4.7 NOISE

This analysis is based on a Community Noise Technical Study (attached as Appendix J) prepared for the project by URS, as well as Environmental Documents prepared for the Tajiguas Landfill Project (listed in Section 1.4.2).

4.7.1 Setting

4.7.1.1 Characteristics of Noise

The Santa Barbara County Comprehensive Plan Noise Element provides a thorough background discussion of noise and its effects on human health and quality of life, as well as a discussion of noise measurement descriptors used in establishing noise standards. The following paragraphs present a brief summary of the terms and standards used in community noise analysis.

Noise levels are measured in a logarithmic scale (with units of decibels) in a way that duplicates the frequency sensitivity of the human ear (the "A" scale), with the abbreviation of dBA. Typically, noise levels in rural and suburban areas range from low values between 35 to 45 dBA, up to levels between 65 to 75 dBA, which may be associated with locations near highways or arterial roadways. Normal human speech becomes nearly inaudible when background noise levels are around 60 to 65 dBA. Noise levels in close proximity to machinery such as lawn mowers or heavy trucks or earth moving equipment, may reach 95 to 100 dBA.

Often noise levels vary over short periods of time and it is necessary to use a single dBA value to represent such changing noise levels. The single value, which may be measured or computed to represent the same amount of acoustic energy transmitted by a varying noise level, is called the Equivalent Noise Level (Leq) and must always be associated with the defined time period over which it applies. It is common to express Leq values for one-hour time periods, but shorter and longer periods might also be specified.

Many standards and guidelines for acceptable noise levels are based on 24-hour periods. For these types of standards the hourly Leq values are determined for different portions of the day, and then "penalty" dBA values are added to the noise levels during the evening and/or nighttime periods to account for the added nuisance of noise during these periods. Two common noise descriptors of this type are the Day-Night Average Noise Level (Ldn) and the Community Noise Equivalent Level (CNEL). The Ldn includes a 10 dBA addition during the nighttime hours (10:00 p.m. to 7:00 a.m.). Ldn is calculated from day and night noise values as follows:

$$Ldn = 10\log_{10}[(15/24)(10^{Ld/10}) + (9/24)(10^{(Ln+10)/10)}]$$

Where:

Ldn = Day-Night Average Noise Level, dBA

Ld = Equivalent Noise Level during Daytime, 15 hours from 7:00 a.m. to 10:00 p.m.

Ln = Equivalent Noise Level during Nighttime, 9 hours from 10:00 p.m. to 7:00 a.m.

The CNEL is similar to Ldn, but also includes a 5 dBA addition during the evening hours (7:00 p.m. to 10:00 p.m.). The numerical difference between Ldn and CNEL values is small. Many publications, including the Santa Barbara County Comprehensive Plan Noise Element, use the two terms interchangeably.

Most noise levels are measured or computed to show their value at a standardized distance from the noise source, commonly 50 feet. Whenever a source noise level is measured or cited, the distance to the source should always be specified or clearly known. As the distance to the receiver location becomes greater, the noise level decreases in a logarithmic fashion. For a doubling of the distance from most point noise sources, the dBA value of the noise will decrease by 6 dBA. For a perfect line source, the decrease amounts to only 3 dBA for each doubling of distance. Depending on their traffic volume and geometry, roadways are treated as either a line source or as something between a point and a line source, with the rate of decrease usually estimated as either 3.0 dBA (line source) or 3.5 to 4.5 dBA (between a line and a point source) for each doubling distance.

Noise levels are often summarized graphically by showing contours, which are lines depicting equal noise values associated with a particular source (either a single source, or an aggregate of multiple sources from one or more geographic locations). For instance, a single noise level contour might show where 60 dB is expected with respect to noise emission from a source; or, multiple contours showing a range of dB values, often in decrements of 5 dB, could illustrate how sound propagates away from that source and how it attenuates with distance.

Noise contours superimposed on an aerial photograph or map of noise-sensitive land uses can help show where noise level exposure may exceed an allowable threshold. Santa Barbara County considers the following as noise-sensitive land uses:

- Residential, including single and multifamily dwellings, mobile home parks, dormitories, and similar uses.
- Transient lodging, including hotels, motels, and similar uses.

- Hospitals, nursing homes, convalescent hospitals, and other facilities for long-term medical care.
- Public or private educational facilities, libraries, churches, and places of public assembly.

4.7.1.2 Characteristics of Ground-borne Vibration and Noise

In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving and operating heavy earth-moving equipment.

The effects of ground-borne vibration include detectable movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance would be well below the damage threshold for normal buildings.

Vibration is an oscillatory motion which can be described in terms of the displacement, velocity, or acceleration. Because the motion is oscillatory, there is no net movement of the vibration element and the average of any of the motion descriptors is zero. Displacement is the easiest descriptor to understand. For a vibrating floor, the displacement is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement and acceleration is the rate of change of the speed. The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration signal. PPV is often used in monitoring of blasting vibration since it is related to the stresses that are experienced by buildings.

4.7.1.3 Noise Sources in the Project Area

Noise sources in the project vicinity include U.S. Highway 101, Union Pacific Railroad operations, and existing operations at the Tajiguas Landfill. The Santa Barbara County Comprehensive Plan Noise Element estimates that the 60 dBA Ldn noise contour associated with U.S. Highway 101 in the project vicinity is about 250 feet from the centerline of the outer travel lane. This means that any residences within this distance from the highway would be subject to noise levels at or above 60 dBA Ldn.

