Additional Evidence Presented in Connection with Steven Harper's Continuance Remarks

1. **Arup's September 27, 2023 Reply to WJHW's Rebuttal**
2. **Second Statement of Carl Hopman, dated September 18, 2023**
3. **Demonstrative Exhibits used during continuance presentation**

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By email
September 27, 2023

Steven Harper, Esq.
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Our ref 296698-00
File ref L02

Dear Steven

Ryan Field Redevelopment at Northwestern University

Review of WJHW Environmental Assessment Documentation

As requested, Arup has conducted an acoustic review of the WJHW's "Ryan Field Redevelopment at Northwestern University, Rebuttal to Arup report" letter. The enclosed memorandum provides comments on the information presented within their documentation.

Please let me know if you have any questions regarding our summary and findings.

Best

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Enc M03 - Ryan Field Redevelopment at Northwestern University – Review of WJHW Rebuttal to Arup
cc Geoffrey Sparks, Todd Brooks (Arup)

ARUP

Memorandum

To	Steven Harper, Esq.
Date	September 27, 2023
Copies	
Reference number	296698-00
From	Ryan Biziorek
File reference	M03
Subject	Ryan Field Redevelopment at Northwestern University – Review of WJHW Rebuttal to Arup

1. Executive Summary

Arup was requested by Mr. Steven Harper, Esq. to undertake a review of the rebuttal to our previous review of Wrightson, Johnson, Haddon & Williams, Inc. (WJHW) reports related to the Northwestern University Ryan Field project. Our review included the following document which is publicly available at the City of Evanston's website under Community Development Proposed Planned Developments:

- WJHW letter to Mr. Darren Nielsen, Subject: "Ryan Field Redevelopment at Northwestern University, Rebuttal to Arup report" dated September 18, 2023 (WJHW Letter 4)

This memo provides updated comments and questions from our previous reviews (Arup M01 and Arup M02) which included review of the following documents:

- WJHW letter to Mr. Darren Nielsen, Subject: "Northwestern University Ryan Field \ Environmental Assessment Review and Summary" dated April 20, 2023 (WJHW Letter 1)
- WJHW letter to Mr. Darren Nielsen, Subject: "Northwestern University Ryan Field \ Environmental Assessment Review and Summary" dated June 27, 2023 (WJHW Letter 2)
- WJHW letter to Mr. Darren Nielsen, Subject: "Northwestern University Ryan Field \ Environmental Assessment Review and Summary" dated August 2, 2023 (WJHW Letter 3)

No additional analysis of the information presented in the WJHW reports was conducted.

Responses to the individual numbered Items are provided beginning in § 3. Note the following:

- We have no further comment in response to Items 2, 3, 4, 5, 19, 20, and 21.
- Comments, questions, and requests for additional information were not fully addressed for Items 6, 7, 9, 11, 13, 14, 15, 16, 17, 18, 22, and 23.

1.1 Review Summary

- Sound mitigation strategies (some permanent and temporary measures as part of stadium design and some operational limits on concert hours and sound levels) are not provided in significantly more detail than in WJHW Letters 1, 2, and 3. Aside from not disclosing design details, it is not clear which of these design elements are committed to the design and are part of the current design submission.
- Further discussion is provided regarding metrics including information on codes, communities, standards, and research validating the use of L_{90} for quantifying ambient sound levels.
- WJHW has added comments on health effects such as hearing loss, and general physiological distress referencing metrics developed as workplace standards and regulations, but does not comment on the potential for other effects of sound levels in the community that impact well-being, including annoyance and sleep disturbance.
- WJHW modeling continues to show predicted concert sound levels in the community exceed limits stated in the local and state codes. Furthermore, their statements focus on measured ambient levels but do not address the exceedances of these stated limits anticipated from their analysis.
- WJHW disclose only limited additional information on sound propagation modeling inputs that were requested in Arup M01 and Arup M02, insufficient to review modeling analysis and conclusions in detail.

2. Response to 'General Comments'

WJHW has provided responses to a number of our summary comments made in § 1 of M01. We offer the following additional commentary, information, and clarifications.

2.1 Arup's Role and Responsibilities

The ARUP Report does not provide any evidence for the Land Use Commission to consider that refutes the findings of Henderson or WJHW regarding sound propagation. It does not provide any indication of SPLs above those levels modeled by Henderson nor does it opine on whether those levels would have an adverse impact on the health, safety, and welfare of nearby neighbors or the community. (Page 1)

Our memos (M01, M02) clearly state that our scope of work was to review the report and not conduct additional analysis of the information presented. Thus, there was no 3D acoustic modeling, electro-acoustic modeling, or calculations on the information presented in the report conducted. There was also no assessment or opinion offered on adverse impact to the health, safety, and welfare of nearby neighbors or the community provided by Arup – nor within WJHW's previous correspondence (WJHW Letters 1, 2, and 3).

The information presented by WJHW in the letters reviewed does not disclose sufficient details to illustrate that the acoustical design is aligned with a standard of care for this project typology given its location and surrounding land uses. There is a lack of detailed information, vague discussion or incomplete information around the acoustical benefits of the strategies, and omission of technical details that would enable a reviewer to fully evaluate the results presented. As we have outlined previously and reiterate in this review, there is insufficient WJHW documentation to validate WJHW's findings.

2.2 Sound Mitigation Strategies

In response to our comment around sound mitigation strategies, WJHW has reiterated information in their previous report that summarizes the strategies stated to be included in the stadium design:

The report describes noise mitigation elements starting on page 5; notably there are multiple permanent items included in the stadium design that are intended to lower community sound levels for football games and other events, in comparison with the existing stadium, including:

- *The event level/field being set 20+ ft below grade which reduces total building openings through which sound can escape to the community.*
- *A distributed house sound system within the seating bowl which reduces sound output of the house system compared to the current end zone cluster.*
- *A canopy above the seating areas provides adequate sound reduction characteristics and reduces the bowl opening through which sound can transmit to the community.*
- *Enclosures and walls around the seating bowl that further reduces openings in the building and reduces sound emissions to the community.*

Note that the Arup comment on sound mitigation strategies in § 1 of M01 specifically references Items 14 and 21 – both associated with concert sound. WJHW's response notes that these strategies *'are*

intended to lower community sound levels for football games and ***other events****'* (emphasis added). Furthermore, WJHW's response to Item 11 states:

Regarding the concert experience using the distributed system, WJHW's experience shows this can be used - though, often they are not. Should a distributed system be used during a concert, it would be used as fill (as in, filling in the gaps that the stage/main system does not cover). The primary/directional sound would still come from the stage.

Given WJHW's response to Item 11, we understand *'other events'* to be inclusive of concerts. In addition to our previous comment requesting analysis that illustrates the benefits of the distributed sound system for gameday community noise, we also recommend that analysis is provided to illustrate the community sound benefit that the distributed house sound system will provide when used for concerts. Also provide clarification on what operational procedures will be implemented to leverage the community sound benefit of this setup.

The response to these items and others within the letter illustrates a general theme of the WJHW documentation – limited information and details that do not clearly illustrate the following:

- Where the design has incorporated sound mitigation strategies through drawings/mark-ups that show the extents of the elements cited. These could be provided as architectural drawings in an appendix.
- The individual acoustical benefit of each strategy for community sound. This could be provided as a performance summary noting the amount of decibel reduction, at what frequencies, and what surrounding communities benefit. This allows the reviewer and other interested parties to clearly understand the performance outcomes and informs what elements should remain in the event of possible design revisions.
- Technical details of each strategy that help validate the performance summary. Information about the design of the strategy, material properties, and technical analysis (e.g. 3D sound modeling) further substantiate the individual strategies to technical reviewers.

It is not specifically stated where the described sound mitigation design elements are integrated into the overall project design documentation, such as any design submissions made to date.2.2

Additional details that would inform assumptions and results associated with sound mitigation presented by WJHW have not been provided for Items 9, 11, 13, 14, and 17.

In addition to the previous stated sound mitigation strategies, WJHW states additional temporary sound mitigation strategies are being analyzed with a *'minimum sound reduction performance of 20 dBA'*. No additional details are provided to substantiate this statement, clarify if the appropriate infrastructure will be included in the design, or confirm if the Concert Operations Plan will incorporate them for every show. WJHW later states that there will be *'...trees and additional landscaping which will further assist in the attenuation of sound.'* (response to Item 13). Again, no additional details to substantiate this statement have been provided to illustrate where these landscaping elements are and what their technical performance benefit is.

Finally, WJHW notes that *'multiple operational parameters have been proposed'* for sound mitigation. However, the list is primarily comprised of proposals of curfews, equipment, or limits without details of how operational policies will enforce, leverage, or revise production activities using these items. For example:

- If a thunderstorm with lightning passes through and interrupts a show, will the curfew of 10 PM still be enforced?
- Where will sound monitoring be installed? Who will maintain and monitor it? How will event staff respond to exceedances in sound limits? What penalties will be imposed to the production?

The importance of understanding the audible impact of each of the proposed mitigation strategies is further illustrated based on the updated acoustic modeling results in WJHW Letter 3. Table 1 from Arup's M01 has been updated using the updated modeling. Several locations surrounding the site do not indicate changes in the predicted concert sound levels between the base condition and the model "with Additional sound Mitigation."

Table 1: Comparison of predicted concert sound with surveyed ambient sound at Wilmette locations (Revised)

Location	Sound Level Measured[1]		Wilmette noise ordinance[2]	Illinois State noise limits[3]	Henderson predicted concert sound level[4,5,6]	Noise codes exceeded? (Y/N)	Ambient sound levels exceeded? (Y/N)
	L_{90}	L_{eq}					
640 Gregory Ave	39 dBA 53 dBC	47 dBA 60 dBC	45 dBA	55 dBA 73 dBC	65-75 dBA 80-90 dBC	Y	Y
624 Isabella St	40 dBA 53 dBC	52 dBA 65 dBC	45 dBA	55 dBA 73 dBC	65-75 dBA 80-90 dBC	Y	Y
128 5th St	39 dBA 53 dBC	47 dBA 58 dBC	45 dBA	55 dBA 73 dBC	65-75 dBA 80-90 dBC	Y	Y
6th St & Maple Ave	38 dBA 52 dBC	46 dBA 59 dBC	45 dBA	55 dBA 73 dBC	65-70 dBA 80-85 dBC	Y	Y

1. Sound levels from Arup ambient sound survey of Wilmette receivers conducted on the evening of August 3, 2023 (see previous Arup Memos). Henderson noise measurement results are not referenced in this table, as they did not measure ambient sound in Wilmette.
2. Code of Ordinances Wilmette, IL nighttime noise limit applicable during likely concert times (7PM-10PM).
3. Illinois Administrative Code. dBA and dBC limits derived from tabulated octave band daytime limits applicable during likely concert times (7PM-10PM). Code limits become 10dB more stringent at nighttime (after 10PM).
4. Henderson's predicted concert noise levels taken from Figures 4 and 5 of WJHW letter 4.
5. Noise levels assessed for areas and facades with Southern and Eastern exposure towards Ryan Field and not shielded by the immediately adjacent home (if applicable).
6. Henderson also prepared a model "with Additional Sound Mitigation" that shows no changes in noise levels at 640 Gregory Ave and 624 Isabella St and up to 10 dBA and 5 dBC reductions at 128 5th St and the corner of 6th St and Maple Ave (see Figures 6 and 7 of WJHW Letter 4)

2.3 Community Ambient Sound Levels

2.3.1 L_{90} and L_{eq}

Based on site measurements and observations in Wilmette residential neighborhoods, Arup has proposed the use of the L_{90} statistical metric as the baseline for community ambient sound levels within these areas. WJHW has rebutted that the L_{eq} metric should be the utilized for community ambient sound levels:

Leq is used in the establishment of most noise ordinances and Federal regulations. It is the most commonly applied metric for community noise evaluation and regulation. The University team understands sound levels fluctuate across time and realize sound levels will occasionally be above or below the Leq (average) sound level. Additionally, Leq is the industry standard method for determining compliance with statutory requirements for community sound levels, such as the State of Illinois requirements for 1-hour Leq (Illinois Administrative Code, Title 35, Section 900.103 - Measurement Procedures). (Page 6)

L90 essentially sets the lower limit of the of the ambient sound field and does not realistically represent the expectation for sound levels within the community. Sound levels exceed these values 90% of the time (54 minutes out of every hour). We understand that there may be particularly quiet moments during a day/evening, but the Leq represents the average and sound level may be at, above, or below this value as sound fluctuates. Further, Leq is the most common metric used by municipalities to describe adverse or disagreeable sound levels within the community and has been found to correlate well with annoyance (Kryter, The Effects of Noise on Man, 1970, pg 310). (Page 6)

WJHW also notes that the Illinois State Code requires a one-hour L_{eq} and suggests that this reinforces the argument to use the L_{eq} metric as a baseline:

WJHW also notes the State of Illinois limits are based on 1-hour Leqs (further reinforcing the argument to use Leq as the baseline for ambient sound level comparison). (Page 7)

We agree that L_{eq} is a common metric used for assessment and commonly referenced in noise codes. However, we note that it is typically utilized as a metric for assessing noise sources other than ambient sound levels (as stated in the WJHW's response above: "*Leq is the most common metric used by municipalities **to describe adverse or disagreeable sound levels**...*" (emphasis added). For example:

- The Wilmette noise ordinance states that the noise limit is associated with noise generated by an activity. There is no mention of noise in terms of ambient sound levels. The code also specifies several exclusions including noises not directly under the control of the owner or occupant of the receiving property, transient noises from moving sources, and noise from HVAC equipment under five (5) tons. See Section 2.5 for additional discussion.
- The Illinois Administrative Code, Title 35 states that *a person must not cause or allow the emission of sound during daytime hours from any property-line noise source located on any Class A, B or C land to any receiving Class A land that exceeds any allowable octave band sound pressure level*

specified in the following table, when measured at any point within the receiving Class A land. There is no mention of noise limits in terms of ambient sound levels.

WJHW also notes that Arup *'...contend(s) sound levels should be compared to the lowest sound level perceived in the community...'* (page 6) Arup has not stated that the L_{90} is the *'lowest sound level'*, which is not correct, but rather that it is more representative than L_{eq} of what is subjectively perceived in the areas Arup measured and observed.

WJHW's next response states: *"L90 essentially sets the lower limit of the of the ambient sound. While this may be how low sound could get"...*

Note the actual *'lowest sound level'* would be represented by the standard metric $L_{min,}$, which is the minimum sound level measured during a given interval. Arup have not recommended using the minimum sound level to represent the perceived ambient sound in the community.

Although L_{eq} is a common metric, based on our observations and measurements of the specific ambient sound conditions in Wilmette we do not think it is suitable as a comparison basis for concert sound impact for the reasons we described in our review:

"Arup observed that ambient sound levels at each location were mostly continuous, with some intermittent road traffic. This means that for the majority of the time, residents perceive a lower ambient sound level than is represented by a time-average metric like L_{eq} used as the basis in WJHW letters." (WJHW Letter 4, page 6)

The following standards and policies reference L_{90} as a metric for quantifying ambient or residual sound:

- ASA/ANSI S12.9-2013/Part 1 (R2023). 2023. "Quantities And Procedures For Description And Measurement Of Environmental Sound, Part 1: Basic Quantities And Definitions." American National Standards Institute.
- ASTM E1686-16. 2000. *Standard Guide for Applying Environmental Noise Measurement Methods and Criteria*. American Society for Testing of Materials Standards.
- Massachusetts Department of Environmental Protection CMR 310 Part 7.10 states that *'Ambient is defined as the background A-weighted sound level that is exceeded 90% of the time measured during the equipment operating hours.'*
- Town of Manchester, CT Code of Ordinances § 223-2. states *'Background Noise: Noise which exists at a point as a result of the combination of many distant sources, individually indistinguishable. In statistical terms, it is the level which is exceeded 90% of the time (L90) during the time period in which the measurement is taken. '*

The following published references refer to L_{90} as metrics for ambient background noise, as well as proposed criteria found to correlate to community sound impact specific to outdoor concert events:

- Cavanaugh, W.J., 2000. Outdoor concert sounds—Searching for acceptability criteria for communities adjacent to amphitheaters. The Journal of the Acoustical Society of America 108, 2565–2565.
- Cavanaugh, W.J., 1995. Evaluating the Severity of Community Response at Outdoor Concert Sites: A Model that seems to work, in: Bernhard, R.J., International Institute of Noise Control Engineering (Eds.), Proceedings of INTER-NOISE 95. Presented at the 1995 International Congress on Noise Control Engineering, Noise Control Foundation, Newport Beach, California, USA.
- Cavanaugh, W.J., Tocci, Greg C., 2002. Criteria for community acceptance of outdoor concert sound...a progress report on continuing research. Proceedings of The 2002 International Congress and Exposition on Noise Control Engineering.
- Hoover, K.A., Brooks, B.M., 2020. Outdoor concert monitoring, community noise, and the Cavanaugh Criterion. The Journal of the Acoustical Society of America 148, 2684–2684.
- Cavanaugh, William J., and K. Anthony Hoover. 2006. "Large Outdoor Performance Venues: Acoustical Lessons Learned." *The Journal of the Acoustical Society of America* 120: 3052–3052.
- Pierce, R.S., 2009. Outdoor Live Music - Noise Criteria & Audibility. Proceedings of the Institute of Acoustics, Proceedings of the Institute of Acoustics 31.
- The Noise Council, 1995. Code of Practice on environmental noise control at concerts. Chadwick House Group Ltd., London.

For reference, the updated Table 1 in this memo includes the Henderson predicted concert sound levels side-by-side with both the L_{90} and L_{eq} ambient noise levels surveyed by Arup at Wilmette receivers.

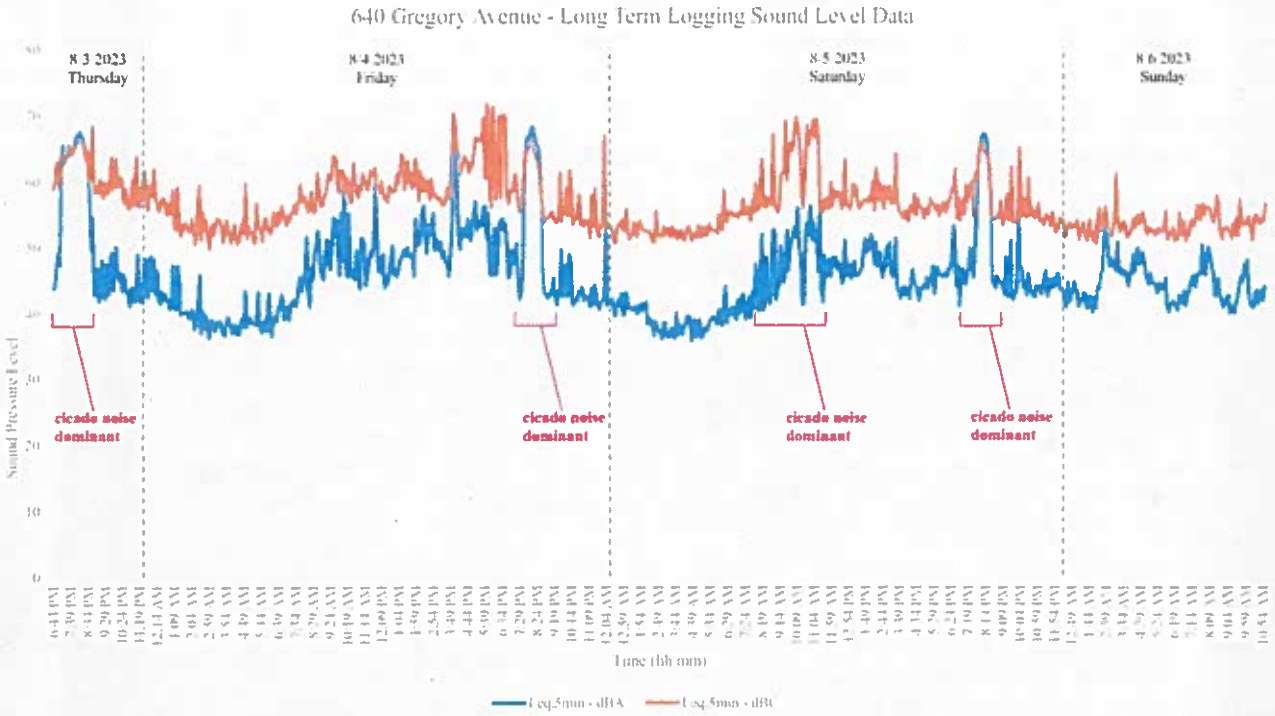
2.3.2 Weekday vs. Weekend Levels

WJHW notes that our measurements were of shorter duration and conducted during a weekday which doesn't allow for direct comparison to the Henderson measurements.

The neighborhood noise study conducted by Henderson was continuous from Friday to Sunday at three locations in Evanston in order to capture typical game day sound. It should also be noted that Arup's measurements were taken on a Thursday evening, which is presumably quieter than a weekend with no gameday activity. (WJHW Letter 4, page 4)

Assuming that WJHW was referencing the Henderson non-gameday measurements, Arup did conduct a long term 64 hour measurement at two locations in Wilmette and presented the results in Table 2 and Figure 4 of M01. Review of Figure 4 (reprinted below as Figure 1) illustrates that the logged levels on Thursday evening are comparable to those on Friday and Saturday evening during the proposed concert event hours. Based on this data, the ambient sound levels on Thursday evening are not necessarily quieter than non-gameday weekend evenings.

Figure 1: Long term noise measurement sound levels logged at 640 Gregory Avenue (Reprinted from M01 with additional day notations)



2.4 Community Concert Sound

2.4.1 Representation

Community Concert Sound

In our review, we observed that there was a limited representation of the community through the measured and modeled sound levels as comparisons were focused against three long-term measurement locations in Evanston. WJHW has noted that their measurements *'are representative of the areas near the stadium that likely have the greatest (worst case) acoustic impact in the community.' (WJHW Letter 4, page 3)*

When reviewing the measurement locations, we note the following:

- Six of the eight short term measurement locations and one of the three long term measurement locations align with areas behind the proposed stage location. The predicted concert sound levels at these locations are reduced as a result of the directionality of the modeled sound system and stadium geometry.
- All long-term measurement locations are on NU property.

- No measurements were taken in locations identified in the computer modeling that correspond to the areas shown to have the highest predicted concert sound levels. Generally, this area is northwest of the proposed Ryan Field and does not benefit from acoustic barrier effect by Trienens Performance Center and Welsh-Ryan Arena.

2.4.2 Community Noise Impact

WJHW comments on health effects such as hearing loss and general physiological distress citing OSHA, NIOSH, and the EPA; however, they do not comment on the potential for other effects of sound levels on well-being, including annoyance or sleep disturbance (other than "*sleep disturbance is limited - if not eliminated - by the agreed event end time of 10:00 pm or 10:15 pm*", *"annoyance is subjective"* and that *"the duration of events limit this impact to a few hours across 6 days a year" (WJHW Letter 4, page 4).*

See references on community sound impact specific to outdoor concert events in § 2.3.1.

