

MEMORANDUM

TO: Regulatory Programs Committee

FROM: Sarah Reynolds, Associate Counsel *SR*

DATE: May 8, 2024

RE: Unconventional Concepts, Inc./Hopmeier
Permit Application 2021-0276
Appeal of Agency staff's January 2024 request for information

Summary

Unconventional Concepts, Inc. (UCI) seeks a permit from the Adirondack Park Agency to allow for the establishment of a commercial use involving the installation of a firing range for the testing of artillery on Rural Use lands in the Town of Lewis, Essex County. On January 2, 2024, Agency staff forwarded a fifth request for information regarding the application. On February 29, 2024, the applicant submitted an appeal of this request.

Since receipt of the initial application on November 21, 2021, the applicant's submissions have provided incomplete and conflicting information regarding the proposal. The type of weapon proposed for testing, the charge proposed for use with the weapon, specifics on the target and any other equipment proposed for use on the site, the proposed firing and target locations, and the number of shots proposed per day, month, and year, have all remained uncertain or changed. Even more significantly, the decibel level for the impulse noise source – the noise level produced at the moment of firing and the basis for any noise analysis – has changed with every response to staff's requests for information. In addition, none of the applicant's submissions have been stamped with the seal of a New York State-licensed professional engineer, as required under State professional standards for projects involving engineering principles and data.

The first four Notices of Incomplete Permit Application (NIPAs), along with numerous follow-up letters and meetings with the applicant, reflect staff's efforts to confirm the specifics of the proposed project and the resulting analysis of potential impacts. The fifth NIPA constitutes a further attempt to determine the information necessary for a complete application, with questions addressing previously submitted information that has changed or has remained unclear or unanswered.

The applicant's February 29, 2024, appeal of the fifth NIPA includes new information that has not been previously provided to the Agency. Staff analysis of this new information indicates that the record now contains sufficient documentation to allow for review of the proposal in relation to Questions 3 and 5 of the fifth NIPA. However, Questions 1, 2, 4, 6, 7, 8, and 9 remain unanswered.

Given the continuing inconsistencies in the record and the potential for impacts from the proposal, staff request that the Agency members affirm the need for the information requested in Questions 1, 2, 4, 6, 7, 8, and 9 of the fifth NIPA.

Legal Background and Review Process

The proposal at issue involves a new commercial use on Rural Use lands, and requires an Agency permit under the Adirondack Park Agency Act (APA Act). Prior to approving this project, the Agency must find that the proposal:

- will be consistent with the land use and development plan;
- will be compatible with the character description and purposes, policies, and objectives of the Rural Use land use area;
- will be consistent with the overall intensity guidelines for the Rural Use land use area;
- will comply with the shoreline restrictions of § 806 of the Act; and
- will not have an undue adverse impact upon the natural, scenic, aesthetic, ecological, wildlife, historic, recreational or open space resources of the Park or upon the ability of the public to provide supporting facilities and services made necessary by the project, taking into account the commercial, industrial, residential, recreational or other benefits that might be derived from the project.

Staff analyze any proposal that requires an Agency permit to ensure that the application is "complete for the purpose of commencing review," as set forth in §809(2)(b) of the APA Act. To do this, staff request information from applicants as necessary to allow for Agency consideration of the findings listed above. For any project not approved pursuant to the Agency's Delegation Resolution, staff make a recommendation to the Agency board as to whether the proposal appears approvable under the required findings, based on staff's analysis of the application materials. The Board may choose to follow or not follow staff's recommendation.

When a complete permit application contains sufficient information to allow the Agency to make the required findings, the Agency may approve the project, with conditions as necessary. When a complete permit application contains disputed facts or insufficient documentation to support approval, the Agency may require an adjudicatory-style public hearing on the proposal. The Agency may only deny a proposal after holding an adjudicatory-style hearing.

Relevant Facts and Project Review History

Project Site

The project site is a 197±-acre parcel of land located on Hale Hill Lane in the Town of Lewis, Essex County, in an area classified Rural Use on the Adirondack Park Land Use and Development Plan Map. The site is identified as Tax Map Section 38.1 Block 1, Parcel 31, and is currently owned by Pulsifer Logging, LLC.

The eastern portion of the project site contains two mountains, Little Church Mountain and Big Church Mountain, which are approximately 1,500 to 1,600 feet in height. A 50±-acre parcel of State lands included in the Taylor Pond Wild Forest adjoins the northeastern portion of the project site; the remainder of the site borders large tracts of Rural Use lands. The closest residence to the site is located approximately 5,800 feet to the northeast, and is currently owned by James Pulsifer. Additional residences are located along Hale Hill Road to the north and east of the site, along State Route 9 to the east of the site, and along Pulsifer Road to the south of the site.

A pre-existing missile silo, currently used as a commercial use, is owned by Diversified Upstate Enterprises, LLC, and located just over a mile to the east of the site. In addition, a sawmill subject to Agency permits is located just under a mile to the north of the site, and the “Oak Hill” mine, also subject to Agency permits, is located approximately a mile and a half to the south. Additional State lands in the Taylor Pond Wild Forest are located to the east and west, and the Jay Mountain Wilderness Area is located approximately two miles to the north and west of the site.

The project site is accessed by an existing drive used for timber harvesting. The site is currently improved by a cabin. A trail traverses the northwestern portion of the site and connects to adjacent Rural Use parcels.

