“D”

Project Submittal Materials

P14-00261
Planning Commission Hearing Date – March 1, 2017

EXHIBIT "C"
PALMAZ PRIVATE HELIPAD
(APN 033-110-080)

PRIMARY APPROACH / DEPARTURE PATHS

EXISTING 8" HIGH PRESSURE WATER LINE

EXISTING 3" FUSED WATER LINE

INSTALL 3" WATER LINE

INSTALL RETAINING WALL (OR EQUIVALENT TIERED WALLS)

TW 350.0
BW 321.7

30.0'

52.0'
CONC. SWALE

TW 337.0
BW 321.7

TW 342.5
BW 322.7

TW 342.0
BW 324.0

FF 322.70
APPROX. CUT ≈ 1,850 cu yd
HANGAR

60.5'

STORAGE

23.5'

TW 330.0
BW 324.0

DI W/ SIDE OPENING

TW 327.0
BW 321.0

DI W/ SIDE OPENING

30.0'

6+73

6+00

5+00

5%

TEMPORARY CONSTRUCTION PARKING

PROPOSED LOCATION OF SECONDARY STOCKPILE (SEE SHEET 1 FOR PRIMARY STOCKPILE)

INSTALL DRAFT HYDRANT PER NAPA COUNTY STANDARDS

REMOVE (E) VINEYARDS PROVIDE PERMEABLE MATERIAL

VEGETATED SWALE S=4%±

REMOVE (E) RETAINING WALL

NAPA COUNTY STANDARD FIRE TRUCK TURNAROUND C-13

R=50'

60.0'

R=50'

12" SD

INSTALL AC PAVING

ROCK RIP RAP

FG 321.30

FG 321.30

DI

12" SD

CMP

4.0%

ROCK RIP RAP

BIORETENTION BASIN

A

A

SECONDARY APPROACH / DEPARTURE PATHS

PROPOSED 10' WIDE 4" PAVEMENT DRIVEWAY AND 2' GRADED SHOULDER EACH SIDE — SEE PROFILE SHEET 4. S=20% MAX.

REMOVE EXISTING RETAINING WALL (TYP)

NAPA COUNTY STANDARD DRIVEWAY TURNOUT TURNAROUND C-11

3:1

12" SD
3' COVER (TYP)

CL

DAYLIGHT LINE (TYP)

REMOVE EXISTING RETAINING WALL (TYP)

FILL

65' MIN. SET BACK

2:1

DAYLIGHT LINE (TYP)

FG 251.4
0+50
CONFORM TO (e) GRAVEL ROAD

1+00

(e) 12%

OLIVE/ORNAMENTAL TREES

ROCK RIP RAP OUTFALL

SCALE: 1"=20'

SECONDARY APPROACH / DEPARTURE PATHS

LEGEND

BW	BOTTOM OF WALL
←	DIRECTION OF DRAINAGE
←←	VEGETATED SWALE
(E)	EXISTING
54	EXISTING 1' CONTOUR
FF	FINISH FLOOR
FG	FINISH GRADE
	NEW AC PAVING
	NEW P.C.C
54	NEW 5' CONTOUR
TW	TOP OF WALL

NOTE: FIRE TRUCK TURNAROUND SHOULD REMAIN UNOBSTRUCTED AT ALL TIMES.

SLOPE CALCULATIONS

$$S = \frac{CI \times CL}{A \times 435.6}$$

WHERE:

S=AVERAGE SLOPE (%)
CI=CONTOUR INTERVAL (FEET)
CL=LENGTH OF CONTOUR LINES (FEET)
A=AREA (ACRES)

$$\frac{1' \times 4750'}{0.67 \times 435.6} = 16.3\%$$

DENSE TREES GROUND NOT VISIBLE

PLAN

MARK	REVISIONS	INT.

CHAUDHARY & ASSOCIATES, INC.
ENGINEERS SURVEYORS INSPECTORS
211 Gateway Road West, Suite 204
NAPA, CALIFORNIA 94558
Tel: (707) 255-2729 FAX: (707) 255-5021 WWW.CHAUDHARY.COM

CONCEPTUAL SITE PLAN FOR A HELIPAD

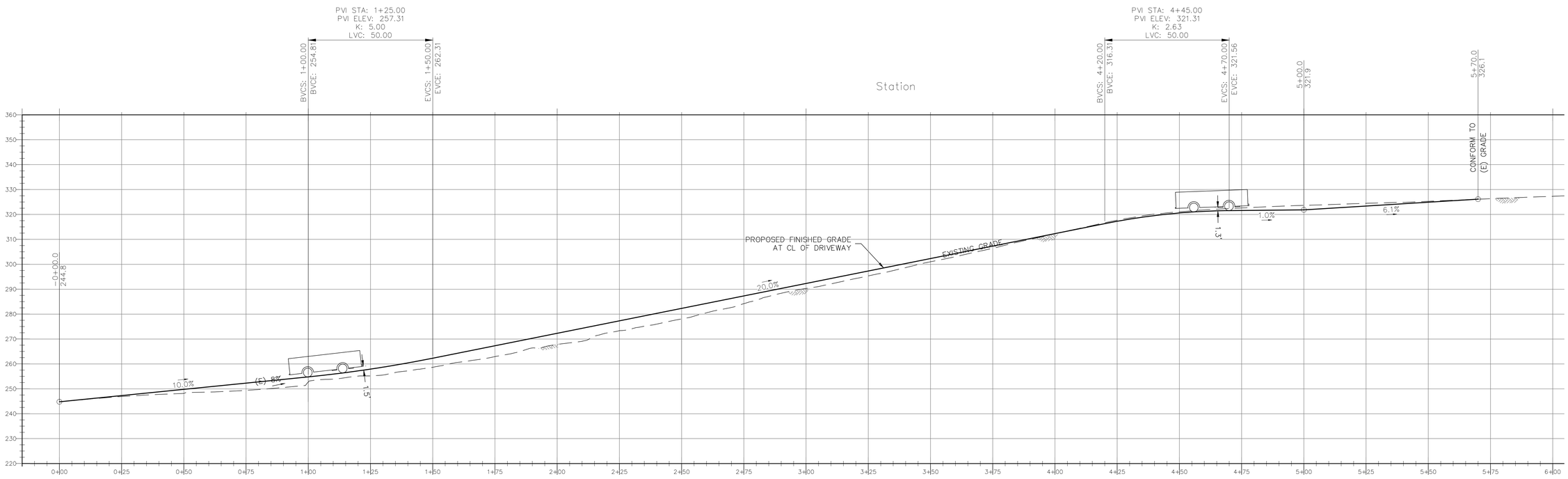
4031 HAGEN ROAD
APN 033-110-080

NAPA CALIFORNIA

DRAWING ID	04EX1403
DESIGN BY	TD
DRAWN BY	FS
CHECKED BY	SC
DATE	JANUARY 27, 2017
SCALE	1"=20'
SHEET	3
OF	5 SHEETS
COUNTY DRAWING FILE #	

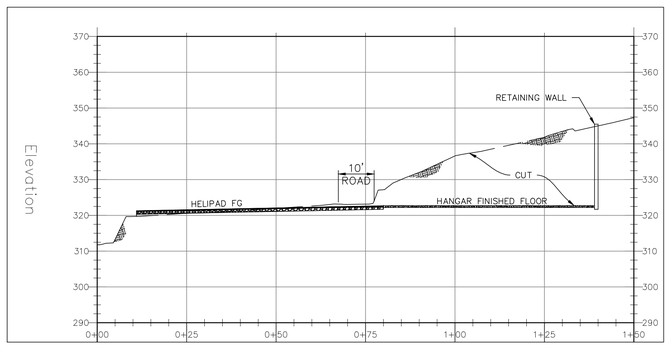
Q:\2014\14-01-003 PalmazHagenRd\DWG\EX-C-D-E1403.dwg

EXHIBIT "D"
PALMAZ PRIVATE HELIPAD
(APN 033-110-080)



