APPENDIX J

COMMUNITY NOISE TECHNICAL STUDY

COMMUNITY NOISE TECHNICAL STUDY

FOR THE TAJIGUAS RESOURCE RECOVERY PROJECT AND ALTERNATIVES

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I. INTRODUCTION

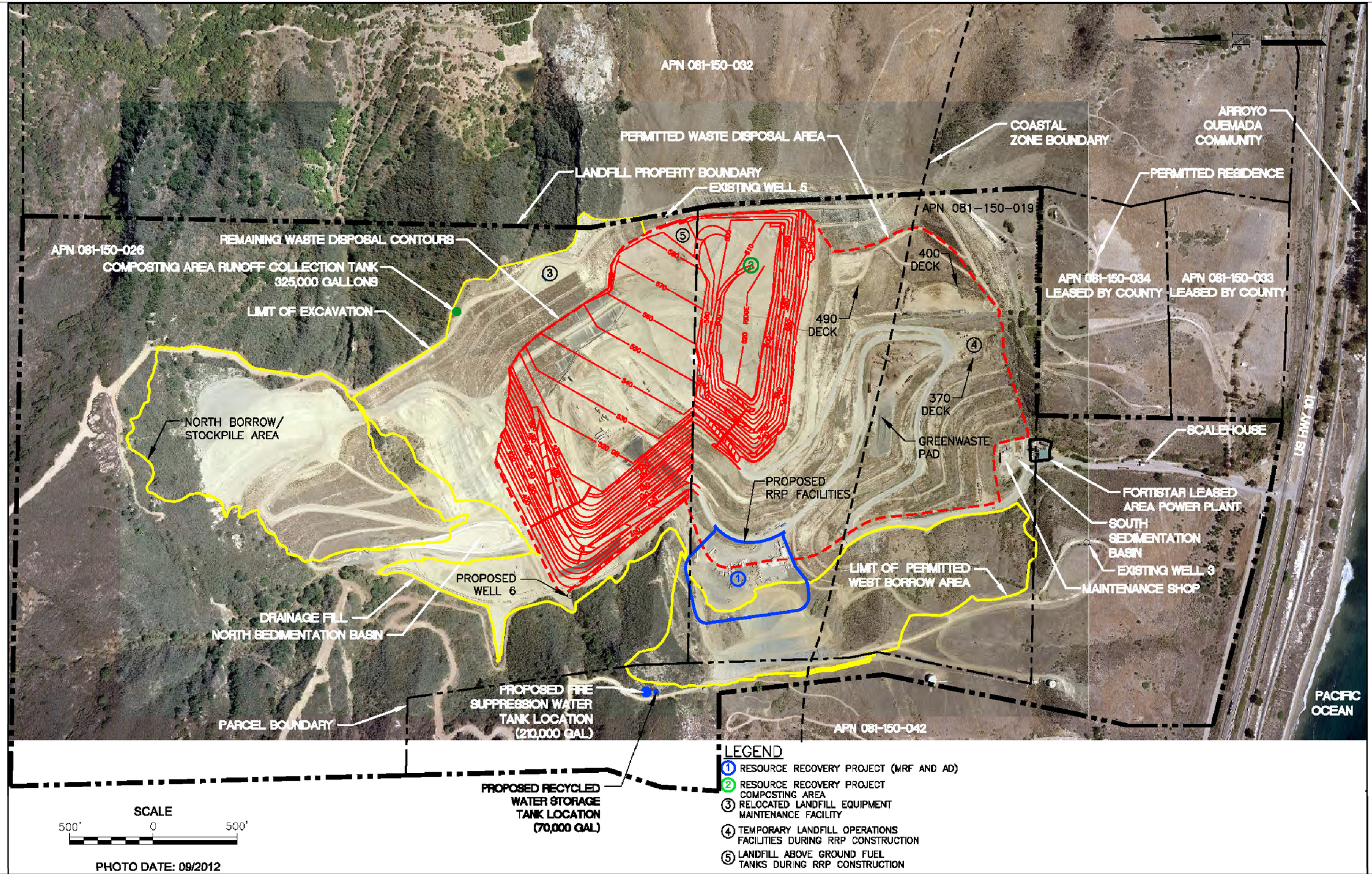
The Tajiguas Landfill Resource Recovery Project (TRRP or Proposed Project) involves the development of the following facilities at the County of Santa Barbara Tajiguas Landfill:

- **Materials Recovery Facility** (MRF – to separate and remove recyclable material from the solid waste delivered to the landfill). The MRF would be a prefabricated metal building with a panelized, color coated, exterior. The building would be constructed with a landfill gas barrier and venting system and landfill gas monitoring system. A tip floor sorter would inspect all waste upon arrival to identify larger bulk and loose materials and to segregate any visible hazardous materials for shipment to authorized disposal facilities. Additional sorters stationed throughout the MRF processing lines would facilitate increased levels of sorting, separation and recovery rates of recyclable materials and decreased levels of contamination to the organic waste material forwarded to the AD Facility. The MRF equipment would likely include (but not be limited to) the following noise-producing components: size reducer, trommel screens, ballistic separation, air separation, magnetic and eddy current separators, optical sorting devices, conveyor belts, material storage bins, computerized process automation and control systems, electrical transformers, baling system, dust filter and collection system, biofilter and air handling system, materials quality control stations and platforms, back-up generator and fuel storage, and process wash down water filtration system. All MRF sorting and separation equipment would be electrically powered and located indoors.
- **Anaerobic Digestion Facility** (AD Facility – to decompose organic material recovered from the MRF, along with the production of methane gas). The AD Facility building would be constructed of concrete with a metal frame gable roof peak running east to west. The building would be constructed with a landfill gas barrier and venting system and landfill gas monitoring system. The enclosed building would be equipped with an air circulation control system that regulates air and controls odors within the structure and exhausts air through a bio-filter system that is shared with the MRF. The AD Facility would share a diesel-fueled backup generator engine with the MRF to provide for emergency operations in the event of a loss of electrical power. The AD Facility would utilize a proprietary technology to convert organic waste recovered from the municipal solid waste (MSW) in the MRF and source separated organic waste (SSOW) into a biogas containing 50 to 60 percent methane. The biogas would be used to power two (2) onsite combined heat and power (CHP) engines, which are introduced in the subsequent description of the Energy Facility. SSOW would be trucked directly to the proposed AD Facility and delivered to a SSOW Delivery Area or transferred from the adjacent MRF via an automated conveyor belt system directly to a MSW organics delivery area. The AD Facility would include three percolate storage tanks each estimated to be a maximum 34 feet in height: one approximately 150,000 gallon tank to support the anaerobic digestion of organic waste recovered from the MSW and two approximately 75,000 gallon tanks to support the anaerobic digestion of SSOW. The percolate system for the AD Facility is a closed loop system and does not produce any wastewater discharge. Biogas would be harvested within 16 enclosed process structures in “digesters”, which are large concrete vessels. These digesters are filled with organic waste

feedstock and the waste is processed using an anaerobic digestion procedure. At the conclusion of the anaerobic process, after the high quality biogas has been extracted for beneficial use (energy production), a controlled purging process would direct the residual gases in the digestion chamber to a flare. The flare would function as an odor control device to destruct the potentially odorous residual gases in the chamber prior to opening the chamber doors and removing the digestate. The MRF and AD equipment would be fueled from a single 10,000-gallon above ground diesel/biodiesel storage tank. The tank would be approximately 8 feet in diameter and 27 feet long and would include secondary containment. Additionally, a 7,500-gallon diesel fuel storage tank would be provided adjacent to the standby generator.

- **Energy Facility** (to produce electricity from the combustion of the methane gas in biogas). The Energy Facility would be located in the AD Facility's CHP engine room attached to the south side of the AD. A flare would be installed on the roof of the AD Facility building as a back-up safety precaution to handle biogas when insufficient engine combustion capacity is available due to maintenance or other downtime of the CHP engines. A 200-gallon propane storage tank would provide supplemental fuel flows to the CHP engines to ensure continuous CHP engine operation within manufacturer's specifications during start-up, shut-down and any periods of irregular, below specification bio-gas production from the digesters. Best available emission control technology in the form of a selective catalytic reduction (SCR) system would be installed to reduce CHP engine exhaust emissions as required by the Santa Barbara County Air Pollution Control District. The operations and maintenance of the CHP Engines would be in accordance with the CHP engine manufacturer's specifications. As the AD Facility includes two CHP Engines, it is possible, depending upon the level of bio-gas production from the digesters that a single engine may be capable of processing all of the bio-gas being produced by the digesters allowing for the other CHP engine to go down for regularly scheduled major maintenance of component replacement.
- **Composting Area** (to provide final treatment and conditioning of digestate material, prior to its sale for use as a soil amendment/compost). The digestate from the AD Facility would be transferred to the Composting Area for a 6 to 8 week aerobic curing phase to produce compost and/or soil amendments, stored as windrows (approximately 9' high x 55' wide x 200' long) and would be aerated weekly via mechanized turning. Wood waste from the MRF may be used as a compost bulking agent, and would be chipped at the Composting Area using and electric-powered grinder. Windrow turning, wood waste chipping, compost/soil amendment screening and transportation operations would occur between the hours of 7:00 am - 4:00 pm, 6 days/week.
- **Optional commingled source separated recyclables** (CSSR) project element. In addition to MSW, CSSR could also be processed through the MRF and an additional waste processing area (10,000 square feet) would be added to the MRF building.

The Proposed Project also requires temporary relocation of the landfill operations buildings to a new location, shown in Figure 1 as ④ above the "370 DECK" callout, which is closer to the proposed residential unit on the Hart property—a nearby noise-sensitive receiver studied among several in this community noise assessment. This report provides estimates of the noise levels



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County of Santa Barbara Public Works
Tajiguas Resource Recovery Project (TRRP)
Santa Barbara County

URS Corporation

Source: [1] County of Santa Barbara, 2013.

Figure 1. Tajiguas Resource Recovery Project Site Overview

2013

from the above sources, and uses Santa Barbara County criteria and standards to assess the potential impact of the noise levels on noise sensitive uses (residential) in the vicinity of the landfill property. Based on these criteria, and the analysis contained in this report, the project as proposed will not have a significant noise impact. Measures already incorporated into the landfill design and included in the TRRP design will serve to keep all projected noise levels well within the applicable County standards.

II. SETTING

A. Regional Overview

The Tajiguas Landfill and associated operations occupy approximately 357 acres within County-owned land along the Gaviota Coast approximately 26 miles west of the City of Santa Barbara. The landfill itself includes about 118 acres within its disturbance limits. The Gaviota Coast is characterized by a series of moderately steep coastal canyons that drain southward from the Santa Ynez Mountains in the north, to the Pacific Ocean. The Tajiguas Landfill is located in one of these canyons: Cañada de la Pila. Most of the coastal canyons are separated from one another by relatively steep ridgelines which provide a degree of isolation and noise reduction for the activities within the canyons.

The dominant noise source in the area is traffic along US Highway 101, which is located approximately 1,600 feet south of the Tajiguas Landfill. The Union Pacific Railroad tracks also run parallel to the highway, just on its south side.

There are few residential or other noise-sensitive uses along the Gaviota Coast as a whole. Most of the land is used for agriculture and several large parcels are within conservation easements. Other uses include state beaches and state parks, and several oil and gas processing and transport related facilities.

B. Site-specific Setting

Units and Standards Used in Noise Assessment. The County Noise Element (Santa Barbara County 2009a:pages 9-22) 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 hear (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 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.). The calculation of Ldn is done 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 County Noise Element, use the two terms interchangeably (Santa Barbara County 2009a:14).

Most noise levels are measured or computed to show their value at a reference 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 a point noise source, the dBA value of the noise will decrease by 6 dBA. For a perfect line source, the amount decreases 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 distance doubling.

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.

By way of example, Santa Barbara County recommends (Santa Barbara County Noise Element, 2009) that areas deemed noise-sensitive include the following:

A. Residential, including single and multifamily dwellings, mobile home parks, dormitories, and similar uses.

B. Transient lodging, including hotels, motels, and similar uses.

C. Hospitals, nursing homes, convalescent hospitals, and other facilities for long-term medical care.

D. Public or private educational facilities, libraries, churches, and places of public assembly.

Groundborne vibration velocity is commonly described in terms of the root-mean square (RMS) peak particle velocity (PPV) as a vibration wave passes any point, with units of inches per second (in/sec or ips), which is used in the vibration-related discussions of this noise assessment.

Project Setting. Noise sources in the project vicinity include US Highway 101, the Union Pacific Railroad line, and existing operations at the Tajiguas Landfill. Short-term daytime sound pressure level (SPL) measurement at a representative location near the intersection of US Highway 101 northbound and the landfill access road yielded an ambient outdoor noise level of approximately 67 dBA Leq (please see Attachment A, measurement location #2 [ML2]). With no trains passing by, the sound environment was unsurprisingly dominated by US Highway 101 northbound and southbound surface transportation traffic.

According to the County Noise Element, the maximum noise levels from passing trains on the Union Pacific Railroad tracks are 96 dBA to 100 dBA at a distance of 100 feet. At this same distance, the CNEL values are estimated to range between 70 and 75 dBA, and the 65 dBA CNEL contour is estimated to be about 150 feet from the tracks (Santa Barbara County 2009a:42).

The Tajiguas Landfill operates under a Solid Waste Facility Permit (#42-AA-0015) issued by the Santa Barbara County Public Health Department, acting as the Local Enforcement Agency for the California Department of Resources Recovery and Recycling. The 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 tractors and grading equipment. Grading 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 previously documented and estimated in the most recent Environmental Impact Report (EIR) for the landfill (Santa Barbara County 2009b:Section 4.6), and are discussed in Section II.D. below.

C. Regulatory Setting

Federal. The US Environmental Protection Agency has established maximum noise level standards for a variety of vehicles and equipment. These standards are found starting at 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). FHWA also publishes the Transportation Noise Model, which was used in the estimates of traffic noise for this project. The 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.

Federal regulations implementing the Occupational Safety and Health Act (OSHA) are found at 29 CFR 1910.95. These regulations are intended to protect workers from adverse health effects of occupational noise exposure. They provide numerical limits, in terms of allowable noise levels and time periods, and require monitoring and a hearing conservation program and other measures to address exposures to high noise levels. Relative to the proposed project, these standards and procedures apply to workers such as heavy equipment operators, or others who might be exposed regularly to high noise levels on-site. The basic OSHA noise exposure limits are summarized in Table 1 below. The regulations also define procedures to combine exposures that occur in two or more separate periods during the day. Implementation of a Hearing Conservation Program is required whenever exposures exceed a time weighted average of 85 dBA or more during an eight-hour period.

TABLE 1
OSHA PERMISSIBLE NOISE EXPOSURE STANDARDS

Duration per Day, Hours	Sound Level dBA
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

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 1926.601 [b][4][i]).

There are no specific federal laws related to allowable community noise levels. Residential projects that rely on federal Housing and Urban Development (HUD) financing, however, must meet exterior noise guidelines established by HUD. These Guidelines are found at 24 CFR Part 51B and are in HUD Circular 1390.2 (HUD 2008). 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 (CA Gov Code 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 (CBC, Title 2, Part 2, Section 1207), 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 subsection.

The California Department of Industrial Relations, division of Occupational Health and Safety (CalOSHA) implements the California occupational noise exposure requirements, which are essentially the same as those for the federal OSHA reviewed above. The applicable California regulations are found at 8 CCR 5095. In one respect, CalOSHA regulations are more stringent, or at lease more specific, than federal regulations. 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 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 Noise Element* and in the *Thresholds and Guidelines Manual*, discussed in Section D. below.

The Draft Gaviota Coast Plan defers to countywide policies and mentions that the County Noise Element would apply, noting that "areas located along Highway 101 and the Union Pacific Railroad that could exceed the maximum noise level allowed for sensitive land uses" and that "development of new noise-sensitive land uses could be affected by these sources." (County of Santa Barbara, 2013).

D. Previous Analysis

The 2009 *Subsequent EIR for the Tajiguas Landfill Reconfiguration and Baron Ranch Restoration Project* estimated landfill operations noise by assuming the worst case scenario with several pieces of landfill equipment operating along the perimeter of the disturbance limits for the landfill. Under this scenario, the 65 dBA CNEL contour was estimated to extend 420 feet

beyond the disturbance limits, as shown below in Figure 2 (Santa Barbara County 2009b:page 4.6-4) and noise impacts were determined to be adverse but less than significant..

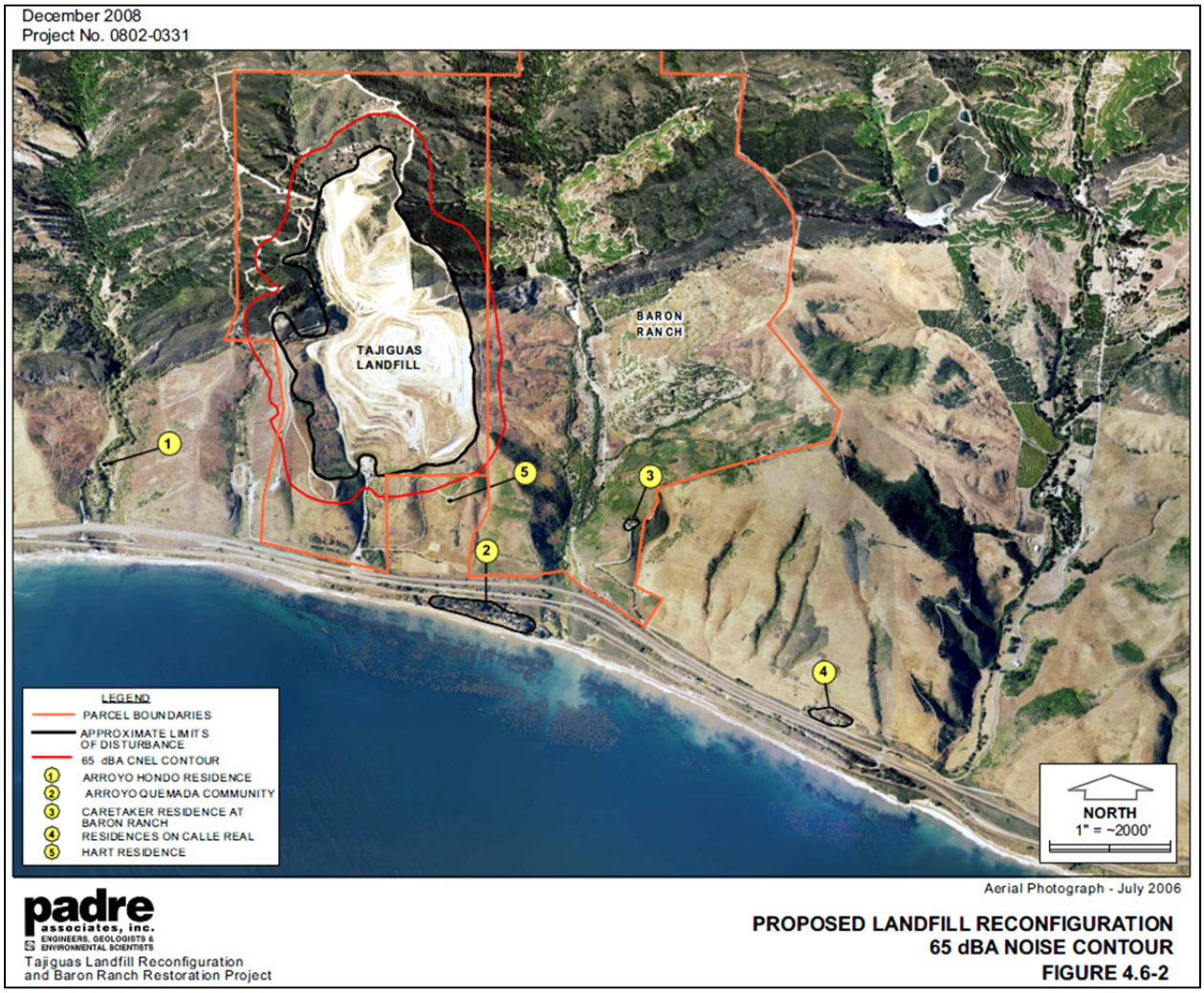

Figure 2 – Estimated Existing Tajiguas Landfill Operations Noise (Source: County of Santa Barbara, 2009)

Sample representative SPL measurements performed approximately 65 feet northwest of the existing Fortistar Power Plant on the Tajiguas landfill site yielded a five-minute energy-equivalent L_p (L_{eq}) of 76 dBA on April 4, 2013. With this measurement as a reference level, and after applying only geometric divergence as natural attenuation, an extrapolated L_{eq} 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 aforementioned Subsequent EIR estimate of baseline Tajiguas landfill operations. Please see Figure 3 for a depiction of the 65 dBA CNEL contour with respect to Proposed Project features.

The CalRecycle Statewide EIR addressing anaerobic digestion projects contains a general discussion regarding potential noise impacts. The report identifies potential impacts, which are

Baron Ranch

TRRP NR-1

TRRP NR-5

TRRP NR-3

101

RNR-2-100

RNR-4-100

RNR-1-50

RNR-3-50

TRRP NR-2

Arroyo Quemado

TRRP NR-4

Legend

- Reference Noise Receiver Locations (RNR-1 to RNR-4)
- Noise Receiver Locations (TRRP NR-1 to NR-5)
- Landfill Operations 65 dBA CNEL Contour
- Approximate Limits of Landfill Disturbance
- Landfill & County Properties

N

0 0.075 0.15 0.225 0.3 Mile

0 500 1,000 1,500 Feet

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Tajiguas Landfill
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Source: 1] NAIP Aerial (2012), [2] Parcels: Santa Barbara County Clerk-Recorder-Assessor Map Division 2008

Figure 3. Tajiguas Resource Recovery Project
Tajiguas Landfill
65 dBA CNEL Contours

2013

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for the most part related to conventional equipment used in any landfill or solid waste handling facility (CalRecycle, 2011:page 7-5). These noise sources include heavy truck traffic, construction equipment (graders, loaders, trucks) and waste handling equipment (loaders, conveyors, fork lifts, grinders and chippers). The actual anaerobic digestion chambers are fully enclosed. Minor noise sources associated with them might include ventilation fans for the enclosure, and minor mechanical noises associated with loading and emptying the chambers.

To assess the significance of changes in noise levels caused by the introduction of new activities and equipment at project sites, the CalRecycle Statewide EIR suggests a sliding scale based on pre-existing noise levels that was developed by the Federal Interagency Committee on Noise (FICON) (1992). The criteria defining a "substantial increase" for noise exposure, as presented in the CalRecycle EIR (CalReCycle 2011: Table 7-2) 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

One of the major noise sources not identified in the CalRecycle analysis is power generating equipment such as that proposed with the TRRP. The large internal combustion engines fueled by the biogas (mainly methane) produced by the anaerobic digestion process would be a major source of noise in any conversion process with a major power generation component. The TRRP power generation facility, along with the other noise sources mentioned above, is included within the discussion of impacts below.

E. Thresholds of Significance

CEQA Guidelines. The California Environmental Quality Act (CEQA) Guidelines (California Natural Resources Agency, 2012) suggest that a project may have a significant impact with respect to noise if it results in any of the following:

A. 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;

B. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

C. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; and,

D. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

(There are also two additional criteria, which relate to projects that may expose new residents to noise from airports in the project vicinity. Since the project does not involve creating new residences, and is not within two miles of a public or private airport, the last two criteria from the

CEQA Guidelines Appendix G section on noise are not listed here. The nearest airport – Santa Barbara Airport – is 16 miles to the east of the project site.)

Santa Barbara County Thresholds. The Santa Barbara County Environmental Thresholds and Guidelines Manual contains several criteria used to define significant noise impacts (Santa Barbara County 2009c: Chapter 12, Section B.3.). These criteria are derived from policies in the County Noise Element, and are as follows:

A. A proposed development that would generate noise levels in excess of 65 dB(A) 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 dB(A) CNEL would generally be presumed to be significantly impacted by ambient noise. A significant impact would also generally occur where interior noise levels cannot be reduced to 45 dB(A) CNEL or less.

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

D. 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 average construction noise is 95 dB(A) at a 50' 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 would be affected by noise levels over 65 dB(A). To mitigate this impact, construction within 1,600 feet of sensitive receptors shall be limited to weekdays between the hours of 8 AM to 5 PM only. Noise attenuation barriers and muffling of grading equipment may also be required. Construction equipment generating noise levels above 95 dB(A) at 50’ may require additional mitigation.

The County thresholds and guidelines do not address groundborne 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 (2004: Table 19 and 20), the most conservative thresholds for continuous sources such as construction equipment and solid waste handling operations, expressed as the peak particle velocity (PPV, in in/sec) that should not be exceeded, are as follows:

- Guideline for vibration damage to buildings: 0.08 in/sec
- Guideline for annoyance to people: 0.01 in/sec

City of Santa Barbara Thresholds. Section 9.16.025 of the City of Santa Barbara noise ordinance (City of Santa Barbara, 2009b) stipulates that non-vehicle mechanical noise is limited to 60 dBA CNEL at a neighboring property line of a parcel either zoned or used for residential purposes. Section 9.16.010.B.7 suggests that residential land uses, or hotels and other facilities providing overnight accommodations, would be considered noise-sensitive; and, Section 12.3.2 of Plan Santa Barbara also considers schools and hospitals as being noise-sensitive land uses. However, as presented in the Environmental Resources Goals, Policies and Implementation document (City of Santa Barbara, 2011a) as noise policy ER26.1 and similarly as ER37 in Plan Santa Barbara 65 dBA CNEL is proposed as a change to the existing guideline threshold of 60 dBA. As discussed in Impact Noise-2 of the Plan Santa Barbara Noise Element (2010), rationale for this new guideline includes mention of modern construction techniques being generally capable of providing a 20 dBA CNEL exterior-to-interior noise reduction (or more) and thus preserving interior noise goals of 45 dBA CNEL when exterior sound levels may be 65 dBA. This 65 dBA exterior sound level is comparable to the 65 dBA Ldn threshold applied as construction noise mitigation measure “N-6” detailed in the Hillside House Project Initial Study (City of Santa Barbara, 2009) and re-iterated in the Hillside Project Draft Environmental Impact Report (City of Santa Barbara, 2011b). Hence, for purposes of noise impact analysis in this report with respect to TRRP or alternatives that are within the jurisdiction of the City of Santa Barbara, the ER26.1 proposed 65 dBA CNEL threshold will be used for residential noise-sensitive receivers. For transient lodging facilities in the City of Santa Barbara, 70 dBA Ldn is considered an acceptable exterior noise level threshold with respect to land use compatibility as presented in Table 12.2 of the Plan Santa Barbara Program FEIR (City of Santa Barbara, 2010).

