

NCBC + Special Areas Joint Land Use Study Implementation

Woolmarket Range Mitigation Plan



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I. Introduction

The Naval Construction Battalion Center Gulfport and Special Areas Joint Land Use Study (JLUS), adopted in August 2017, was created in order to respond to the growth surrounding the Naval Construction Battalion Center and associated areas that the Installation uses within the neighboring counties. The JLUS provides strategies and tools to reduce conflict between a military installation and the surrounding communities to ensure the continued mission of the military installation. This Study included a recommendation that a Noise and Safety Zones Mitigation Plan to guide appropriate land uses near Woolmarket Range be adopted.

Woolmarket Range is a 2,483-acre facility located within Harrison County and the Desoto National Forest. The majority of the land around Woolmarket Range is conservation land is not developed. A residential subdivision along with county facilities and a school is located south of the Installation, across Highway 67. To the southwest and directly adjacent to the Small Arms Range is a private gun club. The current use patterns of conservation, public facilities, low and medium density residential, and commercial are predominately compatible with the training exercises and activities taking place on the base. The majority of off-site impacts generated by the installation are noise from small arms ranges and Counter-Improvised Explosive Device training. In addition, the neighboring private gun club allows the firing of larger caliber weapons and could generate more noise than the Small Arms Range. Although there are no specific land uses that could be identified that would be considered detrimental to the installation, there are compatibility concerns with the uses identified above that should be considered with planning for future growth.

Although geographically separate from NCBC Gulfport, it is responsible for Woolmarket Range's support and maintenance. Please see Figure 1 for the location of Woolmarket Range.

II. Safety and Noise Zone Requirements

Noise Contours

Noise is generally described as unwanted sound. Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Sound can also be sensed by sight and touch – when it vibrates buildings and other objects. Unwanted sound can be based on objective effects (such as hearing loss and speech interruptions) or subjective judgments (such as noise complaints and annoyance).

Noise is measured using several metrics that reflect different noise characteristics. There are differences in continuous (e.g., aircraft flying) versus impulsive (e.g., weapons firing) types of noise, variations in frequency, and duration of noise exposure. Duration of noise exposure also dictates how a person perceives noise; a relatively long steady noise, like a train, aircraft passing, or traffic, “feels” different than a rapid loud gunshot-type noise. Peak 15 sound is the instantaneous, unweighted maximum value reached by the sound pressure produced by small and large caliber weapons. Peak measures the

impulsive sounds generated by small and large munitions, explosions, and sonic booms. It represents a single event where the maximum noise level is likely to be exceeded 15% of the time.

