% of current commercial jets are equipped, but a very small percentage of current GA aircraft (10-20%), are equipped. However, it is important to note that having the hardware is not enough; the aircraft operator must also pay for and install the software on which it operates. We expect over time to get more of the newer equipped aircraft into the JAC fleet and that RNP will become more commonplace in the coming years.

### **Why was the 1983 Agreement amended in 2011, and what would have happened if its term had not been extended?**

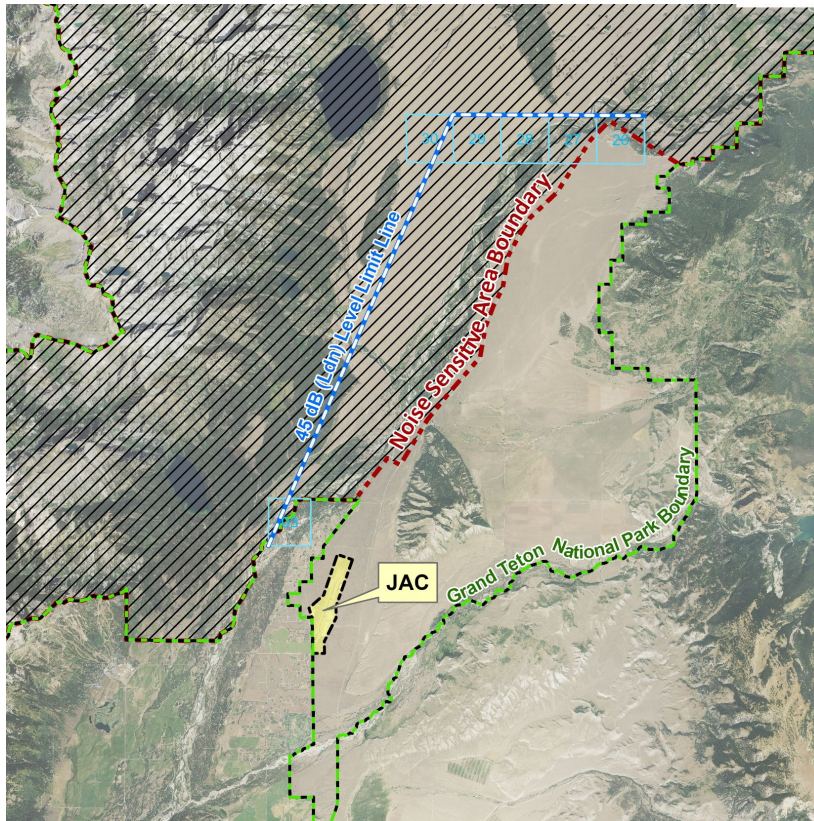
FAA requires that an airport demonstrate that it has "good title" to the airport property and thus able to operate and maintain the improvements constructed with federal financial assistance through the anticipated useful life of those improvements. For airports, like JAC, that operate under a lease with a property owner that is not also the airport operator, the FAA historically has required that the lease have at least 20 years remaining on the term in order to award grant funding. The Use Agreement was amended in 2011 because the Airport was getting close to having less than 20 years remaining on its term. Had the 1983 Agreement not been amended to extend its term, the Airport would not have been eligible for FAA grant funding starting in 2013.



## Background Information

### Could we look at more departures to the north?

The preferred directions as stated in the 1983 Agreement include arrivals from the south and departures to the south, when it is safe to do so. Those preferences were established to protect the Park's Noise Sensitive Area and Critical Area, as seen in the graphic below. Any increase in takeoffs to the north would substantially increase noise in these sensitive areas of the Park (Black Tail Butte substantially limits departures that direction and aircraft can't turn earlier to direct it away from the Park). For this reason encouraging a northern departure procedure will not be considered.



### Will you evaluate both residential and other noise sensitive uses (such as Elk Refuge, etc.)?

Yes. One Task Force member described the Valley as a “String of Pearls,” which is an apt description of the constraints in the Valley that include Grand Teton National Park, the Elk Refuge, terrain constraints, as well as private residences. It will be important to analyze the impacts relative to both private residences and public lands in the area. It is also important to note that any proposed procedures that might come out of this Study will also be subject to evaluation under the National Environmental Policy Act (NEPA). NEPA impact analysis and documentation will need to occur prior to implementation.



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## Background Information

### **Can we look at fanning of procedures?**

We anticipate that more than one procedure to the south may be developed, with selection of which procedure to actually fly being dependent on destination, ATC, weather, aircraft climb performance, the equipment of the aircraft and pilot training. Each procedure would also have a lesser level of built-in dispersion depending up the type of aircraft, the flight management computer, climb performance and pilot activities. Different procedures, with some dispersion built-in to each procedure, would have the effect of “fanning” the departures.

### **Can you put teeth to the voluntary Fly Quiet Program?**

The Fly Quiet Program was designed to have the maximum effect without violating applicable legal standards. Congress and the FAA repeatedly have concluded that a patchwork of local restrictions would seriously undermine the national air transportation system. Mandatory restrictions may be found to violate the U.S. Constitution, federal law and the contractual commitments made by the Airport Board in exchange for federal grant funding.

Most significant among these restrictions is ANCA, mentioned above. ANCA, and its implementing regulations, are very clear that virtually any type of mandatory restriction on aircraft noise must receive FAA approval. Since 1990, the FAA has approved no new restrictions under the law.

Again, the Fly Quiet Program is based largely on positive reinforcement and public recognition, which have proven effective at other airports. The Airport is open to all ideas relative to providing greater encouragement for operators to fly quietly.

### **Can the Airport Board increase landing fees on private jets to a level where they may consider using an alternate airport?**

No, for two reasons. First, the contractual commitments agreed to by the Airport in exchange for federal grant funds require that airport fees must be reasonable and nondiscriminatory. To ensure compliance, airports like JAC traditionally calculate fees to correspond to the airport’s cost to accommodate users (e.g., landing fees offset the cost to improve and maintain the airfield). The FAA may find that adjusting fees based on noise levels is unreasonable and unjustly discriminatory. Second, ANCA treats any airport fee structure design to control noise to be a “restriction” that requires FAA approval. As explained above, FAA has clearly signaled that it disfavors such efforts and almost certainly would deny any request by the Airport Board.



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## Background Information

**Is it possible for the Airport Board to require a contract with operators like NetJets similar to the airlines?**

Airlines are tenants that rent space in the terminal building and maintain a base of operations at the Airport. NetJets and similar operators, regardless of how often they use the Airport, are transient operators. These transient operators cannot be made to enter into an agreement prior to using a federally-funded airport.



**If the Airport Board submits a procedure to FAA, it must first go through the NEPA process for environmental approval. Can you provide more information on the NEPA process?**

The National Environmental Policy Act (NEPA) states that for any major federal action a NEPA evaluation must be prepared. Because a flight procedure change qualifies as a federal action, the FAA must prepare NEPA documentation consistent with their internal guidance. The FAA may delegate this responsibility to the airport sponsor for preparation (to be reviewed and approved by FAA), or the FAA may prepare the documentation internally. If FAA completes the document, which is typical for procedures, they fund the effort. The level of NEPA analysis is dependent on the potential impacts. There are three levels of NEPA documentation: a Categorical Exclusion which can take 1-3 months, an Environmental Assessment, which can take 12-18 months, and an Environmental Impact Statement (EIS) which could take two years or more. Note that special purpose laws such as Section 4(f) of the U.S. Department of Transportation Act must be considered in the NEPA analysis and could potentially delay schedule.

**What is the threshold for noise for NEPA?**

As described earlier, the thresholds for non-compatibility for residential structures (and other noise-sensitive uses) is based on the 65 DNL (cumulative noise metric). In this Study, our analysis is based on single event metrics, which is measured as dBA. It is important to note that 65 dBA is not the same as 65 DNL, DNL is a cumulative metric that is used by the FAA to determine compatibility with noise. Any noise below 65 DNL is considered compatible with residential and other noise sensitive uses. The 65 DNL noise contour does not currently contain any residences or other sensitive noise uses.

The 65 dBA is NOT a threshold for compatibility. As discussed in the meeting, the 65 dBA was used as a comparison for an approximation of typical conversation. Below is a graphic that shows single event noise and an approximation of the type of sound.



Source: FAA Fundamentals of Noise and Sound website, [https://www.faa.gov/regulations\\_policies/policy\\_guidance/noise/basics](https://www.faa.gov/regulations_policies/policy_guidance/noise/basics)



For this study, we are using dBA to show relative change in the single event noise over certain areas, as it is a method to show relative increases and decreases for aircraft events relative to a standard of perceived change. The human ear typically can perceive a change in sound over 3 dBA.

**If 65 dBA is not a threshold, then how are the procedures being evaluated?**

The procedures are being evaluated by comparing each procedure concept to the existing ALPIN and the identifying the relative change (under 3 dBA, 3-9 dBA or over 10 dBA change) at various areas in the community.

The evaluation criteria for this Study are whether the procedure will PERCEIVABLY increase or decrease noise, as detailed above (above 3 dBA change would be perceivable, and about 10 dBA would be very noticeable). All concepts resulted in a shift of noise at one or more of the noise evaluation sites within the community and public lands, resulting in an increase at some sites and a reduction at others.

**What happened to the ZIPET procedure?**

After the May meeting, it was commented that ALL the procedures would shift noise and that it may be advantageous to have one procedure option that evaluated the status quo. Therefore, the ZIPET was modified to be consistent procedure with the existing ALPIN so that all procedures could be evaluated compared to an existing RNP procedure and the KICNE ONE proposed by the FAA.

**Is there a way to consider that ambient noise is different in different locations (i.e. that Town may have higher ambient noise)?**

While certain areas might have higher ambient noise, for all the concepts, the noise analysis showed that there is an increase in 10 dBA or more in at least one location. Perceived change is relative to the change itself (the aircraft event), not the change over the ambient. An area could have a higher ambient level, but a 10 dBA change would still be considered very noticeable.

However, we appreciate that ambient noise levels are of interest and a column will be added to the grid that illustrates Noise Levels at Sample Locations to show the ambient noise level (L50) at each location based on additional monitoring to be completed.

A maximum noise level (such as a loud car event, separate from aircraft events) will not be included in the analysis because it is not a reasonable comparison for this Study's purpose. The purpose is to evaluate the change relative to the potential procedure concepts (ALPIN compared to the concepts). Therefore, a maximum noise level from other sources (separate from aircraft) is not a relevant comparison for analysis in this Study.

**Is it possible to limit size of aircraft and/or number of flights per day?**

No, the contractual commitments agreed to by the Airport in exchange for federal grant funds require that a public airport (i.e., Jackson Hole Airport) must provide access to all airport users and cannot discriminate against any user. Under FAA requirements, the airport must be available to all that have interest in using the airport. To require limitations based on aircraft type or number of flights would be considered discrimination.

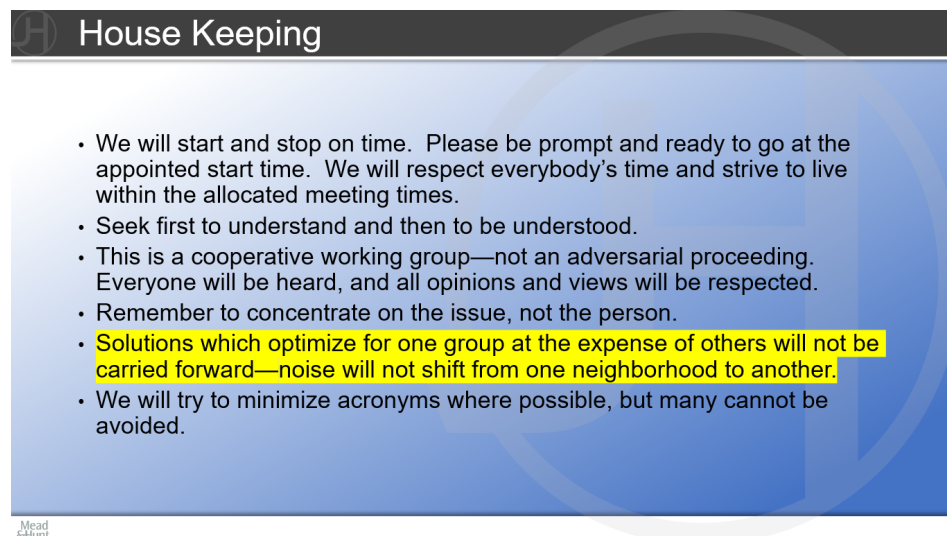


## What are the objectives and ground rules of the Southern Departure Procedure Task Force?

As presented in the first Task Force meeting on February 10, 2022, the objectives of the Task Force are to:

- Gain a common understanding of the physical, environmental, and regulatory context for operations at the Airport.
- Gain a common understanding of the history of flight operations and southern departure options used and considered in the past.
- Review the Airport's history of noise abatement as it relates to both northern and southern procedures for commercial and general aviation operations.
- Identify and prioritize possible improvements to southern departures that will reduce aircraft noise intrusion.

Ground rules for the Task Force included guidance on how to operate as a Task Force and reinforced that the mission of the Study was to evaluate concept procedures to see if there was an opportunity to reduce noise impacts on the community and public lands. It was made clear that solutions which optimize for one group at the expense of others will not be carried forward—noise will not shift from one neighborhood to another.



**H House Keeping**

- We will start and stop on time. Please be prompt and ready to go at the appointed start time. We will respect everybody's time and strive to live within the allocated meeting times.
- Seek first to understand and then to be understood.
- This is a cooperative working group—not an adversarial proceeding. Everyone will be heard, and all opinions and views will be respected.
- Remember to concentrate on the issue, not the person.
- Solutions which optimize for one group at the expense of others will not be carried forward—noise will not shift from one neighborhood to another.
- We will try to minimize acronyms where possible, but many cannot be avoided.

Mead & Hunt 7

Southern Departure Task Force Presentation on February 10, 2022, Slide 7

### Can you initiate a turn at 400' vs 500'?

Right now, based on FAA requirements if you are flying an RNAV procedure you must wait to initiate a turn until 500'. In the future the FAA may be looking to lower this below 500' but it would take years in the making for this to occur. However, the difference in noise from 400' and 500' in would likely be marginal (not perceivable). The 400' in question is only for a conventional departure procedure where aircraft may initiate a turn at 400'.



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## Background Information

### Useful Aviation Acronyms

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<b>AC</b>	Advisory Circular
<b>AEDT</b>	Aviation Environmental Data Tool
<b>AEOZ</b>	Airport Environs Overlay Zone
<b>AFE</b>	Above the Field Elevation
<b>AGL</b>	Above Ground Level
<b>AIA</b>	Airport Influence Area
<b>AIM</b>	Airmen Information Manual
<b>AIP</b>	Airport Improvement Program
<b>ALP</b>	Airport Layout Plan
<b>ANCA</b>	Airport Noise and Capacity Act of 1990
<b>ANSI</b>	American National Standards Institute
<b>AOA</b>	Airport Operations Area
<b>ARTCC</b>	Air Route Traffic Control Center
<b>ASNA</b>	Aviation Safety and Noise Abatement
<b>ATC</b>	Air Traffic Control
<b>ATCT</b>	Airport Traffic Control Tower
<b>ATO</b>	Air Traffic Organization
<b>AURs</b>	Airport Use Regulations
<b>CAT</b>	Category
<b>CDA</b>	Continuous Descent Approach
<b>CFR</b>	Code of Federal Regulations
<b>CIP</b>	Capital Improvement Program
<b>CVRP</b>	Curfew Violation Review Panel
<b>dB</b>	Decibel
<b>dba</b>	A-weighted decibel
<b>dbc</b>	C-weighted decibel
<b>DNL</b>	Day Night Average Sound Level
<b>EPA</b>	Environmental Protection Agency
<b>FAA</b>	Federal Aviation Administration
<b>FAR</b>	Federal Aviation Regulation
<b>FBO</b>	Fixed Base Operator
<b>GA</b>	General Aviation
<b>GIS</b>	Geographic Information System
<b>GPS</b>	Global Positioning System



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## Background Information

<b>FICAN</b>	Federal Interagency Committee on Aviation Noise
<b>FICON</b>	Federal Interagency Committee on Noise
<b>IFR</b>	Instrument Flight Rules
<b>ILS</b>	Instrument Landing System
<b>IMC</b>	Instrument Meteorological Conditions
<b>LDA</b>	Landing Distance Available
<b>Leq</b>	Equivalent Noise Level
<b>Lmax</b>	Maximum Noise Level
<b>LOC</b>	Localizer
<b>NAS</b>	National Airspace System
<b>NAVAIDS</b>	Navigational Aids
<b>NBAA</b>	National Business Aviation Association
<b>NCP</b>	Noise Compatibility Program
<b>NEM(s)</b>	Noise Exposure Map(s)
<b>NEPA</b>	National Environmental Policy Act
<b>NM</b>	Nautical Mile(s)
<b>NPIAS</b>	National Plan of Integrated Airport Systems
<b>PBN</b>	Performance Based Navigation
<b>RNAV</b>	Area Navigation
<b>RNP</b>	Required Navigation Performance
<b>ROA</b>	Record of Approval
<b>RWY</b>	Runway
<b>SEL</b>	Single Event Level
<b>SID</b>	Standard Instrument Departure
<b>TRACON</b>	Terminal Radar Approach Control
<b>VFR</b>	Visual Flight Rules
<b>VHF</b>	Very High Frequency
<b>VMC</b>	Visual Meteorological Conditions
<b>VOR</b>	Very High Frequency (VHF) Omni-Directional Range
<b>VORTAC</b>	Very High Frequency Omni-Directional Range Tactical Air Navigation







# APPENDIX G:

## DEPARTURE DESIGN TECH MEMO





# **SOUTHERN DEPARTURE PROCEDURE STUDY**

Instrument Flight Procedure Technical Memorandum

Prepared for Mead & Hunt

August 22, 2022



## **Background**

Established in the 1930's, Jackson Hole Airport (KJAC) is located seven miles north of Jackson, Wyoming. Despite being the busiest airport in the state with annual pre-covid traffic exceeding 455,000 passengers, KJAC is the only commercial airport in the United States located entirely within a National Park. Subject to frequently changing weather associated with mountainous terrain and an airport elevation of 6,451 feet, KJAC presents a challenging operating environment for pilots and commercial air carriers. Beginning with the 1983 Use Agreement and its associated Noise Abatement Plan and Airline Access Plan, the Jackson Hole Airport Board conducts 14 CFR Part 150 Noise Compatibility Studies to monitor noise sensitive areas in and around Grand Teton National Park.

