City of Palo Alto

City Council Staff Report

(ID # 9020)

Report Type: Informational Report **Meeting Date: 3/19/2018**

Council Priority: Land Use and Transportation Planning

Summary Title: 2017 Airport Annual Noise Report

Title: 2017 Annual Airport Noise Report, Identifying Noise Trends in the Surrounding Areas and Determining Compliance With Established Voluntary Noise Abatement Procedures

From: City Manager

Lead Department: Public Works

Recommendation

This is an informational report only and no Council action is required.

Discussion

The purpose of the Palo Alto Airport Annual Aircraft Noise Complaints Report is to identify noise trends in the surrounding areas and determine compliance with established voluntary noise abatement procedures. Attachment A is the annual report prepared by Public Works Department's Airport Division staff on the aircraft noise complaints received during the 2017 calendar year.

The Palo Alto Airport (PAO) receives noise complaints via e-mail at pao@cityofpaloalto.org and a designated hotline, 650-329-2405. Staff review and respond timely to all complaints ascertaining from complainants their contact information and the date, time and description of the offending occurrence. Staff review and compile the data to determine flying activity trends. Staff contact pilots when violations are observed or reported, advising them of established procedures, requesting compliance and reminding them about our neighborly commitment to the community.

This report is generated on an annual basis and posted to the airport's webpage: www.cityofpaloalto.org/PAO.

Courtesy copies to: Palo Alto Airport Association

Attachments:

- Attachment A: Palo Alto Airport - 2017 Annual Aircraft Noise Complaints Report

Attachment A

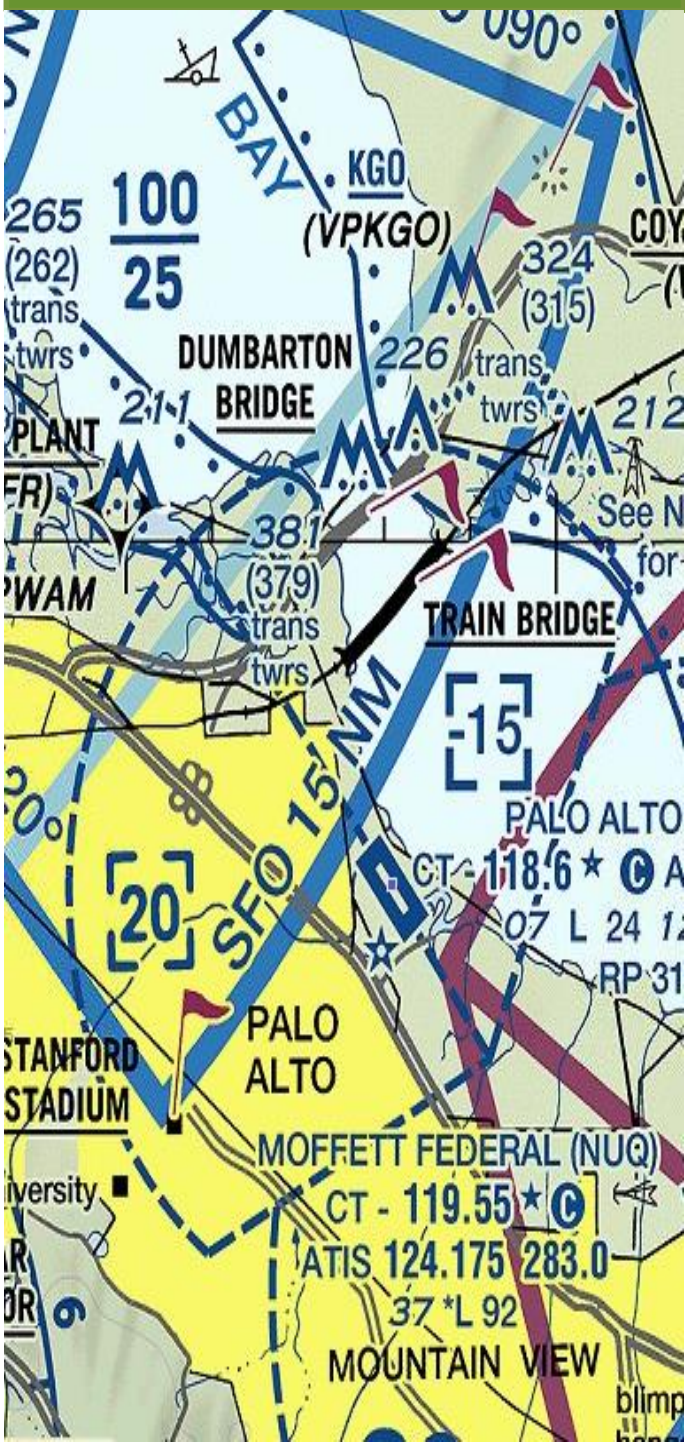
PALO ALTO AIRPORT

PUBLIC WORKS DEPARTMENT

2017 ANNUAL NOISE COMPLAINTS REPORT

(January2017 to December 2017)

Vision: Palo Alto Airport strives to balance the rights of pilots to fly with the rights of neighbors to a peaceful living environment. This document is a report of the noise complaints received by the airport in 2017. Airport staff uses this information to identify trends in neighboring communities. These trends inform communications between airport staff and pilots on the issue of noise.



Introduction:

The following is a report of noise complaints received by Palo Alto Airport (PAO) in 2017. The Federal Aviation Administration (FAA) defines air travel routes and procedures, including defining separation distances between aircraft, determining hazards to aviation and all other safety criteria for aircraft, and is responsible for directing and enforcing the movement of aircraft in flight. Although organizations can petition the FAA regarding flight procedures, the FAA has the final say in what is safe and acceptable. The Airport Noise and Capacity Act (ANCA) of 1990 federally prohibits public-use airports from restricting airspace in anyway.

The FAA measures noise based on the Yearly Day and Night Average Sound Level (DNL) and the Community Noise Equivalent Level (CNEL). While both are essentially the same, airports in California use the CNEL method to measure noise. CNEL is a method of averaging single event aircraft noise into a weighted 24-hour average. The system adds penalties to all events occurring during the evening (7pm – 10pm) and the