

## 3.6 NOISE

### 3.6.1 Introduction and Scope of Analysis

Noise is typically characterized as unwanted sound. Because the natural existing ambient sound is generally not considered a problem, it is not typically classified as noise. The ambient sound level is a composite of sound from all sources, including the natural background and anthropogenic sources. When measured the ambient sound is the total sound received by the microphone of a sound level meter. Existing ambient sound levels are often the starting point for analyzing project-associated noise impacts, because such environmental noise analysis typically compares project-associated noise to either existing ambient or natural background sound based on applicable adverse effect or impact assessment criteria. This section addresses the affected noise environment as it is related to humans and human activity. Effects of noise on non-human species is addressed in sections related to fish resources and fish habitat and wildlife and wildlife habitat (Sections 3.12, 3.13, 4.12, and 4.13).

The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of each day and throughout the week and year. This variation is caused not only by various noise source activities, but also by changing weather conditions, effects of seasonal vegetative ground cover, presence of ice or flowing water from nearby creeks and rivers, and wind.

Reference examples of outdoor and indoor noise levels are provided in **Table 3.6-1** as context for describing existing conditions. These levels are measured in terms of “A-weighted” decibels (dBA), which are used to quantify sound and its effect on people (U.S. Environmental Protection Agency [EPA] 1978), and emphasize frequencies best heard by humans. The equivalent noise levels ( $L_{EQ}$ ) is the measured or calculated noise level energy average over a specific period of time (such as 1 hour or 24 hours). Noise levels listed in **Table 3.6-1** represent Day-Night sound levels ( $L_{DN}$ ), an energy-averaged value over a 24-hour period that reflects increased sensitivity to noise when people are usually sleeping.

**Table 3.6-1 Examples of Noise Levels**

<b>Outdoor</b>	<b>Noise Levels (dBA, L<sub>DN</sub>)</b>	<b>Indoor</b>
Jet flying over at 1,000 feet	100	Rock band
Gas lawn mower at 3 feet	90	Blender at 3 feet
Next to busy highway	88	
0.75-mile from touchdown at major airport	86	Garbage disposal at 3 feet
Noisy urban area during the day	70	Vacuum cleaner at 10 feet
Wooded suburban residential	51	Refrigerator at 3 feet
Rural residential	39	
Wilderness Ambient	35	Library

Table Source: Caltrans 2009; EPA 1978

Table Notes:

dBA = A-weighted decibel

L<sub>dn</sub> = Day-night sound level, expressed in dBA

The analysis area for noise includes areas within a 5-mile radius of the major Stibnite Gold Project (SGP) components (i.e., mine site, access routes, utilities, and off-site facilities) (**Figure 3.6-1**). This is the analysis area for noise because noise levels attenuate (i.e., decrease) as a function of the distance from the source (i.e., divergence), ground absorption, atmospheric conditions, and the presence of physical barriers. Due to these factors noise levels will vary throughout the analysis area.

The following general terms are used in the noise analysis to describe different types of sound:

- **Noise** – Typically, unwanted sound
- **Ambient sound** – The combination of sound from all sound sources, natural or man-made, at any specific time or place.
- **Background sound** – The sound level that already exists before or without the SGP.
- **SGP-attributed sound** – Any sound produced by the SGP that was not already part of the existing background sound.
- **Baseline plus SGP Sound** – The energy sum of the existing background sound and the SGP-attributed sound. All other things remaining equal, the baseline plus SGP sound level would become the new ambient sound if the SGP was implemented.