As part of the most recent 2019 Part 150 Study, further review of the southern departure procedures for Runway 19 was recommended. The Noise Abatement Plan requires the incorporation of a broad array of technological advances – which included the introduction of NextGen flight procedures in 2013. As part of that effort to implement satellite-based instrument flight procedures (IFPs), the FAA began development and implementation of the KICNE ONE RNAV Departure Procedure using current U. S. Standard for Terminal Instrument Procedures (TERPS) design criteria. However, due to potential noise impacts of the KICNE ONE, the Airport Board requested the FAA pause implementation of the procedure to allow for additional analysis and community/stakeholder outreach.

The Airport Board has engaged Mead & Hunt along with Flight Tech Engineering, Aviation/Woolpert, and BridgeNet to conduct the Southern Departure Procedure Study (the "Study") in order for the Airport Board to respond to the FAA by September 29, 2022 with recommendations related to departure procedure alternatives for Runway 19. The Study will investigate the feasibility of a procedure (or procedures) that could reduce noise for the National Park, Elk Refuge, Town of Jackson, and residential communities south of the airport. Using the most current technology, the Study will build upon the existing noise abatement program to look for ways to further refine and reduce noise without simply shifting noise to other communities/stakeholders. To further inform the Study, the Departure Procedure Study Input Taskforce (the "SIT") was created to obtain stakeholder input, address questions, and ensure a broad understanding of the challenges and constraints any possible departure procedure must adhere to.

## **IFP Feasibility and Assessment Overview**

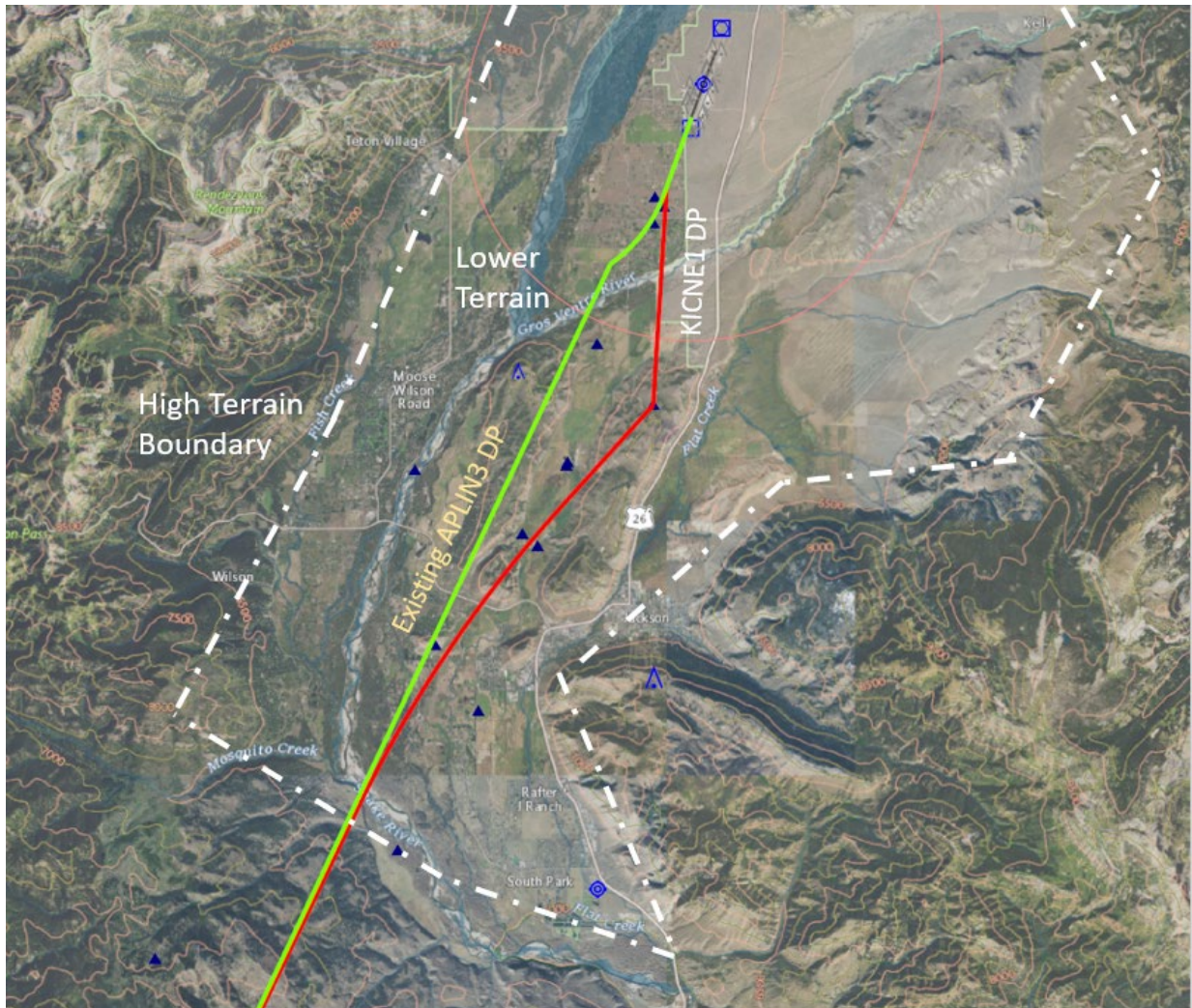
In conjunction with Aviation/Woolpert which provided Air Traffic Control (ATC) procedure insight and coordination, Flight Tech provided TERPS and Area Navigation (RNAV) IFP Design Specialists and the necessary software systems to perform an initial feasibility study and Runway 19 departure procedure assessment at KJAC (the "Feasibility Study"). The Feasibility Study included the best available FAA navigation and terrain/obstacle data which was evaluated and deconflicted prior to commencing the assessment. Furthermore, the Feasibility Study began with a review and assessment of the existing ALPIN THREE and TETON THREE departure procedures along with the pending KICNE ONE procedure.



As detailed in the final section, the Feasibility Study identified six potential Runway 19 departure procedures whose design is based on the following four fundamental constraints that must be accounted for at KJAC:

- The surrounding terrain/obstacle environment
- TERPS and Navigation Specification (NavSpec) design criteria
- Air Traffic Control (ATC) procedures
- Aircraft equipment and performance limitations

**Terrian/Obstacles.** The most obvious design limitation encountered is the fact that Jackson Hole Airport lies on the valley floor at a 6,451 foot elevation with 11,000+ foot mountain ranges to the east and west. This environment constitutes one of the most terrain challenged airport locations in the world, and as such, severely constrained the resulting possibilities for potential departure procedures. As an example, aircraft must gain altitude on the departure procedure over the lower terrain in the valley (i.e., areas of greatest noise sensitivity) and be at least 2000 feet higher than the nearest terrain point before Salt Lake Center could consider issuing them a radar vector off of the departure procedure. Effectively, aircraft must be at 14,000 feet before they can be given instructions to join the en-route segments of their flights and be turned towards their destinations.





TERPS and NavSpec. Design criteria are the fundamental “rules” all procedures must adhere to. For example, on take-off before commencing any turn, aircraft must climb to 400 feet above ground level (AGL) for conventional ground-based procedures (i.e., ALPIN and TETON) or 500 feet AGL for satellite-based procedures. Higher performance aircraft will reach this point quicker and thus begin their turn closer to the runway.

Required climb gradients, terrain clearance requirements, minimum and maximum “leg” lengths, and minimum and maximum bank angles and turn arcs, are just a few examples of the myriad criteria constraints that affected the design of the procedures. Additionally, NavSpec criteria such as satellite-based Area Navigation (RNAV) and Required Navigation Performance (RNP) specifications were both assessed. While RNAV has been broadly adopted by General Aviation operators, RNP is almost exclusively used by commercial airline operators.

## NEXT GEN Components: RNAV/RNP

### Moving to Performance-Based Navigation

#### Conventional

Today's airways connect ground-based navigation aids



Limited Design Flexibility

#### RNAV

Area Navigation (RNAV) routes follow defined “waypoints”



Increased Airspace Efficiency

#### RNP

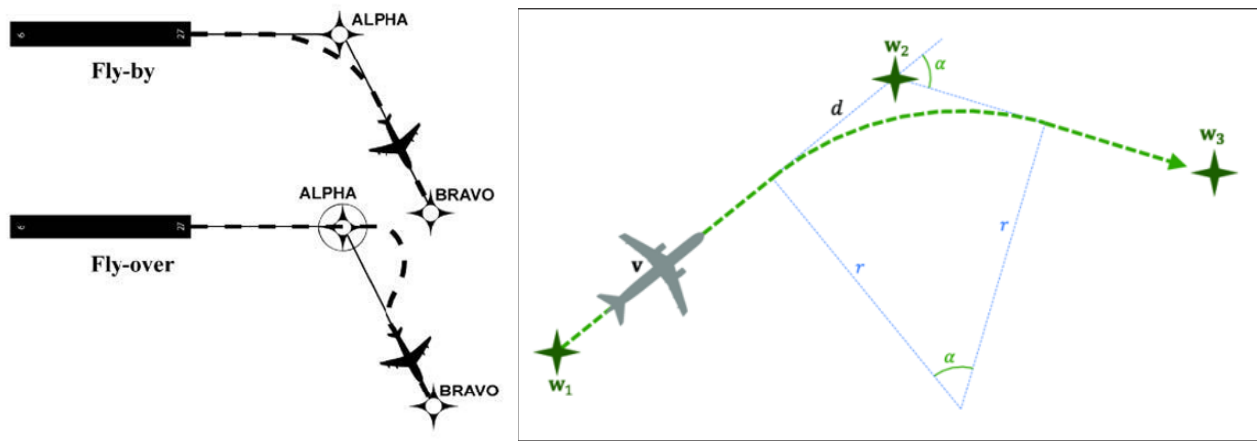
Required Navigation Performance (RNP) routes within specified “containment area”



Optimize Use of Airspace

Source: Federal Aviation Administration

FAA design rules and navigation best practices must incorporate “Turn Anticipation” when designing instrument departures. Aircraft can’t handle abrupt, or knife edge turns and must abide by certain system and performance limitations. Area Navigation (RNAV/GPS) Procedure design requires ‘Distance in Turn Anticipation’ (DTA) assessments to be performed and adhered to. This provides room for the aircraft to start turning in advance of the GPS waypoint and then enough area to roll out of the turn before reaching the next waypoint. DTA buffers ensure aircraft can fly the turn points without excessive bank angles or maneuvering and accounts for varying wind and environmental conditions.



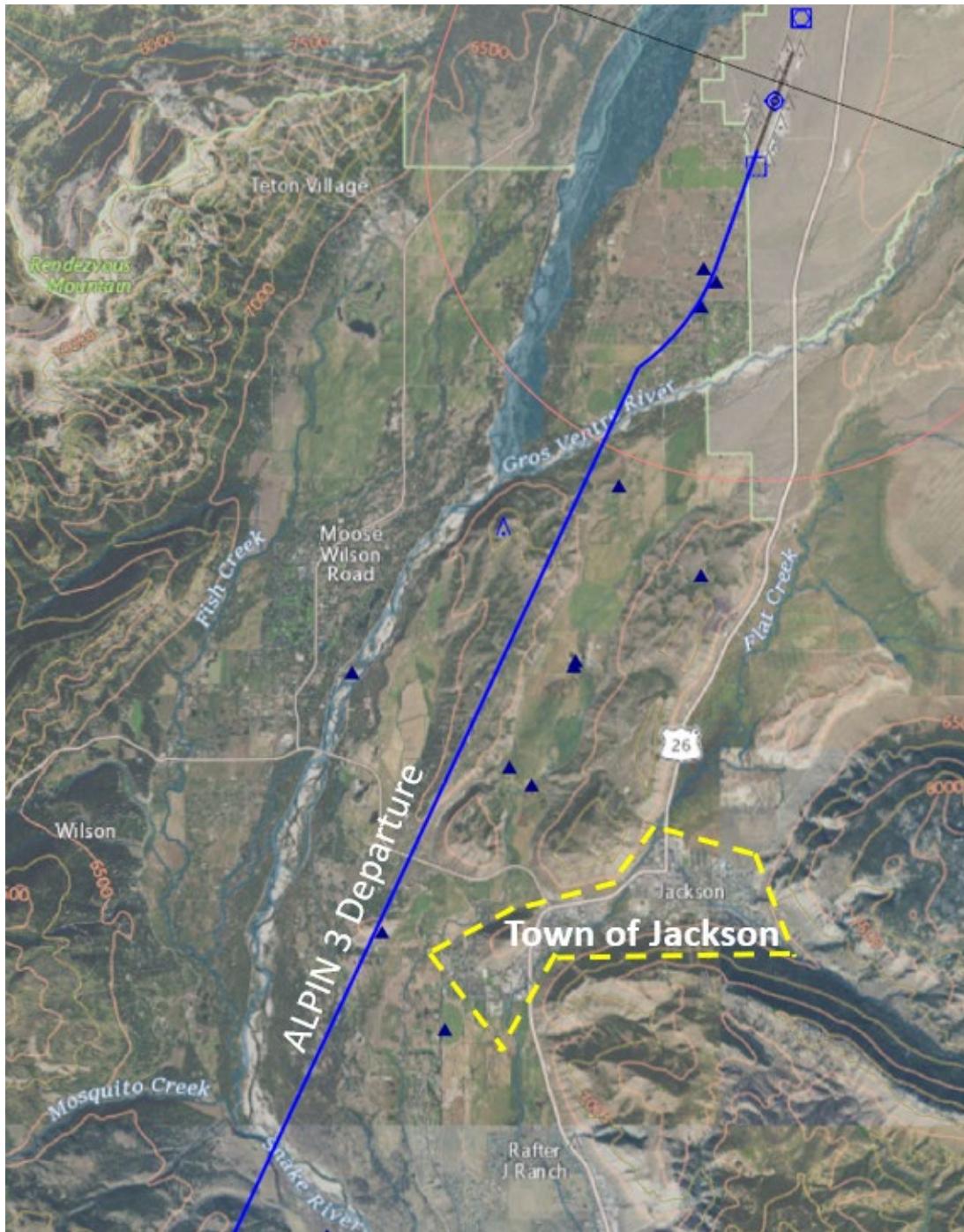
**Air Traffic Control.** ATC considerations also present a significant constraining factor that the Feasibility Study had to account for. Because KJAC is not an airport that supports radar use by Air Traffic Control Towers (ATCT), factors including increased coordination workload between Salt Lake Center (SLC ARTCC) and KJAC ATCT, increased separation standards for both aircraft and terrain, one-in-one-out operations during low visibility conditions, and opposite direction flow conditions between arriving and departing aircraft had significant impacts limiting design options.

**Aircraft Performance.** KJAC supports a variety of aircraft types representing the entire spectrum of aircraft performance and technology. The fleet mix at KJAC includes larger commercial airline operations which are typically higher performing, fly faster, and may have more advanced avionics, along with large corporate and charter aircraft that are similarly higher performing but have a wide mix of avionics technology, and finally lower performing General Aviation piston-powered aircraft that operate much slower and are almost certainly not RNP capable. Regardless of the aircraft's performance characteristics, as mentioned above, no aircraft can accomplish abrupt (knife edge) turns, or turns "on a dime", without having to anticipate and account for the total distance required to change course. Similarly climbing or descending maneuvers that exceed design criteria, aircraft performance limitations, or otherwise endanger the safety of the aircraft and its passengers are strictly prohibited.

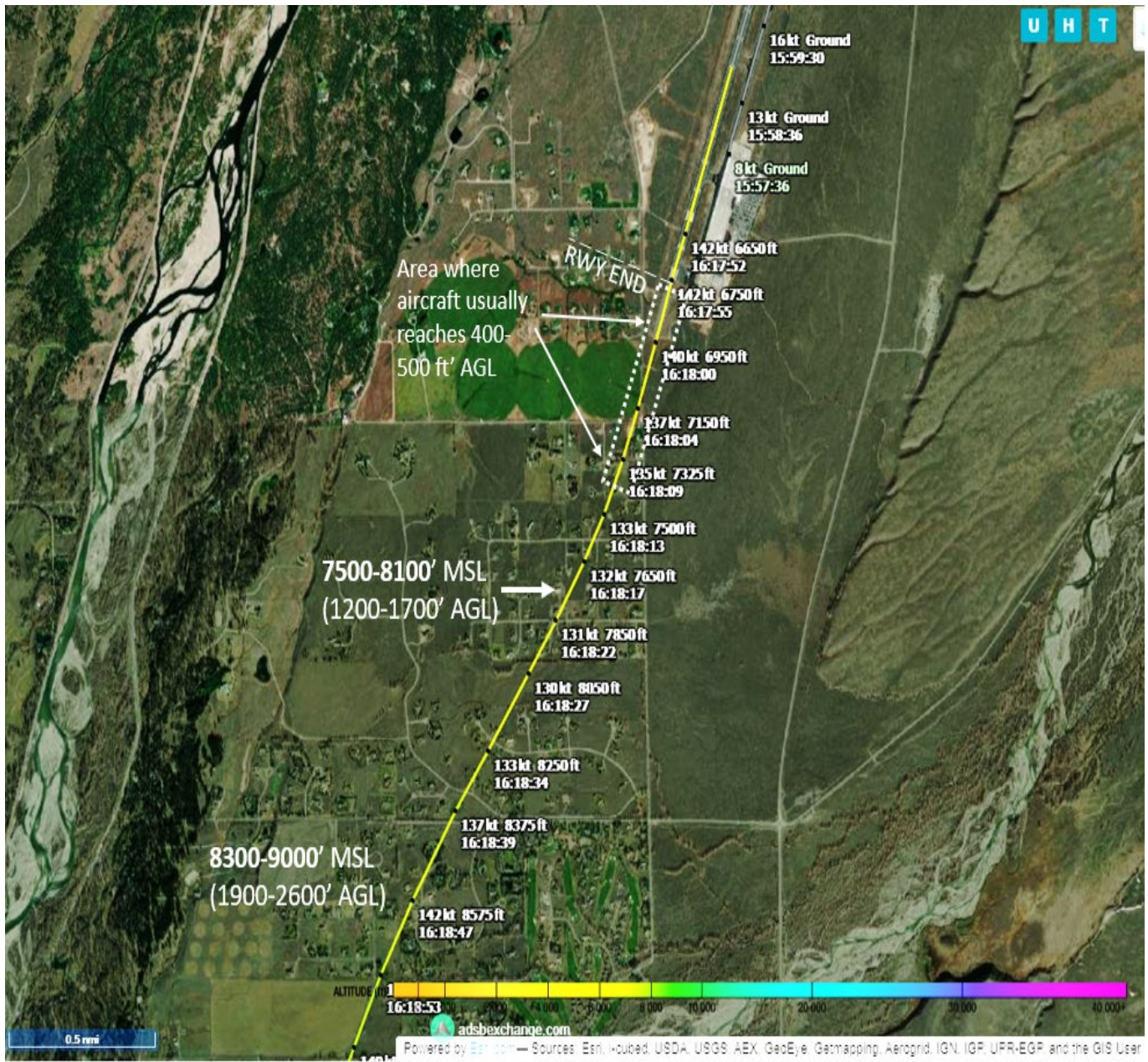
Finally, as an aspect of modern-day aviation safety provided by on-board aircraft technology, and largely as a consequence of each of the above limiting factors, instrument flight procedures are utilized even when the weather is clear and visibility is unrestricted. IFPs are "coded" procedures that are executed by the aircraft's on-board Flight Management System (FMS) computers and are coupled to the aircraft's automated flight systems (e.g., auto-pilot). The coded IFPs proposed by the Feasibility Study yield precise ground tracks and vertical flight paths that are repeatable with the highest degree of fidelity. This ensures ATC, flight crews, and other aircraft always know where an aircraft is on the procedure – and where it is going. In highly constrained environments like KJAC, this is crucial. These coded procedures also allow the aircraft's additional safety systems to be continually evaluating the aircraft's energy state in preparation for an abnormal or emergency situation. Unlike in years past when sole reliance on human judgement and its susceptibility to factors such as fatigue, poor communication, or insufficient training, led to accidents, flight crews now monitor aircraft systems that display the IFP's path which has been designed upfront to ensure they meet all of the above constraints.

