

DD&E

# Environmental Impact Analysis

## Noise Assessment

### INTRODUCTION

This section assess the potential impacts caused by both noise and groundborne vibration activities resulting from the implementation of the Melon Property Multi-Family Residential Project. The proposed project would include development of Multi-Family dwelling units on land owned by Melon Properties, LLC. Additional development would include a residential community designated area along with an appropriately sized water retention basin, as discussed below. This assessment strictly addresses the construction activities needed to implement the Proposed Project. The City of Holtville has allowed the exclusion of operational noise levels from this report due to the fact that operational noise levels for this type of proposed project are normally low and have less than significant effects on nearby residential sites. Finally, mitigation measures intended to lessen impacts caused by construction activities are proposed.

Information used to prepare this construction noise assessment was obtained from the City of Holtville's General Plan Noise Element, the City of Holtville Zoning Ordinance and Project specific information.

DD&E has conducted this construction noise assessment for Melon Properties, LLC (client) in order to assess the proposed construction noise levels that will occur at APNs: 045-390-067,-066, -065, -044, -006, located North/East of the intersection between Melon Ave. /9<sup>th</sup> Street in the City of Holtville, CA. To complete the environmental documentation for this proposed project, noise and vibration levels during construction phasing have been addressed. Due to the proximity to rural residential/low density residential, this report aims to be as accurate as possible in order to reduce any negative impacts caused by construction activities.

### EXISTING CONDITIONS

Currently, the project site lies on five (5) vacant parcels of land that were once agricultural fields. In recent years, development around the proposed project site has grown, comprising of small properties of rural residential/low density residential. Typically, non-developed parcels of land emit little to no noise disturbances until construction activities begin which is true in this case. As of early 2018, the noise level originating from the proposed project location is minimal.

### PROPOSED PROJECT

The proposed project will be comprised of 12 Multi-Family Building Units that will contain 168 total dwelling units. Within these 12 Multi-Family Building Units, 9 will be of Unit Type 1 and 3 will be of Unit Type 2. Located at the projects center will be a location for a .34 Residential Community Designated Area. Additionally, maintenance and laundry facility buildings will be located at the eastern portion of

the proposed project. There are a total of 16 proposed new building structures for the project. The proposed project would add an addition of 168 dwelling units to the City of Holtville current housing stock and thus improve the quality of life for those citizens of Holtville who choose to live in the new proposed development.

## **NOISE MEASUREMENT**

Both the County of Imperial and the City of Holtville both describe the standard unit of measurement of noise in decibels (dB). However, because the human ear is not equally sensitive to all frequencies, a rating scale has been used to relate noise to human sensitivity. This is called "A" weighting and the decibel level measured is called the A-weighted sound level, or dBA. As shown in **Table 1**, all construction equipment used for the proposed project are described in dBA.

## **CONSTRUCTION IMPACTS**

The impacts caused by construction activities represent a short-term impact on the severity of noise and vibration levels. Noise generated by construction activities, including trucks, graders, bulldozers, concrete mixers and portable generators can reach high levels. The majority of equipment used during construction activities reach between 75 to 101 dBA at a distance of 50 feet (please see **Table 1**). As the distances increase, the noise levels decrease, for example, at 200 feet the peak construction noise levels range from approximately 60 to 86 dBA. In order to understand the threshold of noise exposure allowed within the City of Holtville within different land uses please reference **Figure 1**. Additionally, vibration from the larger construction equipment has been shown in **Table 2**. Note that these noise and vibration levels are based upon worst-case conditions.

### ***Demolition***

Any demolition onsite would be accomplished by using a multitude of equipment including a backhoe to remove soil, gravel and other debris from around structures, hydraulic jack hammering to break concrete into pieces, and removing rubble including any reinforcing steel from the site. The soil will be disturbed but no significant disturbance will be caused outside of the property boundary or maintenance road unless unusual circumstances exist.

### ***Excavation***

Excavation is the process of moving earth, rock and other material with large equipment, equipment including large front-end loaders, bulldozers, backhoes, compactors, trenchers and skid steers. Excavation will be required for the proposed project in order for site preparation once the appropriate surveying has been done. Excavation for this proposed project would entail a contractor removing soil to the depth required for the new foundation and ensuring that the soil is firm through compaction tests. After the foundations are poured and footers/stem walls are in place, the contractors will backfill around the new foundation.