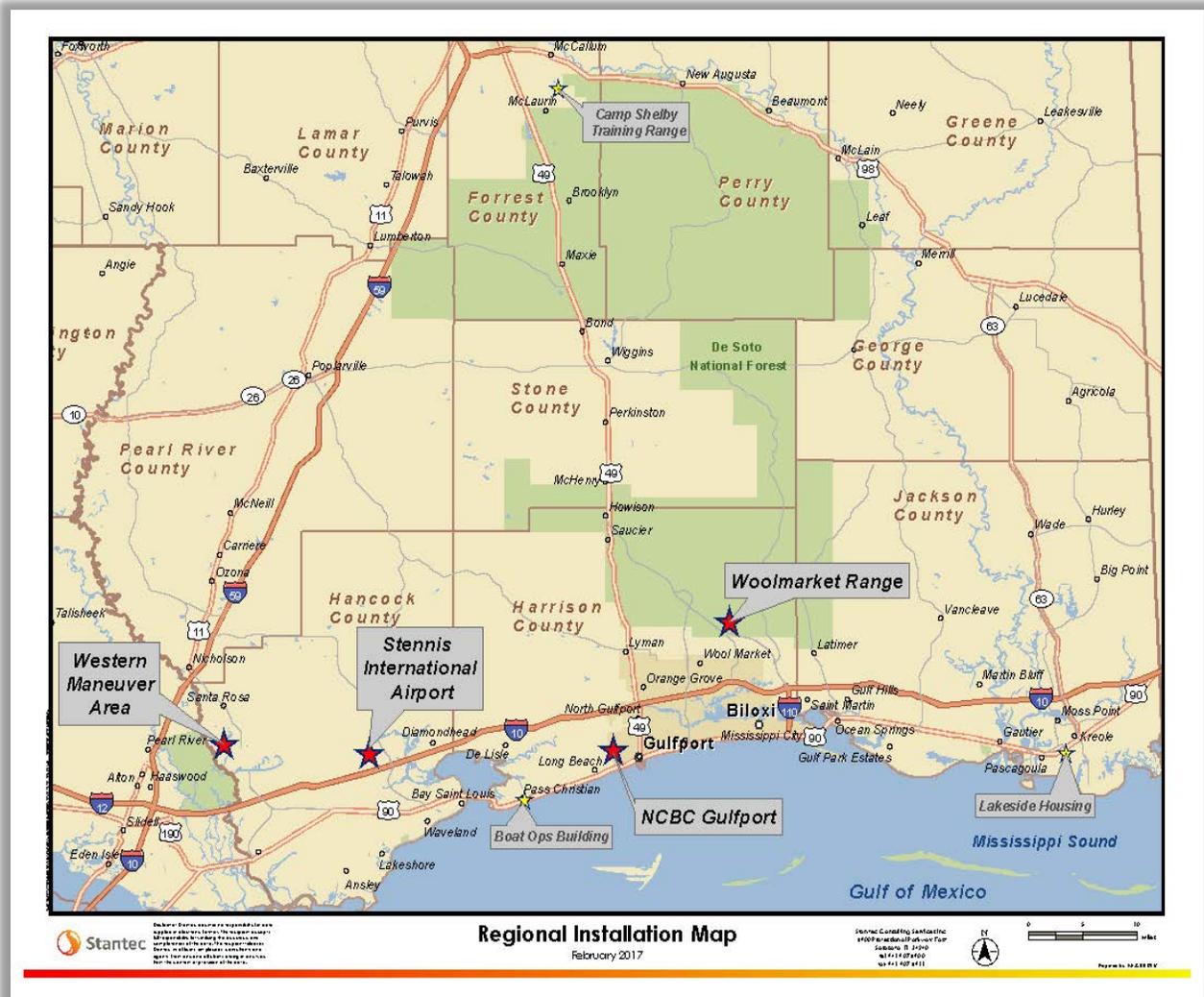


Figure 1: Woolmarket Range Location Map

The threshold of human hearing is approximately 0 decibels (dB) and human speech has a sound level of approximately 60 dB. Sound levels above 120 dB are typically when discomfort begins in the human ear. Sound levels between 130 to 140 dB and above are felt as pain and may cause permanent damage if the noise is sustained.

When measuring sound, the levels are often filtered (i.e. frequency weighted) to accommodate how the human ear functions. This process is known as "A-weighting." For the AICUZ, noise zones are divided into four categories, the lowest of which experiences noise at a 65 dB Day-Night Average A-Weighted Sound Level (DNL). Some of the area experiencing the 65 dB DNL is located off of the of the Range; a large portion of the 87 dB Peak 15 and 115 dB Peak 15 noise contours are located off of the Range. Please see Figures 3 and 4 for the Woolmarket Range noise contours.

In general, DoD recommends that noise sensitive uses (e.g., houses, churches, amphitheatres, etc.) be placed outside the high noise zones. These DoD recommendations are intended to serve as guidelines; local governments are responsible for regulating the land use within these areas.

The Range is located within the growing community of Woolmarket. Although much of the development came after the establishment of the Range, the residents and visitors to the area are not always aware of the training that takes place and the sounds emanating because of it. Noise is typically generated from three small arms bays and a counter-IED training area. Other non-routine training events have also occurred creating noise for nearby residents. A Small Arms Range Noise Assessment Model (SARNAM) was conducted to identify how far the noise from the range reached into the community at unwanted levels. The DNL noise contours for the range remain primarily within the confines of Woolmarket Range. The Peak noise contours, however, can be