## Instrument Flight Procedure Assessments

**Current Procedures.** Southern departures utilize Runway 19 – which is based on the magnetic orientation of the runway centerline in relation to magnetic north. The current FAA departure procedures are the ALPIN THREE and TETON THREE departures which are based on conventional ground-based radio navigation. While there is a slight right turn upon takeoff, both procedures follow a straight path down valley.

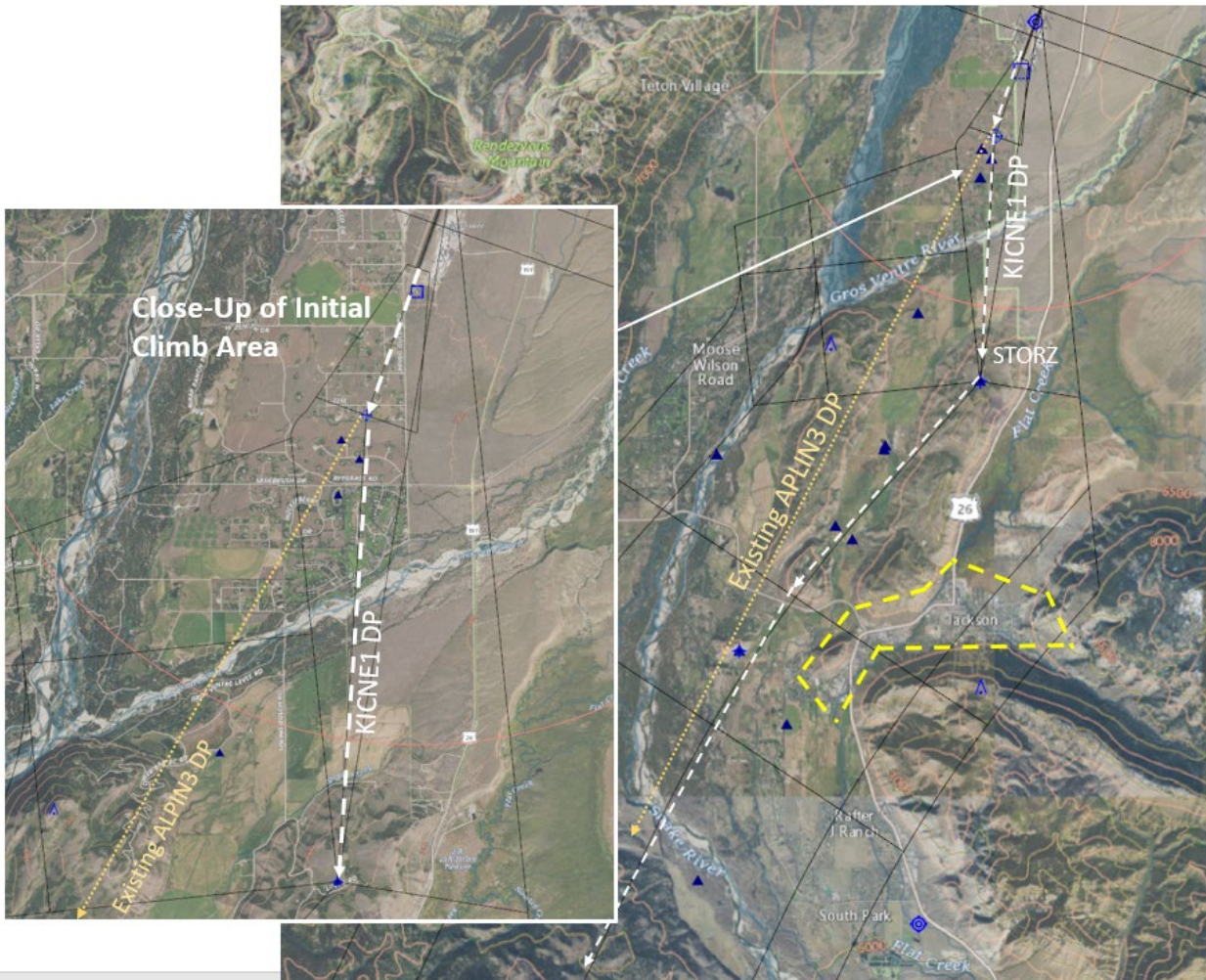






**Previous (FAA) Procedure Proposal.** The KICNE ONE DEPARTURE (RNAV) was originally designed and proposed by the FAA during a 2020-2021 industry working group. This FAA designed proposal was in response to requests to shift aircraft noise as far east as possible. It utilizes an approximately 15 degree turn upon reaching altitude to shift aircraft away from communities within the first three miles of the runway. However, the flight track then crosses back over the eastern Gros Ventre butte to rejoin the existing procedure track to KICNE. This routing prevents direct overflight of the Elk Refuge and the Town of Jackson. The procedure is currently on hold pending input from the SIT and is not scheduled to be published.



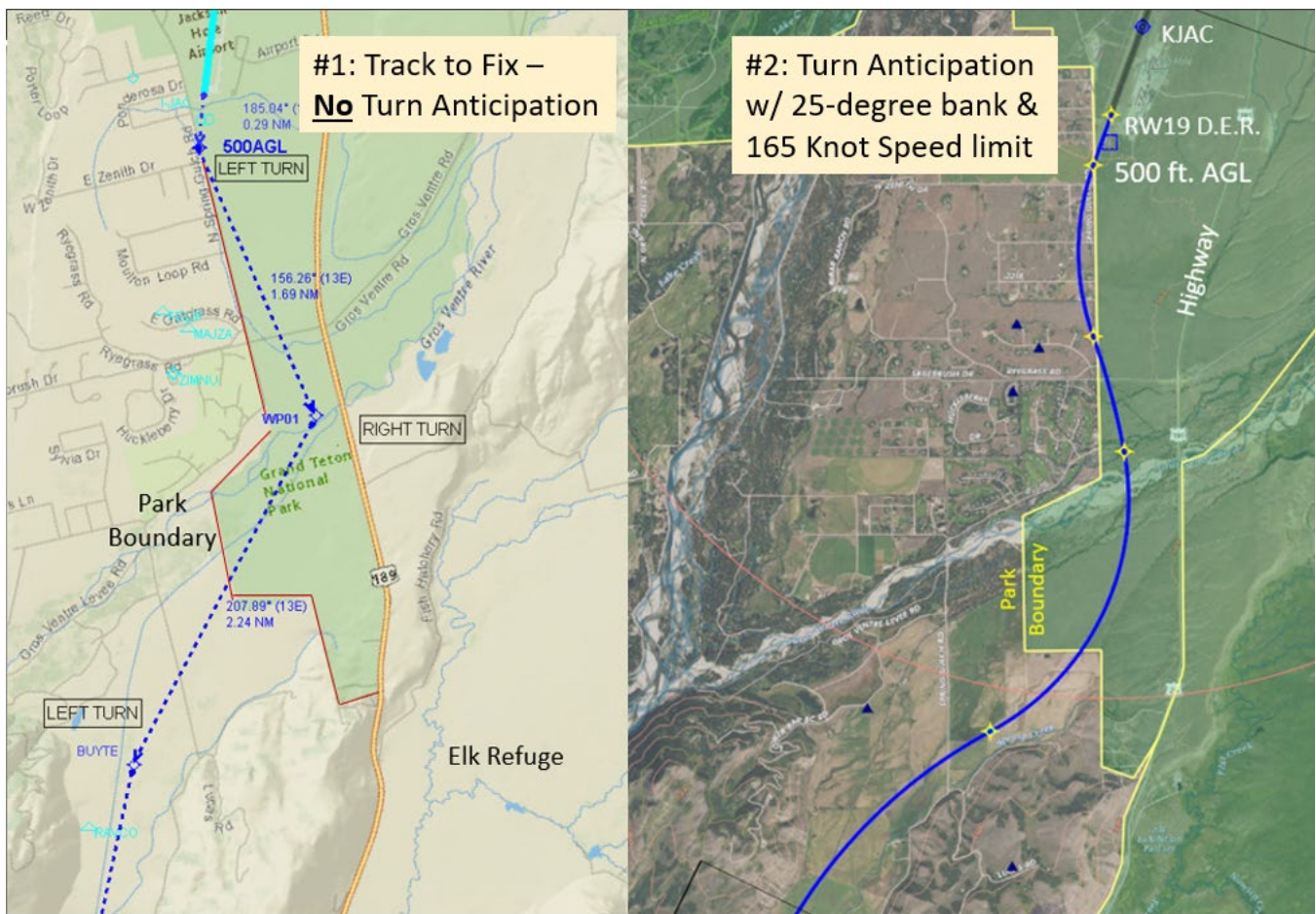


**Previous Visual Paths.** A similar routing as the previous visual departure was assessed for conversion to an instrument procedure following TERPS rules. This routing requires aircraft to make an immediate left ~45 degree turn to overfly Teton National Park. While possible as a visual procedure, it does not meet TERPS standards for instrument departure construction.

**Overview of Criteria Deviations:**

- New design exceeds 15-degree initial course change limitation.
- Would require ~150-165 Knot speed limitations which is on the low end for most large jet aircraft. The speed would limit would require delayed flap retraction and altitude gains.
- The design does not meet turn anticipation standards which prevents design within FAA criteria for IFR Departures.
- When accounting for turn anticipation, the resulting track would still overfly housing near the end of the runway and additional housing areas near the golf courses as it transitions back to the area between the buttes.





## New RWY 19 Departure Concepts

The following new procedure concepts represent the range of possible solutions while working within the ATC and terrain constraints of the valley. They observe the requirement that the first turn initiation point must occur not less than 400-500 feet above ground.

Designs account for the wide range of Aircraft that could use the procedures:

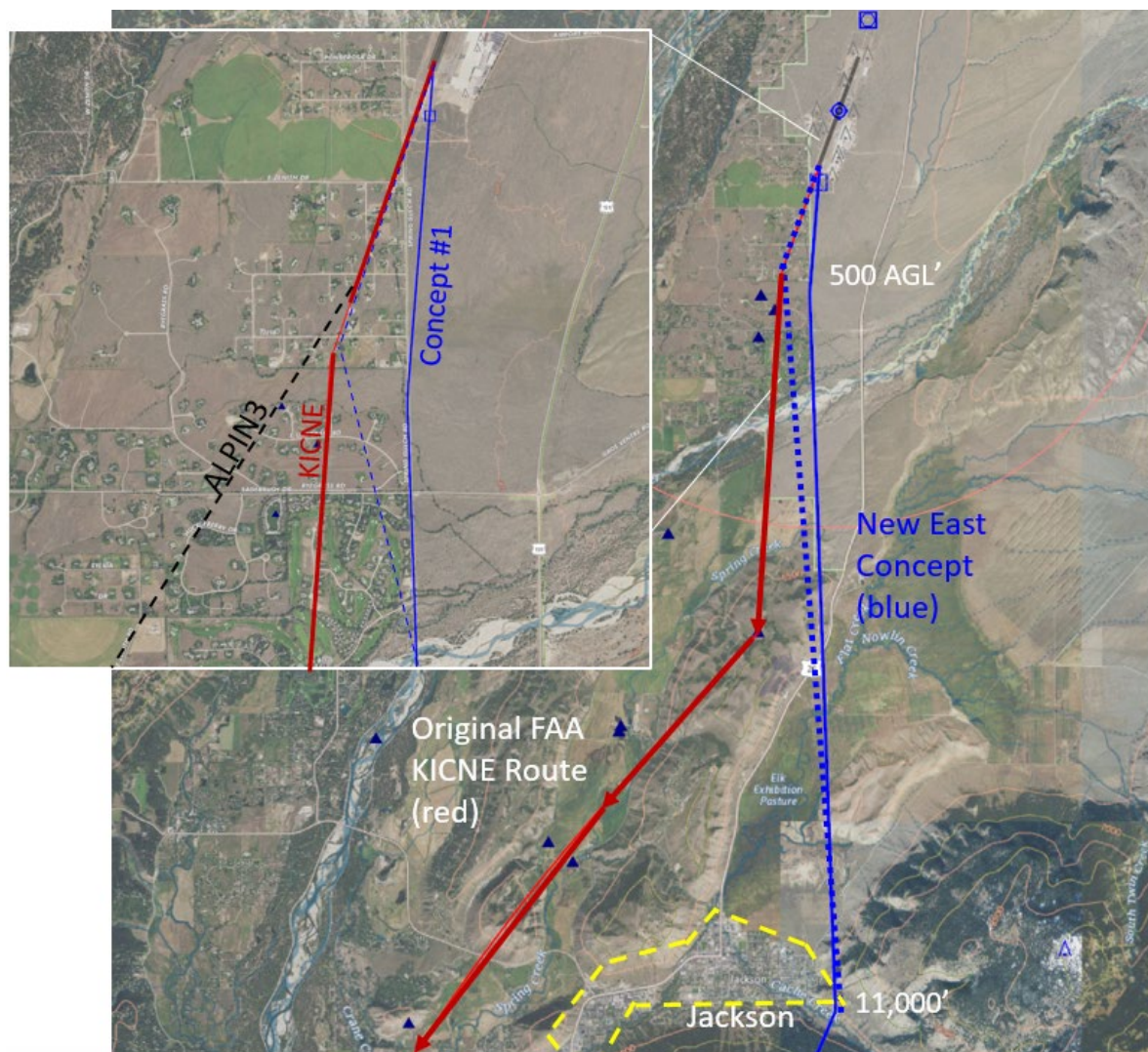
- General Aviation (Personal aircraft– piston & small turbine aircraft)
- Charter & Private Jet Operations
- Scheduled Airline & Cargo Operations

**Advanced Concepts Note.** While not widely useable yet - Advanced Concepts were also assessed in preparation for continuing technology improvements of the fleet. These Departure Procedure concepts may require Modifications to Standards (FAA Waivers). Some procedures utilize Required Navigation Performance – Authorization Required (RNP-AR) which is useable by some airlines, but not by the wider General Aviation and business jet fleet. This may limit the number of operators/aircraft who can utilize the procedures. Therefore, use may be limited

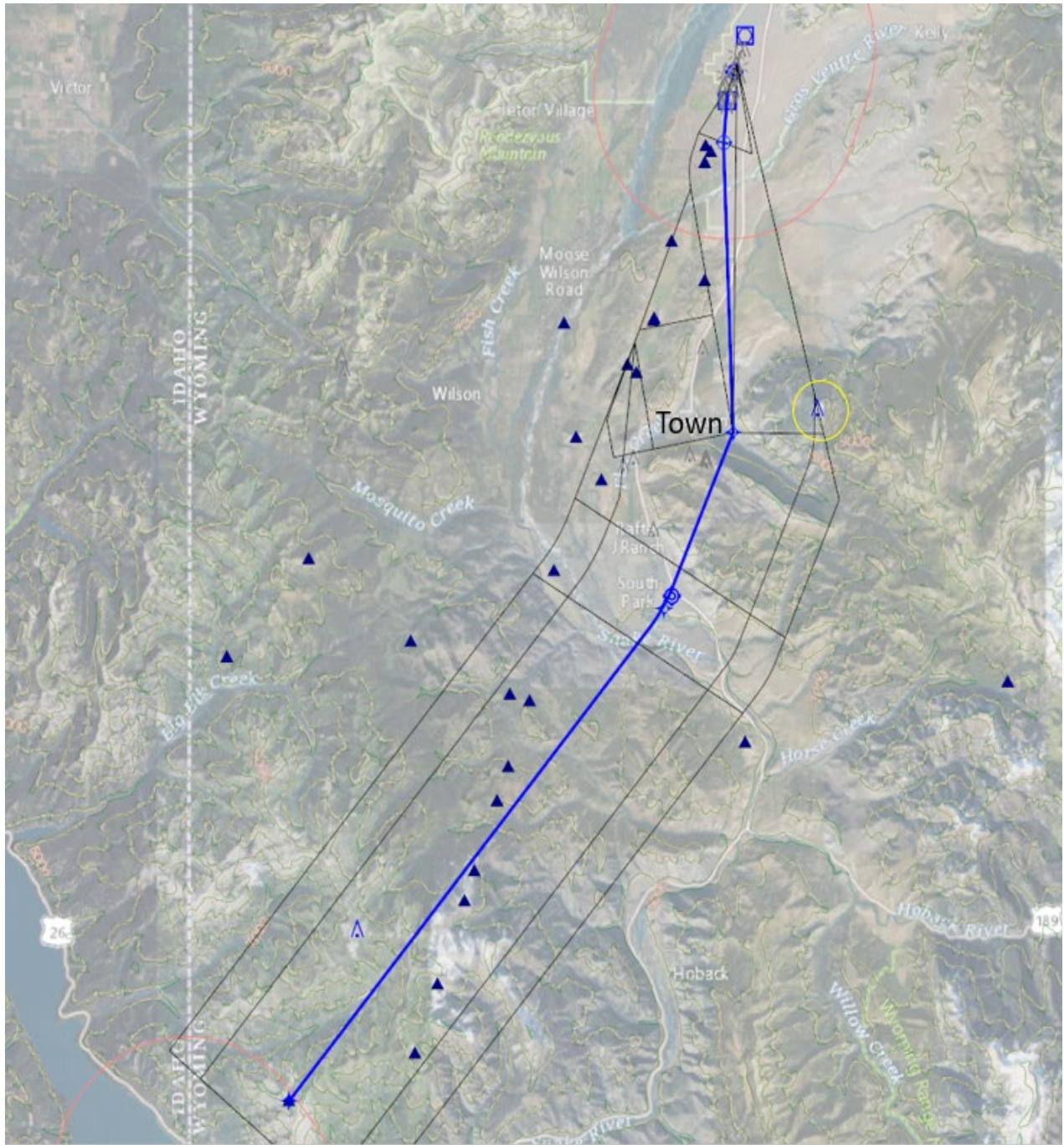
initially due to advanced equipage requirements, but over time as aircraft technology improves, use could increase.

