NOISE § 58.5(i)(1)

- **Background**
- **HUD Noise Standards**
- **Conducting Noise Assessment**
- **Statutory Checklist**

Background

- Congress passed Noise Control Act of 1972, as amended by Quiet Communities Act of 1978
- Implemented for HUD projects through regulations 24 CFR Part 51 Subpart B
- Included in 24 CFR Part 58.5, Related Federal Laws and Authorities

Background

Noise affects the quality of housing and its economic value…

- **Comply with the *Housing Act of 1949*** by creating and enforcing a standard for "**a decent home in a suitable living environment**"
- **Comply with the *HUD Act of 1965*** mandate "to **determine feasible methods of reducing the economic loss** and hardships suffered by homeowners…**following the construction of airports**…"
- **Comply with *Compatible Land Uses at Federal Airfields*** to **not promote incompatible land uses** within the influence of military and other federal air installations

Background

Noise is detrimental for many reasons…

- **Noise affects people's ability to:**
  - **Talk to one another**
  - **Hear threats around them**
  - **Enjoy recreational pursuits**
  - **Learn and concentrate**
- **Noise causes harm – hearing loss, stress, and threats to mental and social wellbeing.**
- **Noise reduces property values and resale potentials.**

Background

Common Audible Sounds

- **Rustle of leaves in wind: 10 dB**
- **Average whisper: 20 dB**
- **Soft radio music in house: 40 dB**
- **Range of speech: 48 – 72 dB**
- **Noisy urban street: 90 dB**
- **Loud horn at 10 feet: 100 dB**

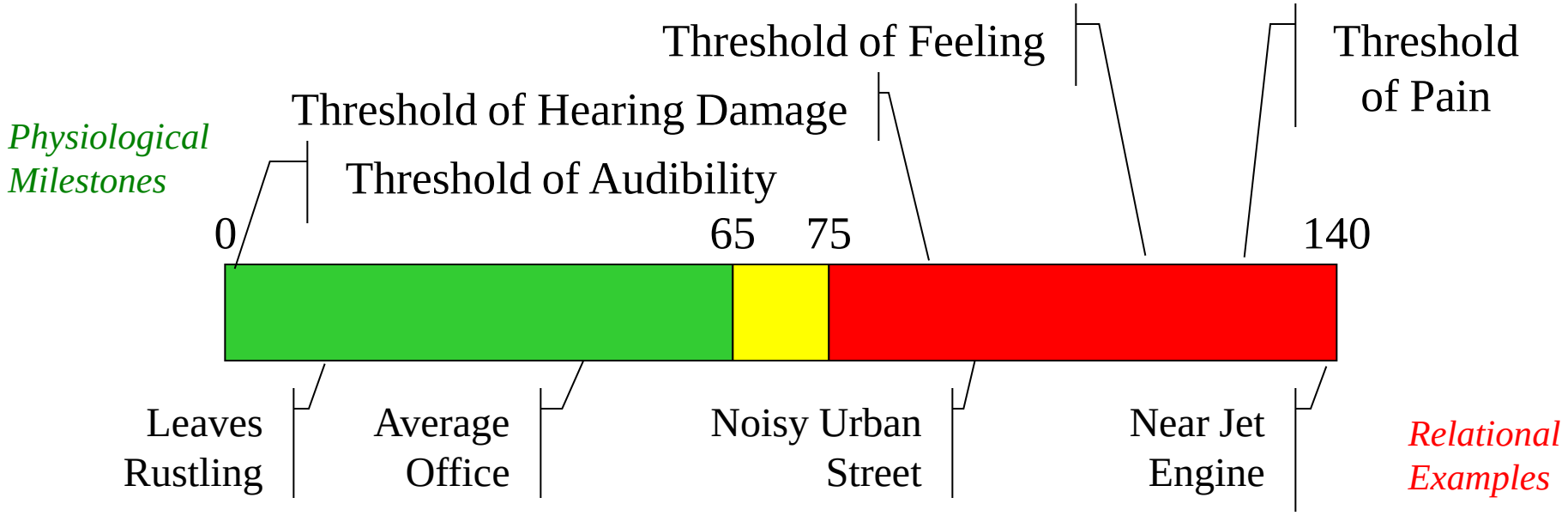
Background

Addressing outdoor noise is critical

- **Outdoor recreation is degraded or negated**
- **Community cohesion is affected**
- **Direct causal relationship to interior noise levels – if outdoor noise level is 65 dB or less, then indoor noise level will be 45 dB or less with typical construction**

HUD Noise Standard

- Outdoor Standards (24CFR51.103):
  - Acceptable Range: $\leq$ 65 dB
  - Normally Unacceptable Range: > 65 dB $\leq$ 75 dB
  - Unacceptable Range: > 75 dB
- Indoor Standard (24CFR51.101(a)(9)): 45 dB Max.



