

C.9 NOISE

This section addresses the environmental setting and impacts related to the construction and operation of the Proposed Project and alternatives. Specifically, Section C.9.1 provides a description of the environmental baseline and regulatory settings, followed by an environmental impacts analysis of the Proposed Action in Section C.9.2. Impact analysis for the alternatives is provided in subsequent sections.

C.9.1 ENVIRONMENTAL BASELINE AND REGULATORY SETTING

C.9.1.1 Environmental Setting

General Characteristics of Community Noise

A noise environment consists of a base of steady "background" noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway.

To describe noise environments and to assess impacts on noise sensitive areas, a frequency weighting measure which simulates human perception is customarily used. It has been found that *A-weighting* of sound intensities best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is the one cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. Table C.9-1 lists dBA noise levels for common events in the environment and industry.

Table C.9-1 Typical Sound Levels Measured in the Environment and Industry

Noise Source (Distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environments	Subjective Impression
Civil Defense Siren (100')	130		
Jet Takeoff (200')	120 110	Rock Music Concert	Pain Threshold
Pile Driver (50')	100		Very Loud
Ambulance Siren (100')	90	Boiler Room	
Pneumatic Drill (50')	80	In Kitchen With Garbage Disposal Running	
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (10')	60	Data Processing Center	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30 20 10 0	Quiet Bedroom Recording Studio	Threshold of Hearing

Source: Arnold Peterson and Ervin Gross, 1963.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day, night, or over a 24-hour period. These are decibel levels that are exceeded 50 percent of the time (and commonly designated by "L₅₀"). Noise levels are generally considered low when they are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Noise levels greater than 85 dBA can cause temporary or permanent hearing loss. Examples of low daytime levels are isolated natural settings, such as the Grand Canyon (20 dBA), and quiet suburban residential streets (43 dBA).¹ Examples of moderate level noise environments are urban residential or semi-commercial areas (55 dBA) and commercial locations (60 dBA). Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones (63 dBA), as well as industrial areas (65 to 70 dBA), they nevertheless are considered adverse.

Various environments can be characterized by levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than in commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding average daytime levels. The day-to-night difference can be less in rural areas away from roads and other human activity. Areas with full-time human occupation that are subject to nighttime noise that does not decrease relative to daytime levels are often considered objectionable. Noise levels above 45 dBA at night can result in sleep interference.

Noise Environment in the Project Area

The primary noise source in the project area is traffic noise from the major streets and freeways serving the subject area (see Figure C.12-1 for an illustration of the regional roadways in and near the study area). Secondary noise sources include noise from industrial operations, noise from commercial and institutional activities (e.g., truck deliveries, school bells, playground activities, air conditioning devices, and blowers), and residential noise (e.g., passenger vehicles, air conditioners, and landscape maintenance).

The existing ambient noise levels vary greatly along the proposed project route and alternative project alignments. These noise level variations are primarily related to the type of adjacent land use, the proximity of specific noise sources (e.g., vehicles along streets and highway), and time of day. The typical L_{dn}²/CNEL³ values are estimated to vary from low to mid 60's dBA in residential areas, to mid to upper 70's dBA (perhaps a few scattered 80 to low 80's dBA) in the heavy industrial areas and immediately adjacent to a roadway with substantial heavy truck usage. The existing day time hourly L_{eq}⁴

¹ The descriptors and decibel levels of noise sources in this discussion are typical of those that have been recorded in various studies, including USEPA, 1971 and Beranek, 1971. Individual locations meeting these descriptions can have levels that differ by a few decibels.

² The average of noise level in dBA with levels increased by 10 dBA between 10 pm and 7 am.

³ Community Noise Equivalent Level; the averaging of noise levels on a measurement scale of decibels that increases the actual noise measurement, to account for an increased sensitivity to noise during late evening, nighttime, and morning hours

⁴ Average level of sound determined over a specific period of time.

or L_{50} ambient noise levels are estimated to range from about 55 dBA to approximately 80 dBA. These estimates are based on published environmental noise data for suburban and urban residential and commercial/industrial land use areas (USEPA, 1971).

Sensitive Receptors

A land use survey was conducted to identify sensitive receptors along the proposed route and the alternatives. Table C.8-3 lists land uses along the proposed pipeline route, identifying areas with residential properties. In addition, as listed in Table C.9-2, 22 non-residential sensitive receptors were identified along the proposed pipeline route, most of which are located in residential and/or commercial designated land uses. Figure C.9-1 illustrates the location of the 22 sensitive receptors along the proposed pipeline route. With regard to the alternative routes, only the Alondra Alternative has sensitive receptors; 6 sensitive receptors were identified along the alternative corridor (see Table C.9-3, as well as Figure C.9-1). One sensitive receptor was located along Bellflower Rail Alternative, and two were identified along the Artesia Route. No sensitive receptors were identified along the other alternative routes.

C.9.1.2 Applicable Laws, Regulations, and Standards

Federal and State Standards and Regulations

There are no federal noise standards that directly regulate environmental noise from construction or operation of a pipeline project. However, it should be noted that the USEPA has developed guidelines on recommended maximum noise levels to protect public health and welfare (USEPA, 1974). Table C.9-4 provides examples of protective noise levels recommended by USEPA. With regard to noise exposure and workers, Office of Safety and Health Administration (OSHA) regulations safeguard the hearing of workers exposed to occupational noise. Refer to 29 CFR Section 1910.95 for a list of permissible noise exposures.

California encourages each local government entity to perform noise studies and implement a noise element as part of their general plan. Standards and implementation are administered by the California Office of Noise Control. California Administrative Code, Title 4, has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The State land use compatibility guidelines are listed in Table C.9-5.