### C1 RNAV to Southeast (Concept #1 RNAV DP – East Shift)

- Modifies the original FAA KICNE Proposal by shifting the initial course to the farthest eastern extent.
- Terrain on the eastern edge of the procedure (yellow circle) requires a higher than a higher climb rate (529 ft/nm to 10,200').
- RNAV procedures requires a 500' initial climb segment.
- Routes aircraft to the East of populated areas.
- Overflies Elk Refuge instead and reduces overflight of core valley areas.
- Crosses to the East of Jackson (town center) as opposed to west of town center.



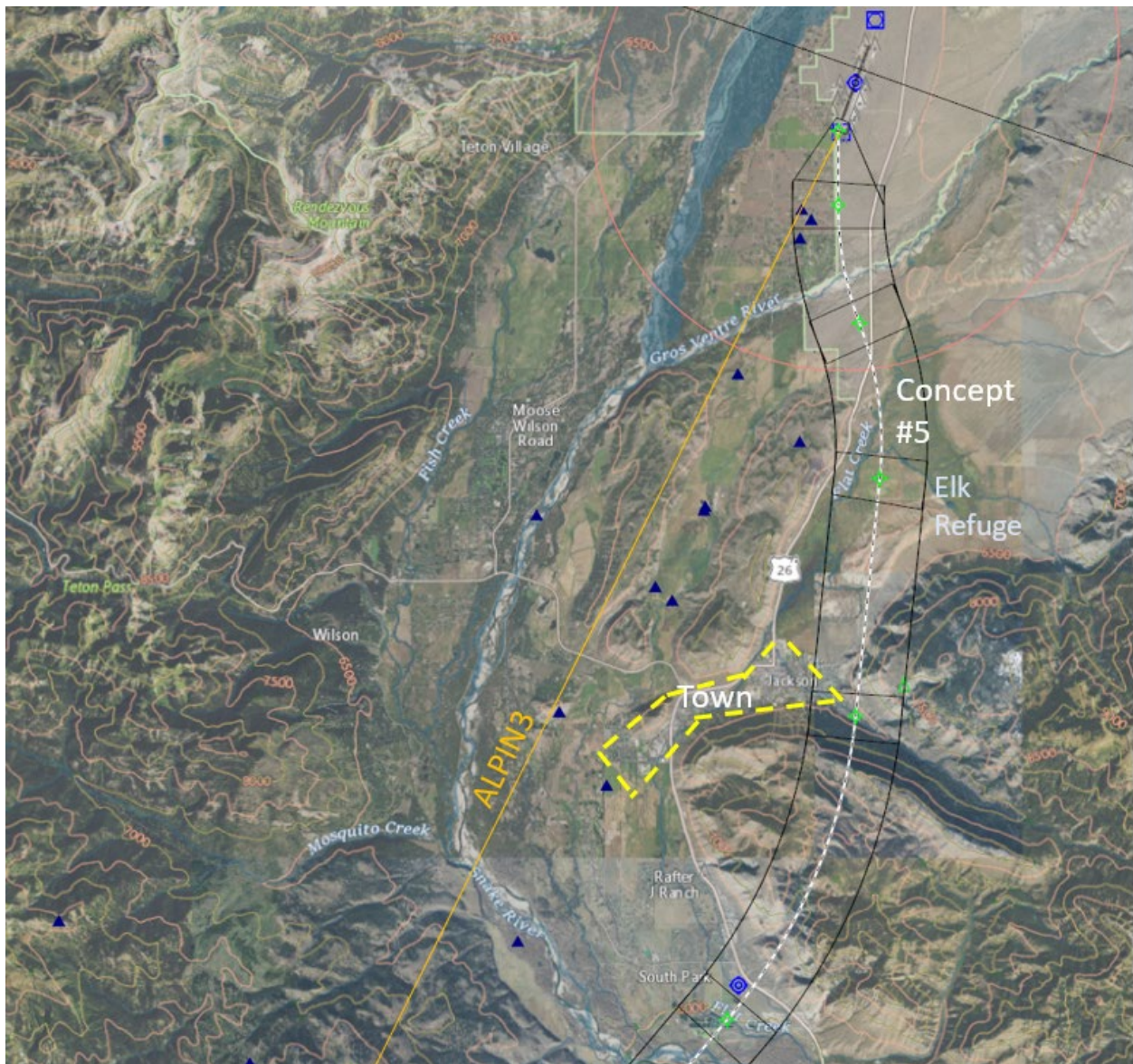




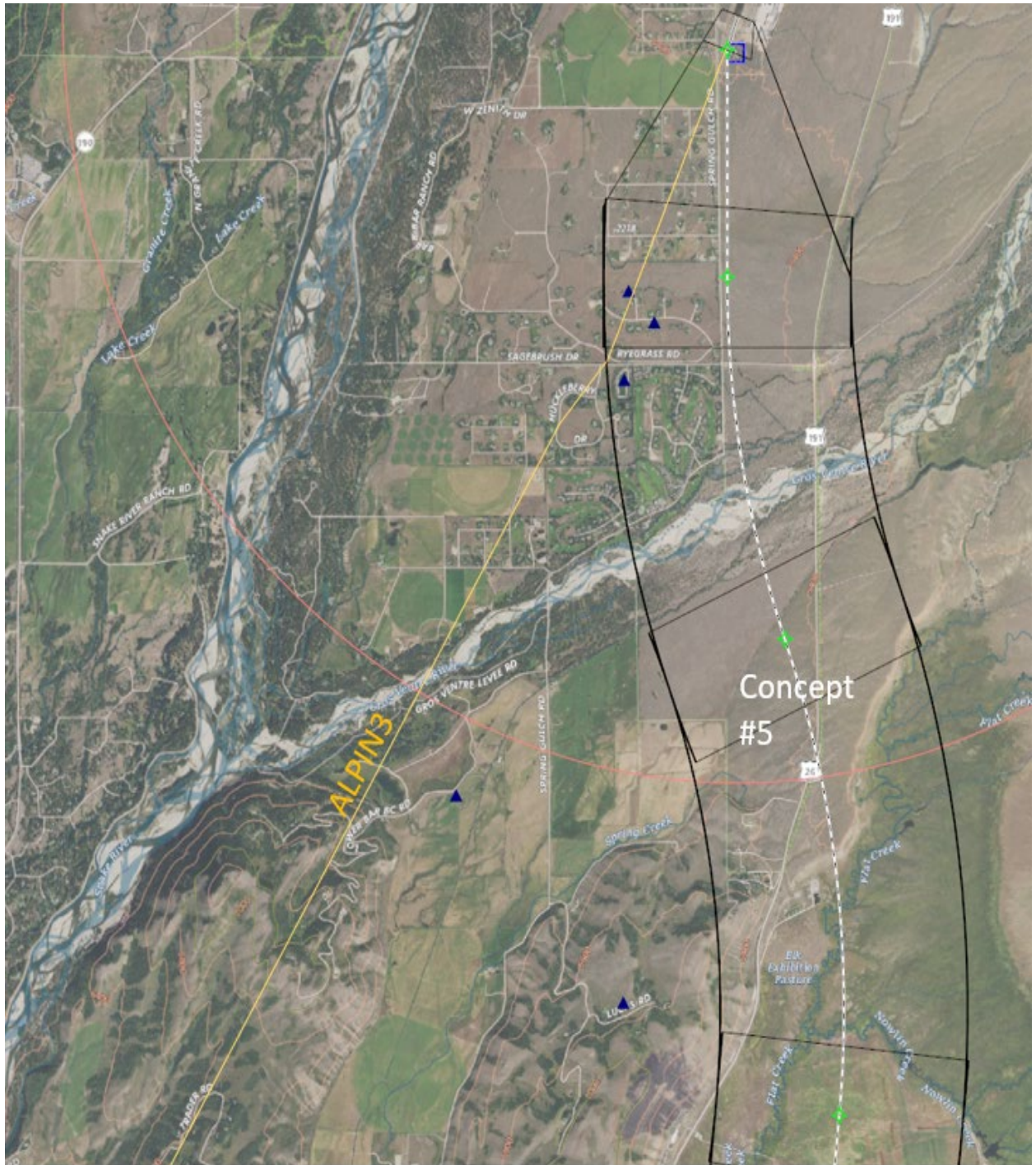


## C2 RNP to Southeast (Concept #5 Immediate Turn to Southeast)

- Limited to the most advanced aircraft due to curved path technology.
- Requires Waivers due to early turn.
- Avoids majority of valley.
- Overflies Elk Refuge and mountainous terrain sooner.
- Avoids direct overflight of communities directly south of Airport
- Could produce a different noise profile as aircraft begins a low-level turn to the southeast.



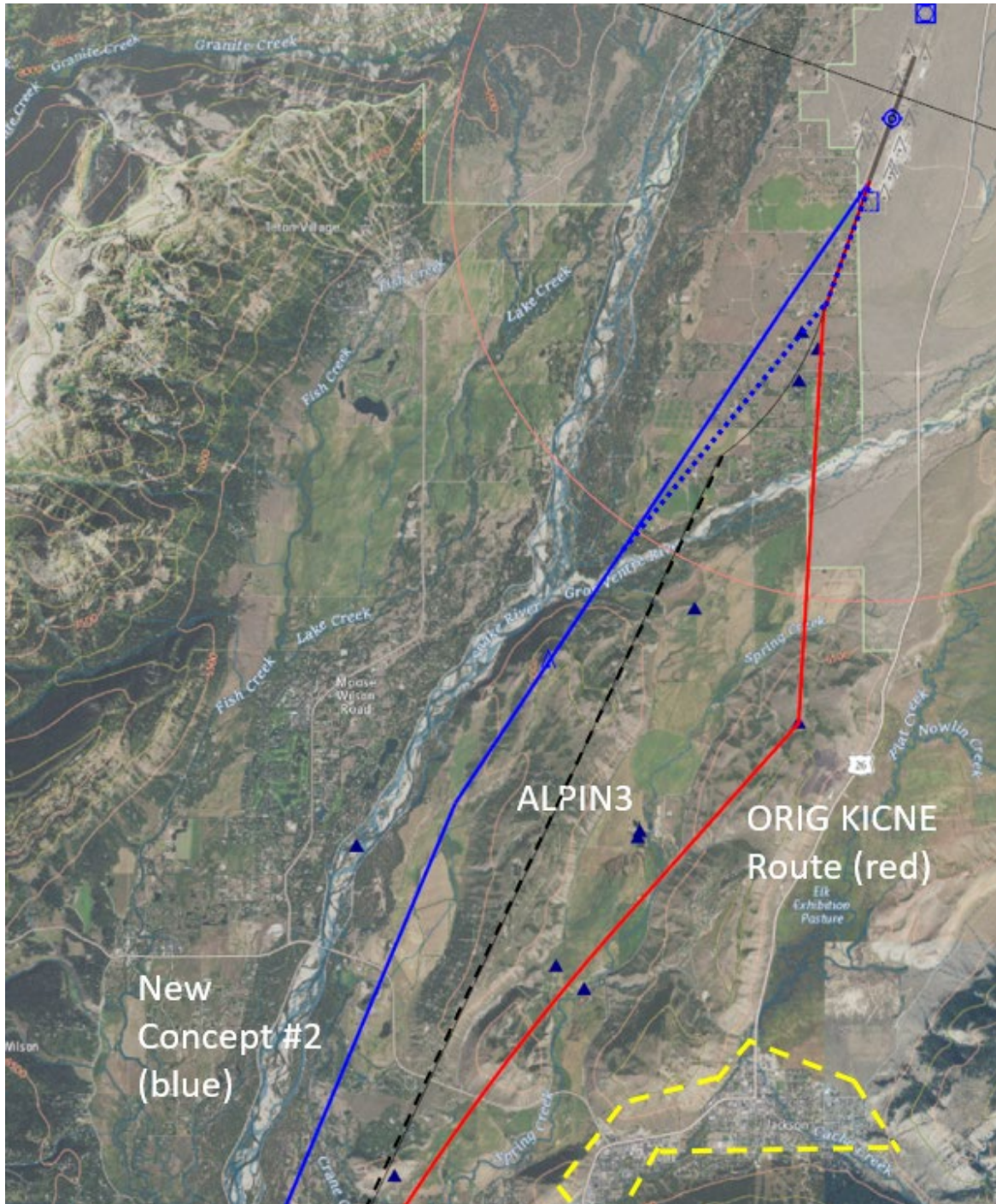




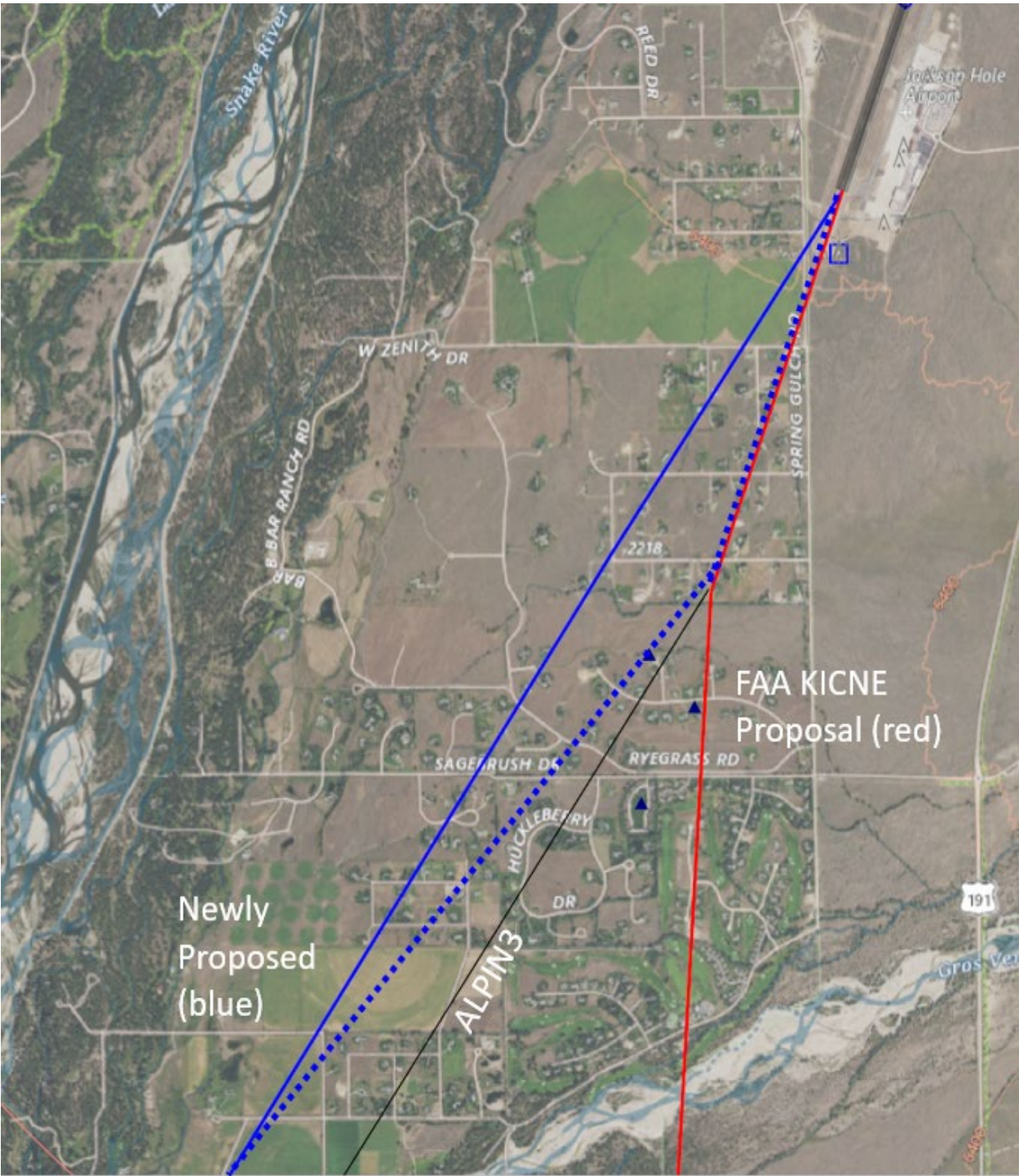


## C3 RNAV to Southwest (Concept #2 RNAV DP – West Shift)

- Similar to existing ALPIN 3 with slightly more southwestern initial routing.
- While closer, route avoids direct overflight of Snake River.
- Close-in view.
- Dashed blue line indicates worst case climb rate.