City of Santa Maria Thresholds. The City of Santa Maria General Plan Noise Element considers noise to be a significant impact if residential and other noise-sensitive land uses (e.g., motels, hospitals, nursing homes, churches, libraries, etc.) are exposed to an exterior noise level of greater than 60 dB CNEL or interior level of 45 dB CNEL for habitable rooms. For commercial land uses and open spaces, the maximum exterior noise level is 65 dB CNEL; and for industrial land uses it is 70 dB CNEL.

III. IMPACT ANALYSIS

A. Methods and Assumptions

The analysis of noise impacts is focused on noise sensitive land uses that include five residential locations 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 identified and mapped in the 2009 Supplemental EIR for the Tajiguas Landfill Reconfiguration and Baron Ranch Restoration (Santa Barbara County 2009b:Figure 4.6-1). Since the proposed TRRP project will be located entirely within the area of the landfill operations it is reasonable to address these same residential receiver locations. Besides the five residential noise receiver locations, four additional locations were also modeled closer to US Highway 101 to help assess roadway traffic noise as an acoustical contributor to the ambient sound environment.

The project noise effects are analyzed in three broad topics:

- Traffic noise levels along US Highway 101, and how they may change
- Equipment operations noise levels from the TRRP
- Groundborne vibration levels from operations equipment

The FHWA Traffic Noise Model (TNM version 2.5, FHWA, 2004) was utilized to determine reference sound levels at 50' from the US Highway 101 and Landfill Access roadway centerlines, from which hourly Leq values for daytime and nighttime periods at the studied receivers could be calculated (via Microsoft Excel spreadsheet-based technique) to account for acoustical geometric divergence with distance. These hourly Leq were then combined to compute the Ldn as previously explained in Section II.B. Changes in traffic resulting from the proposed TRRP, provided by Associated Traffic Engineers (ATE) for this project (ATE 2013), were used to compute the changes in resulting highway traffic noise levels.

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 Federal Highway Administration (FHWA) Roadway Construction Noise Model (FHWA, 2006), or from other sources as cited. For the facilities proposed within the TRRP, the approach to the noise analysis involved three steps:

1. Determine a composite source noise value for operating equipment at each of the following TRRP facility locations:
    - Materials Recovery Facility (MRF)
    - Anaerobic Digestion (AD) Facility
    - Composting Area for digestate from AD facility
    - Energy Facility

2. Compute the CNEL value at the reference distance for each facility, based on the hours of operation from the Project Description, and compute the distance to the 65 dBA CNEL contour.
3. Compare the resulting TRRP CNEL values with those from the 2009 Supplemental EIR, and make adjustments as appropriate to determine if any existing or likely future residential areas will be affected by the new 65 dBA CNEL contour.

For groundborne vibration, the preliminary estimating procedure from Caltrans (2004: Equation 12) was used to estimate the PPV values at each residential location resulting from equipment operation at each of the TRRP 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 more. Along US 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 neighborhood). Intervening ridgelines also separate most of the residential receiver locations from noise sources in the TRRP facilities.
- No attenuation in noise levels from the MRF or the AD facility due to their building enclosures. As described in the Introduction, the current plan layouts and design of these facilities will be enclosed within prefabricated metal or concrete-walled buildings, which if completely covered, would result in measurable reduction of interior-to-exterior sound from major noise-producing equipment and processes. However, since both buildings will have large openings in the south, east and north facings for trucks and heavy equipment to enter and leave, the effective noise reduction from these building shells will be substantially reduced and/or directional with regards to effectiveness. Unless otherwise noted, for purposes of this analysis this report conservatively assumes that such access doors are open and convey noise emission without transmission loss through the building shell surfaces.

Traffic noise levels were estimated for the current (2013) condition, which includes the existing landfill truck traffic. Noise level changes due to Proposed Project trip generation and their corresponding changes of current (a.k.a., “baseline”) traffic flows were then analyzed. These traffic changes, appearing in Table 2 below, are reproduced from an Associated Transportation Engineers (ATE) traffic and circulation study (ATE, 2013) prepared for this Proposed Project.

TABLE 2
PROPOSED PROJECT TRIP GENERATION

Component	Number	Shift	AVO	Trip Generation(a) ADT	A.M. Peak	P.M. Peak
MRF						
Admin Staff	7	7:00 A.M.–3:30 P.M.	1.6	8	0(0/0)	0(0/0)
Employees	24	7:00 A.M.–3:30 P.M.	2.5	20	0(0/0)	0(0/0)
Employees	24	3:00 P.M.–11:30 P.M.	2.5	20	0(0/0)	0(0/0)
Employees	7	11:00 P.M.–7:30 A.M.	2.5	6	3(0/3)	0(0/0)
Trucks	13	NA	NA	26	0(0/0)	0(0/0)
Subtotal				80	3(0/3)	0(0/0)
AD						
Employees	4	7:00 A.M.–3:30 P.M.	2.5	4	0(0/0)	0(0/0)
Trucks	4		NA	8	0(0/0)	0(0/0)
Subtotal				12	0(0/0)	0(0/0)
Existing Landfill						
Employees	-6	6:30 A.M.–4:00 P.M.	1.6	-8	0(0/0)	0(0/0)
Totals				84	3(0/3)	0(0/0)

(a) ADT = 1 inbound and 1 outbound trip for each employee vehicle and each truck. A.M. and P.M. peak hour trips also show inbound/outbound splits (inbound/outbound).

Source: ATE (2013)

Although ATE also analyzed an intermediate "cumulative + project" scenario, for this noise analysis only the longer range 2036 traffic volumes were examined. Since the project influence on the current traffic volumes was less than significant, the only reason for examining long-range traffic projections is to gain insight regarding noise levels into the future – whether cumulative noise effects would be significant and the degree to which project-related traffic contributes to them. This analysis shows that 2036 noise levels along US Highway 101 will not change significantly, so more detailed study is not warranted. Traffic from the CSSR option was also included in the analysis.

As an overall summary, it may be stated that the analyzed Proposed Project noise effects were either under the 65 dBA CNEL criterion used to define significant impacts or did not cause a significant increase in the ambient sound level. Had any of the results approached significant levels, then a more refined analysis taking topographic barriers and other factors into consideration could have been undertaken.

B. Project-specific Impacts

Highway 101 Noise Levels – TRRP. Attachment A contains the results of short-term outdoor ambient SPL measurements made at locations near US Highway 101 in the project vicinity. Measurement data from ML2 was compared with roadway traffic noise levels predicted with the usage of TNM based on observed counts of traffic as presented in Attachment A for this field survey position. Details of this "Validation – ML2" TNM noise prediction scenario appears in

Appendices C and D, resulting in a predicted level of approximately 70 dBA Leq that is conservatively but accurately (i.e., within +/-3 dB) higher than the actual measured SPL of 67 dBA Leq.

Attachment B contains traffic count data, distribution of traffic by type (autos, medium duty trucks, and heavy duty trucks) and other information necessary to populate TNM model input parameters. In summary, the US Highway 101 reference noise levels were predicted with TNM, assuming a straight roadway segment of 2,000' on which the traffic volumes were applied. The reference receiver position was located at a perpendicular distance of 50' from the midpoint of this modeled roadway, so that its exposure to traffic noise propagation (i.e., sound emission from a line source with endpoints sufficiently distant from the receiver) would reasonably mirror actual field conditions.

The Tajiguas Landfill access road was also included in the model, primarily because of its almost exclusive heavy truck traffic and its general proximity to one of the residential receiver locations (TRRP NR-5, the proposed Hart Residence south of the landfill property). For the access road, the truck traffic volume was conservatively presumed to be consistent with the landfill peak daily truck quantity reported for 2008 (132 trucks per day) as referenced in the ATE traffic study: "…2008 landfill traffic using the Landfill Access Road (turning to/from U.S. Highway 101) are used in the Baseline analysis." (ATE, 2013).

For the "Current" and "Current + Project" portions of Attachment B, the computed hourly traffic volumes are carried out to the first decimal place, rather than being rounded to the nearest full trip number. This is because the project has such a small effect on traffic volumes that no change is apparent if only whole numbers are used.

Attachment C contains all of the input and output files from the TNM 2.5 model runs, for the following scenarios:

- Validation – ML2
- Current Traffic Day – Access Road
- Current Traffic Night – Access Road
- Current Traffic Day – US Highway 101
- Current Traffic Night – US Highway 101
- Current + Project Day – Access Road
- Current + Project Night – Access Road
- Future (2036) Day – US Highway 101
- Future (2036) Night – US Highway 101

Five identified residential receiver locations in proximity to the Proposed Project and four additional points closer to US Highway 101 were studied in this traffic noise analysis (see Table

3). The five residential receiver positions were also studied in the analysis of other Project-related noise effects (e.g., operations).

TABLE 3
NOISE RECEIVER LOCATIONS

Identifier	Description
NR-1	Arroyo Hondo Residence
NR-2	Arroyo Quemada Community
NR-3	Caretaker residence at Baron Ranch
NR-4	Residences on Calle Real
NR-5	Proposed Hart Residence
RNR-1-50	Reference Noise Receiver, 600 feet west of landfill access road and 50 feet from centerline of northbound lanes of US Highway 101 (used in roadway noise model)
RNR-2-100	Reference Noise Receiver, 600 feet west of landfill access road and 100 feet from centerline of northbound lanes of US Highway 101 (used in roadway noise model)
RNR-3-50	Reference Noise Receiver, 1,000 feet east of landfill access road and 50 feet from centerline of northbound lanes of US Highway 101 (used in roadway noise model)
RNR-4-100	Reference Noise Receiver, 1,000 feet east of landfill access road and 100 feet from centerline of northbound lanes of US Highway 101 (used in roadway noise model)

Table 4 below summarizes the results of Daytime and Nighttime Leq values for each model run, and the resulting Ldn values at selected residential and reference noise receiver locations.

At all modeled locations, the effect of the increase in traffic attributable to the TRRP is 0.1 dBA or less. This increment is much less than what could normally be detected by people and would not cause any current levels below 65 dBA to exceed that limit. Therefore, at locations where existing CNEL values are below 65 dBA, there is currently no noise impact and there would be no noise impact from traffic associated with the TRRP development.

Some of the residences along Calle Real (NR-4) are above 65 CNEL. Although this existing CNEL value exceeds the County standard, the Proposed Project effect would still be less than a 0.1 dBA increase, which would be undetectable by average healthy human hearing and is much less than an allowable 1.5 dBA Federal Interagency Committee on Noise (FICON) increment where existing levels already exceed 65 dBA. For these reasons, at locations where existing CNEL values exceed 65 dBA, the effect of the TRRP on traffic noise levels would be less than significant.

Highway 101 Noise Levels – TRRP and CSSR Option. The traffic effect of adding the CSSR option to the TRRP would consist of a minor increase in truck traffic delivering additional recyclable material to the MRF and exporting additional recyclable material, and a minor increase in employee automobile traffic. The increases would be from 34 truck trips per day

TABLE 4
US HIGHWAY 101 NOISE LEVELS: CURRENT AND CURRENT + PROJECT

Receiver Location	Daytime L_{eq} (dBA)	Nighttime L_{eq} (dBA)	CNEL (dBA)
	Current		
NR-1	63.1	57.8	66.1
NR-2	67.3	62.0	70.3
NR-3	61.0	55.7	64.0
NR-4	68.7	63.4	71.7
NR-5	61.3	55.8	64.2
RNR-1-50	75.1	69.8	78.1
RNR-2-100	72.1	66.8	75.1
RNR-3-50	75.1	69.8	78.1
RNR-4-100	72.1	66.8	75.1
	Current + Project		
NR-1	63.1	57.8	66.1
NR-2	67.3	62.0	70.3
NR-3	61.0	55.7	64.0
NR-4	68.7	63.4	71.7
NR-5	61.3	55.9	64.2
RNR-1-50	75.1	69.8	78.1
RNR-2-100	72.1	66.8	75.1
RNR-3-50	75.1	69.8	78.1
RNR-4-100	72.1	66.8	75.1

(Project) up to 58 truck trips per day (Project and CSSR). These numbers are shown in Table 2 and Table 5 (reproduced from Table 18 of the ATE traffic study).

TABLE 5
PROJECT + CSSR OPTION TRIP GENERATION

				Trip Generation(a)		
Component	Number	Shift	AVO	ADT	A.M. Peak	P.M. Peak
CSSR Option						
Employees	20	7:00 A.M.-1:30 P.M.	2.5	16	0(0/0)	0(0/0)
Trucks (Imports)	7		NA	14	1(1/0)	1(0/1)
Trucks (Exports)	5		NA	10	0(0/0)	0(0/0)
Subtotal				40	1(1/0)	1(0/1)
Proposed Project				84	3(0/3)	0(0/0)
Proposed Project + CSSR Option				124	4(1/3)	1(0/1)

(a) ADT = 1 inbound and 1 outbound trip for each employee vehicle and each truck. A.M. and P.M. peak hour trips also show inbound/outbound splits (inbound/outbound).

The increases amount to a fraction of a trip per hour (computed in Attachment B), which has a correspondingly negligible effect on the hourly noise level. Since there is no change in the resulting noise levels from the Current + Project scenario the results are not repeated here. In summary, inclusion of the CSSR option would not substantially change the traffic noise results, and would be less than significant.

Construction Noise Levels – TRRP. Construction of the TRRP would include grading and heavy equipment operations at the site of the proposed MRF and AD Facility (current Landfill operations deck) and at the site of the Composting Area on the top deck of the Tajiguas Landfill. All of these areas are within the perimeter disturbance area associated with the landfill. The previous 2009 noise analysis predicted the landfill operating CNEL noise contour based on a suite of heavy equipment operating continuously along this perimeter (Santa Barbara County 2009b:pages 4-1 through 4-6). The loudest noises associated with construction are those from heavy equipment used during the grading and site preparation phase. These noises for the TRRP construction would be very similar to noises from the heavy equipment used in the landfill operation (graders, loaders and bulldozers). In addition, the smallest distance separating any component of the TRRP project from residential noise receivers is 1,980 feet between the Composting Area and NR-5. In this instance there is a ridgeline that intervenes to provide some additional noise shielding. This distance, and all other distances separating the construction locations from residences are in excess of the 1,600 foot criteria used by Santa Barbara County (County threshold d. discussed in Section E above). While landfill operations trailers are expected to be temporarily (i.e., during construction of the TRRP facilities) moved south to a location that is closer to NR-5 (note the ④ in Figure 1), the noise from activities at these trailers is not expected to cause a significant change in the aggregate 65 dBA CNEL contour at a distance of 420 feet from the disturbance perimeter. Hence, since the landfill operations were found not to cause a significant impact, and distances separating TRRP facility construction activities from the nearest noise-sensitive receivers exceed the County criteria, it is reasonable to conclude that the TRRP construction noise will be temporary in nature, similar to noise emission from existing landfill operations and would be a less than significant impact.

Construction Noise Levels – TRRP and CSSR Option. Inclusion of the CSSR component within the MRF would have the minor effect of increasing its size from 60,000 square feet to 70,000 square feet (i.e., the addition of 10,000 square feet as mentioned in the Introduction for this optional Proposed Project element). This would have an indiscernible effect on the equipment noise and duration of construction of the MRF. Since the TRRP construction noise effects were less than significant, the optional project design that includes the CSSR processing would also have a less than significant construction noise effect.

Operation Noise Levels – TRRP. Operational noise from the proposed TRRP will originate from the MRF, the AD facility, the Composting Area, and from the Energy Plant. Reference sound levels from major noise-producing equipment and vehicles for each of these facilities is presented in the following list of tables, along with the computed CNEL values that are discussed in the text below:

- Table 6: Materials Recovery Facility

TABLE 6
MATERIALS RECOVERY FACILITY (MRF) SOURCE NOISE LEVELS

Equipment/Vehicle Type (Rated Engine power)	Quantity	Usage Factor	Lmax (dBA)	Leq (dBA)	Reference Distance (ft.)	References and/or Assumptions
"Volvo L110G" wheeled loader (260 hp)	2	40%	80	79	50	RCNM (FHWA, 2006): Table 1 (front-end loader)
"Volvo L90G" wheeled loader (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)
Toyota Forklift (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 (City of Azusa, 2010)
Truck air brake	1	1%	85	65	50	Azusa MRF & TS (City of Azusa, 2010)
Conveyor	1	100%	65	65	50	Azusa MRF & TS (City of Azusa, 2010)
Alarms	1	10%	82	72	50	Azusa MRF & TS (City of Azusa, 2010)
Voices	1	100%	62	62	50	Azusa MRF & TS (City of Azusa, 2010)
Sorting	1	100%	68	68	50	Azusa MRF & TS (City of Azusa, 2010)
Shredder	1	50%	76	73	50	SCRTS ND/IS (Santa Barbara County, 1995)
Compactor-baler	1	10%	87	77	50	SCRTS ND/IS (Santa Barbara County, 1995)
Logarithmic Sum of Equipment/Vehicle Noise for MRF:				88.2	50	(CNEL = 90.0)* *based on operation hours, and nighttime background of 43 dBA

Sources: Mustang (2013), URS (2013), City of Azusa (2010).

- Table 7: Anaerobic Digestion (AD) Facility
- Table 8: Composting Area

TABLE 7
ANAEROBIC DIGESTION (AD) FACILITY SOURCE NOISE LEVELS

Equipment/Vehicle Type (rated engine power)	Quantity	Usage Factor	Lmax (dBA)	Leq (dBA)	Reference distance (ft.)	References and/or assumptions
"Volvo L110G" wheeled loader (260 hp)	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)
Logarithmic Sum of Equipment/Vehicle Noise for AD:				83.0	50	(CNEL = 84.1)* *based on operation hours, and nighttime background of 43 dBA

Sources: Mustang (2012), FHWA (2006).

TABLE 8
COMPOSTING AREA SOURCE NOISE LEVELS

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)
"Volvo L90G" wheeled loader (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	Santa Barbara County 2008:4)
Logarithmic Sum of Equipment/Vehicle Noise for CA:				85.7	50	(CNEL = 82.7)* *based on operation hours, and nighttime background of 43 dBA

Sources: Mustang (2012), FHWA (2006), Santa Barbara County (2008).

Most equipment source noise levels were obtained from the FHWA Roadway Construction Noise Model (FWHA, 2006). The "usage factors" represent the fraction of time that the equipment type is expected to be actually under power and operating, and were based either on

RCNM data, descriptions of MRF operating equipment from other studies, such as those for the South Coast Recycling and Transfer Station in Santa Barbara (Santa Barbara County 2008:pages 4-5), or from Mustang Renewable Power Ventures, LLC (Mustang).

The TRRP Energy Plant will use two GE Jenbacher cogeneration engines, model JMS 416-GS. Sound pressure data, at octave band center frequency (OBCF) resolution, for each of the combustion engines was supplied by GE Jenbacher (provided via Mustang) and appears in Tables 9 and 10. The engines will be housed in a building having a minimum shell construction of 6" thick concrete masonry unit (CMU), with a south-facing double-door (minimum sound transmission class [STC] of 30) for equipment and personnel access. The approximate 27' x 33' dimensions of the building as currently designed (boxed in yellow in Figures 4 and 5) only allow a few feet of working room around the engines, so for purposes of this analysis it is conservatively assumed the interior equipment-facing surfaces are not, apart from thermal insulation that may be installed, lined with acoustically absorptive treatment.

TABLE 9
ENERGY PLANT SOURCE NOISE LEVELS – CASING RADIATED

Mechanical casing radiated noise (OBCF)	Unweighted dB	A-weighting adjustment	dBA	Building NR (dB)*	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
*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					
	Logarithmic Sum:		97 dBA		68 dBA

Sources: Mustang (2012), Harris (1994), Dynasonics (2013), Alpine Doors (2013), Santa Barbara County (2013), Edison Electric Institute (1984).

TABLE 10
ENERGY PLANT SOURCE NOISE LEVELS – COMBUSTION EXHAUST

Combustion Exhaust noise (OBCF)	Unweighted dB	A-weighting adjustment	dBA	Silencer DIL (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
*based on Maxim MSA55 (or comparable)					
	Logarithmic Sum:		118 dBA		78 dBA

Sources: Mustang (2012), Maxim (2013), Santa Barbara County (2013), Edison Electric Institute (1984).

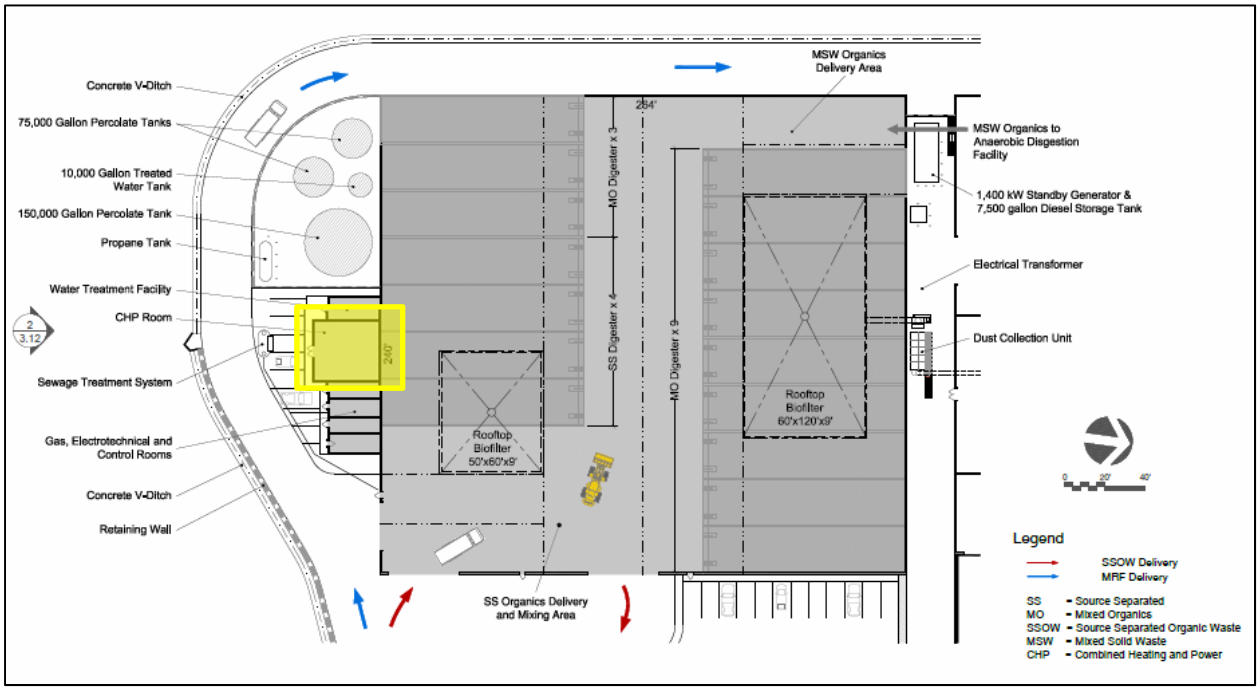

Figure 4 – Plan View of the Proposed TRRP AD Facility (Source: County of Santa Barbara, 2013)

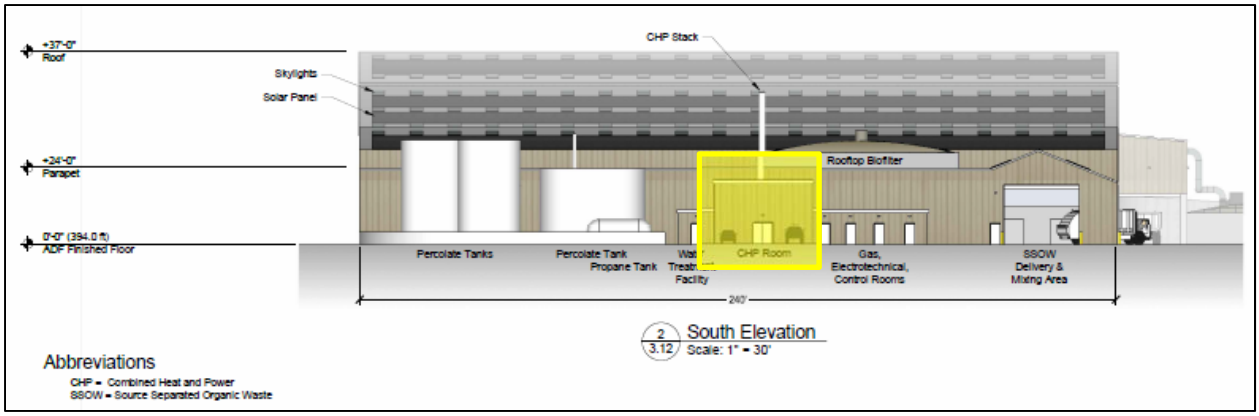

Figure 5 – South Elevation View of the Proposed TRRP AD Facility (Source: County of Santa Barbara, 2013)

Using Edison Electric Institute (EEI) methodology described in its Electric Power Plant Environmental Noise Guide (EEI, 1984), the rightmost column of Table 8 displays the attenuated casing radiated noise for each engine (i.e., after algebraic application of the net building noise reduction [NR], which considers the composite transmission loss [TL] of the concrete wall, a small sound-attenuated ventilation opening [representing no more than 0.5% of a façade], and the closed double-door in the south wall).

CNEL values in Tables 6, 7, and 8 were computed based on the following operating hours:

- MRF: 7:00 a.m. to 11:30 p.m. (12 daytime hours, 3 evening hours, and 1.5 nighttime hours)
- AD: Facility: same as MRF
- Composting Facility: 7:00 a.m. to 4:00 p.m. (9 daytime hours only)
- Energy Plant: 24 hours per day (12 daytime hours, 3 evening hours, and 9 nighttime hours)

During evening and night time hours when any applicable TRRP equipment is not operating, an ambient noise level of 43.3 dBA was assumed. This is the night time Leq computed for NR-5, the proposed Hart residence south of the landfill property, and a reasonable night time ambient noise level for the vicinity.

The Tajiguas Landfill 65 dBA CNEL contour is estimated in the 2009 Supplemental EIR to extend 420 feet beyond the outer limit of the landfill disturbance (Santa Barbara County:2009b:page 4.6-4). Represented as “Existing Ops” in Table 11, this existing noise level from current landfill operations is extrapolated to each of the five studied receiver locations and then logarithmically added to the predicted acoustical contribution from the TRRP MRF, AD, Energy Plant and Composting Area facilities. The logarithmic aggregate or “sum” of predicted noise levels represent the landfill operations plus TRRP at each of the five receivers.

