Outlook

Application #2025-0287/Wake Robin LLC and Ms Serena Granberry (ARADEV LLC)/104 and 106 Sharon Road & 53 Wells Hill Road/ Special Permit for Hotel, Redevelopment of the Wake Robin Inn (Section 213.5)?Map 47/ Lot 2 and 2-1

From wcruger@gmail.com <wcruger@gmail.com>

Date Tue 9/9/2025 2:45 PM

To Land Use <landuse@salisburyct.us>

Cc Bennett Brooks <bbrooks@brooksacoustics.com>; Perley H. Grimes <pgrimes@cramer-anderson.com>; Terri Carlson <tcarlson@crameranderson.com>; Angela Cruger <angelacruger@gmail.com>

1 attachment (415 KB)

BAC PJ2024-1440-L06 - Wake Robin Inn Special Permit Eval - Response to Commission Questions 20250908-3 .pdf;

Please see attached response from Mr Bennett Brooks to questions submitted from Commissioners Cockerline, Riva and Shyer.

Please ensure that this is uploaded to the website

Thank you

Sent from my iPad

BAC
Brooks Acoustics Corporation
35 Talcottville Road Suite 31 Vernon, CT 06066 860.559.4685

Town of Salisbury
Planning and Zoning Commission
Attn: Dr. Michael Klemens
27 Main Street
Salisbury, CT 06068

8 September 2025
PJ024-1440-L06

Subject: Wake Robin Inn – Brooks Acoustics Corp (BAC) Response to Commission Questions

Dear Chairman Klemens and other Commission Members:

This letter provides answers by BAC to Commission Questions regarding the subject Special Permit Application (Ref. 1), with regard to acoustical and noise issues.

At the Public Hearing on 8/25/2026, and subsequently, Commission Vice-Chair Shyer, Commissioner Riva and Commissioner Cockerline asked the following questions:

1- (Ms. Shyer) How is construction noise mitigated?
2- (Ms. Shyer) How is swimming pool noise mitigated, with food and alcohol served?
3- (Mr. Riva) Can you explain the sound level limits that should be used?
4- (Mr. Cockerline) Is no audible sound an attainable goal given that measurable sound already exists? Salisbury P&Z recently issued a special permit to 75 Sharon Rd for complete demolition of one home and construction of another with no restriction on construction noise. Should the same standard apply to this application?
5- (Mr. Cockerline) Is dBC something we need to consider. How and when is it applied?
6- (Mr. Cockerline) The applicant has committed to complete control of sound system in event space. Can low Hertz frequencies be targeted for electronic control? Are these frequencies as easily controlled and/or monitored as dBA?
7- (Mr. Cockerline) Are there effective sound barriers that could be used for parking area and mechanical systems that would further reduce measurable sound? By how much? Also specific recommendations for these barriers.
8- (Mr. Cockerline) Explain soundscape analysis. Would this be helpful in this application?

Answer 1: Construction Noise (Ms. Shyer)

Construction noise may be mitigated to a small degree. For a project of this size and scope extraordinary efforts would be needed to moderately reduce the construction noise that reaches the immediate neighbors and the entire neighborhood.

Note that the CT State Noise Regulations [Regulations of Connecticut State Agencies (RCSA) Sec. 22a-69-1 et seq.] exempt construction noise (Sec. 22a-69-1.8). However, the CT State Regs also state:

> Sec. 22a-69-1.5. **Compliance with regulations no defense to nuisance claim**
>
> Nothing in any portion of these Regulations shall in any manner be construed as authorizing or legalizing the creation or maintenance of a nuisance, and compliance of a source with these Regulations is not a bar to a claim of nuisance by any person.

Construction noise may be mitigated moderately; however, it would be difficult to reduce such noise to levels that would be below the CT regulated daytime sound level limit of 55 dBA for other sources. Therefore, it is likely that the intensive and large-scale construction noise ***would constitute a nuisance*** to the neighbors, and possibly the entire Village.

In addition to the construction processes and machinery operating at the site, there will be extensive road traffic of construction vehicles moving in and out of the site.

The construction machinery and processes may include site work and then building construction. Processes and equipment may include blasting, rock hammers, backhoes, payloaders, bulldozers, large dump trucks, cement trucks, cement pumps, bucket lifts, carpentry equipment (saws, nail guns), material delivery vehicles and the like.