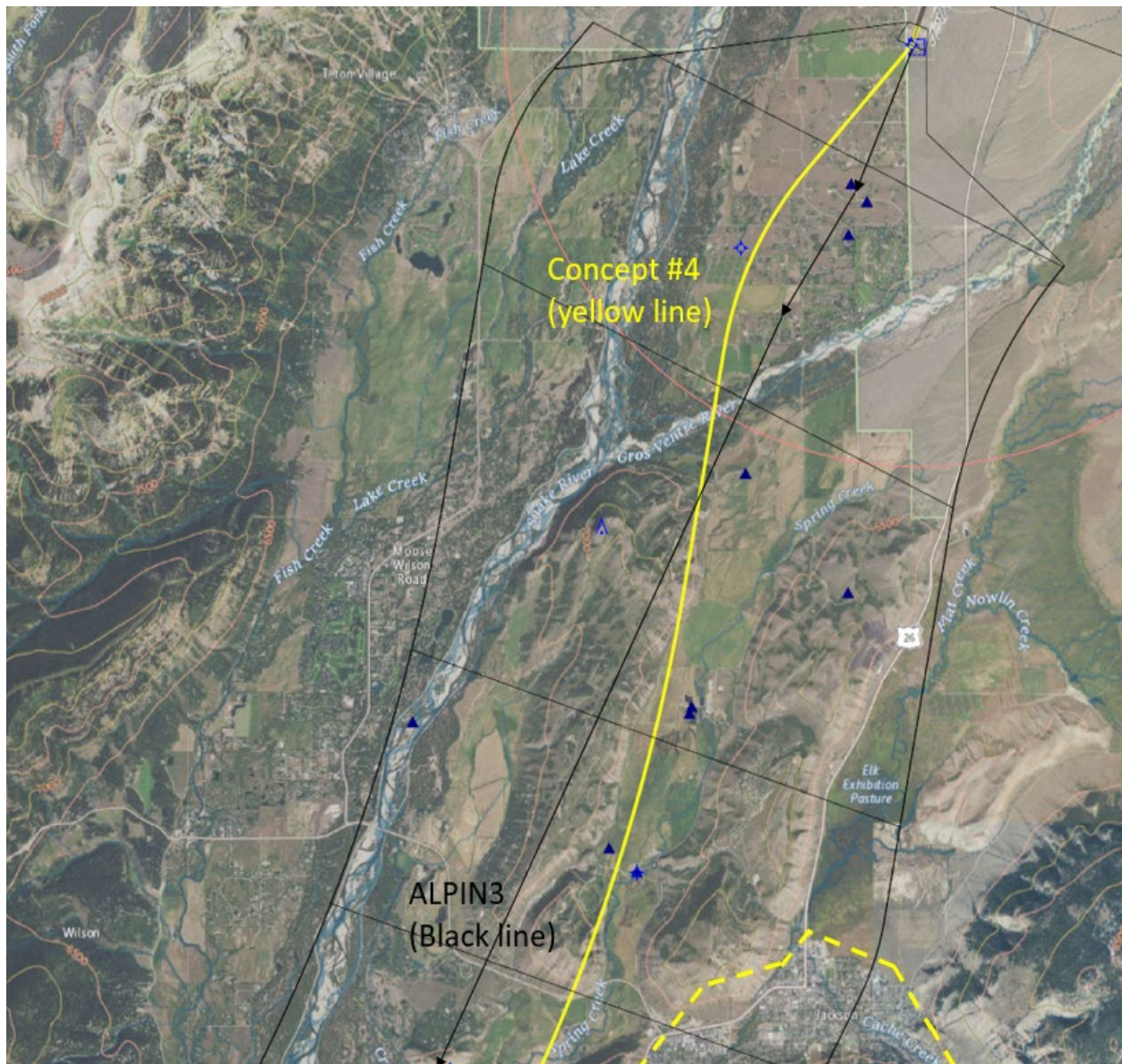






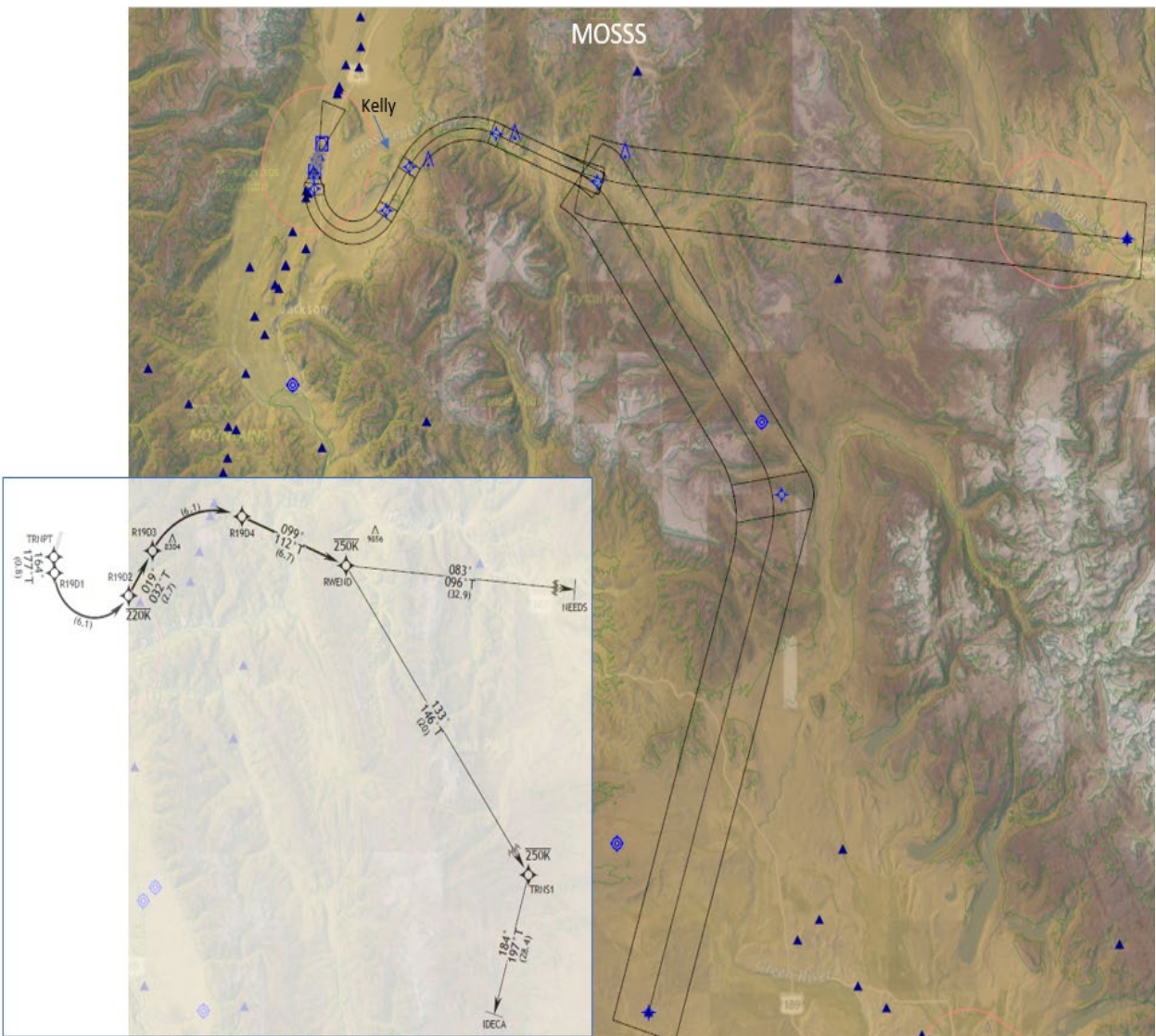
## C4 RNP to Southwest (Concept #4 Immediate Turn to Southwest)

- Advanced RNP design.
- Requires early turn to the southwest, then rejoins ALPIN3 route.
- Would require waivers which could limit use.
- Other than the early (non-standard) turn, it utilizes navigation methods that are easily achievable by a most aircraft.
- Terrain optimized and has a relatively low Climb Rate Requirement (329 ft/nm to 8100)
- Eventually joins similar path as the ALPIN3 departure once down valley

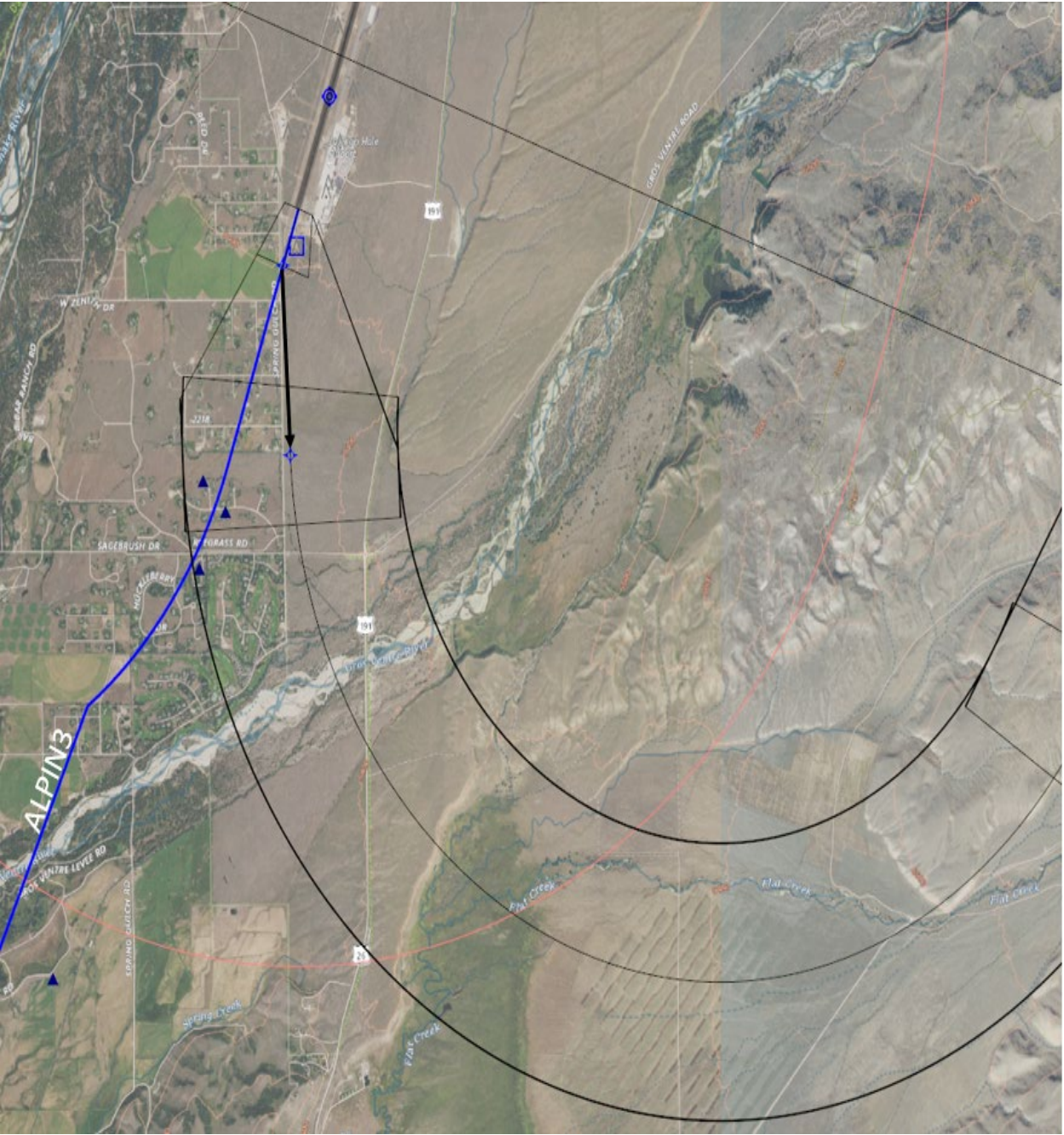


## C5 RNP to East (Concept #6 East Hook Departure/Corkscrew)

- Utilizes Advanced RNP Navigation to route departing aircraft away from the Jackson Valley.
- Presents ATC challenges due to the turn towards oncoming arrival flows.
- Close-in view of immediate departure area.
- Requires a turn at runway end.
- Blue line indicates existing ALPIN Departure
- Could be limited to summer months



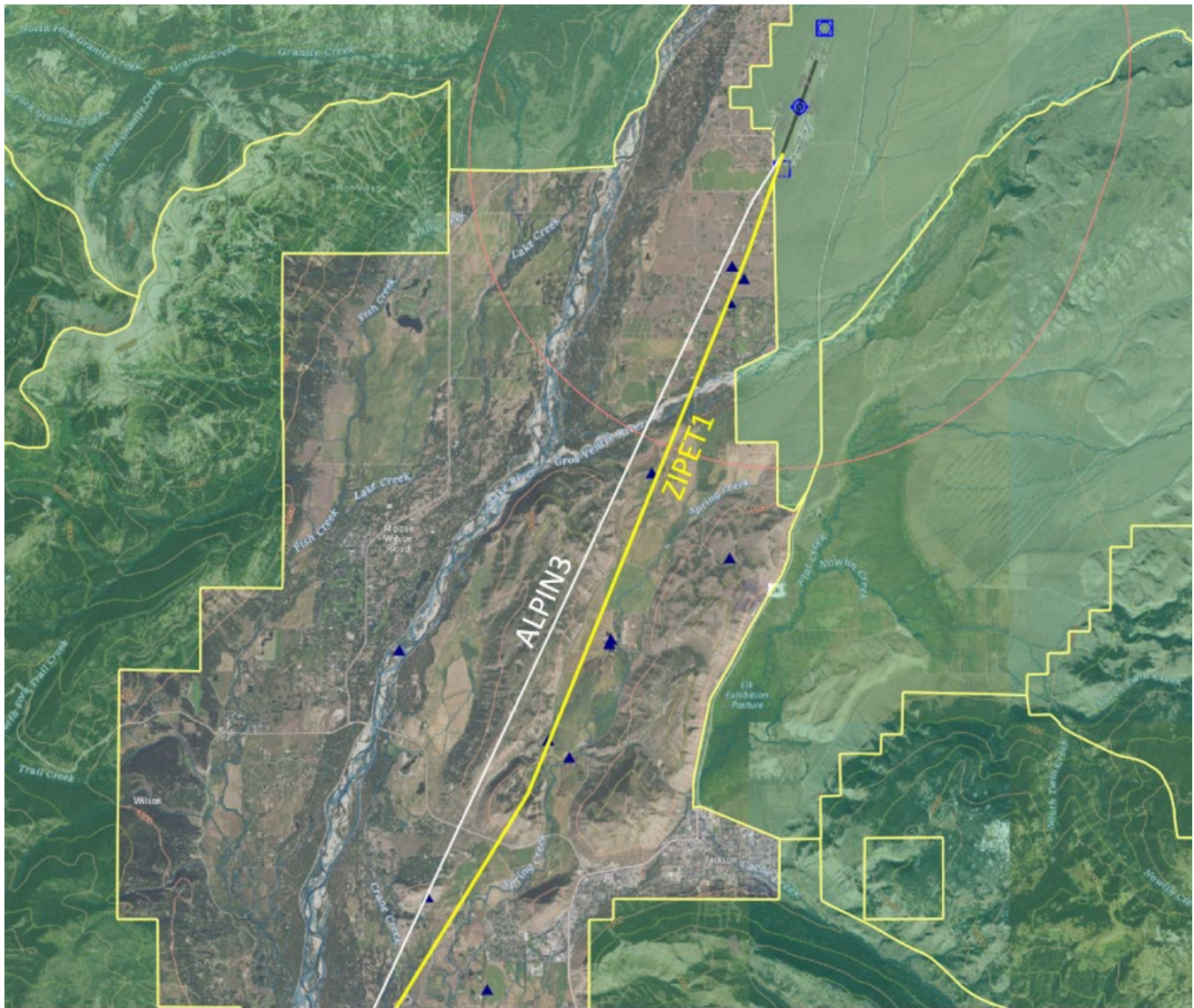






## C6 ZIPET ONE DEPARTURE (RNAV)

- Provides a simple RNAV overlay of the current ALPIN3 (Radio Nav) Departure.
- Has a slight turn mid-valley (between the two ridgelines) to help prevent direct overflight of the ridgelines (marked by orange arrow).
- Ends at the current KICNE Waypoint.
- Avoids overflight of Town.
- Close-up view of initial climb area.
- Distance between the two paths does not exceed 800 feet of lateral distance.
- Easily flyable by all aircraft types.
- Provides redundancy for use during outages of ground-based nav aids used in ALPIN3.



## **IFP Feasibility and Assessment Conclusions**

Each of the seven procedures and its associated ground track represents the array of feasible options for aircraft departing Runway 19; however, the resultant noise modeling is not within Flight Tech's scope and was performed by BridgeNet International as part of their assessment of these alternatives. As a result of the competing constraints including the complex terrain environment, ATC limitations, diverse avionics performance capabilities, and inherent design criteria limitations that all procedures must comply with, there was no "one-size fits all" solution available for aircraft departing to the south from Runway 19.

Due to the close proximity of multiple residential communities south of the airport, the Grand Teton National Park boundaries, and the adjacent Elk Refuge, at present there is no single procedure that is a panacea to eliminate the noise impacts of aircraft departing to the south. Over the next five to seven years, as new aircraft with more advanced avionics make their way into the commercial fleet, A-RNP and RNP-AR departure options, such as the Painter Departure, may provide additional alternatives for the Airport to consider. At present, however, it is extremely doubtful that the FAA would adopt these types of procedures at Jackson Airport for Public use under 14 CFR Part 97, and ultimately their future use will depend on a number of operational factors that must be investigated by individual Air Carriers and other interested Operators to determine their suitability for each aircraft type.