## ***Paving***

Once all appropriate surveys have been done and the site layout is determined, paving of the project site can commence. Paving of the project site will consist of proper preparation of the subgrade, establishing adequate drainage of the pavement structure, selection of the pavement mix and paving/compaction. The noise would occur from running the mixer, that would mix the pavement components and from the compaction/paving machinery.

## **CONSTRUCTION SCHEDULE**

Construction of the proposed 12 Multi-Family Building Units on the project site will occur once all entitlement, recordation of plans and fees are paid through the City of Holtville and the County of Imperial. Per the City of Holtville's Zoning Ordinance, "Construction work or related activity which is adjacent to or across a street or right-of-way from a residential use, except between the hours of 7:00 a.m. and 7:00 p.m. on weekdays, or between 8:00 a.m. and 7:00 p.m. on Saturday and Sunday. No such construction is permitted on federal holidays. Depending on climate conditions, the construction period for such development can range from 8- 12 months.

## **LIST OF EQUIPMENT**

- Compactor (rollers)
- Front Loaders
- Backhoes
- Tractors
- Scrapers, Graders
- Pavers
- Trucks
- Concrete Mixers
- Concrete pumps
- Cranes (movable)
- Cranes (derrick)
- Pumps
- Generators
- Compressors
- Jackhammers and Drills
- Vibrators
- Saws
- Bulldozer

## NOISE GENERAL LEVEL

**Table 1: Construction Equipment Noise Generation**

Equipment	Maximum Noise Level (approximate) dBA				
	50 ft	100 ft	200 ft	500 ft	1,000 ft
Compactor	83	75	68	58	51
Front Loader	79	71	64	54	47
Backhoe	85	78	70	60	53
Tractor	80	73	65	55	48
Scraper, Grader	85,88	77, 80	70,73	60,63	52,55
Paver	89	81	74	64	56
Truck	75	67	60	50	43
Concrete Mixer	85	77	70	60	53
Concrete Pump	82	74	67	57	50
Crane (Movable)	83	75	68	58	51
Pump	76	68	61	51	44
Generator	78	70	63	53	45
Compressor	80	73	65	55	48
Jack Hammer	88	80	73	63	55
Vibrator	76	68	61	51	44
Saw	78	70	63	53	46
Bulldozer	85	78	70	60	53

$L_{max} = \text{Construction } L_{max} \text{ at 50 feet} - 25 * \text{Log} (D/D_0)$

## VIBRATION GENERATION LEVELS

**Table 2: Estimated Vibration Levels**

Equipment	PPV at 25 feet
Loaded Truck	0.076
Large Bulldozer	0.089
Small Bulldozer	0.003

Source: FTA 2006

Figure 1: City of Holtville’s Noise/Land Use Compatibility Matrix

Safety Element

TABLE N-1  
NOISE/LAND USE COMPATIBILITY MATRIX

Land Use	Community Noise Exposure (Ldn or CNEL)						
	50	55	60	65	70	75	80+
Residential	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow
	Green	Green	Green	Green	Green	Red	Red
Transient Lodging – Motel, Hotel	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow
	Green	Green	Green	Green	Green	Red	Red
Schools, Libraries, Churches, Hospitals, Nursing Homes	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow
	Green	Green	Green	Green	Green	Red	Red
Auditoriums, Concert Halls, Amphitheaters	Green	Green	Green	Green	Green	Green	Green
	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
Sports Arena, Outdoor Spectator Sports	Green	Green	Green	Green	Green	Green	Green
	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
Playgrounds, Parks	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Green	Green	Green	Yellow	Yellow
Golf Course, Riding Stables, Water Recreation, Cemeteries	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Green	Green	Green	Yellow	Yellow
Office Buildings, Business Commercial, and Professional	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow
	Green	Green	Green	Green	Green	Yellow	Yellow
Industrial, Manufacturing, Utilities, Agriculture	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Green	Green	Yellow	Yellow	Yellow

Source: Modified by CBA from 1998 State of California General Plan Guidelines



**ZONE A – Normally Acceptable:** Specified land use is satisfactory, based upon the assumption that any buildings involved meet conventional Title 24 construction standards. No special noise insulation requirements.