HUD Noise Standard

HUD policy for projects with noise sensitive uses…

- **New Construction – Prohibit** (generally) HUD support for new construction of noise sensitive uses on sites having unacceptable noise exposure [24 CFR 51.101(a)(3)]
- **Rehabilitation – Encourage,** or strongly encourage, noise attenuation features or convert to a land use compatible with high noise levels [24 CFR 51.101(a)(5)]
- **Land Use – Encourage** land use patterns for housing and other noise sensitive urban needs that provide a suitable separation between them and major noise sources [24 CFR 51.100(a)(3)]

HUD Noise Standard

How is noise evaluated?

HUD uses Day-Night Level (DNL) noise descriptor

- **Accumulates noise data from major noise generators of concern:**
  - airports
  - roadways
  - railroads
  - military and industrial facilities
- **Averaged over a 24 hour period**
- **Weighted 10 dB for nighttime**
- **Estimates noise level for 10-years in future**

Conducting Noise Assessment

Overview of process…

1. **Determine whether project is a noise sensitive use**
2. **Determine whether project is within proximity to major noise source**
3. **Gather data needed for analysis**
4. **Calculate noise level**
5. **Based on calculated DNL, make finding:**
   - **Approve projects as proposed**
   - **Require noise attenuation or mitigation**
   - **Reject project/seek alternative site(s)**

Conducting Noise Assessment

1. Determine whether project is a noise sensitive use

- **What is a noise sensitive use?**
  - **Residential Structures**
  - **Hospitals**
  - **Nursing homes**
  - **Schools**
  - **Libraries**

Conducting Noise Assessment

1. Determine whether project is a noise sensitive use

- **Does this project involve a noise sensitive use?**
  - **New sidewalk construction**
  - **Street repairs**
  - **Construction of a domestic violence shelter**
  - **Construction of a community center**
  - **Rehabilitation of a single family home**
- **If project does not involve a noise sensitive use, a noise assessment is not required.**