Jurisdictional Inquiry and Permit Application

On August 26, 2021, the Agency received a Jurisdictional Inquiry Form from Michael Hopmeier for the installation of a ballistic testing range on the project site. The Agency responded to this inquiry on September 22, 2021, advising that the proposal involved the establishment of a new commercial use, and that an Agency permit would be required.

On November 19, 2021, the Agency received a permit application from Michael Hopmeier as Project Sponsor and James Pulsifer as representative for landowner Pulsifer Logging, LLC, for the establishment of a new commercial use. Specifically, the application proposed leasing a portion of the project site for the establishment of a “firing range” to:

be developed and used to assess the internal ballistics of various kinetic systems used by the United States. The focus is to determine the effectiveness of various manufacturing approaches and techniques used in the manufacture of cannon barrels. The goal of the overall project is to decrease the weight of these systems to ensure the most efficient means of manufacturing and recurring cost of ownership, thereby reducing waste and cost, as well as improving performance... In effect, we are building a shooting range and will fire non-toxic, inert, steel projectiles over a distance of approximately 300 yards [or 900 feet].

The testing of artillery would occur in coordination with work occurring at the missile silo facility located to the east of the project site.

The application stated that “no more than three tests per month are anticipated,” with operations occurring in “all seasons” and each test consisting of 1-3 shots over 1-2 days between 10am and 4pm on weekdays, and “an average of no more than 30 shots per year.” Impulse noise from each shot was “not expected to exceed 180dB.” The application also explained that “a small grouping of mountains” on the site would “act as a projectile backstop... thereby allowing for the reflection/deflection of noise away from more populated areas and into a large open space that can absorb and dampen any impact.”

The application stated that approximately 100 tons of gravel from the Oak Hill mine would be used to construct an approximately 100-foot by 100-foot firing platform structure; other site work would include “clearing brush and a limited number of trees,” using “herbicides to control unrestricted undergrowth,” and using the existing access road to bring in materials for each test, including “a mobile power supply such as a generator on a trailer, portable instrumentation carriers, a trailer, a porta potty, and other mobile support equipment.” The application noted that “a portable steel cargo container... filled with sand or other aggregate” might be brought on the site as “a projectile-catcher,” but was “not expected to be necessary.” The application did not offer any further specifics on the type of equipment or weapons that would be used on the project site.

Maps included with the application showed the location of the existing cabin on the property and the general location of the proposed firing pad and range.

First Notice of Incomplete Permit Application and Response

On December 6, 2021, Agency staff issued a first NIPA for the project. This first NIPA included requests for:

- A site map depicting the lease subdivision lines to allow for confirmation of potential subdivision jurisdiction, and documentation of the location of the other proposed activities;

- A noise impact evaluation using the NYS DEC Program Policy for Assessing and Mitigating Noise Impact (DEC Noise Policy)¹;
- Confirmation as to whether any contaminants would be used on site;
- Confirmation as to whether improvements to the existing access road would be required;
- Additional plans, including a plan for removal of spent projectiles, a design guide, a stormwater management plan, an unexploded ordnance plan, and a decommissioning plan;
- An alternatives analysis; and
- Information regarding coordination with other federal, state, and local agencies.

On December 15, 2021, Agency staff attended a site visit with the applicant. On December 22, 2021, the Agency received from the applicant a response to the first NIPA. This response included an un-scaled aerial photograph overlaid with approximations of the proposed lease and firing range areas. In response to staff's questions regarding contaminants and the removal of spent projectiles, the response stated that the "projectiles used during testing will normally consist of solid bullets of steel" and that, "in the event a target is used... the current design envisions a contained quantity of sand or soil (approximately 8 X 8 X 40 ft) into which projectiles will be fired," but noted that "this design may be modified based on actual operation and empirical data." The response also stated that, "if operations do not require a target, then direct impact into the ground... and projectile recovery will be utilized."

The December 22, 2021, response included a written noise evaluation and overlays of aerial photographs using "a complex non-linear topographic multi-variate inverse square law model for noise distribution that considered propagation over a distance, insertion of a barrier, ground effect, and air absorption" to examine impacts at two receptors: the missile silo located just over a mile to the east of the site, and the Pulsifer residence located just over a mile to the northeast. The evaluation stated that the noise level at the location of firing was "not expected to exceed 185 dB." A noise source of 183 dB was used in the calculations, based on which the applicant stated that "we can anticipate a reduction at both sites to approximately 82 dB centered on 125 Hz peak energy frequency, or a reduction of 101 dB." The evaluation then listed the noise levels of shotguns, rifles, Magnums, chainsaws, and thunder from nearby lightning strikes. For mitigation, the December 22, 2021, response proposed following the blasting notification procedures used by the nearby Oak Hill mine, which would be "part of the [firing range's] site security and operations plan." The noise evaluation was not signed by an engineer or any other New York State licensed professional.

¹ When reviewing projects, Agency staff regularly require completion of a noise impact evaluation for the proposed activity following the review standards established by the DEC in its Program Policy for Assessing and Mitigating Noise Impact. The DEC Noise Policy is available on the DEC website at [Assessing and Mitigating Noise Impacts \(ny.gov\)](https://www.dec.ny.gov/assessing-and-mitigating-noise-impacts).

The December 22, 2021, response asserted that no stormwater management plan, unexploded ordnance plan, or decommissioning plan was necessary, and declined to confirm whether the proposal involved any upgrades to the existing access road. The applicant also declined to provide a design guide, stating that, "We will be working closely with the US Army Development Command... they will provide guidance and approval for the range design and operating procedures... All operations will be in accordance with either approved and designated Army protocols, or based on best engineering and technical judgment developed in coordination with relevant Army staff and personnel." In relation to potential alternatives, the response stated that "other sites... were considered," but were not chosen because of the existing natural features of the project site. The response declined to propose any on-site alternatives, such as a berm or other sound barrier as suggested by the DEC Noise Policy.