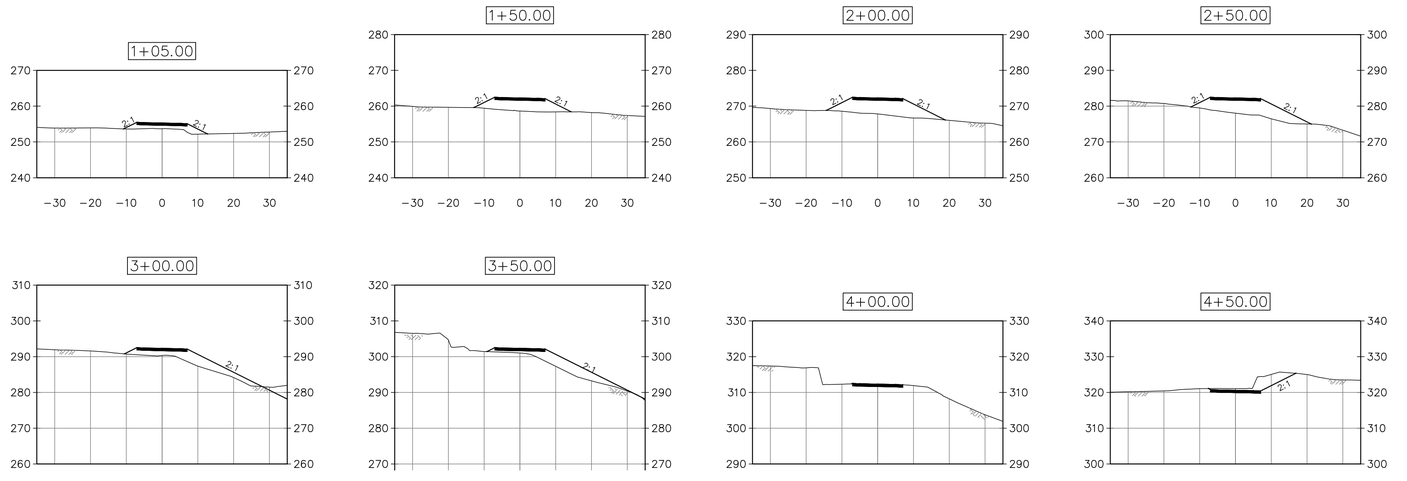
PROFILE - CL OF SPECIAL PURPOSE ROAD

SCALE: 1"=20' (HORIZONTAL)
1"=20' (VERTICAL)



SITE CROSS SECTION - AA

SCALE: 1"=20' (HORIZONTAL)
1"=20' (VERTICAL)



SPECIAL PURPOSE ROAD SECTION VIEWS

SCALE: 1"=20' (HORIZONTAL)
1"=20' (VERTICAL)

MARK	REVISIONS	INIT.

CHAUDHARY & ASSOCIATES, INC.
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211 Gateway Road West, Suite 204
NAPA, CALIFORNIA 94558
Tel: (707) 255-2729 FAX: (707) 255-5021 WWW.CHAUDHARY.COM

CONCEPTUAL PROFILE OF CENTERLINE OF ROAD
4031 HAGEN ROAD
APN 033-110-080
NAPA CALIFORNIA

DRAWING ID	04EX1403
DESIGN BY	TD
DRAWN BY	FS
CHECKED BY	SC
DATE	DECEMBER 13, 2016
SCALE	1"=20'
SHEET	4
	OF 5 SHEETS
COUNTY DRAWING FILE #	

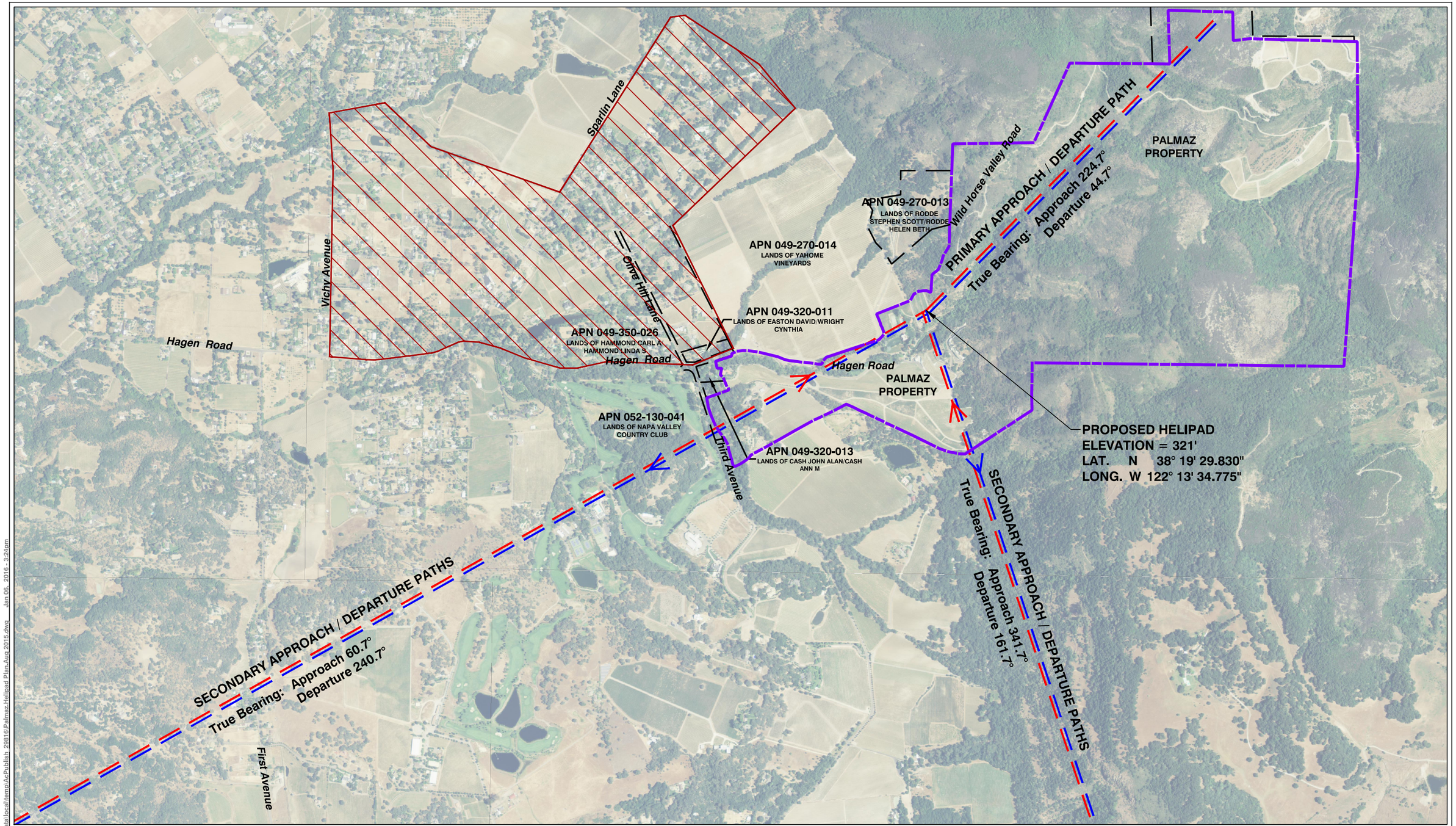


Figure 1

Proposed Flight Tracks

Palmaz Private Helipad

Palmaz Private Helipad

Napa County, California

Private Helipad Overflight and Noise Report

Prepared for Christian Palmaz

by

Mead & Hunt, Inc.

July 2014
Revised November 2014
Amended February and March 2015

1. OVERVIEW

This Overflight and Noise Report examines the location, flight tracks, operations and noise impacts of a proposed private helipad located in an unincorporated area of Napa County, California. This Report will provide supporting documentation that is required by Napa County for approval of the helipad.

Christian Palmaz is a Napa County resident proposing to construct a private helipad in the County for personal use. The helipad will be constructed on property owned by the Palmaz family.

2. PROJECT DESCRIPTION

The proposed helipad is located on property owned by Palmaz. The property is located about 3.8 miles east-northeast of downtown Napa and east of the intersection of Hagen and Olive Tree Lane. The site is proposed to be located on the hillside that is currently occupied by vineyards. The helipad will be utilized by the Palmaz family for personal use.

As a private helipad for personal use, the site is exempt from California Department of Transportation (CalTrans) permit requirements. According to Public Utilities Code (PUC) 21662 and California Code of Regulations (CCR) 3533, personal-use heliports in unincorporated areas which meet the requirements of Article 5 of CCR 3560 are exempt. Article 5 of the California Code of Regulations (CCR 3560) states:

"[M]any design elements of Personal-Use heliports are at the discretion of the owner. However, the Department requires at least the following: 1) FATO [Final Approach and Takeoff Area] dimensions adequate to enable aircraft to operate safely, considering heliport location and the performance data of the most demanding aircraft to utilize the heliport. 2) The closest point of each FATO shall be at least 80 feet from the heliport property line. 3) If the heliport is identifiable as a heliport from the air, it shall be marked with the letters "PVT" in accordance with CCR 3554(a)(3). If a heliport lighting system is installed, it shall illuminate the required markings. The Department shall determine whether or not the heliport is identifiable from the air if there is a dispute."

Design documents for the private helipad are being produced by Chaudhary & Associates Inc. The dimensions of the FATO, proximity to property lines, and pad markings are discussed in these plans and documents.

3. HELIPAD USAGE

ANTICIPATED ACTIVITY LEVELS

Currently, Palmaz bases his helicopter at Napa County Airport (APC). Based on operation data to and from APC plus discussions with Palmaz, it was determined that for purposes of noise analysis, 4 arrivals and 4 departures per week are expected. It should be noted operations may fluctuate based on many factors and should only be considered an average. Plus, these operation numbers should also be considered conservative for purposes of noise modeling, meaning the activity estimate is slightly overstated.