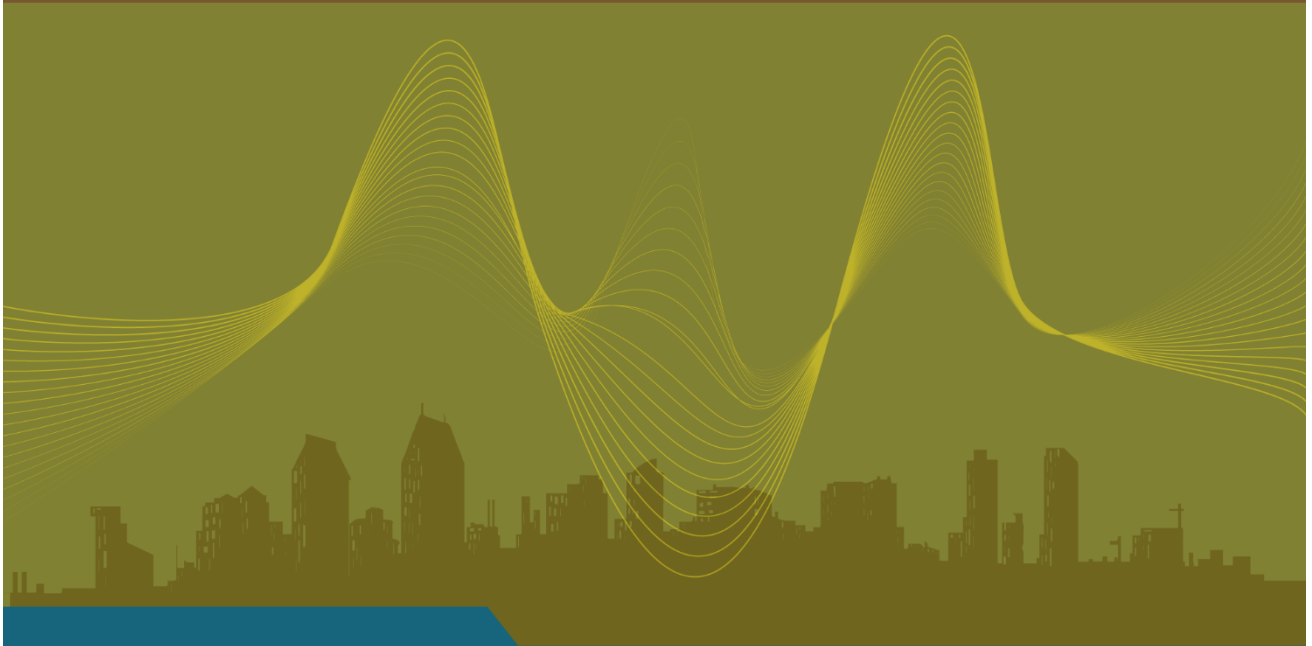
# APPENDIX H:

## NOISE ANALYSIS TECH MEMO





**DRAFT**



# Jackson Hole Airport Southern Departure Task Force Noise Analysis

**Prepared for:**

Mead & Hunt, Inc.

**Prepared by:**

Paul Dunholter  
Cynthia Gibbs

**DRAFT | August 26, 2022**





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# Noise Analysis Methodology for the Jackson Hole Southern Departure Study

## Introduction

In 2022, Jackson Hole Airport convened the Southern Departure Task Force to evaluate departure options to the south that could potentially reduce noise for residents while not shifting noise to a different neighborhoods or noise sensitive public lands. Each of these potential departure procedures were compared to the existing ALPIN THREE departure procedure.

This Noise Analysis Methodology (methodology) has been prepared for the Southern Departure Study to document the steps taken to analyze noise for existing and potential departure procedures (Concepts). Each of the departures were analyzed to determine the associated noise as it relates to noise sensitive land uses, including residential, Grand Teton National Park, the Elk Refuge and Forest Service Wilderness lands.

This methodology used ambient measurements and single event noise to determine existing and potential conditions. The FAA criteria for land use compatibility is the Day-Night Average Noise Level (DNL), a 24-hour measure of the total noise throughout the day with penalties for nighttime noise.

Noise contours are developed annually based upon the calendar year full operations. To develop DNL contours, the FAA AEDT noise model uses standard modeling assumptions that would be required within a Part 150 or FAA sponsored environmental study. The DNL index is a 24-hour, time-weighted energy average noise level based on the A-weighted decibel. It is a measure of the overall noise experienced during an entire year of flight operations. The time-weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized for occurring at these times. In the DNL scale, noise occurring between the hours of 10 p.m. to 7 a.m. is penalized by 10 dB. This penalty was selected to attempt to account for the higher sensitivity to noise in the nighttime and the expected decrease in background noise levels that typically occurs in the nighttime. The 2021 AEDT contours are presented in **Figure 1**.

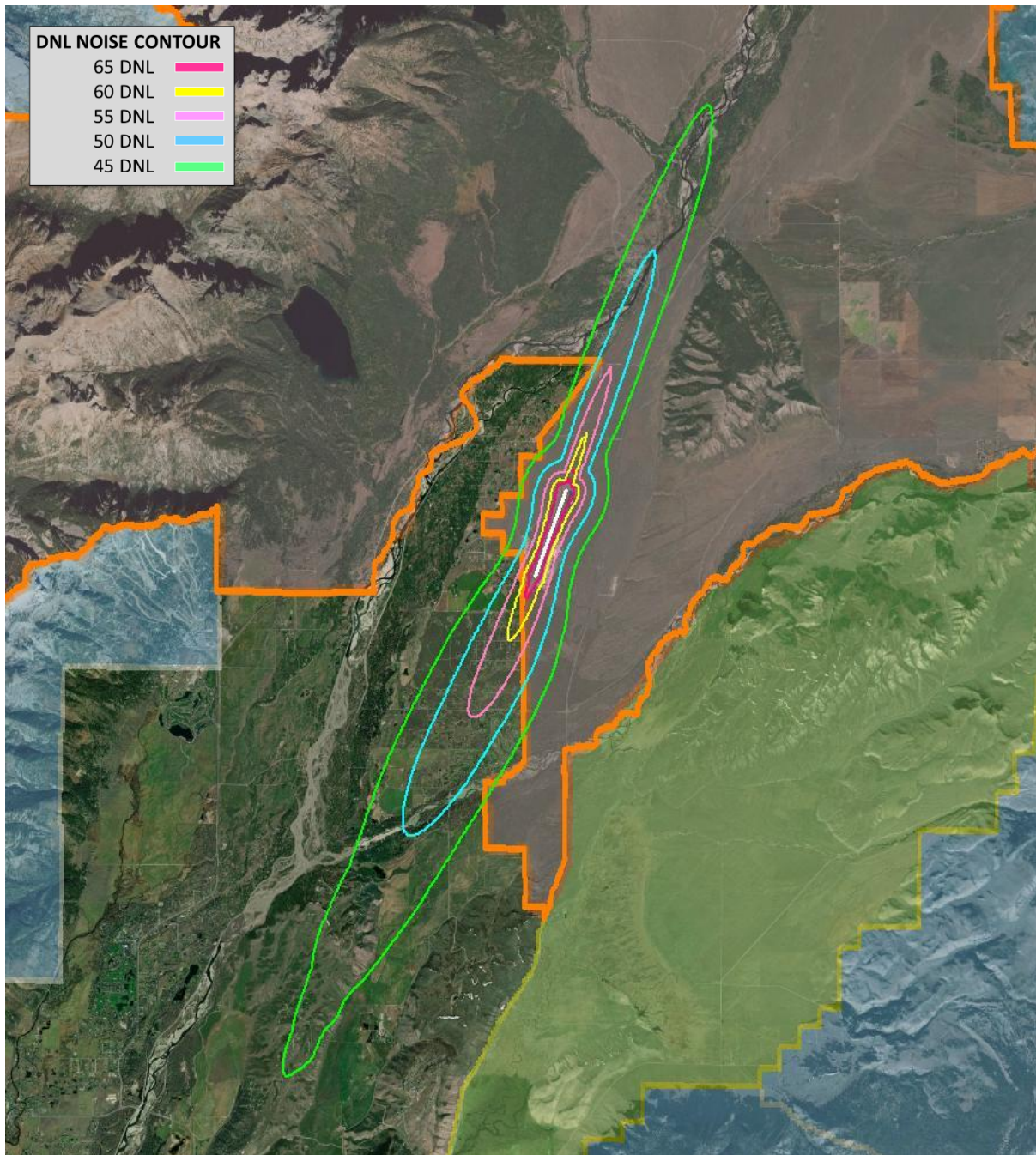
However, you don't hear a DNL. Therefore, the maximum noise level (Lmax) generated by an individual aircraft flyover was used to compare noise generated by each Concept. The ambient noise level L50 was used to determine existing ambient noise in multiple locations throughout the valley that were used as representative locations to evaluate the change in noise.

**Lmax:** The highest noise level reached during a noise event is called the "Maximum Noise Level" (Lmax). Noise levels increase as an aircraft gets closer and then decreases once the aircraft passes until the sound levels return to ambient levels.

**Ambient Noise Level (L50):** The L50 noise level is referred to as the median or ambient noise level. Half the time the noise is below this level, and half the time it is above this level. Even during peak hours of aircraft activity, the L50 noise level would not be influenced by aircraft noise. This level is generally reflective of ambient noise levels.



Figure 1 - 2021 Annual DNL Noise Contour



### *Noise Analysis Protocol*

#### Step 1 – Operational and Flight Data

The methodology included gathering data for the ALPIN THREE departure procedure and associated radar flight tracks. The aircraft operations were derived from the FAA’s Operations and Performance (OPSNET) data as well as the airport’s noise and operations monitoring system that uses a fused feed of both FAA radar sources and a local ADS-B receiver.

A random sample of approximately 5,000 jet departures from Runway 19 flying the ALPIN THREE were gathered from 2021 and first quarter 2022. This radar sample was used to determine average altitude of aircraft over nine points along the existing departure route, located at the following places:

- Runway End (South)
- Spring Gulch Road
- Moulton Loop South Road
- Bar B Bar Subdivision
- Sage Bush Road
- Gros Ventre River
- Bar B C Subdivision
- Tangent to Spring Creek Ranch
- Highway 22 (Tangent to Town of Jackson)

During the Task Force meetings, the group asked for the analysis to include data on the current altitude aircraft turn. The analysis reviewed the percent of aircraft that turn after reaching 500 feet AFE (above field elevation); **Table 1** shows the existing altitudes in tabular form and **Figure 2** shows the aircraft flight tracks color coded by altitude. **Figure 3** shows the interaction between arrivals and departures. Per FAA air traffic control regulations, aircraft must be separated by 1,000 feet vertically. At Jackson Hole, arrivals and departures can operate at similar altitudes where the arrival and departure procedures intersect. Air Traffic Control must maintain required separation for arriving and departing aircraft.

## Step 2 – Proposed Procedures

There are seven proposed departure procedures that were evaluated, including:

- ALPIN THREE – existing published departure procedure,
- KICNE – procedure developed by the FAA,
- Concept C1 RNAV SE,
- Concept C2 RNP SE,
- Concept C3 RNAV SW,
- Concept C4 RNP SW,
- Concept C5 RNP East (Corkscrew) and
- Concept C6 ZIPET

The procedures were provided to BridgeNet in a coded instrument flight procedure format to be imported into our Volans display software. Each of these procedures were then imported to the FAA’s Aviation Environmental Design Tool (AEDT) to determine the Lmax levels associated with each departure operation. Lmax noise contours from 70 dBA to 85 dBA were plotted for an Airbus A319 flying to Denver for each of the proposed procedures and compared to the existing ALPIN THREE departure. These Lmax contours are shown in **Figures 4 – 10**.

## Step 3 – Ambient and Aircraft Noise Measurements

In addition to aircraft and ambient noise being continuously monitored through the airport’s permanent noise system, temporary noise monitoring was conducted at numerous locations south of the airport and within the Town of Jackson. The data collected at the temporary monitoring locations included L50 and the continuous measurement of 1-second A-weighted average or equivalent sound level (LEQ) noise levels.

The methodology employed in this study used a data collection program that was designed to continuously measure and record the noise at each measurement location. It is possible to see the duration of noise events and the time period of ambient noise in between the events. The process of calculating noise events from these data includes the use of floating threshold methodology, which allows for the measurement of lower noise level events. Experience has shown that people respond to a change in noise levels more than an overall noise level. The human ear can discern a change of about 3 dB while a 10 dB change (increase) is perceived to be a doubling of the noise.

Two types of temporary monitoring were conducted: the first type involved monitors in a stationary location south of the airport for approximately five months, and the second type involved an acoustic technician monitoring in a location for an hour at a time, repeating that process at three different times. The locations can be found on **Figure 11**. A member of the technical committee requested that ambient noise levels be considered as part of the study. Some of the receptor locations have noise monitoring data, so that data was used. Some locations additional short-term measurements were completed to determine the ambient levels. Others were predicted based upon data from similar or near by locations. The source and time-period of the ambient data information is presented in **Figure 12**.

Five temporary noise monitors were set up south of the airport to continuously measure ambient and aircraft noise during the entire time the noise monitor is at a given location. These sites were set up from late winter through summer 2022, for approximately five months. Additionally, four temporary sites measured ambient noise in town for approximately one hour at a time, which follows best practices for monitoring ambient noise levels. The ambient noise measurements in town were conducted in August 2022. The sites in town included: Town Square, May Park, Our Lady of the Mountains Catholic Church, and Snow King Resort.

#### Step 4 - Noise Analysis

The noise analysis involved two parts, the single event modeled noise (L<sub>max</sub>) and ambient (L<sub>50</sub>) measured noise.

##### Step 4a – L<sub>max</sub> Noise Contour Analysis

The L<sub>max</sub> single event noise contours were generated using the FAA's AEDT version 3d. AEDT includes standard aircraft noise and performance data for over 100 aircraft types that can be tailored to the characteristics of individual airports, accounting for terrain and temperature.

Information collected during the inventory (Step 1 above) and proposed procedures (Step 2 above) were input into AEDT to create the L<sub>max</sub> noise contours. The contours are presented on a street map (**Figures 4 - 10**) with supporting tabular data including location of the L<sub>max</sub> noise levels at 25 representative evaluation locations. These locations were chosen due to their proximity to the existing and proposed flight paths, community concerns, and location to public lands.

- Departure Procedures - aircraft departure climb profiles were obtained from the radar data and the default AEDT profile that most closely matched the actual profile was used
- Flight Paths - determined from radar data

Lmax contours were generated for the 70, 75, 80, and 85 dBA Lmax contours for each of the proposed procedures and compared to the existing ALPIN THREE departure procedure. The modeled Lmax noise levels generated in AEDT were compared to the measured aircraft noise. The modeled results were consistent with the measured data. The results are presented in tabular format for the 25 locations, noting the changes in noise between 3 – 10 dBA in **Figures 13 and 14**. These figures include a color-coded comparison matrix. If there was a -3 to +3 dBA change from the ALPIN to a Concept it was colored grey, for a -4 to -9 dBA change it was given a light green color, for a -10 dBA or greater change it was given a dark green. Contrasting, if there was a +4 to +9 dBA change it was given a pink color and for a +10 dBA or greater change it was given a red color. The only two Concepts that did not receive a red (10 dB or greater increase) were Concept 3 RNAV SW and Concept 6, the ZIPET or RNAV ALPIN overlay.

**Figure 13** shows the Lmax for each of the procedures as well as the change in decibels relative to the existing ALPIN departure procedure. As shown on the matrix, the highest single event noise levels are predicted to be in the Moulton Loop area for all seven procedures. The increase in Lmax relative to the existing ALPIN ranges from 4 dBA to 29 dBA in the central Elk Refuge area. The decrease in Lmax relative to the existing ALPIN ranges from 0 at numerous locations close into the airport to 37 dBA at Highway 22/Ridgeview.

Subsequent to the noise analysis, a new Concept was requested for analysis, the Painter Procedure. In addition to the actual procedure design analysis, a similar noise evaluation was prepared using the same criteria for both the RNAV and RNP designs. The Painter Procedure matrix is presented in **Figure 14** and, as can be seen, show both red and pink indications.

#### Step 4b – Ambient Noise Analysis

The L50 ambient noise level for daytime was measured at locations south of the airport and in the town as shown in **Figures 13 - 15**. These noise levels ranged between 31 dBA at Highway 22 and Ridgeview and 46 dBA in Town Square. The L50 results are presented in each noise analysis matrix.

After the Southern Departure Procedure Task Force review of the noise analysis and accompanying matrices, a Task Force member requested that the matrix be recalculated showing the comparison of each Concept to the ambient levels at each receptor site, not to the ALPIN (**Figure 16**). In response to this request, actual on-site measurements were conducted at several locations to obtain current data. As can be seen there is little difference between the original matrix and the new matrix; only the RNAV to the west and the ZIPET show no red indications.

#### Step 5 – Prepare Results

The results of each step were gathered into a presentation for the Southern Departure Task Force, presented on August 15, 2022.