Second Notice of Incomplete Permit Application and Response

On January 13, 2022, Agency staff issued a second NIPA for the project. This second NIPA included requests for:

- A site map and documentation of the location of the proposed activities, including the lease subdivision lines and other details;
- A revised noise impact evaluation using 185 dB as the maximum anticipated impulse noise level as referenced in the applicant's December 22, 2021, response and analyzing potential noise impacts to additional receptors within a two-mile radius;²
- A noise mitigation plan, as well as the "site security and safety operations plan" referenced as providing for noise mitigation in the applicant's December 22, 2021, response;
- Information regarding the existing trail that traverses the project site and connects to adjacent private lands;
- An additional analysis of alternatives to the proposal; and
- Additional coordination between the Agency and other state and federal entities.

On February 11, 2022, the Agency received from the applicant a partial response to the second NIPA. This partial response stated that, according to the landowner, there are no outside parties with the right to access the road/trail that traverses the project site. In relation to staff's request for an additional analysis of alternatives, the partial response stated that "it would be impractical to move the testing to a location farther from" the missile silo to the east of the site and that "any attempt to relocate the testing to a significantly more distant area would be cost prohibitive." Finally, in relation to staff's request for an updated noise impact evaluation, this partial response "revised the numbers in the model to accurately reflect the impulse noise value of 185 dBa."³ The

² Pursuant to the DEC Noise Policy, noise evaluations require determining and calculating potential impacts from "the maximum amount of sound created at a single point."

results of this updated assessment were shown on a “Noise Map” depicting noise levels overlaid on an aerial photograph of the area.

At the applicant’s request, on February 25, 2022, Agency staff attended a meeting with the applicant to discuss the second NIPA and the materials received on February 11, 2022. Following this meeting and a follow-up letter from staff to the applicant on March 1, 2022, confirming that portions of the second NIPA were considered “either satisfied or no longer required,” on May 12, 2022, the Agency received from the applicant an additional response to the second NIPA. In relation to staff’s request for a scaled site plan, this additional response included two scaled plans showing a portion of the project site. No lease subdivision lines were shown on these plans. In addition, no dimensions or distances were shown, and not all markings were labeled. According to the scale on the plans, the firing pad measured approximately 30 feet by 80 feet, and the distance between the pad and the target measured approximately 571 feet.

The additional response received on May 12, 2022, stated that, “based on recommendation from the APA, further research on the noise source was performed,” with the noise source now “assumed to be 166.1 dB.” Specifically, in two locations, the May 12, 2022, response described the “Noise Source” as a “M109A5/6; Paladin, 155mm self-propelled Howitzer firing M4A2 zone 7 charges,” with a “Noise Level” of 166.1 dB. The reference materials cited for this noise level showed that the 166.1 dB measurement was taken from “in fighting compartment with hatches open except drivers,” rather than from open air firings.

The additional response received on May 12, 2022, also stated that the proposal had been updated to use a soft catch system for projectiles, rather than using direct impact into the mountains as the target as previously proposed. Using an “ambient noise level... assumed to be approximately 80 dB at the [Pulsifer] residence,” the additional response then included a series of calculations performed by the applicant and concluded that “there is a negligible difference in noise level [at the Pulsifer residence] across an 8-hr day between a day when two shots are fired and [a] day when no shots are fired.” No calculations were provided for any other potential noise receptors, and the noise evaluation was not signed by an engineer or any other New York State licensed professional.

In relation to the Agency’s request for a noise mitigation plan, the additional response received on May 12, 2022, described “active noise mitigation measures,” such as

³ This is the first incidence in the record of a reference to dBa (also referred to as dBA or dB(A)). According to the DEC Noise Policy, “perceived loudness is expressed in decibels (dB) or A-weighted decibel scale dB(A) which is weighted towards those portions of the frequency spectrum, between 20 and 20,000 Hertz, to which the human ear is most sensitive.” In general, the same impulse noise source level would be expressed as a higher number when measured in decibels (dB) than in A-weighted decibels (dB(A)). The applicant’s submissions vary between references to dB and dB(A) in relation to the impulse noise level and noise impact evaluation. Question 9 of the fifth NIPA requests an updated noise impact evaluation documenting both dB and dB(A) measurements for all relevant sound pressure levels.

limiting the number of shots fired annually, limiting the hours of operation, and providing “early warning of the event” pursuant to the procedures used by the nearby Oak Hill Mine as well as “audible warnings (siren) that can be discerned at” the Pulsifer residence, and concluded that the proposal was “not expected to cause any hearing damage or increases in anxiety or stress in nearby residents.” The additional response also described “passive noise mitigation measures,” such as the distance from the Pulsifer residence to the proposed testing range, the natural vegetation and local topography, and the fact that, because of “the rock structure of the mountains,” noise coming from the proposed range “will be reflected back to the west,” toward State lands and “away from the residences and populations in the surrounding areas.” The response proposed no new noise mitigation measures.

