State of California **Business, Transportation and Housing Agency**

Memorandum

To: Geramaldi Geramaldi,
Environmental Planning, SLO

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File No.: SB-101-PM 21.62
San Jose Creek Bridge Replacement
05-1H430_ (0516000073)

From: **DEPARTMENT OF TRANSPORTATION**/District 5
Environmental Engineering Branch
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Subject: **AIR QUALITY, NOISE, and GREEN HOUSE GAS MEMO**

BACKGROUND

Environmental Engineering has reviewed the above referenced project in Santa Barbara County on Route 101 at PM 21.62, which proposes to replace the existing northbound and southbound bridges over San Jose Creek. The bridge structures have been found to have reactive aggregate present. The existing and proposed structures will be removed and constructed in several stages. The existing median barrier and retaining walls will need to be adjusted, all permanent and temporary construction impacts are planned to occur within the existing right of way.

SUMMARY OF IMPACTS

The proposed project does not add capacity to the highway, as such there will be no long-term operational impacts to local air quality or noise as a result of the project. Construction duration is estimated to take approximately 30 months, and is expected to progress expeditiously once the construction contract is awarded. Due to the phased staging of the proposed project, Stage 1 would remove and replace the inside portion of each bridge leaving two 11' outside lanes in either direction open to traffic. Stage 2 would remove and replace the remaining portions. Since this ultimately is not a capacity increasing project, detailed air quality or noise technical studies are not required for this project.

AIR QUALITY

Regulatory framework

The proposed project is in the South Central Coast Air Basin (SCCAB). The SCCAB consists of San Luis Obispo, Santa Barbara, and Ventura Counties. The Santa Barbara County Air Pollution Control District (SBCAPCD) regulates air quality in Santa Barbara County. Santa Barbara County is considered non-attainment with respect to state ambient air quality standards (AAQS) for Ozone (1-hour and 8-hour) and for airborne particulate less than 10 microns in diameter (PM_{10}). Santa Barbara County is considered in attainment or unclassified for all national AAQS.

The Federal Highway Administration (FHWA) first issued air quality conformity guidelines in 1993, which have been amended throughout the years. The conformity guidelines list certain categories of projects that are exempt from local and regional air quality analysis because they have little if any potential to degrade air quality. These kinds of projects are exempt from the requirement that an air quality conformity determination be made according to 40 CFR Part 93.126 Based upon review of the federal guidelines, this project would qualify for an exemption because it consists of bridge reconstruction (with no additional travel lanes) which is considered exempt from federal conformity analysis. Furthermore, because the SBCAPCD is in attainment or unclassified for all NAAQS, air quality conformity requirements do not apply in the basin.

In addition, projects that do not further degrade air quality in the basin are consistent with the SBCAPCD's state air quality attainment goals as stated in their State Implementation Plan (the 2016 Ozone Plan and the Scope and Content of Air Quality Sections in Environmental Documents amended in 2017).

Permanent (Long-term) Impacts

Since no additional lanes or capacity is being added to the highway, there will be no difference in long-term air emissions with or without the proposed project. No operational emissions modeling was conducted, no further long-term operational air quality analysis is required.

Temporary (Construction) Impacts

Fugitive Dust and Equipment Emissions

With almost every construction project, there will be a short-term temporary increase in air emissions and fugitive dust during the construction period. Use of heavy equipment during project construction can generate fugitive dust that may have substantial temporary impacts on local air quality if large amounts of excavation, soil transport, and subsequent fill operations are necessary. It is known that earthwork would be required for the improvements associated with this project including: the existing sack-crete bank protection would be removed, placement of scour mitigation (RSP), several retaining walls will be replaced in order to replace the bridges, drainage work, and other misc. activities. The roadway would utilize existing grade to the maximum extent practicable, and would transition back to existing highway grade at the conform points. Grinding and removing the existing HMA pavement is required with this project, some dust generation would be expected from the earthwork component of this project.

While the SBCAPCD does have established daily and quarterly construction emission thresholds for many types of CEQA projects, highway projects like this one do not fit into their typical purvey of jurisdiction, which typically include residential, commercial, and industrial development projects. Since detailed information concerning the types, numbers, duration, frequency of usage per day, and age of specific construction equipment is not available at the time of this evaluation, quantification of construction emissions using CAL-CET (Caltrans Construction Emissions Tool) has only been included for informational purposes using basic user inputs of project: duration, construction cost, highway length, and type (Refer to Table 1).

