5.0 IMPACTS

5.1 Significance Thresholds

Section 1.5 above presents the overall County significance thresholds, this section is a brief summary and explanation of those pertinent to the Project analysis.

5.1.1 Construction Noise Impact Significance Thresholds

Construction noise impacts would be significant if the Project would exceed the following County Code requirement:

- As stated in Section 36.409 of the San Diego County Code: Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an 8-hour period, between 7:00 a.m. and 7:00 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

5.1.2 Construction Vibration Impact Significance Thresholds

Ground-borne vibration during the construction process and would be considered significant if it exceeds the severe criteria, as specified by Caltrans (2004), for residences of 0.4 inches/sec peak particle velocity (PPV).

5.1.3 Operational Noise Impact Significance Thresholds

Operational noise impacts are typically associated with two aspects of a proposed project. First, noise generated by activities associated with a proposed project including transportation and stationary sources could adversely impact surrounding land uses. In this scenario, the project would function as a "noise generator." Second, noise from surrounding land uses and transportation sources could adversely affect occupants of a proposed project. The most common example is traffic noise from surrounding roadways. In this scenario, the project would function as a "noise receptor."

Transportation Noise

i. A significant noise impact would occur if the exterior noise level would exceed 60 CNEL for single family residential uses or 65 CNEL for multi-family or mixed use.[3]

ii. A significant cumulative impact would occur if the Project would contribute to a cumulative scenario that would result in the exposure of any on- or off-site, existing or reasonably foreseeable NSLU, to: (1) an increase of 10 CNEL over pre-existing noise levels of less than 50 CNEL resulting in a combined exterior noise level of 60 CNEL of

[3] County General Plan 2011

greater, (2) an increase of 3 CNEL in existing plus project plus cumulative conditions if that total is above 60 CNEL, or (3) interior noise in excess of 45 CNEL. A "cumulatively considerable" Project contribution to an identified significant cumulative noise impact would occur if the Project would contribute more than a 1-dB increase.[4]

Stationary Sources

Noise generated by the Project would be significant if the Project would generate noise that would result in noise levels at a common property line with a single-family residential use that would exceed the following one-hour average exterior noise levels: 50 dBA from 7:00 a.m. to 10:00 p.m.; 45 dBA from 10:00 p.m. to 7:00 a.m.

5.2 Construction Noise Impacts

This section addresses potential construction-period noise impacts on human receptors. Noise impacts to sensitive biological species are addressed in the Project Biological Technical Report.

5.2.1 Construction Noise Analysis Assumptions

Construction of the Project would generate elevated noise levels that may disrupt nearby noise sensitive receptors. The magnitude of the impact would depend on the type of construction activity, equipment, duration of each construction phase, distance between the noise source and receiver, and any intervening structures. Construction activities would be divided into approximately nine phases; these phases could include some overlap depending on location, timing, and project phasing. The construction phases would likely include the following:

1. Rough Grading
   This phase typically consists of the use of heavy equipment, potentially including large dozers, excavators, scrapers, rock drills, blasting, compactors, water trucks, and a variety of smaller equipment to create the basic building, road, and outdoor elevations.

2. Foundation Excavation
   This phase typically involves the use of medium-sized equipment, which may include a small dozer, backhoe or excavator, compactor, water truck, and a variety of smaller equipment to create the finished pad elevation and foundation excavations.

3. Utilities Excavation
   This phase typically includes the use of excavator(s), backhoe(s) and/or trencher(s) throughout the site to construct trenches for underground utilities.

4. Foundation Pour
   This phase typically involves the creation of individual building pads; concrete is delivered from an off-site mixing facility, and is pumped throughout the foundation area with a reed boom truck to create a finished building pad.

[4] Report Format and Content Requirements 2009

5. Building Construction
   This phase typically includes the manual construction of the building framing and exterior with the use of forklifts, light mobile cranes or sky lifts, as well as a variety of specific tools including welders, metal shears, and light hand tools.

6. Building Interior and HVAC
   This phase typically consists of the rough framing and finishing of the building interior with all utilities, power, and HVAC systems including rooftop equipment.

7. Finish Grading
   This phase typically includes the preparation of the site for paving and landscaping using a grader, water truck, compactor and sometimes a small dozer and/or skidsteer.

8. Paving
   This phase typically includes the spreading of concrete or blacktop, delivered to the site from an off-site mixing facility, over the planned hard surface areas; it is then either compacted or allowed to cure.

9. Landscaping
   This phase typically involves the installation of planters, watering systems, exterior lighting, fencing, walls, gating and vegetation using a skidsteer, mini excavator, trencher, and a backhoe.