Examples of established impact criteria for sleep disturbance can be found in

- Berglund, Birgitta, Thomas Lindvall, and Dietrich H. Schwela. 1999. "Guidelines for Community Noise." World Health Organization.

2.5 Exceedance of Noise Regulations

In our previous correspondence we noted that WJHW has not referenced any local or regional noise codes or ordinances. WJHW has noted in their response that the sound level limits established by Wilmette ordinances are exceeded in the ambient noise measurements presented by Arup.

We note that Arup completed sound measurements in Wilmette indicating ambient LAeq values are between 46 and 52 dBA (which are in excess of the statutory limit of 45 dBA for evening/nighttime) and 58 to 65 dBC. (WJHW Letter 4, page 3)

It is noted that Arup...observed average sound levels of 46-52 dBA in the Wilmette neighborhoods. These average levels are above the statutory limits set by Wilmette (45 dBA)... (WJHW Letter 4, page 6)

WJHW notes the LAeq values measured by Arup are all above the statutory requirements for the Village of Wilmette. Statute requires sound emissions to not exceed 45 dBA; all ambient Leq values are 46 dBA or above. (WJHW Letter 4, page 8)

We agree that the measured L_{eq} levels are above 45 dBA. However, we disagree that these levels are not in compliance with the statutory requirements. The Wilmette environmental performance standards associated with noise make no reference to ambient sound levels. The code is associated with activities that generate noise and impact an adjacent property. The code specifies numerous activities where the limit of 45 dBA does not apply. These activities include:

- Noises not directly under the control of the owner or occupant of the property.

- Noises emanating from construction, repair and maintenance activities pursuant to the Village Code.
- Noises emanating from safety signals, warning devices, and emergency pressure relief valves.
- Transient noises emanating from moving sources, such as trucks, automobiles, airplanes and railroads.
- Noises emanating from heating, ventilation, or air conditioning equipment provided the size of the equipment does not exceed five (5) tons.
- Noises emanating from permanently installed stand-by generators conducting weekly testing in accordance with this Ordinance and operating in normal mode during a power outage.

Arup did not observe any noise generating activities that would be in violation of the noise code at our measurement locations. All noises were not directly under the control of the owner or occupant of the surrounding and accessed properties, were transient noises from moving sources, and noise from HVAC equipment under five (5) tons. Thus, the noise levels measured were in compliance with Wilmette statutory requirements.

2.6 Acoustic Metrics for Modeling of Concert Sound Levels

WJHWs rebuttal responses (Letter 4) disclose only limited additional information on sound propagation modeling inputs, assumptions, and methodology requested by Arup in M01 and M02 (see § 4.2.1, Item 13). The provided information is insufficient for us or stakeholders to review analysis and conclusions in detail, or to better understand potential sound impact to the community, especially for the proposed concert productions.

2.6.1 Concert sound modeling source sound levels

In response to our comment on the WJHW letters' lack of an assessment of concert sound impact, they note:

"*Additionally, it should be noted the upper sound limit as shown in the model is representative of a peak condition, and is not anticipated to be consistent.*" *(WJHW Letter 4, page 4)*

In response to the table compiled by Arup comparing Henderson modeled concert sound levels against measured existing ambient sound levels at Wilmette locations, WJHW responds:

We reiterate the Henderson model indicates the "worst case" - the upper limit generated from the modelled sound system – for sound levels generated at the stadium and the Leq values will be lower. (WJHW Letter 4, page 8)

That the Henderson concert sound propagation model is based on "peak" concert levels is new information. WJHW Letters 1, 2, and 3 did not describe the modeled concert sound levels as "peak" and did not describe assumed temporal characteristic of the modeled sound levels. Given that gameday activity levels, and ambient noise are discussed in terms of L_{eq} throughout the WJHW letters, and

comparisons are made between these and modeled concert sound levels, it might be inferred that modeled concert sound levels were also in terms of L_{eq} and not any sort of "peak" levels.

WJHW should clarify how they define "peak" sound levels, as there are multiple ways to interpret and quantify these. Is "peak" the true instantaneous peak sound level over the course of a concert? Is it a typical time-weighted maximum level over the course of a set piece (would be assessed by L_{max}). Or is it the average level of the loudest concert production of a concert season?

For discussion of concert sound impact and to compliment a "peak" level assessment, it would be informative and more relevant to present modeling results representative of levels experienced over the duration of the concert. L_{eq} (assessed over an appropriate duration) would be an appropriate metric for this type of assessment.

3. Review of survey and analysis of existing noise conditions

3.1 Henderson survey

Item 1	
Document	WJHW letter 1, Henderson Exhibit, pages 3 and 7
	Henderson Exhibit Tables 1 and 4 include weather conditions during the gameday and non-gameday measurements, based on an internet source. The tabulated "Max Wind Speed" for 5 out of 7 measurements periods is greater than typical 12 mph maximum speed recommended in measurement procedure standards[1,2]. The Henderson exhibit states "Overall, weather had negligible effects on the measurements."
Arup Comment	Provide explanation and additional observations to support the statement that weather conditions had negligible effect on measurements.
WJHW Response	The max wind speed included in the report was the maximum for the day and was not the continuous wind speed. Measured sound levels exceeded the wind induced noise levels reported utilizing the Larson Davis Model EPS2116 Outdoor Microphone Protection, therefore wind was assumed to have a negligible effect. Link to Larson Davis information follows. https://www.larsondavis.com/docs/librariesprovider2/datasheets/ld-eps2116- outdoor-noise-monitoring-microphone-protection-ds- 0240.pdf?sfvrsn=c2e4e3c5_18. Additional wind speed and gust information can be accessed from www.wunderground.com for additional context, however, these measurements are not at the specific meter locations.
Arup Response	Consensus standards call for measurement and documentation of wind speeds at measurement locations[1,2]

3.1.1 Non-gameday ambient sound survey (Evanston neighborhood locations)

Item 2	
Document	WJHW letter 1, Henderson Exhibit, page 6
	Long-term ambient sound survey locations do not include receivers in Wilmette, or generally beyond 3 or 4 blocks from Ryan Field
Arup Comment	Supplementary ambient sound surveys including additional neighborhoods to provide better representation of potentially impacted areas.
WJHW Response	The neighborhood noise study locations aligned with the original gameday noise study locations near the stadium.
Arup Response	No further comment

[1] ASTM E1014-12, "Guide for Measurement of Outdoor A-Weighted Sound Levels" (ASTM International, 2012), https://doi.org/10.1520/E1014-12.

[2] ASTM E1503-14, "Test Method for Conducting Outdoor Sound Measurements Using a Digital Statistical Sound Analysis System" (ASTM International, 2014), https://doi.org/10.1520/E1503-14.

Item 3	
Document	WJHW letter 1, Henderson Exhibit, page 7
	The non-gameday weekend measurement results in Table 5 are a duplicate of gameday measurements results in Table 2.
Arup Comment	Clarify which table is gameday or non-gameday noise results. Provide the missing table of information.
WJHW Response	Results table was mistakenly duplicated. Table 5 in the Henderson survey has been updated, and attached.
Arup Response	No further comment

3.1.2 Gameday sound level survey (long-term and spot-measurements)

Item 4	
Document	WJHW letter 1, Henderson Exhibit, page 2
	Henderson Exhibit: Long-term measurements of gameday sound levels were conducted in/around Ryan Field parking lots only.
Arup Comment	Conduct gameday measurements at neighborhood locations to document typical gameday activity sound (crowd cheers, public address announcements, etc.).
WJHW Response	Short duration measurements were collected during the gameday noise study at various locations in the surrounding neighborhoods. These measurements included activities described by Arup.
Arup Response	No further comment.

Item 5	
Document	WJHW letter 1, Henderson Exhibit, page 4
	Gameday measurements in neighborhoods were short-duration 30-120s at each location. This measurement duration may be too short to represent gameday activity sound levels.
Arup Comment	Measurements of existing gameday sound in surrounding community should capture range of gameday activity sound (crowd cheers, public address announcements, etc.). Document the gameday activities occurring during measurement intervals. Conduct longer or multiple measurements at each location as required to capture typical range of gameday activity levels.
WJHW Response	Short duration measurements were collected during the gameday noise study. All measurements included activity noise from the stadium which was primarily public address announcements and fan noise.
Arup Response	No further comment.

Item 6	
Document	WJHW letter 1, Henderson Exhibit, pages 4-5
	Only one gameday measurement (30-120 seconds in duration) was conducted in Wilmette. Results for gameday measurements are presented as an aggregate range with no results at individual receptors presented.
Arup Comment	Provide a supplementary gameday activity sound survey which includes additional neighborhoods to provide better representation of impacted areas. Include measurement results for each receiver location.
WJHW Response	Measurements were conducted in neighborhoods with close proximity to the stadium and are representative of those areas which may have the greatest impact from stadium activities.
Arup Response	Requested information not provided.

3.2 WJHW analysis and conclusions on gameday noise impact on neighborhoods

Item 7	
Document	WJHW letters, pages 2-3
	The comparison of gameday vs. non-gameday activity sound in neighborhoods is based on a mix of different receivers and mix of long-term and short term (60-120 second acquisitions) and comparing broad ranges over multiple receivers.
Arup Comment	To quantify community sound levels due to gameday activities and compare to typical ambient (non-gameday) metrics, measurements of similar duration (longer than the 30-120s duration measurements measured by Henderson), time-of-day, and location could provide a more clear and meaningful comparison. Comparisons should be documented at each position rather than presenting overall aggregate range across all receivers.
WJHW Response	Figures 1 (page 3) and 2 (page 4) show long term measured sound levels during gameday and non-gameday weekends. Measurements are at the same location, have the same time period, and indicate sound levels across the entirety of the day (daytime and nighttime). Gameday and neighborhood noise studies utilized different locations. Studies occurred at different times during the year, but both occurred over the weekend.
Arup Response	Requested information not provided.

