

Noise Screening Assessment

Rockwell RV & Adventure Park

1. Executive Summary

This Noise Screening Assessment evaluates the potential for the proposed Rockwell RV & Adventure Park to comply with the applicable Minnesota Pollution Control Agency (MPCA) environmental noise standards at the nearest Noise Area Classification (NAC) 1 receiving properties, including the adjacent residential property and neighboring daycare.

A conservative screening assessment was performed by estimating the approximate source sound levels that could occur while maintaining the applicable daytime residential criterion of 60 dBA (L50) at the receiving properties. The assessment intentionally assumes unobstructed (free-field) sound propagation and does not account for attenuation associated with quarry topography, retained berms, buildings, vegetation, or other site-specific shielding features.

Based on this conservative screening assessment, the proposed Rockwell RV & Adventure Park is reasonably expected to operate below the applicable MPCA daytime noise standards during normal operations. Existing quarry topography, retained berms, thoughtful site layout, and planned operational practices are expected to provide additional reductions in off-site sound transmission beyond those assumed in this assessment.

2. Purpose

The purpose of this Noise Screening Assessment is to provide a preliminary evaluation of the potential environmental noise associated with the proposed Rockwell RV & Adventure Park in support of assessing the potential for the proposed recreational activities to comply with the applicable Minnesota Pollution Control Agency (MPCA) environmental noise standards at the nearest Noise Area Classification (NAC) 1 receiving properties.

Specifically, this assessment:

- Identifies the principal project-related noise sources.
- Identifies the nearest NAC 1 receiving properties.
- Evaluates the potential for project-generated noise to comply with applicable MPCA noise standards using conservative screening assumptions.
- Summarizes operational practices intended to minimize off-site noise.

This assessment is intended to support the Interim Use Permit application by providing an initial screening of potential noise impacts. It is not intended to replace a detailed acoustical propagation study should one later be requested by the permitting authority. Rather, it provides a conservative planning-level assessment intended to evaluate whether the proposed project is reasonably expected to comply with applicable MPCA noise standards under typical operating conditions.

3. MPCA Noise Standards and Screening Methodology

The State of Minnesota regulates environmental noise through the Minnesota Pollution Control Agency (MPCA) Noise Standards, Minnesota Rules Chapter 7030. These standards establish maximum allowable sound levels from the proposed property at the receiving property based on the land use classification of the receiver.

The nearest off-site Noise Area Classification (NAC) 1 receivers to the proposed Rockwell RV & Adventure Park are an existing residence north of the project and an adjacent daycare property to the east. Both are subject to the MPCA residential noise standards summarized in Table 3-1.

Table 3-1. MPCA Noise Standards – Noise Area Classification (NAC) 1

Time Period	L50 (dBA)	L10 (dBA)
Daytime (7:00 AM – 10:00 PM)	60	65
Nighttime (10:00 PM – 7:00 AM)	50	55

For the purposes of this screening assessment, the evaluation focuses on the applicable daytime residential criterion of 60 dBA (L50), as the principal recreational activities are proposed to occur during daytime operating hours.

A conservative screening methodology was used to evaluate whether the proposed recreational activities have the potential to exceed the applicable MPCA daytime residential noise standard. The screening assessment identifies the approximate sound level that would be required at each principal project noise source to produce 60 dBA (L50) at the nearest NAC 1 receiving property, assuming unobstructed (free-field) sound propagation. No attenuation associated with terrain, buildings, vegetation, atmospheric absorption, or other site-specific shielding features was included in the screening calculations.

As a result, the calculated source sound levels represent conservative screening thresholds that can be directly compared with the expected sound generated by the proposed recreational activities.

4. Existing Site Conditions

The proposed Rockwell RV & Adventure Park is located within a former limestone quarry in Lime Township, Blue Earth County, Minnesota. Mining operations were conducted on the property for many decades and included blasting, drilling, rock crushing, material processing, excavators, wheel loaders, haul trucks, and other heavy equipment commonly associated with limestone quarry operations.