Table C.9-2 Non-Residential Sensitive Land Uses Along the Proposed Pipeline Route

Item #	Non Residential Sensitive Receptor	Location			
		MP	Street	Jurisdiction	Description
P 1	• DeForest Park	MP 3.4	DeForest Avenue	Long Beach	North and South of Pipeline Proposed Route, Los Angeles River to DeForest Avenue
P 2	• South Street Parkway Park	MP 3.65	South Street	Long Beach	Northeast Side of South Street
P2a	• Riches of Christ	MP 3.7 - 4.9	South Street	Long Beach	Between Locust and Elm Avenues
P2b	• Bread of Life Food Ministry				One block East of Atlantic Avenue
P2c	• House of Prayer				Three blocks east of Atlantic Avenue
P2d	• New City Church				One block east of Orange Avenue
P 3	• Calvary Chapel of North Long Beach	MP 3.95	South Street	Long Beach	South Side of South Street
P 4	• Buddhist Temple	MP 4.40	South Street	Long Beach	West of Orange Avenue on South Street
P 5	• Bret Harte Elementary School	MP 4.95	South Street	Long Beach	South Side of South Street west of Rose Avenue
P 6	• Glad Tidings Assembly of God Church		South Street	Long Beach	Corner of South Street and Cherry Avenue
P 7	• La Casa Mental Health Rehab. Center	MP 5.85	Paramount Boulevard	Long Beach	Paramount Street
P 8	• Chateau Retirement Home	MP 6.85	Artesia Boulevard	Long Beach	South of Artesia Boulevard
P 9	• Windsor Gardens Convalescent Home	MP 6.90	Artesia Boulevard	Long Beach	South of Artesia Boulevard
P 10	• Ramona Park	MP 6.95	Artesia Boulevard	Long Beach	Corner of Obispo and Artesia Boulevard on South Side of Artesia Boulevard
P 11	• Bellflower Doctors Hospital	MP 8.2	Artesia Boulevard	Bellflower	South side of Artesia Boulevard west of Ardmore Avenue
P11a	• Bellflower Convalescent Hospital	MP 8.5	Artesia Boulevard	Bellflower	East of Ardmore Avenue
P 12	• Bellwood General Hospital	MP 9.15	Artesia Boulevard	Bellflower	South side of Artesia Boulevard between Woodruff Avenue and Carpintero Avenue
P 13	• Wonderland Elementary School	MP 9.50	Artesia Boulevard	Bellflower	South side of Artesia Boulevard
P 14	• Artesia Sr. Center	MP 9.50	Artesia Boulevard	Bellflower	North side of Artesia Boulevard
P 15	• Valley Christian High School	MP 9.90	Artesia Boulevard	Cerritos	South Side of Artesia Boulevard
P 16	• Gahr High School	MP 10.3	Studebaker Road	Cerritos	East side of Studebaker Road
P 17	• Reservoir Hill Park		Studebaker Road	Cerritos	West Side of Studebaker Road
P 18	• First Evangelical Church of Cerritos	MP 11.0	166th Street	Los Angeles County	South Side of 166th Street
P 19	• Niemus Elementary School	MP 11.3	166th Street	Artesia	South Side of 166th Street
P 20	• Iglesia Apostolica Monte Calvario Church	MP 12.0	166th Street	Norwalk	Horst Avenue and 166th Street
P 21	• Baptist Community Bible Church, Baptist Christian Schools, Messenger Fellowship Church and Pre-School	MP 12.6	Norwalk Boulevard	Norwalk	Norwalk Boulevard and Alondra Boulevard
P 22	• John Dolland Elementary School	MP 12.9	Norwalk Boulevard	Norwalk	Adjacent to Norwalk Station

Table C.9-3 Non-Residential Sensitive Land Uses Along the Alternative Route Segments

Item #	Non Residential Sensitive Receptor	Location			
		MP	Street	Jurisdiction	Description
Santa Fe Alternative					
SF1	Fire Station 105	MP 0.2	Santa Fe Ave.	LA County	West of Alameda, East of Santa Fe Avenue
Cherry Alternative					
CH1	• Bethel Church and School	MP 0.85	Cherry Avenue	Long Beach	West side at 65th Street

Item #	Non Residential Sensitive Receptor	Location			
		MP	Street	Jurisdiction	Description
CH2	• Affordable Burial and Cremation	MP 1.0	Cherry Avenue	Long Beach	One block south of Artesia Blvd.
Paramount Alternative					
PA1	• Wesley Gables Elementary School	MP 0.8	Garfield Avenue	Paramount	South of Alondra, west side of Garfield
PA1a	• Paramount Mortuary	MP 1.3 - 2.0	Alondra Boulevard	Paramount	East of Paramount Boulevard near California Avenue
Alondra Alternative Route					
ALa	• Bellflower Mission Center	MP 1 - 1.5	Alondra Boulevard	Bellflower	West of Santa Ana Avenue
ALb	• Romanian Baptist Church	MP 1.5 - 1.6			East of Clark Avenue
ALc	• Bellflower Mortuary	MP 2.65-2.95			West of Chicago Avenue
AL1	• Full Gospel Church	MP 2.9	Alondra Boulevard	Bellflower	Corner of Alondra Boulevard and Stevens Avenue
AL1a	• Norwalk Social Services Center	MP 3.5 - 4.05	Alondra Boulevard	Bellflower	East of Pioneer Boulevard
AL1b	• Las Buenas Nuevas Assembly of God Church				
AL2	• Bellflower High School	MP 3.6	Alondra Boulevard	Bellflower	North of Alondra Boulevard
AL3	• United Pentecostal Assembly Church	MP 3.6	Alondra Boulevard	Bellflower	South side of Alondra Boulevard
AL4	• Cerritos Junior College	MP 4.8	Alondra Boulevard	Norwalk	South side of Alondra Boulevard
AL5	• Norwalk Fire Department	MP 4.9	Alondra Boulevard	Norwalk	North side of Alondra Boulevard
AL6	• Norwalk La Mirada Adult School/Excelsior Union High School	MP 5.3	Alondra Boulevard	Norwalk	North side of Alondra Boulevard
Bellflower Rail Alternative					
BR1	• Adventist Union School	MP 2.2	Flora Vista Street	Bellflower	North of Flora Vista, west of Clark Ave.
BR2	• Carruthers and Flora Vista Parks	MP 3.45 to 4.05	Flora Vista Street	Bellflower	adjacent to RR ROW East of San Gabriel River
BR2a	• Los Angeles County Mental Health • Bellflower Public Library • Bellflower City Hall and Auditorium • Los Cerritos Municipal Court	MP 2.95-3.45	Flower Street	Bellflower	West of RR ROW on Flower Street
BR2b					
BR2c					
BR2d					
BR2e	• Bellflower Transit Center • Bel Toreen Villa Nursing home	MP 3.45 - 4.05	Flower Street	Bellflower	West of RR ROW on Flower S)
BR2f					
BR3	• Valley Christian High School	MP 4.4	Artesia Boulevard	Cerritos	South side of Artesia Boulevard
Artesia Alternative					
AR1	• Gahr High School	MP 0.2	Artesia at Studebaker	Cerritos	North side of Artesia Blvd, East of Studebaker Rd.
AR2	• Artesia Cemetery	MP 0.2	Artesia at Studebaker	Cerritos	South side of Artesia Blvd, East of Studebaker Rd.
AR3	• Twin Palms Care Center	MP 1.4	Artesia Boulevard	Artesia	South side of Artesia Boulevard
AR4	• ABC Adult School and Continuation High School	MP 1.8	Artesia Boulevard	Norwalk	East side of Norwalk Boulevard, North of 91 freeway
Shoemaker Alternative					
SM1	• Baptist Community Bible Church; Baptist Christian School	MP 0.10	Alondra Boulevard	Norwalk	South side of Alondra just East of Norwalk Boulevard