Item 8	
Document	WJHW letters, page 3
	WJHW compares surveyed gameday activity sound levels with ambient L_{eq} dBA levels. Figures 1 and 2 also show logged LA_{90} levels, though these are not referenced or discussed in WJHW's analysis.
Arup Comment	For neighborhoods with intermittent traffic, measured L_{90} sound levels are a more appropriate representation of the ambient sound conditions. The L_{90} levels should also be compared against gameday activity sound levels when considering noise impact.
WJHW Response	L90 is the lower limit of the ambient sound level and sets an unrealistic expectation for the fluctuating nature of ambient sound. A full 90% of the sound experienced is above the limit set by L90. Leq is the standard statutory representation of measured sound level in community noise standards, including the State of Illinois.
Arup Response	See detailed response in § 2.3.1

4. Review of new stadium sound analysis

4.1 Gameday sound

Item 9 (revision A)	
Document	WJHW letters 1 and 2, pages 3-4
	A description of new stadium design elements is included and is argued that the new build design elements will "be helpful in reducing sound…". There is not sufficient analysis or modeling to demonstrate the gameday sound impact of the new stadium design and the outcomes of each individual and/or combination of elements. There is also no description of the proposed "canopy" with information about the design parameters (e.g. materiality, extent of coverage, etc.).
Updated Document	WJHW letter 3, pages 5-6
	An additional description has been included (#3, page 6) that describes enclosures and walls around the seating bowl using vertical barriers. It is unclear if this is only a descriptor of elements that had already been included in analysis presented later in the document or a new/updated element of the design that has been incorporated in updated analysis.
Arup Comment	Provide additional analysis each of these design elements can offer individually and collectively to clearly illustrate a more quantifiable estimate of outcomes related to sound levels in the surrounding communities. Clarify which of the listed elements (canopy, barriers, absorptive material, etc.) will be included in the stadium design. Clarify if item #3 – enclosures and walls around the seating bowl – had previously been included in the presented 3D acoustic / electroacoustic modeled results.
WJHW Response	Comparing the individual contribution of each noise isolation element is unnecessary. It is the collective result of all noise mitigation elements which is relevant to the community. The noise mitigation outline in the report (pages 5, 10, and 14) are included in the modelling and the results are representative of the community noise levels anticipated with these items included in the design. Enclosures and walls around the seating bowl have remained consistent throughout the modeling exercise.
Arup Response	Requested information not provided. See comments in § 2.2

Item 10	
Document	WJHW letters, pages 2-3
	Surveyed gameday sound levels are compared with ambient Leq dBA levels. Figures 1 and 2 also show logged L90 dBA levels, though these are not referenced or discussed in the narrative.
Arup Comment	For neighborhoods with intermittent traffic, measured L90 percentile levels are a more appropriate representation of the ambient sound conditions perceived by residents. The L90 levels should also be compared against gameday sound levels when considering noise impact.
WJHW Response	L90 is the lower limit of the ambient sound level and sets an unrealistic expectation for the fluctuating nature of ambient sound. A full 90% of the sound experienced is above the limit set by L90. Leq is the standard statutory representation of measured sound level in community noise standards, including the State of Illinois.
Arup Response	See detailed response in § 2.3.1

Item 11	
Document	WJHW letters, page 3
	A distributed sound system is described as an element that will be included in the design. The benefits cited with regards to community noise are not unreasonable but are not quantified. No clear statement is made about the use of this system for other events (e.g. concerts).
Arup Comment	Provide analysis that illustrates the benefits of the distributed sound system for gameday community noise. Clarify if this distributed sound system will be used for other events. In our experience, a distributed sound system is likely not viable for large concert sound reinforcement.
WJHW Response	Regarding the concert experience using the distributed system, WJHW's experience shows this can be used - though, often they are not. Should a distributed system be used during a concert, it would be used as fill (as in, filling in the gaps that the stage/main system does not cover). The primary/directional sound would still come from the stage. WJHW has seen house sound systems used in conjunction with the touring rig, specifically in AT&T Stadium (Dallas) and US Bank (Minneapolis).
Arup Response	Requested information not provided. See general comments in § 2.2

Item 12	
Document	WJHW letters page 4
	The letter states "We would expect that these design features, combined with lower capacity, will ultimately result in less sound exposure to the residential properties surrounding the stadium compared to the current experience." The argument that lower stadium capacity will not necessarily result in less sound exposure is not correlated with sound level measurements or modeled results. We note that the listed game attendance during the weekend surveyed by Henderson was recorded as 32,123. (https://nusports.com/sports/football/stats/2022/wisconsin/boxscore/19987) which is slightly below the maximum game capacity of the new stadium design of 35,000.
Arup Comment	Statements of sound exposure based on lower stadium capacity design should be made in the context of actual crowd sizes of Ryan Field games in recent years.
WJHW Response	This is a general reference for stadium size (i.e. capacity). WJHW stands by the comment that the design features will result in less sound exposure to the community. The stadium design features provide improvement in noise reduction to the community – regardless of crowd size – as they provide additional barriers to sound transmission. The existing, on grade stadium is essentially wide open. The proposed new stadium includes numerous barriers around the perimeter of the seating bowl, is partially below grade and will have a canopy to limit sound transmission.
Arup Response	Our comment was specifically on the effect of lower stadium capacity contributing to reducing sound exposure, not other design features.

4.2 Concert sound

4.2.1 Concert sound analysis by Henderson

Item 13 (revision A)	
Document	WJHW letters 1-2, pages 4-7
	Details on input data or methodology for the 3D acoustic / electroacoustic modeled concert sound predictions are not provided. Relevant details include: • Stadium reference design (only 2D plan view shown) • Sound system design and configuration • Frequency spectrum of sound source levels (only overall dBA level at sound mix position is presented). Assumed frequency spectrum has a significant impact on audibility and disturbance in neighborhoods (e.g. whether a reasonable pop/rock, dance/EDM, R&B/hip hop, or other musical genre spectrums are considered) • Modeling standards used (user options within the modeling software). For example, is the 3D acoustic / electroacoustic model based on Cadna's implementation of ISO 9613? Is full 3D sound diffraction implemented? What ground effects are assumed? Does it account for meteorological (atmospheric) effects?
Updated Document	WJHW letter 3, pages 6-7
	Additional details are provided on input data and methodology for the 3D acoustic / electroacoustic modeled concert sound predictions including: • The 3D acoustic / electroacoustic model is based on Cadna's implementation of ISO 9613. It is noted that 'adverse wind conditions in all directions related to the sound source per ISO 9613' have been included. Other environmental factors (e.g. air temperature, humidity, temperature inversions, etc.) have not been included in the model. Have other standards been considered for implementation in the model? • The amplified sound source is noted to be a 'pop music' frequency spectrum. No details of the frequency spectrum are provided in relation to the sound levels set at the sound board location. • Use of a line array sound system is noted as the amplified sound source positioned at 56 ft above the field. Further details of the sound system design and configuration are not provided – just a photograph of an example of a line array loudspeaker – nor any details how Cadna incorporates a amplified sound system into its modeling input. While these details clarify portions of our previous comments, further clarifications would help evaluate the results and conclusions and what limitations of the 3D acoustic / electroacoustic remain.
Arup Comment	Provide additional 3D acoustic / electroacoustic modeling input data and details listed above.
WJHW Response	Stadium is based on the architectural model. Sound system design is based on a generic touring concert sound system and specific inputs are indicated on page 7 of the report. Frequency spectrum is based on a typical pop music concert spectrum. Modeling standards include: • Frequency spectrum utilized was from a previously measured rock concert. • Industry Standard: ISO 9613 • Meteorology was not accounted for in calculations. • Ground absorption was not accounted for in calculations. • Lateral Diffraction Setting: some Obj This modelling approach was intentionally conservative as it does not include any event attendees (empty seats included in the model), trees and additional landscaping which will further assist in the attenuation of sound.

Item 13 (revision A)	
Arup Response	Requested detailed information not provided. Also see § 2.6 regarding clarification of concert sound level input metric. Additionally, ISO 9613-2 states that "the foliage of trees and shrubs provides a small amount of attenuation, but only if it is sufficiently dense to completely block the view along the propagation path, i.e. when it is impossible to see a short distance through the foliage." Provide further information to quantify the reduction from foliage including areas in the model that are "sufficiently dense" to use this mitigating factor in the analysis.

Item 14	
Document	WJHW letter 2, pages 5-7
	Concert sound prediction maps are included for two scenarios: A baseline design and a design "with Additional Sound Mitigation" (figures 3-6). While WJHW's narrative describes various noise mitigation options in general, details of noise mitigation design included in Henderson's "Additional Sound Mitigation" scenario are not presented.
Arup Comment	Provide design details for "mitigated scenario" to clarify what each of these design elements can offer individually and collectively. Clarify which of the listed elements will be included in the stadium design to clearly illustrate a more quantifiable estimate of outcomes related to noise.
WJHW Response	The mitigated scenario is the result of closing in locations of the north elevation openings. As the design of the structure continues to evolve, the University is committed to finalizing the investigation of mitigation options which will provide the most benefit to the surrounding community.
Arup Response	No additional information has been provided to address the comment.

Item 15	
Document	WJHW letter 2, pages 5-7
	Concert sound predictions are presented as broadband dBA and dBC results only. No frequency band results, or indication of low-frequency results are provided.
Arup Comment	Consider frequency spectrum of predictions results, especially low-frequency (125Hz and below) impact.
WJHW Response	dBA is the standard to which most municipalities determine acceptability of community noise, including the Village of Wilmette and the State of Illinois. Low frequency sound impact is represented by dBC and was included in the report at the request of the City of Evanston.
Arup Response	No additional information has been provided to address the comment.

4.2.2 Interpretation of Concert Sound Analysis

Item 16	
Document	WJHW letters, pages 8-10
	The specific nature of concert sound compared to typical or existing ambient sound sources in the environment are not addressed. Amplified concerts typically contain prevalent low-frequency (bass) energy that is often rhythmic. Characterizing concert sound in terms of single broadband dBA sound levels is not sufficient, and sound pressure levels at lower frequencies should be specifically considered[3]. Considerations appropriate for an impact assessment are referenced in environmental noise survey standards[4], and there is precedent in other noise codes, agreements, and guidance documents[5].
Arup Comment	Provide a noise impact study that contains specific consideration of characteristics of concert music sounds compared to other existing ambient sound in the community.
WJHW Response	Model images of the dBA and dBC contour maps have been provided to represent noise from concert events.
Arup Response	Requested design details have not been provided.

[3] ASA/ANSI S12.9-2021/Part 4, sec. Annex D: Sounds with strong low-frequency content.

[4] ASTM E1686-16, *Standard Guide for Applying Environmental Noise Measurement Methods and Criteria*, section 10.5.1.4.

[5] The Noise Council, *Code of Practice on Environmental Noise Control at Concerts* (London: Chadwick House Group Ltd., 1995).

Item 17 (revision A)	
Document	WJHW letters, pages 5-6
	An argument is made for the shielding effect of Northwestern University buildings to the North as partial justification of North-facing orientation of sound system. However, building shielding appears to benefit a small percentage of Wilmette residential land area as demonstrated in Henderson's 3D acoustic / electroacoustic modeling output.
Updated Document	WJHW letter 3, page 9
	An argument is made that alternative stage locations do not realize the sound reduction benefits of the building barrier effect of structures to the North of Ryan Field in comparison to those to the South. However, 3D acoustic / electroacoustic modeling is not presented to qualify this conclusion and provide numerical and statistical comparison of the predicted sound levels and the population affected.
Arup Comment	Provide further clarification on the level of benefit shielding is providing for community noise from concert events between properties north and south of the field with the alternative stages.
WJHW Response	The benefit of shielding from the University buildings is noted in the report on page 9. In addition to the shielding effect of the buildings to the north, reference Appendix C North Stage Analysis for additional factors which warrant the final stage orientation.
Arup Response	No additional information has been provided to address the comment.

Item 18 (revision A)	
Document	WJHW letters, page 6
	An argument is made that the effects of including structures beyond the Northwestern University property (not included in Henderson's 3D acoustic / electroacoustic model) would result in lower noise levels: "…would limit how far into the residential area sound travels before it reaches ambient levels. The sound levels in the residential community will be lower than at the property line, when factoring in the impact of other structures, distance, directivity, and other factors." There is no analysis or estimate of the difference or at what distance the sound is estimated to be attenuated to ambient (or code required) levels. Buildings also reflect sound and may cause local increases in sound level. Meteorological effects, depending on weather conditions, can result in less attenuation with distance.
Updated Document	WJHW letter 3, page 9
	The updated figures illustrate sound levels that differ from previous results, but no discussion is provided why there may be differences. Reviewing the mitigated option (figure 7), items of note include: • Sound levels at various properties to the north have increased from 80 dBC in previous results to 85 dBC • Sound levels to the north within the residential areas are 75 dBC – 80 dBC along the south facing portion of the property. The north side of the property appears to benefit from some 'sound shadowing' with levels typically at 70 dBC *or* 5 dBC lower than the south portion of the property. No discussion is provided on the effects of the meteorological conditions included, what effects additional meteorological conditions may have which have not been modeled, or a statistical analysis of sound levels from the updated model results with the residential structures included.
Arup Comment	Additional enhancements to the 3D acoustic / electroacoustic model to include meteorological conditions should be included to analyze and accurately quantify the predicted sound attenuation with distance in varying conditions. Statistical analysis of the sound levels with/without the inclusion of the 3D modeled structures should be provided to evaluate the outcomes of their inclusion in the 3D acoustic / electroacoustic model.
WJHW Response	Additional residential and community buildings were included in the model per a previous response. Weather conditions can vary substantially - day to day, time of year, and even over an evening. While these conditions can impact sound transmission, the sheer number of combinations would be impossible to model. At this time, ISO 9613 has been used as the baseline as this is the industry standard to utilize when modelling anticipated sound levels.
Arup Response	No additional analysis of meteorological conditions has been provided. Inversions are common in evening hours, which may result in less sound attenuation at intermediate distances than would be predicted using ISO 9613 methodology.