The proposed redevelopment represents a transition from historic industrial land use to family-oriented outdoor recreation. The principal noise sources associated with the completed project will consist primarily of dispersed recreational activities rather than continuous industrial equipment.

To the Project Proposer's knowledge, no documented off-site noise complaints associated with the historic quarry operations have been identified during the period of active mining. While the proposed recreational uses differ substantially from historic mining activities, the site's long history of industrial operation provides useful context when considering the relative magnitude of anticipated project noise.

The nearest off-site Noise Area Classification (NAC) 1 receiving properties include:

- An existing single-family residence located immediately north of the project property.
- An adjacent daycare facility located on the east side of the project property near the northern project entrance.

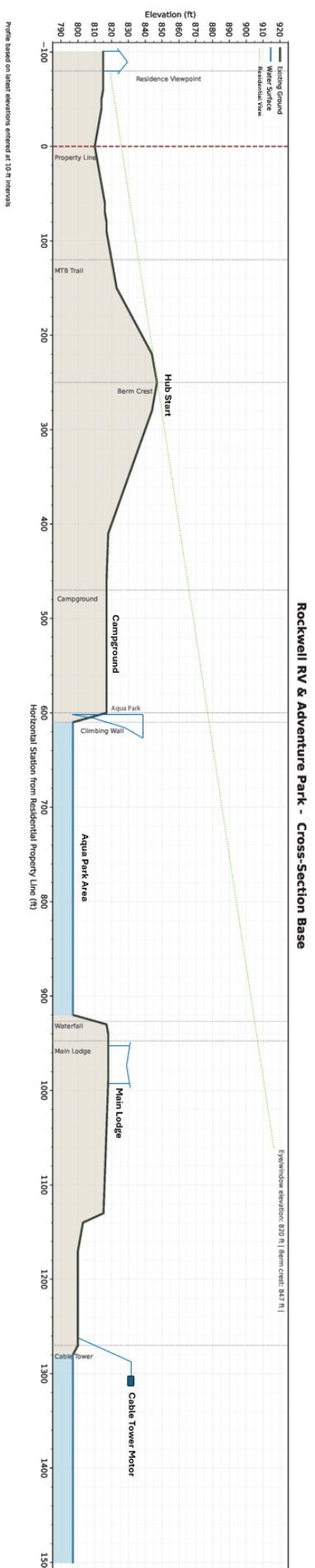
Table 4-1 summarizes the approximate separation distances between the principal project features and each NAC 1 receiving property. Because the closest receiving property varies depending on the project feature, the screening assessment presented in Section 6 evaluates each principal noise source using the nearest applicable NAC 1 receiver.

Table 4-1. Approximate Distance from Principal Project Features to Nearest NAC 1 Receiving Properties

Project Feature	Nearest Residence (ft)	Adjacent Daycare (ft)	Controlling Receiver
Hub Start	120	730	Residence
Campground	470	450	Daycare
Aqua Park	600	500	Daycare
Climbing Wall	610	640	Residence
Aqua Park Building	850	810	Daycare
Waterfall Feature	950	570	Daycare
Main Lodge	960	360	Daycare
Cable Wake Park	1,270	210	Daycare

Figure 4-1 illustrates the relationship between the existing residential property, retained quarry berms, and the proposed recreational facilities. The cross section demonstrates that the principal activity areas are located below the elevation of the surrounding terrain and that existing berms and quarry walls interrupt direct line-of-sight between project activities and adjacent residential properties. These physical site characteristics are discussed further in Section 7 as factors expected to reduce sound propagation beyond the conservative free-field assumptions used in the screening analysis.

Figure 4-1. Representative North-South Cross-Section



5. Principal Noise Source Categories

The proposed Rockwell RV & Adventure Park includes several distinct activity areas that generate different types and levels of sound during normal operations. The principal noise source categories evaluated in this screening assessment are described below.

5.1 Aqua Park

The Aqua Park is anticipated to be the most active recreational area during normal daytime operations. This category includes the floating Aqua Park attractions, deep-water climbing wall, Aqua Park support building, and decorative waterfall feature.