Figure 2: Noise Level Chart

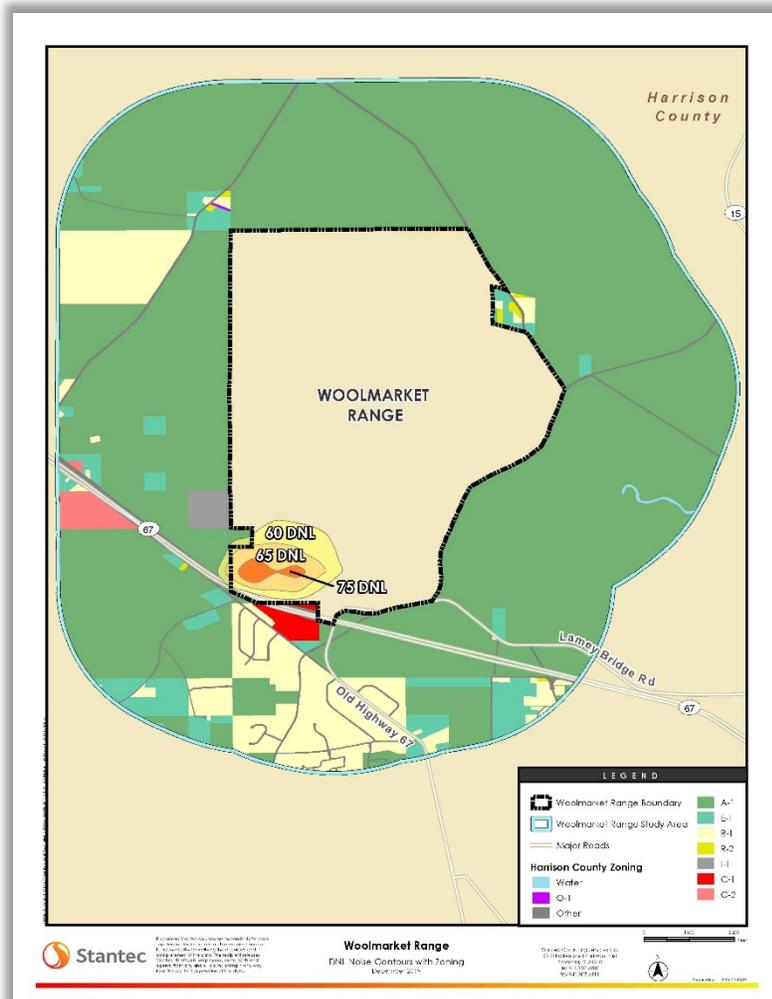


Figure 3: Woolmarket Range DNL Noise Contours

heard outside of the range. The 87db Peak 15 extends the farthest into the community – west and south of the range. The contours cover A-1 General Agriculture, C-1 Neighborhood Commercial, R-1 Low Density Residential, and E-1 Very Low-Density Residential Districts as identified on the Harrison County Zoning Map. The 115db Peak 15 from the Joint Improvised Explosive Defeat

Organization (JIEDDO) course also extends southward out of the range and into the A-1 General Agriculture, C-1 Neighborhood Commercial, and R-1 Low Density Residential zoning districts.

In addition to the noise emanating from the Range and JIEDDO course, adjacent to the facility is the Coast Rifle and Pistol Club Range. It is a private range that is open 24 hours a day, seven days per week. The private range does not conduct noise studies. Because the two SAR ranges are in such close proximity, when a noise complaint is submitted it is difficult to determine which small arms range activity generated the complaint.

Natural tree buffers were existing adjacent to Highway 67 for many years, some believe the trees reduced the effects of the range on the neighborhoods. In the recent past, the buffers were removed for the widening of Highway 67 and the installation of a US Forestry Service weather station.