Third Notice of Incomplete Permit Application and Response

On June 6, 2022, Agency staff issued a third NIPA for the project. This third NIPA included requests for:

- An updated site map with all markings labeled that depicted and confirmed the size of the lease area, which remained unknown, and the dimensions and locations of the firing pad and target area, which appeared to have changed from the initial application;
- An updated noise impact evaluation comporting with the DEC Noise Policy, prepared by a NYS licensed professional, and including an explanation of the decrease in proposed maximum noise levels from 185 dB to 166.1 dB;
- An explanation of the assumed ambient noise level of 80 dB at the site and the Pulsifer residence;
- Clarification of the procedures for public notification of tests;
- Inclusion of additional noise mitigation measures;
- Confirmation of the equipment and machinery proposed for use on site; and
- Clarification of numerous other discrepancies between submissions.

The third NIPA noted that “the proposal as presented consists of testing munitions year-round up to 120 times per year with an estimated munitions firing noise source of 185 dB with no noise source mitigation measures proposed,” while the U.S. Department of the Army considers any impulse noise greater than 140 dB to be hazardous, and the US Bureau of Mining has documented damage to residential dwelling window glass from over air pressure blasts of greater than 133 dB.

On September 16, 2022, and November 9, 2022, the Agency received from H2H Associates, LLC (now H2H Geoscience Engineering, PLLC; referred to herein as H2H) an initial and revised Scope of Work proposal for performing a noise analysis at the project site. Staff responded to these letters on September 28, 2022, and November 28, 2022. The specific changes to the Scope of Work requested in staff’s responses were later incorporated by H2H, though no final approval of the proposed Scope of Work was ever issued by staff.

On February 28, 2023, the Agency received a partial response to the third NIPA from Matthew Norfolk, Esq., as attorney for UCI, which was now described as the applicant. This response stated that the applicant was no longer proposing a lease subdivision, and would instead “have access to the area at certain times to perform ballistic testing in coordination with” the landowner.

In response to staff’s request for clarification of the dimensions and locations of the firing pad and target area, the February 28, 2023, response stated that: “The specific placement of instrumentation and test articles will vary within a general range based on test requirements. All instrumentation and test articles are portable and will be emplaced before and after each test. As no permanent structures will be deployed, exact position of placement may vary each time.”

In response to staff’s request for confirmation as to the equipment and machinery proposed for use on site, the February 28, 2023, response declined to name any specifics, instead stating only that “all vehicles and equipment used on site will not exceed current noise levels created by” vehicles commonly used in sawmill operations. In response to staff’s request for clarification of the procedures for public notification of tests, the response stated that, seven days prior to any test, UCI would notify the Town and mail notice to landowners “within a two-mile radius.”

On March 1, 2023, the Agency received a document titled “Sound Study Unconventional Concepts, Inc. APA Project #2021-0276,” prepared by H2H, and dated February 2023 (February 2023 Sound Study). The Project Background section introducing the February 2023 Sound Study included an explanation of the proposed testing process: “Each test will consist of four-five shots, and each series of shots will last no more than two days. Testing will only occur on weekdays, between 10:00 AM and 4:00 PM local time. No more than two shots will be fired in one day... The Sound Source (system being tested) will be located on a 100 ft. X 100 ft. crushed gravel pad (Firing Pad)... The Target Area is 590 ft. east of the Firing Pad.”

The February 2023 Sound Study updated the specific weapon proposed for firing at the project site: an M109A3GN (155 mm) Howitzer. The February 2023 Sound Study also clarified for the first time some of the additional equipment proposed for use: a 40-ton haul truck for transporting the howitzer and other materials to and from and across the site.

The February 2023 Sound Study named 176 dB(A) as the noise level for the howitzer, stating that this “sound level data for the Sound Source is provided in” an older study, titled “Noise emission data for M109, 155 mm field howitzer,” prepared by Morten Huseby for the Norwegian Defence Research Establishment, and dated December 5, 2007 (the 2007 Norwegian Study). The 2007 Norwegian Study, which was included with the materials received on March 1, 2023, examined the firing of M109, 155 mm field howitzers with a charge of up to 5 modules DM72, with each module containing 2.44 kilograms propelling charge.

The 2007 Norwegian Study was “conducted at the Norwegian Defence Research Establishment... to estimate noise pollution around military firing ranges.” The study stated that the “M109 [Howitzer] is one of the noisiest weapons in the Norwegian defence, and as such represents a limiting factor for activity at firing ranges and training fields.” The Study also repeatedly stated that, to the author’s knowledge, there existed no “consensus” or “commonly accepted methods” for producing free field emission data to use for analyzing potential sound impact levels from howitzers.

Using 176 dB(A) as the noise source, the February 2023 Sound Study modeled impulse sound levels at five receptors within two miles of the project site: Receptors M-1, M-2, and M-3 located along residential lands to the east and south of the site, and Receptors M-4 and M-5 located on State lands to the west and northeast of the site. The modeled impulse sound levels were calculated as 75, 71, and 73 dB(A) at Receptors M-1, M-2, and M-3; 79 dB(A) at Receptor M-4; and 107 dB(A) at Receptor M-5.

As part of the February 2023 Sound Study, H2H also recorded and modeled ambient noise levels at the receptor sites, and then charted the difference between the ambient sound levels and the modeled impulse sound levels. The study modeled the impulse noise as being between 17.8 dB(A) and 72.3 dB(A) higher than the ambient noise levels.

Finally, the February 2023 Sound Study analyzed the overall change in ambient sound levels that would occur during the six-hour period from 10am to 4pm on a day with two shots fired. This modeling found that, because the impulse noises were so short, the increase in overall ambient noise levels over the six-hour period ranged from 0 to 0.4 dB(A) at Receptors M-1 through M-3, and from 2.0 to 32.0 at Receptors M-4 and M-5. The Study then found that “the proposed project does not pose a potentially significant environmental impact due to an increase in sound levels at receptors in the area.”