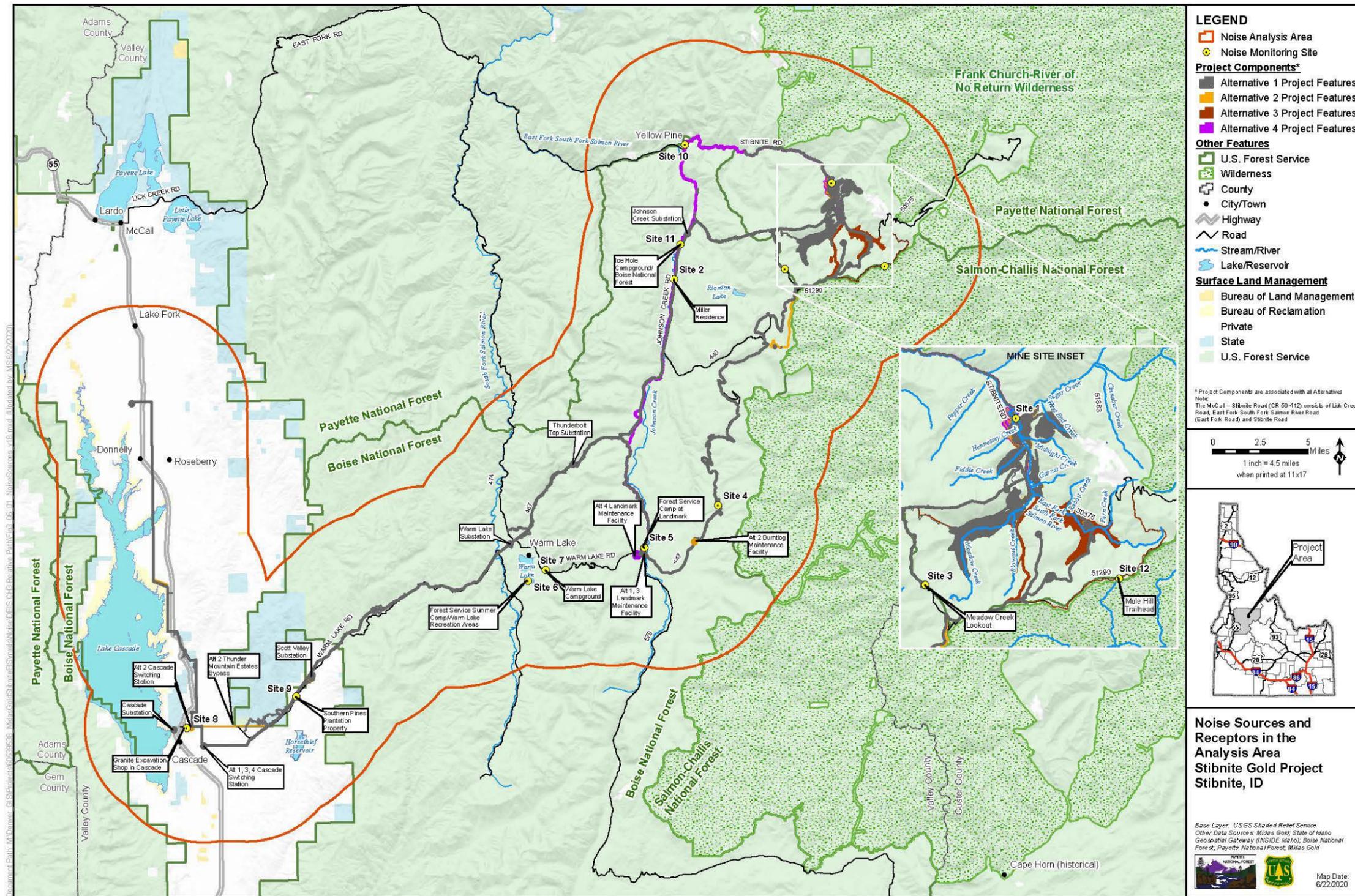


Figure Source: AECOM 2020

**Figure 3.6-1 Noise Sources and Receptors in the Analysis Area**

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## 3.6.2 Relevant Laws, Regulations, Policies, and Plans

### 3.6.2.1 Federal Regulations

The Noise Control Act of 1972 established a national policy to promote an environment free from noise that jeopardizes public health or welfare. The Noise Control Act directed the EPA to identify acceptable limits under various conditions that would protect public health and welfare with an adequate margin of safety. EPA published a summary of these acceptable limits in 1978, as follows:

- Average hourly noise level ( $L_{EQ1h}$ ) of less than or equal to 55 dBA for outdoor areas where people spend limited amounts of time, such as school yards or playgrounds.
- Day-night noise level ( $L_{DN}$ ) of less than or equal to 55 dBA for outdoor areas at residences, farms, and other areas where people spend varying amounts of time, where quiet is a basis for the use of such areas.