night (10pm – 7am). The Santa Clara County Airport Land Use Commission (SCC ALUC) performed a noise study for the Palo Alto Airport using the CNEL to determine the noise contours for 55, 60, 65, and 70 decibels. The contour map is included as **Attachment A**.

Regarding safety and altitude, the FAA has in place Federal Aviation Regulations (FARs) that establishes Minimum Safe Altitudes (MSAs) for aircraft. For fixed wing aircraft, the minimum is 1000 feet above ground when over congested areas and 500 feet when not over congested areas. These minimum altitudes apply to all fixed wing aircraft except when necessary for landing and takeoff operations. Helicopters are exempt from these altitude restrictions due to the nature of their flight. These minimum altitudes are enforced by the FAA Flight Standards District Office in San Jose and not Palo Alto Airport. Although, Palo Alto Airport cannot tell pilots when or where to fly; the airport, however, does have voluntary noise abatement procedures that Palo Alto Airport recommends that pilots follow. (See the Noise Abatement Procedures section below.)

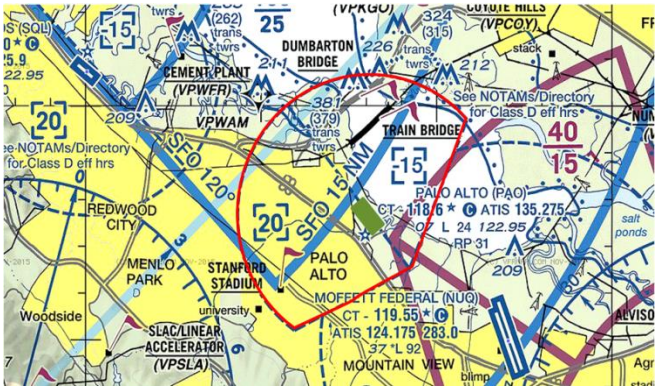
The airport receives noise complaints via email at pao@cityofpaloalto.org and a noise complaint hotline 650-329-2405. Airport staff review and timely respond to all complaints ascertaining as much information from complainants, including contact information, date, time and description of the occurrence. Various flight trackers can be used in an attempt to help identify the aircraft involved and verify if FAA regulations or Palo Alto Airport procedures were violated. The airport staff reviews and compiles all data to determine trends with flying activities.