TABLE 11
PREDICTED CNEL VALUES AT RESIDENTIAL RECEIVER LOCATIONS

	MRF		AD		Energy Facility		Composting Area		Existing Ops (EO)		Sum
Location	Distance (ft.)	CNEL (dBA)	Distance (ft.)	CNEL (dBA)	Distance (ft.)	CNEL (dBA)	Distance (ft.)	CNEL (dBA)	Distance (ft.)*	CNEL (dBA)	CNEL (dBA)
NR-1	3,662	53	3,527	47	3,540	28	4,860	43	2,900	57	59
NR-2	4,568	51	4,423	45	4,310	26	3,710	45	2,200	58	59
NR-3	5,218	50	5,137	44	5,055	25	3,650	45	2,500	57	58
NR-4	8,975	45	8,895	39	8,800	20	7,530	39	6,300	53	54
NR-5	2,902	55	2,776	49	2,660	30	1,980	51	600	64	64

* distance to disturbance perimeter

The results in Table 11 are conservatively high estimates since they do not account for any noise reduction due to intervening topography between the TRRP facilities and the identified residential noise receiver locations. Location NR-5 (proposed Hart Residence south of the landfill) may have a direct line of site to the MRF, AD and the Energy Plant; but the Composting Area would likely be blocked by the ridgeline north of the residence location. As shown by the rightmost column of Table 10, all five receiver locations are anticipated to have combined (i.e., TRRP operations added to existing landfill operations) noise levels that are below the 65 dBA CNEL criteria for identifying a significant noise impact, and the resulting increase above existing landfill operations noise is no greater than 1 to 2 dBA.

In summary, operation of the TRRP facilities would not cause a substantial shift in the projected landfill 65 dBA CNEL contour onto residential land (compare Figures 3 and 6), and because all of the resulting CNEL values at the identified residential receiver locations would remain below the County criteria of 65 dBA; furthermore, the permanent increase in ambient sound environment due to the Proposed Project would (at 1 to 2 dBA) be a barely perceptible change to average healthy human hearing. For these reasons, the operations of the TRRP facilities would be expected to have a less than significant noise impact.

Groundborne Vibration Levels – TRRP. For purposes of groundborne vibration assessment, and in order to estimate potential worst-case vibration effects from moving sources, it was assumed that nothing bigger or more powerful than a large bulldozer (representing a typical wheeled loader, and for which reference PPV data is available from the Federal Transit Administration [FTA]) would be operating at each of the TRRP facility sites. The procedure described by the Caltrans Vibration Guidance Manual was used (Caltrans, 2004) to estimate its vibration level. 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 (FTA, 2006). Table 12 below shows the results of placing such a vibration source at each of the TRRP facility locations, as well as on the landfill disturbance perimeter (to estimate existing operations vibration), giving the resulting PPV values at each of the residential noise receiver locations.

TRRP MRF
TRRP AD Facility
TRRP Energy Plant
TRRP Composting Area
Baron Ranch
TRRP NR-1
TRRP NR-5
TRRP NR-3
RNR-2-100
RNR-4-100
RNR-1-50
RNR-3-50
TRRP NR-2
TRRP NR-4
101
Arroyo Quemado

Legend

- TRRP Facility Source Noise Locations
- Reference Noise Receiver Locations (RNR-1 to RNR-4)
- Noise Receiver Locations (TRRP NR-1 to NR-5)
- Landfill Operations 65 dBA CNEL Contour
- Landfill Operations & Predicted TRRP Facility Operations 65 dBA CNEL Contour
- Approximate Limits of Landfill Disturbance
- Landfill & County Properties
- Composting Area

N

0 0.075 0.15 0.225 0.3 Mile

0 500 1,000 1,500 Feet

County of Santa Barbara Public Works
Tajiguas Landfill
Santa Barbara County

URS Corporation

Source: 1] NAIP Aerial (2012), [2] Parcels: Santa Barbara County Clerk-Recorder-Assessor Map Division 2008

Figure 6. Tajiguas Resource Recovery Project
Tajiguas Landfill + TRRP Projected
65 dBA CNEL Contours

2013

G:\gis\projects\15772980702392\map_docs\mxd\Noise\October_2013_Versions\Tajiguas_Preferred_Current&Projected_65dBA_CNEL.mxd

TABLE 12
PREDICTED GROUNDBORNE VIBRATION AT RESIDENTIAL RECEIVER LOCATIONS

	MRF		AD		Composting Area		Existing Ops (EO)	
Location	Distance (ft.)	PPV (in/sec)	Distance (ft.)	PPV (in/sec)	Distance (ft.)	PPV (in/sec)	Distance (ft.)	PPV (in/sec)
NR-1	3,662	0.000369	3,527	0.000385	4,860	0.000270	2,900	0.000477
NR-2	4,568	0.000289	4,423	0.000300	3,710	0.000364	2,200	0.000646
NR-3	5,218	0.000250	5,137	0.000254	3,650	0.000370	2,500	0.000562
NR-4	8,975	0.000138	8,895	0.000139	7,530	0.000167	6,300	0.000203
NR-5	2,902	0.000477	2,776	0.000500	1,980	0.000726	600	0.002699

All of the values in Table 12 are well below the most conservative criteria used to identify significant impacts (0.08 in/sec for buildings and 0.01 in/sec for human annoyance). Therefore, the construction and operation of all of the TRP facilities will have a less than significant impact with respect to groundborne vibration.

Operation Noise Levels – TRRP and CSSR Option. The effect of adding the CSSR option to the TRRP project would be to increase activity at the MRF by a relatively small amount. The amount of material handled would increase from 250,000 tons per year to 290,000 tons per year (an increase of 16 percent), requiring 20 additional employees working a shift from 7:00 am to 1:30 pm. Since the operations noise analysis above already assumed implementation of the second shift, this potential effect has already been considered. Therefore, inclusion of the CSSR option in the project would result in operations noise effects that are considered less than significant.

Groundborne Vibration Levels – TRRP and CSSR Option. The groundborne vibration analysis presented in Table 12 above used a procedure and criteria defined for evaluating continuous activities. The effect of including the CSSR option within the TRRP would not significantly alter the operations, but may lead to processing occurring more hours per day. Since the analysis in Table 12 already is for continuous activities, a slight increase in the operation hours per day would not alter those results. Therefore, inclusion of the CSSR option within the TRRP project would have a less than significant impact with respect to groundborne vibration.

C. Extension of Landfill Life Impacts

The Project Description (Section 3.8) states that implementation of the TRRP project (with or without the CSSR option) would extend the useful life of the Tajiguas Landfill from its current estimated closing date of approximately 2026, by 10 years to a new closing date of approximately 2036. Noise effects of the current operations at the landfill were determined to be less than significant. This is the conclusion in Impact N-1 in the 2009 *Supplemental EIR for the Tajiguas Landfill Reconfiguration and Baron Ranch Restoration Project* (Santa Barbara County 2009b:Section 4.2.6.3). Landfilling operations would take place in the back canyon area of the

landfill property increasing the distance from this noise source to surrounding noise sensitive receptors, and would be reduced in scope due to the reduced volume of waste being buried. Therefore, implementation of the project would prolong the duration of less than significant noise impacts associated with operation of the Landfill.

D. Additional Proposed Project Impacts Discussion

Future (2036) Highway 101 Noise Levels – TRRP. Future (2036) Ldn values for US Highway 101 were estimated using the same procedures and TNM model described above in Section III.B. Attachment B contains the future (2036) traffic assumptions based on traffic information from the Proposed Project traffic analysis report (ATE, 2013). Attachments C and D contain the TNM input and output data, and results for all scenarios. The Ldn results for the Future and Future + Project scenarios are presented in Table 13.

Comparison of the results above (Table 13) with the earlier results (Table 4) shows that future noise levels along US Highway 101 are expected to increase by about 0.6 dBA at most locations. As with the analysis for the Proposed Project under the current conditions, the TRRP related traffic would be responsible for no more than 0.1 dBA of additional increase. Neither of these increases – the 0.6 dBA increase expected from the forecast growth in the region or the 0.1 dBA increase resulting from the TRRP project – would lead to an Ldn value in excess of 65 dBA where existing values are currently below that criteria. Both of the increases added together (0.5 + 0.1 = 0.6 dBA) are still below the most conservative 1.5 dBA criteria for determining a substantial increase. For these reasons, the cumulative effects of the project plus traffic from forecasted growth in the region on noise levels along US Highway 101 would remain less than significant.

Future (2036) Highway 101 Noise Levels – TRRP and CSSR Option. As discussed above in Section III. B, addition of the CSSR option to the TRRP project has a very small effect on traffic generation – increasing the average truck trips by less than one per hour. The same was true for the TRRP project by itself, but the hourly truck traffic estimates were increased by a full trip for each segment and time period in that analysis. For that reason, the fractional trip per hour addition from the CSSR was essentially already counted and the effect on resulting noise levels caused by the CSSR is indiscernible. The same result would occur in the future (2036) projection. The effect on including the CSSR option within the TRRP on cumulative traffic noise levels would be less than significant.

Combined Existing Operations and Construction Noise Levels – TRRP. The Tajiguas Landfill operation has characteristics that make it essentially like a continuous construction project. Daily operations by bulldozers, loaders, landfill compactors, and heavy trucks are part of the landfill activity – and are quite similar to continuous construction activity. The TRRP construction activity will be part of the overall noise effects that were accounted for in the 2009 Supplemental EIR for the Tajiguas Landfill Reconfiguration project (Santa Barbara County 2009b:Figure 4.6-1). When the 65 dBA CNEL contour was drawn around the landfill disturbance area as if landfilling activities were occurring simultaneously around the entire perimeter, that

TABLE 13
US HIGHWAY 101 NOISE LEVELS:
FUTURE AND FUTURE + PROJECT

Receiver Location	Daytime Leq (dBA)	Nighttime Leq (dBA)	CNEL (dBA)
Future (2036)			
NR-1	63.7	58.4	66.7
NR-2	67.9	62.6	70.9
NR-3	61.6	56.3	64.6
NR-4	69.3	64.0	72.3
NR-5	61.8	56.4	64.8
RNR-1-50	75.7	70.4	78.7
RNR-2-100	72.7	67.4	75.7
RNR-3-50	75.7	70.4	78.7
RNR-4-100	72.7	67.4	75.7
Future + Project			
NR-1	63.7	58.4	66.7
NR-2	67.9	62.6	70.9
NR-3	61.6	56.3	64.6
NR-4	69.3	64.0	72.3
NR-5	61.9	56.4	64.8
RNR-1-50	75.7	70.4	78.7
RNR-2-100	72.7	67.4	75.7
RNR-3-50	75.7	70.4	78.7
RNR-4-100	72.7	67.4	75.7

assumption had the effect of accounting for all future construction activities. For this reason, the cumulative effect of adding the TRRP construction noise generation to the existing landfill operations noise will be less than significant.

Combined Existing Operations and Construction Noise Levels – TRRP and CSSR Option. The CSSR option involves a very small addition to the TRRP MRF (+10,000 SF to the 60,000 SF MRF building). All of the envisioned construction is within the general scope of landfill activities for which the 65 dBA CNEL contour was prepared. For these reasons, the construction noise effects of including the CSSR along with the TRRP construction and the landfill activities would be less than significant.

Combined Ambient Highway 101 and Operation Noise Levels – TRRP. The noise receiver location NR-5 (proposed Hart Residence) was used for this analysis. As presented in Table 11, the highest operation noise from the TRRP components would occur at NR-5. It is the closest of

the five receiver locations, and unlike all of the others it has a relatively unobstructed line of sight to the MRF, AD Facility, and Energy Plant components of the project. It does not have a line of sight to the Composting Area location. Logarithmically adding the "Sum" estimated noise level value (64 dBA CNEL) from Table 11 to either the Future (2036) or Future (2036) + Project roadway noise level at NR-5 (both values of 64.8 dBA as shown in Table 13) then gives a cumulative total from all noise sources of 68 dBA, which is above the 65 dBA CNEL criterion for residential locations. However, the reader should note that this predicted result is a future ambient (and thus, combination) of Proposed Project and non-Project acoustical contribution, which are each below the 65 dBA CNEL criterion. Additionally, the predicted existing operations (EO) noise level is already at 64 dBA CNEL, which means the existing combined noise level at NR-5 is already—when EO is logarithmically added to the value from Table 4 (64.2 dBA CNEL)—67 dBA CNEL. Hence, the increase over time will be no greater than 1 dBA (largely undetectable by average healthy human hearing).

The few homes located near to US Highway 101 that are affected by higher noise levels (NR-4 Calle Real Residences) are very far from the landfill and the TRRP project location, and well separated from both by intervening ridgelines. All of the other noise receivers will also be shielded from TRRP noise by intervening topography. Even without such shielding, however, the TRRP operations noise levels were found to be less than significant. Thus, NR-5 is the most susceptible to cumulative noise effects from the TRRP project components and highway noise in the vicinity. From the above paragraph, these summed noise effects would remain less than significant. All other noise receiver locations would experience less of a combined noise effect, due to the dominance of highway traffic noise in the ambient sound environment. For these reasons, the combined effect of adding the TRRP operations noise to existing and future noise levels projected for the area will remain less than significant**.**

Combined Operation Noise Levels – TRRP and CSSR Option. The effect of including the CSSR within the MRF component of the TRRP will be to increase processing activities slightly – mainly be expanding into two shifts per day work. The operational noise analysis for the TRRP already assumed two full shifts per day (extending through the evening hours and until 11:30 p.m.). For this reason, the CSSR option would have no effect on the TRRP operational noise generation. For the same reason, the effect of including the CSSR option on combined noise levels would also be less than significant.

Combined Groundborne Vibration Levels – TRRP. The only notable source of ground vibration in the vicinity is the Tajiguas Landfill. All of the residential receiver locations are at distances from the landfill, and from the TRRP component locations, that vibration levels are reduced to a very small fraction of even the most conservative criteria for this issue. Combined groundborne vibration effects from the landfill plus the TRRP components will be less than significant.

Combined Groundborne Vibration Levels – TRRP and CSSR Option. Construction and operation of the CSSR component will not have effects discernible from the equipment operation at the TRRP already considered. For this reason, the conclusions above related to

groundborne vibration will remain valid and the effect of including the CSSR option on cumulative groundborne vibration will be less than significant.

E. Cumulative Impacts

According to the Cumulative Projects Map included as Figure 7, the Proposed Project is over three miles distant from many other major projects in the county. At this distance, due to geometric divergence and other sound attenuation factors such as air absorption, ground absorption and intervening terrain, there is no expectation of a significant cumulative noise impact at a receiver due to the combined noise of the Proposed Project and the nearest other major project.

However, there are a few projects in the vicinity (less than 2 miles distant from the Proposed Project area [approximated as red-shaded box] as shown in Figure 7) of the Proposed Project as follows:

- Bean Blossom residences – Lot H and Lot X;
- Shell/Hercules Remediation and Slope Stabilization; and,
- Simon Residence

At distances less than two miles to the aforementioned noise-sensitive land uses studied with respect to the Proposed Project, construction activity noise emission from these other projects (when they occur) may be audible under the right conditions, but would be temporary in nature. Post-construction, and with respect to anticipated activities or operations, the three residential projects would be expected to have a less than significant cumulative increase on the ambient sound environment—especially due to the existing dominance of nearby US Highway 101 traffic noise.

The Shell/Hercules Remediation project, for which the Remedial Action Plan (RAP) is under review and due to be amended in 2014, may involve ongoing construction-like activity for its expected duration and may thus have some cumulative effect on the ambient sound environment. But like the residential projects, this remediation project is located near US Highway 101 that produces the dominant noise source. While it is not known at this time what noise-producing activities and processes are involved for the RAP, when such details are available a predictive study may be made to assess its potential noise contribution to the ambient sound environment. Cumulative noise increase could then be evaluated per the County 65 dBA CNEL criterion and the FICON-based increase over ambient thresholds mentioned in Section II.D.

December 2012
Project No. 1202.0792

TAJIGUAS LANDFILL

LEGEND

- A SAN JOSE CREEK BIKEWAY SOUTH
- B FOWLER ROAD AND EKWILL STREET EXTENSION
- C SANTA BARBARA COUNTY RAIL SIDING PROJECT
- D HOLLISTER AVENUE IMPROVEMENTS
- E BEAN BLOSSOM LOT H RESIDENCE
- F BEAN BLOSSOM LOT X RESIDENCE
- G EL CAPITAN CANYON CAMPGROUND RELOCATION AND DEVELOPMENT
- H GAVIOTA MARINE TERMINAL AND OIL STORAGE TERMINAL DEMOLITION
- I HART FARM EMPLOYEE DWELLING
- J HART SINGLE-FAMILY RESIDENCE
- K LARRAIDE RESIDENCE
- L LAS VARAS/EDWARDS RANCH
- M PARADISO DEL MARE OCEAN AND INLAND ESTATES
- N SANTA BARBARA RANCH
- O SCHULTE/DOS PUEBLOS RANCH LOT LINE ADJUSTMENT
- P SIMON RESIDENCE
- Q STOLTMAN RESIDENCE
- R ZACARA RANCH DEVELOPMENT
- S CANADA EL CAPITAN OAKS
- T SOUTHERN CALIFORNIA GAS STORAGE ENHANCEMENT PROJECT
- U GAVIOTA HOLDINGS HABITAT RESTORATION
- V SHELL HERCULES REMEDIATION
- W BARON RANCH TRAIL EXTENSION
- X GAVIOTA CURVE REALIGNMENT

NORTH
1" = ~1.5 Mile

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County of Santa Barbara Public Works
TRRP Cumulative Projects
Santa Barbara County

URS Corporation

Source: [1] Padre Associates, 2012.

Figure 7. Tajiguas Resource Recovery Project Cumulative Projects Map

2013

IV. MITIGATION MEASURES

The potential noise and vibration impacts discussed above were determined to be less than significant (Class III) without any mitigation. No unique or special aspects of project design were assumed beyond the elements of the TRRP as described in the Introduction and elsewhere in this noise assessment study.

For the Energy Facility, these elements included (or assume, at this stage of Proposed Project design development):

- CMU building enclosure for the two Jenbacher engines with anticipated noise reduction (NR) performance as shown in Table 9.
- A metal roof featuring typical thermal insulation (e.g., glass fiber) or sandwich panel construction so that its effective noise reduction would differ from that of the southern wall (which contains the aforementioned double-door and sound-attenuated air intake vents of a face area sufficient for interior air changes) by no more than 5 dB.
- Engine exhausts feature design elements such as robust high-performance silencers, with expected dynamic insertion losses (DIL) that appear in Table 10.
- The double door shown in the Project Description drawings would be expected to have relatively high sound transmission loss (TL) and likely feature acoustical gasketing so that it would not degrade the composite TL of the building façade on which it is installed. The ventilation openings (one on each of two adjoining walls) would feature (at a minimum) an 8” deep acoustical louver with face area that does not exceed 0.5% of the building façade surface area.

Should project features or elements like these that influence noise-reducing performance of the Energy Facility building envelope be different from these understood conditions and/or assumptions as Proposed Project design further develops, the analysis of the Energy Facility should be revisited to ascertain any changes to its acoustical contribution to the aggregate of TRRP operations noise.

V. ALTERNATIVES

Alternative 1 – No Project

Under this alternative, the Tajiguas Landfill would continue to operate until its estimated closure in 2026 and would continue to have less than significant noise effects as described in the prior EIR prepared for the landfill reconfiguration (Santa Barbara County 2009). Because waste would continue to be generated from the communities served by the landfill, another waste management strategy would need to be pursued. In absence of the proposed Tajiguas RRP, the possible alternatives would be an expansion of the Tajiguas Landfill to provide additional capacity or exportation of the waste to other landfills (i.e., Simi or Santa Maria). These alternatives are discussed below.

Alternative 2A – MRF at MarBorg Industries Site (Quinientos St. and S. Calle Cesar Chavez) and ADF at Tajiguas

Alternative Description and Setting

This Alternative would involve construction and operation of the proposed MRF component of the Resource Recovery Project (including processing of CSSR) at a site owned by MarBorg Industries at the east corner of Quinientos Street and Calle Cesar Chavez located in the City of Santa Barbara (street address 620 Quinientos Street, Santa Barbara, California 93103). The MRF would be located on several parcels (APN 017-113-025 to -028 and a portion of -031) encompassing a total area of 4.19 acres. Figure 8 shows a proposed plan view of the MRF on the site.

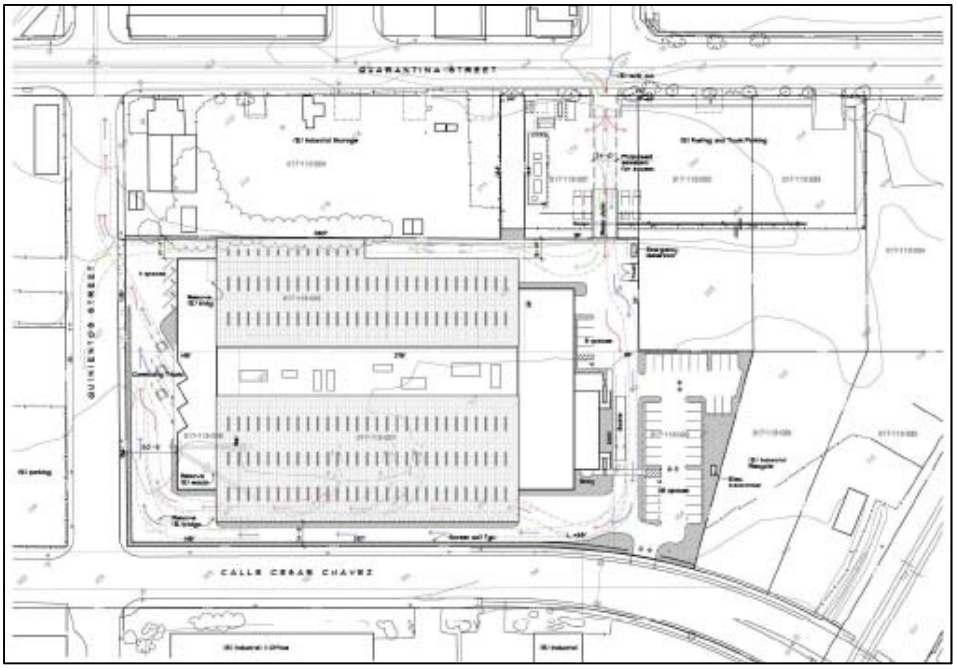


Figure 8 – MRF at MarBorg Industries Site (Source: LMA Architects, 2013)

Current uses of the proposed site include a 1.1 acre green-waste chipping and inert materials processing facility, a Portland cement concrete batch plant for ready-mix concrete (leased to Vulcan), vehicle and equipment storage and inert material storage. Additionally, Lash Construction is a concrete, paving, and asphalt contractor that leases part of the property. MarBorg Industries green-waste and inerts processing facility operates under a Notification Tier Solid Waste Facility Permit.

The proposed 4.19 acre site is currently developed with approximately 11,000 sf of structures and the remaining areas of the site are paved. The proposed site is zoned M-1/SD-3, Light Manufacturing with Special District 3 overlay (Coastal Zone). Most of the surrounding properties are also zoned M-1 and are used for storage, offices and/or light industrial use. The parcels located across Calle Cesar Chavez are zoned OM-1 and uses include the Whitcraft Winery and West Marine, a boating parts and accessories store. The proposed site is located approximately 700 feet southeast of MarBorg Industries Construction and Demolition Materials Recovery and Transfer Facility. There are several older residential buildings in the vicinity, most of which have been converted to other uses such as offices.

There are residential land uses to the northeast of the site along Nopalitos Way, as depicted in Figure 9, which is a close-up portion of Figure 10 that reproduces Figure 12.1 of the Plan Santa Barbara Program EIR (City of Santa Barbara, 2010). For reader convenience, the Legend from Figure 10 appears in Figure 11.

The outdoor noise environment in this area is typically loud and complex, being dominated by roadway traffic on local streets, with various contributions from industrial activities in the area and from traffic along US Highway 101 north of the site. On December 8, 2012, a brief walking survey along S. Quarantina Street and Quinientos Street recorded an Equivalent Noise Level (L_{eq}) of about 67 decibels (dBA) along the sidewalks. One-minute L_{eq} values during this survey ranged as high as 69 dBA, which is generally consistent with the depiction of existing noise contours in the area, shown in Figures 9 and 10 (and the Legend for both in Figure 11). While these three Figures indicate that existing noise over the area of the alternative MRF site ranges from 60-65 dBA CNEL, the aforementioned residences adjacent to Nopalitos Way are within the >70 dBA CNEL region that encompasses the area immediately surrounding U.S. Highway 101.