The February 2023 Sound Study included an overlay of an aerial photograph, labeled Figure 1 – Site Overview Map. Figure 1 is scaled at 1 inch : 1,000 feet, and shows the region of the project site and approximate locations of the firing pad, howitzer, target, and property lines.

The February 2023 Sound Study was not signed by an engineer or any other New York State licensed professional.

Fourth Notice of Incomplete Permit Application and Response

On March 16, 2023, Agency staff issued a fourth NIPA for the project. This fourth NIPA included requests for:

- A revised noise impact evaluation that complies with the DEC Noise Policy, clarifies and documents the method for determining 176 dB(A) as the accurate noise source level for the howitzer, clarifies and documents the modeling used

- for sound levels at the receptor sites, and clarifies numerous facts and other discrepancies among the prior submissions, including between the number of shots proposed for each test and the proposed charge for each test; and
- Confirmation of the equipment proposed for use at the site, noting that an “armored tracked vehicle” was documented as transporting the howitzer in the 2007 Norwegian Study.

The fourth NIPA also stated that, “until an acceptable full noise assessment has been provided, the Agency cannot assess whether the currently proposed public notification and mitigation is adequate.”

At the applicant’s request, on June 26, 2023, Agency staff attended a meeting with the applicant to discuss the fourth NIPA. On August 1, 2023, the Agency received from UCI a partial response to the fourth NIPA. In response to staff’s questions regarding the noise source level for the proposed howitzer and the modeling used for sound levels at the receptor sites, the UCI response noted that the applicant had been required “to develop data that could be used to model the attenuation of sound produced by a howitzer due to the previous lack of available information.”

In response to staff’s request for confirmation of the equipment proposed for use at the site, the August 1, 2023, UCI response reiterated the applicant’s earlier assertion that only “a diesel truck similar to what has historically operated on site in support of logging activities will be used to transport the” howitzer around the site. In response to staff’s request for clarification of the number of shots proposed for each test, the response stated that no more than two shots are proposed for any given day, with up to three days of shots associated with each test. Finally, in response to staff’s question regarding the maximum proposed charge, the response asserted that “the level of sound for all charge sizes employed will not exceed those acceptable levels determined by H2H’s assessments and testing.” The response concluded that “there are no other practicable means to mitigate noise.”

The August 1, 2023, UCI response stated that “the Source sound power level was transcribed incorrectly in the H2H February 2023 Sound Study Report. Source sound power level is 180.8 dB (163.2 dB(A)), not 175.9 dB.”

An updated Sound Study, prepared by H2H, dated July 2023, and included with the partial response (the July 2023 Sound Study), explained that the 180.8 dB sound power level was determined by using a Table in the 2007 Norwegian Study that documented a sound pressure level of 130.5 dB at a sensor located 803 feet away and at a 32-degree angle from a howitzer. There is no indication of variables such as terrain, vegetation, or wind and temperature conditions at the time of firing in the 2007 Norwegian Study. Nevertheless, using “industry standard calculations,” the applicant used its own model to calculate back to determine the originating sound pressure level for the howitzer in the Norwegian study, and then determined that the sound level would be 127 dB at this same distance and angle from a howitzer on the project site. The July 2023 Sound

Study then asserted that the difference of 3.5 dB between the 130.5 dB recorded sound pressure reading in the Norwegian study and the applicant's modeled sound pressure reading of 127 dB showed "correlation within ISO standards." Therefore, according to the applicant, a level of 180.8 dB at the location of the howitzer should be considered accurate.

The July 2023 Sound Study was not signed by an engineer or any other New York State licensed professional.

On August 16, 2023, Agency staff issued a letter confirming receipt of the August 1, 2023, response, and noting that the Sound Study had not been sufficiently updated as requested and that the response had not confirmed the maximum charge proposed. The letter noted that, using the applicant's modeled potential error discrepancy of 3.5 dB, the application documented a potential for impulse noise levels at nearby State lands above the 133-dB level determined capable of breaking windows as documented by the US Bureau of Mining.

On December 15, 2023, the Agency received from UCI an additional response to the fourth NIPA. For the first time in the application process, this additional response proposed a noise mitigation measure that did not rely on the natural features of the site or notification to nearby landowners: the applicant now proposed to install a "Sound Mitigation Berm" on the site. The response stated that the berm would be 13 feet in height and "constructed along the northern boundary of the Firing Pad," but gave no specifics on the materials that would be used for construction or the location of the berm in relation to the howitzer. The December 15, 2023, UCI response also included modeling of sound levels by temperature and humidity, noting that "testing is not anticipated to take place" at lower temperatures, as well as additional sound power level and sound pressure level calculations, charts, and conclusions.

An updated Sound Study, prepared by H2H and dated September 2023 (the September 2023 Sound Study), was included with the materials received on December 15, 2023. The September 2023 Sound Study modeled impulse sound levels at Receptors M-1 through M-5 with and without the berm, although the study did not contain the modeling of sound levels by temperature and humidity or the additional sound power level and sound pressure level calculations, charts, and conclusions submitted with the UCI response.