Purpose:

The purpose of the Palo Alto Airport Annual Noise Report is to identify noise trends in the surrounding areas and determine compliance with established voluntary noise abatement procedures.

Airspace:

The Palo Alto Airport airspace is unique. The congested Bay Area airspace is dominated by SFO Class Bravo airspace, which encompasses a



Palo Alto Airport Sectional Map
Palo Alto Airport in Green
PAO Airspace highlighted in Red
Source: http://vfrmap.com/?type=vfrc&lat=37.461&lon=-122.115&zoom=10

30 nautical mile radius around SFO. Underneath the Class Bravo airspace lays the Class Charlie airspace of Oakland and San Jose international airports. Finally, Moffett Airfield lies approximately 4 nautical miles to the southeast of Palo Alto Airport.

As a result, Palo Alto Airport airspace ends only 1.5 nautical miles southeast of Runway 31's final approach. To land at Palo Alto Airport, aircraft must turn before entering Moffett's airspace, resulting in aircraft having to space themselves in traffic patterns over the peninsula when take-off/landing volumes peak. The FAA's Air Traffic Control Tower (ATCT) at Palo Alto Airport has a letter of agreement with Moffett's ATCT providing Palo Alto Airport aircraft with extensions into Moffett airspace when Moffett airfield is not in use. The additional airspace is a useful mitigation tool during busy times.

Further restrictions in Palo Alto Airport airspace come from San Jose Class C airspace, starting at 1500 feet Mean Sea Level, just southeast of Palo Alto Airport and SFO Class B airspace, starting at 2500 feet Mean Sea Level, just northeast of the Palo Alto Airport. Both are identified on the Palo Alto Airport Sectional Map: San Jose Class C is shown with thick magenta lines and SFO Class B is shown with thick blue lines. These restrictions play a vital role in aircraft departures, in turn influencing noise abatement procedures for the Palo Alto Airport.

Noise Abatement Procedures:

Noise abatement procedures are voluntary procedures that the airport asks pilots to follow. The airport is prohibited from restricting airspace. Palo Alto Airport staff will speak with individual pilots and educate them about the voluntary noise abatement procedures. The Palo Alto Airport cannot levy fines on pilots that violate the voluntary noise procedures. For illustrated noise abatement procedures reference Palo Alto Airport Pilots Handout included as **Attachment B**.

Pilots are asked to fly over the bay whenever possible. If pilots must fly over the peninsula, they are asked to reduce power and fly at or above 1500 feet above ground before crossing Highway 101. Staff also asks that aircraft not make a left crosswind departure, but instead make a "Left Dumbarton Departure" (fly to the Dumbarton Auto Bridge before making a left turn and flying over East Palo Alto) or a right 270 degree turn whenever departing to the south or west from Runway 31. When aircraft are using Runway 13, pilots are asked to make a left 270 departure before flying west over Palo Alto.

For arrivals, it is standard practice and necessary for pilots to descend to pattern altitude before entering the traffic pattern around PAO, sometimes requiring aircraft to descend below the 1500 feet minimum over Palo Alto. As these aircraft are descending to land the engines are generally powered back and quieter than ascending aircraft.

Airport staff continuously engages with tenants and pilots about the voluntary noise abatement procedures, always noting that safety always supersedes noise.

Findings:

The Palo Alto Airport remains the third busiest airport in the bay area with an average of 166,000 operations per year since 2010, significantly less than the average of 198,000 operations per year between 1990 and 2009 (**Table 1**). An operation is defined as either a takeoff or a landing and a touch-and-go procedure will account for two operations.