Along the Union Pacific Railroad tracks, at a distance of 100 feet from the tracks, the maximum noise levels from passing trains are 96 dBA to 100 dBA. At this same distance, the Santa Barbara County Comprehensive Plan Noise Element estimates noise levels are between 70 and 75 dBA CNEL, and the 65 dBA CNEL contour is estimated to be about 150 feet from the tracks.

The Tajiguas Landfill is currently permitted to receive up to 1,500 tons per day of solid waste. Waste is brought to the landfill in large trucks and placed in prepared disposal cells with large tracked tractors (D9 dozers) and dual-engine scrapers. This equipment is also used in construction operations to obtain fill material, to prepare waste disposal areas and to construct drainage and other improvements within the landfill. Noise levels from these existing operations have been assessed in the Tajiguas Landfill Expansion Project EIR (Section 4.7.2.2), and revised based on the modified waste footprint as described in the Tajiguas Landfill Reconfiguration and Baron Ranch Restoration Project SEIR (see Section 4.7.2.3).

4.7.1.4 Noise Measurements

As part of the Community Noise Technical Study prepared for the project, noise levels were measured at two locations on April 4, 2013:

- Calle Real near the landfill, 100 feet north of the centerline of the U.S. Highway 101 northbound lanes (9:56 – 10:06 a.m.);
- Tajiguas Landfill, 65 feet northwest of the landfill gas power plant (9:44 – 9:48 a.m.).

The Leq noise level measured along Calle Real was 66.7 dBA, while the Leq noise level measured at the landfill was 75.8 dBA. Using the 75.8 dBA as a reference level, and after applying only geometric divergence attenuation, an extrapolated Leq of 60 dBA would be expected at a distance of 420 feet, which after conversion to the CNEL metric becomes 66 dBA and agrees (within 1 dBA CNEL) with the estimate of noise levels associated with Tajiguas Landfill operations provided in the Landfill Reconfiguration Project SEIR (see Section 4.7.2.3).

4.7.1.5 Regulatory Setting

Federal

The U.S. Environmental Protection Agency has established maximum noise level standards for a variety of vehicles and equipment (see 40 CFR Part 201). For on-highway medium and heavy duty trucks, the applicable standards are in Part 205, and require that all such vehicles manufactured after January 1, 1988, have a maximum noise level of no more than 80 dBA at 50 feet under specified conditions of acceleration and other measurement procedures.

The Federal Department of Transportation has standards and guidelines for federally funded transportation projects such as highways, rail transit, and airports. The regulations and procedures related to highways are found at 23 CCR Part 772, which applies to programs of the Federal Highway Administration (FHWA). The FHWA developed the Traffic Noise Model, which was used to estimate traffic noise for this project. Noise abatement criteria for residential areas used in federal projects is based on the highest one-hour Leq, and is 67 dBA. Other standards and procedures are defined in the regulations to establish a uniform review system and approach to mitigating traffic noise impacts.

For all motor vehicles (trucks and heavy equipment) used at off-highway job sites, federal regulations require backup or reverse signal alarms that are audible above the surrounding noise level (29 CFR 1626.601).

There are no specific federal laws related to allowable community noise levels. However, residential projects that rely on federal Housing and Urban Development (HUD) financing must meet exterior noise guidelines established by HUD. HUD and other federal guidelines commonly use a 65 dBA CNEL as the maximum noise level compatible with residential uses.

California

The California Government Code (Section 65302(f)(1)) requires the inclusion of a Noise Element within the General Plan, the contents of which are specified by the Governor's Office of Planning and Research as part of their General Plan Guidelines. California building standards that relate to noise levels and required insulation provisions for residential uses are found in the state Building Code (24 CCR Chapter 12), but apply only to multi-family residential structures.

Caltrans prepares traffic noise analyses in a manner that implements the FHWA regulations at 23 CFR Part 772, described in the preceding section. For off-highway vehicles capable of hauling or carrying more than 2.5 cubic yards of material, automatic backup alarms must be provided that can be heard for at least 200 feet in all directions (8 CCR 1592(a)).

Santa Barbara County

The Santa Barbara County Land Use and Development Code does not have a separate noise section. Instead, noise performance standards are set forth in the various zones defined in the code. The Tajiguas Landfill, however, is in an area with the U-Unlimited Agriculture zone, for which there is no specific noise performance standard. The County Noise Ordinance (Section 40 of the County Code) prohibits excessive noise in all areas between the hours of 10:00 p.m. and 7:00 a.m., but does not set forth any other quantitative restrictions. Applicable noise criteria to be used in assessing potential noise impacts are found in the County's Comprehensive Plan Noise Element and in the Environmental Thresholds and Guidelines Manual (see Section 4.7.2.1).

A Draft Gaviota Coast Plan was developed by the County Planning and Development Department and released in February 2013 (revised in December 2013 as the Board of Supervisors Initiation Draft). The Tajiguas Landfill, including the project site is located within the planning area. The Gaviota Coast Plan would update the County Comprehensive Plan and Coastal Land Use Plan, and provide policy direction for land use issues. The Plan does not include any policies related to noise, but acknowledges that development of new noise-sensitive land uses may be affected by noise generated by Union Pacific Railroad and U.S. Highway 101 operations. Planning Commission hearings were conducted from June through September 2013 to solicit public input. As of June 2014, the Gaviota Coast Plan has not been adopted.