Table C.9-4 Summary of Noise Levels Identified as Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety

Effect	Level	Area
Hearing Loss	$L_{eq}(24) < 70$ dB	All areas
Outdoor Activity Interference and Annoyance	$L_{dn} < 55$ dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq}(24) < 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor Activity Interference and Annoyance	$L_{dn} < 45$ dB	Indoor residential areas
	$L_{eq}(24) < 45$ dB	Other indoor areas with human activities such as schools, etc.

Source: USEPA, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974.

Note: $L_{eq}(24)$ = Represents the sound energy averaged over a 24-hour period.
 L_{dn} = Represents the Leq with a 10 dB nighttime weighting.

Regional and Local Regulations and Standards

The Proposed Project and alternative route segments lie within the jurisdictions of the Cities of Carson, Long Beach, Paramount, Bellflower, Cerritos, Artesia, Norwalk, and unincorporated Los Angeles County. These local agencies have established policies and regulations concerning the generation and control of noise that could adversely affect their citizens and noise sensitive land uses. The various policies and laws established to achieve control of adverse environmental noise are not absolute prohibitions, but recognize the necessity and inevitability of noise associated with an urbanized technological society.

The local governments utilize two basic methods to promote noise/land use compatibility. One method is associated with local agency function of planning, zoning, and the issuance of discretionary permits. The policies, guidelines, and control mechanisms are usually embodied in the Noise Element of the agency's General Plan. This method is primarily used on projects with very long-term or permanent effects on the noise environment such as highways, manufacturing or heavy industry, airports, and transit facilities. This method typically uses the Average Day-Night Level (L_{dn}) or Community Noise Equivalent Level (CNEL) indices in A-weighted decibel (dBA) units to quantify noise levels.

The second method applied by local government agencies is used to ensure short-term peace and quiet. The policies and performance criteria take the form of a nuisance noise control, zoning, or grading ordinance. The noise control ordinances address many forms of noise pollution. These are usually associated with fixed noise sources such as a noisy air compressor or car-wash machinery, but also apply to noise-producing activities which may include construction. The noise control ordinance method typically uses the L_{eq} index in dBA units to quantify noise levels which may not be exceeded for a certain percentage of time. The ordinance may also control hours of operation or require that noise sources be equipped with special devices such as mufflers and air inlet silencers.

Placeholder for Figure C.9-1 Sensitive Noise Receptors

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Table C.9-5 Land Use Compatibility for Community Noise Environment

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE - Ldn or CNEL (db)							
	50	55	60	65	70	75	80	
Residential - Low Density Single Family, Duplex, Mobile Home								
Residential - Multi-Family								
Transient Lodging - Motel, Hotel								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditorium, Concert Hall, Amphitheaters								
Sports Arena, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation, Cemeteries								
Office Buildings, Business Commercial and Professional								
Industrial, Manufacturing, Utilities, Agriculture								
	Normally Acceptable Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.							
	Conditionally Acceptable New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design.							
	Normally Unacceptable New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.							
	Clearly Unacceptable New construction or development generally should not be undertaken.							

Source: State of California General Plan Guidelines, Office of Planning and Research, June 1990.

The local agencies may use either or both methods to regulate noise associated with the proposed project. Some specific limitations and exemptions for construction noise are provided in the ordinances applicable to the project. Table C.9-6 summarizes the applicable regulations which could be applied to the project.