Policy ER26.1 in the General Plan Environmental Resources Element (City of Santa Barbara 2011a) suggests that the maximum value for the Ldn or CNEL that is normally acceptable for outdoor living areas in residential uses located in non-residential zones should be 65 dBA. This value is higher than the 60 dBA recommended for residential uses in general found in the 1979 Noise Element (reproduced in the 2011 Environmental Resources Element starting at Santa Barbara 2011:93), and may be used as a guide to judge the significance of noise levels associated with roadway traffic and other ambient sources affecting existing residential uses in this industrial area. As previously mentioned in Section II.E of this report, Section 9.16.025 of the City of Santa Barbara noise ordinance (City of Santa Barbara, 2009b) stipulates that non-vehicle mechanical noise is limited to 60 dBA CNEL at a neighboring property line of a parcel either zoned or used for residential purposes. However, this noise impact analysis will use the

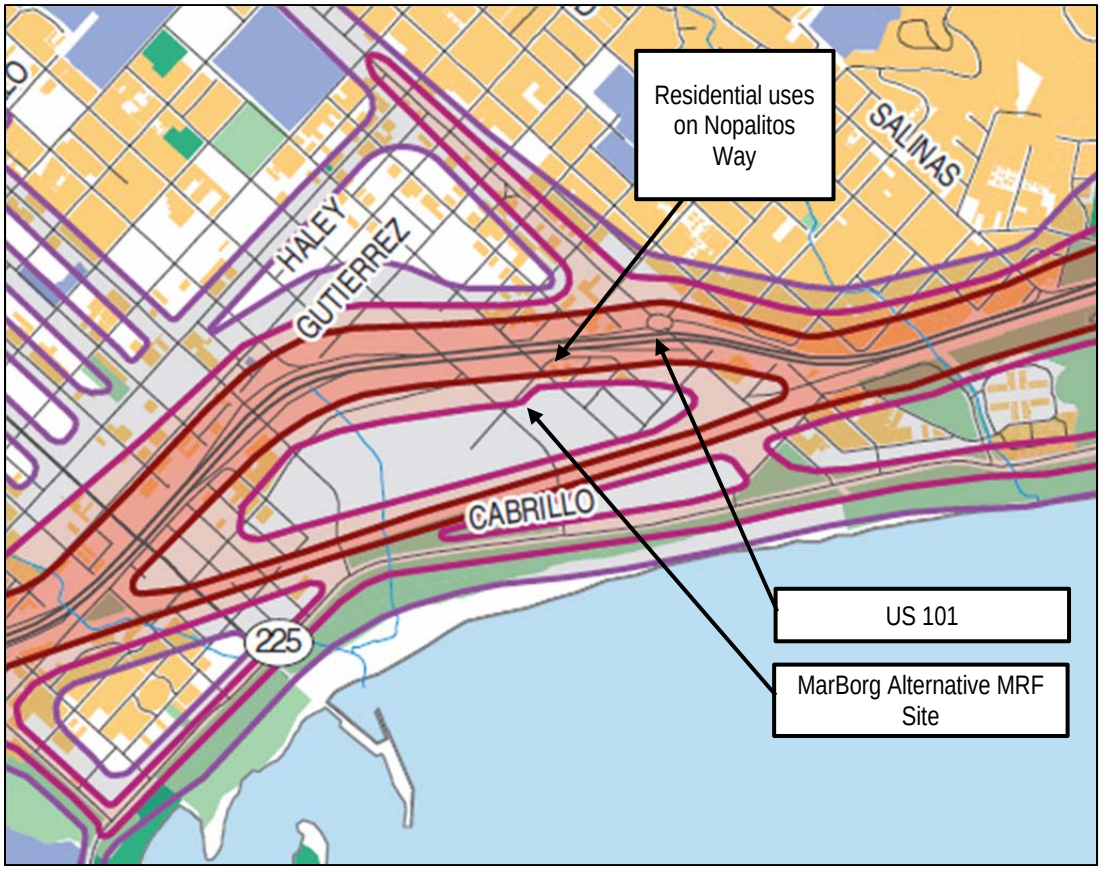


Figure 9 – Existing Noise Contours in the Vicinity of MarBorg MRF Alternative (Source: Plan Santa Barbara EIR, 2010)

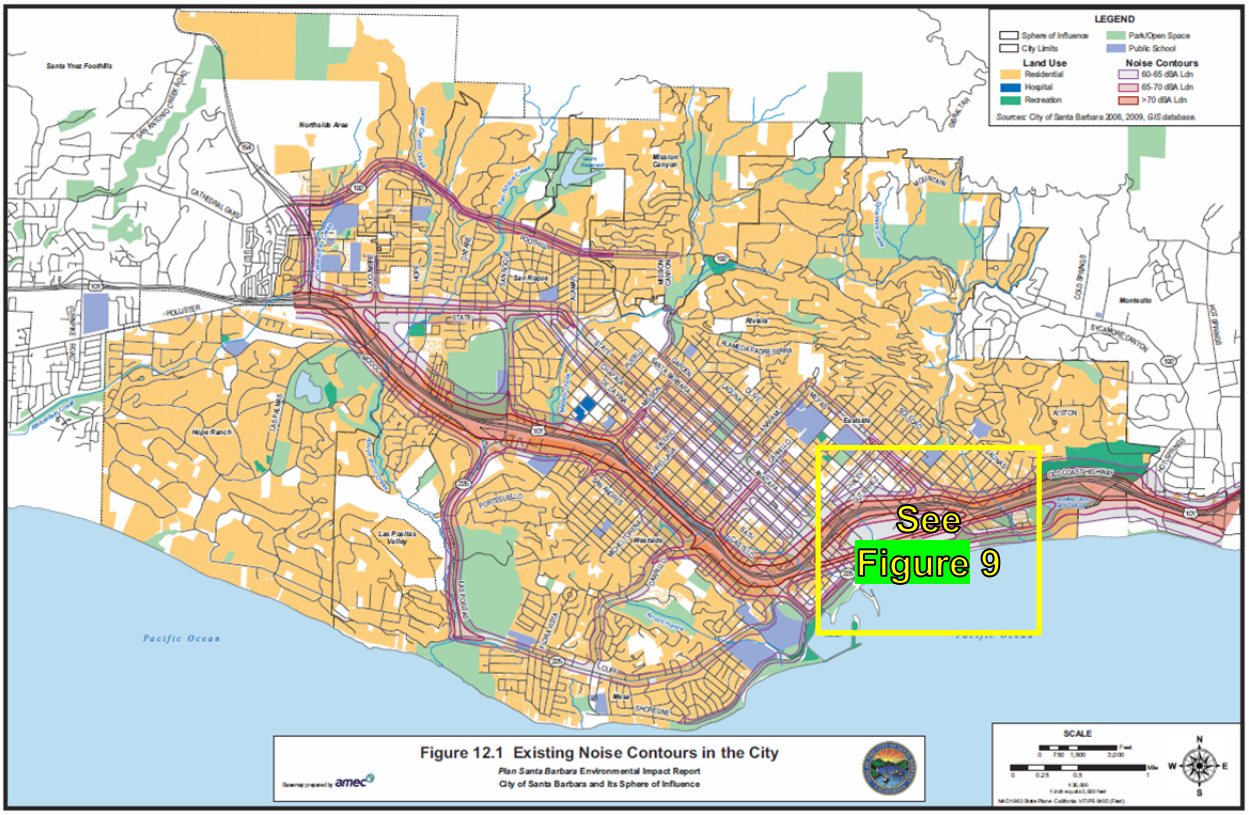


Figure 10 – Existing Noise Contours (Source: Plan Santa Barbara EIR, 2010)

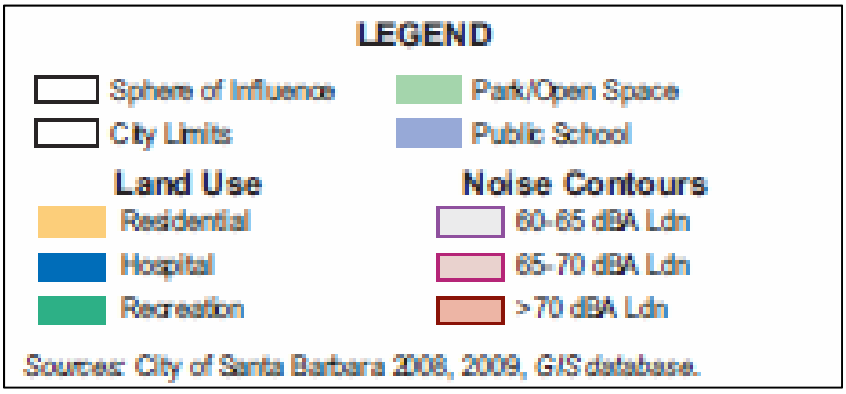


Figure 11 – Existing Noise Contours Legend (Source: Plan Santa Barbara EIR, 2010)

proposed 65 dBA CNEL limit for impact assessment at residential receivers as suggested by Policy ER26.1, and 70 dBA Ldn (comparable to 70 dBA CNEL) for transient lodging land uses.

Noise Assessment

Traffic Increase Noise Analysis

Using data from the traffic study (ATE, 2013), comparison of Figures 12 and 13 show that development of the MRF at this alternative location will only slightly increase peak hour traffic volumes on local streets.

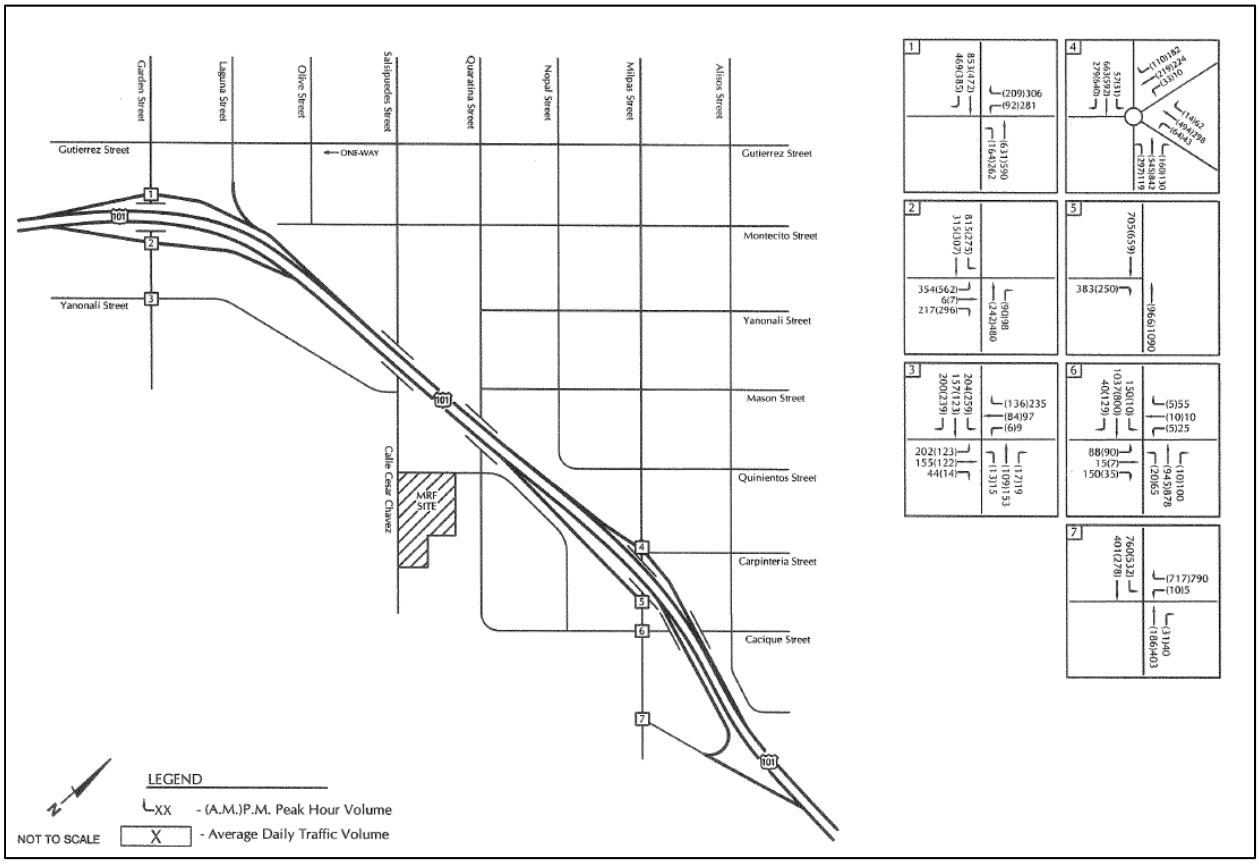


Figure 12 – Existing Traffic Volumes in Vicinity of MarBorg Site (Source: ATE, 2013)

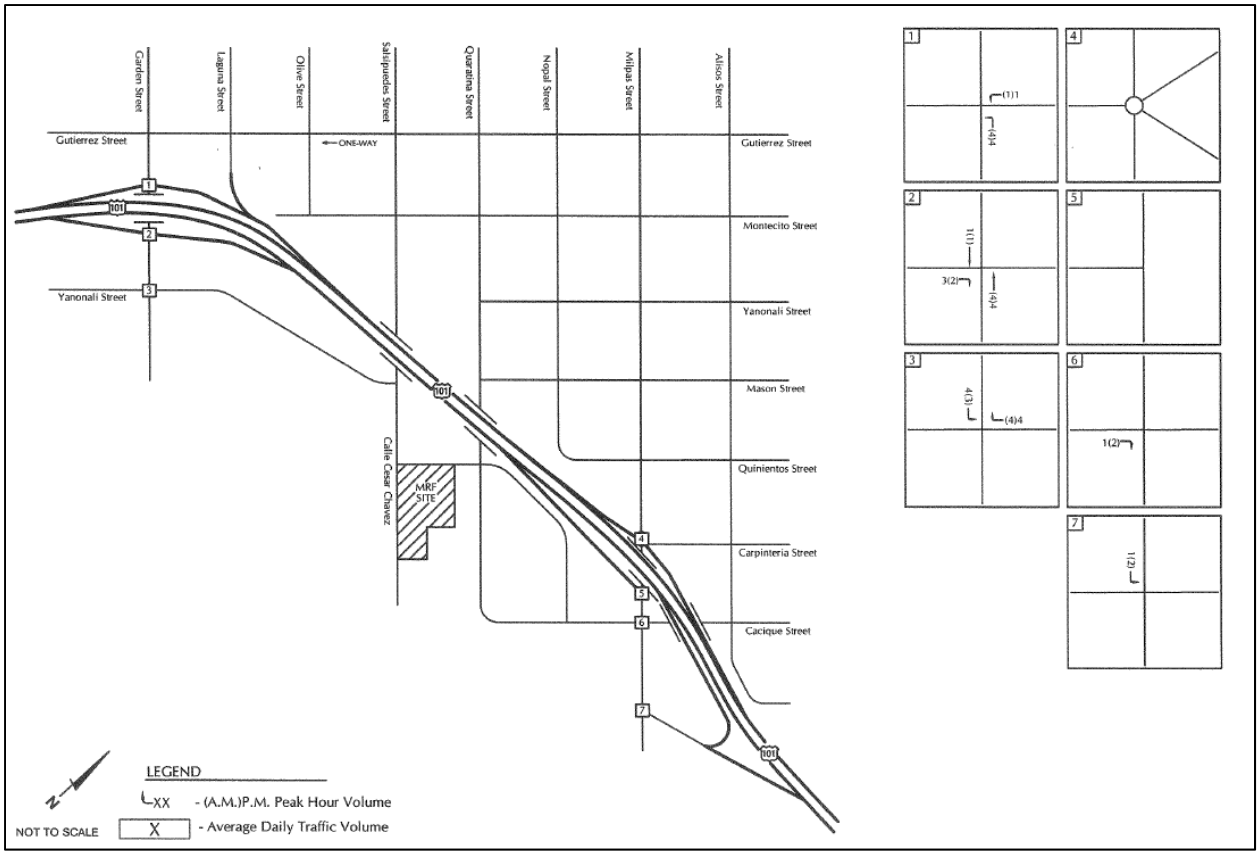
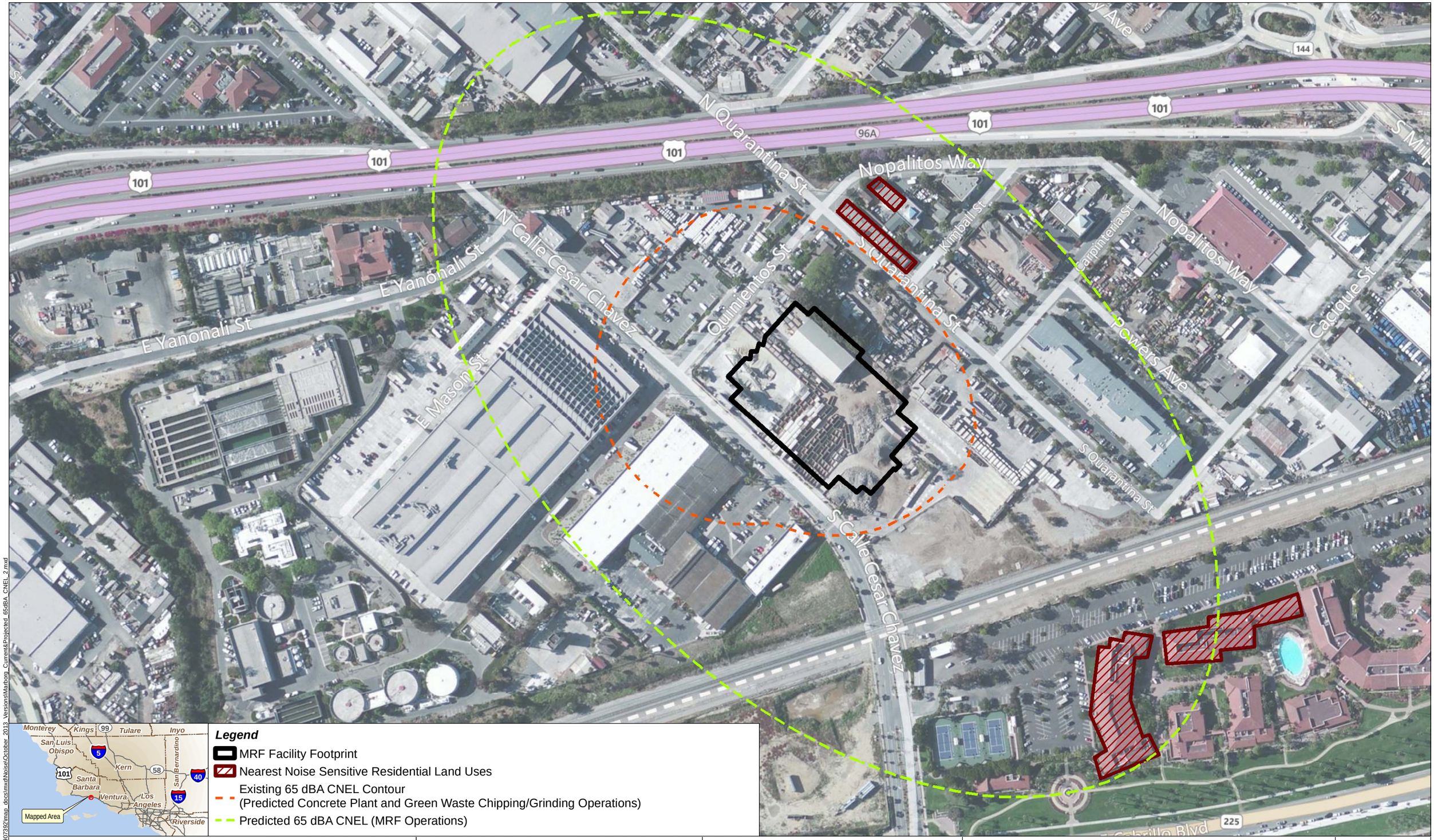


Figure 13 – Project-Added Traffic Volumes in Vicinity of MarBorg Site (Source: ATE, 2013)

The project-added peak hour traffic volumes associated with the MRF located at the MarBorg site represent much less than a 10% increase and are therefore not expected to cause more than a 1 dBA increase in traffic noise level. As existing traffic noise levels are already in excess of 65 dBA CNEL at the nearest residential land uses, this increase would be considered less than a significant impact.

Replacement of Existing Land Use Noise Sources

As a result of the proposed MRF installed at this MarBorg site, the enclosed green-waste chipping and inert materials processing facility (currently permitted for wood debris chipping and grinding operations) and the exposed Vulcan concrete batch plant currently operating on this MarBorg site would be removed. Thus, the predicted noise from these existing operations, including acoustical contribution from a “concrete batch plant” and “concrete mixer truck” using reference sound power and acoustical usage factor data from the RCNM User’s Guide (FHWA, 2006), and a wood chipper (Berger, 2010) and grinder (Padre, 2008) is depicted on Figure 14 and would be replaced by estimated noise from the MRF, which is also depicted on Figure 14 as a future 65 dBA CNEL contour.



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County of Santa Barbara Public Works
Urban Area MRF Alternative 1 (MarBorg Industries Site)
Santa Barbara County

URS Corporation

Source: [1] Microsoft Bing Map Mosaic for ESRI (Aug, 2010), [2] Parcels: Santa Barbara County Clerk-Recorder-Assessor Map Division 2008

Figure 14. Tajiguas Resource Recovery Project
Alternative 2A MarBorg MRF Alternative
Current and Projected
65 dBA CNEL Contours

2013

Predicted MRF Operation Noise

While the MRF is a large metal-framed building with solid surfaces, net building noise reduction is conservatively expected to be low due to the quantity of open roll-up doors and other means of building ingress and egress (both for personnel and the flow of material and vehicles into and out of the structure). This is particularly true for predicted MRF aggregate noise emission in the northwest and southeast directions, on which these openings of the MRF facades directly face the surroundings. However, noise emission from the MRF facility is generally expected to be somewhat less in the northeast and southwest directions, owing to the lack of openings on these building facades that directly face these directions and the corresponding phenomenon of sound diffraction. These details are illustrated in Figure 15, with openings highlighted in yellow boxes.

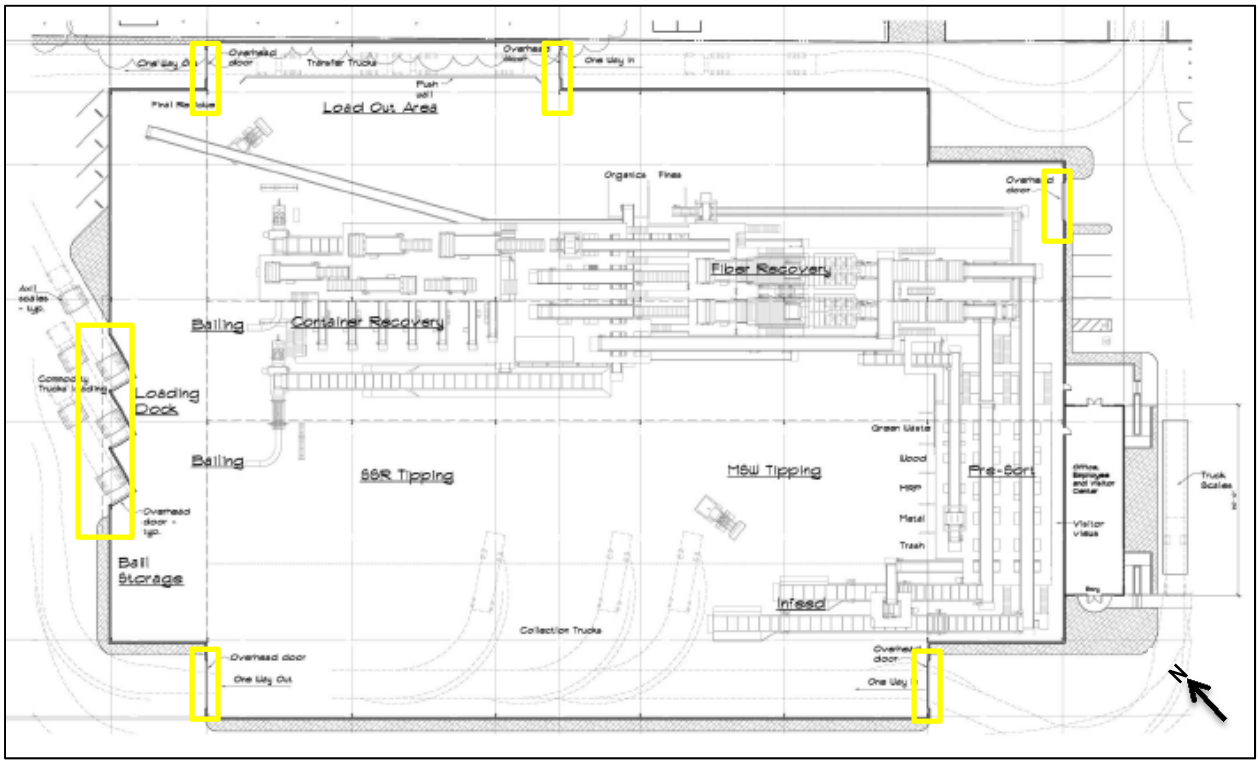


Figure 15 – Locations of Openings at Proposed MRF for MarBorg Site (LMA Architects, 2013)

In other words, one would expect building noise reduction on the NE and SW noise emission paths, but not the two others. In contrast, the MRF building has openings on three of the four directional facades (north, east and south) but not the west.

The composite predicted noise emission from MRF operation is shown on Figure 14, where the resulting distance to a 65 dBA CNEL operations noise contour is somewhat shorter in the NE and SW direction than it is in the other two directions. MRF operation noise for this alternative was modeled in the same way as the Project, but with sound diffraction above added to the NE

and SW propagation directions as a -5 dBA adjustment (Beranek and Ver, 1992). At the nearest noise-sensitive receiver, a residential use on the southeastern corner of South Quarantina Street and Nopalitos Way, only 200 feet from the northeastern façade of the MRF, the MRF operations noise level is predicted to be approximately 73 dBA CNEL. While this level may be comparable to existing ambient outdoor sound, dominated by US Highway 101 surface traffic noise, it would exceed the 65 dBA CNEL threshold.

At another noise-sensitive receiver, the nearest building façade of the Fess Parker Santa Barbara Hotel (located a distance of approximately 680 feet from the southeastern end of MRF building), the MRF operations noise level is predicted to be approximately 67 dBA CNEL, which would be below the City's threshold of 70 dBA Ldn exterior threshold for "transient lodging".

Potential Sound Abatement Concept for MRF

Because the duration of MRF building overhead door closure necessary to reduce noise levels is considered impractical, a possible mitigation measure would be installation of barrier walls (numbered orange blocks with black outline) along portions of the northeast and southeast perimeters of the site as suggested in Figure 16.

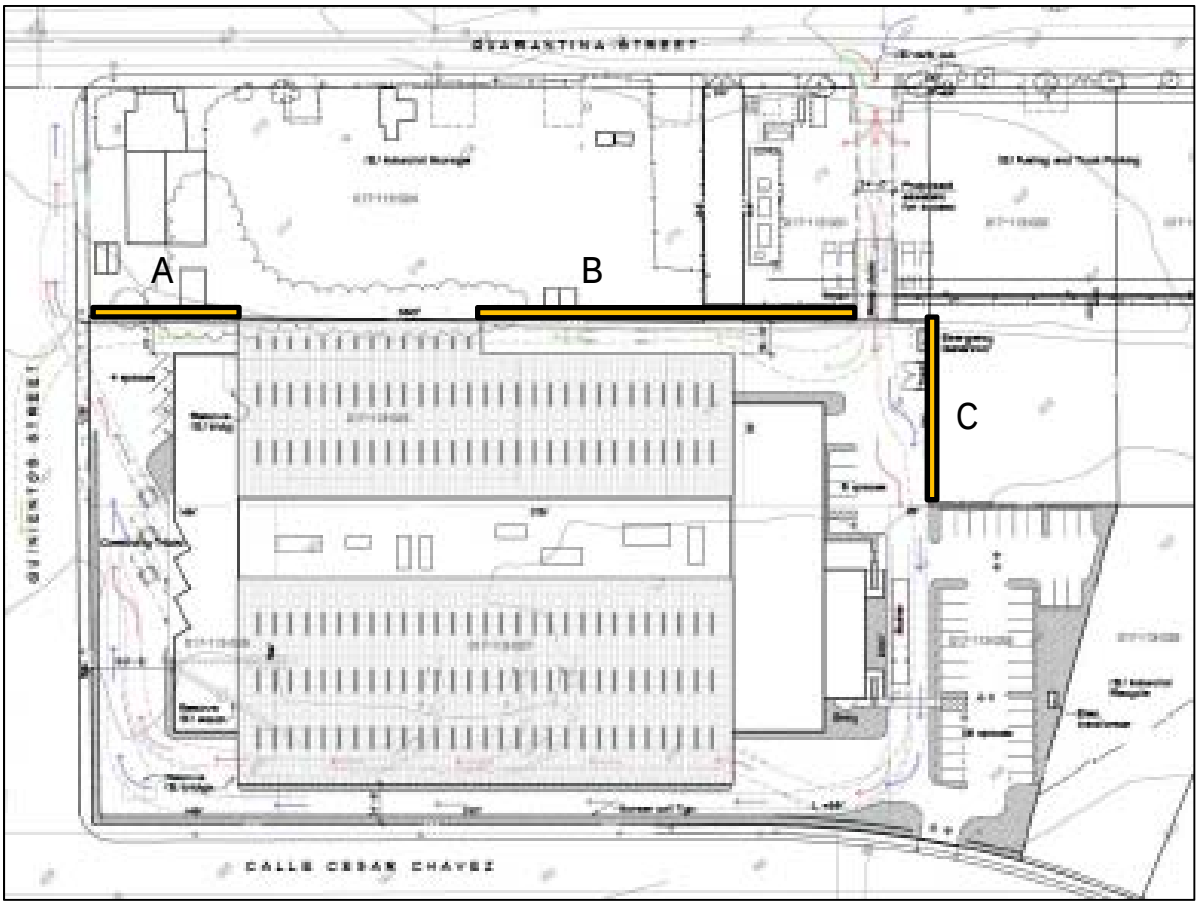


Figure 16 – Potential Noise Barrier Locations for the Proposed MRF at MarBorg Site Alternative (LMA Architects, 2013; URS, 2013)

To be effective, the potential barriers would have to provide linear occlusion (i.e., line-of-sight block) between the MRF building roll-up doors and the two nearest identified residences, which means they may need to be as tall as twenty feet (20'), if not more. To reduce sound reflection off the barrier surfaces that face the MRF, acoustically absorptive materials should be considered as a wall facing (or are integral to the barrier design, should panel-type barriers be considered). Unlike barrier C, which would need to be a self-supporting solid wall, barriers A and B might alternately be extensions of the MRF building's northeast-facing façade. The detailed design of these barriers, including final locations, extent, height, materials, and structural supports are beyond the scope of this noise study.