Table 1. Airport Operations

	Air Taxi	Military	**Total**
1992	0	0	232789
1993	243	38	212303
1994	313	0	207404
1995	261	16	187650
1996	60	0	197582
1997	1	0	205311
1998	8	12	192093
1999	13	8	205436
2000	2	0	197283
2001	29	370	216483
2002	62	1	208755
2003	17	1	212981
2004	619	12	199453

	Air Taxi	Military	**Total**
2005	2397	28	184821
2006	1932	17	176570
2007	1440	318	181883
2008	1697	280	174332
2009	1650	301	155556
2010	2077	6	158217
2011	1572	8	170389
2012	1700	16	176564
2013	1628	14	172653
2014	1518	22	179900
2015	1082	118	172132
2016	708	52	153238
2017	872	146	148769

During the 2017 Calendar year, the Airport logged 1098 total noise complaints from 62 households. **Table 2** shows the number of complaints by quarter, and includes the total from 2016.

Table 2. Complaints Received

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total 2017	Total 2016
Complaints	412	383	116	187	1098*	527
Households	21	26	16	19	62	96

*864 Complaints came from 2 households

Table 3 sorts the complaints logged into three sections. The first one is PAO which includes all complaints that involve aircraft that performed an operation at the airport. The next section is General which includes complaints that did not include a specific aircraft or incident of noise. These complaints may or may not involve aircraft from PAO. The last section is Non-PAO, which include aircraft that are not based or did not operate at the airport. These flights could include CHP, Coast Gard, Air Taxis, Survey and or banner towing operations. Also included in Table 3 is the total for 2016.

Table 3. Aircraft Association

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total 2017	Total 2016
PAO	390	359	110	174	1033	393
General	5	1	1	7	14	28
Non-PAO	17	23	5	6	51	106

Table 4 provides a detailed breakdown of the 1033 PAO related complaints by city. Most complaints came from Sunnyvale, with 963 complaints logged from 21 households, but note that 840 complaints

came from 2 households accounting for 81% of all noise complaints. Palo Alto was the second most impacted city, with 31 complaints from 4 households.

Table 4. PAO Noise Complaints by City

	Quarter 1		Quarter 2		Quarter 3		Quarter 4		Total 2017		Total 2016	
City	C	H	C	H	C	H	C	H	C	H	C	H
Atherton			1	1					1	1		
Cupertino			1	1					1	1		
East Palo Alto	5	1			1	1	1	1	7	2	21	7
Fremont			1	1	1	1	1	1	3	1		
Hayward							1	1	1	1		
Los Altos							3	1	3	1		
Menlo Park	1	1	11	1					12	2	6	1
Millbrae			1	1					1	1		
Mountain View	1	1							1	1	2	2
Palo Alto	10	1	6	3	8	2	5	1	31	4	65	9
San Carlos			3	2			1	1	4	3		
San Rafeal					1	1			1	1		
Sunnyvale	373	10	334	11	95	4	161	6	963*	21	270	30
Unknown			1	1					1	1		
West San Jose							1	1	1	1		
Woodside					2	2			2	2		
Total	390	14	359	22	110	11	174	13	1033	44		

* 840 Complaints came from 2 households

Starting in August of 2016, weather patterns shifted and the prevailing winds were from the south. This weather pattern, which is normally seen during stormy weather, persisted for several months into the fourth quarter. This southern wind caused San Jose International jet arrivals to descend over Sunnyvale before turning to the south over the bay to land. At the same time, Surf Air changed their approach to the Bay Side Approach which flew over Sunnyvale. This coincides with the increase in noise complaints from Sunnyvale during the fourth quarter of 2016 and continued into 2017. Note: there has been no change to PAO activity or flight paths during this time.