However, EPA stressed that the protective levels should “not be viewed as standards, criteria, regulations, or goals. Rather, they should be viewed as levels below which there is no reason to suspect that the general population will be at risk from any identified effects of noise” (EPA 1978). Therefore, the EPA levels are guidance levels rather than enforceable standards or regulations. The EPA guidance levels do not apply to biological resources such as fish and wildlife. Methods used to evaluate noise impacts to fish and wildlife are discussed in Section 3.12, Fish Resources and Fish Habitat, and Section 3.13, Wildlife and Wildlife Habitat.

### 3.6.2.2 EPA Guidance on Ambient Noise Levels

Guidance on safe noise levels, which can be used to assess impacts of a project on public health and welfare, is available from EPA (1974, 1978). **Table 3.6-2** shows outdoor and indoor noise levels identified by EPA to protect public health and welfare, expressed as  $L_{EQ24h}$  or  $L_{DN}$  (based on the dBA over a 24-hour period). Note that the acceptable noise levels listed in the table are not “peak,” but are 24-hour averages over several years. These values are not standards but are levels where the general population would not be expected to be at risk from the identified effects of the noise (EPA 1978).

**Table 3.6-2 Yearly Values that Protect Public Health and Welfare with a Margin of Safety**

<b>Effect</b>	<b>Safety Level</b>	<b>Area</b>
Hearing Loss	$LEQ_{24h} \leq 70$ dBA	All areas.
Outdoor Activity Interference and Annoyance	$LDN_{24h} \leq 55$ dBA	Outdoors in residential areas and farms, and other outdoor areas where people spend widely varying amounts of time, and other places where quiet is a basis for use.
Indoor Activity Interference and Annoyance	$L_{DN} \leq 45$ dBA $LEQ_{24h} \leq 45$ dBA	Indoor residential areas. Other indoor areas with human activities, such as schools, etc.

Table Source: EPA 1978

Table Notes:

dBA = A-weighted decibel.

$LEQ_{24h}$  = Equivalent sound level for 24-hour period, expressed as dBA.

$L_{DN}$  = Day-night sound level, expressed as dBA.

$LDN_{24h}$  = Day-night sound level, expressed as dBA over a 24-hour period.

### 3.6.2.3 State Regulations

The Idaho Administrative Procedures Act does not contain regulations relating to environmental noise. Therefore, there are no state noise regulations applicable to the SGP.

### 3.6.2.4 Local Regulations

There are no applicable local county noise ordinances for Valley County, Idaho.

### 3.6.2.5 National Forest Land and Resource Management Plans

Physical, social, and biological resources on National Forest System lands are managed to achieve a desired condition that supports a broad range of biodiversity and social and economic opportunity. National Forest Land and Resource Management Plans embody the provisions of the National Forest Management Act and guide natural resource management activities on National Forest System land.

In the SGP area, the Payette National Forest Land and Resource Management Plan (Payette Forest Plan; Forest Service 2003), and the Boise National Forest Land and Resource Management Plan (Boise Forest Plan; Forest Service 2010) provide management prescriptions designed to realize goals for achieving desired condition for noise and include various objectives, guidelines, and standards for this purpose.

### 3.6.3 Existing Conditions

Describing the existing conditions that would potentially be affected by SGP-related noise involves identifying noise-sensitive receptors, characterizing baseline ambient noise levels, and characterizing landscape features (e.g., terrain, vegetation) that may affect noise transmission.

#### 3.6.3.1 Noise-Sensitive Receptors

The proposed mine site is located in the upper East Fork South Fork Salmon River (EFSFSR) drainage approximately 44 air miles northeast of the City of Cascade, Idaho. The current access from State Highway (SH)-55 to the mine site is via the Warm Lake Road (County Road [CR] 10-579) to Johnson Creek Road (CR 10-413) (in summer) or South Fork Salmon River Road (National Forest System Road [FR] 50674) (in winter), and then Stibnite Road portion of the McCall-Stibnite Road (CR 50-412) (**Figure 3.6-1**).

At the mine site the primary human noise-sensitive receptors (NSRs) would be mine site workers. Outside the mine site, the primary human NSRs would be residents and recreational land uses (e.g., campgrounds, lookouts, trails, dispersed recreational uses in wilderness areas, including undeveloped campsites). Analyzed NSRs are listed in **Tables 3.6-3** and **3.6-4**, for locations with (NSRs 1 through 9) and without (NSRs 10 through 12) baseline noise measurements, respectively.