The September 2023 Sound Study included a new color-coded model of sound pressure levels. This model is labeled "Image 1," and is described by the September 2023 Sound Study as "demonstrat[ing] the accuracy of the sound propagation model." "Image 1" appears to be an overlay of an aerial photograph of the site, although the locations of the firing pad, howitzer, target, and property lines are not visible. The September 2023 Sound Study also included the aerial photograph overlay labeled Figure 1 – Site Overview Map that had been included with the prior sound studies; this map shows the region of the project site with the locations of the firing pad, howitzer,

target, and property lines approximated, but without the color-coded sound pressure level modeling distinct to “Image 1.”

The September 2023 Sound Study was not signed by an engineer or any other New York State licensed professional.

On January 2, 2024, Agency staff issued a fifth NIPA for the project. On January 18, 2024, the Agency received a request for an extension to the deadline for filing an appeal of the fifth NIPA pursuant to 9 NYCRR § 572.22(c). On January 18, 2024, staff responded by letter agreeing to the extension. On February 29, 2024, the Agency received the applicant’s appeal of the fifth NIPA.

Appeal

Pages 1-12 of the appeal contain a summary by the applicant of the history of project submissions and Agency staff responses regarding the proposed firing range. Staff disagree with a number of the factual and other statements made in this summary. The applicant’s summary, along with all other submissions and staff correspondence, are part of the record for this appeal.

The matter presented for review and action by the Agency members at this time is a challenge to the questions included by staff in the fifth NIPA. However, staff analysis of new information included in the appeal indicates that the application now contains sufficient information to allow for analysis of the proposal in relation to Questions 3 and 5. Accordingly, the remaining challenges to the fifth NIPA involve Questions 1, 2, 4, 6, 7, 8, and 9.

Responses Considered Sufficient

- **Question 3 of the fifth NIPA**

Since receipt of the initial application on November 21, 2021, the applicant’s submissions have provided incomplete and conflicting information regarding the impulse noise level and location of proposed noise source. The maximum impulse noise level was stated as 180 dB in the initial application on November 21, 2021, 185 dB in the response to the first NIPA, 185 dB and then 166.1 dB in response to the second NIPA, 176 dB(A) in response to the third NIPA, and 180.8 dB (163.2 dB(A)) in response to the fourth NIPA. The proposed size and location of the firing pad has also been inconsistent throughout the applicant’s submissions. Staff have continually noted that, due to the potential for impacts based on the impulse noise level and location of proposed noise source, additional noise mitigation measures may be required.

Until December 15, 2023, the applicant’s responses to these comments regarding mitigation centered on the mitigation measures described in the initial application: that notification to nearby landowners of upcoming tests would not cause hearing damage or

increase anxiety or stress in nearby residents, and that the natural features of the site would reflect noise away from residences and towards uninhabited State lands to the west. On December 15, 2023, in a response to the fourth NIPA, the applicant proposed installing a berm as a new mitigation measure.

Question 3 of the fifth NIPA recommended additional potential mitigation measures, and requested an evaluation of whether any could be added to further limit noise impacts from the proposal. The applicant responded to this question on page 15 of the appeal, explaining that these additional measures would be unacceptable.

For the purpose of commencing review, staff have no additional questions regarding this issue. The applicant's response, along with staff's technical review and analysis, will be included as part of the permit application for future Agency review.

- Question 5 of the fifth NIPA

Since receipt of the initial application on November 21, 2021, the applicant's submissions have provided incomplete and conflicting information regarding the proposed timing and number of shots. Specifically, the initial application stated that there would be an average of 30 total shots per year under the proposal, but according to later submissions, there would be up to 10 shots per month, year-round. In addition, the applicant's December 15, 2023, written response suggested that no testing would occur at times of the year with lower temperatures, despite earlier indications that testing would occur in all months.

Question 5 of the fifth NIPA requested confirmation of the proposed maximum number of shots per week, month, and year, and whether there were any atmospheric conditions under which testing would not occur. The applicant responded to this question on pages 16-17 of the appeal, confirming that testing is proposed to occur year-round, with a maximum of 10 shots per month, and with no atmospheric restrictions.

For the purpose of commencing review, staff have no additional questions regarding this issue. The applicant's response, along with staff's technical review and analysis, will be included as part of the permit application for future Agency review.

Questions Remaining

- Question 1 of the fifth NIPA

Since receipt of the initial application on November 21, 2021, the applicant's submissions have provided incomplete and conflicting information regarding the proposed location of the noise source and the distance between the noise source and the private and State land receptor sites used in the noise analysis. As noted in the first paragraph of Question 1 of the fifth NIPA, in a submission received on February 28,

2023, the applicant stated that the location and distance would vary from test to test: “The specific placement of instrumentation and test articles will vary within a general range based on test requirements. All instrumentation and test articles are portable and will be emplaced before and after each test. As no permanent structures will be deployed, exact position of placement may vary each time.” Noise impact evaluations depend on calculations using precise locations and distances; accordingly, the exact locations and distances must either be confirmed and used in the noise analysis, or the analysis must account for the worst-case-scenario for these factors.

Staff request: “Please provide cross-section sheet(s) depicting the proposed typical M109 155 mm howitzer and assembly set up to be utilized on site, including all proposed instrumentation and test articles, that is drawn to scale and depicts howitzer barrel and assembly dimensions and muzzle location. Please label the location of the noise source and its associated sound pressure level source height as measured from the finished grade of the pad.”

This request attempts to document the size of the proposed howitzer in face view. In particular, the requested sheet(s) would document the distance of the muzzle – which was the noise source location used in the 2007 Norwegian Study – from the rest of the artillery, and the height of the muzzle from the ground or firing pad.