Table 5. Aircraft Type

	Helicopter	Multi-Reciprocating	Multi-Turboprop	Single-Reciprocating	Single-Turboprop	Unknown
2017 Complaints	19	49	53	776	113	23
2016 Complaints	40	32	16	289	41	

Table 5 above shows the general type of aircraft identified as causing noise complaints at the airport. There were 23 complaints where staff was unable to identify the type of aircraft involved in the flight. There are 2 types of engines for aircraft utilizing PAO. The first is reciprocating which is similar to an automobile engine, and the second is turboprop which is a turbine engine with a propeller that

produces thrust. Aircraft are further differentiated by “multi” and “single” which denotes the number of engines for the aircraft. In the case of PAO all multi engine aircraft will be only have 2 engines. As Table 5 shows single reciprocating aircraft produced the largest portion of noise complaints. This class of aircraft represents most of the fleet at PAO and usually consists of Cessna, Pipers and Cirrus aircraft.

Table 6 below shows the number of violations of the established noise abatement procedures. Airport staff makes every effort to talk to all aircraft that violate these procedures, but it is difficult to talk to all transient pilots about noise abatement procedures. It is not the role of the FAA Air Traffic Control Tower to advise pilots of the noise abatement procedures, the City has develop a working relationship with the ATCT and Air Controllers do advise pilots of the noise abatement procedures when they have the ability.

Table 6. Observed Violations Noise Abatement Procedures

	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Total
Tenant	1	6	5	3	15
Transient	6	10	7	3	26
Unknown			1	1	2
Total	7	16	3	7	43
Complaints	412	383	116	187	1098
Operations	30987	40033	42368	35381	148769
% Compliance	99%	99%	99 %	99%	99%

Attachment A

PAO Noise Contour Map

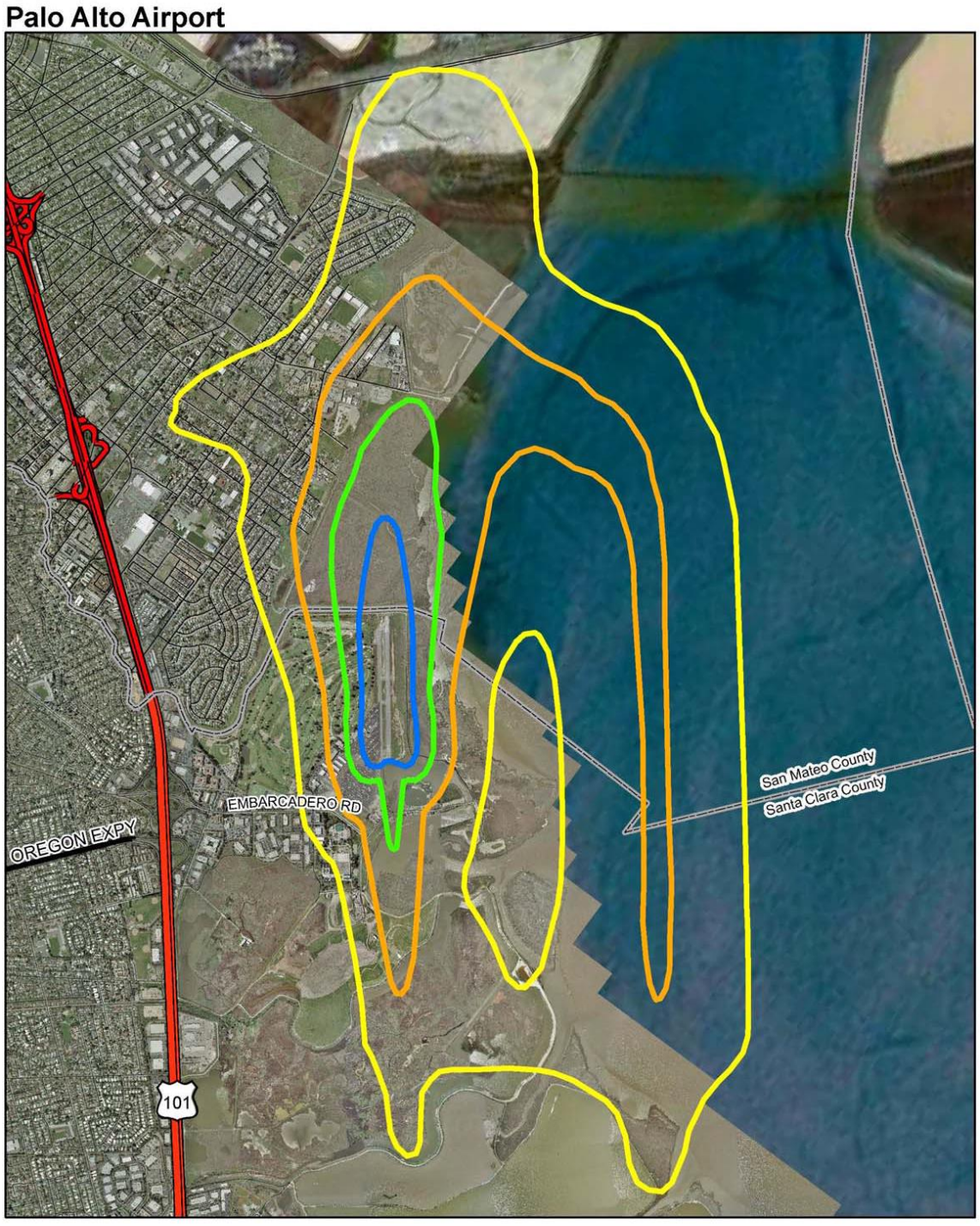
Following is a noise contour map for PAO, adopted by the Santa Clara County Airport Land Use Commission (SCC ALUC) in their 2008 Comprehensive Land Use Plan, reflecting the forecasted noise contours for Palo Alto Airport in 2022.