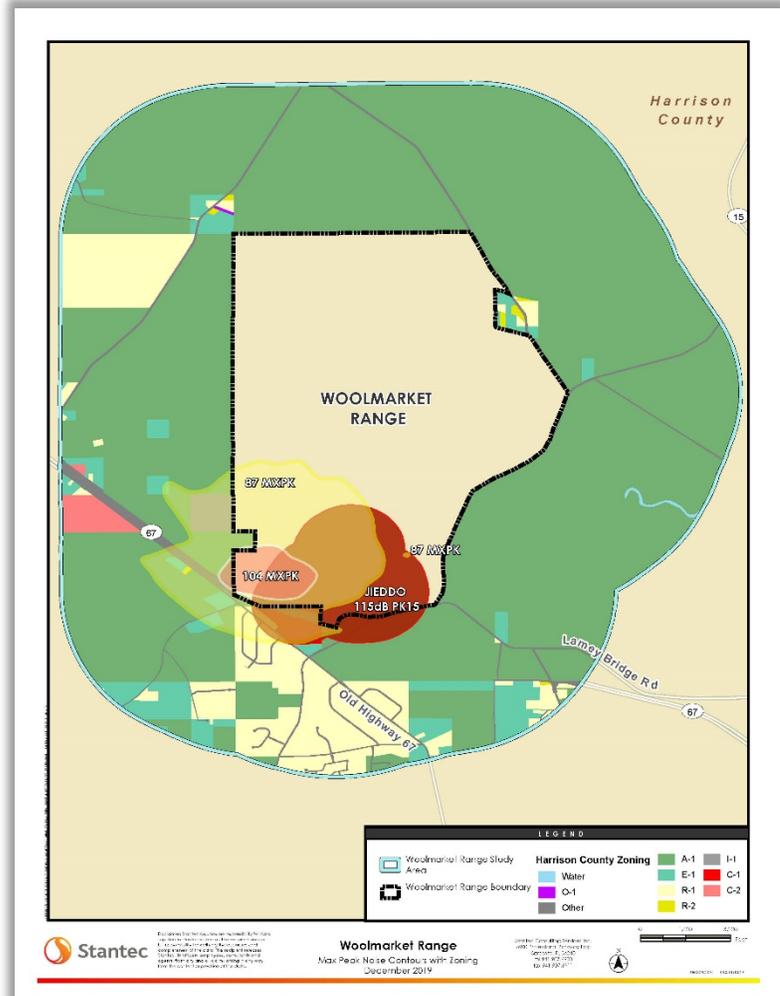


Figure 4: Woolmarket Range Peak 15 Noise Contours

Through stakeholder meetings, site visits, and public workshops, there has been a significant amount of discussion regarding the noise emanating from the Range. However, there have been no official reports filed with the Harrison County Sheriff’s Office and only one complaint received by the Range. Instead of following traditional routes of complaints, residents often contact their Harrison County Supervisor to notify them of the problem. This course of action doesn’t provide official documentation that can be tracked.

There are four noise contours that extends outside of the Woolmarket Range property boundary and consist of the 87 to 104 dB Peak Noise Contour and the 115 to 130 dB Peak Noise Contour as defined in the 2017 Range Compatible Use Zones Study for the Naval Construction Battalion Center Gulfport and depicted on Figure 4. GIS indicates that there are 302.81 acres within the 87dB Peak 15 noise zone that fall outside the Range, and 108.51 acres within the 115 dB Peak 15 noise zone that fall outside the Range. The current use of these areas is primarily Agriculture.

Safety Zones

The current mission training activities include field training exercises, JIEDDO training, convoy training, and small arms weapons training. It is important to note that the training taking place at Woolmarket is not limited to navy exercises, particularly within the small arms range. The range is used Monday through Friday and includes other organizations such as the Police Department, Harrison County Sheriff's Office, Mississippi Department of Transportation, and other emergency personnel. An estimated 4.5 million rounds are shot per year with the peak day usually occurring on Thursday. In the event of emergency unexploded ordnance (UXO) situations, Woolmarket Range is sometimes used to safely detonate old, WWII era ordnance found on the range or in the surrounding area.

The property has also been used by Marine Corps Special Operation Command for special night training using pyrotechnics and helicopters. This training activity created noise not normal experienced by Woolmarket residents. Due to the capabilities offered by Woolmarket Range, it is anticipated that military training activities at each of the five Bays will continue to increase as capacity allows.

The Woolmarket Range is part of the DeSoto National Forest; excepting the southern portion where the firing range and mock village are located, the Range is surrounded by National Forest land. The safety zones within this area consists of the Range that is down range of the firing line. This area is subject to live fire.



Figure 5: A sign notifying members of the public of the Range's Safety Zone

The JLUS noted that trespassing is a problem within the Range. Due to its location within the National Forest, the facility must allow public access leading to unanticipated civilian entries. The special use permit that allows the Range to operate within the National Forest grants compatible uses, which can include hunting, hiking, and other recreational activities. The Range is surrounded by a fence – three sides with three strand barbed wire and the fourth side (facing Highway 67) with chain link. The fence is periodically marked with signs showing that the area is subject to live fire and trespassing is prohibited.