4.7.2 Impact Analysis and Mitigation Measures

4.7.2.1 Thresholds of Significance

State CEQA Guidelines

The State CEQA Guidelines (14 CCR Chapter 3, Appendix G) suggest that a project may have a significant impact with respect to noise if it results in any of the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; and,
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Santa Barbara County Thresholds

The Santa Barbara County Environmental Thresholds and Guidelines Manual includes several criteria used to define significant noise impacts:

a. A proposed development that would generate noise levels in excess of 65 dBA CNEL and could affect sensitive receptors would generally be presumed to have a significant impact.

b. Outdoor living areas of noise-sensitive uses that are subject to noise levels in excess of 65 dBA CNEL would generally be presumed to be significantly impacted by ambient noise.

c. A significant impact would also generally occur where interior noise levels cannot be reduced to 45 dBA CNEL or less.

d. A project will generally have a significant effect on the environment if it will increase substantially the ambient noise levels for noise-sensitive receptors adjoining areas. Per item a., this may generally be presumed when ambient noise levels affecting sensitive receptors are increased to 65 dBA CNEL or more. However, a significant effect may also occur when ambient noise levels affecting sensitive receptors increase substantially but remain less than 65 dBA CNEL, as determined on a case-by-case level.

e. Noise from grading and construction activity proposed within 1,600 feet of sensitive receptors, including schools, residential development, commercial lodging facilities, hospitals or care facilities, would generally result in a potentially significant impact. According to EPA guidelines, the average construction noise is 95 dBA at a 50 foot distance from the source. A 6 dB drop occurs with a doubling of the distance from the source. Therefore, locations within 1,600 feet of the construction site may be affected by noise levels over 65 dBA.

Caltrans

The County Environmental Thresholds and Guidelines Manual does not address ground-borne vibration. Caltrans has published a Transportation- and Construction-Induced Vibration Guidance Manual, which provides criteria for allowable vibration in terms of potential annoyance to people, as well as potential damage to buildings. Based on the guidelines listed by Caltrans, the most conservative thresholds for continuous sources such as construction equipment and solid waste handling operations, expressed as the peak particle velocity (PPV) that should not be exceeded, are as follows:

Guideline for vibration damage to buildings: 0.08 inches/second

Guideline for annoyance to people: 0.01 inches/second

CalRecycle

The Program EIR prepared for Statewide Anaerobic Digester Facilities recommends using a sliding scale based on pre-existing noise levels developed by the Federal Interagency Committee on Noise (1992). The criteria defining a "substantial increase" for noise exposure, as presented in the Program EIR are as follows:

For existing Ldn < 60 dBA: +5.0 dBA or more

For existing Ldn 60–65 dBA: +3.0 dBA or more

For existing Ldn > 65 dBA: +1.5 dBA or more

4.7.2.2 Approved Tajiguas Landfill Expansion Project

01-EIR-05 for the Tajiguas Landfill Expansion Project (see Section 3.9.3) identified the following noise impacts for the approved Front Canyon Expansion:

1. Short-term noise associated with construction of a new scale-house and maintenance shop was considered a less than significant impact (Class III). However, mitigation measure N-1 (maintenance of landfill equipment) was adopted to reduce noise levels from landfill equipment.
2. Noise levels at the Arroyo Quemada community associated with expanded landfill operations were considered a less than significant impact (Class III). However, mitigation measure N-1 was adopted to reduce noise levels from landfill equipment.
3. Noise levels at residences at Baron Ranch associated with expanded landfill operations were considered a less than significant impact (Class III). However, mitigation measure N-1 was adopted to reduce noise levels from landfill equipment.
4. Noise levels associated with blasting of the north and west borrow areas at nearby sensitive receptors were also considered a less than significant impact (Class III). However, mitigation measure N-2 (limitations on the hours when blasting can occur, 8:00 am to 4:00 pm, Monday through Friday) was adopted to further reduce impacts from blasting events.
5. Noise levels associated with closure and post-closure activities was considered a less than significant impact (Class III). However, mitigation measure N-1 was adopted to reduce noise levels from landfill equipment.

4.7.2.3 Approved Tajiguas Landfill Reconfiguration and Baron Ranch Restoration Project

The Subsequent EIR for the Tajiguas Landfill Reconfiguration and Baron Ranch Restoration Project estimated landfill operations noise by assuming the worst case scenario consisting of several pieces of heavy equipment operating along the perimeter of the disturbance limits of the landfill. Under this scenario, the 65 dBA CNEL contour was estimated to extend 420 feet beyond the disturbance limits and noise impacts were determined to be adverse but less than significant.

4.7.2.4 Proposed Tajiguas Resource Recovery Project

Methodology and Assumptions

The analysis of noise impacts is focused on noise-sensitive land uses that include five residential locations (see Figure 4.7-1) in the vicinity of the existing Tajiguas Landfill. Recreational uses occur on the neighboring Baron Ranch and Arroyo Hondo, but these uses are not considered to be noise-sensitive. The five locations were the same as identified in the Subsequent EIR for the Tajiguas Landfill Reconfiguration and Baron Ranch Restoration Project. Since the proposed project would be located entirely within the area of existing landfill operations, it is reasonable to address these same residential receiver locations.