Table C.9-6 Local Agency Criteria For Noise-Sensitive Land Uses

Agency	Land Use	Planning Limit Ldn or CNEL (unless stated otherwise) (dBA)	Ordinance Limit, Leq (unless stated otherwise), (dBA)
City of Carson	Residential	65 exterior 45 interior	<ul style="list-style-type: none"> 50 L₅₀^{1.4} (7a.m.-10 p.m.) 45 L₅₀^{1.4} (10p.m.-7 a.m.)
	Commercial	---	<ul style="list-style-type: none"> 60 L₅₀^{1.4} (7a.m.-10 p.m.) 55 L₅₀^{1.4} (10p.m.-7 a.m.) 70 L₅₀^{1.4} (anytime)
	Industrial	---	
City of Long Beach	Residential	45 interior	<ul style="list-style-type: none"> 45 L₅₀^{1.4} (7a.m.-10 p.m.) 35 L₅₀^{1.4} (10p.m.-7 a.m.)
	Commercial	---	<ul style="list-style-type: none"> 55 L₅₀^{1.4}
	Industrial	---	<ul style="list-style-type: none"> 60 L₅₀^{1.4}
City of Paramount	Residential (R1 and R2)	---	<ul style="list-style-type: none"> 62 dBA (6am -10pm) 57 dBA (10pm -6am)
	Residential (R3 and R4)	---	<ul style="list-style-type: none"> 67 dBA (6am -10pm) 52 dBA (10 pm - 6 am)
	Industrial/Commercial	---	<ul style="list-style-type: none"> 82 dBA (6am - 10 pm) 77 dBA (10pm - 6am)
City of Bellflower	Residential (Single Family)	60 exterior 45 interior	Limits on Construction Hours: 7a.m. to 8p.m. on weekdays and Saturdays
	Residential (Multi-Family)	65 exterior 45 interior	Limits on Construction Hours: 7a.m. to 8p.m. on weekdays and Saturdays
City of Cerritos	Residential	60 exterior 45 interior	<ul style="list-style-type: none"> 50^{1.2}
	Commercial	60	<ul style="list-style-type: none"> 60^{1.2}
	Industrial	70	<ul style="list-style-type: none"> 70^{1.2}
City of Artesia	Residential	65 exterior 45 interior	Limits on Construction Hours: 7a.m. to 9p.m.
	Professional	70 (Leq)	Limits on non-construction and non-transportation noise levels: no greater than 5 dB above ambient level.
	Commercial	70 (Leq)	
	Industrial	80 (Leq)	
City of Norwalk	Residential	65 exterior 45 interior	Limits on Construction Hours: 7a.m. to 10p.m.
	Commercial	70	
	Industrial	75	
Unincorporated Los Angeles County	Residential		<ul style="list-style-type: none"> 50 L₅₀^{1.4} (7a.m.-10 p.m.) 45 L₅₀^{1.4} (10p.m.-7 a.m.)
	Commercial		<ul style="list-style-type: none"> 60 L₅₀^{1.4} (7a.m.-10 p.m.) 55 L₅₀^{1.4} (10p.m.-7 a.m.)
	Industrial		<ul style="list-style-type: none"> 70 L₅₀^{1.4} (anytime)

- Notes: 1. If the existing background noise levels are higher than the levels listed, the background noise levels become the applicable limit.
2. Assumes a steady noise without impulse or prominent pure tones. Impulsive or pure-tone type noises are assessed a 5 dB penalty (i.e., the maximum sound level for these types of noises are 5 dB lower than shown above).
3. Includes all residential categories and all noise sensitive land uses such as hospitals, schools, etc.
4. Noise levels exceeded fifty percent of the time. Typically, 30 minutes in any hour, although the City of Carson's noise ordinances specifies 15 minutes in any 30 minute period as a valid L₅₀ time interval.

C.9.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

C.9.2.1 Definition and Use of Significance Criteria

There are two criteria for judging noise impact. First, noise levels projected for the planned facility must comply with the relevant federal, State, or local standards or regulations. Mitigation of noise impacts on worker safety and health is enforced by OSHA and by CAL OSHA in California, but effectiveness depends on the vigilance of supervisors in seeing that workers use protective gear in high noise environments. Noise impact on the surrounding community is enforced through the local noise ordinance, supported by nuisance complaints and subsequent investigation. There are no regulatory significance criteria applicable to the Proposed Project during construction or operation, but it is assumed that existing regulations will be enforced.

The second measure of impact recognized by noise analysts is the increase in noise levels above the existing ambient as a result of the introduction of a new source of noise. A change in noise level due to a new noise source can create an impact on people. The degree of impact is hard to assess because of the highly subjective character of individuals' reactions to changes in noise. Empirical studies have shown people begin to notice changes in environmental noise level around five dBA (USEPA, 1974). Thus, average changes in noise levels less than five dBA cannot be definitively considered as producing adverse impact. For changes in level above five dBA, it is difficult to quantify the impact beyond the obvious: the greater the noise level change, the greater the impact. A judgment commonly used in community noise impact analyses associates long-term noise increases of 5 to 10 dBA with "some impact." Noise level increases of more than 10 dBA are generally considered severe. In the case of short-term noise increases, such as those from construction, the 10 dBA threshold between "some" and "severe" impact is often replaced with a criterion of 15 dBA. These noise-averaged thresholds are to be lowered when the noise level fluctuates, or the noise has an irritating character with considerable high frequency energy, or if it is accompanied by subsonic vibration. In these cases the impact must be individually estimated.

Adopted community noise standards are key factors in determining significance of noise impact. Local noise elements and general plans for communities along the ROW were collected and evaluated as part of the survey of land use goals and guidelines. Applicable local noise standards typically follow one of three approaches in regulating community noise:

- Threshold L_{dn} levels permissible at various land uses that have been classified by sensitivity to noise
- Permissible changes in noise levels relative to measured or estimated ambient baseline levels
- Specific quantitative maximum noise levels permissible for each zoning district in the jurisdiction.

For most communities the guidelines, goals or ordinances that address construction noise are particularly relevant to this Environmental Impact Report (EIR). As shown in Table C.9-6, some communities specify more stringent standards during nighttime hours (typically after 10 p.m.) or provide special exemptions for some or all types of construction noise during standard weekday work hours.

For this analysis, impacts from noise would be considered significant if:

- Adopted local standards, noise element, or ordinance would be exceeded in noise level, timing, or duration
- The project would increase the ambient noise level above ordinance-specified limits for the land use zoning or by more than 3 dBA in areas already exceeding the limits
- An increase in noise levels of 15 dB or more would occur over a period of at least one-half day at a sensitive receptor at any ambient noise level; permanent increases of 10 dB would also be significant
- Long term noise would conflict with State or local guidelines, interior noise levels, and 24-hour averages, and specifically, noise levels exceeding a day-night average sound pressure level L_{dn} of 60 dBA at the nearest noise sensitive receptor (California Office of Noise Control)
- Noise increments to the ambient that are as low as 5 dB would be significant if they occur during quieter hours at night (between 10 p.m. and 7 a.m.). There is no precise threshold as the character of the noise is also important.

C.9.2.2 Applicant Proposed Measures

In SFPP's PEA, there are numerous measures proposed that are intended to reduce the adverse impacts of the project. Outlined below are the measures that have been developed by the Applicant to reduce the project's noise impacts (SFPP, 1997). The noise analysis is based on the assumption that these measures would be implemented by SFPP.