Factors that may contribute to a fluctuation in operations may include: weather, wind, visibility and cloud ceiling. Other factors may include Palmaz's personal schedule, such as taking the helicopter to a place for personal vacation and not returning for some time. The helicopter may also be non-operative for periods of time for regular maintenance.

Operations during evening (7:00 PM – 10:00 PM) and night hours (10:00 PM – 7:00 AM) will be minimal. Based on current operation statistics from Palmaz, evening operations account for 6 percent of total operations, and night operations are 2 percent.

DESIGN HELICOPTER

Palmaz utilizes a Eurocopter 130B4 helicopter (EC 130B4). The EC 130B4 is a state-of-the art helicopter model that incorporates the latest technology to help limit noise exposure. The EC 130B4 was specifically developed to address environmental concerns of noise pollution from air-tour operations over the Grand Canyon. According to *Aviation International News* (Pilot Report: EC 130B4, May 9, 2008), noise reduction features of the EC 130B4 include:

- "Noise is, of course, a major concern for air-tour operators, so Eurocopter made reduction of noise a high priority with the 130. Aerospatiale pioneered the shrouded tailrotor, which it calls a fenestron."
- "[T]he blades are not equally spaced, a configuration that provides less noise and vibration than equally spaced blades."
- "Overall noise is further decreased by reducing rotor rpm (Nr) in flight"
- "According to Eurocopter, the EC 130 has achieved a measured average ICAO (Annex 16, Chapter 8) noise level of 86.8 EPNdB, seven DB below the ICAO limit, and an overflight noise level of 84.3 EPNdB, 8.5 dB below the ICAO limit. This latter figure is 0.5 dB below the Grand Canyon National Park (GCNP) noise rule for a six-passenger aircraft and 1.2 dB below the GCNP noise rule for a seven-passenger aircraft."

Because of these features, the EC 130B4 is widely regarded as one of the quietest helicopters operating today. Operating an EC 130B4 helicopter will help minimize noise impacts on nearby property.

4. APPROACH AND DEPARTURE PATH REQUIREMENTS

Although the high degree of maneuverability of helicopters gives them wide latitude in the choice of a flight path into and out of a heliport, establishment of a formal landing site requires that defined approach/departure paths be designated. The purpose for designation of these paths is to ensure that adequate airspace is, and will continue to be, available for safe operation of helicopters to and from the heliport. It is desirable, although not absolutely essential, that a heliport have two approach/departure paths

separated by an arc of at least 135 degrees. The two most important aeronautical factors in design of the approach/departure paths are the direction of the prevailing wind and the location of potential obstructions.

WIND SPEED AND DIRECTION

As with fixed-wing aircraft, helicopter takeoffs and landings are easiest and most efficient when conducted into the wind. Unlike fixed-wing aircraft, helicopters need very little final approach distance into the wind; some 500 to 1,200 feet is preferable although they can get by with less if necessary.

Wind data from the nearby Napa County Airport indicate that the prevailing winds vary based on the season. Throughout most of the year, winds are out of the south-southwest. However, during winter months the winds are out of the east and during spring months winds are out of the west. The proposed approach and departure paths consider the prevailing wind when looking at approach and departure paths.

OBSTACLE CLEARANCE

The standards for heliport approach/departure paths are set by Part 77 of the Federal Aviation Regulations (FAR), *Safe, Efficient Use, and Preservation of the Navigable Airspace.* These regulations establish a set of imaginary surfaces in the airspace around the heliport. In general, the heliport and its approach/departure paths should be designed so that no objects penetrate the FAR Part 77 surfaces. For heliports, the FAR Part 77 standards specify two types of surfaces:

Approach/Departure Surfaces — These surfaces begin at the edge of the helipad, and slope upward one foot per every eight feet horizontally (8:1). The approach/departure surface length is 4,000 feet and the width at the outer end is 500 feet. The surface follows the approach path.

Transitional Surfaces — Transitional surfaces are situated along the sides of the helipad and approach surfaces. They slope upward one foot per every two feet horizontally (2:1) for a horizontal distance of 250 feet from the FATO and approach surface centerlines.

Since the helipad will be privately owned and operated, FAA and CalTrans permitting is not required and therefore no applicable airspace standards are required. However, it is noted these surfaces are imperative to overflight safety for the helicopter and nearby structures. These surfaces will act as a guide when siting approach and departure surfaces.

PREFERRED APPROACH AND DEPARTURE PATHS

Besides wind and obstacle clearance, another important factor for preferred approach and departure paths is avoiding overflight of nearby residences. Helicopters are louder when arriving than when departing, since they are slowing down, blade configurations may change, and simply they are closer to the ground at a given distance from the helipad.

For reasons of avoiding residential overflight, the primary approach and departure paths project to the west from the Palmaz property. On approaches, this route allows helicopters to descend over Palmaz property. Conversely, on departures, helicopters will ascend over Palmaz property. By following this route, helicopters would remain over Palmaz property the greatest distance (as opposed to any other direction).

Two approach and departure paths were selected as primary and secondary paths, and each is illustrated in **Figure 1**. Palmaz also indicated there are times when he will travel through the canyon directly east of his property when flying to a destination to the east (and winds dictate). **Figure 1a** shows residences under the primary approach and departure path