For traffic noise levels along U.S. Highway 101, updated 65 Ldn noise contours were developed using current traffic counts and truck traffic estimates from Caltrans, using the FHWA Traffic Noise Model (TNM version 2.5). TNM 2.5 was used to determine the hourly Leq values for daytime and nighttime periods, which were then combined to compute Ldn values. Traffic noise levels on U.S. Highway 101 were estimated based on traffic volume data collected in December 2012 and January 2013 (see Appendix K), which includes the existing landfill truck traffic. Noise level changes due to the proposed project were assessed by adding project-related trips (see trip generation in Table 4.9-10) to current traffic volumes. Cumulative noise level changes due to the proposed project were assessed by adding project-related trips to forecast year 2036 traffic volumes. Traffic volumes associated with the *CSSR Option* were also included in the analysis.

For equipment operations, source noise values used in the analysis were taken from a combination of measurements performed at solid waste handling facilities, literature values for typical heavy construction equipment from the FHWA Roadway Construction Noise Model (FHWA, 2006), or from other sources. The approach to the noise analysis involved three steps:

1. Determine a composite source noise value for operating equipment at each of the proposed facility locations; MRF, AD Facility, composting area and energy facility;
2. Compute the CNEL value at the reference distance for each facility, based on the proposed hours of operation, and compute the distance to the 65 dBA CNEL contour; and
3. Compare the resulting CNEL values with those from the 2009 SEIR, and make adjustments as appropriate to determine if any existing or likely future residential areas would be affected by the new 65 dBA CNEL contour.

Note that noise impacts associated with the relocated landfill maintenance building were not specifically assessed as landfill equipment maintenance activities are part of the environmental baseline, and the project would result in moving this facility further from noise-sensitive land uses.

For ground-borne vibration, the preliminary estimating procedure from the Caltrans Transportation- and Construction-Induced Vibration Guidance Manual was used to estimate the PPV values at each residential location resulting from equipment operation at each of the project facilities.

Throughout the analyses, two assumptions were used to assure a worst case approach and for the sake of simplicity. These assumptions include:

- No attenuation in noise levels due to intervening topography, whether natural (ridgelines between some residential locations and the project site) or man-made (perimeter berms around the landfill disturbance area). Under the right conditions, topographic barriers can provide a 5–10 dBA reduction in noise levels, and major ridgelines can provide much greater reduction. Along U.S. Highway 101, some residential receiver locations are exposed more or less directly to the highway, so no topographic reduction should be assumed. At other locations, however, homes are located at an elevation well below that of the highway (such as in the Arroyo Quemada community). Intervening ridgelines also separate most of the residential receiver locations from proposed noise sources.
- No attenuation in noise levels from the MRF or the AD Facility due to their building enclosures. These facilities would be enclosed within metal buildings, which if completely covering the noise sources would provide measurable noise reduction. However, since both buildings would have large openings for trucks and heavy equipment to enter and exit, the effective noise reduction from these building shells would be substantially reduced. For purposes of this analysis, it is conservatively assumed that such access doors are open and convey noise emissions without any reduction associated with the facility enclosure.

With respect to project design, no unique or special aspects were assumed beyond those included in the project description (Section 3.5). Based on information provided by the proposed vendor, the Energy Facility would include reinforced concrete walls, insulated metal roof, engine exhaust silencers and acoustical gaskets on the doors.

Impact TRRP N-1: Project-related construction could generate short-term noise that would result in an adverse but less than significant impact on noise-sensitive receptors on adjacent agriculturally zoned land – Class III Impact.

Construction of the proposed project would include use of heavy-duty trucks and equipment at the MRF/AD Facility site (current landfill operations deck), proposed composting area, proposed maintenance building site, proposed water tanks site and proposed composting area run-off collection tank site. Each of these areas are located at least 1,600 feet from the nearest noise-sensitive land use (planned Hart residence), which would not be significantly impacted by construction noise (see County threshold e.).

Landfill operations trailers would be temporarily relocated to either a location northeast of the landfill top deck or on a deck southeast of the green waste operations deck within 800 feet of the planned Hart residence during construction of the project facilities. However, noise associated with re-locating landfill operations would involve installing pre-fabricated trailers and moving existing intermodal containers rather than constructing new buildings. These activities would be limited to less than a month, and would be limited to the existing permitted landfill operating hours. Overall, construction noise impacts would be less than significant.

Impact TRRP N-2: Project-related vehicle traffic on U.S. Highway 101 would result in an adverse but less than significant increase in noise levels at noise-sensitive receptors near the landfill – Class III Impact.

Project-related traffic increases would be minimal as compared to existing traffic on U.S. Highway 101, and result in noise increases at nearby residential land uses of less than 0.1 dBA CNEL (see Table 4.7-1). Project-related noise would not result in new exceedances of the 65 dBA CNEL threshold, or cause noise increases of 1.5 dBA or more. Therefore, traffic noise impacts are considered less than significant.

Table 4.7-1. Summary of U.S. Highway 101 Traffic Noise Impacts

Receiver	Daytime (dBA Leq)		Nighttime (dBA Leq)		Daily (dBA CNEL)	
	2013	2013 + Project	2013	2013 + Project	2013	2013 + Project
Arroyo Hondo residence	63.1	63.1	57.8	57.8	66.1	66.1
Arroyo Quemada community	67.3	67.3	62.0	62.0	70.3	70.3
Baron Ranch residence	61.0	61.0	55.7	55.7	64.0	64.0
Calle Real residences	68.7	68.7	63.4	63.4	71.7	71.7
Hart residence (planned)	61.3	61.3	55.8	55.9	64.2	64.2

Impact TRRP N-3: Noise associated with operation of project facilities would result in an adverse but less than significant impact on noise-sensitive land uses near the landfill – Class III Impact.