Local residents have been using the National Forest since its establishment in 1936 and feel a sense of ownership of the land due to their continual use of it. It receives its heaviest usage from October through March for hunting season. As a safety precaution, visitors are asked to stay outside of the safety zones – identified through fencing and signage, to provide protection from training hazards and any potential unexploded ordnance that could exist. Often, due to their familiarity with the land, visitors

disregard the fencing and signage and either intentionally or unknowingly enter the safety zones. Portions of the fence are sometimes cut to allow unrestricted access. The Navy thoroughly checks the fence line on a regular basis as well as the roadway looking for signs of potential hunters which is an increased burden on personnel.

III. Existing Development

The 60 to 65 DNL noise contours cover a portion of the neighboring rifle and pistol range. This use is unlikely to be affected by the noise generated by the Range, as it is creating similar noise of a similar type and level.

The Max Peak Noise contours, however, cross the road to the south and include properties that house a school, a community center, and some lots within a residential neighborhood. Table 1, below, shows the zoning for the parcels within the Max Peak Noise contours. The majority of the land that falls under the 87 dB Peak 15 and 115 dB Peak 15 Noise Zones is Agriculture; the majority of the land not designated as Agriculture is developed. Although the majority of the land within the noise contours is developed, and is already experiencing the effects of being located near to the Range, measures should be taken to

mitigate the effects of noise on the surrounding community, especially as use of the Range is expected to increase in the future. Measures can be taken to lessen the effect on both existing and future development.

Zoning District	87 dB Peak 15 Noise Zone (acres)	115 dB Peak 15 Noise Zone (acres)
General Agriculture (A-1)	154.22	52.11
Neighborhood Commercial (C-1)	29.59	32.18
Very Low Density Residential (E-1)	17.85	0.11
Light Industry (I-1)	40.27	n/a
Low Density Residential (R-1)	25.15	8.28
Medium Density Residential (R-2)	0.98	n/a
Other	34.74	15.83
Total	302.81	108.51

IV. Mitigation Tools

There are numerous things that the County can do to attenuate the effects of noise within the Max Peak Noise contours. These tools include both existing tools and additional efforts in local land use controls found in the Land Development Ordinance as well as notification procedures that can alert nearby residents to out-of-the-ordinary training events.

Existing Tools

Zoning Designations/Use of Land

The purpose of the Harrison County Unified Development Ordinance is to promote the general welfare of the citizens of Harrison County. The Ordinance is designed to lessen congestion in the streets; secure safety from fire, panic, and other dangers; provide adequate lights and air; prevent overcrowding of land and inappropriate mixing of land uses; and facilitate the provision of transportation, public utilities, and

community facilities. Zoning Designations are one of the most useful tools the City can use to limit development within the Safety Zone.

Overlay Districts

Harrison County’s Unified Development Ordinance contains Section 500, Special Use and Overlay Districts. This category was established to permit the development of specific types of land uses that have the potential to create significant impact on abutting or nearby properties. Existing overlay districts include a Stream Bed Overlay and Planned Unit Development Overlay. The County has also adopted an Military Influence Area Overlay for the NCBC and Keesler Air Force Base-related areas within the County. This overlay includes requirements for the area around the Woolmarket Range and includes requirements for notifying applicants for any type of building permit within the noise contours of the potential for noise and information regarding sound-reduction measures that could be taken to reduce the noise level. This overlay district can be viewed under separate cover.

Noise Attenuation

For the development south of the Range within the 87 dB Peak 15 and 115 dB Peak 15 noise contours, sound attenuation measures can lessen the impact of noise within a building. According to Homeadvisor.com (accessed 9/18/2019), these are some common sound attenuation measures:



Figure 6: A gate restricting access to a Woolmarket Range training area

- Textured Wall Panels: These panels are an easy way to reduce the amount of noise that travels through the walls of a home, apartment building or business.
- Carpeting: Carpet is great at absorbing sounds while still looking beautiful and homey. Installing carpeting is an easy way to prevent your noise from reaching the people living below you.
- New Windows: Old, leaky windows let in drafts and noise. Replacing your windows is an easy, convenient solution.
- Textured Wall Paint: Textured wall paint can provide almost as much soundproofing as an acoustic panel, but it is a fraction of the cost.
- Wall Hangings: Hanging decorative rugs and other tapestries on the walls can reduce sound transfer and add beauty at the same time.
- Soundproof Curtains: If the stray sound is coming from the windows, soundproof curtains are a great way to keep it out.
- Blanket Insulation: A product that is commonly used in home construction, blanket insulation can also be used to help prevent sound from leaking through the walls.
- Acoustic Underlayments and Mats: This material is used under a room's flooring to prevent stray sounds from bothering downstairs neighbors.
- Acoustic Slab: This dense and versatile material can be used to keep sound from escaping through the floors, ceilings and walls.
- Foam Panels: These panels may look similar to egg crate solutions, but they work significantly better.
- Resilient Channels: These metal rails collect and absorb sound so that it doesn't escape through the walls.
- Soundproof Drywall: Made out of gypsum board and steel-like materials, this soundproof material is great for keeping stray sounds out.