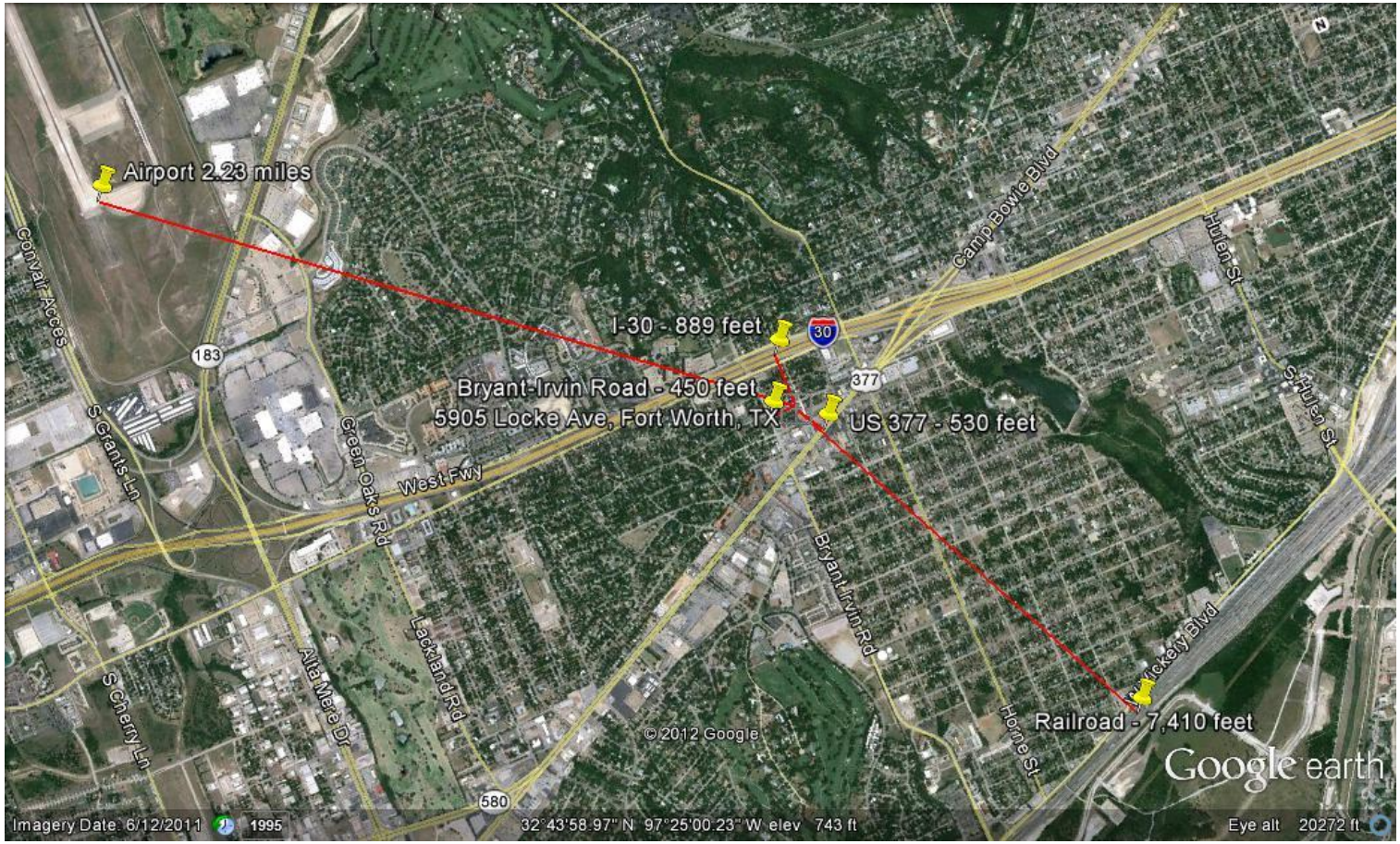
Conducting Noise Assessment

2. **Determine whether project is within proximity to a major noise source or sources**

- **Is project within…**
  - **15 miles of a civil or military airport?**
  - **1000 feet of a major roadway?**
  - **3000 feet of a railroad?**
- **If project is not within threshold distances, a noise assessment is not required.**

Conducting Noise Assessment

5905 Locke Ave, Fort Worth, Texas



Conducting Noise Assessment

3. Gather data needed for analysis

Gather information about the project and area

- **Maps of the site and surroundings**
  - Site plan and vicinity map
  - Aerial photograph – e.g. Google Earth
  - Planimetric map – shows roads, building footprint, railroads, etc.
  - Topographic map – shows elevation contours
- **Local land use plans (future, proposed) and zoning**
- **Is outdoor use a component of the project? (balconies, patios, decks)**
- **Visit site if possible**

Conducting Noise Assessment

3. Gather data needed for analysis

Gather information about the noise sources

- **Airports**
  - Contact airport manager or Federal Aviation Administration (FAA). http://www.airnav.com/airports/
  - Obtain noise contour map or data on # flights per day, both daytime and at night.
  - Most airports have noise plan that includes Noise Contours - Nearly all installations that make noise have a plan for managing it.
  - At Military Installations, ask for their "Air Installation Compatible Use Zone" Plan – It is intended to be shared with local planners and developers. (NAS Fort Worth JRB March 2010 Compatibility Plan: http://www.nctcog.org/trans/aviation/jlus/RCCOutreach_citizen_electronic_final.pdf)

Conducting Noise Assessment

3. Gather data needed for analysis

Gather information about the noise sources

- **Roadways -** Contact State DOT, city/county transportation agency or regional planning agency
  - Average Daily Traffic (ADT) http://www.txdot.gov/travel/traffic_maps/default.htm
  - Percentage Breakdown of automobiles and medium and heavy trucks
  - Traffic projections needed for minimum 10 years into future
  - Percentage Nighttime Use

Conducting Noise Assessment

3. Gather data needed for analysis

Gather information about the noise sources

- **Railroads -** Obtaining data: try Federal Railroad Administration (FRA) at-grade crossing inventory database:
  - safetydata.fra.dot.gov/OfficeofSafety/publicsite/crossing/xingqryloc.aspx
  - Take crossing # from bungalow or signal mast, or
  - Get street name at crossing
  - Perform search to get RR contact information and data on train numbers

Conducting Noise Assessment

3. Gather data needed for analysis

Assumptions are ALLOWABLE when better data is not obtainable

- **Roadways**
  - Average speed = actual observed speed for cars and trucks, or maximum allowable speed for cars and trucks
  - Night time traffic = 15% of ADT
- **Railroads**
  - 50 cars per diesel train
  - 8 cars per electric train
  - Night time traffic = 15% of ADT

Conducting Noise Assessment

3. Gather data needed for analysis

Gather information about the noise sources

- **Industrial Facilities**
  - Identify factories, warehouses, heavy industrial uses within proximity of project site
  - Hours of operation
  - Such facilities may generate loud impulsive sounds