1. All noise-producing project equipment and vehicles using internal combustion engines will be equipped with mufflers, and air-inlet silencers where appropriate, in good operating condition that meets or exceeds original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) will be equipped with shrouds and noise control features that are readily available for that type of equipment.
2. All mobile or fixed noise-producing equipment used on the project, which is regulated for noise output by a local, state, or federal agency, will comply with such regulation while in the course of project activity.
3. All project personnel who could potentially be exposed to sound levels in excess of 85 dBA will be provided with personal protective equipment in accord with Occupational Safety and Health Administration (OSHA) regulations and guidelines.
4. Construction zones where noise levels are expected to exceed 85 dBA will be delineated by hazard tape, cones, temporary construction fencing or other effective means and identified by temporary signage as a "noise hazard" area to preclude hearing damage to non-project-related persons including members of the general public.
5. Material stockpiles and mobile equipment staging, parking, and maintenance areas will be located as far as practicable from noise-sensitive receptors.
6. The hours of construction including noisy maintenance activities and all spoils and material transport will be restricted to the periods and days permitted by the local noise or other applicable ordinance.
7. The use of noise-producing signals, including horns, whistles, alarms, and bells will be for safety warning purposes only.

8. No project-related public address loudspeaker, two-way radio, or music system will be audible at any adjacent noise-sensitive receptor.
9. The on-site construction superintendent will have the responsibility and authority to receive and resolve noise complaints. A clear appeal process to SFPP will be established prior to construction commencement that will allow for resolution of noise problems that cannot be immediately solved by the site supervisor.
10. The emplacement of berms or erection of temporary sound wall barriers will be considered where project activity is unavoidably close to noise-sensitive receptors.

C.9.2.3 Impacts of Pipeline Construction

As described in Section B (Project Description), SFPP has proposed to construct a 13-mile pipeline from their Watson facility in Carson to their Norwalk Station. Noise generated from the construction of a pipeline is a result of the operation of heavy construction equipment during spread activities, such as ditching, hauling, pipe bending, welding, backfilling, and cleanup. Table C.9-7 provides a typical list of construction equipment used along a pipeline construction spread, as well as their associated noise levels (USEPA, 1974).

Table C.9-7 Noise Emission Characteristics of Construction Equipment

Equipment	Typical Range
Jack hammers and drills	75-98
Dozer	82-95
Backfiller	82-95
Trucks with lowboy	82-92
Truck leaving construction site	72-80
Backhoe	80-92
Sideboom	78-92
Air compressor	85-91
Ditching machine	80-90
Dragline 1-1/4 yard	80-90
Motor crane	78-87
Front end loader	80-90
Pickup	70-85
Welding rigs	72-82

Note: Data are adapted from U.S. Environmental Protection Agency NTID 300.1, 1972, pg.2-108, and other sources (levels are in dBA at 50-foot reference distance). These values are based on a range of equipment and operating conditions.

The construction noise levels used in this impact analysis was developed in two previous noise impact studies. The first study was completed for the environmental analysis of a proposed 20-inch, 132-mile pipeline in southern California (Pacific Pipeline). It was found in the study that the noise from the combined construction operations resulted in a level of approximately 60 dBA at 1,300 feet from the ditch

centerline, which equates to approximately 75 dBA at approximately 200 feet (CPUC, 1993; CPUC, 1996). In addition, another study was conducted to investigate potential noise effects arising from the installation of a 12-foot-diameter pipeline for water conveyance. The study found that noise associated with pipeline construction did not exceed L_{eq} of 75 dBA at a distance of 90 feet from the trench centerline. Adjusted to a distance of 50 feet from the construction activity, the noise level would be 80 dBA L_{eq} . The noise values for construction of the 13-mile Carson to Norwalk pipeline are expected to be similar to the results described above.

As described in Section B, the proposed 13-mile pipeline would be located almost entirely within the street ROW of various transportation corridors (see section C.12). Land uses along the proposed route are urbanized, and include residential, commercial, industrial, and a few open spaces. During construction, it is expected that land uses along the proposed route would be impacted from the numerous pieces of construction equipment operating within the streets of Carson, Long Beach, Bellflower, Cerritos, Norwalk, and unincorporated County land, as well as the cities of Paramount and Artesia for alternative route segments. Based on the information presented above, noise levels adjacent to the construction ROW could be 70 to 80 dBA, depending on the distance the receptor is from the source of noise. However, in order to safeguard the general public against unsafe noise exposure levels, SFPP has committed to delineate all construction zones where noise levels are expected to exceed 85 dBA. This will reduce the potential for hearing damage to non-project-related persons including the general public.

Mitigation Measures N-1 through N-4 would reduce noise levels somewhat and protect sensitive receptors against noise effects. Upon their implementation, the noise impacts along the ROW would be reduced to a level that is less than significant (**Class II**). Although SFPP has committed to some of these measures in general terms, they are further detailed below for additional clarity and to allow for monitoring of their implementation.

As listed in Table C.9-2, there are 22 sensitive receptors along the proposed route, in addition to many areas of residential housing, which may be affected by the noise created during the construction of the proposed pipeline. According to SFPP, the construction of the proposed pipeline would progress at a rate of 300 to 500 feet per day; however, recent urban pipeline construction in the Los Angeles area has averaged only 200 feet per day. Therefore, it is assumed that each of the sensitive receptors would be affected for a period of approximately one or two weeks. Noise levels at the receptors would be between 70 dBA and 80 dBA, depending on the distance the receptor is from the noise source. In some cases this would result in an incremental increase in noise levels above the 15dBA for more than one half day. Noise could also occur at night, as a result of implementation of Mitigation Measure T-1 (Section C.12). These noise levels would be potentially significant, but reduced to less than significant (**Class II**) through the implementation of Mitigation Measures N-1 through N-4.

With regard to worker exposure to high noise levels, all project personnel who could potentially be exposed to sound levels in excess of 85 dBA will be provided personal protective equipment in accord with SFPP's

Applicant Proposed Measure 3 and Occupational Safety and Health Administration (OSHA) regulations and guidelines. Therefore, noise impacts to project personnel would be adverse, but not significant (**Class III**).

Mitigation Measures for Pipeline Construction

Impact: Noise from construction could disturb adjacent land uses (**Class II**).