SCC ALUC used the Integrated Noise Model which considers airport altitude, mean temperature, runway configuration, aircraft flight track definition, aircraft departure and approach profiles, aircraft traffic volume and fleet mix, and flight track utilization by aircraft types. All data is entered into the CNEL formula to prepare the noise contours for Palo Alto Airport.

Refer to https://www.sccgov.org/sites/dpd/DocsForms/Documents/ALUC_20081119_PAO_CLUP.pdf, for a more detailed description of how the SCC ALUC prepared this map.

The 65 decibel (db) noise level of the airport extends beyond the airport boundaries, but is only over Palo Alto Golf Course, Palo Alto Baylands Nature Preserve, and the salt marshes in San Mateo County and is the threshold at which FAA requires noise mitigation programs.

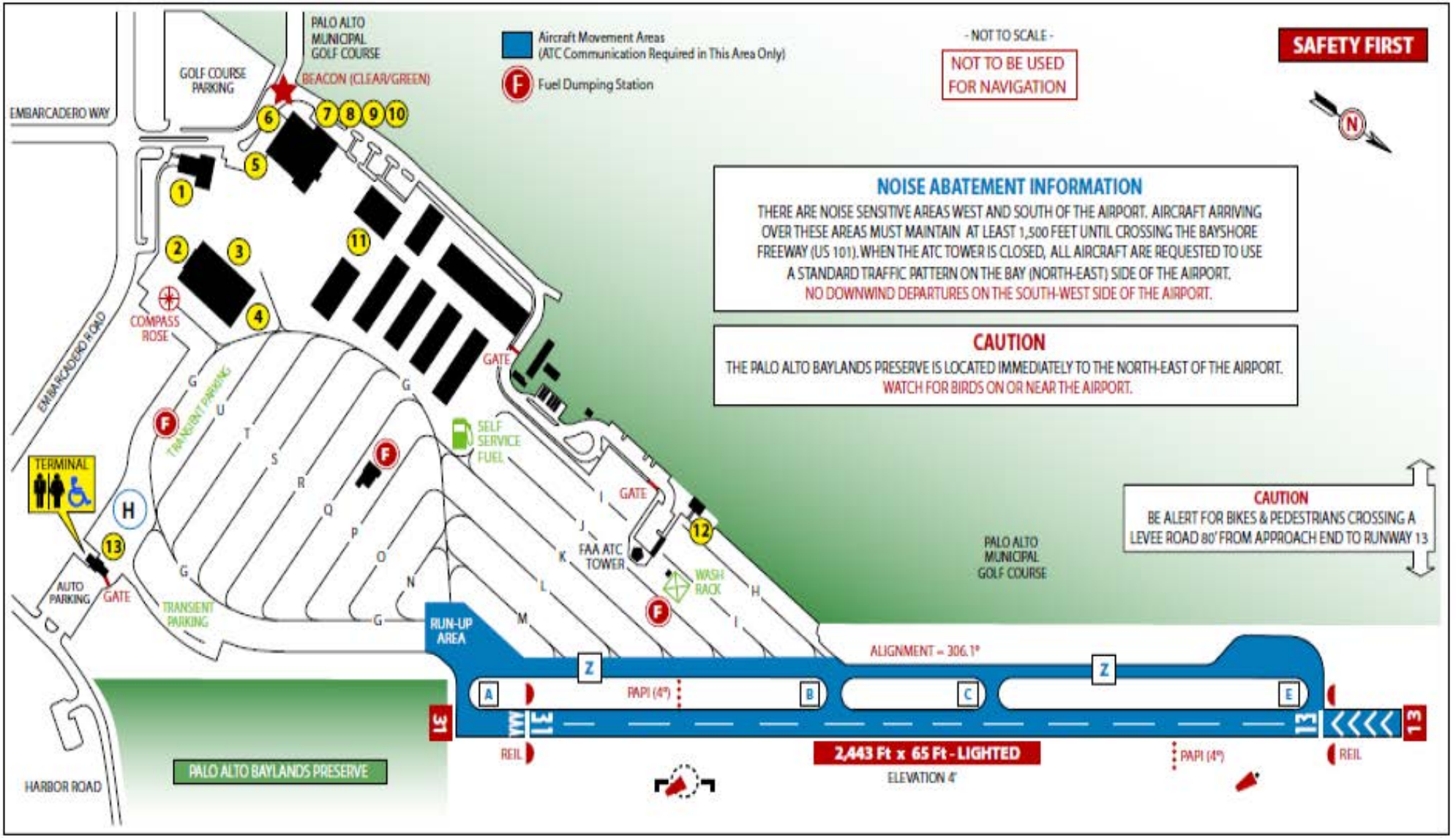
2022 Forecasted Palo Alto Airport Noise Contour Map



Attachment B

PAO Pilot Handout

Santa Clara County created a Pilot Handout for Palo Alto Airport that described the noise abatement procedures. When the City of Palo Alto assumed control of the airport, the existing noise abatement procedures were adopted, with one exception, “pilots must maintain 1500 feet or above across Highway 101” was replaced with “Aircraft are asked to climb to and maintain at least 1500 feet before crossing Highway 101.” The change is consistent with the voluntary nature of noise abatement procedures as airports are federally prohibited from instructing pilots how to fly.



AIRPORT SURFACE MAP

PALO ALTO AIRPORT PAO

1925 Embarcadero Road
Palo Alto, California 94303
www.countyairports.org

MOBILE FUEL SERVICES

Palo Alto Fuel Service	100LL	Exxon	122.95	650-856-7640
Rossi Aircraft	100LL	Chevron	122.85	650-493-3326
	Jet-A	Chevron	122.85	650-493-3326