5.2.2 Construction Noise Impacts and Mitigation

On-site Construction

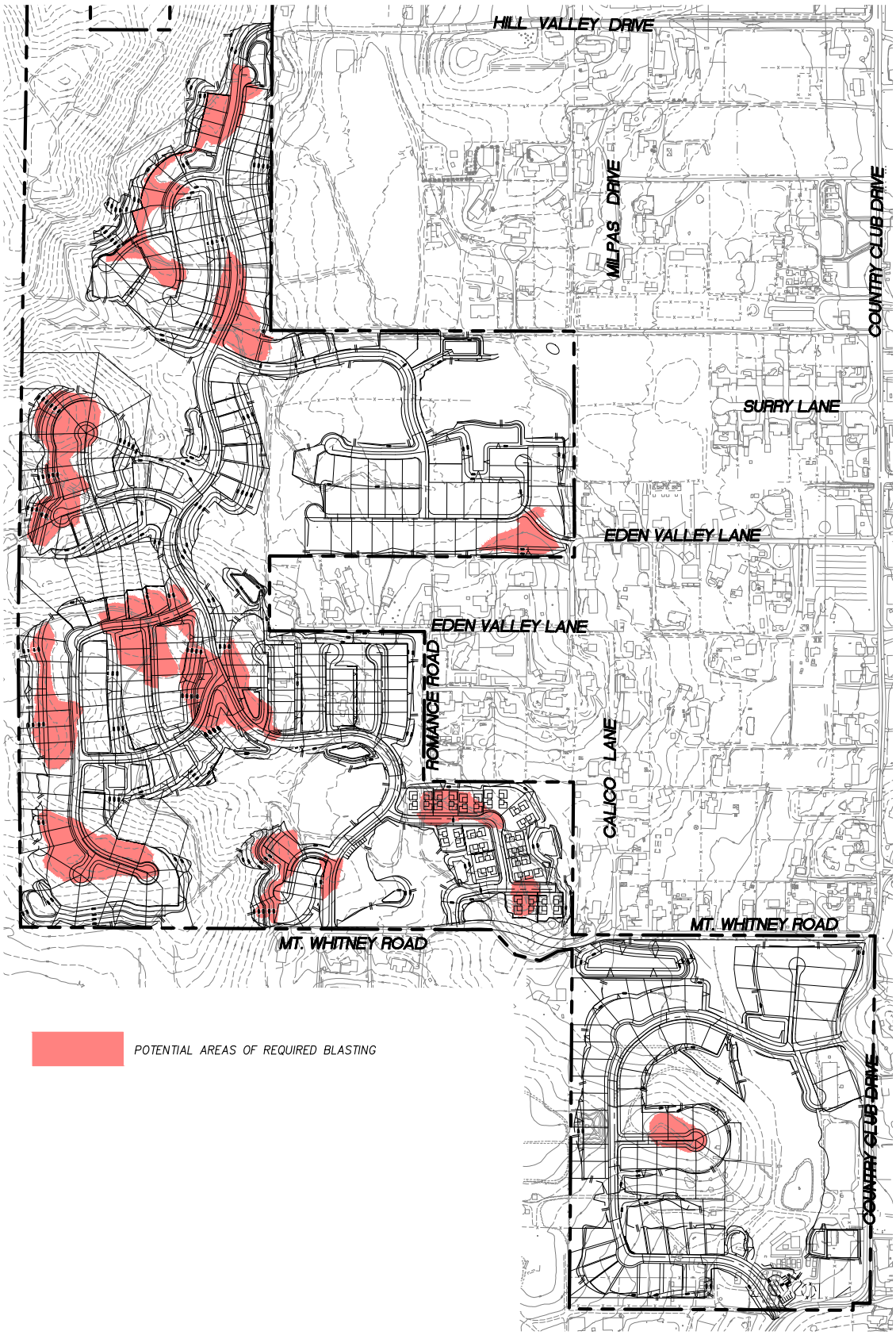
This noise impact analysis focuses on the mass grading, which is typically significantly louder than other activities and has the greatest potential to create impacts to off-site NSLUs; the Project would require extensive material excavation and/or fill. The Project's geotechnical report notes that the site is underplayed with granitic rock formations, and that portions of the site may experience difficult ripping; additionally, other areas are anticipated to require blasting after the rippable mantle is removed (GEOCON, 2012).

Figure 3 shows the areas where extensive cut/fill with likely blasting would occur. The map shows numerous areas throughout the Project area with potential ripping, drilling, and blasting.

Hard Rock Handling

Impacts

This portion of the analysis will review the requirements and planning for the ripping of materials, the drilling of non-rippable materials, and the breaking of oversize materials via the use of a large dozer.