**Table 3.6-3 Baseline Ambient Sound Levels**

<b>ID</b>	<b>Name</b>	<b>Baseline Ambient Sound Level (dBA)<sup>1,2</sup></b>	<b>Location and Existing Noise Characterization</b>
Site 1	EFSFSR Valley	40 $L_{EQ1h}$	Located in the EFSFSR valley near the proposed mine pit locations to characterize baseline ambient noise levels where mining operations would occur.
Site 2	Miller Residence	50-51 $L_{DN}$	Located near a residence on Johnson Creek Road (CR 10-413) between Stibnite Road (CR 50-412) and Meadow Creek Lookout site to characterize baseline ambient noise levels near the highway that trucks would use to access the mine site via the temporary YPR <sup>3</sup> .
Site 3	Meadow Creek Lookout	45 $L_{EQ1h}$	Located at the Meadow Creek Lookout site off Meadow Creek Lookout Road (FR 51290) to characterize baseline ambient noise levels in undeveloped areas and near the proposed Burntlog Route <sup>4</sup> ; general noise levels in adjacent wilderness areas.
Site 4	Burnt Log Road	40 $L_{EQ1h}$	Located approximately 100 feet from FR 50447 (Burnt Log Road) to characterize baseline ambient noise levels in undeveloped areas near the proposed Burntlog Route, and for use in characterizing general noise levels in adjacent wilderness areas.

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ID	Name	Baseline Ambient Sound Level (dBA) <sup>1,2</sup>	Location and Existing Noise Characterization
Site 5	Forest Service Camp at Landmark	34-40 L <sub>DN</sub>	Located at a Forest Service campground near Johnson Creek Road (CR 10-413) and Landmark Airfield to characterize baseline ambient noise levels near this higher volume roadway along the Yellow Pine Route where other noise sources (e.g., aircraft) also are present.
Site 6	Forest Service Summer Home/Warm Lake Recreation Areas	34-49 L <sub>DN</sub>	Located on the southwest shoreline of Warm Lake to characterize baseline ambient noise levels near Forest Service summer home and recreation areas associated with Warm Lake.
Site 7	Warm Lake Road	47-52 L <sub>DN</sub>	Located approximately 150 feet north of Warm Lake Road (CR 10-579) and directly east of Warm Lake to characterize baseline ambient noise levels along this frequently used road, at Warm Lake Campground, near the proposed Burntlog Route.
Site 8	Granite Excavation Shop in Cascade	61-64 L <sub>DN</sub>	Located at a commercial shop along Warm Lake Road (CR 10-579) in Cascade, with a residence nearby, to characterize baseline ambient sound levels near the highway.
Site 9	Southern Pines Plantation Property	51-52 L <sub>DN</sub>	Located approximately 7 miles east of SH 55 along Warm Lake Road (CR 10-579) to characterize baseline ambient noise levels along this frequently used highway near a group of private residences.

Table Source: HDR, Inc. 2017 a,b

Table Notes:

- 1 Presented hourly L<sub>EQ</sub> values (L<sub>EQ1h</sub>) are averaged from daytime (i.e., from 7:00 AM and 10:00 PM) hourly baseline measurement data collected over a period of multiple consecutive days.
- 2 Presented L<sub>DN</sub> values are calculated from 24-hour baseline measurement data collected over a period of multiple consecutive days (HDR, Inc. 2017a,b).
- 3 The proposed Yellow Pine Route is the current summer access from SH 55 to the mine site via Warm Lake Road (CR 10-579), Johnson Creek Road (CR 10-413), and Stibnite Road (CR 50-412).
- 4 The proposed Burntlog Route includes Warm Lake Road (CR 10-579), FR 447 (Burnt Log Road), Thunder Mountain Road (FR 50375), and a new connector segment from Burnt Log Road (FR 447) to Thunder Mountain Road (FR 50375).