Typical sound sources include guest conversations, laughter, occasional cheering, lifeguard whistles used for safety purposes, participants entering the water, normal building activity, and the ambient sound generated by the waterfall. Background music may be provided near the Aqua Park building at a level intended to serve guests within the immediate activity area.

5.2 Mountain Bike Trail System

The Mountain Bike Trail System includes the Start Hub and the network of mountain bike trails distributed throughout the property.

Typical sound sources consist of riders gathering at the Start Hub, conversations, occasional rider instructions, bicycles traveling on the trail system, and intermittent cheering associated with organized rides or events. Once riders leave the Start Hub, activity becomes dispersed throughout the trail network, reducing the concentration of sound at any one location. No permanent amplified sound systems are proposed within the trail system. E-bikes are allowed, but bikes with internal combustion engines like motorcycles or dirt bikes are not permitted.

5.3 Campground

The campground consists of individual RV campsites distributed throughout the property and is characterized by dispersed, low-intensity recreational activity. Typical sound sources include conversations, children playing, vehicle arrivals and departures, campsite activities, and other routine campground use.

Because campground guests also represent a noise-sensitive recreational use, campground operations will be managed through established quiet hours and campground rules intended to minimize excessive noise during evening and nighttime

periods. These operational practices are expected to support a comfortable camping environment while also reducing the potential for off-site noise impacts.

5.4 Cable Wake Park

The Cable Wake Park consists of a continuously operating overhead cable system used to tow participants around the lake.

Primary sound sources include the electric drive motor and gearbox located at the drive tower, participant activity on the water, and routine guest conversations near the dock and staging area. The cable system operates using an electric motor with a variable frequency drive, resulting in smooth startup and operation without internal combustion engine noise. Background music may be provided near the Cable Park start dock at a level intended to serve guests within the immediate activity area.

5.5 Main Lodge

The Main Lodge serves as the primary guest arrival, registration, retail, and gathering area for the project.

Typical sound sources include guest arrivals, conversations, routine building activity, and vehicle movements within the adjacent parking areas. Outdoor amplified sound is not proposed as a regular component of Main Lodge operations. Background music may be provided near the Main Lodge at a level intended to serve guests within the immediate activity area.

6. Noise Screening Assessment

6.1 Screening Approach

A conservative screening assessment was performed to evaluate whether the proposed Rockwell RV & Adventure Park is reasonably expected to comply with the applicable Minnesota Pollution Control Agency (MPCA) daytime Noise Area Classification (NAC) 1 criterion of 60 dBA (L50) at the nearest residential and daycare receiving properties.

Because measured or manufacturer sound data are not available for many of the proposed recreational activities, this assessment uses a reverse-calculation approach. Rather than predicting future project noise, the assessment begins with the applicable receiver criterion and determines the approximate sound levels that could occur at representative source locations while maintaining compliance at the nearest receiving property.

For purposes of this screening assessment, each of the five principal source categories was evaluated using an equal contribution assumption. Under this assumption, each source category could contribute approximately 53 dBA at the nearest Noise Area Classification (NAC) 1 receiver while the combined sound level from all five sources would remain approximately 60 dBA (L50).

The five principal source categories include:

- Mountain Bike Trail System
- Campground
- Aqua Park
- Main Lodge
- Cable Wake Park

Reference sound levels were evaluated at 100 feet for the distributed recreational activity areas and 10 feet for the Cable Wake Park drive motor, which represents a localized mechanical source. The assessment assumes unobstructed (free-field) sound propagation and intentionally does not account for attenuation provided by quarry topography, retained berms, buildings, vegetation, atmospheric absorption, or other site-specific shielding features. Consequently, the calculated values represent conservative screening thresholds rather than predicted operating sound levels.