# Appendix – Figures and Tables

Table 1 - Existing ALPIN Departure Altitudes

Distance Description (General)	Distance From from Runway End	ALL JETS		BUSINESS JETS ONLY		All JETS
		Avg Altitude (feet) Above Airport Elev	Avg Altitude (feet) Above Sea Level	Avg Altitude (feet) Above Airport Elev	Avg Altitude (feet) Above Sea Level	% 500 feet Above Airport Elev
	<i>Airport Elev.</i>	6,450	--	6,450	--	
Runway End (South)	0.0	197	6,647	225	6,675	5%
Spring Gulch Road	0.5	687	7,137	674	7,124	72%
Moulton Loop South Road	1.0	1,220	7,670	1,146	7,596	99%
Bar B Bar Subdivision	1.5	1,710	8,160	1,601	8,051	100%
Sage Bush Road	2.0	2,161	8,611	2,058	8,508	100%
Gros Ventre River	3.0	2,967	9,417	2,980	9,430	100%
Bar B C Subdivision	4.0	3,681	10,131	3,860	10,310	100%
Tanget to Spring Creek Ranch	6.0	5,018	11,468	5,460	11,910	100%
Hwy 22 (Tangent to Town of Jackson)	8.0	6,291	12,741	6,859	13,309	100%

Figure 2 - ALPIN Radar Tracks by Altitude

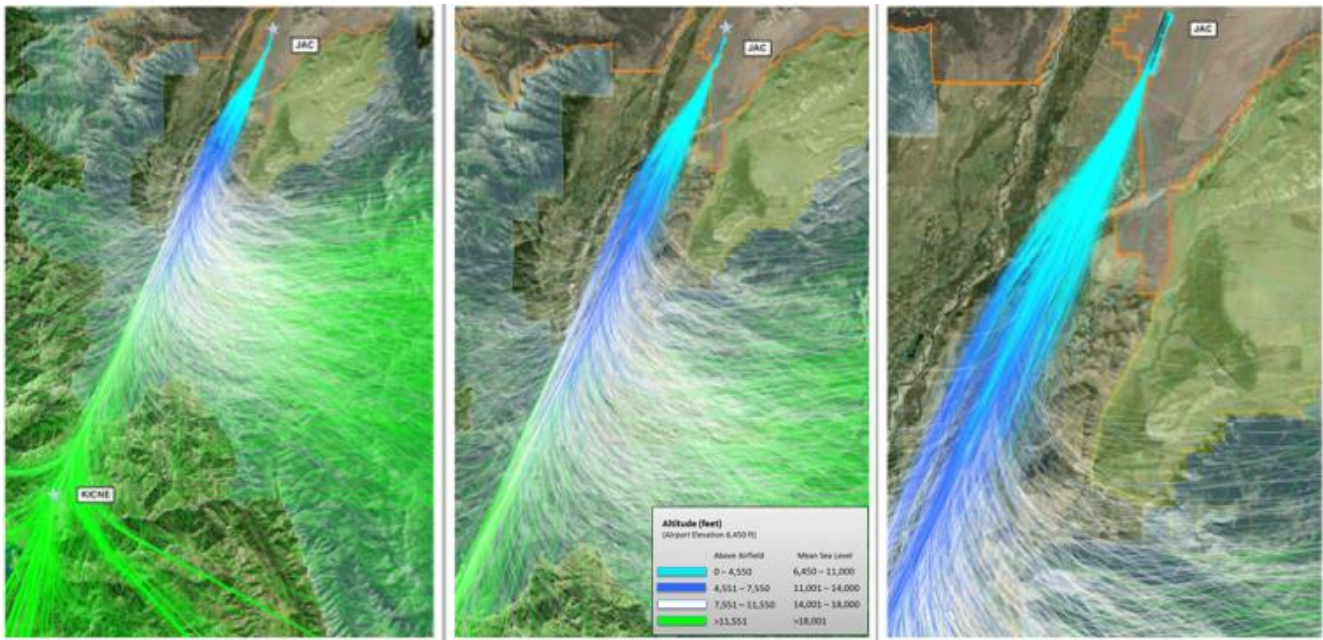


Figure 3 - Existing Arrival and Departure Flight Track Interaction

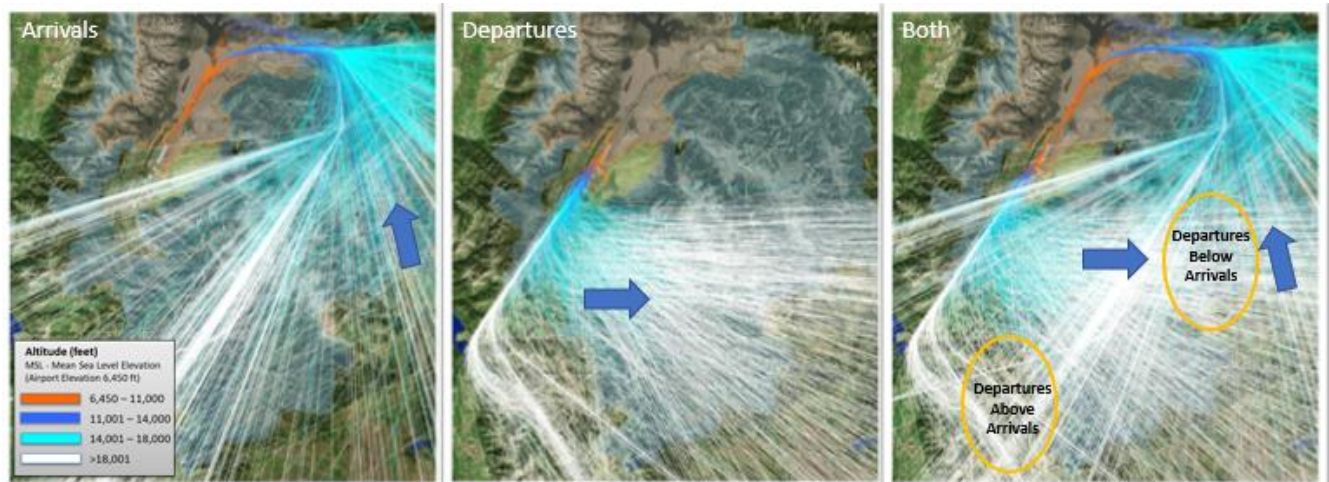


Figure 4 - Lmax Contour – Existing ALPIN Departure

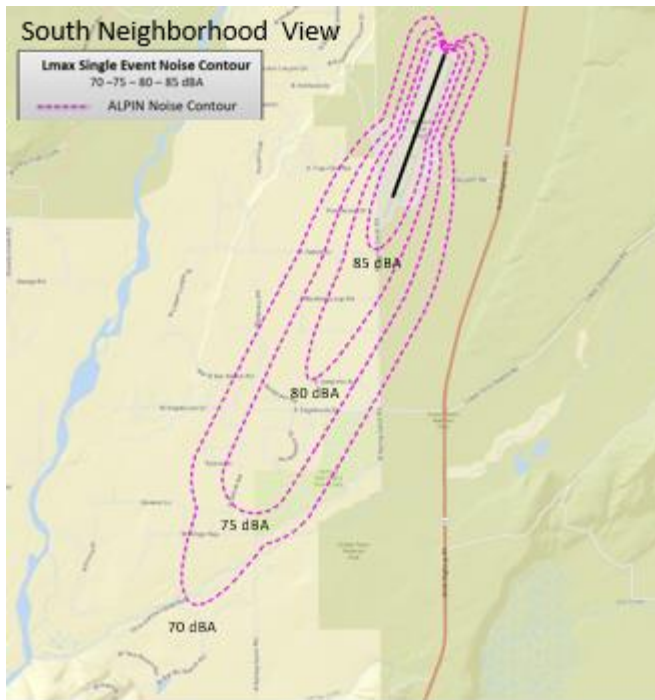


Figure 5 - FAA KICNE Proposed Departure

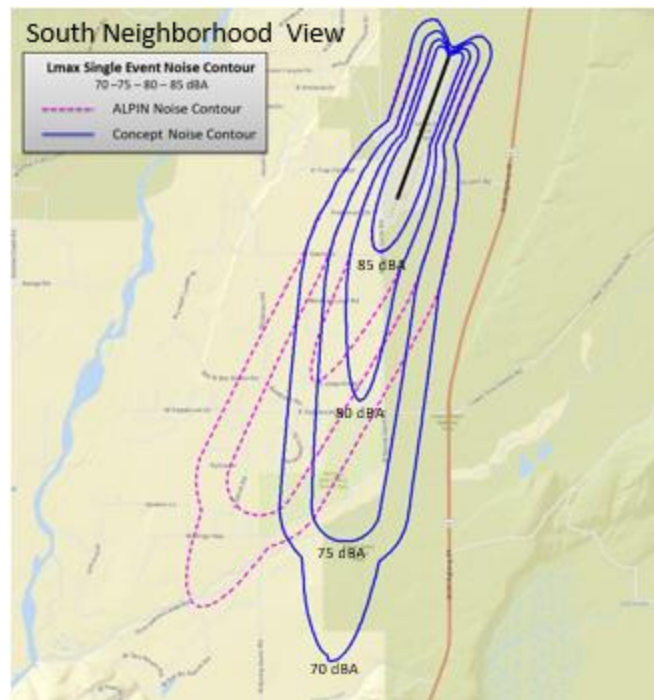


Figure 6 - C1 RNAV to the Southeast

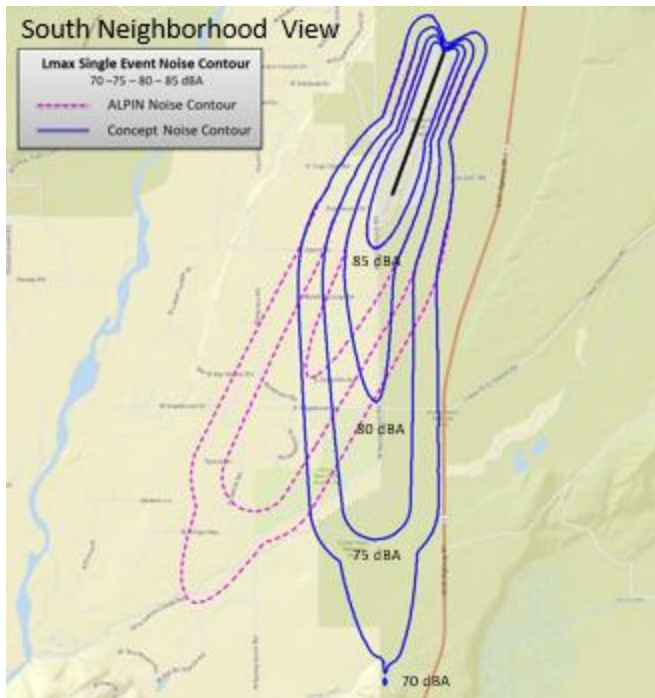


Figure 7 - C2 RNP to the Southeast

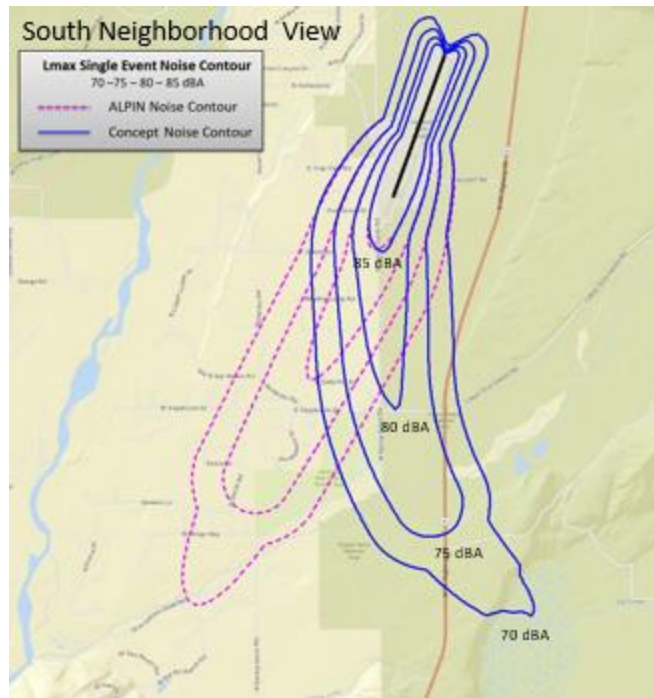




Figure 8 - C3 RNAV to the Southwest

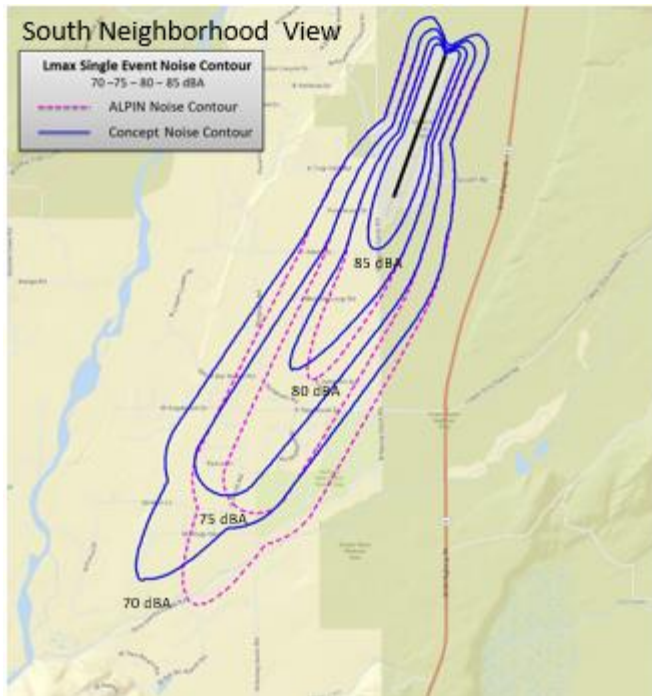


Figure 9 - C4 RNP to the Southwest

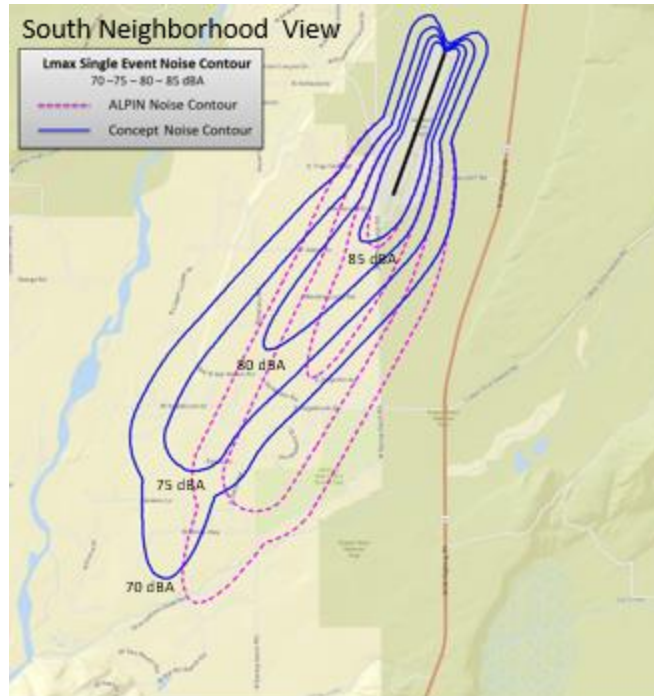


Figure 10 - C5 RNP to the East (Corkscrew)