Noise measurement sites 2, 3, 5, 6, 8, and 9 are considered human use NSRs for this analysis because they represent residences or recreational land uses (e.g., campgrounds, lookouts, trails, dispersed recreation uses in wilderness areas, including undeveloped campsites). Site 1 represents ambient sound levels near the mine site. Site 4 is not considered an NSR, but the sound levels measured at Site 4 represent—like the levels measured at Site 3—ambient sound levels in adjacent wilderness areas. Site 7 also is not considered to be an NSR but characterizes traffic noise along Warm Lake Road (CR 10-579).

Residences are located near Warm Lake Road (CR 10-579) in Cascade and approximately 7 miles east of SH 55 on the Southern Pines Plantation Property. Recreational land uses located near Warm Lake Road (CR 10-579) include the Warm Lake Campground, a U.S. Forest Service (Forest Service) summer home, and recreational areas along the southwest shoreline of Warm Lake. These noise-sensitive receptors are in the vicinity of both the Yellow Pine Route and the proposed Burntlog Route.

Several residences, the Forest Service Camp at Landmark, and the Ice Hole Campground, are located near Johnson Creek Road (CR 10-413) between Warm Lake Road (CR 10-579) and Stibnite Road (CR 50-412), with additional residences located near Johnson Creek Road (CR 10-413) in Yellow Pine.

The Meadow Creek Lookout is located just north of Meadow Creek Lookout Road (FR 51290), which would be used to access a proposed portion of the Burntlog Route. The Frank Church-River of No Return Wilderness Area is located east of the proposed Burntlog Route and there are several hiking trails in the vicinity. The closest is the Mule Hill Trailhead (National Forest System Trail #219).

### 3.6.3.2 Baseline Ambient Noise Level Measurements

Outdoor baseline ambient sound levels were measured at five locations in the analysis area in July and August of 2014 and at four additional locations in July and August of 2016 (HDR, Inc. 2017a,b). **Table 3.6-3** provides a description of each site along with summarized baseline sound levels. The noise measurement locations (Sites 1 through 9) are shown in **Figure 3.6-1**. Sites with assumed nighttime human use, such as residences and campgrounds are reported in dBA,  $L_{DN}$ , those with assumed daytime only use are reported in dBA,  $L_{EQ}$ .

Three additional locations have been identified as human use NSRs for this analysis. **Table 3.6-4** provides a description of these additional NSRs along with reference baseline sound levels. Measured noise levels were not available for these areas, but baseline levels were estimated based on similarity to other sites with measurements.

**Table 3.6-4 Additional Human Use NSRs**

ID	Name	Baseline Ambient Sound Level	Location and Existing Noise Characterization
Site 10	Yellow Pine	50-51 $L_{DN}$	Located in Yellow Pine village. No noise measurements were taken from this site, but baseline sound levels assumed to be similar to Site 2, on the basis of similar distance to shared nearby roadway(s) and proximity of residences.
Site 11	Ice Hole Campground/ Boise National Forest	50-51 $L_{DN}$	Located at Ice Hole Campground in the Boise National Forest. No noise measurements were taken from this site, but baseline sound levels assumed to be similar to Site 2, on the basis of similar distance to shared nearby roadway.

<b>ID</b>	<b>Name</b>	<b>Baseline Ambient Sound Level</b>	<b>Location and Existing Noise Characterization</b>
Site 12	Mule Hill Trailhead	40-45 L <sub>EQ1h</sub>	Located at the Mule Hill Trailhead. No noise measurements were taken from this site, but ambient sound levels assumed to be in the range of Site 3 and Site 4 sound levels.

Table Source: AECOM 2020

### 3.6.3.3 Landscape Features

The mine site is located in the Payette National Forest in the upper drainage basin for the EFSFSR. The mine site area is characterized by narrow valleys surrounded by steep mountains. Elevations along the valley floors range from 6,000 to 6,600 feet above mean sea level. The surrounding mountains and areas in the Frank Church-River of No Return Wilderness area reach elevations over 9,000 feet above mean sea level. Off-site facilities, much of the Burntlog Route, and the transmission line corridor are in the Boise National Forest with a similar topography and terrain. On the western edge of the SGP area, access routes and transmission lines are in wider valley bottoms. Noise levels attenuate (i.e., decrease) as a function of the distance from the source (i.e., divergence), ground absorption, atmospheric conditions, and the presence of physical barriers (i.e., landscape features).