Item 19	
Document	WJHW letters, pages 4-8)
	There is no description of planned scheduling and timing of sound from concert activities including event setup, soundchecks, the concert event, and teardown.
Arup Comment	Timing of concerts and other sound generating activities associated with concert production should be considered in a noise impact assessment.
WJHW Response	Setup of the stage, sound system, lighting and supplemental equipment will typically occur the day before a concert event. Members of the community will observe trucks and buses entering and leaving the underground loading area. The day of the concert will involve completion of setup activities, sound check activities in the afternoon occurring for 45-60 minutes, and the concert event in the evening. Immediately following the concert event, dismantling of the stage, sound system, lighting and supplemental equipment will commence, and wrap up the following day. Each event is unique in terms of show elements as well as requirements and limitations stated by the venue.
Arup Response	No further comment

Item 20	
Document	WJHW letters, pages 1,3,4,6, & 8
	The focus of the document is the sound impact of residential properties, but does not address other building and land uses in the community.
Arup Comment	A noise impact study should consider all noise-sensitive uses, including but not limited to, residential, worship, healthcare facilities, education (schools), and outdoor parks and recreation spaces that would potentially be impacted.
WJHW Response	The closest sensitive receivers to the stadium are residential neighborhoods and the majority of our effort has been related to them. There are other sensitive spaces within Evanston and Wilmette that may experience sound impact, but our assessment shows these to have lower overall impact. We have not forgotten about these potential receivers, but the overwhelming concern is with the residential properties closest to the stadium.
Arup Response	No further comment.

Item 21	
Document	WJHW letters, page 1
	The introduction states that the memo "includes comments on the potential impact of sport and concert activities at the stadium on the surrounding communities". The WJHW letter does not make clear statements on noise impact to the community. General statements concerning the audibility of concert and gameday activity sound (that they will be audible) are given. The letter compares limited modeled and measured broadband sound pressure levels without reference to local or regional noise codes, and without interpretation of impact on the community these sound levels may have. The geographical extents of the area studied (measured and modeled) are limited and do not address all neighborhoods that may be impacted.
Arup Comment	A noise impact assessment has not been provided and is recommended[10].
WJHW Response	The report outlines the study completed for this project. Statements made are representative of the results.
Arup Response	No further comment.

Item 22	
Document	WJHW letters, pages 9-10
	Recommendations for concert sound mitigation include limiting sound levels by implementing sound level limits, noise level monitoring, and limiting hours of concerts. No specific limits are proposed or details of concert event management approaches for activities such as soundcheck, event start, curfew times, and teardown.
Arup Comment	The concert sound mitigation strategies should be developed in more detail and assessed in terms of both feasibility and effectiveness including event management approaches.

[10] Camilla Adelle and Sabine Weiland, "Policy Assessment: The State of the Art," *Impact Assessment and Project Appraisal* 30, no. 1 (March 1, 2012): 25–33, https://doi.org/10.1080/14615517.2012.663256.

WJHW Response	The report describes noise mitigation elements starting on page 5; notably there are multiple permanent items included in the stadium design that are intended to lower community sound levels for football games and other events, in comparison with the existing stadium, including: • The event level/field being set 20+ ft below grade which reduces total building openings through which sound can escape to the community. • A distributed house sound system within the seating bowl which reduces sound output of the house system compared to the current end zone cluster. • A canopy above the seating areas provides adequate sound reduction characteristics and reduces the bowl opening through which sound can transmit to the community. • Enclosures and walls around the seating bowl that further reduces openings in the building and reduces sound emissions to the community. Temporary sound mitigation strategies focusing on the northwest corner of the stadium are being analyzed, including sound curtains and moveable partitions which will have a minimum sound reduction performance of 20 dBA. In addition to the permanent architectural elements and temporary measures noted above, multiple operational parameters have been proposed such as: • Ending concerts at 10:00 pm Sunday – Thursday and 10:15 pm Friday – Saturday notwithstanding local ordinances allowing sound until 11:00 on weekend evenings. • Installation of sound monitoring devices in and/or around the stadium. Limiting maximum sound levels at the sound board.
Arup Response	No additional information has been provided to address the comment. See general comments in § 2.2

Item 23	
Document	WJHW letter 2, pages 5-7
	Concert sound prediction maps are included for two scenarios: A baseline design and a design "with Additional Sound Mitigation" (figures 3-6).
Updated Document	WJHW letter 3, pages 8-12
	Concert sound prediction maps are included for two scenarios: A baseline design and a design "with Additional Sound Mitigation" (figures 4-7). 3D modelled structures beyond the property line of Northwestern University two to three blocks away have been included. However, no information on the source and currency of the 3D GIS data is noted. A different false color scale step is used in these figures which makes it difficult to compare to the previously published results.
Arup Comment	Provide details for 3D GIS information used. Provide figures with false color map scales equivalent to the previous presented figures (or update previous figures) to allow for direct comparison between modeled results.
WJHW Response	Structures beyond the University's property line were modelled to the following boundaries: Maple Avenue (North), Bryant Avenue (East), Lincoln Street (South) and Broadway Avenue (West). dBA and dBC scale was adjusted to focus on the levels encountered in the model in an effort to minimize confusion caused by the use of similar colors on the previous scale. dBA and dBC data shown in the modeling images can be directly compared as the only adjustment between the two reports was to include the structures outside of the University's property line to the extents noted above.
Arup Comment	Requested information has not been provided.

END OF MEMO

SECOND STATEMENT OF CARL HOPMAN

1. My name is Carl Hopman. I am over 18 years of age and a resident of Wilmette, IL. I am competent to give this affidavit. I have personal knowledge of the facts set forth in this affidavit and, if called as a witness, could testify to them.

2. After my previous Statement in this matter, dated August 10, 2023, I continued to ask Dave Davis and other Northwestern University representatives to honor the university's prior promises to provide the data, assumptions, analysis, and conclusions underlying the "Environmental Assessment Review and Summary," dated April 20, 2023, prepared by Northwestern's consultant, Wrightson, Johnson, Haddon, and Williams ("WJHW").

3. Among other items, I requested that Northwestern produce Henderson Engineers' "draft report dated January 26, 2023," which WJHW emphasized is the "sole" basis for its summary and comments "on the potential impact of sport and concert activities in the stadium on the surrounding communities."

4. As detailed in my first Statement, I first sought this information on May 24 and reiterated my request to Mr. Davis in emails on **May 30, May 31, June 1, June 2, June 5, June 13, June 15, June 20, June 23, June 27, June 28, June 30, July 5, July 7, July 10, July 12, July 14, July 18, July 20, July 24, July 27, August 3, and August 7.**

5. After my first Statement, I repeated my request in emails dated **August 11, August 16, August 18, August 22, and August 24.**

6. On **August 25,** Mr. Davis sent me a copy of the Second Revised WJHW Summary, dated August 2, 2023, which Northwestern had already submitted to the City of Evanston. Refusing to produce the Henderson draft that I had been seeking for three months, Mr. Davis made the non-responsive assertion that there was "no additional output data beyond what has been included in this revised report."

7. On the same day, **August 25,** I reminded Mr. Davis that what he had provided was not what I have been asking for. Receiving no response, I emailed Mr. Davis again on **August 26.**

8. On **September 6,** I received an email from Mr. Davis. In style, tone, and content it deviated starkly from his previous messages to me. The message ignored his earlier promises to provide Henderson's January 26, 2023 draft upon which WJHW relied exclusively for its summary and comments. Instead, the message asserted summarily,

   "The University submitted the April 20, 2023 WJHW analysis with its submission in May, which included the Henderson study. There have been no changes to the Henderson

study since this submission. Henderson has confirmed that there is no additional information to be shared."

9. In my **September 7** response, I reminded Mr. Davis that Henderson's draft, dated January 26, 2023, had never been fully disclosed. Mr. Davis answered, "As stated in our previous correspondence, we have provided all the information that is relevant to your specific requests. At this point, we consider the matter closed and will not be pursuing any further investigation on this particular subject."

10. My email exchanges with Mr. Davis since August 3, 2023, are listed below in chronological order (emphasis supplied as indicated in bold):

Email Thread

From: Carl Hopman <chopman1@gmail.com>
Sent: Thursday, August 3, 2023 4:00 PM
To: Dave Davis <dave.davis@northwestern.edu>
Cc: Braiman, Michael <braimanm@wilmette.com>; Craig A Johnson <johnson-c@northwestern.edu>; Eleanor Revelle <erevelle@cityofevanston.org>; Greg Hughes <ghughes@wjhw.com>; Greg Stripp <greg.stripp@northwestern.edu>; Luke Figora <luke.figora@northwestern.edu>; Northwestern President <nupresident@northwestern.edu>
Subject: Re: Sound analysis for Ryan Field

Dear Dave and the other Northwestern officials in cc,
Would you mind explaining why you still have not shared the data I have been requesting for over two months?
Again, at this point, I am only asking for data that requires no additional work, since you already have it (questions 1 and 2).
Do you have any objections to being transparent with the community?
Thank you for your help,
Carl.

On **Mon, Aug 7, 2023** at 8:09 AM Carl Hopman <chopman1@gmail.com> wrote:
Dear Dave, Luke, Craig, Greg and Michael,
I am baffled that none one of you five has found time to answer any of the four emails I sent you since July 20th.
Again, I am only asking Northwestern to share information that you already have, in a spirit of transparency with the community.
Do you have any objection to this?
Thank you for your time,
Carl.
1) Could you please share the details of both analyses WJHW did for this renovation (project numbers 22005-000 and 22005-ext1). There is no need to add additional work, just the detailed analyses and reports that were done for, or shared with, the university.

2) Could you please also share the details of "the results and data collected and developed by Henderson Engineers (draft, dated January 26, 2023)". Since this draft has already been written, probably by Mischa (project # 1350000841), it should only take her a minute to share that information with Eleanore and me. Could you also please include the full content of project # 1350000841 ?

On **Mon, Aug 7, 2023** at 12:33 AM Dave Davis <dave.davis@northwestern.edu> wrote:
Dear Carl,

I truly appreciate your patience with this matter. Please know that we have not overlooked your request and understand the urgency and significance of the data you seek. Our team has been fully engaged in finalizing all our reports for the Land Use Commission to ensure they meet the strict deadlines for submittals. We are also awaiting revised models and analysis from Henderson and WJHW, and we will share that information as soon as it's ready.

I apologize for any inconvenience caused by the delay in providing the requested data. At this time, our primary focus is fulfilling the requirements of City staff and the Land Use Commission.

Thank you once again for your understanding and cooperation. Please don't hesitate to contact me if you have any further questions.