Typical construction noise sources are based on the *US Federal Highway Administration (FHWA) Traffic Noise Model (TNM v3.2 – 2023)* construction sound database. The construction equipment has been sorted from the highest to the lowest sound pressure level (i.e. from loudest to lowest sound source).

For each piece of construction equipment, the sound level in **dBA** (**LASmax** = maximum A-weighted sound level measured on the "slow" meter setting) at a **distance of 50 feet** from that piece of equipment, is listed in the following table.

As a comparison, the sound level of a normal **conversation** at a distance of about **5 feet** would range from **60 to 70 dBA**.

It is important to note that the decibel scale is not linear but is logarithmic. That is, decibels are based on the mathematical function of logarithms, which are given as multiplying factors of 10. So, a sound level of 70 dBA has 10 times the sound energy of 60 dBA. The way that our ears work, a sound level that is 10 dBA higher will be perceived at twice as loud, and a sound level that is 10 dBA lower will be perceived as half as loud.

For example, a 70 dBA sound has 10 times the sound energy of a 60 dBA sound, but we hear it as twice as loud. The same is true for every increase of 10 dB, such that a noise of 80 dBA sounds twice as loud as one of 70 dBA, and 90 dBA sounds twice as loud as 80 dBA, and so on. Given that relationship, a noise of 90 dBA will sound 2x2x2 = 8 times as loud as a conversation at 60 dBA.

The construction noise levels from the US FHWA database are given in the Table below.

Sound Pressure Level (LASmax), measured at 50 ft distance:	**Construction Equipment Piece:**
109 dBA	Blasting
108 dBA	Warning Horn (Air Horn)
104 dBA	Chipping Gun
103 dBA	Concrete Pump Truck; Chipping Hammer
102 dBA	Concrete Grinder
99 dBA	Jackhammer; Rock Drill; Dump Truck
92 dBA	Movement Alarm (Truck); Backhoe
90 dBA	Concrete Saw; Telescopic Handler (Forklift)
89 dBA	Front End Loader
83 dBA	Crane
80 dBA	Generator; Man Lift
79 dBA	Circular Saw; Cutoff Saw; Miter Saw
77 dBA	Nail Gun; Powder Actuated Fastner; Pump
73 dBA	Grinder

Note that due to the small site for the proposed construction, the noise levels across the residential property lines from the site could easily be at those listed in the table or *even higher* due to shorter distances than 50 feet, depending on the location of the equipment relative to the property line.

Untreated, even the lower level construction noise source of a generator at 80 dBA will sound four (4) times as loud as a conversation at 60 dBA. A concrete pump truck at 103 dBA will sound over *16 times as loud* as the 60 dBA conversation.

Construction noise is most effectively mitigated at a location close to the operating machinery, by the use of temporary noise barriers. In some cases, multiple noise barriers would be needed to meet the noise limits for a particular project.

For large noise barriers on the Wake Robin Inn site (20 feet high), about 8 to 12 dBA of attenuation could be expected. This would still leave very high levels at neighbor residences.

For a ballpark idea of the noise levels on the neighbor property with a barrier in place, subtract 10 dB from the levels in the above table. That leaves **noise at the neighbor** from the **conversational level of 63 dBA to close to 100 dBA**. This will make the construction noise very intrusive on the neighbors for a duration expected to be over 2 years.

As the locations of the machinery move extensively as the site is being developed, close-in noise barrier enclosures for each piece of equipment are a flexible option for the first line of defense. Property line barriers are the second line of defense to provide the additional mitigation that will be needed. A reliable supplier of sound barriers that we have used for a recent residence project and specifications for these barriers systems are given below.

Sound barrier material specifications

The **sound barrier enclosures** shall utilize 2 pound per square foot (PSF face) weight sound barrier blankets. These reinforced blankets shall be Sound Seal model BBC-13X-2, or equivalent.

The barrier frame may be constructed from 4 x 4 inch timber or similar structural members which will support the weight of the barrier material and also be rugged enough to be lifted via chain or other carrier and moved multiple times during the construction schedule.

The **sound barrier walls** shall utilize 1 pound per square foot (face) weight sound barrier blankets. These non-reinforced blankets shall be Sound Seal model BBC-EXT-N, or equivalent.

The barrier wall may be constructed from telephone poles or similar structural members which will support the weight of the barrier material and also be rugged enough to survive moderate wind loads. If severe storm conditions are present, then this material must be removed.