Noise would be generated from many of the project facilities, including the MRF (sorting equipment, mobile equipment), the AD Facility (mobile equipment, screening equipment), the composting area (mobile equipment, grinder), and from the energy facility (CHP engines). Composite reference noise levels were developed for each major project facility (see Tables 4.7-2 through 4.7-6). Noise levels were estimated for each facility at each noise-sensitive receiver, based on the respective operating hours for each facility. The resulting noise levels were then combined to produce a 65 dBA CNEL noise contour (see Figure 4.7-1), and a combined noise level at each noise-sensitive receiver (see Table 4.7-7).

These combined noise levels are conservatively high since they do not account for any noise reduction due to intervening topography between project facilities and noise-sensitive receptors. As shown in Table 4.7-7, noise levels at sensitive receptors are projected to be below 65 dBA CNEL criteria and the resulting increase above existing landfill operations noise is projected to be no greater than 1 to 2 dBA. Project-related operations noise would result in a less than significant noise impact.

Impact TRRP N-4: Vibration associated with operation of project facilities would result in an adverse but less than significant impact on residential land uses near the landfill – Class III Impact.

The ground-borne vibration assessment is based on the vibration effects from mobile equipment. As a worst-case scenario, it was assumed a large bulldozer would be operating at each of the project facility sites. The procedure described by the Caltrans Vibration Guidance Manual was used (Caltrans, 2004) to estimate vibration levels. The reference source vibration for a large bulldozer is a peak particle velocity (PPV) of 0.089 in/sec at a distance of 25 feet (Federal Transit Administration, 2006). Table 4.7-8 provides the results of the vibration assessment at residential receivers for each project facility. Project-related vibration would not exceed the 0.01 inches/second threshold for human annoyance and would be well below the 0.08 threshold for building damage, therefore project generated vibration impacts would not be significant.

Table 4.7-2. Reference Noise Levels for Proposed MRF Equipment

Equipment/Vehicle Type (Rated Engine power)	Quantity	Usage Factor	Lmax (dBA)	Leq (dBA)	Reference Distance (ft.)	References and/or Assumptions
Caterpillar 980M ~~Volvo L110G"~~ wheeled loader (386 ~~260~~ hp)	2	40%	80	79	50	RCNM (FHWA, 2006): Table 1 (front-end loader)
Caterpillar 938K ~~Volvo L90G"~~ wheeled loader (169 ~~173~~ hp)	1	40%	80	76	50	RCNM (FHWA, 2006): Table 1 (front-end loader)
~~"Volvo L20F" wheeled loader (56 hp)~~	~~1~~	~~40%~~	~~80~~	~~76~~	~~50~~	~~RCNM (FHWA, 2006): Table 1 (front-end loader)~~
Caterpillar M322D material handler (173 hp)	1	40%	85	81	50	RCNM (FHWA, 2006): Table 1 (excavator)
Caterpillar 2P-6000 ~~Toyota~~ Forklift (61 ~~57~~ hp)	3	40%	80	81	50	Est. similar to wheeled loader
Tractors – Freightliner	(Counted as heavy truck along Access Road in traffic noise analysis.)					
Trailers – Western	(Counted as heavy truck along Access Road in traffic noise analysis.)					
Trailers – End Dump	(Counted as heavy truck along Access Road in traffic noise analysis.)					
Utility truck and trailer (470 hp)	1	40%	84	80	50	RCNM (FHWA, 2006): Table 1 (flatbed truck)
Pick-up trucks (250 hp)	2	40%	75	74	50	RCNM (FHWA, 2006): Table 1 (pick-up truck)
Truck hydraulic pumps	1	10%	73	63	50	Azusa MRF & TS (RBF Consulting, 2011)
Truck air brake	1	1%	85	65	50	Azusa MRF & TS (RBF Consulting, 2011)
Conveyor	1	100%	65	65	50	Azusa MRF & TS (RBF Consulting, 2011)
Alarms	1	10%	82	72	50	Azusa MRF & TS (RBF Consulting, 2011)
Voices	1	100%	62	62	50	Azusa MRF & TS (RBF Consulting, 2011)
Sorting	1	100%	68	68	50	Azusa MRF & TS (RBF Consulting, 2011)
Shredder	1	50%	76	73	50	SCRTS ND/IS (Fugro West, 1995)
Compactor-baler	1	10%	87	77	50	SCRTS ND/IS (Fugro West, 1995)
Rolling bed dryer	1	100%	-	85	50	Vendor data sheet
Logarithmic Sum of Equipment/Vehicle Noise for MRF:				**91.0 ~~88.2~~**	**50**	**(CNEL = 92.2 ~~90.0~~)*** *based on operation hours, and nighttime background of 43 dBA