Predicted Noise from MRF Construction

Construction of the MRF building and installation of its systems will likely entail trucks and other heavy equipment for a temporary period of time. Using techniques adopted by the FTA (2006) and the Bureau of Land Management (BLM), one can assume that construction noise can be generally be represented by the operation of two loud vehicles or machines.

In summary, construction of the MRF is projected to take approximately 16.5 to 17 months to complete and would include demolition or removal of existing structures and paving, site preparation and grading, foundation pile-driving, MRF building erection and the installation of its equipment and systems. Of these, daytime-only (e.g., 7 a.m. to 4 p.m.) pile-driving would be the loudest and expected to emit 90 dBA CNEL at a distance of 50 feet. Propagating from as close as the nearest MarBorg site property line, this predicted construction noise would thus yield 67 dBA CNEL at the Fess Parker Hotel building façade, and 73 dBA CNEL at the nearest residence on Nopalitos Way. Noise from other construction activities, such as a dump truck combined with a hoe-ram or pavement scarifier operating during the same daytime period, would only be as loud as 79 dBA CNEL at 50 feet. At these same two noise-sensitive receivers, the nearest Fess Parker Hotel building façade and the residence on Nopalitos Way, the combined noise level from this non-pile-driving construction vehicle pairing would be 56 dBA CNEL and 62 dBA CNEL, respectively.

Were one to apply the same 65 dBA CNEL exterior sound level threshold to protect residences from construction noise, as described in construction noise mitigation measure "N-6" detailed in the Hillside House Project Initial Study (City of Santa Barbara, 2009) and re-iterated in the Hillside Project Draft Environmental Impact Report (City of Santa Barbara, 2011b), the predicted pile-driving noise levels indicate impacts would occur at the residence on Nopalitos Way. To reduce this predicted pile-driving noise to compliant levels, temporary noise barriers (see Figure 17 for an example) should be considered. The detailed layout of these barriers, including final locations, extent, height, materials, and structural supports are beyond the scope of this noise study.

Noise Emission from the Tajiguas Landfill

With the MRF located at the MarBorg site, and with only the AD, the associated Energy Plant, and the Composting Area added to the Tajiguas Landfill operations as major noise-producing

Figure 17 – Sample Temporary Construction Noise Barrier (URS, 2012)

sources, no significant alteration of the 65 dBA CNEL combined (i.e., existing landfill plus TRRP facility components) facility operations noise contour would be expected (see Figure 22).

Cumulative Impact Analysis

With respect to other projects that are proposed or currently being developed, the dissipative nature of noise emission (i.e., it attenuates geometrically with distance, until sound from a source becomes indistinguishable from, and joins, the background that one may hear or measure as part of the ambient sound environment) suggests that cumulative project noise is unlikely to be a significant effect. The degree of effect would depend on a number of factors as follows:

- Timing of construction associated with another project, and its concurrence with construction of the MRF at this alternative site;
- Proximity of another project with respect to a noise-sensitive receiver location; and,
- Intensity and type of noise emission associated with the other project, for both temporary (e.g., construction) and non-temporary (e.g., post-construction processes, operations, HVAC, added traffic, etc.).

By way of example, according to current residential and non-residential development project status lists (City of Santa Barbara, 2013), there are a few projects within a quarter-mile of either

the MarBorg site or the nearest identified noise-sensitive residential land uses along Nopalitos Way, summarized as follows:

- 1 N Calle Cesar Chavez 102 – approved proposal to reconfigure parking and add commercial space. (The site is across the street from the MarBorg site.)
- 134 South Milpas St. – pending one-story addition to a fuel station and mini-mart.
- 224 South Milpas St. – approved proposed permit for approximately 2,500 square feet of "as-built" dwelling unit within an existing commercial property.
- 714 Cacique St. – building permit issued for modular unit on storage yard.
- 800 Cacique St. – building permit issued for installation of a paint spray and drying booth.

At distances less than a quarter-mile to the aforementioned noise-sensitive land uses, construction noise emission from these other projects may be audible under the right conditions, but would be temporary in nature. Post-construction, and with respect to anticipated activities or operations, these projects appear to be similar in nature to those of existing commercial and industrial land uses and would thus be expected to have a less than significant cumulative increase on the ambient sound environment—especially due to the existing dominance of roadway traffic noise. Construction and subsequent operation noise from projects that are more distant (i.e., greater than ¼-mile) would not be expected to have significant cumulative contribution to the ambient sound environment of the MarBorg site or the nearby residential land uses on Nopalitos Way.

Alternative 2B – Alternative Urban Location (South Coast Recycling Transfer Station [SCRTS])

Alternative Description and Setting

This Alternative would involve construction and operation of the MRF component of the Resource Recovery Project at the existing County-owned and operated South Coast Recycling and Transfer Station (SCRTS) site located at 4430 Calle Real in Santa Barbara, California. Under this Alternative the MRF would be integrated with the existing solid waste operations at the SCRTS. Similar to the proposed project, the AD Facility would be located at the Tajiguas Landfill, with disposal of residual waste also at the Tajiguas Landfill.

The SCRTS receives commercial roll-off containers, as well as waste brought in by residents and small, non-franchised haulers (e.g. landscapers). The permitted traffic volume is 767 vehicles/day. Commodities salvaged from the waste stream entering the SCRTS include scrap metal & white goods (major appliances), green and urban wood waste, tires, high grade metals (copper, brass, aluminum), construction and demolition debris (rubble, drywall, carpet, dirt wire, foam pad, ABS plastic), cardboard and paper, cathode ray tubes and other electronic waste.

The permitted operating hours are Monday through Saturday from 7:00 a.m. to 5:00 p.m. with the exception of New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving

Day, and Christmas Day. The facility is operated by a daily staff of 26 employees consisting of supervisors, truck drivers, checkers, maintenance workers, shop and scale personnel, mulch personnel, contract laborers and a contract falconer.

With the exception of small storage trailers, administration building/trailers and maintenance and tire shops, the site is uncovered and all waste handling occurs outdoors. A tipping floor cover structure (approximately 15,840 sf core building with a 35 foot wing on east side and 60 foot wing on the west side) to protect surface water quality was approved, but was never constructed. A storm water clarifier was installed in September 2004 as an alternative to constructing the cover structure. Access to the site is from Calle Real. Primary routes of delivery to the site include: U.S. 101/El Sueno Road interchange, U.S. 101/Turnpike Road interchange, Cathedral Oaks Road, Highway 154 between Cathedral Oaks Road and Calle Real.

SCRTS has been in operation since 1967, and features a solid waste operations area located on 8.3 acres in the central portion of a larger 143.48 acre publicly owned parcel (APN 059-140-023) containing other public and non-profit uses (e.g., County Road Yard, a Corporation Yard which serves General Services and Flood Control, Growing Solutions Restoration Education Institute, a non-profit native plant nursery, and Hearts Therapeutic Equestrian Center, an non-profit therapeutic riding program). The alternative site and surrounding lands are all zoned for recreation (REC zone). There are, as shown in Figure 18, nearest residentially-zoned land uses to the east (westerly adjoining El Sueno Road, zoned 10-R-1) and west (just east of the intersection of Camino Del Remedio and Oak Glen Drive, zoned DR-8) of the potential MRF site. Non-residential land uses bordering SCRTS include the Santa Barbara County Jail and Santa Barbara County Health and Social Services training buildings.

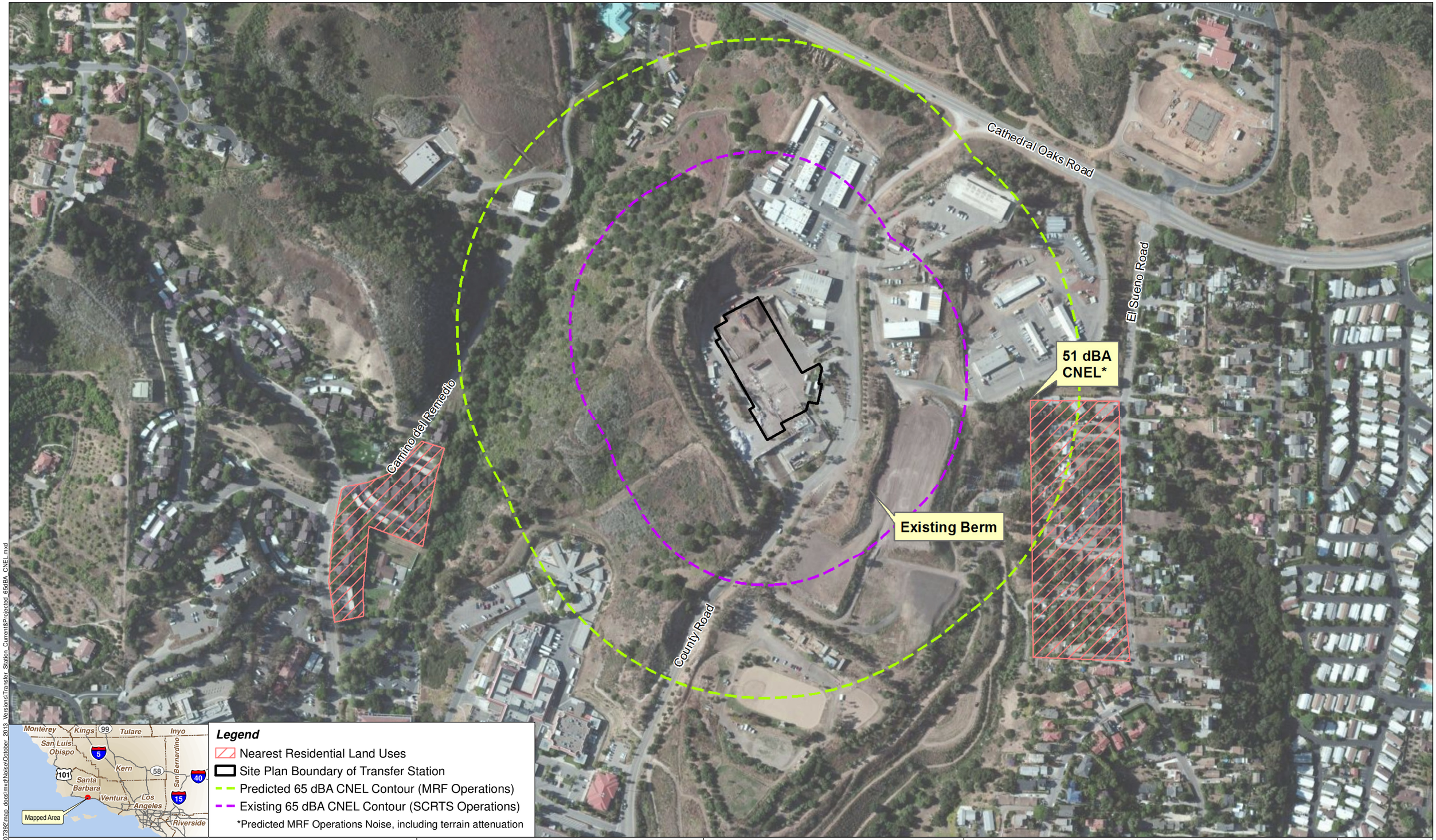
Noise Assessment

Existing Ambient Sound Environment

The existing outdoor noise environment in this area is expected to include 55-60 dBA CNEL from roadway traffic noise on Cathedral Oaks Road to the north and more importantly US Highway 101 to the south, based on surface transportation noise estimation methodology from the Federal Transit Administration (FTA) Transit Noise and Vibration Assessment Guidance document (FTA, 2006). Noise emission from HVAC, other mechanical systems, and human activities located at the surrounding aforementioned residential and non-residential land uses would also contribute to the ambient sound environment and might raise the CNEL somewhat further. Table 14 reproduces SPL measurements that were performed on December 21, 2007, which show various modes of SCRTS operation and the sound level at the nearest residential receiver to the east of the site.

Traffic Increase Noise Analysis

Using data from the traffic study (ATE, 2013), comparison of Figures 19 and 20 show that development of the MRF at this alternative location will only slightly increase peak hour traffic volumes on local streets.



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County of Santa Barbara Public Works
Urban Area MRF Alternative 2
(South Coast Recycling and Transfer Station [SCRTS])
Santa Barbara County

URS Corporation

Source: [1] Microsoft Bing Map Mosaic for ESRI (Aug, 2010), [2] Parcels: Santa Barbara County Clerk-Recorder-Assessor Map Division 2008

Figure 18. Tajiguas Resource Recovery Project Alternative 2B (SCRTS MRF Alternative) Current and Projected 65 dBA CNEL Contours (without terrain sound attenuation)

2013

TABLE 14
EXISTING AMBIENT SOUND ENVIRONMENT AT SCRTS SITE

Location	Scenario	Time Period	Noise Level (dBA Leq)
Transfer Station, near tub grinder	Ambient: tub grinder off, wheeled loaders in sorting area active	9:20–9:23 a.m.	52.6
Transfer Station, 15 meters from tub grinder	Tub grinder in warm-up mode, hydraulics and electric motors only, no grinding	9:32–9:42 a.m.	80.7
Transfer Station, 15 meters from tub grinder	Tub grinder in operation, mostly small limbs and foliage	9:47-10:01 a.m.	87.4
Transfer Station, 15 meters from tub grinder	Tub grinder in operation, mostly small tree limbs and foliage	10:07-10:27 a.m.	89.1
Nearest residence to tub grinder (830 feet to the east)	Ambient: normal Transfer Station operations, tub grinder operating, mostly wood	10:37-10:47 a.m.	42.9

Source: Padre (2008)

The project-added traffic volumes associated with the MRF located at the SCRTS site represent much less than a 10% increase and are therefore not expected to cause more than a 1 dBA increase in traffic noise level and thereby considered less than a significant impact.

Predicted MRF Operation Noise

While the MRF is a large metal-framed building with solid surfaces, net building noise reduction is conservatively expected to be low due to the quantity of open roll-up doors and other means of building ingress and egress (both for personnel and the flow of material and vehicles into and out of the structure). Please refer to Figure 21 for a plan view of the proposed MRF facility at the SCRTS site.

MRF operation noise for this alternative was modeled in the same way as the Project. Figure 18 depicts two 65 dBA CNEL noise contours:

- the estimated existing SCRTS operation noise, assuming the data and conditions from Table 14 are still valid; and,
- the estimated noise emission due to anticipated MRF activities.

As can be seen from Figure 18, the 65 dBA CNEL noise contour extends into residentially zoned land uses east of the SCRTS site. However, the prediction model for both existing SCRTS and MRF contours has conservatively neglected sound attenuation due to the following effects:

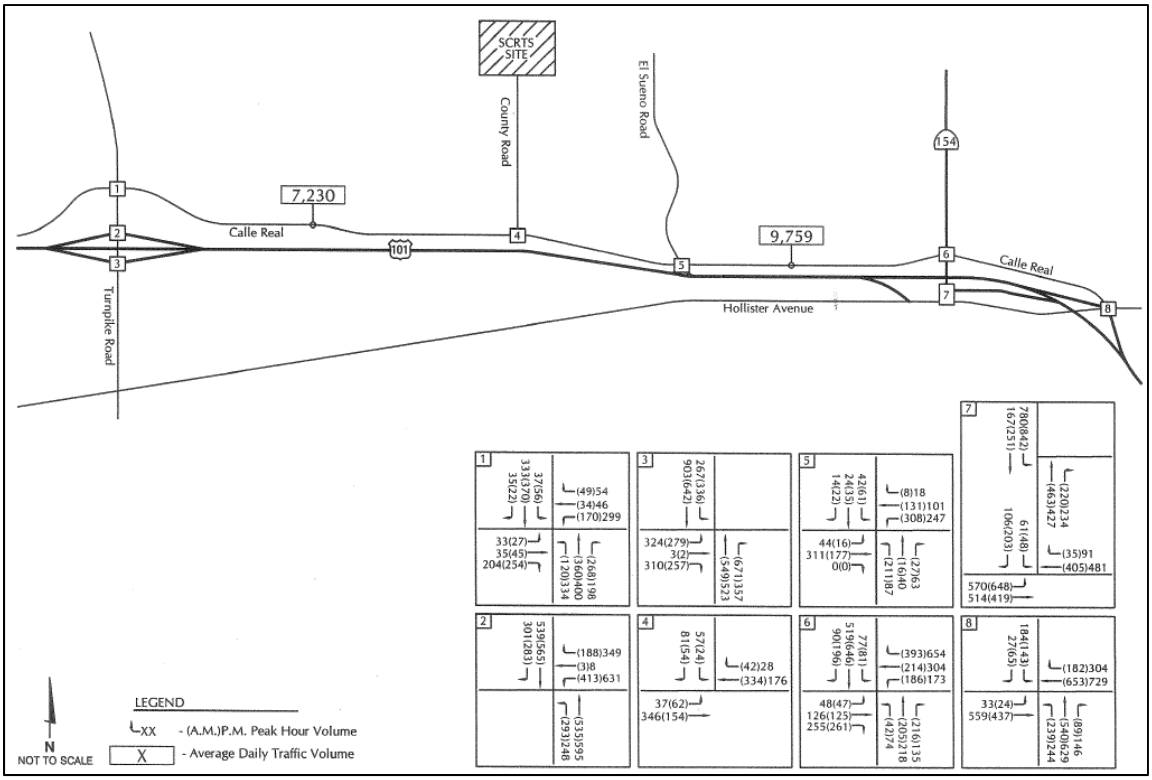


Figure 19 – Baseline Traffic Volumes in Vicinity of SCRTS Site (Source: ATE, 2013)

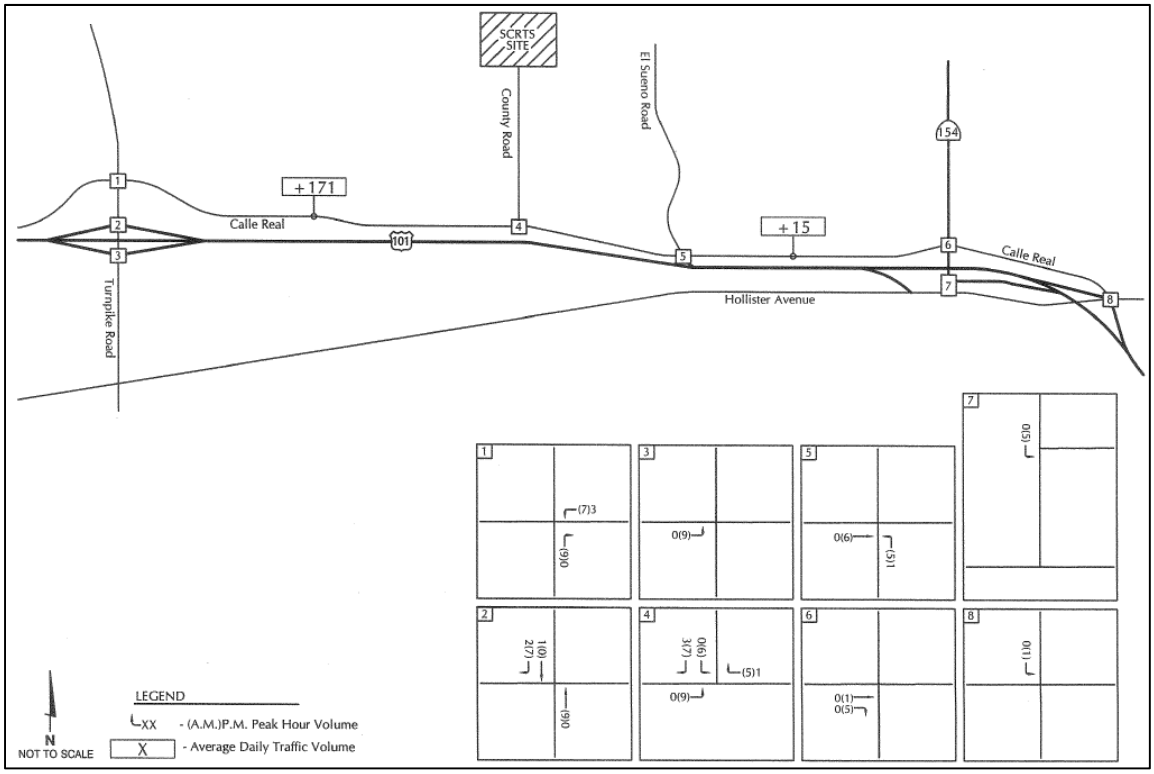
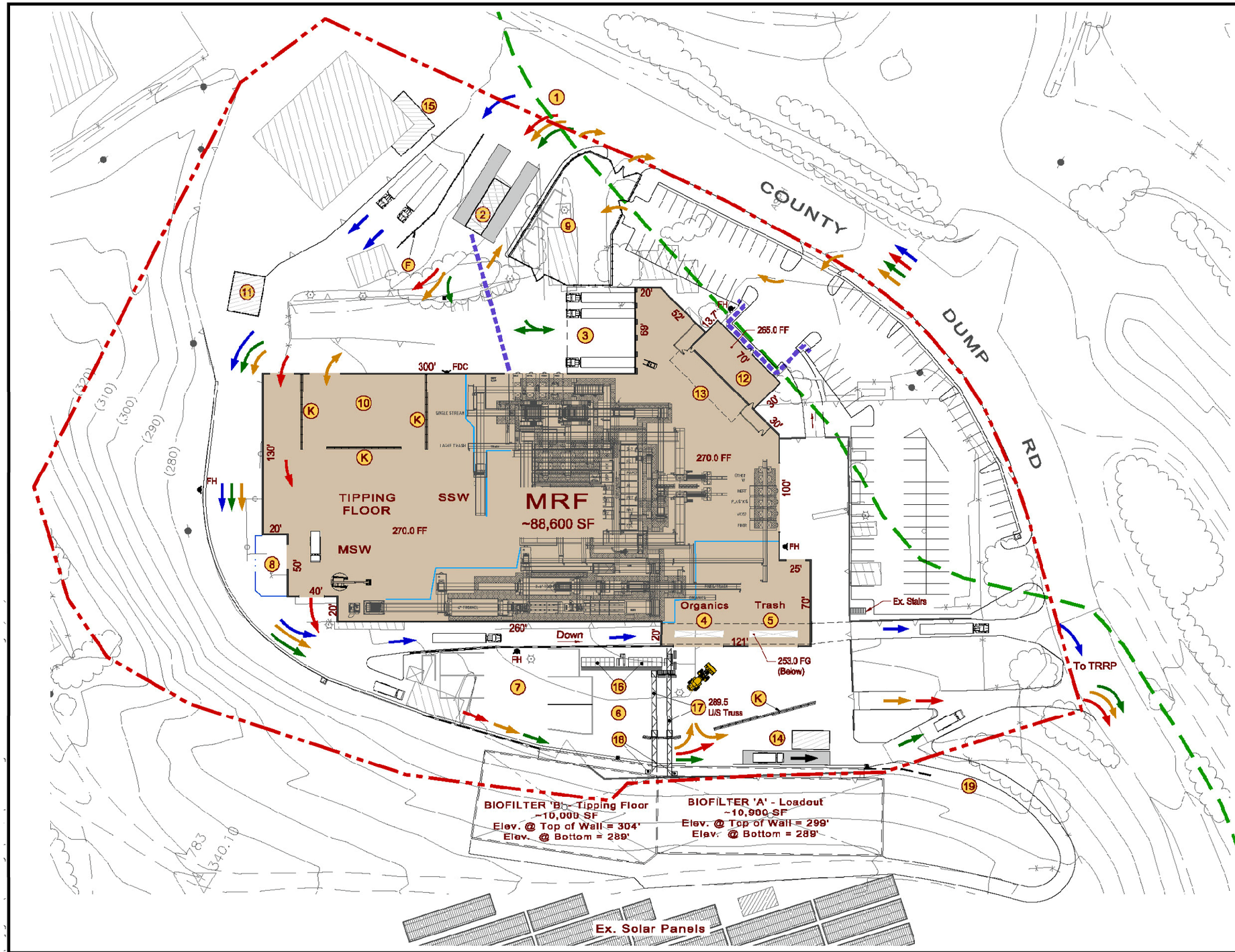


Figure 20 – Project-added Traffic Volumes in Vicinity of SCRTS Site (Source: ATE, 2013)



KEYNOTES

1. Entrance
2. Weigh Scales & Scale House (675 SF)
3. Recyclable Loadout Dock (with canopy or office over)
4. Organic Waste Loadout
5. Trash Loadout
6. Green Waste Drop-off & Mulch Area
7. Rubble
8. Various
9. Self-Recycleables, E-Waste & Universal Waste
10. Self-Haul Drop Off
11. Wash Rack
12. 3 Story Annex (offices, employee area, visitor center, 3rd floor is 50' x 70') Total Office 7,700 SF
13. Bale Storage (Office Above)
14. Weigh Scale & Scale House (450 SF)
15. 1 Story Additior to Maintenance Bldg. (~750 SF)
16. Dust Collection Units (2 - 26' x 7.5')
17. 3' Dia. Duct in 4' x 4' Box Truss (Overhead)
18. Humidification Units (2 - 3' x 4')
19. Biofilter Access Road (12' Wide, Paved)
- F. Proposed Fence
- K. Proposed K-Rail Barrier

LEGEND

- Existing SCRTS Permit Area (8.3 ac.)
- Reported Refuse Limit (Approximate)
- ADA Access Route
- Interior Partition Wall
- MRF Delivery
- Waste Loadout
- Recycleable Loadout
- Self Haul / Green Waste Delivery

Prepared by

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County of Santa Barbara Public Works
Urban Area MRF Alternative 2 (SCRTS)
Santa Barbara County

URS Corporation

Source: [1] John Kular Consulting, 2013.