Source: Fuscoe Engineering 2014

Rock Cut Map Areas Potentially Requiring Blasting

VALIANO

Figure 3

HELIX Environmental Planning

Data for construction equipment noise planning is extracted from three sources: The Federal Highway Administration (FHWA) Construction Noise Database, The Department of Food and Rural Affairs (DEFRA) Construction Noise Database (England), and in-situ construction site noise measurements. Table 5-1 provides the octave spectrum of the equipment used in this analysis.

Table 5-1
CONSTRUCTION EQUIPMENT NOISE LEVELS

Source	Noise Levels in decibels[1] (dB) Measured at Octave Frequencies in Hertz (Hz)									Overall Noise Level in A-weighted Scale (dBA)
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1,000 Hz	2,000 Hz	4,000 Hz	8,000 Hz	
Breaker	119.5	113.5	118.5	116.5	118.5	122.5	119.5	118.5	116.5	126.7
Excavator	121.0	126.0	119.0	118.0	118.0	114.0	112.0	109.0	104.0	120.0
Dozer	130.0	125.5	114.5	116.5	113.5	112.5	118.5	102.5	96.5	121.2

[1] Based on Sound Power Levels (S_{WL})

Typically a D8, D9 or similar size dozer may be used for ripping the harder subsurface materials, as well as removing large boulders during the site rough grading.

Analysis will focus on areas shown in red highlight in Figure 3 as most likely to require heavy ripping with a focus on areas within an impact to existing NSLUs. Figure 4 shows one of these areas, based on a D9 moving at 1.25 mph at the highest on-site elevations, making nine passes at varying distances from the southwestern property line. The highest impact level at the adjacent property, east of the on-site areas which might require ripping, is 83.5 dBA L_{EQ} which exceeds the County's 8-hour noise level limits if operations are longer than 1.25 hours in duration. Therefore, impacts from ripping would be potentially significant. (**Impact Noi-1)**

A hydraulically operated impact hammer attached to a tracked excavator is commonly called a breaker. These units are used in site preparation to reduce large granitic materials to a size where they can either be transported off site, buried on site for fill, or used as rip rap or landscaping materials.

Breakers create an impulsive noise. The County's noise limit for impulsive noise is 82 dBA L_{MAX}. If a breaker operates within 300 feet of the nearest property line of an occupied residence, the breaker noise may exceed the County noise level limit, and impacts would be potentially significant. (**Impact Noi-2)**

Mitigation

M-Noi-1 **Ripping Noise Barrier:** If ripping, drilling, or excavation is required within 180 feet of a residentially occupied off-site or on-site property line, a 12-foot-high barrier shall be erected along a length of the property line. This barrier shall be of sufficient length to block the line of sight between the occupied property and any ripping operations within 180 feet of the property. Additionally, the barriers shall extend at least 10 feet beyond the horizontal line of sight in each direction. Figure 5 shows the 12-foot barrier noise mitigation noise contours. The final barrier must break the line of sight between the top of the equipment exhaust and the residential receiver at all visible locations, and when taking into consideration all topography in relevant areas.

If new information is provided to prove and certify that the construction equipment and noise measures being used is different prior to grading plan approval, then then a new construction noise analysis may be reviewed to the satisfaction of the [PDS, PCC]. The supplemental noise analysis shall be prepared by a County Approved Noise Consultant and the report shall comply with the Noise Report Format and Content Requirements. Any proposed alternative methods, or the reduction or modification of measures may be approved if the construction activities are reduced to 75 dB and below at the occupied property line.

M-Noi-2 **Breaker Equipment Operation Limit:** If a breaker is required on-site, then it shall not be used within 300 feet of property lines of occupied residences.

Blasting

A full blasting analysis cannot be done until after the site is cleared of all surface material including any rippable material to expose the specific type of material to be blasted, the extent of the area of blasting, and the required blasting charge type is known. This evaluation is based on a reasonable minimum blast size and its closest allowable off-site residential distance based on available standards. As the blast charge size is increased, so is the allowable distance to prevent residential structural damage.

Definitions and Assumptions

Blasting has three separate types of potential impacts: flyrock, vibration, and airblast.

Flyrock: Flyrock is debris (smaller and potentially larger chunks of rock) ejected from the blast. Outside the immediate area of the blast itself, flyrock is potentially the most dangerous portion of blasting; it has the ability to damage structures, and maim or kill humans or other animals at great distances from the blast.

Flyrock cannot be allowed at this site, beyond the direct area of the blast, under any circumstances. This analysis assumes that proper blast planning would be used, that all flyrock