Table 4.7-3. Reference Noise Levels for Proposed AD Facility Equipment

Equipment/Vehicle Type (rated engine power)	Quantity	Usage Factor	Lmax (dBA)	Leq (dBA)	Reference distance (ft.)	References and/or assumptions
Caterpillar 938M ~~"Volvo L110G"~~ wheeled loader (169 ~~260~~ hp)	2 ~~1~~	40%	80	76	50	RCNM (FHWA, 2006): Table 1 (front-end loader)
Screening, electric (Titech)	1	50%	85	82	50	RCNM (FHWA, 2006): Table 1 (vibrating hopper)
Tennant M30 scrubber-sweeper	1	25%	85	75	50	RCNM (FHWA, 2006)
Logarithmic Sum of Equipment/Vehicle Noise for AD Facility:				**84.3 ~~83.0~~**	**50**	**(CNEL = 80.0 ~~84.1~~)*** *based on 7 a.m. – 4 p.m. equipment operating hours, and nighttime background of 43 dBA

Table 4.7-4. Reference Noise Levels for Proposed Composting Area Equipment

Equipment/Vehicle Type (Rated Engine Power)	Quantity	Usage Factor	Lmax (dBA)	Leq (dBA)	Reference Distance (ft.)	References and/or Assumptions
"Screen machine 612T" tracked trammel screen (84 hp)	1	50%	85	82	50	RCNM (FHWA, 2006): Table 1 (vibrating hopper)
Caterpillar 938K "~~Volvo L90G~~" wheeled loader (169 ~~173~~ hp)	1	40%	80	76	50	RCNM (FHWA, 2006): Table 1 (front-end loader)
"Vermeer CT 1010) windrow turner (215 hp)	1	50%	75	72	50	RCNM (FHWA, 2006): Table 1 (tractor)
"Morbark 3800" horizontal grinder (electric, 1,200 hp)	1	20%	89	82	50	Padre Associates, ~~Santa Barbara County~~ 2008~~:4)~~
Logarithmic Sum of Equipment/Vehicle Noise for the Composting Area:				**85.7**	**50**	**(CNEL = 82.7)*** *based on operation hours, and nighttime background of 43 dBA

Table 4.7-5. Reference Noise Levels for the Energy Facility – Mechanical Radiation

Mechanical Casing Radiated Noise[1]	Unweighted dB	A-weighting adjustment	dBA	Building Noise Reduction (dB)[2]	dBA at 1m from Building Surface
31.5	84	-39.4	44.6	13	32
63	88	-26.2	61.8	17	45
125	97	-16.1	80.9	22	58
250	95	-8.6	86.4	22	64
500	93	-3.2	89.8	27	63
1,000	88	0	88	34	54
2,000	87	1.2	88.2	39	49
4,000	90	1	91	35	56
8,000	88	-1.1	86.9	32	55
Logarithmic Sum:			**97 dBA**		**68 dBA**

[1] Octave band center frequency (hertz)

[2] Based on 6”-thick, 49 lb/sf painted concrete wall (or comparable) and small (<=0.5% of façade area) vent opening; with a closed 8’ tall by 7’ total width double-door (STC-30) in the south wall

Table 4.7-6. Reference Noise Levels for the Energy Facility – Exhaust

Combustion Exhaust Noise[1]	Unweighted dB	A-weighting adjustment	dBA	Silencer Noise Reduction (dB)	Attenuated Exhaust at 1m (dBA)
31.5	105	-39.4	65.6	12	54
63	120	-26.2	93.8	22	72
125	127	-16.1	110.9	40	71
250	115	-8.6	106.4	45	61
500	113	-3.2	109.8	42	68
1,000	111	0	111	40	71
2,000	108	1.2	109.2	40	69
4,000	109	1	110	40	70
8,000	107	-1.1	105.9	40	66
Logarithmic Sum:			**118 dBA**		**78 dBA**

[1] Octave band center frequency (hertz)

Table 4.7-7. Summary of Operational Noise Impacts (dBA CNEL)

Receiver	MRF	AD Facility	Energy Facility	Composting Area	Existing Operations	Sum
Arroyo Hondo residence	55 ~~53~~	43 ~~47~~	28	43	57	**59**
Arroyo Quemada community	53 ~~51~~	41 ~~45~~	26	45	58	**59**
Baron Ranch residence	52 ~~50~~	40 ~~44~~	25	45	57	**58**
Calle Real residences	47 ~~45~~	35 ~~39~~	20	39	53	**54**
Hart residence (planned)	57 ~~55~~	45 ~~49~~	30	51	64	**65** ~~**64**~~

Table 4.7-8. Summary of Vibration Impacts (PPV inches/second)

Receiver	MRF	AD Facility	Composting Area	Existing Operations
Arroyo Hondo residence	0.000369	0.000385	0.000270	0.000477
Arroyo Quemada community	0.000289	0.000300	0.000364	0.000646
Baron Ranch residence	0.000250	0.000254	0.000370	0.000562
Calle Real residences	0.000138	0.000139	0.000167	0.000203
Hart residence (planned)	0.000477	0.000500	0.000726	0.002699

Relocated Landfill Facilities

Operations facilities (primarily portable offices) may be temporarily relocated during the project construction period to an area north of the landfill top deck or to the southern portion of the landfill. Landfill equipment maintenance facilities would be relocated to the area north of the landfill top deck (see Figure 3-4). These facilities are existing and part of the environmental baseline. However, the proposed project may result in temporarily moving the operations facilities to within 800 feet of the planned Hart residence. However, noise generation would be limited to light vehicle traffic during daylight hours and would not exceed the County's 65 dBA CNEL noise threshold at the nearest noise-sensitive use. The maintenance facilities would be relocated to the back canyon and not in proximity to any noise receivers. Overall, noise impacts associated with relocated landfill facilities would be less than significant.