It is extremely important that construction noise barriers be deployed carefully, so as to be effective. This is not a simple process but is an extensive effort which must be managed and monitored on a daily basis.

Even with such a construction noise barrier program in place, due to the small site area and large scale of the project, as the data table shows, it is **unlikely that construction noise levels could be reduced to conversation levels** or lower. This will result in an enormous amount of construction noise being released into the neighborhood.

Other than noise barriers, it is very difficult to mitigate construction noise, as often the developer and general contractor will not have control over the vehicles and equipment which subcontractors use to deliver materials or operate on site. For example, these vehicles may have faulty mufflers and very loud back-up alarms.

This *intensive activity*, conducted for a substantial period of time in the **context of the small rural Village** of Lakeville, is **likely to be a noise nuisance**.

As Mr. Tocci stated in his letter of August 6, 2025:

> We recommend that, prior to the issuance of a zoning permit, the construction manager prepare a Construction Noise Control Plan for the Wake Robin Inn project.

Unfortunately, it is unlikely that even an extensive noise control plan for the Wake Robin Inn construction, which would be an intensive production shoehorned into a small site, would meet the requirement to not cause a nuisance.

Answer 2: Swimming Pool Noise (Ms. Shyer)

The noise from people (human behavior) being served food and alcohol at the proposed swimming pool is also difficult to mitigate. Again, as the noise sources themselves (boisterous people and children shouting) are difficult to mitigate, barriers may be the most effective approach. In this case, cabana buildings, large earth berms or walls could be used to moderately reduce the noise levels by 5 to 8 dB. However, the pool activities still may be intrusive at the nearest neighbors, especially if repeated every weekend during the summer season.

Answer 3: Decibel Limits to Noise (Mr. Riva)

A recommendation for decibel noise limits for the proposed Wake Robin Inn operations, including the Event Barn, were made in the Brooks letter of August 25, 2025, as follows:

"As Tocci knows well, since he personally applied these **noise audibility criteria** to musical entertainment venues for many years, the noise from identifiable, rhythmic music sources will be audible above the baseline sound level. Originally, Tocci applied a reduction of 5 dB to the average (LAeq) background to account for tonality, arriving at a design target of 32 dBA. However, after conceding to use the correct baseline background sound level (LA90), they then applied a 5 dB *increase*. This does not properly account for tonality, as Tocci admits. Using Tocci's own criteria, at the baseline (LA90) + 5 dB sound level, the music will be *"sometimes audible"*. This does not meet the no-nuisance standard, either individually or on a cumulative basis."

Mr. Tocci's measurements of ambient baseline level indicated that the lowest baseline sound level (LA90) was 27 dBA.

In order to satisfy Mr. Singleton's definition of audibility, with a margin of design safety for the project and to account for tonality, by Tocci's logic the target level for the operation of the Wake Robin Inn should be the lowest LA90 *minus* 5 dB.

The **target level** at the property line for the operation of the Wake Robin Inn should be:

Lowest LA90 of 27 dBA – 5 dBA safety margin = **22 dBA**.

A more relaxed standard for the project would be the measured baseline LA90 of 27 dBA.

This low target sound level is *theoretically achievable* only for the Event Barn portion of the project. All other aspects of the project **will never achieve these low levels**, including **construction and parking lot traffic**.

Furthermore, to achieve this low level for Events would require special attention to noise control in the design and construction of the Event Barn at every step. This special attention is significantly more extensive and detailed than what was provided in the Aradev application, or subsequent documents.

The Town's Acoustical Engineer, Mr. Herb Singleton stated during his discourse with the Commission, that audibility could be used to assess annoyance and nuisance based on the *context* of the situation. He also stated that the sound of an entertainment event could be heard in a quiet area, even if the sound level from that event was at or below the ambient baseline sound level and so could be an intrusive nuisance. Unfortunately, Mr. Singleton has not effectively addressed the very intrusive nuisances caused by the parking lot traffic and construction noise expected from this project.

Ultimately, it does not matter which sound level limit is selected for the proposed Wake Robin Inn redevelopment since, as we have demonstrated, it **will often be clearly and intrusively audible and therefore a nuisance**, due to its size, scale and intensity, and to the plethora of noise sources operating on a constantly recurring and cumulative basis. These include the Event Barn entertainment noise, traffic and people noise (human behavior) and construction noise.