N-1 Conduct all construction activities involving motorized equipment between the hours of 7 a.m. and 7 p.m. Monday through Saturday, or for a shorter period if so stipulated in the applicable noise ordinance or as approved by the local jurisdiction. Further restrict construction to outside school hours where schools are located adjacent to the ROW and would be impacted by construction noise, unless school district officials give written approval. Incorporate these restrictions in all construction plans and scheduling prior to construction. Compliance during planning and construction is to be monitored by the city/county agency that enforces the noise ordinance, by the Public Works Department, or by a CPUC-approved construction monitor. This measure will be overridden by Mitigation Measure T-3 where it conflicts with the provisions therein.

N-2 SFPP or its construction contractor shall provide at least 72-hour advance notice of the start of construction to all business and residences adjacent to the ROW (implement with Mitigation Measures L-1 through L-3). Notification shall be by mail with follow up by telephone or in person. The announcement shall state specifically where and when construction will occur in the area. If construction delays of more than seven days occur, an additional contact shall be made, either in person or by mail. Notices shall provide tips on reducing noise intrusion, for example, by closing windows facing the planned construction. The noticing shall also advise the recipient on how to inform the Applicant/contractor if specific outdoor events are scheduled so that construction can be rescheduled, if necessary, to avoid a conflict. A reasonable deadline for notification shall be stated. Compliance is to be monitored by a CPUC-approved construction monitor.

N-3 SFPP shall establish a toll-free telephone number for receiving questions or complaints during construction and develop procedures for responding to callers. The number shall be included in the mailed notification (Mitigation Measure N-2) and implemented with Mitigation Measures L-1 through L-3.

N-4 SFPP or its contractor shall maintain proper mufflers on all internal combustion and vehicles engines used in construction to reduce noise to the maximum feasible extent. SFPP or its contractor shall maintain written certification of muffler condition and make it available upon request to CPUC-approved construction monitor.

C.9.2.4 Impacts of Station Modifications

As described in Section B.3.2, SFPP plans to modify certain existing facilities as a part of the proposed expansion project. The hauling of construction materials and the movement of equipment onto and off each site would be staggered over time. All terminal-related modifications will occur within the boundaries and easements of the existing facilities, or within the adjacent railroad ROW. The following paragraphs briefly describe the modifications at each station, as well as provides a description of any potential noise impacts related to the modifications.

Watson Station. This station would be modified by adding two new electric pumps (2,000 hp) and new metering equipment within the existing station boundaries. Additionally, vapor recovery systems would be added to 3 existing tanks; one tank would be converted from diesel to multi-product use; and a new scraper-launching facility would be installed. The temporary noise levels from the subject modifications would not be significant because the station is in an industrial area and no sensitive noise receptors are located close enough to hear construction noise (**Class III**).

Norwalk Station. The new 16-inch pipe will be installed between Norwalk Boulevard and the existing SFPP station equipment. Piping modifications will be made to connect the new pipeline to the existing 16-inch (Military) pipeline which starts at Norwalk and continues to the Colton Station. As described in Section C.8.2.4, single and multi-residential units immediately south of the Norwalk Station are currently subjected to high noise levels from the existing pumps at the facility. Construction within the Norwalk Station would have the potential to disturb adjacent residences to the south of the facility. However, through the implementation of Mitigation Measures L-1 through L-3 from Section C.8, Land Use and Recreation, and N-1 through N-4, and N-5 (below), the incremental noise levels associated with the modifications would not be significant (**Class II**).

Impact: Temporary construction noise would impact the residences south of the Norwalk Station.

N-5 To reduce offsite noise levels at the residences adjacent to the Norwalk Station, the following measures shall be implemented for all construction within the station:

- Internal-combustion engine-powered equipment, whether mobile or stationary, will be equipped with and use enclosures, noise shields, shrouds, or other noise reduction features.
- Portable noise shields (3/4 or 1-inch thick plywood with fiberglass facing) shall be available and used to shield noise from noise-producing equipment that does not have integral shrouds or noise-reducing enclosures.
- Trenching within the Station shall be completed with hand-digging techniques unless otherwise approved by the CPUC Environmental Monitor after assessment of technical feasibility and noise impacts.
- All residents living adjacent to the Station construction (i.e., all residents living in the properties on the north side of Cheshire Street between Norwalk Boulevard and Madris Avenue, or those at the north end of Thornlake) shall be informed of the construction to occur within the Station in accordance with Mitigation Measure N-2. These residents shall be informed that if they have special needs for quiet during

the day, they may call SFPP's toll-free telephone number to arrange for alternative temporary housing for up to 2 days when construction activities are near their homes.

Industry Station. Two new electric pumps (1,750 hp) will be added at SFPP's Industry Station to boost the pressure in the existing 16-inch pipeline. Also, the existing 16-inch pipeline, which currently does not pass through the station but passes south of the railroad tracks, would be re-routed to pass through the station so its product could be boosted by the pumps. Construction at the Industry Station would be within the boundary of the facility or within the railroad ROW. The temporary noise levels from the modifications would not be significant because the station is located in a relatively isolated industrial area, between the railroad ROW and a flood control channel, and adjacent to two very busy major streets (Valley Boulevard and Brea Canyon Road). Therefore, noise impacts would be adverse but not significant (**Class III**).

Colton Terminal. Piping modifications will occur at the Colton Terminal to allow both of the incoming pipelines to connect directly with the Phoenix-West line. The temporary noise levels from the subject modifications would not be significant because the noise would occur within the 80-acre Colton Terminal which is located in an industrial area (**Class III**).

C.9.2.5 Impacts of Pipeline Operations

Pump Stations. New electric pumps would be installed at the Watson Station (two 2,000 hp pumps) and at the Industry Station (two 1,750 hp pumps). These size pumps tend to produce a noise level of 60 dBA at 50 feet and 35 dBA at 1,000 feet (assuming no environmental attenuation) (Aspen, 1996). As described in Section C.8.2.4 (Land Use and Recreation), the operation of the pumps at the Industry and Watson Station would not create any noise impacts because of the high ambient noise levels in the area, as well as the distance (greater than 300 feet) the receptors are from the site.