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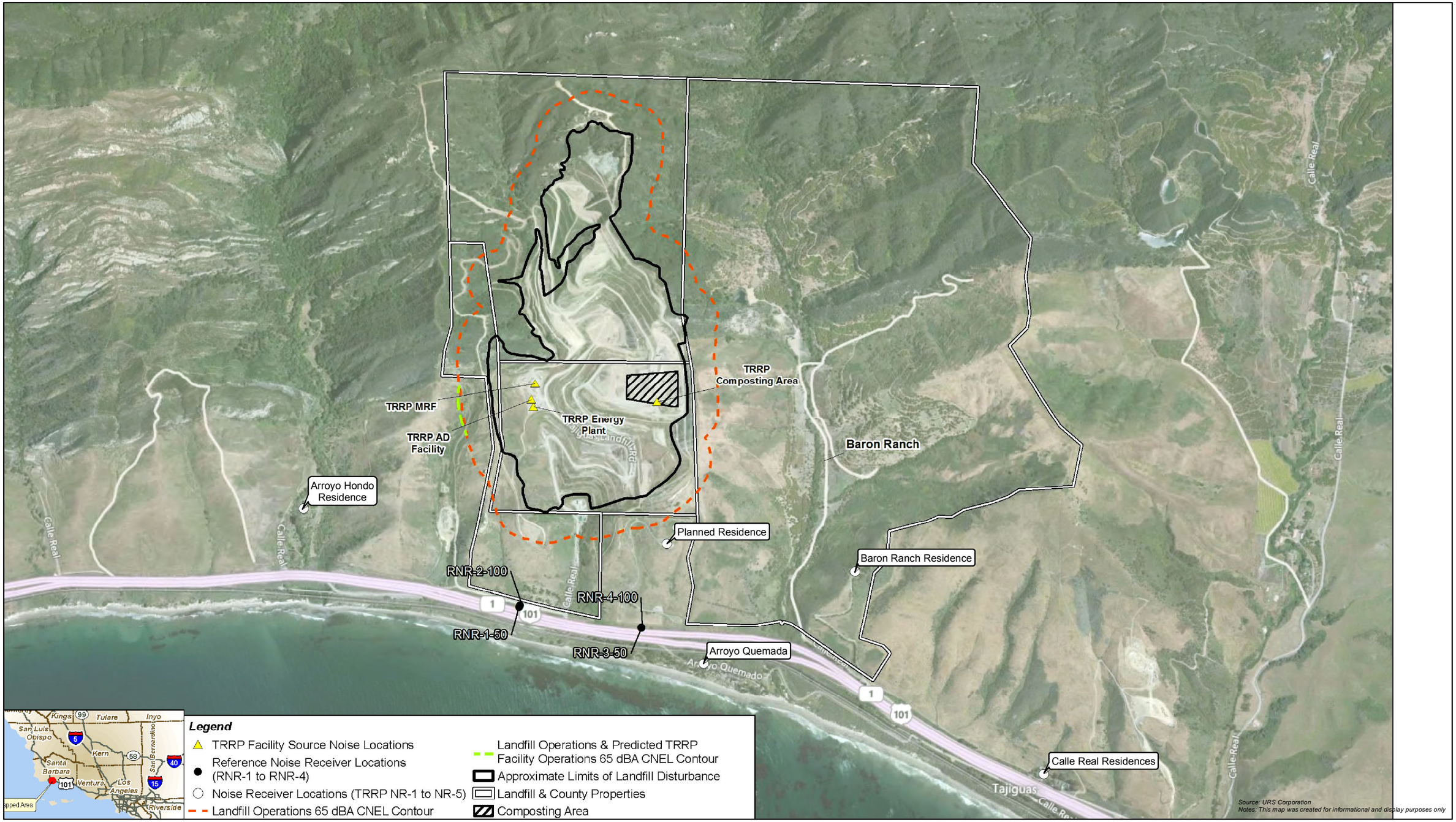

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

Tajiguas Resource Recovery Project

PROJECT NOISE CONTOUR MAP
FIGURE 4.7-1

Back of Figure 4.7-1

4.7.2.5 Proposed Tajiguas Resource Recovery Project with Optional Comingled Source Separated Recyclables (CSSR) Component

Inclusion of the *CSSR Option* would require additional sorting facilities within the proposed MRF building (see Figure 3-8). The addition of these facilities and the 10,000 sf of additional building area would have an indiscernible effect on the equipment noise and duration of construction of the MRF, and would not alter the significance of construction noise impacts.

The small amount of additional vehicle traffic (40 ADT) associated with the *CSSR Option* would not increase traffic noise levels along U.S. Highway 101. Project-related noise with the *CSSR Option* would not result in new exceedances of the 65 dBA CNEL threshold, or cause noise increases of 1.5 dBA or more. Therefore, traffic noise impacts are considered less than significant.

The very small amount of additional activity and equipment associated with the *CSSR Option* would not substantially increase operational noise levels provided in Table 4.7-7. Project-related operations noise with the *CSSR Option* would result in a less than significant noise impact.

The very small amount of additional activity associated with the *CSSR Option* would not substantially increase vibration levels provided in Table 4.7-8 and impacts would remain less than significant.