Significantly, as discussed in the Brooks letter of August 25, 2025, no attention was given by Aradev to the low-frequency bass sound emitted from the Event Barn, or to the likely higher sound levels than estimated for the music inside the barn, or to the noise build-up due to the hard reflective finishes inside the barn. This has not been addressed by Aradev.

In addition, the Aradev application states that windows and doors to the Event Barn would be open until 9 pm, making the barn essentially like an open pavilion or tent.

Based on the information and data presented in the application and supplemental documents, the **noise levels** from the **Event Barn** that we can **expect at the nearest property lines are 60 to 70 dBA**.

It is guaranteed that the noise of the Wake Robin Inn operation in total will be a nuisance.

Also, as stated earlier, the noise from **human behavior** (people and vehicles), of 24 events per year with more than 100 people (each event lasting an entire weekend), with no limit on the number of events involving fewer than 100 people, **cannot be mitigated**.

Answer 4: Is no audible sound an attainable goal given that measurable sound already exists? Salisbury P&Z recently issued a special permit to 75 Sharon Rd for complete demolition of one home and construction of another with no restriction on construction noise. Should the same standard apply to this application? (Mr. Cockerline)

No audible sound for the proposed Wake Robin Inn Event Barn music only is a theoretically attainable goal as mentioned above but it would be extremely difficult to achieve. All other activities, as discussed in Answer 3, will be very audible and intrusive nuisances.

How audible above the background sound and how often the noise is audible and intrusive are better questions to ask.

Also, the type of sound is important to consider. If the sound is considered to be normal for the current context, in the operation of the existing use as a small country inn, then it will be more tolerated. Such sounds would be lawn maintenance equipment, or occasional traffic disturbances associated with the normal operation of the current use.

If the sound is not very intrusive and only just above the background then it may be tolerated on rare occasions.

Importantly, consider how often the sound occurs. For the rare or occasional tent event, the noise which reaches the neighbors may be audible, but is not expected to recur often. There is an expectation by neighbors that this is a rare event and that there will be relief in the foreseeable future, so that the noise may be somewhat tolerated.

However, if there is an expectation that these noise intrusions will occur on a **regular, constantly recurring basis**, such as every week or even more often, then the tolerance for such intrusions will decrease rapidly.

Also, an important thing to remember is that the Applicant could build a special building (which they have not demonstrated) which would mitigate the Event noise. But that would still leave the untreatable noise sources of increased human behavior with many more people and vehicles outside, and these would be new noise sources out of context with the current use. This new, additional noise from people and vehicles would be clearly audible and well above the established baseline ambient sound (27 dBA) and so constitute a clear nuisance.

The standard to be applied to the construction of single family home under a Special Permit is the decision of the PZC.

It may not be necessary to apply the same standard to the single family home. In an RR-1 zone, home construction would be considered a normal activity in the current context. The scale, scope and duration of the project, the number of neighbor residents that would be affected, and the ongoing proposed use of the property will suggest to the PZC what the noise standard should be.

As guidance to the PZC it is noted that a home is a much smaller project than that proposed for the Wake Robin Inn.

The **expectation of cumulative, sustained, long duration and repetitive intrusions from construction noise** in the Aradev Application is much greater than that from a single home. Further, the noise intrusions from an ongoing entertainment use would not be expected.

Answer 5: Is dBC something we need to consider. How and when is it applied? (Mr. Cockerline)

The metric of dBC differs from dBA in that dBC accounts for the low frequency bass noise better than the dBA metric. This is used by many jurisdictions as a limiting factor for entertainment generated noise.

The metric dBC is often applied to entertainment noise projects, as it is easier to understand as “bass-related” than detailed spectrum based data such as 1/3 octave band (1/3 OB) or octave band (OB) sound levels. The more detailed spectrum levels would be useful for building design and project quality assessment purposes. Usually we define the “music bass” levels as the 40 Hz to 125 Hz 1/3 OB levels. This detailed analysis should have been done but was not presented in the Aradev application.

Often, the noise level limit in dBC is 10 dB more than the level limit given for dBA. For example, if the level limit is 40 dBA, then the low frequency based limit would be 50 dBC.

For the Special Permit, it would be very important to compare the projected dBC level with the measured baseline ambient sound level for the *existing condition*, the tested L90 level for dBC. This is often designated LC90.