Conducting Noise Assessment

4. Calculate noise level

- Noise exposure is calculated for major noise sources typically encountered - aircraft, vehicles and trains
- Sound levels are combined for a total projected noise environment – (Sound levels are not added together, rather mathematical factors combine levels based on the difference between two levels being compared)
- Impact noises are handled separately – such as, sonic booms, stamping mills, metal fabrication, artillery and explosives training or testing

Conducting Noise Assessment

4. Calculate noise level

- Select Noise Assessment Location – “NAL”
- Measure distance from NAL to noise source
- Input noise source data (variables) into on-line calculator
- Calculate combined DNL
- Re-calculate DNL accounting for barriers & mitigation, as appropriate

http://www.hud.gov/offices/cpd/environment/dnlcalculator.cfm

Conducting Noise Assessment

4. Calculate noise level

NAL – Noise Assessment Location

- NAL is located 6.5 feet (2 meters) in front of the façade of the proposed building at the point that is closest to the noise source
- If more than one building, use building nearest to noise source
- May have more than one NAL for a large site or site with more than one major noise source

http://www.hud.gov/offices/cpd/environment/dnlcalculator.cfm

Conducting Noise Assessment

4. Calculate noise level

Measure the distance from NAL to centerline of noise source – use scaled site map (Google Earth)

- Roadways
  - If symmetrical roadways, simply measure to centerline
  - If more than one building, use building nearest to noise source
  - If unsymmetrical measure to near edge of nearest lane, far edge of farthest lane, add and divide by 2
- Railroads
  - Measure to center of single track
  - Multiple tracks – measure to middle of set
  - Non-adjacent tracks –calculate each track as separate source

Conducting Noise Assessment

4. Calculate noise level

5905 Locke, Fort Worth, TX

- Roadways – I-30 distance from site = 889 feet; 109,270 light vehicles per day at 65 mph; 13,730 trucks per day at 55 mph; 15% of ADT is at night.
- Roadways – US 377 distance from site = 530 feet; 16,400 light vehicles per day at 45 mph; 1287 trucks per day at 45 mph; 15% of ADT is at night.
- Roadways – Bryant-Irvin Rd distance from site = 450feet; 14,310 light vehicles per day at 40 mph; 15% of ADT is at night.
- Airport noise contour shows DNL for site is < 65 dB
- No loud impulsive sounds
- DNL for 5905 Locke Ave, Fort Worth, TX = **68 DNL**

Due to the imprecision of noise assessments, HUD allows 1 dB tolerance on findings.

Conducting Noise Assessment

5. Based on calculated DNL, make finding

- **Acceptable** Range: ≤65 dB
- **Normally Unacceptable** Range: 65 dB ≤75 dB
- **Unacceptable** Range: >75 dB
  - If Acceptable – accept project as is
  - If Normally Unacceptable:
    - Select another site (alternative location)
    - Consider exterior mitigation
    - Consider interior mitigation
  - If Unacceptable:
    - Select another site (alternative location)
    - Conduct EIS (Environmental Impact Statement)

Statutory Checklist

Does the project involve a noise sensitive use such as a residential structure, school, hospital, nursing home, library, etc.?

If Yes, continue.
If No, compliance with this section is complete. Mark box "A" on the Statutory Checklist for this authority.

Is the project located within 15 miles of a civilian or military airfield with more than 9,000 carrier operations annually; 1000 feet of a major highway or busy road; within 3000 feet of a railroad.

If Yes to any the above, complete a noise calculation assessment. Use adopted DNL contours if the noise source is an airport. Continue.
If No, compliance with this section is complete. Mark box "A" on the Statutory Checklist for this authority.

Statutory Checklist

Do noise calculations or airport noise contour maps indicate noise levels above 65dB (outside)?

If Yes, continue.

If No, compliance with this section is complete. Mark box “A” on the Statutory Checklist for this authority.

Do noise calculations or airport noise contour maps indicate noise levels above 75dB (outside)?

If No, for projects in the normally unacceptable zone (65dB – 75dB), noise attenuation measures are strongly encouraged for rehabilitation and required for new construction to reduce noise levels to below 65dB (outside). Mark box “B” on the Statutory Checklist for this authority.

If Yes, HUD assistance for the construction of new noise sensitive uses is generally prohibited for projects with unacceptable noise exposure (>75dB). Noise attenuation measures are strongly encouraged for rehabilitation projects with unacceptable noise exposure to reduce noise levels to below 65dB (outside). Mark box “B” on the Statutory Checklist for this authority.

Questions?

Thank You!

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