

1 **5.9 Noise**

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3 Noise is technically defined as sound that is unwanted and perceived as a nuisance by humans.
4 Within the context of this HSW EIS, the public represents human habitations located adjacent to the
5 boundary of the Hanford Site and communities bordering roads that may support material and waste
6 shipments to and from the site. An understanding of noise impacts is facilitated by associating noise
7 levels with common activities or sources (Figure 5.26).

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9 Potential impacts of noise on the public from implementing the alternatives are addressed in the
10 following sections. The analytical methods used to arrive at the conclusions drawn in this section are
11 presented in Appendix J.

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13 In the course of implementing any of the alternatives, various waste management construction and
14 operations activities would generate noise. The total work force associated with the alternatives would
15 not likely exceed 850, which would result in a minimal addition to traffic noise.

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17 For protection of the public, the Washington Administrative Code (WAC 173-60) has established a
18 limit for daytime residential noise levels of 70 dBA and a nighttime limit of 50 dBA at industrial site
19 boundaries. No actual human habitations would be located within 10 km (approximately 6 mi) of the
20 boundary of the Industrial-Exclusive zone surrounding the 200 Areas or the Area C borrow pit south of
21 SR 240, thus ensuring that WAC limits would not be exceeded.

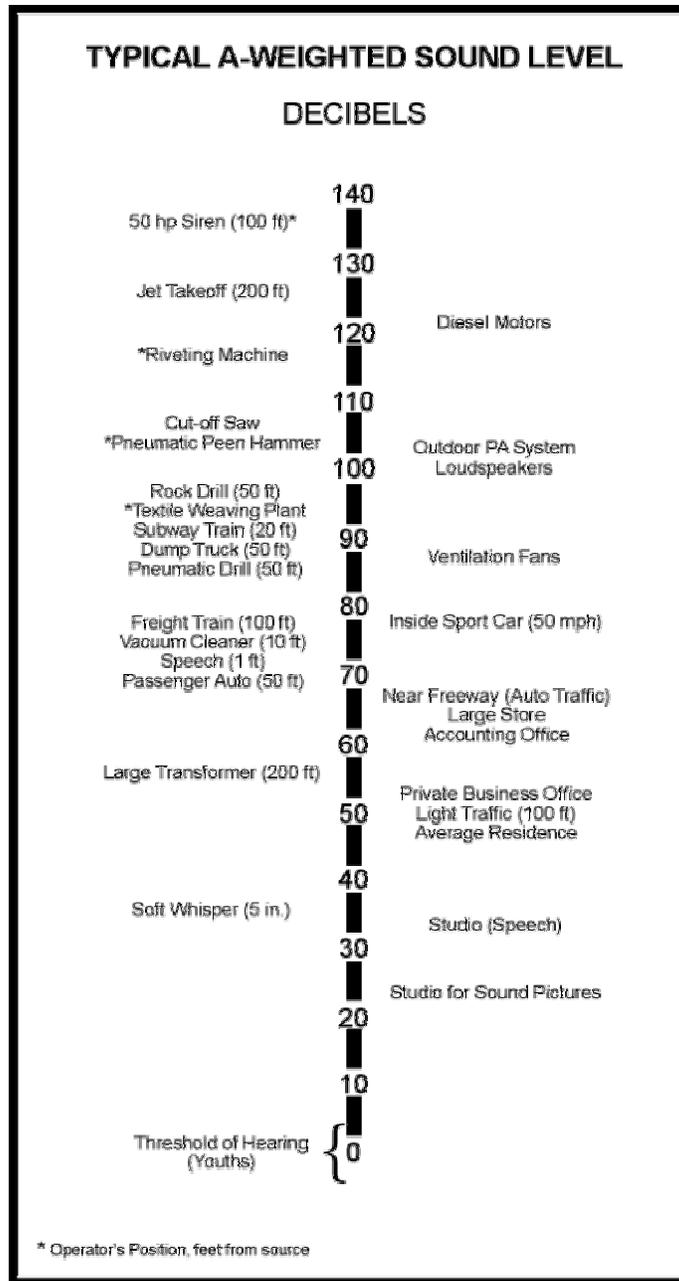
22
23 The point of closest potential exposure to noise for the transient public near the 200 Areas is about
24 2 km (approximately 1 mi) distant on SR 240. However, only emergency turnouts exist on SR 240 in that
25 vicinity, and any exposure to noise would be of short duration and below applicable standards.

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27 Noise is defined in terms of human perception, but sound can be disturbing also to wildlife. Because
28 wildlife can relocate freely to areas of less sound intrusion, no substantial adverse sound-based impacts
29 from waste management activities are anticipated.

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31 Again, although not noise in the above sense, a potential might exist for impacts from ground vibra-
32 tions on research conducted at the Laser Interferometer Gravitational Wave Observatory (LIGO). The
33 major source of such ground vibrations would be associated with excavation for capping materials in
34 Area C where the closest distance to one of the LIGO detection arms is approximately 14 km (about
35 9 mi). The impacts, if any, would be similar for any of the alternatives; however, these impacts have not
36 been quantified.