In addition to measures that homeowners can take on their own (e.g. carpeting, soundproof curtains, or wall hangings) these measures can significantly reduce the amount of noise that enters a home. The national average cost of sound attenuation is approximately \$1,746 dollars per room, with the typical range being \$1,015 to \$2,585 per room. The costs to attenuate noise from the Installation within the 65-dB noise contour will vary from structure to structure, depending on the measures taken. Many noise mitigation measures also have insulation values; the County should consider coordinating with utility providers in the area to offer rebates or incentives on soundproofing/insulation retrofitting. The County should also explore the possibility of using a Community Development Block Grant to perform mitigation measures within the noise contours.



Figure 7: An electronic sign at Barksdale Air Force Base, Louisiana. Photo courtesy <http://www.ledticker.com/outdoorledsigns.html>.

Providing greater notification to people nearby the range can also decrease noise complaints. Additional notice would allow people to adjust plans that could be

interrupted by noise from the Range. The current strategy of placing a flag by the gate to the range (please see Figure 6, above) is inadequate – many people do not recognize the significance of the flag. An electronic sign that alerted people to out-of-the-ordinary training activities ahead of time would be more effective.

Safety Zone

To reduce trespassing onto the Range, the Navy should consider the following strategies.

- **Engage in Public Outreach.**
Initiate a broad outreach effort to property owners and businesses in the County to inform them of the risks associated with trespassing onto the Range. These efforts should also include a communication of the Range’s mission and training purpose. The information shared should clearly define the risks.
- **Public Notification.**
Use a public notification system, such as text alerts (outlined in the Training Notification Report) to notify the community of when training is occurring. Also provide information that can be placed on the Desoto National Forest’s website regarding the location of the range, what types of training take place there, and the general timing of the training.
- **Identify the Safety Zone on the County’s maps and property information.**
Land use maps should identify the Range to increase general awareness of the location of the Range and the type of activities that occur there.
- **Increase signage.**
Increase the level of signage on the fence surrounding the Range. Consider investing in flashing or electronic signs that would notify potential trespassers when live firing is occurring.

A combination of these proposed strategies will allow the City to ensure that the land uses within the Noise and Safety Zones are compatible with the continuing mission of the Installation.



Figures 7 and 8: A sign showing restricted access to the safety zone at Woolmarket Range (above). These signs could be enhanced with flashing lights and additional information, like those around Camp Lejeune, North Carolina (right).

Appendix A

Maps



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Regional Installation Map

February 2017

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 Tel 941.907.6900
 Fax 941.907.6911



WOOLMARKET RANGE

60 DNL
65 DNL
75 DNL

Lamey Bridge Rd

Old Highway 67

67

67

LEGEND

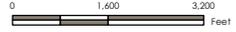
-  Woolmarket Range Boundary
-  Woolmarket Range Study Area
-  Major Roads
- Harrison County Zoning**
-  Water
-  O-1
-  Other
-  A-1
-  E-1
-  R-1
-  R-2
-  I-1
-  C-1
-  C-2



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Woolmarket Range
DNL Noise Contours with Zoning
December 2019

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Harrison County

15

WOOLMARKET RANGE

87 MXPk

67

104 MXPk

87 MXPk

JIEDDO
115dB PK15

Lamey Bridge Rd

67

Old Highway 67

LEGEND

-  Woolmarket Range Study Area
-  Woolmarket Range Boundary

- Harrison County Zoning**
-  A-1
 -  E-1
 -  R-1
 -  R-2
 -  I-1
 -  C-1
 -  C-2
 -  O-1
 -  Other



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Woolmarket Range
Max Peak Noise Contours with Zoning
December 2019

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