The ***only way*** to assess the impact of the expected bass noise on the neighbors of the proposed development is to compare the projected bass noise level to the current ambient baseline condition.

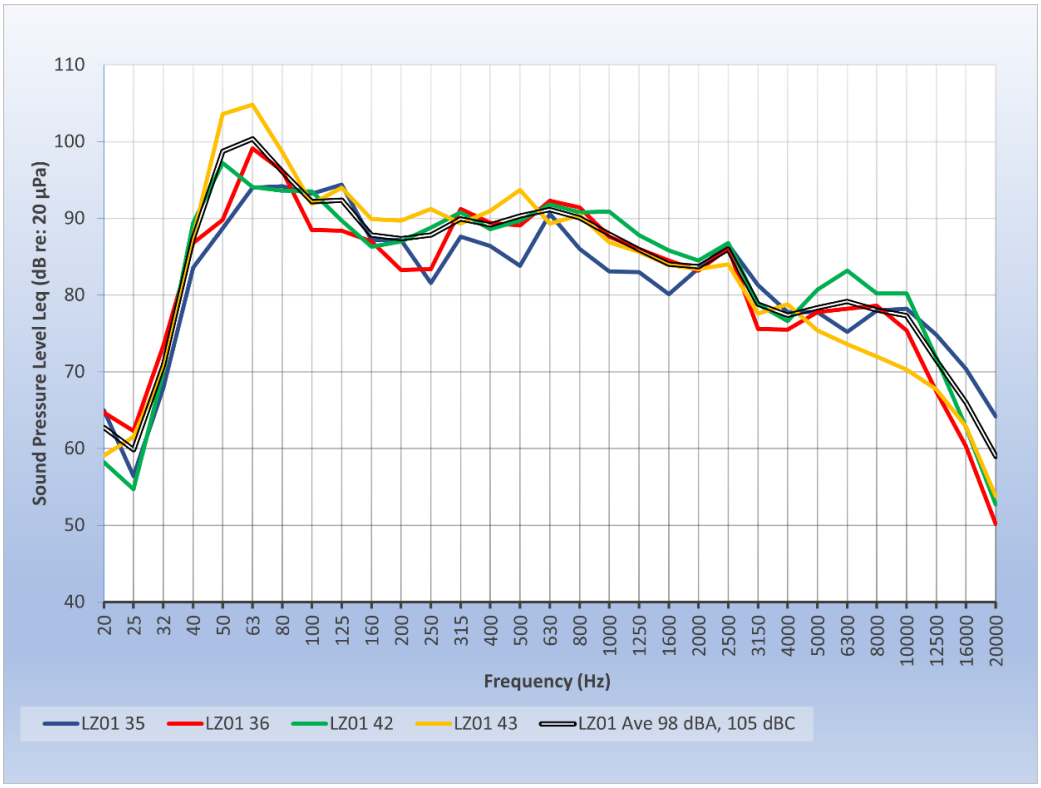
Despite having ample opportunity, this was **not done** by Aradev.

Answer 6: The applicant has committed to complete control of sound system in event space. Can low Hertz frequencies be targeted for electronic control? Are these frequencies as easily controlled and/or monitored as dBA? (Mr. Cockerline)

Yes, low frequency sound can be easily controlled at the music sound system. All of the sound in the event space can be electronically controlled and monitored. The event operator, be that Aradev or a hired contractor (i.e. DJ or live band) can always control their equipment.

However, the operator will also be responsive to the demands of their client, the event sponsor (i.e. Bride) to provide the expected entertainment experience. This will likely lead to louder noise levels in the event space than were accounted for in the Aradev application. This is especially true as the evening progresses from “dinner music" to full-blown “dance party”.

Typical sound level spectra recently measured by Brooks Acoustics (BAC) for an event space that hosts bachelorette and wedding parties are shown in the graph below for a variety of popular tunes played by a DJ (2023).



The measured values inside the event room were determined to be **98 dBA** and **105 dBC** sound pressure level (SPL).

These are typical sound levels for a moderate dance party venue, as has been consistently verified over years of testing (Reference 2).

The measured spectrum data shown in the graph above as taken for each song were the near peak (L01) sound levels near the wall in the entertainment space. Then, the average L01 spectrum was determined for that group of songs.