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38 **5.9.1 Alternative Group A**

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40 The principal activities associated with Alternative Group A (for Hanford Only, Lower Bound, or
41 Upper Bound waste volumes) would be modification of the T Plant Complex; construction of deeper and
42 wider trenches; loading, backfilling, and closure of the LLBGs; operation of the WRAP, T Plant, and
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Figure 5.26. Association of Noise Levels with Common Sources or Activities

CWC; operation of pulse driers for MLLW leachate; onsite transport of construction materials and waste; transport of MLLW offsite for treatment; disposal of ILAW in a new disposal facility near the PUREX Plant; and transport of construction materials to the site. Noise emissions from construction equipment range from 75 to 89 dBA (Table 5.24). Because of the distance from the sources of noise from these activities, noise levels would be less than applicable state standards at the nearest residence. The

Table 5.24. Typical Noise Levels Associated with Construction Equipment^(a) and Blasting^(b)

Equipment	Representative Noise Level (dBA) at 15 m (50 ft)
Backhoe	80
Grader	85
Loader	85
Roller	75
Bulldozer	85
Truck	88
Scraper	89
Blasting	94 ^(c)
(a) FTA (1995).	
(b) Hoover and Klein (1996).	
(c) Noise level at 1200 m (4000 ft) is about 59 dBA.	

maximum calculated noise level at the nearest residence is 33 dBA, and this would be indistinguishable from background noise. Infrequent blasting of rock from the Area C borrow pit would not exceed applicable state standards at the nearest residence.

Material for capping LLBGs at closure would be acquired from the Area C borrow pit and would result in higher, but localized, noise levels from use of heavy equipment. In the absence of prolonged presence of the public in the vicinity, these noise levels likely would not result in a noticeable impact. Because there are no residential areas in the vicinity, Washington state standards for noise would not be exceeded.

Incremental noise in communities through which waste is transported daily would be negligible when compared to background highway noise. Similarly, transport of construction material to the site and onsite would not result in substantial increases in traffic noise.

5.9.2 Alternative Group B

The principal activities associated with Alternative Group B (for either the Lower Bound or Upper Bound waste volumes) would be construction and operation of a New Waste Processing Facility; construction of current design rather than deeper and wider trenches; loading, backfilling, and closure of the LLBGs; operation of the WRAP, T Plant Complex, and CWC; operation of pulse driers for MLLW leachate beginning in 2026; onsite transport of construction materials and waste; transport of MLLW offsite for treatment; disposal of ILAW in multiple lined trenches in the 200 West Area; and transport of construction materials to the site. As in the case of Alternative Group A, noise levels resulting from these activities would be less than applicable state standards at the nearest residence.

The volume of capping materials required in Alternative Group B would be the largest among the alternatives. Although the activities would extend over a longer period of time, they would result in noise impacts similar to those described for Alternative Group A.

1 **5.9.3 Alternative Group C**

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3 Alternative Group C is very similar to Alternative Group A in terms of industrial activities and
4 associated noise propagation. Noise levels associated with the implementation of this alternative would
5 be less than applicable state standards at the nearest residence. Moreover, noise levels would not differ
6 substantially in magnitude or duration from those associated with Alternative Group A.
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8 **5.9.4 Alternative Groups D and E**

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10 Except for excavation of capping materials, activities associated with Alternative Groups D and E are
11 very similar to those of Alternative Group A, with only minor differences in scope and location of waste
12 disposal. Noise levels associated with the implementation of this alternative would be less than applica-
13 ble state standards at the nearest residence. They also would not differ substantially in magnitude or
14 duration from those associated with Alternative Group A.
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16 The volume of capping materials is less than for Alternative Group A. Hence, noise impacts
17 indicated for Alternative Group A would occur over a shorter period of time.
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19 **5.9.5 No Action Alternative**

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21 The principal activities associated with the No Action Alternative would be construction of
22 66 additional CWC buildings for storage of waste that cannot be certified for disposal; construction of
23 additional LLW trenches of current design, loading, and backfilling; capping of two existing MLLW
24 trenches; operation of the WRAP, T Plant Complex, and CWC; operation of pulse driers for MLLW
25 leachate beginning in 2026; onsite transport of construction materials and waste; transport of MLLW
26 offsite for treatment; disposal of ILAW as glass cullet in vaults near the PUREX Plant; and transport of
27 construction materials to the site. Again, noise levels resulting from these activities would be less than
28 applicable state standards at the nearest residence.
29

30 Less than 25 percent of the volume of capping materials would be required to cap the MLLW
31 trenches and the ILAW. The noise levels associated with extraction of these materials from the borrow
32 pit would be similar to those for Alternative Group A, but the activities would occur over a much shorter
33 time.
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