Best regards,

Dave D. Davis
Senior Executive Director
Neighborhood and Community Relations
1800 Sherman Ave, Suite 7-100
Evanston, IL 60208
dave.davis@northwestern.edu
O: 847.467.5762
C: 847.331.8710
Northwestern | Neighborhood and Community Relations
www.northwestern.edu/communityrelations

On **Fri, Aug 11, 2023** at 12:58 PM Carl Hopman <chopman1@gmail.com> wrote:
Dear Dave, Luke, Craig, Greg and Michael,
I do not understand how the five of you could decently be asking me to wait further.
I have already been waiting since May 24th, more than two months ago. On June 27th, you promised Eleanor Revelle and me that we would get answers by June 30th, later delayed to July 7th, which was over a month ago.

You only need to write a one line email to Greg Hughes and Mischa Haramia to allow them to realease [sic] the information that is already available to you, but hidden from the community.
Thank you for your commitment to transparency with the community,
Carl.

1) Could you please share the details of both analyses WJHW did for this renovation (project numbers 22005-000 and 22005-ext1). There is no need to add additional work, just the detailed analyses and reports that were done for, or shared with, the university.
2) Could you please also share the details of "the results and data collected and developed by Henderson Engineers (draft, dated January 26, 2023)". Since this draft has already been written, probably by Mischa (project # 1350000841), it should only take her a minute to share that information with Eleanore and me. Could you also please include the full content of project # 1350000841 ?

On **Wed, Aug 16, 2023** at 10:31 AM Carl Hopman <chopman1@gmail.com> wrote:
Dear Dave, Luke, Craig, Greg and Michael,
I hope Dave had a nice vacation.
Can one of you please allow Greg Hughes to release the existing information requested below asap?
I am not asking for any new work or analysis.
Thank you very much,
Carl.

1) Could you please share the details of both analyses WJHW did for this renovation (project numbers 22005-000 and 22005-ext1). There is no need to add additional work, just the detailed analyses and reports that were done for, or shared with, the university.
2) Could you please also share the details of "the results and data collected and developed by Henderson Engineers (draft, dated January 26, 2023)". Since this draft has already been written, probably by Mischa (project # 1350000841), it should only take her a minute to share that information with Eleanore and me. Could you also please include the full content of project # 1350000841 ?

On **Fri, Aug 18, 2023** at 10:34 AM Carl Hopman <chopman1@gmail.com> wrote:
Dear Dave, Luke, Craig, Greg and Michael,
Can one of you please allow Greg Hughes to release the existing information requested below?
I am not asking for any new work or analysis, so it should be quick and easy.
Since you are requesting a zoning change from the community, it would be great if you did not keep this information for yourself, hidden from the community.
Thank you very much,
Carl.

1) Could you please share the details of both analyses WJHW did for this renovation

(project numbers 22005-000 and 22005-ext1). There is no need to add additional work, just the detailed analyses and reports that were done for, or shared with, the university.
2) Could you please also share the details of "the results and data collected and developed by Henderson Engineers (draft, dated January 26, 2023)". Since this draft has already been written, probably by Mischa (project # 1350000841), it should only take her a minute to share that information with Eleanore and me. Could you also please include the full content of project # 1350000841 ?

On **Tue, Aug 22, 2023** at 10:25 AM Carl Hopman <chopman1@gmail.com> wrote:
Dear Dave, Luke, Craig, Greg and Michael,
Do you see any issue with releasing to the community the information that the University has (listed below), which I have been asking for months?
As you know, the Evanston land use commission, which would have the ability to evaluate this information, is scheduled in only a few short weeks.
Thank you very much,
Carl.

1) Could you please share the details of both analyses WJHW did for this renovation (project numbers 22005-000 and 22005-ext1). There is no need to add additional work, just the detailed analyses and reports that were done for, or shared with, the university.
2) Could you please also share the details of "the results and data collected and developed by Henderson Engineers (draft, dated January 26, 2023)". Since this draft has already been written, probably by Mischa (project # 1350000841), it should only take her a minute to share that information with Eleanore and me. Could you also please include the full content of project # 1350000841 ?

From: Carl Hopman <chopman1@gmail.com>
Sent: Thursday, August 24, 2023 10:37 AM
To: Dave Davis <dave.davis@northwestern.edu>; Luke Figora <luke.figora@northwestern.edu>; Craig A Johnson <johnson-c@northwestern.edu>; Greg Stripp <greg.stripp@northwestern.edu>; Northwestern President <nupresident@northwestern.edu>
Cc: Eleanor Revelle <erevelle@cityofevanston.org>; Braiman, Michael <braimanm@wilmette.com>; Greg Hughes <ghughes@wjhw.com>
Subject: Re: Sound analysis for Ryan Field

Dear Dave, Luke, Craig, Greg and Michael,

I want to make sure there is no miscommunication. In Dave's last email, from more than two weeks ago, he again asks me to wait while you are doing more analysis.

In case I have not been clear, I am not asking for any new work or analysis. I am simply asking that you share the information that you already have.

Thank you very much,
Carl.

1) Could you please share the details of both analyses WJHW did for this renovation (project numbers 22005-000 and 22005-ext1). There is no need to add additional work, just the detailed analyses and reports that were done for, or shared with, the university.
2) Could you please also share the details of "the results and data collected and developed by Henderson Engineers (draft, dated January 26, 2023)". Since this draft has already been written, probably by Mischa (project # 1350000841), it should only take her a minute to share that information with Eleanore and me. Could you also please include the full content of project # 1350000841 ?

On **Fri, Aug 25, 2023** at 2:03 PM Dave Davis <dave.davis@northwestern.edu> wrote:
Dear Carl,

Thank you for your continued patience with this request. Attached is a copy of the most recent noise study we submitted to the City of Evanston. Additionally, after consulting with our experts and the team responsible for this study, we can confirm that there is no additional output data beyond what has been included in this revised report.

I hope this information is helpful to you. Thank you for your understanding and continued engagement with this project.

Dave D. Davis
Senior Executive Director
Neighborhood and Community Relations
1800 Sherman Ave, Suite 7-100
Evanston, IL 60208
dave.davis@northwestern.edu
O: 847.467.5762
C: 847.331.8710
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www.northwestern.edu/communityrelations

On **Fri, Aug 25, 2023** at 5:12 PM Carl Hopman <chopman1@gmail.com> wrote:
Dear Dave, Luke, Craig, Greg and Michael (Schill, for the avoidance of doubt),

Thank you for sharing the updated review and summary you had sent to Evanston.
Unfortunately, this is not what I have been asking for.
Indeed, what I have been requesting for the last three months is the details of the analyses done by Hendersen Engineers and WJHW, and not only their "output data".
In particular, you have never shared with me the "draft, dated January 26, 2023" from Henderson Engineers.

I also requested the full content of project # 1350000841 from Henderson Engineers, and the full content of project numbers 22005-000 and 22005-ext1 from WJHW, which you have not shared either.
Would you mind sharing those at your earliest convenience?

Thank you very much,
Carl.

On **Wed, Aug 30, 2023** at 10:30 AM Carl Hopman <chopman1@gmail.com> wrote:
Dear Dave, Luke, Craig, Greg and Michael (Schill, for the avoidance of doubt),

I wanted to make sure you got my message on Friday.
Could you please send me the documents I have been requesting for over three months?
In particular, you have never shared with me the "draft, dated January 26, 2023" from Henderson Engineers.
I also asked for the full content of project # 1350000841 from Henderson Engineers, and the full content of project numbers 22005-000 and 22005-ext1 from WJHW, not only their "output data".
Would you mind sharing those at your earliest convenience?

Thank you very much,
Carl.

From: Carl Hopman <chopman1@gmail.com>
Sent: Wednesday, September 6, 2023 10:36 AM
To: Dave Davis <dave.davis@northwestern.edu>; Greg Stripp <greg.stripp@northwestern.edu>; Craig A Johnson <johnson-c@northwestern.edu>; Northwestern President <nupresident@northwestern.edu>; Luke Figora <luke.figora@northwestern.edu>
Cc: Eleanor Revelle <erevelle@cityofevanston.org>; Braiman, Michael <braimanm@wilmette.com>; Greg Hughes <ghughes@wjhw.com>
Subject: Re: Sound analysis for Ryan Field

Dear Dave, Luke, Craig, Greg and Michael,

Any news on this?

On **Wed, Sep 6, 2023** at 3:42 PM Dave Davis <dave.davis@northwestern.edu> wrote:
Dear Carl,

I checked with our project team again to confirm whether there is any additional information not included in the report I previously shared with you. I am happy to confirm that there is not, and below is additional information based on your specific requests:

- ***"Full content of project # 1350000841 from Henderson Engineers"***

  This project number is not associated with the Ryan Field project. This project ID is associated with Henderson's bid on another Northwestern project from years ago (that they did not win). Mischa was associated with that bid but has never been associated with the Ryan Field project. Our best guess is that you, or someone else, received this project ID when calling Henderson directly and asking about Northwestern.

- ***"The draft, dated January 26, 2023, from Henderson Engineers"***

  The University submitted the April 20, 2023 WJHW analysis with its submission in May, which included the Henderson study. There have been no changes to the Henderson study since this submission. Henderson has confirmed that there is no additional information to be shared.

- ***"The full content of project numbers 22005-000 and 22005-ext1 from WJHW"***

  These are simply WJHW's internal project numbers for this engagement with Northwestern. Again, these project numbers are not referenced anywhere else, so our assumption is that you, or someone else, received them by calling WJHW directly. WJHW has confirmed there is nothing else associated with these numbers except their report, which we sent to you already.

I hope this helps clarify your questions.

Take care,

Dave D. Davis
Senior Executive Director
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C: 847.331.8710
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www.northwestern.edu/communityrelations

From: Carl Hopman <chopman1@gmail.com>
Sent: Thursday, September 7, 2023 9:57 PM
To: Dave Davis <dave.davis@northwestern.edu>
Cc: Greg Stripp <greg.stripp@northwestern.edu>; Northwestern President <nupresident@northwestern.edu>; Luke Figora <luke.figora@northwestern.edu>; Eleanor Revelle <erevelle@cityofevanston.org>; Braiman, Michael

<braimanm@wilmette.com>; Greg Hughes <ghughes@wjhw.com>
Subject: Re: Sound analysis for Ryan Field

Thank you very much, Dave.
I really appreciate you looking into this.
1) For the "draft, dated January 26, 2023, from Henderson Engineers", it has never been FULLY disclosed. Indeed, no document dated January 26 2023 was ever shared with the community. In addition, according to WJHW, their analysis was BASED on this draft, and SUMMARIZES the results from the Henderson study, which clearly implies that the full study was not included in their report : "The information below summarizes the results and data collected and developed by Henderson Engineers (draft, dated January 26, 2023)" and "Information contained herein is based solely on the data presented by Henderson and no additional analysis was conducted". Would you mind please sharing the FULL content of this draft as well as the FULL content of the Henderson study/data (for which, I apologize, I had the wrong project number)?
2) For the "full content of project numbers 22005-000 and 22005-ext1 from WJHW", it was never included in WJHW's summary report. Indeed, there are two project numbers, but only one summary report. Could you please allow them to share the FULL CONTENT of both analyses, including all assumptions, technical inputs, alternative options etc., which were used to produce the output that they shared?
Thank you again,
Carl.

From: **Dave Davis** <dave.davis@northwestern.edu>
Date: **Thu, Sep 7, 2023** at 10:15 PM
Subject: RE: Sound analysis for Ryan Field
To: chopman@alum.mit.edu <chopman@alum.mit.edu>
Cc: Greg Stripp <greg.stripp@northwestern.edu>, Northwestern President <nupresident@northwestern.edu>, Luke Figora <luke.figora@northwestern.edu>, Eleanor Revelle <erevelle@cityofevanston.org>, Braiman, Michael <braimanm@wilmette.com>, Greg Hughes <ghughes@wjhw.com>

Dear Carl,

As stated in our previous correspondence, **we have provided all the information that is relevant to your specific requests. At this point, we consider the matter closed and will not be pursuing any further investigation on this particular subject.**

Should you have any other questions or require additional information on a different matter, please feel free to reach out to me.