Inspection Operations. According to 49 CFR Part 195, pipeline route and valves must be inspected at least 26 times per year, but SFPP proposes inspections twice each week. The primary noise sources associated with inspection are the transportation vehicles used by inspection personnel. SFPP estimates that inspection of the proposed project will result in SFPP personnel traveling an additional 2,000 miles per year. In comparison to the ambient background noise, the noise generated from the vehicle trips would be negligible, this noise impact would be adverse, but not significant (**Class III**).

Maintenance Operations. While maintenance operations would be performed principally at the pump station sites, maintenance work would also sometimes occur along the pipeline. Noise sources might occasionally involve trenching by backhoes, welding equipment, and cranes. The net increase in noise levels would be less than for pipeline construction and would only occur at a few locations along the ROW for a short period of time. Every so often noise levels from maintenance operation could exceed 15 dBA at some sensitive location. However, the noise levels impacts would be reduced through the implementation of N-1 through N-5. This impact would be adverse, but not significant (**Class III**).

C.9.2.6 Secondary Impacts of Project Operations

As described in Section B.3.3, the implementation of the proposed project would result in increased product shipment from Colton through the CalNev Pipeline and SFPP's Phoenix-West Line, as well as an increase in the amount of product transported to the Inland Empire via tanker trucks. The incremental increase of product through the CalNev Pipeline and SFPP Phoenix-West Line could create noise impacts to the community surrounding the pipeline ROWs, if those pipelines required additional pumping equipment to ship the increased throughput. However, the impacts associated with potential noise from additional pumping requirements along these two pipelines cannot be quantified with available information.

With regard to the noise resulting from product being shipped by tanker trucks, it is assumed that approximately 250 additional truck trips would result from the implementation of the Proposed Action. It is estimated that 80 percent of the additional trucks would be transporting product to destination within the Riverside/San Bernardino Area. The other 20 percent of the truck trips would to distant locations such as Palm Springs, Escondido, etc. The tanker trips would be staggered throughout the day and would consist mainly of trucks from independent companies servicing the Inland Empire. Noise levels that would result from trucks exiting the Colton Station on Riverside Street would be approximately 72 to 75 dBA (CPUC, 1996) at a distance of 50 feet. The incremental noise from these additional truck trips, in comparison to ambient noise levels from the number of vehicles traveling on the local roadways (i.e., Riverside Street, the I-10 Freeway and the Pomona Freeway) within the Inland Empire, would be adverse but less than significant (**Class III**).

C.9.2.7 Cumulative Impacts

Cumulative noise impacts would occur if utility repair projects, pipeline, or roadway construction projects, or construction on a property near the ROW were to be implemented simultaneously with the construction of the proposed pipeline. Refer to Section B.10 for tables of identified projects along the ROW from the Watson Station to Colton Station. In the worst circumstances, concurrent construction projects might cause the local noise level to be approximately three dBA higher than that produced by the louder source, if the nearby construction project were to produce about the same level of construction noise. If the noise levels from the two sources are dissimilar, the noise increase relative to the louder noise source would be less than three dBA. Mitigation measures proposed in the Land Use and Traffic sections (C.8 and C.12) for coordinating construction activities would further reduce noise levels heard by sensitive receptors. In all cases, the cumulative noise impact would be less than significant (**Class III**).

C.9.2.8 Significant Unavoidable Impacts

Through the implementation of the Applicant Proposed Measures, as well as Mitigation Measures N-1 through N-5, there would be no significant unavoidable impacts as a result of construction and operating the proposed 13-mile pipeline.

C.9.3 SANTA FE ALTERNATIVE SEGMENT

The Santa Fe Alternative is a 0.6-mile alternative in the Rancho Dominguez area of Los Angeles County at the western end of the proposed pipeline. As described in Section B.8.1, this alternative would replace most of the Laurel Park portion of the proposed route. Based on the information in Table C.8-4, the land use along the ROW consists primarily of light industrial, a small amount of open space at Compton Creek, and small parcel of agricultural land. There is one sensitive receptor (a fire station) along the alternative. In comparison to the proposed project, the noise impacts for this alternative would be less because the Santa Fe Alternative would eliminate noise impacts at Del Amo Mobile Estates, at Dominguez Adobe, and at Dominguez Seminaries. Mitigation Measures N-1 through N-4 should be imposed to eliminate or further reduce adverse (**Class III**) noise levels associated with construction of the proposed pipeline.

C.9.4 CHERRY ALTERNATIVE SEGMENT

The 1.5 mile long segment would diverge from the proposed route by turning north on Cherry Avenue from South Street, then east on Artesia Boulevard to re-join the proposed route at Artesia and Paramount. As described in Section B.8.2, the Cherry Alternative Segment would eliminate construction on South Street (between Cherry and Paramount), and no construction would occur on Paramount. As described in Table C.8-5, land uses includes a mix of industrial, commercial, and single- and multi-family residential. In addition, two sensitive receptors are located along Cherry Avenue. This alternative would avoid noise impacts to the Mental Health Rehabilitation Center on Paramount Street. However, it would affect about 23% more residential units. Mitigation Measures N-1 through N-4 should be imposed to eliminate or further reduce adverse (**Class III**) noise levels associated with construction of the proposed pipeline.

C.9.5 PARAMOUNT ALTERNATIVE SEGMENT

This 2.5 mile long segment would diverge from the Cherry Alternative segment by continuing north on Cherry/Garfield Avenues to Alondra, and turning east on Alondra until it meets the Alondra Alternative segment at Lakewood Boulevard. Under this alternative, no construction would occur on Artesia Boulevard. This alternative would cause potential noise impacts to the school on Garfield Avenue, south of Alondra, to a funeral home on Alondra, and to the residential units on Garfield and Alondra Boulevard. This alternative would affect approximately 150 residential units as opposed to about 500 on the proposed route (Artesia Boulevard between Paramount and Lakewood). Mitigation Measures N-1 through N-4 should be imposed to eliminate or further reduce noise levels associated with construction of the proposed pipeline.