6.2 Reverse-Calculated Screening Thresholds

Using the applicable MPCA daytime criterion together with the approximate distance from each principal activity area to its nearest NAC 1 receiving property, conservative screening thresholds were calculated for each source category. These values represent the approximate sound level that could occur at the stated reference distance while contributing approximately 53 dBA at the controlling receiving property under free-field conditions.

Table 6-1. Reverse-Calculated Screening Thresholds

Source Category	Controlling Receiver	Distance to Receiver	Reference Distance	Screening Threshold
Mountain Bike Trail System	Residence	120 ft	100 ft	54.6 dBA
Campground	Daycare	450 ft	100 ft	66.1 dBA
Aqua Park	Daycare	500 ft	100 ft	67.0 dBA
Main Lodge	Daycare	360 ft	100 ft	64.1 dBA
Cable Wake Park	Daycare	210 ft	10 ft	79.4 dBA

These screening thresholds are intended only as planning-level reference values. They do not represent measured or predicted operating sound levels.

6.3 Comparison to Representative Sound Levels

To assist in interpreting the reverse-calculated screening thresholds, Table 6-3 compares the calculated reference-level thresholds with representative sound levels from the Minnesota Pollution Control Agency's *A Guide to Noise Control in Minnesota*. These comparisons are intended only to provide general context and should not be interpreted as direct measurements or predictions of actual project sound levels.

Table 6-3. Comparison to Representative Common Sound Levels

Calculated Threshold	Comparable Common Sound*	Discussion
60–65 dBA	Normal conversation at approximately 3 feet	Comparable to ordinary speech levels.
70 dBA	Vacuum cleaner at approximately 10 feet	Noticeably louder than conversation but common in everyday environments.
80 dBA	Food blender at approximately 3 feet	Represents relatively loud activity in close proximity to the source.
85–90 dBA	Gas lawn mower at approximately 3 feet	Comparable to common outdoor equipment when measured very near the source.

6.4 Interpretation of Screening Results

The reverse-calculated values shown in Table 6-1 identify the approximate sound level that each principal source category could generate at the stated reference distance while contributing approximately 53 dBA at the controlling receiving property. The reverse-calculated values identify the approximate screening threshold associated with each principal source category.

The screening thresholds are most applicable to sound that is sustained or frequently recurring during the MPCA hourly evaluation period. Many anticipated project sounds including conversations, occasional cheering, bicycle pass-byes, vehicle movements, and lifeguard whistles are intermittent and vary in both duration and location. These individual events would not independently determine compliance with the L50 criterion unless they occurred frequently enough to dominate the sound environment for more than 50 percent of the evaluation period.

The screening calculations intentionally exclude the additional attenuation expected from existing quarry topography, retained berms, buildings, vegetation, and other site-

specific shielding features. Accordingly, the calculated values represent conservative screening thresholds rather than anticipated field conditions.

Based on this screening assessment, the proposed recreational activities are reasonably expected to operate below the applicable MPCA daytime Noise Area Classification (NAC) 1 criterion during normal operations.

7. Site Characteristics Affecting Sound Propagation

The screening assessment presented in Section 6 intentionally assumes unobstructed free-field sound propagation and does not account for the existing physical characteristics of the project site that are expected to further reduce off-site sound transmission.

Several existing site features provide natural separation between the principal recreational activity areas and the nearest NAC 1 receiving properties.

7.1 Quarry Topography

The proposed Rockwell RV & Adventure Park is located within a former limestone quarry where many recreational activities occur below the elevation of the surrounding terrain. Existing quarry walls, retained rock faces, and earthen berms interrupt the direct path between project activity areas and the adjacent residential property and daycare, creating a natural barrier effect.

Barrier effects are generally more effective at attenuating higher-frequency sounds than lower-frequency sounds because higher-frequency sound waves are more readily interrupted by terrain and physical barriers. As a result, the quarry topography and berms are expected to provide meaningful additional attenuation for many sounds associated with recreational activities, including conversations, whistles, bicycle tire noise, and other higher-frequency components.

These topographic features were intentionally excluded from the screening calculations, making the assessment conservative.