Figure 21. Tajiguas Resource Recovery Project Proposed Materials Recovery Facility (MRF) at South Coast Recycling and Transfer Station (SCRTS)

2013

- air absorption (approximately -1 dBA per 1000 feet of sound travel);
- ground absorption (approximately 4 to 5 dBA reduction at distances of at least 250 feet, with the mean sound path height above ground no more than 5 feet; and,
- potentially intervening terrain (e.g., an existing earthen berm), which if depending on its location (with respect to noise source[s] and receiver), horizontal extent, vertical height, and composition (i.e., material density and porosity) might be expected to provide up to an additional 15 dBA of noise reduction.

These attenuation estimates are based on information and predictive calculation techniques from International Organization of Standardization (ISO) 9613-2:1996(E) (ISO, 1996).

By way of comparison, existing SCRTS operations noise as described in Table 14 appears to be as loud as 89 dBA Leq at a distance of approximately 50 feet, but attenuates to only 43 dBA Leq at the nearest residence 830 feet away. This 46 dBA difference, much greater than the 24 dBA expected from geometric divergence alone (for this 830-foot horizontal distance between the noise source and the receiver), suggests that linearly-occluding terrain features and other factors (including acoustical absorption due to air mass and ground surface) are providing additional noise attenuation as the sound from the SCRTS traverses the landscape. Indeed, as described in the Final Negative Declaration / Initial Study (95-ND-05, Santa Barbara County, 1995):

> *"Based on noise measurements conducted by the County, when the shredder was in operation, it appears that the berms provide a noise level attenuation of 20 dBA. With the berms in place, measured noise levels at residences along El Sueno Road are less than 50 dBA."*

According to the same document, these berms are 23 to 34 feet tall and serve as noise barriers for residences to the east of the SCRTS. Given their apparent noise-reducing performance of 22 dBA (i.e., 46 dBA total apparent attenuation minus 24 dBA due to geometric divergence alone) between the current SCRTS site and the residential receiver 830 feet to the east, the existing berms should similarly attenuate noise from the proposed MRF, which Table 6 indicates is predicted to exhibit 88 dBA Leq at 50 feet. Hence, at the same residential location 830 feet east of what would be MRF operations and with other conditions being comparable to what was present during the measurements displayed in Table 14, the expected noise level would be 42 dBA Leq, which results in much less than the 65 dBA CNEL criterion. Further, the expected increase over existing ambient would be slight or possibly even negative, based on anticipated MRF aggregate operations noise apparently being comparable to that of existing SCRTS operations (i.e., only 1 dBA different: 88 dBA Leq at 50 feet versus 89 dBA Leq at 50 feet). For both reasons, the MRF operations noise impact would not be expected to yield a significant impact.

Predicted MRF Construction Noise

Were the MRF to be built at this SCRTS site, construction activity noise generation would be less than 1,600 feet distant from the aforementioned nearest residential land uses to the east and west. In this event, and in compliance with SBC requirements, MRF construction would be limited to weekdays between the hours of 7 AM to 4 PM only.

For the same reasons as described above, the existing berms between the SCRTS area and the residences to the east should continue to provide significant noise attenuation and would reduce MRF construction noise by a similar degree. Hence, even during allowable daytime construction hours, noise is expected to be less than a significant impact.

Noise Emission from the Tajiguas Landfill

With the MRF located at the SCRTS site, and with only the AD, the associated Energy Plant, and the Composting Area added to the Tajiguas Landfill operations as major noise-producing sources, no significant alteration of the 65 dBA CNEL combined (i.e., existing landfill plus TRRP facility components) facility operations noise contour would be expected (see Figure 22).

Cumulative Impact Analysis

With respect to other projects that are proposed or currently being developed, the dissipative nature of noise emission (i.e., it attenuates geometrically with distance, until sound from a source becomes indistinguishable from, and joins, the background that one may hear or

measure as part of the ambient sound environment) suggests that cumulative project noise is unlikely to be a significant effect. The degree of effect would depend on a number of factors as follows:

- Timing of construction associated with another project, and its concurrence with construction of the MRF at this alternative site;
- Proximity of another project with respect to a noise-sensitive receiver location; and,
- Intensity and type of noise emission associated with the other project, for both temporary (e.g., construction) and non-temporary (e.g., post-construction processes, operations, HVAC, added traffic, etc.).

While there are a few small subdivision (“lot split”) development projects within a mile of SCRTS and a proposed fast food restaurant at the corner of Turnpike Road and Calle Real, their distances to the residential area (El Sueno Road) studied for this MRF site alternative suggest that cumulative noise effect would not be significant.

The closest of these lot split development projects, Butler, is located on El Sueno road and would appear to benefit from the aforementioned existing earthen berms that attenuate noise from SCRTS operations. As these berms would also attenuate noise from proposed MRF

TRRP Composting

TRRP Energy Plant

TRRP AD Facility

Baron Ranch

TRRP NR-1

TRRP NR-5

TRRP NR-3

TRRP NR-2

TRRP NR-4

101

Arroyo Quemado

Legend

- TRRP Facility Source Noise Locations
- Noise Receiver Locations (TRRP NR-1 to NR-5)
- Landfill & Predicted TRRP Facility Operations 65 dBA CNEL Contour
- Approximate Limits of Landfill Disturbance
- Landfill & County Properties
- Composting Area

N

0 0.075 0.15 0.225 0.3 Mile

0 500 1,000 1,500 Feet

County of Santa Barbara Public Works
Tajiguas Landfill
Santa Barbara County

URS Corporation

Source: 1] NAIP Aerial (2012), [2] Parcels: Santa Barbara County Clerk-Recorder-Assessor Map Division 2008

Figure 22. Tajiguas Resource Recovery Project
Urban MRF Alternatives
Tajiguas Landfill Projected
65 dBA CNEL Contours
Without MRF Component of TRRP

2013

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operations at the SCRTS site, the cumulative noise effect would not be expected to be significant.

Alternative 3 – Aerobic Composting (Engel and Gray Facility) and MRF at Tajiguas

The Engel & Gray facility comprises two parcels on a 40.15 acre portion of the 161-acre City of Santa Maria Wastewater Treatment Plant (WWTP), located approximately 0.3 miles south of the State Route 166/Ray Road intersection, and about 2.5 miles west of residential areas located at Black Road. The site operates under Solid Waste Facilities Permit 42-AA-0053, which authorizes receipt of up to 52,200 tons per quarter of compostable materials, a site storage capacity of 400,000 cubic yards, and an average permitted daily traffic volume of 75 vehicles/day. Based on the facility's required quarterly reporting (for July to December 2012), actual average daily traffic volume was 17.5, with a peak of 45 vehicle trips per day.

The proposed alternative would add approximately 13 daily trips to the facility—almost a 75% increase in similar truck traffic to and from the site, but resulting in less than a 3 dBA increase in traffic noise (assuming same proportions of vehicle types).

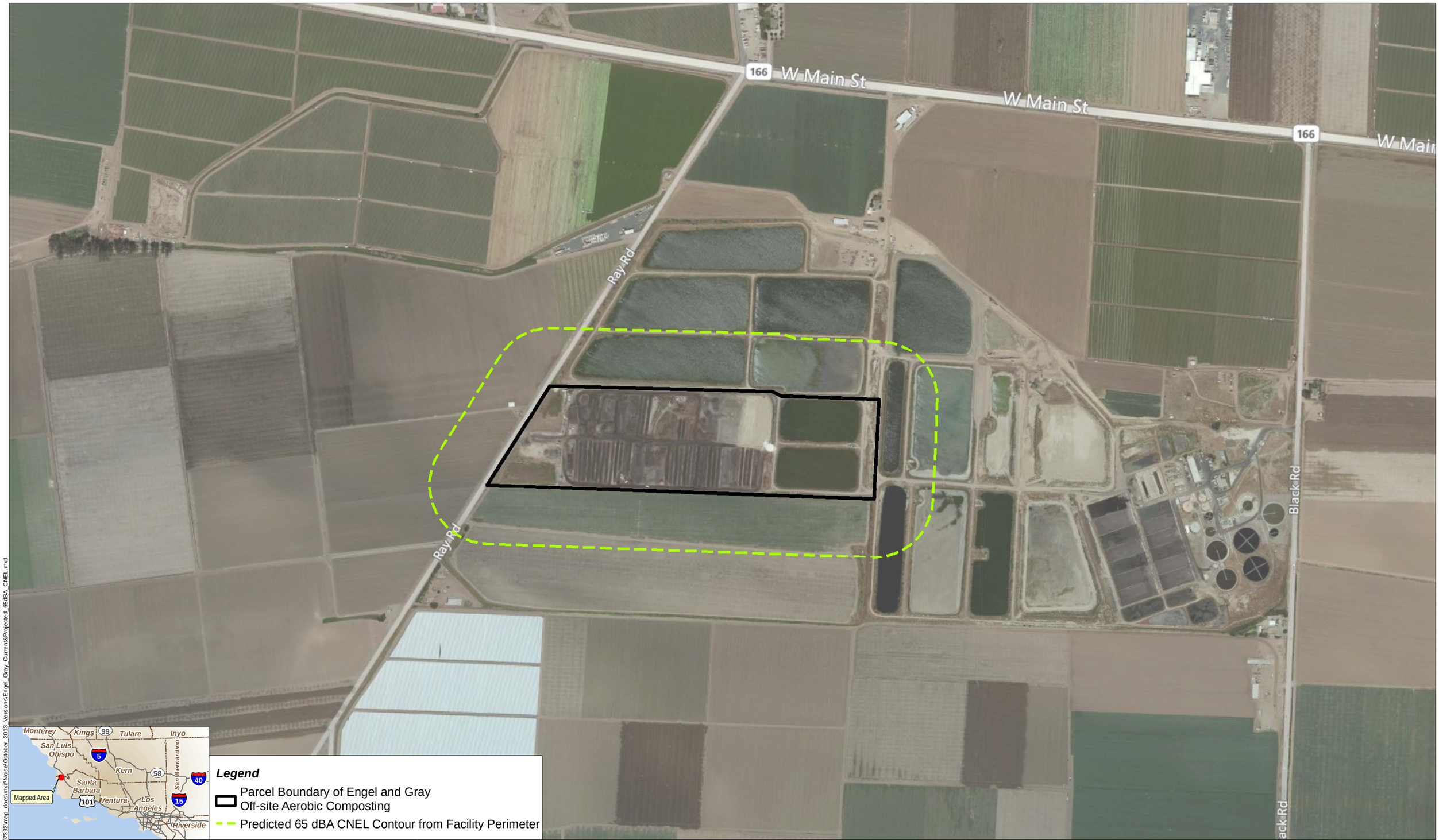
The facility would be expected to handle the proposed transport of 73,600 tons per year of material from the MRF as part of its already-permitted 208,800 tons per year of operating capacity. If the facility already handles 134,400 tons per year, this allowable increase of inbound material could represent approximately a 55% increase. As the facility is only permitted to operate from 7 a.m. to 7 p.m. seven days per week, current onsite equipment might thus be expected to be operating for greater portions of time within a given work shift. All other conditions being the same, the change in existing noise level from onsite operations would likely be an increase based on the following expression: 10*LOG(1.55) = 1.9 dBA, a modest quantity. As there are no known noise-sensitive land uses nearby, the predicted 65 dBA CNEL contour from onsite composting activities shown in Figure 23 would not result in a noise impact.

This alternative would also generate slightly less noise in the vicinity of the Tajiguas Landfill itself. This is because the AD Facility and its related Composting operation would not occur. The MRF component would remain at the landfill under this alternative, as shown in Figure 24. Because the MRF is expected to be the dominant noise-generating element of the TRRP project, the effect of removing acoustical contribution from the AD Facility and Composting Area would be modest. In addition, there would be a slight increase in truck traffic related to moving organic waste from the MRF to the Engel and Gray yard, but this would be offset by the reduction in traffic since there would be no deliveries of finished compost product from the TRRP at Tajiguas.

Alternative 4 – Landfill Expansion

Alternative Description and Setting

This Alternative would involve expansion of the Tajiguas Landfill to extend its life by at least 10 years (similar to the Proposed Project) from the currently projected closure in approximately



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County of Santa Barbara Public Works
Off-site Aerobic Composting (Engel & Gray Site)
Santa Barbara County

URS Corporation

Source: [1] Microsoft Bing Map Mosaic for ESRI (Aug, 2010), [2] Parcels: Santa Barbara County Clerk-Recorder-Assessor Map Division 2008

Figure 23. Tajiguas Resource Recovery Project Alternative (Aerobic Composting at Engel and Gray Alternative) Projected 65 dBA CNEL Contour

2013

TRRP MRF

TRRP NR-1

TRRP NR-5

TRRP NR-3

TRRP NR-2

101

Arroyo Quemado

Legend

- TRRP Facility Source Noise Locations
- Noise Receiver Locations (TRRP NR-1 to NR-5)
- Landfill Operations & Predicted TRRP Facility Operations 65 dBA CNEL Contour
- Approximate Limits of Landfill Disturbance
- Landfill & County Properties

N

0 0.075 0.15 0.225 0.3 Mile

0 500 1,000 1,500 Feet

County of Santa Barbara Public Works
Tajiguas Landfill
Santa Barbara County

URS Corporation

Source: [1] NAIP Aerial (2012), [2] Parcels: Santa Barbara County Clerk-Recorder-Assessor Map Division 2008

Figure 24. Tajiguas Resource Recovery Project
Alternative 3 Offsite Aerobic Composting
Tajiguas Landfill Projected
65 dBA CNEL Contours
Without ADF and Composting Area

2013

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2026 to approximately 2036. The expansion would provide additional disposal capacity to extend its life as compared to the proposed Resource Recovery Project which would reduce the quantity of material being disposed through the recovery of additional recyclable materials and organics and utilize the permitted capacity to achieve the same extension of Landfill life. The Landfill Expansion Alternative has been designed to preserve the existing North Sedimentation basin and to avoid additional impacts to the Pila Creek channel.

Under the Expansion Alternative, the permitted maximum daily tonnage for the Tajiguas Landfill would remain at its current level of 1,500 tons/day. The existing landfill would be expanded both vertically and horizontally, to provide an additional 3.7 million cubic yards of airspace or 2.2 million tons of waste disposal capacity. The expansion would increase the total disposal capacity from 23.3 million cubic yards to 27 million cubic yards (approximately 12.6 million tons to 16.2 million tons). The final tonnage would depend on a variety of factors, including the amount of cover material used and the effectiveness of waste compaction.

The 3.7 million cubic yards of additional capacity would be provided by expanding the Landfill footprint in the back canyon area of the Landfill property in the area of the Landfill reconfiguration project that was approved in 2009. This expansion would create a total landfill waste footprint of 131 acres. The expansion would consist of approximately 38 acres of vertical expansion on the existing landfill waste footprint, approximately 14 acres of horizontal expansion within previously disturbed areas of the landfill property and approximately one acre of new disturbance.

Under the expansion, the landfill elevation would not exceed the currently permitted maximum elevation of 620 feet above mean sea level (msl). The overall capacity increase would be achieved by lining and placing additional waste against the existing landfill cut slope and by additional excavations in the back canyon area increasing the waste fill elevations in the back canyon by approximately 60 feet. Approximately 300,000 cubic yards of excavation would be required to create the additional capacity and to facilitate the installation of the composite liner. The fill slopes would be constructed with 15-foot-wide benches every 40 vertical feet to create overall fill slopes of 2.4:1. While the expansion would be developed in phases, no changes would occur to the following landfill facilities and operations:

- Ancillary facilities (i.e., scale house, maintenance area, offices, etc.);
- Utilities (sewage/wastewater disposal, electricity, telephone and communication, fuel storage);
- Landfill operations (hours, personnel, equipment, security/safety, waste inspection and handling procedures);
- Environmental protection and monitoring; and,
- Nuisance monitoring and controls (i.e., dust, litter, vectors, birds, noise, odor).

Noise Assessment

With no substantial changes to the landfill operations, new noise associated with this Alternative would result primarily from excavation activities taking place within the confines of the existing site boundaries. If these excavations are conducted with conventional construction equipment (i.e., no blasting or pile driving), the added noise is likely to be a less than significant increase over that from existing operations (see Table 11). For instance, the FHWA RCNM User's Guide indicates that an excavator has an Lmax of 81 dBA at 50', and a dump truck measures 76 dBA Lmax at 50'. With 40% acoustical usage factors for both, the corresponding Leq for the combination is 78 dBA at 50'. At NR-5, the closest (about a ½-mile away) of the five residential receivers studied in this report for the Proposed Project, the resulting sound level due to geometric divergence alone would be less than 50 dBA, less than existing ambient noise, and thus not a significant impact per County criteria.

Alternative 5 – Waste Export Options

Simi Valley Landfill and Recycling Center

Alternative Site Description

This Alternative would involve transportation of all MSW generated in the Tajiguas Landfill wasteshed (up to 270,000 tons/year of MSW, maximum of 1,500 tons/day as currently permitted) to the Simi Valley Landfill and Recycling Center (SVLRC), when the Tajiguas Landfill reaches its permitted capacity (approximately 2026). The SVLRC is located at 2801 Madera Road, Simi Valley, California approximately 65 miles from the City of Santa Barbara. The entrance road is located approximately 0.5 miles west of the California State Highway 118/Madera Road interchange.

The basis of this Alternative is to provide 10 additional years of MSW disposal capacity, when the Tajiguas Landfill reaches its permitted capacity in approximately 2026. This is equivalent to the 10 year increase in Landfill life provided by the proposed project through reductions in disposal rates associated with increased recycling. This Alternative includes the following assumptions regarding solid waste management in the wasteshed following closure of the Tajiguas Landfill:

- CSSR would be consolidated at the SCRTS and shipped to the Gold Coast MRF in Ventura for processing and shipment to markets (existing conditions);
- Self-haul MSW received at the SCRTS would be consolidated at the SCRTS into larger capacity trucks and transported to the SVLRC;
- MSW currently collected by the franchise haulers in packer trucks would be consolidated at the existing MarBorg MRF/Transfer Station in Santa Barbara and at the SCRTS and would be transported to the SVLRC in tractor trailers;
- Source separated green-waste collected on the south coast would be processed at the Tajiguas Landfill (existing conditions).

Noise Assessment

In this Alternative, delivery of waste to Tajiguas Landfill would continue normally until 2026. After closure of Tajiguas Landfill, trucks would deliver waste to the SVLRC, SCRTS and MarBorg MRF/Transfer Station sites. A study of traffic for this alternative prepared by ATE (ATE, 2013) predicts that the SCRTS site would experience 160 average daily trips (ADT), the MarBorg MRF/Transfer Station would see 60 ADT, and the SVLRC would gain 170 ADT. Since these estimates of added ADT for MarBorg MRF/Transfer Station and SCRTS are less than the anticipated added ADT for Alternatives 2A (TRRP MRF at the MarBorg site) and 2B (TRRP MRF at the SCRTS site), which were predicted to have less than significant noise impact due to traffic volume increases, then it is reasonable to conclude that traffic noise increase at the MarBorg and SCRTS sites for this SVLRC waste export alternative would also be less than significant.

The additional 170 ADT anticipated for SVLRC would represent only 27% of the added 625 ADT associated with the facility's expected expansion as reported in Section 3.10 (Noise) of the Simi Valley Landfill and Recycling Center Expansion Project Final EIR (County of Ventura, 2010). Table 15 reproduces the FEIR estimated noise impacts from SVLRC expansion traffic and operations.

The noise impact criteria for the community near SVLRC is that the project would not result in an Leq1H of 55dB(A) or ambient noise level plus 3dB(A) from 6:00 a.m. to 7:00 p.m. Since the estimated A-weighted Leq and incremental increase values of Table 15 (i.e., the two right-most

TABLE 15
SVLRC EXPANSION PROJECT NOISE IMPACTS AT NEARBY RECEPTORS

Receptor Location	Noise Source	Distance (Meters) from Source	Current Daytime Lowest L_{Aeq}	Estimated L_{Aeq} based on 625 Additional Trucks per Day	Incremental Increase (dBA Leq)
Nearest Residence (116 Aristotle)	Truck traffic	900	64.2	64.8	0.6
Quiet Residence (1121 Athens)	Truck traffic	1,100	49.1	49.7	0.8
Line of Sight Residence (Erringer at Lost Canyon Dr.)	Landfill equipment	2,800	42.5	43.0	0.5
Wal-Mart	Truck traffic	500	59.3	59.9	0.6
Mall Parking Lot (near Union Bank)	Truck traffic	2,300	57.2	57.8	0.6
Office Park near Madera Rd.	Truck traffic	350	60 *	60.5	0.5

Source: County of Ventura, CA (2010). * estimated.

columns) indicate SVLRC expansion will comply with these criteria, and because this alternative analysis assumes SVLRC expansion includes potential waste import (due to Tajiguas closure) as a contributor to the total expected added ADT and site operations, then this alternative is also anticipated to have a less than significant impact.

Santa Maria Integrated Waste Management Facility

Alternative Site Description

This Alternative would involve transportation of all MSW generated in the Tajiguas Landfill wasteshed (up to 270,000 tons/year of MSW, maximum of 1,500 tons/day as currently permitted) to the proposed Santa Maria Integrated Waste Management Facility (Santa Maria IWMF), when the Tajiguas Landfill reaches its permitted capacity (approximately 2026). The Santa Maria IWMF is proposed to be located on a 1,774 acre site, approximately 7 miles south of the Santa Maria city center (approximately 70 miles from the City of Santa Barbara) and one mile east of U.S. 101.

The basis of this Alternative is to provide 10 additional years of MSW disposal capacity, when the Tajiguas Landfill reaches its permitted capacity in approximately 2026. This is equivalent to the 10 year increase in Landfill life provided by the proposed project through reductions in disposal rates associated with increased recycling. This Alternative includes the following assumptions regarding solid waste management in the wasteshed following closure of the Tajiguas Landfill:

- CSSR would be consolidated at the SCRTS and shipped to the Gold Coast MRF in Ventura for processing and shipment to markets (existing conditions);
- Self-haul MSW received at the SCRTS would be consolidated at the SCRTS into larger capacity trucks and transported to the Santa Maria IWMF;
- MSW currently collected by the franchise haulers in packer trucks would be consolidated at the existing MarBorg MRF/Transfer Station in Santa Barbara and at the SCRTS and would be transported to the Santa Maria IWMF in tractor trailers; and,
- Source separated green-waste collected on the south coast would be processed at the Tajiguas Landfill (existing conditions).

Noise Assessment

In this Alternative, delivery of waste to Tajiguas Landfill would continue normally until 2026. After closure of Tajiguas Landfill, trucks would deliver waste to the IWMF, SCRTS and MarBorg MRF/Transfer Station sites. A study of traffic for this alternative prepared by ATE (ATE, 2013) predicts that the SCRTS site would experience 160 average daily trips (ADT), the MarBorg MRF/Transfer Station would see 60 ADT, and the IWMF would gain 170 ADT. Since these estimates of added ADT for MarBorg MRF/Transfer Station and SCRTS are less than the anticipated added ADT for Alternatives 2A (TRRP MRF at the MarBorg site) and 2B (TRRP MRF at the SCRTS site), which were predicted to have less than significant noise impact due to traffic volume increases, then it is reasonable to conclude that traffic noise increase at the MarBorg and SCRTS sites for this IWMF waste export alternative would also be less than significant.

The additional 170 ADT anticipated for IWMF, which is situated adjacent to US Highway 101 northbound, would represent less than a 1% increase in traffic and thus a negligible (less than 1 dBA) increase in traffic noise due to this alternative.

For a comparable illustration, Section IV.I (Noise) of the Santa Maria IWMF EIR (City of Santa Maria, 2009) discusses transfer truck trip noise from the existing Santa Maria landfill (at the northern end of Philbric Road) to the IWMF. Table 16 shows that the addition of IWMF transfer truck trips had little or no increase over ambient sound level, and thus per FICON guidance resulted in less than significant impact.

TABLE 16
2012 AND 2012 + PROJECT SOUND LEVELS FROM HAUL ROUTE ROADWAYS
(dBA CNEL)

Nearest Sensitive Receptor Location	2012 Conditions	2012 + Project	FICON Guideline (dBA increase)	Noise Level Increase (dBA Leq)
2 Residences Along Philbric Road, at Stowell Road (65 feet from centerline)	61.7	61.7	3.0	0.0
1 Residence Along Philbric Road, South of Battles Road (110 feet from centerline)	57.1	57.1	5.0	0.0
1 Residence Along Philbric Road, South of Stowell Road (130 feet from centerline)	55.7	55.7	5.0	0.0
2 Residences Along Betteravia Road, West of Philbric Road (115 feet from centerline)	67.4	67.4	1.5	0.0
Residences Along U.S. Highway 101 North of Clark Avenue (75 feet from centerline)	77.9	78.0	1.5	0.1
Residences Along U.S. Highway 101 South of Clark Avenue (75 feet from centerline)	76.5	76.7	1.5	0.2
Residences Along U.S. Highway 101 South of Exit 161 Interchange (75 feet from centerline)[1]	76.5	76.5	1.5	0.0

Source: City of Santa Maria (2010)

[1] Sound levels south of the U.S. Highway 101 Exit 161 Interchange were analyzed under the assumption that non-project ADT is identical to ADT for the segment of U.S. Highway 101 north of the Exit 161 Interchange to Clark Avenue.

Operational changes at IWMF to accommodate the solid waste material considered under the TRRP project may have additional noise effects, but its EIR (City of Santa Maria, 2010) suggests that such operation-related noise impacts—if IWMF largely continues its normal operation and expands its capacity at a pace as intended—might be less than significant:

> *"The proposed IWMF would be operated using the 'canyon and area fill method' for refuse placement, which includes the excavation of a large area, the stockpiling of excavated soils, construction of the waste containment or liner system, and then the*

placement of refuse. Noise sources associated with these operations include scraping and bulldozing activities, tipping/filling activities, and depositing of refuse. As noted in Table IV.I-4, noise associated with ground clearing and excavation activities, which include scraping and bulldozing, measure up to 88 dBA at 50 feet from the source. Noise impacts due to operation of the landfill would be similar to noise impacts due to construction activities. As discussed under Impact N-1 above, this level of noise would not exceed the maximum acceptable outdoor noise levels of 60 dBA at adjacent residential uses.