Staff request: “To allow for review of worst-case scenario noise impacts, please provide scaled cross-section plan sheet(s) depicting the distance between the closest point of the proposed gravel pad or the noise source, whichever is closer, to each of M1-M5, and between the closest point of the proposed gravel pad and the receptor located at the southwest corner of the nearest state land parcel. Please depict the proposed berm on each of these plan sheets.”

This request attempts to document the location of the proposed howitzer in plan view. In particular, the requested sheet(s) would document and confirm the distance of the noise source from the receptor sites used in the noise impact evaluation. In addition, as the only indication in the record of the location for the proposed berm is that it would be “constructed along the northern boundary of the Firing Pad,” this request also requires a scaled depiction of the berm in plan view.

The appeal states that “previous submissions” show that the “howitzer barrel assembly” will be “located in the center of the 100-foot by 100-foot firing pad;” however, a search of the record by staff finds no evidence that this information has been previously submitted. The appeal also supplies calculations not previously in the record purporting to model sound pressure levels at Receptors M-1 through M-5 with the sound source at “the edge of the firing pad;” however, these calculations were not provided and stamped by a NYS-licensed engineer and, in any event, do not account for the possibility of the noise source extending beyond the edge of the pad toward the receptor sites. Finally, the appeal points to the fact that the H2H Sound Studies use “a Sound Source height of

6.5 feet;" however, there remains no documentation in the record that 6.5 feet is or will be the accurate height of the noise source from the ground or firing pad.

As noise impact evaluations depend on calculations using precise locations and distances, the exact locations and distances must either be confirmed and used in the noise analysis, or the analysis must account for the worst-case-scenario for these factors. Therefore, given the importance of documenting and confirming the exact location of the proposed noise source in relation to the receptor sites, staff request that the Agency members affirm the need for the plan sheets requested in Question 1 of the fifth NIPA.

- Question 2 of the fifth NIPA

Staff request: *"Please clarify what materials the berm will be constructed with, and any associated stabilization measures and other erosion and sediment controls."*

Despite numerous requests and suggestions for potential noise mitigation measures, no on-site mitigation was proposed until December 15, 2023, in the additional response to the fourth NIPA, when the applicant proposed installation of a berm "along the northern boundary of the Firing Pad." The record contains no specifics on the materials that would be used for construction, the location of the berm in relation to the noise source, or even whether the berm would be permanent or temporary and subject to movement or re-construction for individual tests.

As noted in the DEC Noise Policy, installation of a berm can be helpful in reducing potential noise impacts. However, any reduction in noise would depend on the type, size, and location of the berm in relation to the noise source; these factors must be known to allow for calculations of the angle of reflection and barrier attenuation. In addition, stabilization measures and erosion and sediment controls are sometimes necessary to protect nearby resources from berms, depending on the materials and method used for construction.

Given the importance of documenting the details related to the proposed berm, staff request that the Agency members affirm the need for the information requested in Question 2 of the fifth NIPA.

- Question 4 of the fifth NIPA

Staff request: *"Please explain why there are separate tables, calculations and conclusions made in the UCI written response received on December 7, 2023, that are not included in the [September 2023 Sound Study by H2H]."*

UCI's December 15, 2023, additional response to the fourth NIPA included modeling of sound levels by temperature and humidity and other sound power level and sound

pressure level calculations, charts, and conclusions that are not included or reflected in the September 2023 Sound Study completed by H2H. Question 4 of the fifth NIPA attempts to reconcile these differences, to ensure that the record for Agency review and decision reflects consensus on the final proposal and modeled impacts.

Given the importance of documenting the details related to potential noise impacts, staff request that the Agency members affirm the need for the information requested in Question 4 of the fifth NIPA.

- Question 6 of the fifth NIPA

Staff request: "Please revise Image 1 to depict the location of the 100-foot by 100-foot pad, all state land boundaries, the southwest corner of the nearest state land parcel located approximately 300 feet from the northeast corner of the firing pad, the nearest dwellings (including the Pulsifer residence), receptor locations M1 – M4, and the closest point of the proposed gravel pad or the noise source, whichever is closer, to each receptor."

H2H's September 2023 Sound Study modeled impulse sound levels at Receptors M-1 through M-5 with and without the berm. The study then asserted that "the accuracy of th[is] sound propagation model" was demonstrated in "Image 1."

"Image 1" is a color-coded model of sound pressure levels that was first submitted to the Agency with the September 2023 Sound Study, received on December 15, 2023. "Image 1" appears to be an overlay of an aerial photograph of the site; the locations of the firing pad, howitzer, target, and property lines are illegibly hidden beneath the color-coding of sound pressure levels.

In the appeal, the applicant states that Question 6 has been "asked and answered," because "UCI has already supplied Agency Staff with the requested information in Figure 1, 'Site Overview Map,' provided in H2H's September 2023 Sound Study." However, while Figure 1 in the September 2023 Sound Study does approximate the locations of the firing pad, howitzer, target, and property lines on an aerial photograph, Figure 1 does not contain the color-coded sound pressure level modeling distinct to "Image 1."

Given the importance of documenting the accuracy of the sound propagation model used in the sound studies in the record and the applicant's insistence that "Image 1" provides this documentation, staff request that the Agency members affirm the need for the revision to "Image 1" requested in Question 6 of the fifth NIPA.