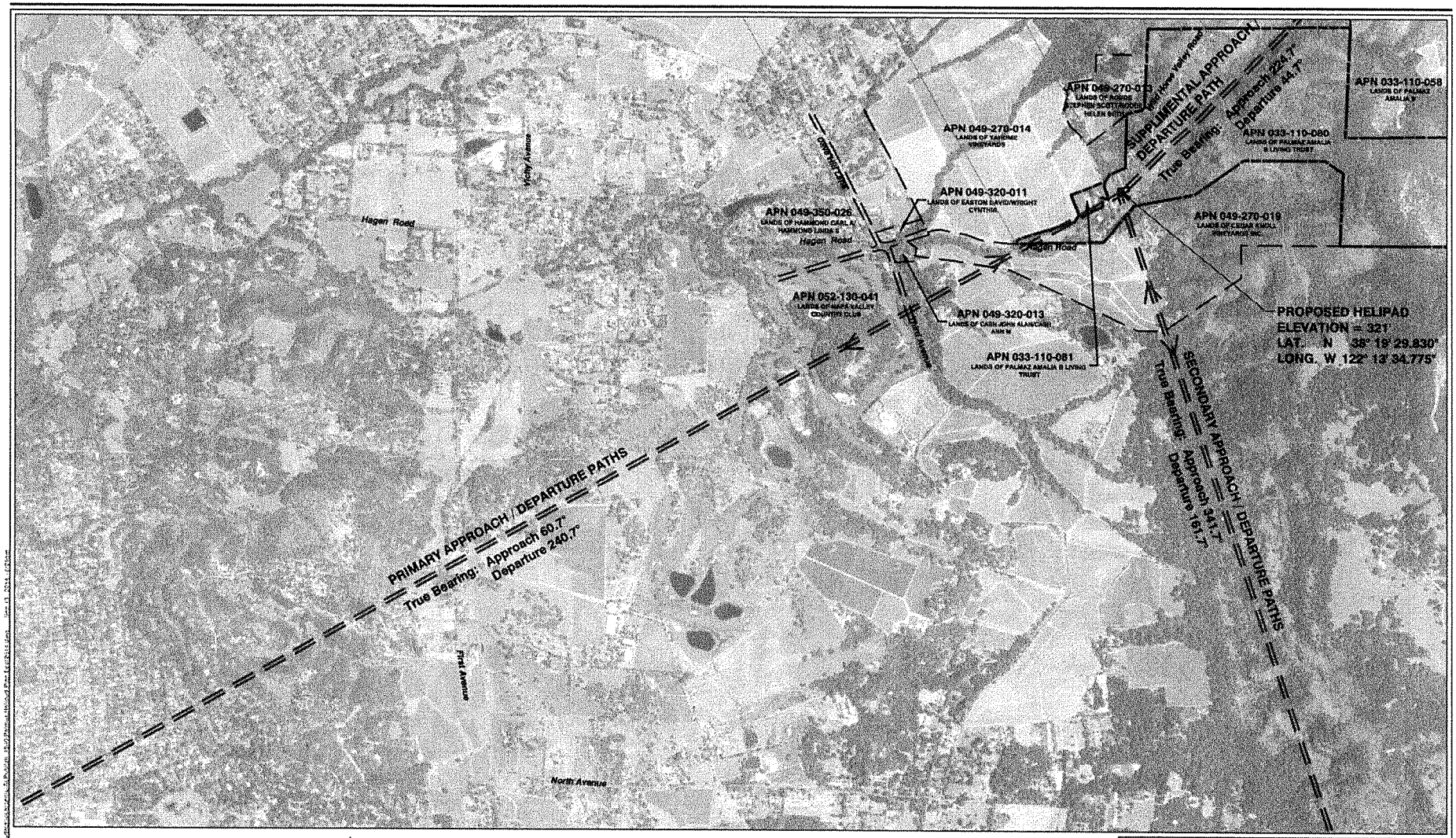


Figure 1

Proposed Flight Tracks

Palmaz Private Helipad

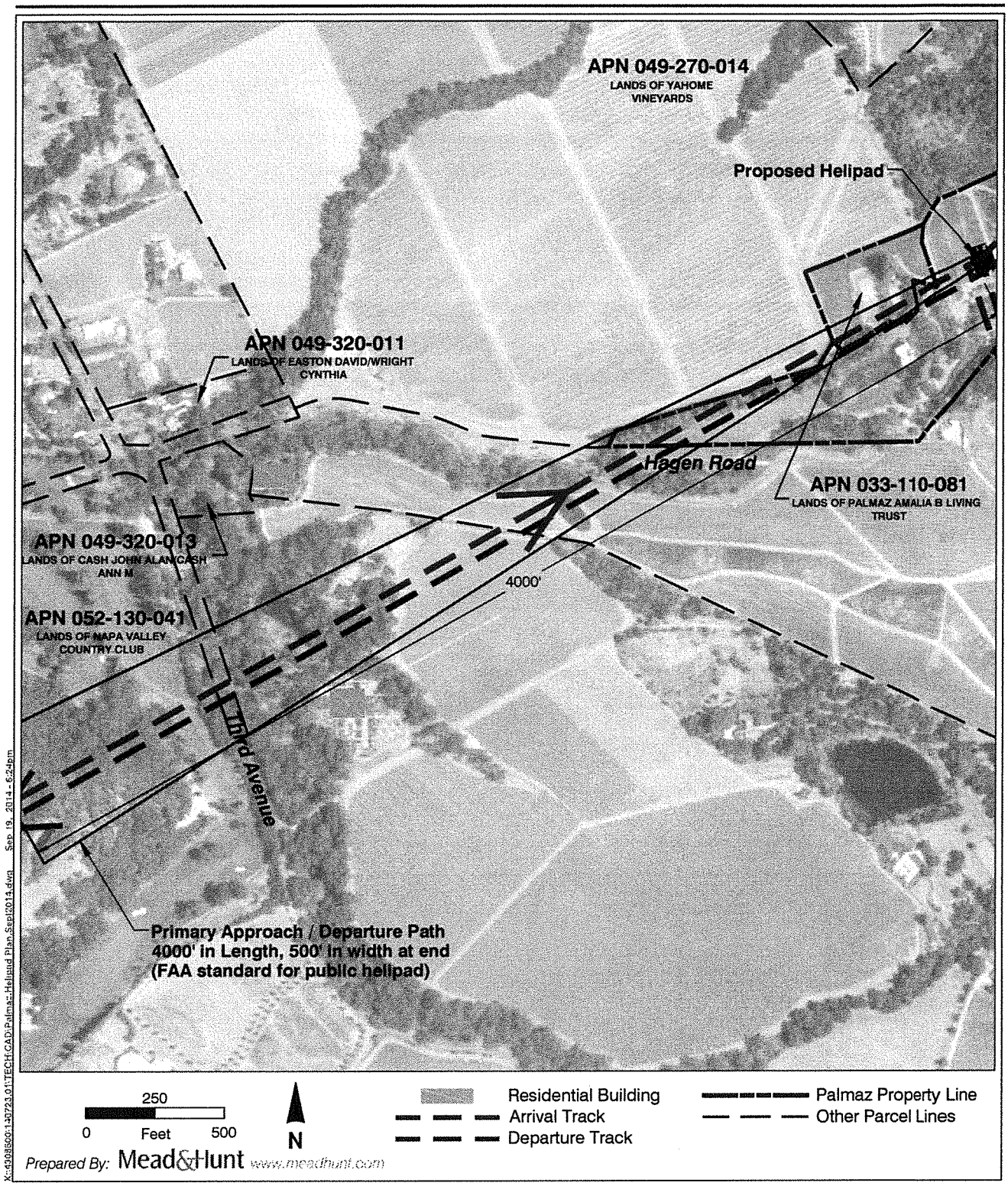


Figure 1a

Residneces Near Primary Approach Path

Palmaz Private Helipad

FLY NEIGHBORLY GUIDE

The Helicopter Association International (HAI) published the *Fly Neighborly Guide* (second edition issued in 1993) which provided voluntary noise abatement programs for helicopter pilots. This *Guide* recommends procedures on noise abatement and how to operate helicopters quietly. Among the recommendations:

- "Increasing the distance/separation from noise-sensitive areas is the most effective means of noise abatement."
- "Takeoffs are reasonably quiet operations, but you can limit the total ground area exposed to helicopter sound by using a high rate-of-climb and making a smooth transition to forward flight."
- "Maintaining an altitude as high as possible above the ground and flying at airspeeds consistent with minimum noise output, flight safety and [air traffic control] constraints is essential."
- When commencing approach, begin descent at a rate of at least 200 fpm (feet per minute) before reducing airspeed, then reduce airspeed while increasing the rate of descent to 800-1000 fpm.

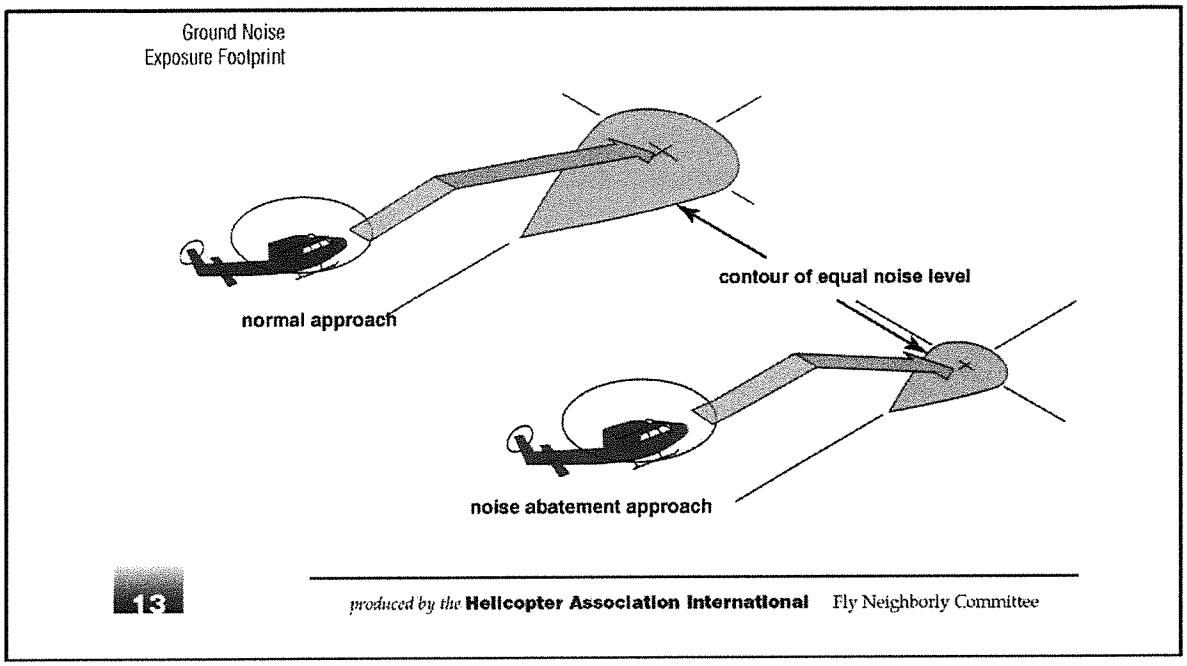
Discussions with Palmaz indicated practices that help reduce noise impacts on approach and departures. For instance:

- Palmaz will travel between 1,000 and 1,500 feet above ground level (AGL). Most helicopters travel at 1,000 feet AGL.
- When arriving, Palmaz descends at a steeper angle than what is typical. When approaching, Palmaz will slow to 110 knots and descend to 500 feet AGL. At 500 feet AGL, the helicopter will slow to 75 knots.
- The same is true of departures – Palmaz will depart at a steeper angle (1,000 feet per minute climb ratio) than what is typical.

Based on discussions with Palmaz on approach and departure operating procedures, these recommendations by the HAI are generally followed. This will help limit noise exposure on nearby land uses.

Figure 2 below shows a typical approach and departure profile that Palmaz will follow when landing and departing. Included in this Figure is a typical, more constant approach path that would produce more noise, and the Part 77 8:1 approach surface slope. Figure 2 shows that Palmaz will keep his helicopter above 1,000 feet MSL until over his property, and descend / ascend at a steep rate that is consistent with HAI *Fly Neighborly Guide*, as presented above. Also included is the HAI produced graphic that shows the preferred steeper approach path that produces less noise that the constant rate approach.

These procedures ensure that helicopter noise will last for a matter of a minute or so with each takeoff or landing. Other noise sources that are common to Napa County include lawn mowers and leaf blowers. When these items are used in the area, they may be operated for up to 3 hours at a time, every other day.