7.2 Existing Berms

Substantial earthen berms remain along portions of the northern property boundary adjacent to the nearest residential property and daycare.

Similar to the quarry walls, these berms create an additional barrier effect by interrupting the direct line of sight between project activity areas and surrounding land

uses. This physical separation is expected to reduce off-site sound transmission beyond that predicted by the conservative screening calculations.

The barrier effect provided by the existing quarry topography and retained berms is particularly beneficial for the Mountain Bike Trail System, Aqua Park, Main Lodge, and Cable Wake Park, all of which are located below the elevation of the surrounding terrain for much of the project site.

7.3 Buildings and Site Layout

The overall site layout has been intentionally designed to maximize separation between the principal recreational activity areas and adjacent residential land uses.

Several of the higher-activity features, including the Aqua Park, Main Lodge, and Cable Wake Park, are located hundreds of feet from the nearest NAC 1 receivers. In addition, the proposed Main Lodge and Aqua Park support building are expected to provide localized shielding of activity areas immediately behind the structures.

The Mountain Bike Trail System has also been designed with noise and visual screening in mind. The primary trail corridor is setback from adjacent residential property lines. Existing and added wooded vegetation along the northern property boundary will provide additional visual and acoustical screening between trail users and neighboring properties.

7.4 Operational Controls

In addition to the site's physical characteristics, planned operational practices further reduce the potential for off-site noise impacts.

The proposed operating schedule has been intentionally developed to align with the Minnesota Pollution Control Agency (MPCA) daytime and nighttime evaluation periods. The park's normal operating hours are 8:00 a.m. to 10:00 p.m., which correspond to the MPCA's daytime period (7:00 a.m. to 10:00 p.m.) during which the 60 dBA (L50) residential noise criterion applies. Quiet hours are established from 10:00 p.m. to 8:00 a.m., overlapping the MPCA's nighttime period (10:00 p.m. to 7:00 a.m.), when the more restrictive nighttime noise standards apply.

Additional operational measures include:

- No routine outdoor public address systems.
- Limited background music confined primarily to designated guest gathering areas and oriented toward the interior of the site.
- Electric drive equipment for the Cable Wake Park, no engine noise associated with combustion-powered equipment.

- Quiet hours intended to minimize guest activity and noise generation during the MPCA nighttime evaluation period.

These operational practices are consistent with the assumptions used in the screening assessment and are expected to further reduce the potential for off-site noise impacts.

7.5 Overall Assessment

The cumulative screening assessment presented in Section 6 intentionally assumes unobstructed free-field sound propagation and therefore does not account for the additional sound attenuation expected from existing quarry topography, retained berms, buildings, vegetation, and other site-specific shielding features.

Collectively, these features create a barrier effect that interrupts direct sound propagation and is expected to further reduce sound transmission to the adjacent residential property and daycare beyond that predicted by the conservative screening analysis.

8. Conclusion

This Noise Screening Assessment evaluated the potential for the proposed Rockwell RV & Adventure Park to comply with the applicable Minnesota Pollution Control Agency (MPCA) daytime noise standard of 60 dBA (L50) at the nearest Noise Area Classification (NAC) 1 receiving properties.

Based on the conservative screening assessment presented herein, the proposed recreational activities are reasonably expected to operate below the identified screening thresholds, with combined project sound levels anticipated to remain below the applicable MPCA daytime NAC 1 criterion at both the adjacent residential property and the nearby daycare. Because the assessment intentionally excludes the additional attenuation expected from quarry topography, retained berms, buildings, vegetation, and other site-specific shielding features, actual off-site sound levels are expected to be equal to or lower than those indicated by this assessment.

The Project Proposer is committed to designing, operating, and maintaining the Rockwell RV & Adventure Park in a manner that complies with applicable Minnesota Pollution Control Agency (MPCA) noise standards while remaining compatible with adjacent land uses. Thoughtful site planning, operational policies, quiet-hour requirements, and ongoing management practices have been incorporated into the project to minimize off-site noise and will continue to support that commitment throughout the life of the project.