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Attachment A: Noise Measurements

Attachment A: Noise Measurements

Noise Meter Settings

Location 1: Tajiguas Landfill, Northwest of Fortistar Power Plant (approx. 65 feet)

Location 2: US 101 Northbound Frontage Road (100 ft. from CL northbound lanes)

Location 3: Vicinity of Marborg Site – S. Quarantina St. and Quinientos St.

Location 4: Train Passage, Along S. Quarantina Street (approx. 300 ft. to tracks)

Attachment A: Noise Measurements

Noise Meter Settings

LARSON-DAVIS LABORATORIES
MODEL 700 SN B3255
DATA FROM: Manual Transfer

	12/8/2012 (Marborg)	4/4/2013 (Tajiguas)
Detector	SLOW	SLOW
Weight	A	A
Unwgt Pk	OFF	OFF
Criterion	90	90
Threshold	32	32
Exchange rate	3	3
RMS Threshold	115	115
Pk Threshold	140	140
Hysteresis	2	2
Exceedances	0	0
Intervals	18	16
Int time	0:01	0:01
Intv Ln's	ON	ON
History	169	151
Save Peaks	OFF	OFF
Period	6	6

Run/Stop Times and Measurement Locations

Runs on:	12/8/2012	Location 3
	9:10:42	(walk along S. Quarantina St.)
Stop 1	9:26:24	
	9:30:14	Location 4 - Train passage
Stop 2	9:31:14	
	11:31:06	office - discard
Stop 3	11:31:08	
Runs on:	4/4/2013	
	9:44:17	Location 1
Stop1	9:48:27	(Meas-1: 65 ft from Forstistar)
	9:55:53	Location 2
Stop2	10:06:44	(Meas-2: 100 ft. from US101)

Note: Lmin and Interval Ln valutes were not transcribed at Location 3 (Marborg).

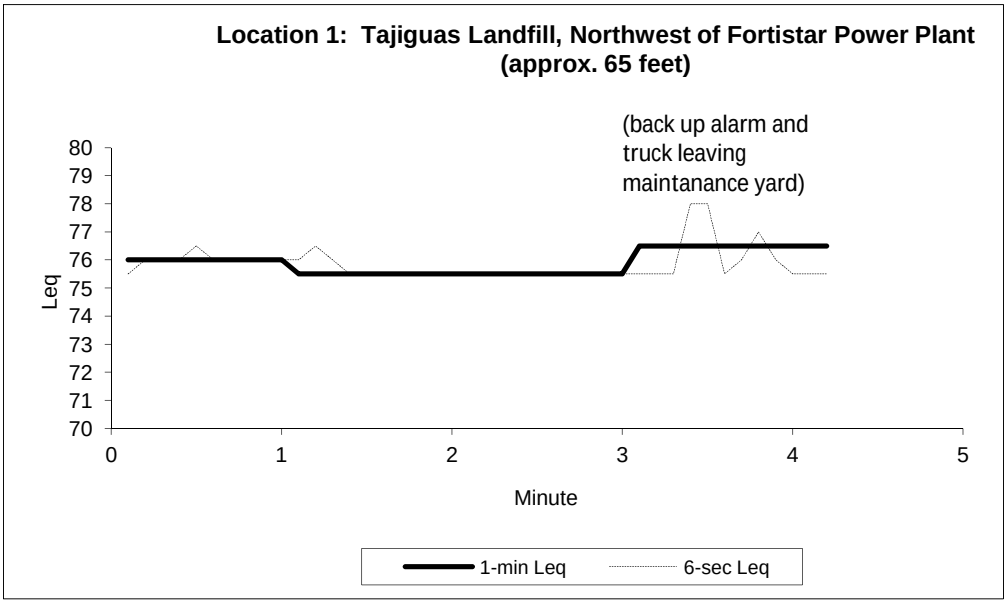
Attachment A: Noise Measurements

Location 1: Tajiguas Landfill, Northwest of Fortistar Power Plant (approx. 65 feet)

Minute Number	Time	LVL	Lmin	Lmax	Lpk	L10	L33	L50	L90
1	9:44:17	76.0	73.5	78.0	89.5	77.0	76.5	76.0	75.0
2	9:45:17	75.5	73.5	78.0	88.5	76.0	76.0	75.5	74.5
3	9:46:17	75.5	73.0	77.5	88.5	76.5	76.0	75.5	74.5
4	9:47:17	76.5	73.0	85.0	92.5	77.5	76.0	76.0	75.0
5	9:48:17	75.5	73.5	77.5	87.5	76.5	76.0	75.5	75.0

Leq for Location 1 = 75.8

Notes: Approximately 65 feet northwest of Forstistar LFG 3 MW ICE power plant. Noise from combination of mechanical equipment within enclosure, and ventilation noise. Other directions from plant were quieter.



Attachment A: Noise Measurements

Location 2: US 101 Northbound Frontage Road (100 ft. from CL n. bound lanes)

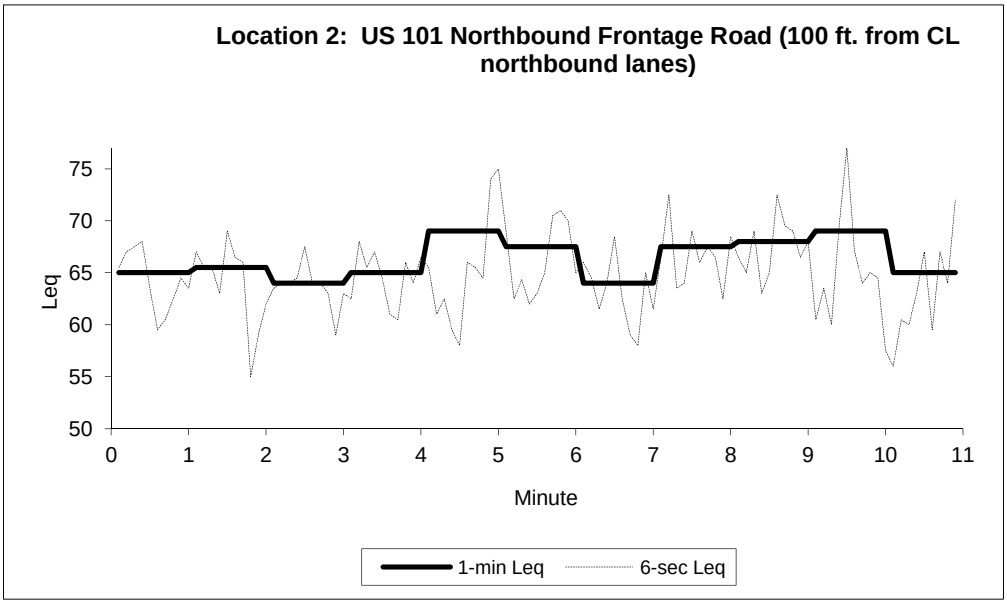
Minute Number	Time	LVL	Lmin	Lmax	Lpk	L10	L33	L50	L90
1	9:55:53	65.0	47.0	71.0	81.5	69.5	66.0	63.0	55.5
2	9:56:53	65.5	48.5	74.0	83.5	69.0	66.0	63.0	55.5
3	9:57:53	64.0	54.5	71.0	81.0	67.5	65.0	62.5	58.0
4	9:58:53	65.0	53.0	72.5	85.0	68.5	66.0	63.5	58.0
5	9:59:53	69.0	47.5	81.5	89.0	74.0	65.5	62.5	55.5
6	10:00:53	67.5	49.0	78.0	86.5	71.5	66.5	64.5	56.5
7	10:01:53	64.0	51.0	75.5	85.0	67.5	63.5	61.5	56.0
8	10:02:53	67.5	55.0	78.5	88.0	70.5	67.5	66.0	59.5
9	10:03:53	68.0	58.0	76.5	101.5	71.5	68.0	66.5	62.5
10	10:04:53	69.0	52.5	81.5	89.5	74.0	65.0	61.5	57.0
11	10:05:53	65.0	49.5	85.5	112.0	67.5	63.0	60.0	53.0

Leq for Location 2 = 66.7

Traffic Counts and Notes

100 ft. from CL n.bound lane

	Southbound			Northbound		
	For Period	Per Hour	%	For Period	Per Hour	%
Autos	150	818	85%	140	764	90%
Med. Trks.	8	44	5%	7	38	4%
Hvy. Trks.	18	98	10%	9	49	6%
Total	176	960	100%	156	851	100%

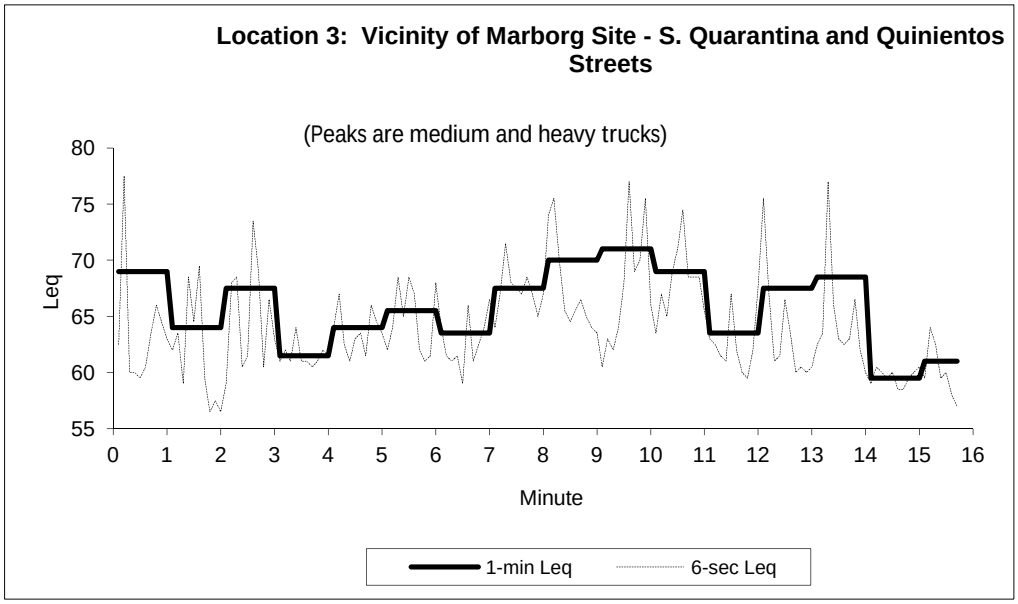


Attachment A: Noise Measurements

Location 3: Vicinity of Marborg Site - S. Quarantina St. and Quinientos St.

Minute Number	Time	LVL	Lmax	Lpk
1	9:10:42	69	94	103
2	9:11:42	64	79	90
3	9:12:42	67.5	80.5	99.5
4	9:13:42	61.5	68.5	94
5	9:14:42	64	79	101
6	9:15:42	65.5	75.5	97.5
7	9:16:42	63.5	72	80.5
8	9:17:42	67.5	75.5	88.5
9	9:18:42	70	80	92.5
10	9:19:42	71	81.5	92
11	9:20:42	69	81	100.5
12	9:21:42	63.5	73.5	83.5
13	9:22:42	67.5	81	89.5
14	9:23:42	68.5	83.5	105
15	9:24:42	59.5	66.5	106.5
16	9:25:42	61	71	101.5

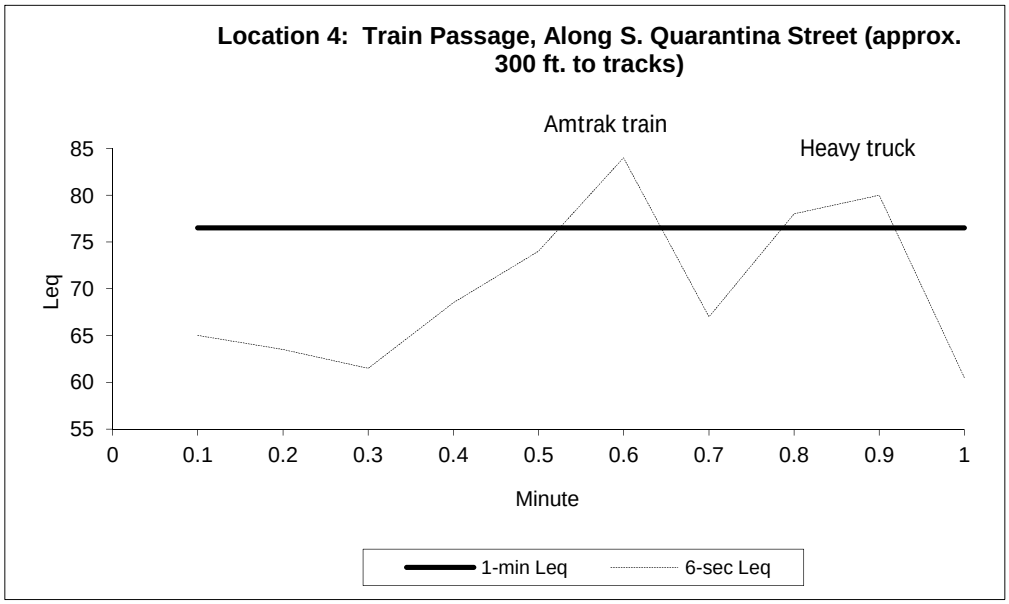
Leq for Location 3 = 66.9



Attachment A: Noise Measurements

Location 4: Train Passage, Along S. Quarantina St., approx. 300 ft. to tracks

Minute Number	Time	LVL	Lmax	Lpk
17	9:26:42	76.5	95	104.5



Attachment B: Calculations and Assumptions for Traffic Input Data

- Calculations and Assumptions for Traffic Input Data (3 pages)

- Calculations for Prediction of Proposed MRF Operations CNEL – Including Terrain Shielding (1 page 11 x 17)

ATTACHMENT B

Calculations and Assumptions for Traffic Input Data

		Assumptions for:			Daytime			Nighttime		
Street Segment	ADT	% Autos	% MT	% HT	Auto/hr	MT/hr	HT/hr	Auto/hr	MT/hr	HT/hr
Model Confirmation										
US Hwy 101		(none - used counts)								
Northbound Lanes near landfill entrance					764	38	49			
Southbound lanes near landfill entrance					818	44	98			
Model Current Traffic (1)	30000	89%	6%	5%	1513	102	85	445	30	25
US Hwy 101										
Northbound Lanes										
N (w) of Landfill	15000	89%	6%	5%	757	51	43	223	15	13
S (e) of Landfill	15000	89%	6%	5%	757	51	43	223	15	13
Southbound Lanes										
N (w) of Landfill	15000	89%	6%	5%	757	51	43	223	15	13
S (e) of Landfill	15000	89%	6%	5%	757	51	43	223	15	13
Access Road	**70**	Auto/day			9		33			
	264	HT/day								
		assume:	8	hr/day						
Model Current+Project(2)										
US Hwy 101										
Northbound Lanes										
N (w) of Landfill					758	51	43	223	15	13
S (e) of Landfill					757	51	43	223	15	13
Southbound Lanes										
N (w) of Landfill					758	51	43	223	15	13
S (e) of Landfill					757	51	43	223	15	13
Access Road										
Project Traffic:	36	Autos/day			11		35	2		1
	14	Autos/night								
	28	HT/day								
	6	HT/night								

ATTACHMENT B

Calculations and Assumptions for Traffic Input Data

		Assumptions for:			Daytime			Nighttime		
Street Segment	ADT	% Autos	% MT	% HT	Auto/hr	MT/hr	HT/hr	Auto/hr	MT/hr	HT/hr
Model Future (2036) (3)					1730	117	97	509	34	29
US Hwy 101										
Northbound Lanes	34300									
N (w) of Landfill	17150	89%	6%	5%	865	58	49	254	17	14
S (e) of Landfill	17150	89%	6%	5%	865	58	49	254	17	14
Southbound Lanes										
N (w) of Landfill	17150	89%	6%	5%	865	58	49	254	17	14
S (e) of Landfill	17150	89%	6%	5%	865	58	49	254	17	14
Access Road (use Current as above)					9		33			
Model Future (2036)+Project										
Northbound Lanes										
N (w) of Landfill					866	58	49	255	17	14
S (e) of Landfill					865	58	49	254	17	15
Southbound Lanes										
N (w) of Landfill					866	58	49	255	17	14
S (e) of Landfill					865	58	49	254	17	15
Access Road (with Project Traffic as above)					11		35	2		1
Model Current+Project+CSSR (4)										
Northbound Lanes										
N (w) of Landfill					758	51	43	223	15	13
S (e) of Landfill					757	51	44	223	15	13
Southbound Lanes										
N (w) of Landfill					758	51	43	223	15	13
S (e) of Landfill					757	51	44	223	15	13
	52	Autos/day								
Access Road	14	Autos/night								
Project + CSSR Traffic:	48	HT/day			12		36	2		1
	10	HT/night								

ATTACHMENT B
Calculations and Assumptions for Traffic Input Data

		Assumptions for:			Daytime			Nighttime		
Street Segment	ADT	% Autos	% MT	% HT	Auto/hr	MT/hr	HT/hr	Auto/hr	MT/hr	HT/hr
Model Future (2036)+Project+CSSR										
Northbound Lanes										
N (w) of Landfill					866	58	49	255	17	14
S (e) of Landfill					865	58	50	254	17	15
Southbound Lanes										
N (w) of Landfill					866	58	49	255	17	14
S (e) of Landfill					865	58	50	254	17	15
Access Road										
Project+CSSR Traffic as above					12		36	2		1
Notes:										
(1) US Hwy 101 ADT from ATE 2013:Figure 4. Distribution of vehicle types computed from										
estimated truck traffic data for 2010 in Caltrans (2011).										
MT = Medium duty trucks (3 axle or less)										
HT = Heavy duty trucks (4 or more axles)										
Assumptions used to estimate hourly traffic from ADT (standard practice assumption):										
Daytime = 7:00 a.m. to 10:00 p.m.		15	hours and:	85%	of ADT.					
Nighttime = 10:00 p.m to 7:00 a.m.		9	hours and:	15%	of ADT.					
(2) Project Traffic from ATE 2013:1 and Table 8.										
(3) Future (2036) ADT is from ATE 2013:Figure 11.										
(4) CSSR Traffic is from ATE 2013:Figure 18.										

ATTACHMENT B

Calculations for Prediction of Proposed MRF Operations CNEL - Including Terrain Shielding

Predicted CNEL at Nearest Receving Residentially-zoned Property for Proposed MRF Operations at SCRTS Site (Alternative 2B)

Methodology

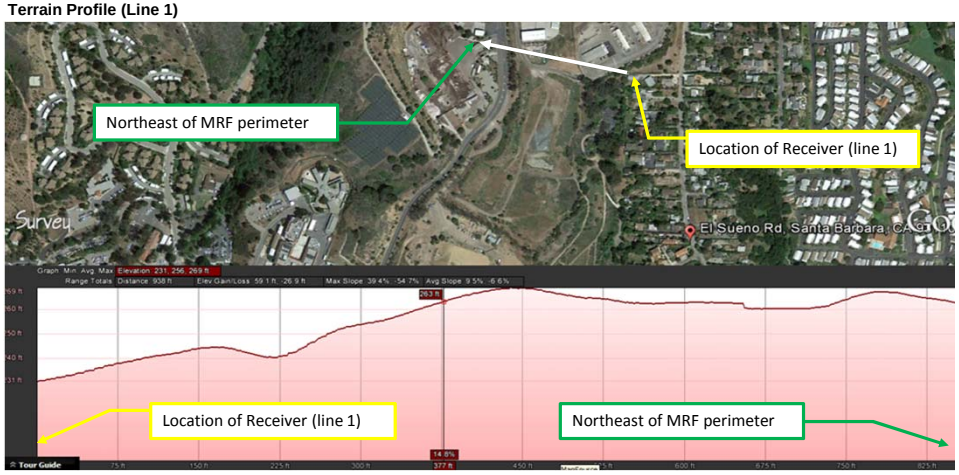
Figure 18 currently displays two 65 dBA CNEL contours (one representing existing SCRTS operations noise, the other predicted proposed MRF operations at the SCRTS site), but they only include expected outdoor sound attenuation due to distance (i.e., "geometric divergence", or better known as the "6dB per doubling of distance" rule of thumb). While conservative, they do not account for additional attenuation factors such as acoustical air absorption, ground absorption, and terrain shielding that are briefly discussed in the report.

To help demonstrate that expected CNEL from proposed MRF operations (which has an estimated reference sound level shown on line **A**.) at the nearest residential area would be quite less than what the Figure 18 contour suggests, this calculation worksheet predicts the attenuated MRF operations noise level (see **B** for the hourly L_{eq}) at the nearest residential receiver location, which is then used to calculate the CNEL value (see **C**).

The terms involved in the expression to calculate the insertion loss associated with terrain shielding sound attenuation (see **D**.), based on methodology from *Engineering Noise Control* (2nd ed., Bies & Hansen, 1996), are shown to the right between terrain profiles for each of lines 1 & 2: two representative pathways over which sound from proposed MRF operation would traverse to get to the residential receiver location. Note that in Line 2, the existing earthen berm is more prominent and given a width (approx. 200') in the terrain shielding calculation for purposes of this analysis.

reference distance for aggregate Leq proposed MRF at SCRTS	50	feet
A. reference aggregate Leq for proposed MRF at SCRTS	**88**	dBA

Terrain Profile (Line 1)



Source: Google Earth

Results

horizontal distance (in feet), source-to-receiver ($hd_{MRF-rcvr}$)		Hourly L_{eq} (attenuation only from **geometric divergence**)	Hourly L_{eq} (attenuation from: **geom. div.** + **air abs.** + **ground abs.** + **terr. shld.**)
Line1 (path over hilltop)	830	63.6	46.4
Line2 (path over 200'-thick berm)	830	63.6	45.7

B. arithemtic average of the Leq values for line1 and line 2: **46.1**
(enter this average value into the CNEL calculation below)

Time Period (military time)	L_{eq}	Hours	Metric
700-1700	**46.1**	10	L_{day}
1700-1900	**46.1**	2	L_{day}
1900-2200	**46.1**	3	$L_{evening}$
2200-2330	**46.1**	1.5	L_{night}
2330-700	43	7.5	L_{night}
		24	

C. CNEL= **51** dBA

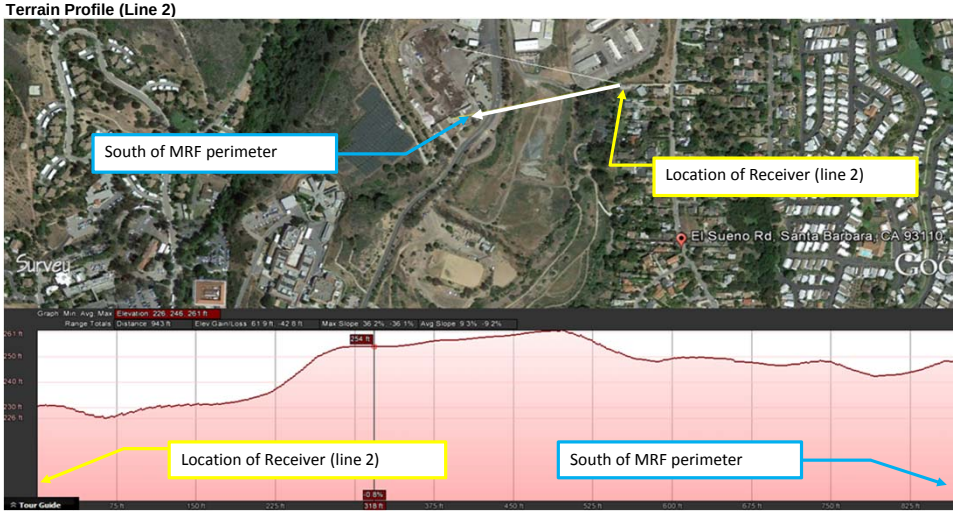
Terrain Shielding Sound Attenuation Calculation

terrain shielding sound attenuation (values below in feet)

Path	$hd_{ridge-rcvr}$	$hd_{MRF-ridge}$	h_{MRF}	h_{ridge}	h_{rcvr}	hw_{ridge}	$td_{MRF-rcvr}$	$td_{MRF-ridge}$	$td_{ridge-rcvr}$	path length diff (z)	Fresnel no. (N) for 1kHz	**D**. Insertion Loss (dB) at 1kHz*
Line 1	430	400	40	40	5	0	830.7	400.0	431.4	0.7	1.2	12
Line 2	260	370	30	30	5	200	830.4	370.0	261.2	0.8	1.5	12

* 1kHz used to approximate A-weighted spectrum, given lack of A-weighting adjustment at this octave band center frequency.