(Source: HAI *Fly Neighborly Guide, Figure 7, page 13)*

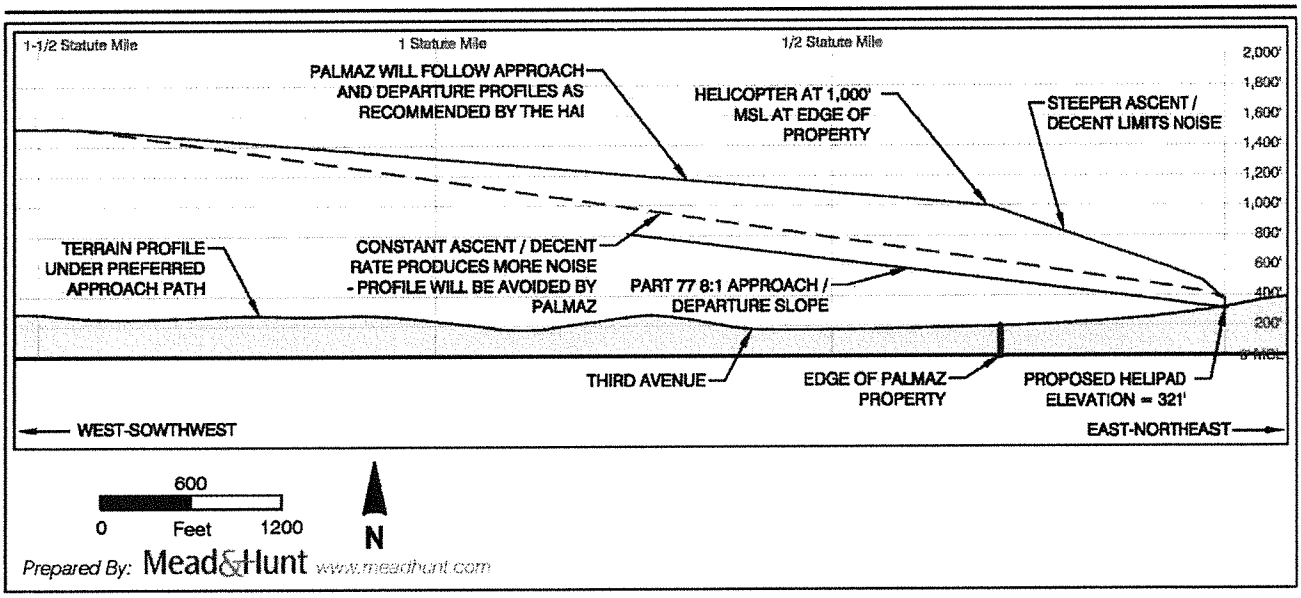


Figure 2

Typical Approach and Deparutre Profile

Palmaz Private Helipad

5. NOISE IMPACT ANALYSIS

This section details the noise impacts associated with helicopter activity to and from the proposed helipad at the Palmaz site.

AIRCRAFT NOISE

Of all the adverse effects related to aircraft activity, noise is arguably the most noticeable. To understand aircraft noise and its effects on people, it is important to understand the science of sound. Sound is a type of energy that travels in the form of a wave. Sound waves create minute pressure differences in the air that are recognized by the human ear or microphones. Sound waves can be measured using decibels (dB) to measure the amplitude or strength of the wave and Hertz (Hz) which measures the frequency or pitch of the wave.

The strength, or loudness, of a sound wave is measured using decibels on a logarithmic scale. The range of audibility of a human ear is 0 dB (threshold of hearing) to 140 dB (threshold of pain). The use of a logarithmic scale often confuses people because it does not directly correspond to the perception of relative loudness. A common misconception is that if two noise events occur at the same time, the result will be twice as loud. In reality, the simultaneous events will double the sound energy, but only result in a 3 dB increase in magnitude. For a sound event to actually be twice as loud as another, it must be 10 dB higher.

Scientific studies have shown that people do not interpret sound the same way a microphone does. For example, humans are biased and sensitive to tones within a certain frequency range. The A-weighted decibel scale was developed to correlate sound tones with the sensitivity of the human ear. The A-weighted decibel is a "frequency dependent" rating scale which emphasizes the sound components within the frequency range where most speech occurs. This scale is illustrated in **Table 1**, *Approximate Decibel Level of Common Sound Sources*, which lists typical sound levels of common outdoor sound sources.

When sound becomes annoying to people, it is generally referred to as noise. A common definition of noise is unwanted sound. One person may find higher levels of noise bearable, while others do not. Studies have also shown that a person will react differently to the same noise depending on that person's activity at the time the noise is recognized, e.g., when that person is sleeping.

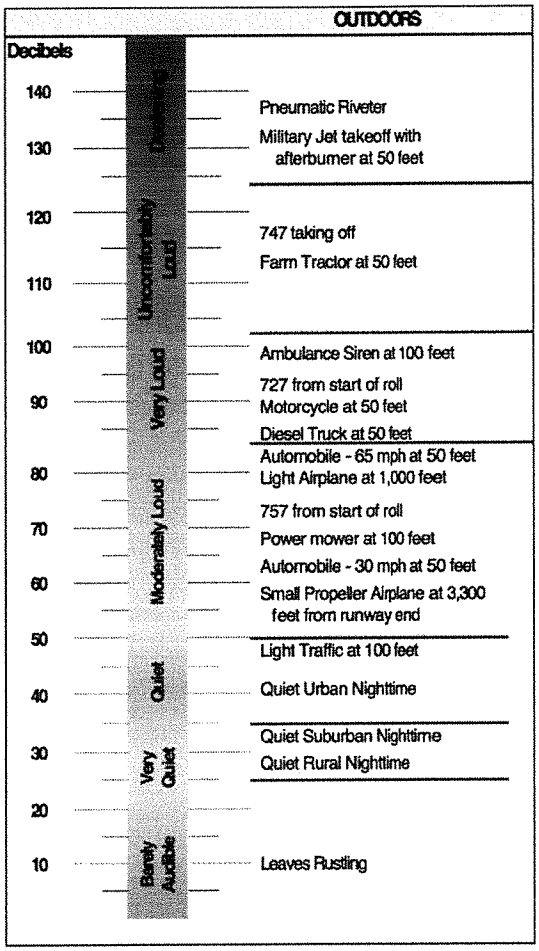


Table 1: Approximate Decibel Level of Common Sound Sources

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL)

While the A-weighted decibel scale measures human perception of loudness, it does not account for the degree of annoyance based on the duration of a noise event or how often the event occurs. Characteristics of the noise also influence annoyance.

Noise generated by the operation of aircraft to, from, and around an airport (or in this case, a heliport) is generally measured in terms of cumulative noise levels of all aircraft operations. Cumulative noise level metrics provide a single measure of the average sound levels in decibels for any point near an airport or heliport when exposed over the course of a day. A variety of cumulative noise level metrics have been formulated to provide a single measure of continuous or multiple noise events over an extended period of time. In the state of California, the metric used is the Community Noise Equivalent Level. The CNEL metric recognizes that frequent medium-intensity noise events are more bothersome than less frequent high-intensity noises events.

The CNEL penalizes any activity that takes place in the evening (7:00 PM – 10:00 PM) by increasing the decibel level by approximately 5 dB, and in the nighttime (10:00 PM – 7:00 AM) by increasing the decibel level by 10 dB. Since the decibel scale uses a base-10 logarithm, each evening operation is equal to 5 daytime operations, and each nighttime operation is equivalent to 10 daytime operations. The rationale for this adjustment is based on the reduced ambient noise at these times, and thus the increase in human sensitivity. A summary of effects that noise has on people was developed by the Federal Interagency Committee on Noise in 1992.

CNEL CONTOURS

The Integrated Noise Model (INM) 7.0d was used to generate the CNEL noise contours for the proposed helipad which are illustrated in **Figure 3**. The INM is developed by the FAA and is the standard model for computer analysis of aircraft noise. Operational data is required for input into the INM for the program to generate the contours includes: the specific helicopter model and number of operations, the time of day that helicopters operate, and the direction of approach and departure flight tracks. **Table 2** details the input data used to generate noise contours. On average, 8 operations (4 arrivals and 4 departures) are expected to occur each week at the Palmaz helipad. Please note that flight tracks are evenly distributed (to/from west and to/from south) to provide a more conservative CNEL contour. It is expected that most operations will actually use the primary routes – the westerly corridor.

Table 2: Helipad Operations INM Inputs

Helicopter Type		Operation	Flight Track	Operation Totals			Total Daily Operations	Total Weekly Operations
Helicopter	INM Code or Sub			Day Operations	Evening Operations	Night Operations		
Eurocopter EC 130-B4	EC130	Arrival	From South	0.262	0.017	0.006		
	EC130	Arrival	From South	0.262	0.017	0.006		
	EC130	Departure	To West	0.262	0.017	0.006		
	EC130	Departure	To South	0.262	0.017	0.006		
			Totals	1.049	0.068	0.023	1.140	8

As discussed previously, CNEL contours illustrate the cumulative average of noise exposure over a 24-hour period, based on the type of helicopter and amount of operations. The CNEL metric is what is required in California when CEQA documents are prepared. It is also the required metric for measuring noise levels at airports and inclusion in land use compatibility plans.