Take care,

Dave D. Davis

Senior Executive Director
Neighborhood and Community Relations
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dave.davis@northwestern.edu
O: 847.467.5762
C: 847.331.8710
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www.northwestern.edu/communityrelations

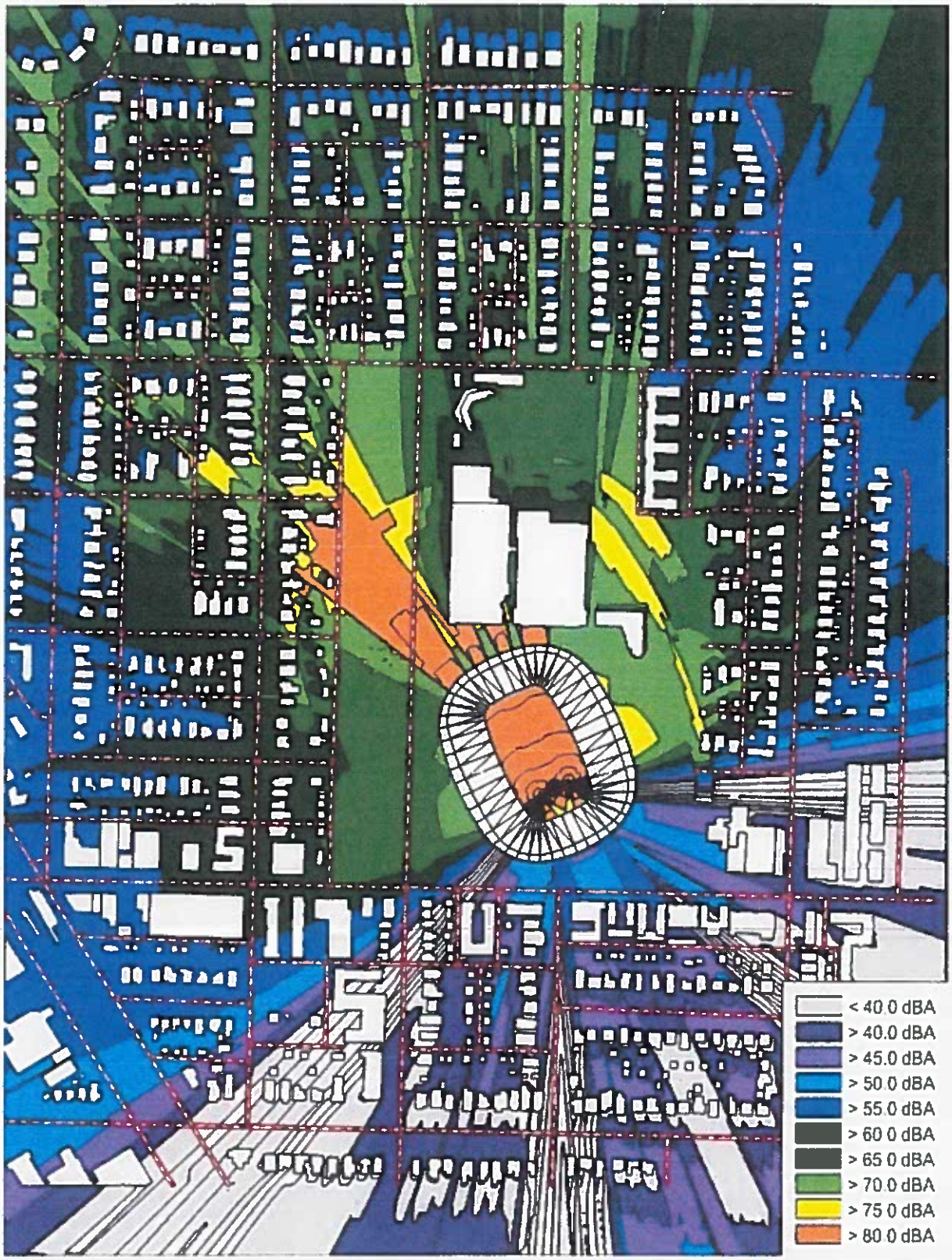
From: **Carl Hopman** <chopman1@gmail.com>
Date: **Mon, Sep 11, 2023** at 10:37 AM
Subject: Re: Sound analysis for Ryan Field
To: Dave Davis <dave.davis@northwestern.edu>, Greg Stripp <greg.stripp@northwestern.edu>, Northwestern President <nupresident@northwestern.edu>, Luke Figora <luke.figora@northwestern.edu>, Craig A Johnson <johnson-c@northwestern.edu>
Cc: Eleanor Revelle <erevelle@cityofevanston.org>, Braiman, Michael <braimanm@wilmette.com>, Greg Hughes <ghughes@wjhw.com>

Dear Dave, Luke, Craig, Greg and Michael (Schill),
Thank you for your quick answer.
I want to make sure everyone has the record straight here.
Clearly, Northwestern University is refusing to divulge to the community various critical pieces of information it has in its possession.
As I demonstrated below, **you have never disclosed the "draft, dated January 26, 2023, from Henderson Engineers". Indeed, Evanston has never received any document dated January 26 2023, as an attachment or otherwise. In addition, if the content of that draft were the same as that of the summary from WJHW, you would have no objection to releasing the original.**
Since the Freedom of Information Act does not apply to private institutions such as Northwestern, you have no obligation to transparency, and you have the legal right to hide any data you want from the public. Whether this is acting in good faith and partnership with the community is another matter.
If this information were anodyne, you would have shared it months ago, when I first asked for it, and as you had promised in public to Alderman Revelle.
Your last email makes it unequivocal that you want to keep this important evidence hidden from the community, and that you do not mind breaking your promise to the City of Evanston.
Thank you for this clarification,
Carl.

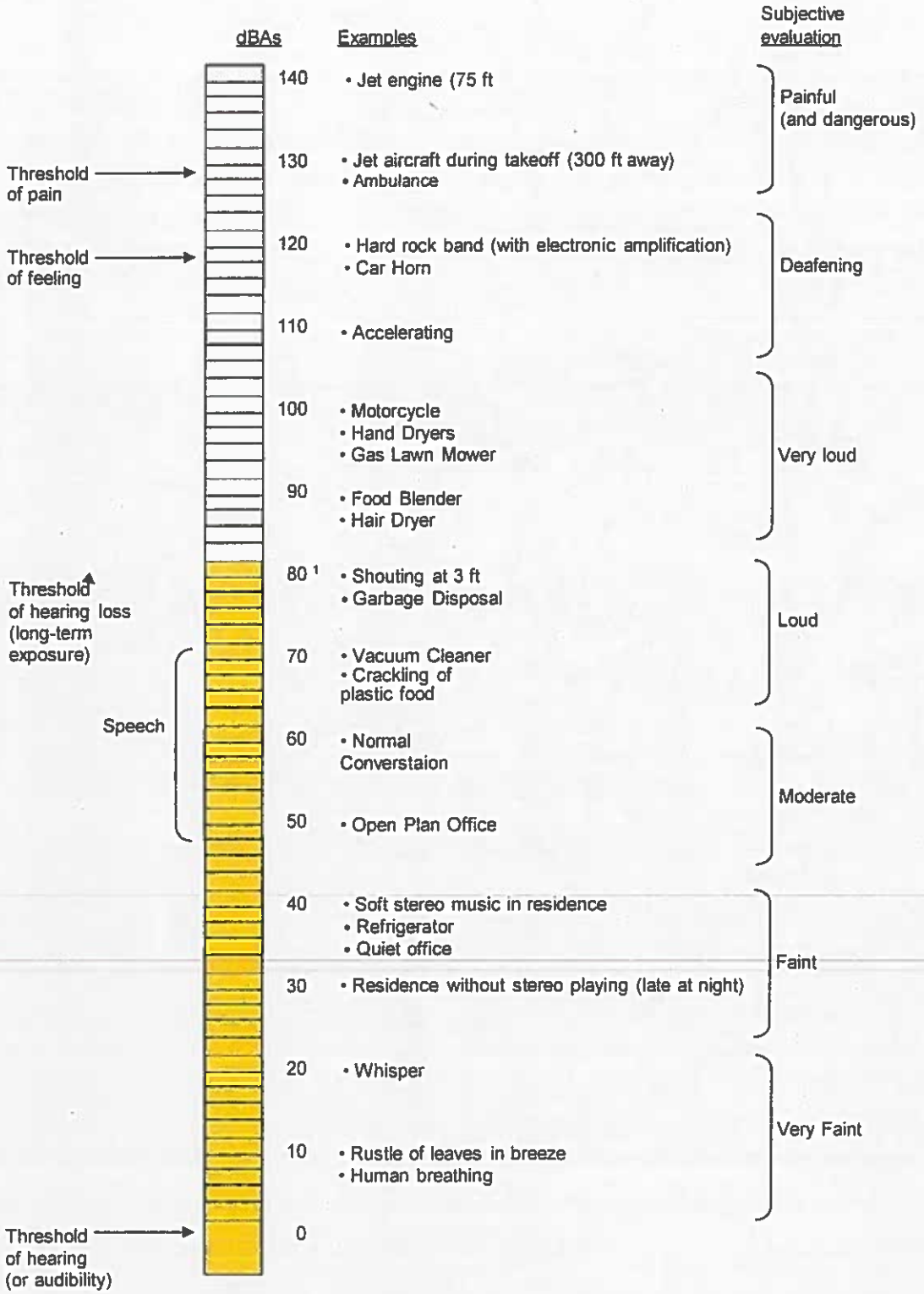
Signed _____ this 18 day of September, 2023

Carl Hopman
311 Driftwood Lane
Wilmette, IL 60091

Figure 4: Concert Environmental Assessment Results (dBA)



Appendix A: Reference Chart of Common Sounds in dBA



[1] Continuous exposure to sound energy above 80 dBA can be hazardous to health and can cause hearing loss for some persons.

Wrightson, Johnson, Haddon & Williams, Inc.
Designers and Planners for Sound, Video, Multi-Media, Telecommunication, Broadcast, Theatre & Acoustics

"Provide a canopy above the seating areas that provides adequate sound reduction characteristics."

Source: **WJHW Summaries (Greg Hughes):** April 20, 2023, p. 4; June 27, 2023 Revision, p. 4; August 2, 2023 Revision, p. 6

Dan Loosbrock, Owner's Rep.,VP-CAA ICON:

Commissioner Halik: "Do they have any acoustical attenuation properties?"

Loosbrock: "They do have some. It is limited... The attenuating factors are primarily based on the roofing material that is creating the canopy itself. It's very limited as far as the benefit that it brings, but there is something there." (1:43:45)
https://youtu.be/-x-nKNqb_zQ?t=6224

"Utilize a distributed house sound system within the seating bowl."

Source: **WJHW Summaries (Greg Hughes):** April 20, 2023, p. 3; June 27, 2023 Revision, p. 3; August 2, 2023 Revision, p. 5

Sept. 6, 2023 Hearing

Michael Godoy, CAA ICON, concert witness:

Commissioner Lindwall: **"Don't artists usually bring their own sound systems?"**

Godoy: **"That's correct. The production, sound, lighting, that would be brought with the artist.... In my experience, the venue's sound system is not utilized." (2:34:43; 2:40:35)**
https://youtu.be/-x-nKNqb_zQ?t=9288

"Taylor Swift breaks curfew at Levi's Stadium during surprise song set"

Source: *San Francisco Chronicle*, July 28, 2023, https://shorturl.at/lqyN1

"Dave Grohl: I broke gig curfew because I knew we could afford the fine."