**ZONE B – Conditionally Acceptable:** New construction or development shall be undertaken only after a detailed noise analysis is made and noise reduction measures are identified and included in the project design.



**ZONE C- Normally Unacceptable:** New construction or development is discouraged. If new construction is proposed, a detailed analysis is required, noise reduction measures must be identified, and noise insulation feature included in the design.



**ZONE D – Clearly Unacceptable:** New construction or development clearly should not be undertaken

## **SIGNIFICANCE OF IMPACTS PRIOR TO MITIGATION**

### ***Permanent Ambient Noise***

As previously stated, the Operational noise for the proposed project, which would potentially affect the permanent ambient noise levels, would not exceed the County of Imperial's and the City of Holtville's Guidelines for Determining Significance as it would not increase ambient levels. Therefore, impacts would be less than significant.

### ***Temporary Ambient Noise***

The average hourly noise level would be approximately 80 dBA at 50 feet from the equipment or 73 dBA at 100 feet, levels of noise nuisance decreases substantially past 50 feet. Nearest sensitive respecters to construction includes rural residential/low density residential at approximately 80-100 feet. Per the City of Holtville's General Plan (**Figure 1**), noise levels above 60 dBA require mitigation measures. Therefore, since these noise levels would not be compliant with the County's construction noise criterion, mitigation measures have been proposed (Impact 1).

### ***Temporary Ground-Borne Vibration***

Operational activities associated with the proposed project would not produce ground-borne vibrations; therefore, no impact would occur. During construction, vibration from earth moving activities/equipment shown in **Table 2** would be the most sever. Per the City of Holtville's Municipal Code, "No use except a temporary construction operation shall be permitted which generates inherent and recurrent ground vibration perceptibly, without instruments, at the boundary of the lot on which the use is located". Only during construction of the proposed project would vibration be perceived, which is allowed under the City of Holtville's Municipal Code.

## **MIGITATION**

### ***Noise Impact 1:***

To ensure that proposed project-generated noise from construction of the multi-family facility comply with both City of Holtville's Zoning Ordinance and General Plan:

1. Prior to earth moving and construction activities, the project applicant shall install Noise attenuating barriers/acoustic shields along the perimeter of the project site. Depending on the height and material, these noise attenuating barriers/acoustic shields can be very effective. To function well, the barrier must prevent the "line-of-sight" between the noise source and the receiver. Although the aesthetic effect of barriers on the surrounding neighborhood would be negative, they would only be installed temporarily, in order to provide for noise muffling purposes and would be removed once construction activities ceased.

2. Equipment Shields- utilizing shields that are physically attached to the particular piece of equipment are effective, particularly for stationary equipment. This would entail encapsulating the piece of equipment in metal containers, i.e. Equipment Shields.

3. Stationary Equipment- Whenever possible, positioning stationary equipment such as generators and compressors as far away as possible from sensitive areas should be considered. Additionally, temporary barriers surrounding the individual equipment can soften their noise levels. These techniques can significantly reduce noise levels and, in many cases, are relatively inexpensive. These barriers can typically be constructed on the work site from common construction building material, such as plywood.

4. Time Periods and Duration- Time constraints and the use of equipment during certain time periods can be effective in reducing the impacts caused during sensitive time periods. In addition, operating noisy equipment only when needed and switching off such equipment when not in use can minimize noise impacts. Furthermore, if project applicant closely coordinates with neighboring residents to understand their daily schedules, the project applicant will have a greater understanding of when sensitivity is highest and will be able to avoid greater disturbance.

5. Selection of Equipment- Utilizing new pieces of equipment is generally quieter than old equipment for many reasons, including technology advancements and the lack of worn, loose, or damaged components. Requiring construction equipment to be no older than 10 years old will allow for a quieter work environment.

## **CONCLUSION**

### ***Operational Noise***

As stated previously, noise generated during operations of the Proposed Project would result in a less than significant impact at the property boundary lines. Project applicant has received confirmation from the City of Holtville that Operational Noise would not need to be addressed within this Noise Assessment.

### ***Construction Noise***

During construction of the Proposed Project, construction activities, such as earthmoving activities, would result in increased noise levels; however, these noise levels would be reduced to less than significant once mitigation measures are in place.