Figure 3 shows that the 60 and 65 CNEL contours remain on Palmaz property. A small portion of the 55 CNEL contour is off Palmaz property slightly to the north. The land use of this adjacent property is forest and a small portion is agriculture (vineyards). No dwelling unit is located within the 55 CNEL contour.

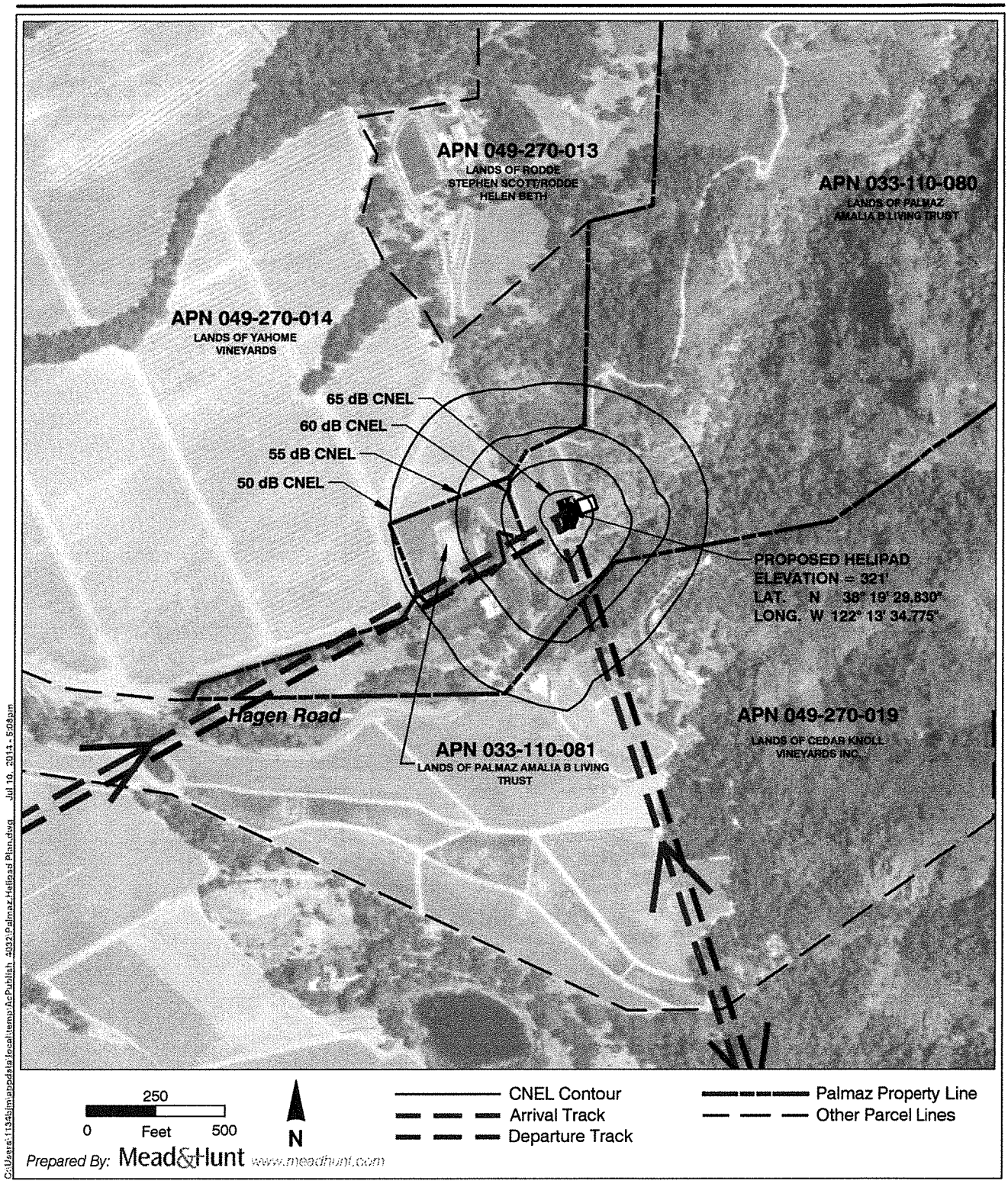


Figure 3

CNEL Noise Contours

Palmaz Private Helipad

NAPA COUNTY AIRPORT LAND USE COMPATIBILITY PLAN

In accordance to California law, Napa County established the Napa County Airport Land Use Commission (ALUC) which subsequently adopted the Airport Land Use Compatibility Plan (ALUCP) for the County. The ALUCP establishes criteria and policies that the ALUC uses in determining land use plans and proposed development in the vicinity of the public-use airports located within the County. These criteria may include, but are not limited to: height limitations, land use restrictions and building standards.

The Napa County ALUCP primarily follows the *California Division of Aeronautics Airport Land Use Planning Handbook* when setting forth policies and criteria. The ALUCP looks at four categories when determining land use impacts and compatibility: noise, hazards to flight (clear airspace), safety on the ground (limiting people below flight paths), and overflights (annoyance from regular activity above).

Within the ALUCP, guidance is provided for the approval of new public airports or heliports. Since the proposed Palmaz helipad is a private helipad not within any city limits, it is not subject to Caltrans Heliport Permit requirements and thus also does not need ALUC approval. However, for land use permit purposes, these guidelines may still be observed by the County of Napa to determine if any non-conforming land uses are located nearby and if the helipad would be allowed if it was public use.

The Napa County ALUCP states: "In reviewing proposals for new airports and heliports, the Commission shall focus on the noise, safety, overflight, and height limit impacts upon surrounding land uses.... The review shall examine the relationships between existing and planned land uses in the vicinity of the proposed airport or heliport and the impacts that the proposed facility would have upon these land uses. Questions to be considered should include:

- Would the existing or planned land uses be considered incompatible with the airport or heliport if the latter were already in existence?
- What measures are included in the airport or heliport proposal to mitigate the noise, safety, overflight, and height restriction impacts on surrounding land uses? Such measures might include: (1) location of flight tracks so as to minimize the impacts; (2) other operational procedures to minimize impacts; (3) acquisition of property interests (fee title or easements) on the impacted land."

It should also be noted again the CNEL metric is used to quantify noise for land use compatibility plans in California. The Napa ALUCP considers the maximum CNEL acceptable for most residential uses within the vicinity of airports to be 55 decibels. As viewed in **Figure 3**, the 55 CNEL contour is mostly contained on Palmaz property. The portion of the 55 CNEL contour that is located off of Palmaz property falls on forested and agricultural land. No dwelling units are located within the 55 CNEL contour, therefore this passes the ALUCP noise test.

A previously discussed, maximum effort will be taken to follow a flight path that is on a bearing to the west-southwest when departing, and east-northeast when arriving. By following these tracks, the helicopter will limit overflight of residential land uses. These measures follow ALUCP guidance on mitigating overflight, thus increasing safety.

FINDINGS AND SUMMARY

This report was produced to help explain the operations and procedures that Palmaz will execute at the proposed helipad to help limit noise exposure. The figures produced include the proposed flight tracks and CNEL noise contours for activity to and from the helipad. In summary, this report finds the following:

- The proposed helipad is for private and personal use. No commercial use will be permitted.
- Palmaz will be flying one of the quietest helicopters (Eurocopter 130B4) in the industry.
- Palmaz will utilize widely recognized HAI guidance on how to fly to minimize operational noise as long as is safe and reasonable.
- Proposed flight paths will concentrate the greatest noise within the confines of Palmaz property and avoid low altitude flight over neighboring property. The preferred flight tracks (arrivals from the west and departures to the west) would keep the helicopter over Palmaz property to the west of the helipad. When departing to or arriving from the west, the helicopter will be greater than 1,000 feet above ground level over the Napa Valley Country Club.
- Palmaz typically will travel between 1,000 and 1,500 feet above ground level. Most helicopters travel at 1,000 feet above ground level. This higher altitude will result in less of a noise impact.
- Palmaz will typically approach the helipad at a steeper angle of decent than what is typically seen. These procedures reduce noise impacts and are in accordance with HAI fly quietly procedures. The same is true of departures – Palmaz will depart at a steeper angle than what is typical. This practice also reduces noise impacts.
- The project meets applicable Napa County ALUC and California handbook criteria. CNEL contours produced show no significant impacts to nearby residences. The 60 and 65 CNEL contour does not leave Palmaz property. The 55 CNEL contour is mostly located on Palmaz property. No dwelling unit is located within the 55 CNEL contour.
- The amount of departures and arrivals per week is relatively small with minimal evening or night operations.
- The noise generated by the operation of the aircraft is comparable with common noise sources such as garden equipment, tractors, trucks and other ubiquitous noise sources, taking into account the very short duration of the aircraft noise event.
- The typical duration of an approach or departure will be distinctly audible above ambient noise level for only a few seconds. The helicopter will not be hovering over the helipad and it will not remain running on ground before or after flight longer than essential for safety.