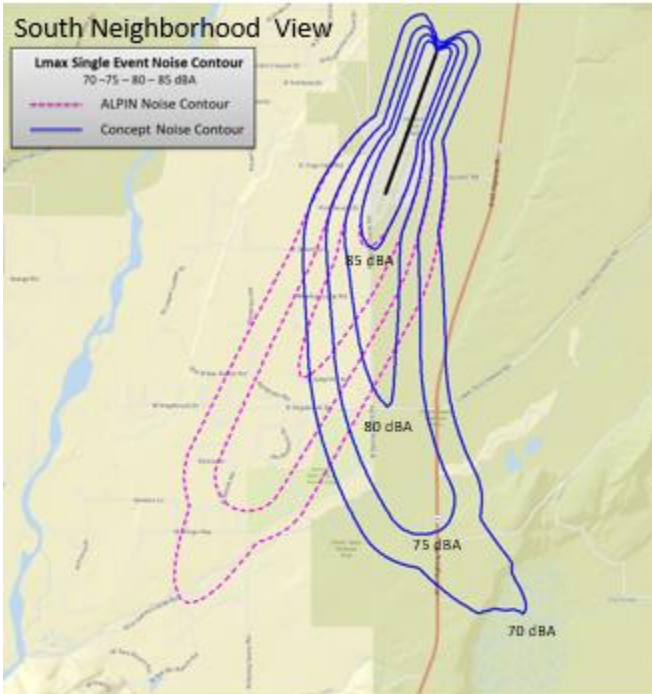


Figure 11 - Noise Receptor Locations

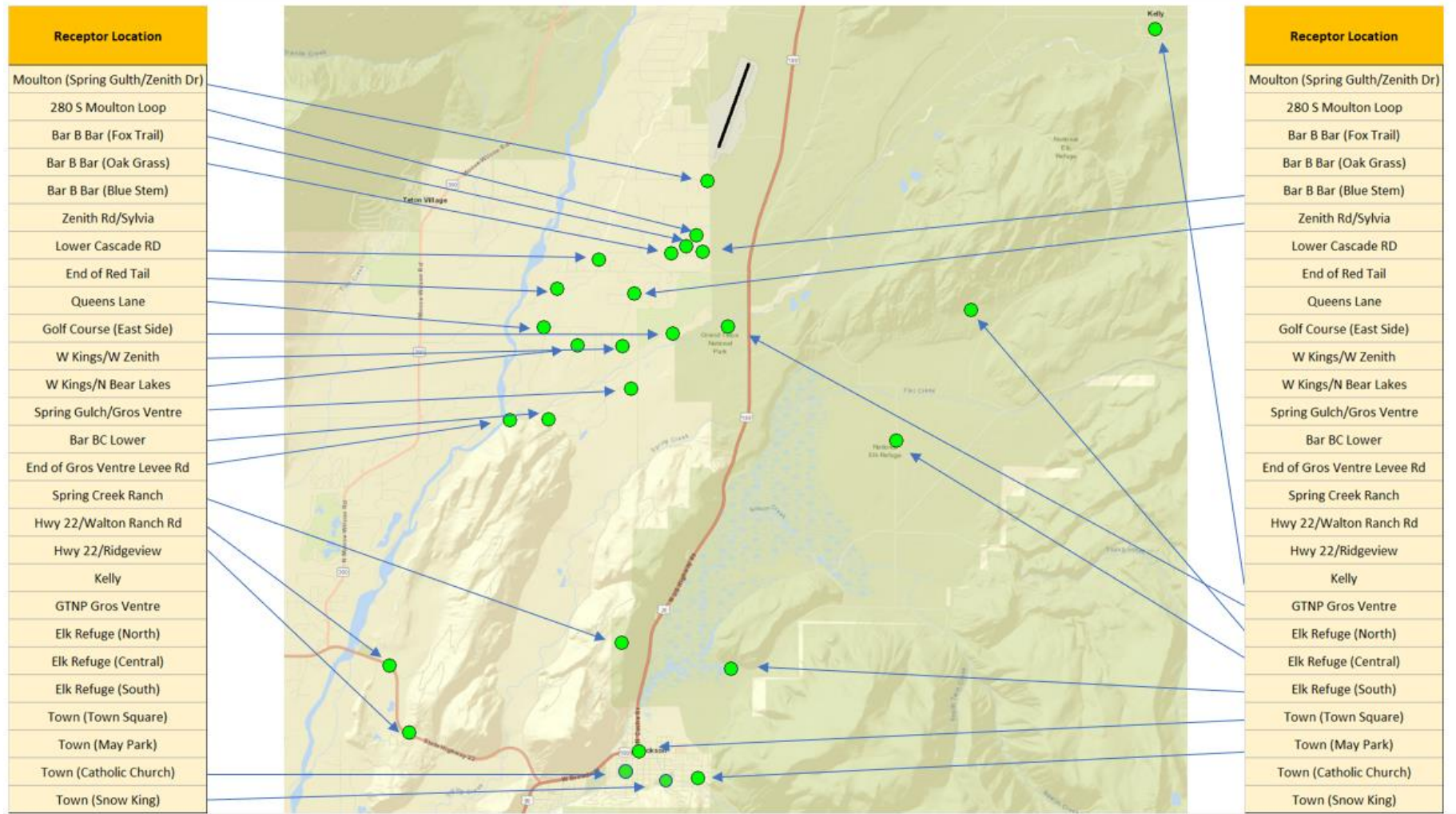




Figure 12 - Source and Time-period of Ambient Data

Ambient		Ambient Measurement Source
Receptor Location <i>Aug 21 Update</i>	Day (L50)	
Moulton (Spring Gulth/Zenith Dr)	42	Annual 2021 (Note location is very close to Spring Gulth Road and exposed to higher road noise than other sites south of the airport)
280 S Moulton Loop	36	Temporary Measurement site from Oct 2021 through Jan 2022
Bar B Bar (Fox Trail)	35	Temporary Measurement site from Oct 2021 through Jan 2022
Bar B Bar (Oak Grass)	37	Temporary Measurement site from Oct 2021 through July 2022
Bar B Bar (Blue Stem)	35	Estimated from other nearby locations
Zenith Rd/Sylvia	34	Temporary Measurement site from Oct 2021 through Jan 2022
Lower Cascade RD	35	Estimated from other nearby locations
End of Red Tail	35	Estimated from other nearby locations
Queens Lane	35	Estimated from other nearby locations
Golf Course (East Side)	42	Annual 2021 (Note location is very close to Gros Ventre River and exposed to higher ambient noise than other sites south of the airport)
W Kings/W Zenith	35	Estimated from other nearby locations
W Kings/N Bear Lakes	35	Estimated from other nearby locations
Spring Gulch/Gros Ventre	35	Estimated from other nearby locations
Bar BC Lower	35	Estimated from other nearby locations
End of Gros Ventre Levee Rd	35	Estimated from other nearby locations
Spring Creek Ranch	33	Temporary Measurement site from Oct 2021 through Jan 2022
Hwy 22/Walton Ranch Rd	44	Estimated from other nearby locations
Hwy 22/Ridgeview	31	Short term measurements during week of July 25th
Kelly	35	Estimated from other nearby locations
GTNP Gros Ventre	35	Estimated from other nearby locations
Elk Refuge (North)	32	Estimated from prior measurements in Part 150 Study
Elk Refuge (Central)	32	Estimated from prior measurements in Part 150 Study
Elk Refuge (South)	32	Estimated from prior measurements in Part 150 Study
Town (Town Square)	46	Short term measurements during week of July 25th
Town (May Park)	42	Short term measurements during week of July 25th
Town (Catholic Church)	43	Short term measurements during week of July 25th
Town (Base Snow King)	44	Short term measurements during week of July 25th

Figure 13 - Lmax Noise Levels at Sample Locations (Change Relative to Existing ALPIN)

Receptor Location <i>Aug 21 Update</i>	Ambient Day (L50)	MAXIMUM SINGLE EVENT NOISE LEVEL FROM FLYOVER (LMAX)								CHANGE RELATIVE TO EXISTING ALPIN																	
		Original Concept #	1		5		2		4		6		3		Original #	1		5		2		4		6		3	
		ALPIN Existing	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St				
Moulton (Spring Gulth/Zenith Dr)	42	85	85	85	85	84	83	85	84	0	0	0	-1	-2	0	-1											
280 S Moulton Loop	36	79	81	80	80	76	71	81	78	2	1	1	-3	-8	2	-1											
Bar B Bar (Fox Trail)	35	79	79	77	77	77	71	79	80	0	-2	-2	-2	-8	0	1											
Bar B Bar (Oak Grass)	37	80	75	72	71	79	72	75	80	-5	-8	-9	-1	-8	-5	0											
Bar B Bar (Blue Stem)	35	74	80	80	80	71	66	80	74	6	6	6	-3	-8	6	0											
Zenith Rd/Sylvia	34	77	66	63	60	78	72	64	75	-11	-14	-17	1	-5	-13	-2											
Lower Cascade RD	35	65	58	56	56	69	76	58	64	-7	-9	-9	4	11	-7	-1											
End of Red Tail	35	60	53	51	50	63	69	52	59	-7	-9	-10	3	9	-8	-1											
Queens Lane	35	58	52	50	48	63	65	50	57	-6	-8	-10	5	7	-8	-1											
Golf Course (East Side)	42	69	76	71	65	65	59	69	72	7	2	-4	-4	-10	0	3											
W Kings/W Zenith	35	72	64	60	56	69	67	59	72	-8	-12	-15	-3	-5	-13	0											
W Kings/N Bear Lakes	35	66	56	53	50	71	71	53	63	-10	-13	-16	5	5	-13	-3											
Spring Gulch/Gros Ventre	35	68	64	58	55	62	63	57	70	-4	-10	-13	-6	-5	-11	2											
Bar BC Lower	35	66	51	48	45	68	67	47	62	-15	-18	-21	2	1	-19	-4											
End of Gros Ventre Levee Rd	35	60	47	45	42	66	61	44	57	-13	-15	-18	6	1	-16	-3											
Spring Creek Ranch	33	51	63	57	53	45	58	36	56	12	6	2	-6	7	-15	5											
Hwy 22/Walton Ranch Rd	44	61	55	38	35	66	54	30	55	-6	-23	-26	5	-7	-31	-6											
Hwy 22/Ridgeview	31	68	63	42	39	62	63	31	65	-5	-26	-29	-6	-5	-37	-3											
Kelly	35	31	31	31	31	31	31	55	31	0	0	0	0	0	24	0											
GTNP Gros Ventre	35	60	69	75	78	57	53	77	61	9	15	18	-3	-7	17	1											
Elk Refuge (North)	32	37	38	40	41	37	37	54	37	1	3	4	0	0	17	0											
Elk Refuge (Central)	32	38	42	44	49	38	36	68	39	4	6	11	0	-2	30	1											
Elk Refuge (South)	32	42	50	67	66	38	46	40	45	8	25	24	-4	4	-2	3											
Town (Town Square)	46	47	52	59	56	41	52	33	51	5	12	9	-6	5	-14	4											
Town (May Park)	42	41	47	66	64	37	46	33	45	6	25	23	-4	5	-8	4											
Town (Catholic Church)	43	48	53	56	54	42	54	32	52	5	8	6	-6	6	-16	4											
Town (Base Snow King)	44	43	48	63	61	38	48	32	47	5	20	18	-5	5	-11	4											

is there noise sensitive land uses with a noticable **decrease** in single event noise (-4 to -9 dBA decrease)  
 Is there noise sensitive land uses with a very noticable **decrease** in single event noise (+10 dBA or greater)  
 Is there noise sensitive land uses with a noticable **increase** in single event noise (+4 to +9 dBA increase)  
 Is there noise sensitive land uses with a very noticable **increase** in single event noise (+10 dBA or greater)


**Change in Single Event Lmax (dBA) Noise Levels**  
*(Departing A319 Aircraft)*

- +10 dBA or greater increase
- + 4 to +9 dBA increase
- 3 to + 3 dBA change
- 4 to -9 dBA decrease
- 10 dBA or greater decrease

Figure 14 - Lmax Noise Levels at Sample Locations (Change Relative to Existing ALPIN or Ambient)

Receptor Location <i>Aug 21 Update</i>	Ambient Day (L50)	MAXIMUM SINGLE EVENT NOISE LEVEL FROM FLYOVER (LMAX)								CHANGE RELATIVE TO HIGHEST OF EXISTING ALPIN OR AMBIENT																	
		Original Concept #	1		5		2		4		6		3		Original #	1		5		2		4		6		3	
		ALPIN Existing	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St				
Moulton (Spring Gulth/Zenith Dr)	42	85	85	85	85	84	83	85	84	0	0	0	-1	-2	0	-1											
280 S Moulton Loop	36	79	81	80	80	76	71	81	78	2	1	1	-3	-8	2	-1											
Bar B Bar (Fox Trail)	35	79	79	77	77	77	71	79	80	0	-2	-2	-2	-8	0	1											
Bar B Bar (Oak Grass)	37	80	75	72	71	79	72	75	80	-5	-8	-9	-1	-8	-5	0											
Bar B Bar (Blue Stem)	35	74	80	80	80	71	66	80	74	6	6	6	-3	-8	6	0											
Zenith Rd/Sylvia	34	77	66	63	60	78	72	64	75	-11	-14	-17	1	-5	-13	-2											
Lower Cascade RD	35	65	58	56	56	69	76	58	64	-7	-9	-9	4	11	-7	-1											
End of Red Tail	35	60	53	51	50	63	69	52	59	-7	-9	-10	3	9	-8	-1											
Queens Lane	35	58	52	50	48	63	65	50	57	-6	-8	-10	5	7	-8	-1											
Golf Course (East Side)	42	69	76	71	65	65	59	69	72	7	2	-4	-4	-10	0	3											
W Kings/W Zenith	35	72	64	60	56	69	67	59	72	-8	-12	-16	-3	-5	-13	0											
W Kings/N Bear Lakes	35	66	56	53	50	71	71	53	63	-10	-13	-16	5	5	-13	-3											
Spring Gulch/Gros Ventre	35	68	64	58	55	62	63	57	70	-4	-10	-13	-6	-5	-11	2											
Bar BC Lower	35	66	51	48	45	68	67	47	62	-15	-18	-21	2	1	-19	-4											
End of Gros Ventre Levee Rd	35	60	47	45	42	66	61	44	57	-13	-15	-18	6	1	-16	-3											
Spring Creek Ranch	33	51	63	57	53	45	58	36	56	12	6	2	-6	7	-15	5											
Hwy 22/Walton Ranch Rd	44	61	55	38	35	66	54	30	55	-6	-23	-26	5	-7	-31	-6											
Hwy 22/Ridgeview	31	68	63	42	39	62	63	31	65	-5	-26	-29	-6	-5	-37	-3											
Kelly	35	31	31	31	31	31	31	55	31	-4	-4	-4	-4	-4	20	-4											
GTNP Gros Ventre	35	60	69	75	78	57	53	77	61	9	15	18	-3	-7	17	1											
Elk Refuge (North)	32	37	38	40	41	37	37	54	37	1	3	4	0	0	17	0											
Elk Refuge (Central)	32	38	42	44	49	38	36	68	39	4	6	11	0	-2	30	1											
Elk Refuge (South)	32	42	50	67	66	38	46	40	45	8	25	24	-4	4	-2	3											
Town (Town Square)	46	47	52	59	56	41	52	33	51	5	12	9	-6	5	-14	4											
Town (May Park)	42	41	47	66	64	37	46	33	45	5	24	22	-5	4	-9	3											
Town (Catholic Church)	43	48	53	56	54	42	54	32	52	5	8	6	-6	6	-16	4											
Town (Base Snow King)	44	43	48	63	61	38	48	32	47	4	19	17	-6	4	-12	3											
is there noise sensitive land uses with a noticeable <b>decrease</b> in single event noise (-4 to -9 dBA decrease)																											
Is there noise sensitive land uses with a very noticeable <b>decrease</b> in single event noise (+10 dBA or greater)																											
Is there noise sensitive land uses with a noticeable <b>increase</b> in single event noise (+4 to +9 dBA increase)																											
Is there noise sensitive land uses with a very noticeable <b>increase</b> in single event noise (+10 dBA or greater)																											

Figure 15 - Painter Procedure RNAV and RNP Lmax Noise Levels

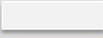



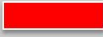
Receptor Location <i>Updated Aug 21</i>		Ambient Day (L50)	LMAX MAXIMUM			CHANGE	
			ALPIN Existing	PAINTER RNAV	PAINTER RNP	PAINTER RNAV	PAINTER RNP
Moulton (Spring Gulth/Zenith Dr)	42	85	84	85	-1	0	
280 S Moulton Loop	36	79	75	80	-4	1	
Bar B Bar (Fox Trail)	35	79	71	77	-8	-2	
Bar B Bar (Oak Grass)	37	80	67	71	-13	-9	
Bar B Bar (Blue Stem)	35	74	76	80	2	6	
Zenith Rd/Sylvia	34	77	58	60	-19	-17	
Lower Cascade RD	35	65	54	56	-11	-9	
End of Red Tail	35	60	49	50	-11	-10	
Queens Lane	35	58	49	49	-9	-9	
Golf Course (East Side)	42	69	66	65	-3	-4	
W Kings/W Zenith	35	72	58	56	-14	-16	
W Kings/N Bear Lakes	35	66	53	52	-13	-14	
Spring Gulch/Gros Ventre	35	68	65	61	-3	-7	
Bar BC Lower	35	66	57	58	-9	-8	
End of Gros Ventre Levee Rd	35	60	53	55	-7	-5	
Spring Creek Ranch	33	51	58	54	7	3	
Hwy 22/Walton Ranch Rd	44	61	55	59	-6	-2	
Hwy 22/Ridgeview	31	68	64	67	-4	-1	
Kelly	35	31	31	31	0	0	
GTNP Gros Ventre	35	60	78	78	18	18	
Elk Refuge (North)	32	37	42	42	5	5	
Elk Refuge (Central)	32	38	46	46	8	8	
Elk Refuge (South)	32	42	46	44	4	2	
Town (Town Square)	46	47	51	47	4	0	
Town (May Park)	42	41	45	42	4	1	
Town (Catholic Church)	43	48	52	48	4	0	
Town (Base Snow King)	44	43	46	43	3	0	
is there noise sensitive land uses with a noticeable <b>decrease</b> in single event noise (-4 to -9 dBA decrease)							
Is there noise sensitive land uses with a very noticeable <b>decrease</b> in single event noise (+10 dBA or greater)							
Is there noise sensitive land uses with a noticeable <b>increase</b> in single event noise (+4 to +9 dBA increase)							
Is there noise sensitive land uses with a very noticeable <b>increase</b> in single event noise (+10 dBA or greater)							



Figure 16 - Lmax Noise Levels at Sample Locations (Task Force Member Suggested Colorization)

Receptor Location <i>Aug 21 Update</i>		Ambient Day (L50)	MAXIMUM SINGLE EVENT NOISE LEVEL FROM FLYOVER (LMAX) COLORED BY LEVEL ABOVE AMBIENT (ANPAC)														
			Original Concept #	1		5		2		4		6		3		--	--
			ALPIN Existing	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew	C6 ZIPET RNAV St	PAINTER RNAV	PAINTER RNP					
Moulton (Spring Gulth/Zenith Dr)	42	85	85	85	85	84	83	85	84	84	85						
280 S Moulton Loop	36	79	81	80	80	76	71	81	78	75	80						
Bar B Bar (Fox Trail)	35	79	79	77	77	77	71	79	80	71	77						
Bar B Bar (Oak Grass)	37	80	75	72	71	79	72	75	80	67	71						
Bar B Bar (Blue Stem)	35	74	80	80	80	71	66	80	74	76	80						
Zenith Rd/Sylvia	34	77	66	63	60	78	72	64	75	58	60						
Lower Cascade RD	35	65	58	56	56	69	76	58	64	54	56						
End of Red Tail	35	60	53	51	50	63	69	52	59	49	50						
Queens Lane	35	58	52	50	48	63	65	50	57	49	49						
Golf Course (East Side)	42	69	76	71	65	65	59	69	72	66	65						
W Kings/W Zenith	35	72	64	60	56	69	67	59	72	58	56						
W Kings/N Bear Lakes	35	66	56	53	50	71	71	53	63	53	52						
Spring Gulch/Gros Ventre	35	68	64	58	55	62	63	57	70	65	61						
Bar BC Lower	35	66	51	48	45	68	67	47	62	57	58						
End of Gros Ventre Levee Rd	35	60	47	45	42	66	61	44	57	53	55						
Spring Creek Ranch	33	51	63	57	53	45	58	36	56	58	54						
Hwy 22/Walton Ranch Rd	44	61	55	38	35	66	54	30	55	55	59						
Hwy 22/Ridgeview	31	68	63	42	39	62	63	31	65	64	67						
Kelly	35	31	31	31	31	31	31	55	31	31	31						
GTNP Gros Ventre	35	60	69	75	78	57	53	77	61	78	78						
Elk Refuge (North)	32	37	38	40	41	37	37	54	37	42	42						
Elk Refuge (Central)	32	38	42	44	49	38	36	68	39	46	46						
Elk Refuge (South)	32	42	50	67	66	38	46	40	45	46	44						
Town (Town Square)	46	47	52	59	56	41	52	33	51	51	47						
Town (May Park)	42	41	47	66	64	37	46	33	45	45	42						
Town (Catholic Church)	43	48	53	56	54	42	54	32	52	52	48						
Town (Base Snow King)	44	43	48	63	61	38	48	32	47	46	43						

**ANPAC SUGGESTED PRESENTATION**  
**Maximum Single Event Noise Level (dBA) Colored by Level Above Ambient**  
*(Departing A319 Aircraft)*

	Lmax <= 60	<b>BEST</b>
	Lmax >= 61 and 1 to 10 dBA Above Ambient	
	Lmax >= 61 and 11 to 20 dBA Above Ambient	
	Lmax >= 61 and 21 to 30 dBA Above Ambient	
	Lmax >= 61 and >=30 dBA Above Ambient	

Exceptions:  
 No site < 65 Lmax receives a color code worse than yellow  
 No site < 70 Lmax receives a color code worse than Orange  
 No site < 75 Lmax receives a color code worse than Violet

*Note comparison presented is relative to ambient noise levels and not relative to the current ALPIN procedure.*