- Question 7 of the fifth NIPA

In response to the request in the fourth NIPA for information as to how the decibel level of the noise source was determined by the applicant, the July 2023 Sound Study and

the September 2023 Sound Study both state that the level was calculated using a Table in the 2007 Norwegian Study. Specifically, the sound studies explain that this table showed a documented sound pressure level of 130.5 dB at a sensor located 803 feet away and at a 32-degree angle from a howitzer. There is no indication of variables such as terrain, vegetation, or wind and temperature conditions at the time of firing in the 2007 Norwegian Study. Nevertheless, using “industry standard calculations,” the applicant used its own model to calculate back to determine the originating sound pressure level for the howitzer in the Norwegian study, and then determined that the sound level would be 127 dB at this same distance and angle from a howitzer on the project site. The July 2023 Sound Study then asserted that the difference of 3.5 dB between the 130.5 dB recorded sound pressure reading in the Norwegian study and the applicant’s modeled sound pressure reading of 127 dB showed “correlation within ISO standards.” Therefore, according to the applicant’s response to the fourth NIPA, a sound power level of 180.8 dB at the location of the howitzer should be considered accurate.

Staff request: “Please provide an explanation of these ISO standards and the asserted correlation, including a clarification of whether the ISO standards are appropriately used in this context. Please also provide any other available documentation confirming that 3.5 dB is appropriately cited as the maximum limit of error for this proposal.

Please confirm through field-verification at an authorized location and through independent third party verifications that 180.8 dB is the noise level produced by M109 155 mm howitzers.”

The DEC Noise Policy requires determining the maximum amount of sound created at a noise source, and then conducting a noise impact evaluation based on this level. Accordingly, it is imperative that the noise level of a noise source is accurately determined, to allow for analysis of potential impacts at receptor locations.

Question 7 of the fifth NIPA requests confirmation of the accuracy of the applicant’s assertion of 180.8 dB as the noise level of an M109 155 mm howitzer. Staff remain concerned about the accuracy of this number for several reasons: every prior submission posited a different decibel level for the noise source; the 180.8 dB figure was calculated based a single measurement from one study in 2007 conducted in unknown conditions and with other unknown variables; the only confirmation of the accuracy of the applicant’s calculation is based on their finding of a noise level 3.5 decibels lower than was documented in the 2007 Norwegian Study when the distance and angle of the 2007 measurement were inputted in the applicant’s model; and the applicant asserts that a discrepancy of 3.5 decibels “show[s] correlation with ISO standards,” where ISO standards have not been used in relation to other recent commercial and mining projects within the Park.

Given the importance of documenting the accuracy of the noise level of the noise source used in the sound studies in the record, staff request that the Agency members affirm the need for the information requested in Question 6 of the fifth NIPA.

- Question 8 of the fifth NIPA

Staff request: *“The ‘Noise emission data for M109, 155 mm field howitzer’ study referenced in the [December 2023 Sound Study] references a maximum charge of 5 modules DM72 with each module containing 2.44 kilograms propelling charge, while USACHPPM materials referenced in the UCI response received by the Agency [on] July 18, 2022 reference the sound level for a M4A2 zone 7 charge. Please confirm that this will be the maximum charge used. Please also explain how the two charges compare and the effect [the charge] will have on the level of sound produced.”*

UCI’s May 12, 2022, submission to the Agency in response to the second NIPA described the noise source for the project as M4A2 zone 7 charges. However, the 2007 Norwegian Study, which was submitted on March 1, 2023, in response to the third NIPA and was used to model the decibel level of the proposed noise source for the H2H Sound Studies, involved a charge of up to 5 modules DM72, with each module containing 2.44 kilograms propelling charge.

The charge used in a howitzer may significantly alter the impulse noise level produced from firing. Accordingly, Question 8 of the fifth NIPA was first asked in the fourth NIPA, in response to the differing charges proposed after the second and third NIPAs. UCI’s response to the fourth NIPA stated only that “the level of sound for all charge sizes employed will not exceed those acceptable levels determined by H2H’s assessments and testing.”

Given the importance of confirming that the maximum charge proposed will not result in impulse noise levels above the levels used in the sound studies in the record, staff request that the Agency members affirm the need for the information requested in Question 8 of the fifth NIPA.

- Question 9 of the fifth NIPA

Staff request: *“Please provide an updated noise analysis that accounts for the confirmed height of the noise source from the gravel pad and the location of the noise source at the closest point of the gravel pad to each receptor. This updated noise analysis must include all tabular, calculated, and conclusory information included in the latest UCI response, Modal Data in Appendix D, and barrier attenuation calculations that account for the most conservative/worst case scenario height and location of the noise source in relation to each receptor. The updated noise analysis must also account for all proposed months of operation and any proposed atmospheric operating restrictions. In addition, the analysis*

must include revised tabular information, Modal Data in Appendix D, and barrier attenuation calculations that account for the height and location of the noise source in relation to each receptor, and must include sound pressure levels expressed as both dB and dBA. This updated analysis must include a cover sheet with the seal of a NYS licensed professional engineer.”

Given the continuing inconsistencies in the record and the potential for impacts to Park resources from the proposal, staff request that the Agency members affirm the need for the updated noise impact evaluation requested in Question 9 of the fifth NIPA. In addition, as New York State professional standards require that projects involving the application of engineering principles and data be signed and stamped with the seal of a New York State licensed professional engineer, staff also request that the Agency members affirm the need for the updated noise impact evaluation to include a cover sheet with the appropriate seal.

Conclusion

For the reasons stated above, staff request that the Agency members affirm the need for responses to Questions 1, 2, 4, 6, 7, 8, and 9 of the NIPA.