ADDENDUM No. 1

INTRODUCTION

In November 2014, Mead & Hunt completed a report documenting noise data for a private helipad that the Palmaz Family proposes to build in unincorporated Napa County. That report, *Private Helipad Overflight and Noise Report for the Palmaz Helipad* (*Helipad Report*) contains specifics on helicopter operations, flight paths, noise impacts and voluntary noise mitigation. Noise impacts from helicopter operations to and from the proposed helipad were quantified by using the Community Noise Equivalent Level (CNEL) metric, which was developed by the State of California as a way to measure cumulative aircraft noise.

The *Helipad Report* was submitted to the County for initial review and, in December, the County responded with a request that information be supplied to show that the helipad would comply with Noise Code Regulations in Section 8.16 of the Napa County General Plan. The purpose of this *Addendum* to the *Helipad Report* is to provide the requested information.

Mead & Hunt notes, however, that it is questionable as to whether the County Noise Code Regulations, or at least some aspects of them, apply to the proposed helipad. To the extent that the regulations would function to regulate helicopter operations or the amount of noise that the operations would generate, any local controls are preempted by federal regulations. Less clear is the extent to which the local regulations can be used to determine whether to permit or deny construction of the helipad in the first place. This is a legal question that this *Addendum* does not attempt to answer.

For background information purposes, this *Addendum* begins with a summary of federal regulations of aircraft operations and noise and the court cases that have defined the limitation of local regulations for that purpose. Next, the specific Napa County regulations are listed and an analysis is made as to whether the proposed Palmaz helipad would comply with the provisions therein. Finally, an outline is provided of the steps that Palmaz has voluntarily agreed to take to limit the noise impact of the helicopter operations.

FEDERAL REGULATIONS

As previously stated, state and federal courts have held that federal regulations preempt local jurisdictions with regard to noise restrictions for aircraft. The overriding court decision that has been upheld on multiple occasions is City of Burbank v. Lockheed Air Terminal, Inc. (1973). In September 2009, the FAA released *FAA Airport Compliance Manual - Order 5190.6B*, which continues supporting that federal preemption. *Order 5190.6B* states:

- "The federal government has preempted ... the regulation of aircraft noise at its source."
- "State and local governments may protect their citizens through land use controls."
- "The federal government has the authority and responsibility to control aircraft noise by the regulation of source emissions, by flight operational procedures, and by management of the air traffic control system and navigable airspace in ways that minimize noise impact on residential areas, consistent with the highest standards of safety and efficiency."
- "Airport sponsors are primarily responsible for planning and implementing action designed to reduce the effect of noise on residents of the surrounding area. Such actions include optimal site location, improvements in airport design, noise abatement ground procedures, land acquisition, and restrictions on airport use that do not unjustly discriminate against any user, impede the federal interest in safety and management of the air navigation system, or unreasonably interfere with interstate or foreign commerce."

The major court case that is sited in subsequent case law for upholding that federal regulations preempt local jurisdictions is the Supreme Court's opinion in City of Burbank v. Lockheed Air Terminal, Inc., [411 U.S. 624, 36 L. E,d. 2d 547, 93 S. Ct. 1854 (1973)]. The Court stated due to the pervasive nature of federal regulation of aircraft noise, the FAA (in conjunction with the Environmental Protection Agency) has full control over aircraft noise, therefore preempting state and local regulation.

Historically, the courts have upheld the sovereignty of the FAA by allowing aircraft traffic needs to be met over environmental concerns. Airports and heliports are required to study and analyze the impacts of aircraft traffic and create noise contour maps. Courts have followed the lead of the Burbank decision and held that states or municipalities may not utilize their police powers to attempt to regulate noise by altering flight patterns. Courts have also uniformly struck down attempts by local governments to regulate the noise of aircraft.

This was recently tested in Burbank. In a special election in October 2001, Measure A was passed by voters, which would put into effect a nighttime curfew and limit flights at the Burbank-Glendale-Pasadena Airport before any expansion of the airport was started. In summary, the Court found that the City of Burbank could not use municipal curfews to impose noise regulations on aircraft operations.

NAPA COUNTY NOISE CODE REGULATIONS

Disregarding the question of federal preemption, four sections of the Napa County Noise Code Regulations that are relevant to the proposed helipad are addressed directly below.

8.16.040 - General noise restrictions designated.

A. Notwithstanding any other provision of this chapter, and in addition thereto, it is unlawful for any person to willfully or negligently make or continue, or cause to be made or continued, any loud, unnecessary or unusual noise which disturbs the peace and quiet of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

B. The factors which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be limited to the following:

   1. The sound level of the objectionable noise;
   2. The sound level of the ambient noise;
   3. The proximity and timing of the noise in relation to residential sleeping facilities and normal sleeping hours;
   4. The nature and zoning of the area within which the noise emanates;
   5. The number of persons affected by the noise source;
   6. The time of day or night the noise occurs;
   7. The duration of the noise and its tonal or musical content;
   8. Whether the noise is continuous, recurrent or intermittent;
   9. Whether the noise is produced by a commercial or noncommercial activity.

(Ord. 777 § 1 (part), 1984: prior code § 5813)

Discussion: Mead & Hunts understands this section as intended to outline general characteristics of a land use's noise impacts that are of interest to the County in reviewing a project proposal. The specific criteria by which a proposal would be evaluated are contained in the separate sections that follow. As for the general noise characteristics of the proposed Palmaz helipad, they are described in the November 2014 *Helipad Report.*

8.16.060 - Interior noise standards.

A. Maximum Permissible Dwelling Interior Sound Levels. The interior noise standards for residential dwelling units generated by noise sources outside the dwelling unit, as presented in Table 8.16.060 shall apply, unless otherwise specifically indicated, within all such dwelling units.

Table 8.16.060
INTERIOR NOISE LIMITS

Noise Zone	Type of Land Use	Time Interval	Allowable Interior Noise Level (dBA)
All	Residential	10 p.m. — 7 a.m.	55
		7 a.m. — 10 p.m.	60

B. No person shall operate or cause to be operated within a dwelling unit any source of sound or allow the creation of any noise which causes the noise level, when measured inside a neighboring receiving dwelling unit, to exceed:

1. The noise standard as specified in Table 8.16.060 above for a cumulative period of more than five minutes in any hour; or
2. The noise standard plus five dB for a cumulative period of more than one minute in any hour; or
3. The noise standard plus ten dB or the maximum measured ambient, for any period of time.

(Ord. 777 § 1 (part), 1984: prior code § 5816)

Discussion: The cumulative noise contour produced by the FAA's INM (Figure 3 in the *Helipad Report*) shows that no residences are located within the 55 dB contour. Therefore, the helipad and noise generated from the operations of the helicopter pass the Interior Noise Limit test.

8.16.070 - Exterior noise limits.

A. Maximum Permissible Sound Levels by Receiving Land Use.

1. The noise standards for the various categories of land use identified by the noise control officer, as presented in Tables 8.16.060 and 8.16.070 shall, unless otherwise specifically indicated, apply to all such property within a designated zone.

2. No person shall operate, or cause to be operated, any source of sound at any location within the unincorporated area of the county, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed:

   a. The noise standard for that land use as specified in Table 8.16.070 for a cumulative period of more than thirty minutes in any hour; or

   b. The noise standard plus five dB for a cumulative period of more than fifteen minutes in any hour; or

   c. The noise standard plus ten dB for a cumulative period of more than five minutes in any hour; or

   d. The noise standard plus fifteen dB for a cumulative period of more than one minute in any hour;

   e. The noise standard plus twenty dB or the maximum measured ambient level, for any period of time.

3. If the measured ambient noise level differs from that permissible within any of the first four noise limit categories above, the allowable noise exposure standard shall be the ambient noise level.

4. If the measurement location is on a boundary between two different zones, the sound level limit applicable to the quieter noise zone shall apply.

5. Wherever possible, the ambient noise level shall be measured at the same location along the property line utilized in subsection (A)(2) with the alleged offending noise source inoperative. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period sufficient to measure the ambient noise level, the ambient noise level may be determined by traveling away from the noise source to a point where a steady-state decibel reading is achieved. If this test is not possible, the noise level measured while the source is in operation shall be compared directly to the noise level standards.

B. Correction for Character of Sound. In the event the alleged offensive noise, as judged by the noise control officer, contains a steady, audible tone such as a whine, screech or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech, the standard limits set forth in Tables 8.16.060 and 8.16.070 shall be reduced by five dB, but not lower than forty-five.