"The Foo Fighters played for almost three hours at the show."

Source: https://shorturl.at/hkxW6

"It may be difficult to determine an appropriate interior sound limit at this time without understanding exactly how sound escapes the stadium in **real events**."

***

"**We do not intend the limits to be set at such low** volume that the enjoyment of the concert is compromised, nor **to make the venue uncompetitive in a competitive market**."

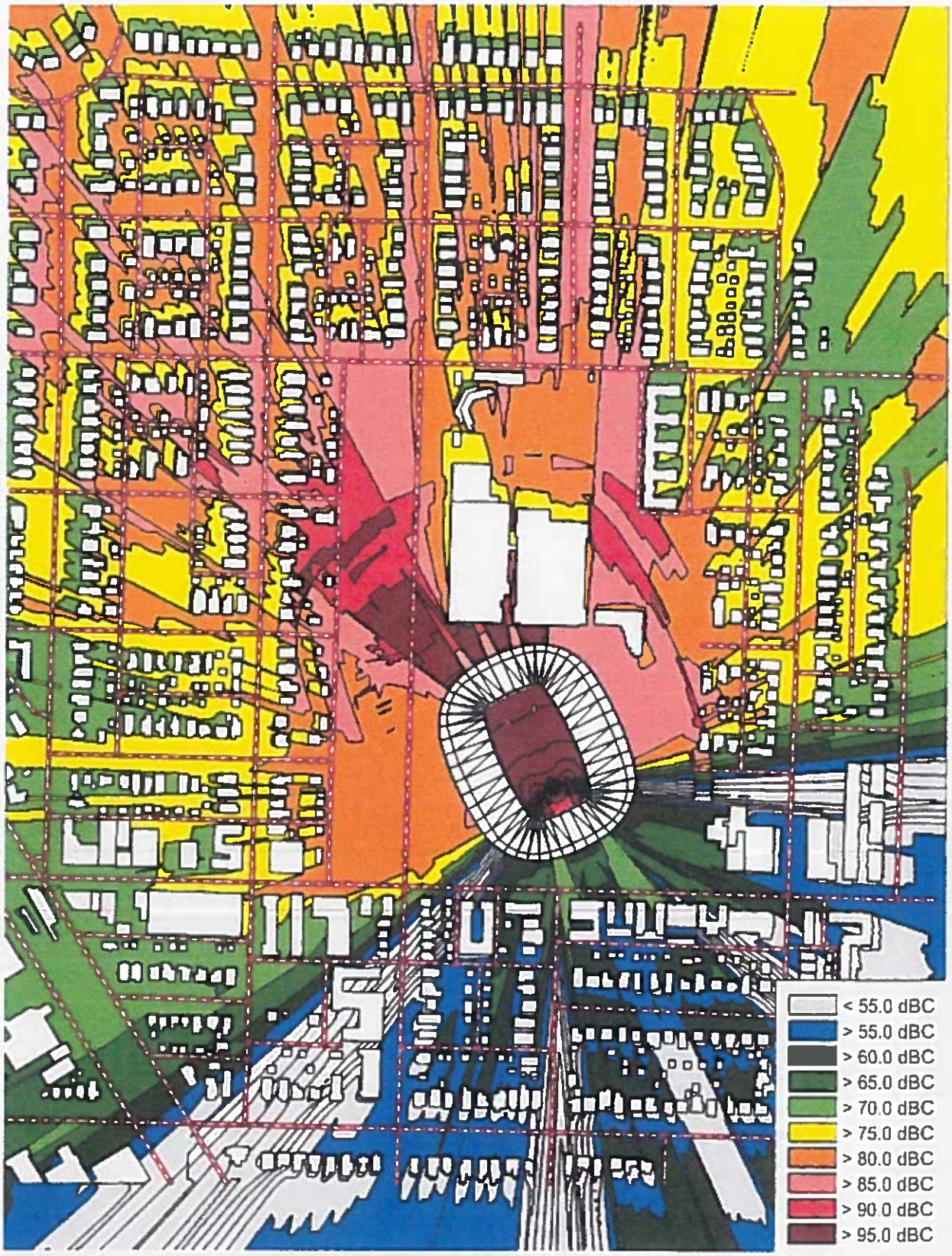
Source: **WJHW Summaries (Greg Hughes):** April 20, 2023, p. 8; June 27, 2023, p. 9; August 2, 2023, p. 14

President Michael Schill

"I am excited about this project, which will create a world-class new stadium...."

Source: "Northwestern releases early design concepts for dynamic new Ryan Field," Northwestern University Press Release, Sept. 28, 2022

Figure 5: Concert Environmental Assessment Results (dBC)



The Problem of Low-Frequency Noise Pollution (dBC)

"Cardiovascular diseases (variations in heart rate) are another effect on human health due to exposure to low-frequency noise."

Source: J. Alves, F. Palva, L. Silva, and P. Remoaldo "Low-Frequency Noise and Its Main Effects on Human Health—A Review of the Literature between 2016 and 2019," *Applied Sciences,* Vol. 10, Issue 15 (July 28, 2020), https://shorturl.at/sxBDH

"Intense low-frequency noise appears to produce clear symptoms including respiratory impairment and aural pain."

"The effects of low-frequency noise are of particular concern because of its pervasiveness due to numerous sources, efficient propagation, and reduced efficacy of many structures (dwellings, walls, and hearing protection) in attenuating low-frequency noise compared with other noise."

Source: Birgitta Berglund, Peter Hassmén, R. F. Soames Job, "**Sources and effects of low-frequency noise**," *Journal of the Acoustical Society of America,* Vol. 99(5), May, 1996, https://shorturl.at/oxFH4

Table 1: Comparison of predicted concert sound with surveyed ambient sound at Wilmette locations (Revised)

Location	Sound Level Measured[1]		Wilmette noise ordinance[2]	Illinois State noise limits[3]	Henderson predicted concert sound level[4,5]	Noise codes exceeded? (Y/N)	Ambient sound levels exceeded? (Y/N)
	L_{90}	L_{eq}					
640 Gregory Ave	39 dBA 53 dBC	47 dBA 60 dBC	45 dBA	55 dBA 73 dBC	65-75 dBA 80-90 dBC	Y	Y
624 Isabella St	40 dBA 53 dBC	52 dBA 65 dBC	45 dBA	55 dBA 73 dBC	65-75 dBA 80-90 dBC	Y	Y
128 5th St	39 dBA 53 dBC	47 dBA 58 dBC	45 dBA	55 dBA 73 dBC	65-75 dBA 80-90 dBC	Y	Y
6th St & Maple Ave	38 dBA 52 dBC	46 dBA 59 dBC	45 dBA	55 dBA 73 dBC	65-70 dBA 80-85 dBC	Y	Y

[1] Sound levels from Arup ambient sound survey of Wilmette receivers conducted on the evening of August 3, 2023 (Survey details in Appendix A). Henderson noise measurement results are not referenced in this table, as they did not measure ambient sound in Wilmette.

[2] Code of Ordinances Wilmette, IL nighttime noise limit applicable during likely concert times (7PM-10PM). .

[3] Illinois Administrative Code. dBA and dBC limits derived from tabulated octave band 'daytime limits' applicable during likely concert times (7PM-10PM). Code limits become 10dB more stringent at 'nighttime' (after 10PM).

[4] Henderson's predicted concert noise levels taken from Figures 4 and 5 of WJHW letter dated August 2, 2023.

[5] Noise levels assessed for areas and facades with Southern and Eastern exposure towards Ryan Field and not shielded by the immediately adjacent home (if applicable).

World Health Organization: "Community Noise"

Birgitta Berglund & Thomas Lindvall (eds.), 1995. *This document was published by the World Health Organization (WHO).* Online source: https://shorturl.at/fDQW2

7.6.1.1. Direct psychological responses

"A sudden change in the acoustic surroundings may activate several physiological systems leading to changes such as increase in heart rate, increase in blood pressure, vascular constrictions, and may even initiate alarm reactions."

7.6.1.2. Indirect noise effects and stress

"In real life community noise interferes with a number of activities, for example, recreation, sleep, communication, and concentration. The risk of adverse effects on health must be considered in the light that noise as a stressor may operate through physiological responses modified in complex ways by individual psychological processes."

10.6.2. Hearing Impairment Induced by Community Noise

"High-level noise exposures that may give rise to noise-induced hearing deficits are by no means restricted to occupational nonindustrial situations."

"Such levels can also occur in open air concerts, discotheques, motor sports, shooting ranges, and dwellings in terms of noise from loudspeakers or other leisure activities."

10.6.3. Sleep Disturbance

"Even if the total equivalent continuous sound pressure level is fairly low, a small number of noise events with a high maximum level will affect sleep adversely."

"If the noise exposure is not continuous, the maximum sound pressure level is best correlated to sleep disturbances. Effects have been observed at individual exposures of 45 dB LAmax, or even less."

"At nighttime outdoors, sound pressure levels should not exceed 45 dB LAeq, so that people may sleep with bedroom windows open."

EVANSTON

"It shall be unlawful for any person within the City to make, continue, or permit ***any loud, unnecessary or unusual noise which annoys a reasonable person of ordinary sensibilities, disturbs, injures or endangers the comfort, health, peace or safety of others*** within the limits of the City. ***Noise in violation of this Section is a public nuisance."***

Source: *Evanston Code, Title 9, Ch. 5, Sec. 9-5-20: NOISES PROHIBITED*

WILMETTE

"No activity… may be conducted in such a manner that it generates a level of sound on another property which is greater than the A-weighted sound level set forth in Table 13-3: A-Weighted Sound Limits."

VILLAGE OF WILMETTE, ILLINOIS *TABLE 13-3: A-WEIGHTED SOUND LIMITS*		
DISTRICT CLASSIFICATION OF RECEIVING PROPERTY	*TIME OF DAY*	*MAXIMUM A-WEIGHTED SOUND LEVEL*
RESIDENTIAL DISTRICTS	7:00 a.m. to 7:00 p.m. **7:00 p.m. to 7:00 a.m.**	50 dB(A)**45 dB(A)**
NON-RESIDENTIAL DISTRICTS	7:00 a.m. to 7:00 p.m. 7:00 p.m. to 7:00 a.m.	60 dB(A)55 dB(A)

Source: *Code of Ordinances, Appendix A, Art. 30-13, Sec. 30-13.7-Environmental performance standards, (a) Noise*

EVANSTON

"(H) Schools, Courts, ***Churches and Hospitals:*** The creation within the City of ***any excessive noise in the vicinity of any school, institution of learning, church,*** *court or* ***hospital,*** while the same is in use, which ***unreasonably interferes with the workings of such institution, or which disturbs or unduly annoys patients in the hospital,*** provided conspicuous signs are displayed in the vicinity of any such building indicating that the same is a school, hospital, court or church."

Source: Evanston Code, Title 9, Ch. 5, Sec. 9-5-20 NOISES PROHIBITED

President Michael Schill

"The rapidly decaying condition of Ryan Field will require a major investment by the University in any case…

It is important to note that Northwestern would have to make a similar financial investment to restore the current, crumbling Ryan Field to an adequate level to play seven football games per year as it will to create the new Ryan Field."

Source: "To the Northwestern Community: An Update on Our Plans for Ryan Field," Northwestern University Press Release, Aug. 17, 2023