The important thing to note are the high sound levels in the bass frequencies of 40 Hz to 125 Hz. These sounds are difficult to mitigate with building elements, such as windows and walls. Double or even triple wall and window partitions are needed.

So, the expected high source bass levels are difficult to control to meet the desired neighborhood noise limits.

Further, it gives rise to concern that the music source sound levels that Aradev used for their analysis, including the bass levels, are significantly lower than these typical measured sound levels. Aradev (Tocci) used event room source sound levels that are at least 14 dBA too low. They used "dinner music" sound levels rather than "dance party" sound levels.

Details of this analysis are given in another Brooks Acoustics letter (PJ2025-1440-L07, dated September 8, 2025).

Answer 7: Are there effective sound barriers that could be used for parking area and mechanical systems that would further reduce measurable sound? By how much? Also specific recommendations for these barriers. (Mr. Cockerline)

Probably the most appropriate sound barrier for the parking area would be a landscaped earth berm. An earth berm that is 6 feet high could be expected to provide about 5 to 8 dBA of noise reduction from the parking area at ground level. However, there would be no reduction in noise level for second story bedroom windows at nearby residences.

For the mechanical systems, a masonry wall which is treated inside with sound absorption material could be expected to provide about 8 to 12 dBA of sound reduction. More sound reduction could be expected if substantial noise enclosures were integrated into the designs in addition to the masonry walls. These could be designed to be practically inaudible if desired but would be complex and extensive.

Answer 8: Explain soundscape analysis. Would this be helpful in this application? (Mr. Cockerline)

Soundscape analysis is described in the BAC letter of August 25, 2025, and below. It is useful for gauging the expected response of a community to a change in their environment, so it is very helpful in this application. Soundscape analysis is based on the ISO 12913 standard series (Ref. 3) and is described extensively in the book *Soundscapes: Humans and Their Acoustic Environment* (Ref. 4), for which Mr. Brooks contributed a chapter on land use planning and sound.

In soundscape analysis, understanding how sounds are perceived within their context is the main focus, and the approach involves using the knowledge of those called the **"local experts."** These individuals live, work, and play in the area being studied and are **stakeholders in the community**. They have the best insight into how sounds are perceived and what they mean within their environment, whether urban or rural. Soundscape analysis can also produce objective numerical and statistical data about perceptions through community surveys. This information helps observers better understand how sound affects the lives of residents and others in the area.

Clearly, the Aradev application has garnered the attention of the public, including Town residents and neighbors, which was expressed in several ways, including a petition with over 450 signatories and attendance at the PZC public hearings of nearly 100 persons. These data constitute a Soundscape analysis of the proposed development.

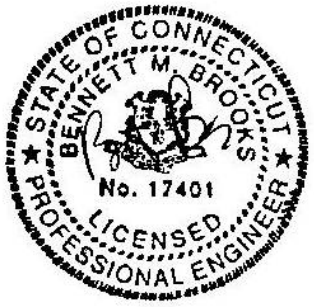
This soundscape analysis shows that most Lakeville residents have **predominantly negative expectations** regarding the proposed Wake Robin Inn development. This is because they **expect excessive noise** from both the construction and operation of the project. The negative perception is justified because the Applicant lacks a comprehensive plan to address the noise issues.

I hope that answers your questions.

Thank you for your careful consideration of this matter.

Very truly yours,
BROOKS ACOUSTICS CORPORATION

Bennett M. Brooks, PE, FASA, INCE
President



Reference 1: Aradev Application (2025-0278)

Reference 2: Noise Navigator Sound Level Database (2016)
https://multimedia.3m.com › mws › media › 1262312O › 3m-noise-navigator.xlsx

Reference 3: International Standards Organization (ISO) Standard Series ISO 12913.
ISO 12913-1:2014 Acoustics — Soundscape Part 1: Definition and conceptual framework
ISO/TS 12913-2:2018 Acoustics — Soundscape Part 2: Data collection and reporting requirements
ISO/TS 12913-3:2025 Acoustics — Soundscape Part 3: Data analysis

Reference 4: Soundscapes: Humans and Their Acoustic Environment, Brigitte Schulte-Fortkamp, André Fiebig, Joseph A. Sisneros, Arthur N. Popper, Richard R. Fay, Editors, Springer Nature Switzerland AG, 2023. https://doi.org/10.1007/978-3-031-22779-0