Table 8.16.070
EXTERIOR NOISE LIMITS
(Levels not to be exceeded more than 30 minutes in any hour)

Receiving Land Use Category	Time Period	Noise Level (dBA) Noise Zone Classification[1]		
		Rural	Suburban	Urban
Residential	10 p.m. — 7 a.m.	45	45	50
Single and double	7 a.m. — 10 p.m.	50	55	60
Residential multiple and country	10 p.m. — 7 a.m.	45	50	55
Commercial	7 a.m. — 10 p.m.	50	55	60
	10 p.m. — 7 a.m.		60	
	7 a.m. — 10 p.m.		65	
Industrial, including wineries	Anytime	75		

Discussion: The standards applicable to the proposed helipad, which is in a rural setting, are 45 dBA at night and 50 dBA during the day and evening, as measured at the property line. However, given the infrequent number of anticipated operations and the brief duration of the noise events, the provision of Paragraph 2.e can be applied, thus increasing these limits by 20 dB. The cumulative noise contour produced by the FAA's INM (Figure 3 in the *Helipad Report*) shows that the 65 dB noise contour remain entirely within the property line. Therefore, the helipad and noise generated from the operations of the helicopter pass the Exterior Noise Limit test.

8.16.080 - Specific types of noise prohibited.

A. Noise Disturbances Prohibited. No person shall unnecessarily make, continue or cause to be made or continued any noise disturbance.

B. Specific Prohibitions. The following acts, and the causing or permitting thereof, are declared to be in violation of this chapter:

C. Powered Motor Vehicles. Operating or permitting the operation of powered model vehicles so as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of subsection (A) of Section 8.16.060 or subsection (A) of Section 8.16.070

Discussion: For the reasons of federal preemption, it is doubtful that this section can be applied to the helipad. Nevertheless, a discussion of the relevant data is included in the preceding two sections.

VOLUNTARY NOISE MITIGATION

The *Helipad Report* found that operations to and from the proposed Palmaz helipad would not create a significant noise impact on neighboring land use, as defined by the FAA and supplemented through state land use criteria. The full analysis can be found in the *Helipad Report* and is summarized below.

Generally, the FAA regards a maximum day-night average sound level of 65 dB as incompatible with residential land use. The Report found that the 65 decibel CNEL contour does not extend beyond property owned by Palmaz. Therefore, the helipad passes the federal test for noise impacts.

Additionally, the helipad meets applicable Napa County Airport Land Use Commission (ALUC) and California handbook criteria for noise impacts. The ALUC's purpose is to protect the airport from incompatible land uses, as opposed to mitigating noise through limiting airport operations. The CNEL contours produced show no significant impacts to nearby residences. The 60 and 65 CNEL contours do not leave Palmaz property. The 55 CNEL contour is mostly located on Palmaz property. No dwelling unit is located within the 55 CNEL contour.

In addition to operations not creating a significant impact based on FAA standards and state land use criteria, Palmaz has indicated he will perform noise abatement procedures:

- Palmaz will utilize widely recognized Helicopter Association International guidance on how to fly to minimize operational noise as long as is safe and reasonable.
- Proposed flight paths will concentrate the greatest noise within the confines of Palmaz property and avoid low altitude flight over neighboring property. The preferred flight tracks (arrivals from the west and departures to the west) would keep the helicopter over Palmaz property to the west of the helipad. When departing to or arriving from the west, the helicopter will be greater than 1,000 feet above ground level over the Napa Valley Country Club.
- Palmaz typically will travel between 1,000 and 1,500 feet above ground level. Most helicopters travel at 1,000 feet above ground level. This higher altitude will result in less of a noise impact.
- Palmaz will typically approach the helipad at a steeper angle of decent than what is typically seen. These procedures reduce noise impacts and are in accordance with HAI fly quietly procedures. The same is true of departures – Palmaz will depart at a steeper angle than what is typical. This practice also reduces noise impacts.

The FAA does recommend that noise abatement procedures be performed when safe and efficient to do so to help minimize noise impacts on nearby land uses. With these practices, Palmaz hopes to eliminate any noise impacts to nearby residences from helicopter operations.

ADDENDUM NO. 2

ANTICIPATED ACTIVITY LEVELS

Napa County provided additional comments in a letter dated January 21, 2015. The County requested this report "address any safety and noise issues related to schools that fall under or within close proximity to the proposed flight paths." Services outline in *Addendum No. 2* address the County's concerns.

Five schools were found to be "under or within close proximity to the proposed flight paths." The schools are listed in the table below and illustrated on **Figure A-1.**

School	Distance From Proposed Helipad	Direction From Proposed Helipad
Vichy Elementary	1.8 (statute miles)	Northwest
Mt George Elementary	2.3 sm	South-southwest
Silverado Middle School	2.8 sm	Southwest
Alta Heights Magnet School	3.0 sm	Southwest
Oxbow School	3.3 sm	Southwest

- Each of these schools is outside the range of noise contours that are illustrated in Figure 3 of the original report. The 60 CNEL contour does not leave Palmaz property.
- The helicopter using the proposed helipad will not be ascending or descending near any schools.
- It is expected the helicopter using the Palmaz helipad will be at cruising altitude of 1,000 feet above ground level when flying above or near any schools. The altitude of 1,000 feet above ground level is considered the normal cruising altitude for helicopters. Other helicopters that may overfly these schools would also be at this altitude.
- The Vichy Elementary School is located closest to the proposed helipad, and is not under a projected approach or departure path.

Based on these findings, the proposed helipad and associated activity will have no significant effect on noise or safety at schools within proximity to the proposed flight paths.

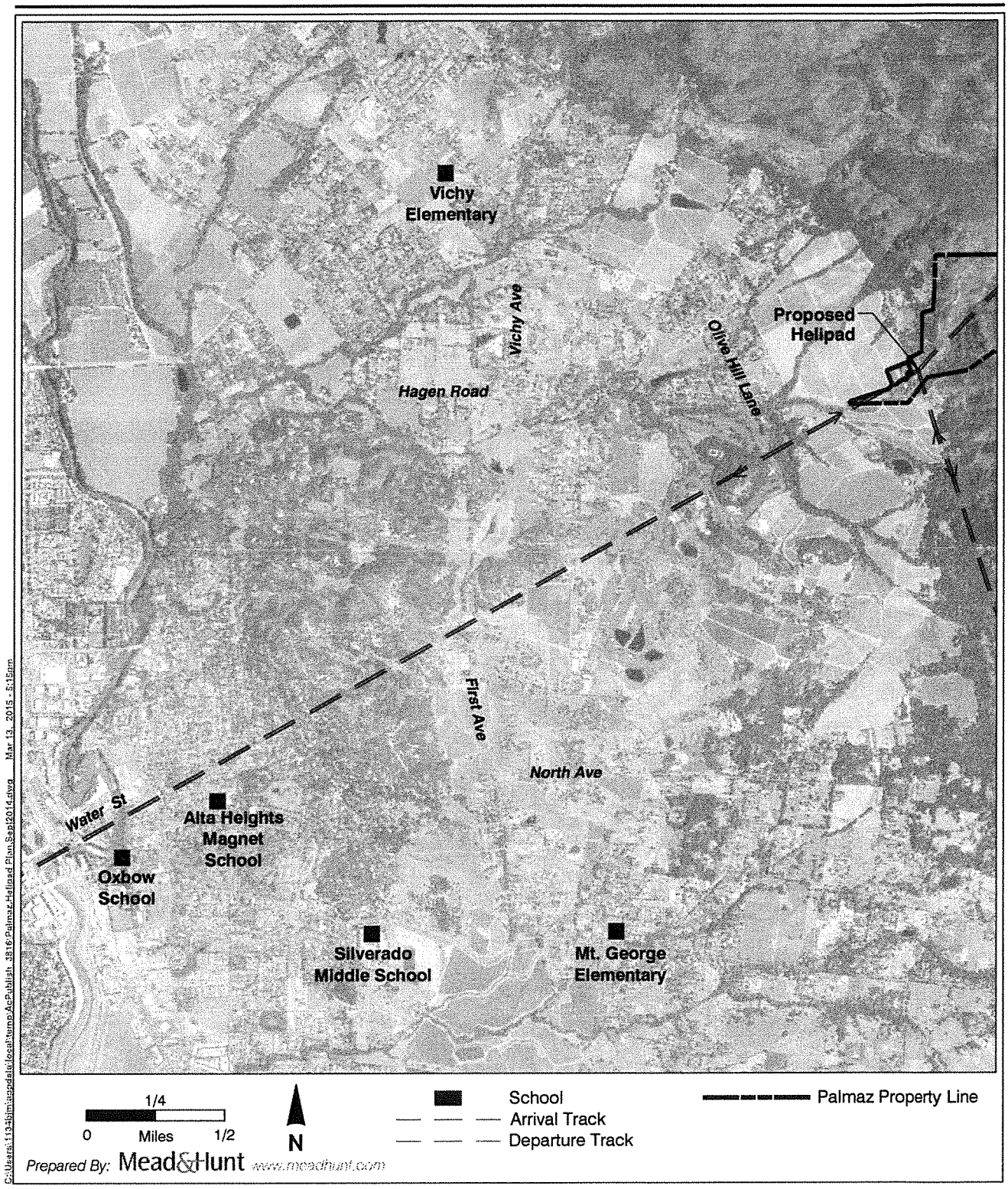


Figure A-1

Schools Near Approach Path and Helipad

Palmaz Private Helipad