SELF SERVICE FUEL

Palo Alto Fuel Service	100LL	Exxon	650-856-7640

FBO's & SERVICES - KEY

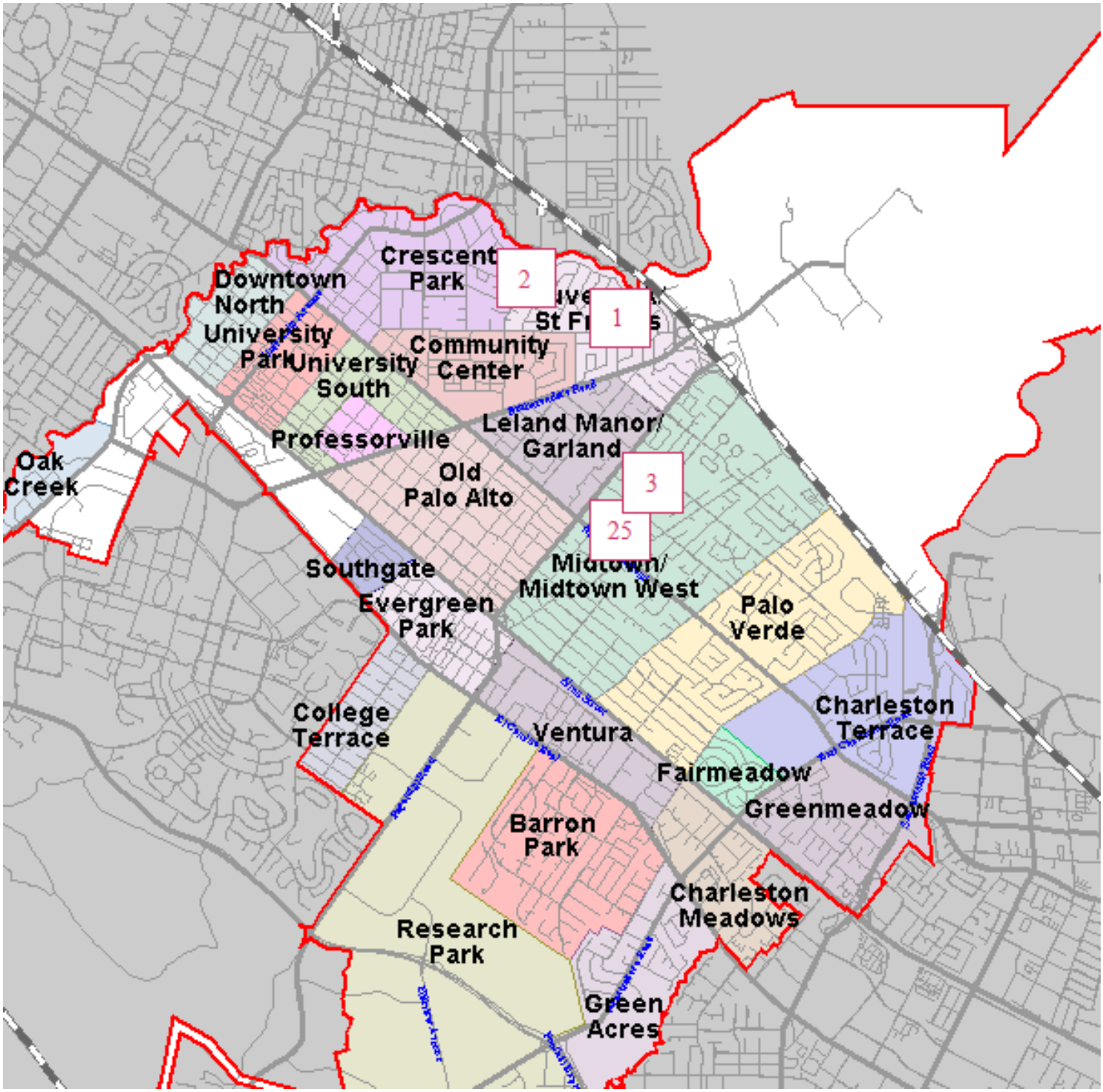
1. Aviation Supplies
2. Palo Alto Flying Club
3. Shoreline Flying Club
4. Rossi Aircraft
5. West Valley Flying Club
6. Abundant Air Cafe
7. Advantage Aviation
8. Lawrence Aircraft Sales
9. Peninsula Avionics
10. Sundance Flying Club
11. Victor Aviation
12. Civil Air Patrol
13. Enterprise Rent-A-Car

PHONE DIRECTORY

Airport Operations	650-856-7833
Palo Alto AWOS	- Future -
Airport Noise Abatement	866-638-2344
Palo Alto (PAO) ATIS	650-858-0606
FAA Control Tower	650-493-0641
FSS/Weather/NOTAMS	800-272-1180
San Jose FSDO	408-291-7681

Attachment C

Map of Palo Alto Households



This map shows the approximate location and number of complaints from households within Palo Alto. This map was generated using GISt by airport staff.