4.7.2.6 Extension of Landfill Life Impacts

Impact TRRP N-5: Project-related extension of the life of the Tajiguas Landfill would extend adverse but less than significant landfill operational noise impacts further in time – Class III Impact.

As discussed in Section 3.4, project-related diversion of recyclable material and organic waste is anticipated to extend the life of the Tajiguas Landfill by about 10 years. The combined effect of continued landfill operations and operation of the project facilities on project area noise levels is discussed in Section 4.7.2.4. Separately, prior environmental documents prepared for the Tajiguas Landfill determined that noise impacts associated with landfill operations were less than significant (see Sections 4.7.2.2 and 4.7.2.3). These analyses were based on presumed operation of equipment simultaneously along the entire landfill perimeter. However, by the time the proposed project is operational, residual waste disposal activities would occur in the back canyon area of the landfill property, which would increase the distance from this existing noise source to surrounding noise-sensitive receptors. In addition, diversion of MSW associated with the proposed project would reduce the volume of waste and associated equipment required for disposal. Therefore, with implementation of the proposed project, less than significant noise impacts associated with landfill operations (see Section 4.7.2.2) could continue further in time as compared to earlier closure of the landfill in the absence of the proposed project.

4.7.2.7 Decommissioning Impacts

Impact TRRP N-6: Heavy equipment and vehicles used during decommissioning would generate noise that may affect noise-sensitive receptors near the landfill – Class III Impact.

Similar to project construction activities (see **Impact TRRP N-1**), the use of heavy equipment and vehicles to dismantle and remove project facilities would generate noise. However, the intensity and total amount of decommissioning activity would be less than associated with construction, decommissioning would occurring during daytime hours, and all activity would occur at least 1,600 feet from the nearest existing noise-sensitive land use. Based on the Gaviota Coast Plan, adjacent land uses would remain in agriculture, such that no new noise-sensitive land uses are anticipated to be constructed near the Landfill. Therefore, noise impacts during decommissioning are considered less than significant.

4.7.2.8 Cumulative Impacts of the Tajiguas Resource Recovery Project

Impact TRRP N-CUM-1: Future (2036) traffic on U.S. Highway 101 associated with forecast growth combined with project-related vehicle traffic could contribute to an adverse but less than significant cumulative increase in noise levels along the highway corridor - Class III Cumulative Impact; Project Contribution – Not Considerable (Class III).

By 2036, noise levels along U.S. Highway 101 are expected to increase by about 0.6 dBA at most locations. Project-related traffic increases would be minimal as compared to year 2036 traffic (forecasted growth) on U.S. Highway 101, and result in noise increases at nearby residential land uses of less than 0.1 dBA CNEL (see Table 4.7-9). Forecasted growth combined with project-related noise would not result in new exceedances of the 65 dBA CNEL threshold, or cause noise increases of 1.5 dBA or more. Therefore, cumulative U.S. Highway 101 traffic noise impacts would be less than significant and the project's incremental contribution would not be cumulatively considerable. The very small amount of additional vehicle traffic associated with the *CSSR Option* would not increase cumulative noise levels provided in Table 4.7-9 and would also not be cumulatively considerable.

Table 4.7-9. Summary of U.S. Highway 101 Cumulative Traffic Noise Impacts

Receiver	Daytime (dBA Leq)		Nighttime (dBA Leq)		Daily (dBA CNEL)	
	2036	2036 + Project	2036	2036 + Project	2036	2036 + Project
Arroyo Hondo residence	63.7	63.7	58.4	58.4	66.7	66.7
Arroyo Quemada community	67.9	67.9	62.6	62.6	70.9	70.9
Baron Ranch residence	61.6	61.6	56.3	56.3	64.6	64.6
Calle Real residences	69.3	69.3	64.0	64.0	72.3	72.3
Hart residence (planned)	61.8	61.9	56.4	56.4	64.8	64.8

Impact TRRP N-CUM-2: Noise associated with construction and operation of project facilities combined with noise generated by other cumulative projects would result in adverse but less than significant noise levels at noise-sensitive land uses near the landfill property – Class III Cumulative Impact; Project Contribution – Not Considerable (Class III).

Only three of the cumulative projects (see Section 3.6) are located within 2 miles of the landfill site: Bean Blossom residences – Lot H and Lot X (construction of these residences has been completed), Shell/Hercules Remediation and Slope Stabilization, and Simon Residence. Construction-related noise from these other projects may adversely affect the ambient noise environment of the area. However, construction noise would be temporary in nature, and would be virtually undetectable over the dominant noise source in the area (U.S. Highway 101).

Operational noise (vehicles, landscape maintenance, music, etc.) generated by the three residences may adversely affect the ambient noise environment of the area, but would be virtually undetectable over the dominant noise source in the area (U.S. Highway 101).

The Shell/Hercules Remediation project, ~~for which a Remedial Action Plan is under review and due to be amended in 2014, may~~ would involve ongoing construction-like activity and may adversely affect the ambient noise environment of the area. ~~However, details regarding the are not known at this time.~~ Given the dominance of U.S. Highway 101 noise and the fact that the remediation site and the landfill site are both within canyons separated by a ridge, noise levels would not be additive and significant cumulative noise impacts to residences in the area are not expected.

Overall, cumulative noise levels are unlikely to exceed the 65 dBA CNEL threshold at noise-sensitive receivers and therefore noise impacts would not be significant. The incremental contribution of the proposed project to cumulative noise impacts would not be cumulatively considerable.