Terrain Profile (Line 2)



Source: Google Earth

Definition of Terms

$hd_{MRF-rcvr}$	= horizontal distance between MRF (noise source) and receiver
$hd_{ridge-rcvr}$	= horizontal distance between ridge (top of terrain) and receiver
$hd_{MRF-ridge}$	= horizontal distance between MRF and ridge
h_{MRF}	= height of average MRF sound source above ground surface, relative to receiver elevation
h_{ridge}	= height of ridge, relative to receiver position ground elevation
h_{rcvr}	= height of listener above ground surface at receiver position
hw_{ridge}	= effective horizontal width of ridge
$td_{MRF-rcvr}$	= "true"distance (point-to-point vector) between MRF and receiver
$td_{MRF-ridge}$	= "true" distance between MRF and ridge
$td_{ridge-rcvr}$	= "true" distance between ridge and receiver

Attachment C: Traffic Noise Model (TNM) Input and Output Tables

List of Input and Output Tables

Current – Daytime – Access Road

-Receiver Input,

-Roadway Input,

-Traffic Input,

-Results

Current – Daytime – US Highway 101

-Receiver Input,

-Roadway Input,

-Traffic Input,

-Results

Current – Nighttime – US Highway 101

-Receiver Input,

-Roadway Input,

-Traffic Input,

-Results

Current + Project – Daytime – Access Road

-Receiver Input,

-Roadway Input,

-Traffic Input,

-Results

Current + Project – Nighttime – Access Road

-Receiver Input,

-Roadway Input,

-Traffic Input,

-Results

Future – Daytime – US Highway 101

-Receiver Input,

-Roadway Input,

-Traffic Input,

-Results

Future – Nighttime – US Highway 101

-Receiver Input,

-Roadway Input,

-Traffic Input,

-Results

Validation – ML2

ML2 Northbound NB

– Receiver Input,

-Roadway Input,

-Traffic Input,

-Results

ML2 Southbound (SB)

– Receiver Input,

Roadway Input,

Traffic Input,

Results

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current - Day - Access

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	1,000.0	50.0	0.00	4.92	0.00	66	10.0	8.0	Y

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current - Day - Access

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement) X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Access	24.0	point1	1	0.0	0.0	0.00				Average	
		point3	3	100.0	0.0	0.00				Average	
		point4	4	200.0	0.0	0.00				Average	
		point5	5	300.0	0.0	0.00				Average	
		point6	6	400.0	0.0	0.00				Average	
		point7	7	500.0	0.0	0.00				Average	
		point8	8	600.0	0.0	0.00				Average	
		point9	9	700.0	0.0	0.00				Average	
		point10	10	800.0	0.0	0.00				Average	
		point11	11	900.0	0.0	0.00				Average	
		point12	12	1,000.0	0.0	0.00				Average	
		point13	13	1,100.0	0.0	0.00				Average	
		point14	14	1,200.0	0.0	0.00				Average	
		point15	15	1,300.0	0.0	0.00				Average	
		point16	16	1,400.0	0.0	0.00				Average	
		point17	17	1,500.0	0.0	0.00				Average	
		point18	18	1,600.0	0.0	0.00				Average	
		point19	19	1,700.0	0.0	0.00				Average	
		point20	20	1,800.0	0.0	0.00				Average	
		point21	21	1,900.0	0.0	0.00				Average	
		point2	2	2,000.0	0.0	0.00					

URS			**2 October 2013**									
CM URS SD			**TNM 2.5**									
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	**County of Santa Barbara Public Works**											
RUN:	**Tajiguas Current - Day - Access**											
Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Access	point1	1	9	25	0	0	33	25	0	0	0	0
	point3	3	9	25	0	0	33	25	0	0	0	0
	point4	4	9	25	0	0	33	25	0	0	0	0
	point5	5	9	25	0	0	33	25	0	0	0	0
	point6	6	9	25	0	0	33	25	0	0	0	0
	point7	7	9	25	0	0	33	25	0	0	0	0
	point8	8	9	25	0	0	33	25	0	0	0	0
	point9	9	9	25	0	0	33	25	0	0	0	0
	point10	10	9	25	0	0	33	25	0	0	0	0
	point11	11	9	25	0	0	33	25	0	0	0	0
	point12	12	9	25	0	0	33	25	0	0	0	0
	point13	13	9	25	0	0	33	25	0	0	0	0
	point14	14	9	25	0	0	33	25	0	0	0	0
	point15	15	9	25	0	0	33	25	0	0	0	0
	point16	16	9	25	0	0	33	25	0	0	0	0
	point17	17	9	25	0	0	33	25	0	0	0	0
	point18	18	9	25	0	0	33	25	0	0	0	0
	point19	19	9	25	0	0	33	25	0	0	0	0
	point20	20	9	25	0	0	33	25	0	0	0	0
	point21	21	9	25	0	0	33	25	0	0	0	0
	point2	2										

URS 2 October 2013
CM URS SD TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current - Day - Access
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

URS **2 October 2013**
CM URS SD **TNM 2.5**

INPUT: RECEIVERS
PROJECT/CONTRACT: **County of Santa Barbara Public Works**
RUN: **Tajiguas Current - Day - US101**

Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	1,000.0	50.0	0.00	4.92	0.00	66	10.0	8.0	Y

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current - Day - US101

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement) X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
US101	30.0	point1	1	0.0	0.0	0.00				Average	
		point3	3	100.0	0.0	0.00				Average	
		point4	4	200.0	0.0	0.00				Average	
		point5	5	300.0	0.0	0.00				Average	
		point6	6	400.0	0.0	0.00				Average	
		point7	7	500.0	0.0	0.00				Average	
		point8	8	600.0	0.0	0.00				Average	
		point9	9	700.0	0.0	0.00				Average	
		point10	10	800.0	0.0	0.00				Average	
		point11	11	900.0	0.0	0.00				Average	
		point12	12	1,000.0	0.0	0.00				Average	
		point13	13	1,100.0	0.0	0.00				Average	
		point14	14	1,200.0	0.0	0.00				Average	
		point15	15	1,300.0	0.0	0.00				Average	
		point16	16	1,400.0	0.0	0.00				Average	
		point17	17	1,500.0	0.0	0.00				Average	
		point18	18	1,600.0	0.0	0.00				Average	
		point19	19	1,700.0	0.0	0.00				Average	
		point20	20	1,800.0	0.0	0.00				Average	
		point21	21	1,900.0	0.0	0.00				Average	
		point2	2	2,000.0	0.0	0.00					

URS **2 October 2013**
CM URS SD **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **County of Santa Barbara Public Works**
RUN: **Tajiguas Current - Day - US101**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
US101	point1	1	1513	65	102	55	85	55	0	0	0	0
	point3	3	1513	65	102	55	85	55	0	0	0	0
	point4	4	1513	65	102	55	85	55	0	0	0	0
	point5	5	1513	65	102	55	85	55	0	0	0	0
	point6	6	1513	65	102	55	85	55	0	0	0	0
	point7	7	1513	65	102	55	85	55	0	0	0	0
	point8	8	1513	65	102	55	85	55	0	0	0	0
	point9	9	1513	65	102	55	85	55	0	0	0	0
	point10	10	1513	65	102	55	85	55	0	0	0	0
	point11	11	1513	65	102	55	85	55	0	0	0	0
	point12	12	1513	65	102	55	85	55	0	0	0	0
	point13	13	1513	65	102	55	85	55	0	0	0	0
	point14	14	1513	65	102	55	85	55	0	0	0	0
	point15	15	1513	65	102	55	85	55	0	0	0	0
	point16	16	1513	65	102	55	85	55	0	0	0	0
	point17	17	1513	65	102	55	85	55	0	0	0	0
	point18	18	1513	65	102	55	85	55	0	0	0	0
	point19	19	1513	65	102	55	85	55	0	0	0	0
	point20	20	1513	65	102	55	85	55	0	0	0	0
	point21	21	1513	65	102	55	85	55	0	0	0	0
	point2	2										

URS 2 October 2013
CM URS SD TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current - Day - US101
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	75.1	66	75.1	10	Snd Lvl	75.1	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current - Night - US101

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	1,000.0	50.0	0.00	4.92	0.00	66	10.0	8.0	Y

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current - Night - US101

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement) X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
US101	30.0	point1	1	0.0	0.0	0.00				Average	
		point3	3	100.0	0.0	0.00				Average	
		point4	4	200.0	0.0	0.00				Average	
		point5	5	300.0	0.0	0.00				Average	
		point6	6	400.0	0.0	0.00				Average	
		point7	7	500.0	0.0	0.00				Average	
		point8	8	600.0	0.0	0.00				Average	
		point9	9	700.0	0.0	0.00				Average	
		point10	10	800.0	0.0	0.00				Average	
		point11	11	900.0	0.0	0.00				Average	
		point12	12	1,000.0	0.0	0.00				Average	
		point13	13	1,100.0	0.0	0.00				Average	
		point14	14	1,200.0	0.0	0.00				Average	
		point15	15	1,300.0	0.0	0.00				Average	
		point16	16	1,400.0	0.0	0.00				Average	
		point17	17	1,500.0	0.0	0.00				Average	
		point18	18	1,600.0	0.0	0.00				Average	
		point19	19	1,700.0	0.0	0.00				Average	
		point20	20	1,800.0	0.0	0.00				Average	
		point21	21	1,900.0	0.0	0.00				Average	
		point2	2	2,000.0	0.0	0.00					

URS			**2 October 2013**									
CM URS SD			**TNM 2.5**									
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	**County of Santa Barbara Public Works**											
RUN:	**Tajiguas Current - Night - US101**											
Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
US101	point1	1	445	65	30	55	25	55	0	0	0	0
	point3	3	445	65	30	55	25	55	0	0	0	0
	point4	4	445	65	30	55	25	55	0	0	0	0
	point5	5	445	65	30	55	25	55	0	0	0	0
	point6	6	445	65	30	55	25	55	0	0	0	0
	point7	7	445	65	30	55	25	55	0	0	0	0
	point8	8	445	65	30	55	25	55	0	0	0	0
	point9	9	445	65	30	55	25	55	0	0	0	0
	point10	10	445	65	30	55	25	55	0	0	0	0
	point11	11	445	65	30	55	25	55	0	0	0	0
	point12	12	445	65	30	55	25	55	0	0	0	0
	point13	13	445	65	30	55	25	55	0	0	0	0
	point14	14	445	65	30	55	25	55	0	0	0	0
	point15	15	445	65	30	55	25	55	0	0	0	0
	point16	16	445	65	30	55	25	55	0	0	0	0
	point17	17	445	65	30	55	25	55	0	0	0	0
	point18	18	445	65	30	55	25	55	0	0	0	0
	point19	19	445	65	30	55	25	55	0	0	0	0
	point20	20	445	65	30	55	25	55	0	0	0	0
	point21	21	445	65	30	55	25	55	0	0	0	0
	point2	2										

URS 2 October 2013
CM URS SD TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current - Night - US101
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	69.8	66	69.8	10	Snd Lvl	69.8	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current + Proj - Day - Access

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	1,000.0	50.0	0.00	4.92	0.00	66	10.0	8.0	Y

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current + Proj - Day - Access

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement) X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Access	24.0	point1	1	0.0	0.0	0.00				Average	
		point3	3	100.0	0.0	0.00				Average	
		point4	4	200.0	0.0	0.00				Average	
		point5	5	300.0	0.0	0.00				Average	
		point6	6	400.0	0.0	0.00				Average	
		point7	7	500.0	0.0	0.00				Average	
		point8	8	600.0	0.0	0.00				Average	
		point9	9	700.0	0.0	0.00				Average	
		point10	10	800.0	0.0	0.00				Average	
		point11	11	900.0	0.0	0.00				Average	
		point12	12	1,000.0	0.0	0.00				Average	
		point13	13	1,100.0	0.0	0.00				Average	
		point14	14	1,200.0	0.0	0.00				Average	
		point15	15	1,300.0	0.0	0.00				Average	
		point16	16	1,400.0	0.0	0.00				Average	
		point17	17	1,500.0	0.0	0.00				Average	
		point18	18	1,600.0	0.0	0.00				Average	
		point19	19	1,700.0	0.0	0.00				Average	
		point20	20	1,800.0	0.0	0.00				Average	
		point21	21	1,900.0	0.0	0.00				Average	
		point2	2	2,000.0	0.0	0.00					

URS **2 October 2013**
CM URS SD **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **County of Santa Barbara Public Works**
RUN: **Tajiguas Current + Proj - Day - Access**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Access	point1	1	11	25	0	0	35	25	0	0	0	0
	point3	3	11	25	0	0	35	25	0	0	0	0
	point4	4	11	25	0	0	35	25	0	0	0	0
	point5	5	11	25	0	0	35	25	0	0	0	0
	point6	6	11	25	0	0	35	25	0	0	0	0
	point7	7	11	25	0	0	35	25	0	0	0	0
	point8	8	11	25	0	0	35	25	0	0	0	0
	point9	9	11	25	0	0	35	25	0	0	0	0
	point10	10	11	25	0	0	35	25	0	0	0	0
	point11	11	11	25	0	0	35	25	0	0	0	0
	point12	12	11	25	0	0	35	25	0	0	0	0
	point13	13	11	25	0	0	35	25	0	0	0	0
	point14	14	11	25	0	0	35	25	0	0	0	0
	point15	15	11	25	0	0	35	25	0	0	0	0
	point16	16	11	25	0	0	35	25	0	0	0	0
	point17	17	11	25	0	0	35	25	0	0	0	0
	point18	18	11	25	0	0	35	25	0	0	0	0
	point19	19	11	25	0	0	35	25	0	0	0	0
	point20	20	11	25	0	0	35	25	0	0	0	0
	point21	21	11	25	0	0	35	25	0	0	0	0
	point2	2										

URS 2 October 2013
CM URS SD TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current + Proj - Day - Access
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

URS						**2 October 2013**					
CM URS SD						**TNM 2.5**					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	**County of Santa Barbara Public Works**										
RUN:	**Tajiguas Current + Proj - Night - Access**										
Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	1,000.0	50.0	0.00	4.92	0.00	66	10.0	8.0	Y

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current + Proj - Night - Access

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement) X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Access	24.0	point1	1	0.0	0.0	0.00				Average	
		point3	3	100.0	0.0	0.00				Average	
		point4	4	200.0	0.0	0.00				Average	
		point5	5	300.0	0.0	0.00				Average	
		point6	6	400.0	0.0	0.00				Average	
		point7	7	500.0	0.0	0.00				Average	
		point8	8	600.0	0.0	0.00				Average	
		point9	9	700.0	0.0	0.00				Average	
		point10	10	800.0	0.0	0.00				Average	
		point11	11	900.0	0.0	0.00				Average	
		point12	12	1,000.0	0.0	0.00				Average	
		point13	13	1,100.0	0.0	0.00				Average	
		point14	14	1,200.0	0.0	0.00				Average	
		point15	15	1,300.0	0.0	0.00				Average	
		point16	16	1,400.0	0.0	0.00				Average	
		point17	17	1,500.0	0.0	0.00				Average	
		point18	18	1,600.0	0.0	0.00				Average	
		point19	19	1,700.0	0.0	0.00				Average	
		point20	20	1,800.0	0.0	0.00				Average	
		point21	21	1,900.0	0.0	0.00				Average	
		point2	2	2,000.0	0.0	0.00					

URS **2 October 2013**
CM URS SD **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **County of Santa Barbara Public Works**
RUN: **Tajiguas Current + Proj - Night - Access**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Access	point1	1	2	25	0	0	1	25	0	0	0	0
	point3	3	2	25	0	0	1	25	0	0	0	0
	point4	4	2	25	0	0	1	25	0	0	0	0
	point5	5	2	25	0	0	1	25	0	0	0	0
	point6	6	2	25	0	0	1	25	0	0	0	0
	point7	7	2	25	0	0	1	25	0	0	0	0
	point8	8	2	25	0	0	1	25	0	0	0	0
	point9	9	2	25	0	0	1	25	0	0	0	0
	point10	10	2	25	0	0	1	25	0	0	0	0
	point11	11	2	25	0	0	1	25	0	0	0	0
	point12	12	2	25	0	0	1	25	0	0	0	0
	point13	13	2	25	0	0	1	25	0	0	0	0
	point14	14	2	25	0	0	1	25	0	0	0	0
	point15	15	2	25	0	0	1	25	0	0	0	0
	point16	16	2	25	0	0	1	25	0	0	0	0
	point17	17	2	25	0	0	1	25	0	0	0	0
	point18	18	2	25	0	0	1	25	0	0	0	0
	point19	19	2	25	0	0	1	25	0	0	0	0
	point20	20	2	25	0	0	1	25	0	0	0	0
	point21	21	2	25	0	0	1	25	0	0	0	0
	point2	2										

URS 2 October 2013
CM URS SD TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Current + Proj - Night - Access
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	With Barrier Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	44.6	66	44.6	10	----	44.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Future - Day - US101

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	1,000.0	50.0	0.00	4.92	0.00	66	10.0	8.0	Y

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Future - Day - US101

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement) X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
US101	30.0	point1	1	0.0	0.0	0.00				Average	
		point3	3	100.0	0.0	0.00				Average	
		point4	4	200.0	0.0	0.00				Average	
		point5	5	300.0	0.0	0.00				Average	
		point6	6	400.0	0.0	0.00				Average	
		point7	7	500.0	0.0	0.00				Average	
		point8	8	600.0	0.0	0.00				Average	
		point9	9	700.0	0.0	0.00				Average	
		point10	10	800.0	0.0	0.00				Average	
		point11	11	900.0	0.0	0.00				Average	
		point12	12	1,000.0	0.0	0.00				Average	
		point13	13	1,100.0	0.0	0.00				Average	
		point14	14	1,200.0	0.0	0.00				Average	
		point15	15	1,300.0	0.0	0.00				Average	
		point16	16	1,400.0	0.0	0.00				Average	
		point17	17	1,500.0	0.0	0.00				Average	
		point18	18	1,600.0	0.0	0.00				Average	
		point19	19	1,700.0	0.0	0.00				Average	
		point20	20	1,800.0	0.0	0.00				Average	
		point21	21	1,900.0	0.0	0.00				Average	
		point2	2	2,000.0	0.0	0.00					

URS			**2 October 2013**									
CM URS SD			**TNM 2.5**									
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	**County of Santa Barbara Public Works**											
RUN:	**Tajiguas Future - Day - US101**											
Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
US101	point1	1	1730	65	117	55	97	55	0	0	0	0
	point3	3	1730	65	117	55	97	55	0	0	0	0
	point4	4	1730	65	117	55	97	55	0	0	0	0
	point5	5	1730	65	117	55	97	55	0	0	0	0
	point6	6	1730	65	117	55	97	55	0	0	0	0
	point7	7	1730	65	117	55	97	55	0	0	0	0
	point8	8	1730	65	117	55	97	55	0	0	0	0
	point9	9	1730	65	117	55	97	55	0	0	0	0
	point10	10	1730	65	117	55	97	55	0	0	0	0
	point11	11	1730	65	117	55	97	55	0	0	0	0
	point12	12	1730	65	117	55	97	55	0	0	0	0
	point13	13	1730	65	117	55	97	55	0	0	0	0
	point14	14	1730	65	117	55	97	55	0	0	0	0
	point15	15	1730	65	117	55	97	55	0	0	0	0
	point16	16	1730	65	117	55	97	55	0	0	0	0
	point17	17	1730	65	117	55	97	55	0	0	0	0
	point18	18	1730	65	117	55	97	55	0	0	0	0
	point19	19	1730	65	117	55	97	55	0	0	0	0
	point20	20	1730	65	117	55	97	55	0	0	0	0
	point21	21	1730	65	117	55	97	55	0	0	0	0
	point2	2										

URS 2 October 2013
CM URS SD TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Future - Day - US101
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	75.7	66	75.7	10	Snd Lvl	75.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Future - Night - US101

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	1,000.0	50.0	0.00	4.92	0.00	66	10.0	8.0	Y

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Future - Night - US101

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement) X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
US101	30.0	point1	1	0.0	0.0	0.00				Average	
		point3	3	100.0	0.0	0.00				Average	
		point4	4	200.0	0.0	0.00				Average	
		point5	5	300.0	0.0	0.00				Average	
		point6	6	400.0	0.0	0.00				Average	
		point7	7	500.0	0.0	0.00				Average	
		point8	8	600.0	0.0	0.00				Average	
		point9	9	700.0	0.0	0.00				Average	
		point10	10	800.0	0.0	0.00				Average	
		point11	11	900.0	0.0	0.00				Average	
		point12	12	1,000.0	0.0	0.00				Average	
		point13	13	1,100.0	0.0	0.00				Average	
		point14	14	1,200.0	0.0	0.00				Average	
		point15	15	1,300.0	0.0	0.00				Average	
		point16	16	1,400.0	0.0	0.00				Average	
		point17	17	1,500.0	0.0	0.00				Average	
		point18	18	1,600.0	0.0	0.00				Average	
		point19	19	1,700.0	0.0	0.00				Average	
		point20	20	1,800.0	0.0	0.00				Average	
		point21	21	1,900.0	0.0	0.00				Average	
		point2	2	2,000.0	0.0	0.00					

URS **2 October 2013**
CM URS SD **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **County of Santa Barbara Public Works**
RUN: **Tajiguas Future - Night - US101**

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
US101	point1	1	509	65	34	55	29	55	0	0	0	0
	point3	3	509	65	34	55	29	55	0	0	0	0
	point4	4	509	65	34	55	29	55	0	0	0	0
	point5	5	509	65	34	55	29	55	0	0	0	0
	point6	6	509	65	34	55	29	55	0	0	0	0
	point7	7	509	65	34	55	29	55	0	0	0	0
	point8	8	509	65	34	55	29	55	0	0	0	0
	point9	9	509	65	34	55	29	55	0	0	0	0
	point10	10	509	65	34	55	29	55	0	0	0	0
	point11	11	509	65	34	55	29	55	0	0	0	0
	point12	12	509	65	34	55	29	55	0	0	0	0
	point13	13	509	65	34	55	29	55	0	0	0	0
	point14	14	509	65	34	55	29	55	0	0	0	0
	point15	15	509	65	34	55	29	55	0	0	0	0
	point16	16	509	65	34	55	29	55	0	0	0	0
	point17	17	509	65	34	55	29	55	0	0	0	0
	point18	18	509	65	34	55	29	55	0	0	0	0
	point19	19	509	65	34	55	29	55	0	0	0	0
	point20	20	509	65	34	55	29	55	0	0	0	0
	point21	21	509	65	34	55	29	55	0	0	0	0
	point2	2										

URS 2 October 2013
CM URS SD TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas Future - Night - US101
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas ML2 - Validation - US101NB

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	1,000.0	100.0	0.00	4.92	0.00	66	10.0	8.0	Y

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas ML2 - Validation - US101NB

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement) X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
US101 NB	30.0	point1	1	0.0	0.0	0.00				Average	
		point3	3	100.0	0.0	0.00				Average	
		point4	4	200.0	0.0	0.00				Average	
		point5	5	300.0	0.0	0.00				Average	
		point6	6	400.0	0.0	0.00				Average	
		point7	7	500.0	0.0	0.00				Average	
		point8	8	600.0	0.0	0.00				Average	
		point9	9	700.0	0.0	0.00				Average	
		point10	10	800.0	0.0	0.00				Average	
		point11	11	900.0	0.0	0.00				Average	
		point12	12	1,000.0	0.0	0.00				Average	
		point13	13	1,100.0	0.0	0.00				Average	
		point14	14	1,200.0	0.0	0.00				Average	
		point15	15	1,300.0	0.0	0.00				Average	
		point16	16	1,400.0	0.0	0.00				Average	
		point17	17	1,500.0	0.0	0.00				Average	
		point18	18	1,600.0	0.0	0.00				Average	
		point19	19	1,700.0	0.0	0.00				Average	
		point20	20	1,800.0	0.0	0.00				Average	
		point21	21	1,900.0	0.0	0.00				Average	
		point2	2	2,000.0	0.0	0.00					

URS			**2 October 2013**									
CM URS SD			**TNM 2.5**									
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	**County of Santa Barbara Public Works**											
RUN:	**Tajiguas ML2 - Validation - US101NB**											
Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
US101 NB	point1	1	764	65	38	55	49	55	0	0	0	0
	point3	3	764	65	38	55	49	55	0	0	0	0
	point4	4	764	65	38	55	49	55	0	0	0	0
	point5	5	764	65	38	55	49	55	0	0	0	0
	point6	6	764	65	38	55	49	55	0	0	0	0
	point7	7	764	65	38	55	49	55	0	0	0	0
	point8	8	764	65	38	55	49	55	0	0	0	0
	point9	9	764	65	38	55	49	55	0	0	0	0
	point10	10	764	65	38	55	49	55	0	0	0	0
	point11	11	764	65	38	55	49	55	0	0	0	0
	point12	12	764	65	38	55	49	55	0	0	0	0
	point13	13	764	65	38	55	49	55	0	0	0	0
	point14	14	764	65	38	55	49	55	0	0	0	0
	point15	15	764	65	38	55	49	55	0	0	0	0
	point16	16	764	65	38	55	49	55	0	0	0	0
	point17	17	764	65	38	55	49	55	0	0	0	0
	point18	18	764	65	38	55	49	55	0	0	0	0
	point19	19	764	65	38	55	49	55	0	0	0	0
	point20	20	764	65	38	55	49	55	0	0	0	0
	point21	21	764	65	38	55	49	55	0	0	0	0
	point2	2										

URS 2 October 2013
CM URS SD TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas ML2 - Validation - US101NB
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	With Barrier Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas ML2 - Validation - US101SB

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	1,000.0	190.0	0.00	4.92	0.00	66	10.0	8.0	Y

URS 2 October 2013
CM URS SD TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas ML2 - Validation - US101SB

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
US101 SB	30.0	point1	1	0.0	0.0	0.00				Average	
		point3	3	100.0	0.0	0.00				Average	
		point4	4	200.0	0.0	0.00				Average	
		point5	5	300.0	0.0	0.00				Average	
		point6	6	400.0	0.0	0.00				Average	
		point7	7	500.0	0.0	0.00				Average	
		point8	8	600.0	0.0	0.00				Average	
		point9	9	700.0	0.0	0.00				Average	
		point10	10	800.0	0.0	0.00				Average	
		point11	11	900.0	0.0	0.00				Average	
		point12	12	1,000.0	0.0	0.00				Average	
		point13	13	1,100.0	0.0	0.00				Average	
		point14	14	1,200.0	0.0	0.00				Average	
		point15	15	1,300.0	0.0	0.00				Average	
		point16	16	1,400.0	0.0	0.00				Average	
		point17	17	1,500.0	0.0	0.00				Average	
		point18	18	1,600.0	0.0	0.00				Average	
		point19	19	1,700.0	0.0	0.00				Average	
		point20	20	1,800.0	0.0	0.00				Average	
		point21	21	1,900.0	0.0	0.00				Average	
		point2	2	2,000.0	0.0	0.00					

URS			**2 October 2013**									
CM URS SD			**TNM 2.5**									
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	**County of Santa Barbara Public Works**											
RUN:	**Tajiguas ML2 - Validation - US101SB**											
Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
US101 SB	point1	1	818	65	44	55	98	55	0	0	0	0
	point3	3	818	65	44	55	98	55	0	0	0	0
	point4	4	818	65	44	55	98	55	0	0	0	0
	point5	5	818	65	44	55	98	55	0	0	0	0
	point6	6	818	65	44	55	98	55	0	0	0	0
	point7	7	818	65	44	55	98	55	0	0	0	0
	point8	8	818	65	44	55	98	55	0	0	0	0
	point9	9	818	65	44	55	98	55	0	0	0	0
	point10	10	818	65	44	55	98	55	0	0	0	0
	point11	11	818	65	44	55	98	55	0	0	0	0
	point12	12	818	65	44	55	98	55	0	0	0	0
	point13	13	818	65	44	55	98	55	0	0	0	0
	point14	14	818	65	44	55	98	55	0	0	0	0
	point15	15	818	65	44	55	98	55	0	0	0	0
	point16	16	818	65	44	55	98	55	0	0	0	0
	point17	17	818	65	44	55	98	55	0	0	0	0
	point18	18	818	65	44	55	98	55	0	0	0	0
	point19	19	818	65	44	55	98	55	0	0	0	0
	point20	20	818	65	44	55	98	55	0	0	0	0
	point21	21	818	65	44	55	98	55	0	0	0	0
	point2	2										

URS 2 October 2013
CM URS SD TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: County of Santa Barbara Public Works
RUN: Tajiguas ML2 - Validation - US101SB
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0