C.9.6 ALONDRA ALTERNATIVE SEGMENT

The Alondra Alternative is an approximately 4-mile long route segment on the central and eastern end of the proposed pipeline route, through the Cities of Bellflower and Norwalk. It would diverge from the proposed route by turning north from Artesia Boulevard on Lakewood Boulevard, then east on Alondra

Boulevard to Norwalk Boulevard, where it would re-join the proposed pipeline route. As listed in Table C.8-7, land uses along this route is mixed, and includes several schools and churches (11 nonresidential sensitive receptors). In comparison to the proposed route, construction noise would impact fewer residential areas (with approximately 270 residential units affected versus about 630 on the equivalent portion of the proposed route), by avoiding the segment of the proposed route along 166th Street, which is primarily residential. Noise impacts to non-residential sensitive receptors would also be less on this alternative than along the proposed route, which would affect 13 sensitive receptors. Mitigation Measures N-1 through N-4 should be imposed to eliminate or further reduce adverse noise levels associated with construction of this alternative segment.

C.9.7 BELLFLOWER RAIL ALTERNATIVE SEGMENT

This 4.2-mile alternative would avoid construction on Artesia Boulevard between Lakewood Boulevard and the 605 Freeway. The alternative would diverge from the proposed route by turning north on Lakewood at Artesia Boulevard for 1.8 miles, and then turning southeast into the rail ROW just south of Somerset. As shown in Table C.8-8, the land uses along the rail ROW include commercial small industrial, and residential areas. There are nine sensitive receptors along the ROW, including Adventist Union School, Flora Vista Park, Valley Christian High School, and City of Bellflower municipal buildings.

The Union Pacific railroad line generates noise from passing trains. Noise generated from the trains passing along the railway line is dependent on the speed of the trains, the number of rail-cars, and the operational frequency of the train's warning horn. Approximately 4 trains per week currently travel along the subject railway (Brohard, 1997).

Because of the residential properties along the rail ROW, the impacts of this alternative are still considered significant, but mitigable (**Class II**) with application of Mitigation Measures N-1 through N-4.

This alternative would be preferred over the proposed route because it has fewer residences (about 170 versus 300 along the proposed segment), and because construction would proceed at up to 1,000 feet per day (approximately 5 times faster than construction in urban streets).

C.9.8 ARTESIA ALTERNATIVE SEGMENT

This segment would diverge from the proposed route by staying on Artesia Boulevard where the proposed route turns north on Studebaker Road. This alternative route would continue east on Artesia Boulevard to Norwalk Boulevard, turning north on Norwalk to the Norwalk Station. As listed in Table C.8-9, land use along this route consists of commercial land uses, with several isolated residential areas. In comparison to the proposed route, construction noise would impact fewer residential areas (about 80 residential units versus 260 along the proposed route segment), by avoiding the segment of the proposed route along 166th Street and Studebaker Road which is primarily residential. Fewer non-residential receptors would be affected by this alternative, as compared to the proposed route. Mitigation Measures N-1 through N-4

should be imposed to eliminate or further reduce adverse noise levels associated with construction of the proposed pipeline.

C.9.9 SHOEMAKER ALTERNATIVE SEGMENT

The alternative segment is approximately 1.5 miles long, and would result in about 0.9 miles being added to the total length of the proposed pipeline within the City of Norwalk. It would diverge from either the proposed route or the Alondra Alternative by turning east on Alondra Boulevard from the corner of Norwalk Boulevard for 1 mile, then turning north on Shoemaker Avenue for 0.5 miles. As described in Table C.8-10, land uses along the Shoemaker Alternative Segment include some residential areas, as well as commercial and industrial uses. The only sensitive receptor is a church complex on the corner of Alondra and Norwalk Boulevard, and it would also be affected by the proposed route. Similar to what is described in Section C.12 (Traffic and Transportation), through the implementation of this alternative, the construction noise levels would be extended over a longer period of time, and over a longer distance, as a result of the increase in the additional 0.9 miles. However, this alternative would eliminate the potential noise impacts associated with constructing the pipeline within the Norwalk Station, immediately adjacent to the residences the south of the facility.

Impacts of this alternative would be significant but mitigable (**Class II**) by implementation of Mitigation Measures N-1 through N-4. The Shoemaker Alternative would be preferred over the proposed route because, while the number of affected residences is comparable (90 units along the alternative segment and 110 along the proposed route), the residences along Alondra are further from the location of construction.

C.9.10 NO PROJECT ALTERNATIVE

If the proposed project is not built, and demand grows as predicted by SFPP, petroleum products would have to be provided to the Nevada, Arizona, and Inland Empire markets by other methods (either via other pipelines or trucks), as described in Section B.9. The incremental increase in noise from additional trucks and trains would be adverse, but not significant (**Class III**).

C.9.11 MITIGATION MONITORING PROGRAM

Table C.9-8 presents the mitigation monitoring program for the noise issue area.

Table C.9-8 Mitigation Monitoring Program

Impact	Mitigation Measure	Location	Monitoring Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Noise from construction could disturb adjacent land uses (Class II)	N-1 Conduct all construction activities involving equipment between the hours of 7 a.m. and 7 p.m. Monday through Saturday; restrict construction to outside school hours.	All route segments, including the alternative segments	Verify that SFPP included the schedule in all construction plans.	Verification of construction activities during specified hours will result in impact reduction.	CPUC and local jurisdictions	Before and during construction
	N-2 Provide 72-hour advance notice to all sensitive receptors, and provide tips on reducing noise intrusion.		Review documentation of all mailings, calls and correspondence received. Check against list of expected sensitive receptors.	Verification of the appropriate sensitive receptor locations, and review of the notice-letter; Notifying the appropriate receptors will result in an impact reduction.		Prior to construction
	N-3 Establish a toll-free telephone number for receiving complaints during construction and develop procedures for responding to them (See also L-1 through L-3).			Verification of the 800-telephone number and active log book.		Prior to construction
	N-4 Maintain proper mufflers on all internal combustion and vehicles engines used in construction.		Periodic checks of the equipment and its operation, or make use of noise measurements.	Verification of the operational functionality of the mufflers will result in an impact reduction.		Prior to and during construction
Construction noise at Norwalk Station (Class II)	N-5 Implement noise reduction techniques to reduce offsite noise levels to the residences adjacent to the station; offer short-term alternative housing.	Norwalk Station	Observe construction activities and document compliance.	Verification of the operational functionality of the barrier will result in an impact reduction.		Before and during construction

C.9.12 REFERENCES

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