Equipment emissions can vary substantially from day-to-day depending on the level of activity, the specific type of operation and the prevailing weather conditions. Depending on the construction site location and proximity to sensitive receptors, a project that generates high levels of construction emissions, including diesel PM, may require special attention and mitigation. Due to the small scope and footprint of work and its location, this project presents minimal potential to subject surrounding sensitive receptors to inhalable construction emissions that would be considered significant.

AQ Minimization

Including the use of standard construction dust and emission minimization practices and procedures, it is anticipated that project emissions of particulate matter (dust) and equipment emissions will be well within the SBCAPCD thresholds. To minimize dust emissions from the project, Section 14-9.02 (Air Pollution Control) of the 2015 Standard Specifications states that the contractor is responsible for complying with all local air-pollution-control rules, regulations, ordinances, and statutes that apply to work performed under the Contract, including those provided in Govt Code § 11017 (Pub Cont Code § 10231). Additionally, the project level SWPPP will address water pollution control measures that cross correlate with standard dust emission minimization measures such as covering soil stockpiles, watering haul any roads, watering excavation and grading areas, and so on. By incorporating appropriate engineering design and robust storm water Best Management Practices during construction, minimal short-term air quality impacts are anticipated.

Demolition Activities

Removing the existing bridge structures would require demolition activities that potentially could create nuisance dust in close proximity to the actual work location, but are not expected to be significant enough to impact the nearest residences. Lead paint on the rail systems or girders and or asbestos wrapped utility pipes may potentially be present. Both bridge decks may have been treated with methacrylate in the past to try and seal cracks. Any work that disturbs the existing paint system and/or demolition of the structures exposes workers to health hazards and produces: debris containing heavy metals, toxic fumes when heated, and grime and detritus already on the bridge before the start of work may also contain lead.

A “Debris Containment and Collection Plan” will need to be included in the project special provisions (approved by the project Resident Engineer) to effectively capture and collect all demolition debris and waste materials, preventing any material from entering the creek channel or migrating offsite during windy conditions. All stockpiled construction debris should at a minimum be covered daily or be off-hauled as soon as possible.

If after a waste characterization evaluation determines if lead paint or asbestos wrapped pipe is present, the project may need to implement “Work Area Monitoring” of the ambient air and soil in and around the work area to verify the effectiveness of any containment system if one is ultimately included in the engineers estimate.

GREENHOUSE GAS DISCUSSION

Greenhouse gas emission discussion has been included in this AQ technical memo utilizing the Climate Change guidance on the DEA website, "Discussion Notes for Climate Change considerations/analysis for Caltrans Environmental Generalists." According to the guidance, there are several categories of projects that most likely will have minimal or no increase in operational GHG emissions, including bridge replacement projects such as this. These projects should include a qualitative discussion about the operation of the project and the low to no potential for an increase in GHG emissions. No modeling of operational related GHG emissions was conducted for this project consistent with the above referenced guidance.

It is anticipated that there will be long-term GHG benefits as a result of this project by improving the facility such that there are improved traffic flows, smoother pavement surfaces, and reduced lifecycle maintenance costs associated with the facility. These elements are all consistent with reducing operational GHG emissions.

Construction GHG emissions will be unavoidable and would result from raw material extraction, material processing and delivery to the job site, on-site construction equipment, and potential traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction would be offset by longer intervals between maintenance and rehabilitation activities.

Construction Climate Change emissions were estimated using the CAL-CET modeling tool utilizing default settings for a bridge replacement project. The estimated average Carbon Dioxide emissions is 124 tons/year or a total of 310 tons generated over a 30-month time frame (Refer to Table 1). Note that this estimate is based on assumptions made during the environmental planning phase of the project and is considered a "ballpark" of energy usage (diesel fuel) and climate change emissions (CO_2) using limited data inputs and default modeling.

Table 1: Project Related Construction Emission Estimates

	Summary of Project Emissions and Diesel Fuel Consumption							
	TOG	ROG	CO	NOx	PM_{10}	$PM_{2.5}$	CO_2	Diesel Fuel
Daily Average (lbs/day)	0.26	0.25	2.08	3.69	0.53	0.19	952	273
Maximum Daily Average (lbs/day)	0.66	0.64	4.63	9.22	5.23	0.69	2139	649
Annual Average (tons/year)	0.03	0.03	0.27	0.48	0.07	0.03	124	36

NOISE

Regulatory Setting

The California Environmental Quality Act (CEQA) considers noise to be a "significant effect" when it "increase(s) substantially the ambient noise levels for adjoining areas". Caltrans and the Federal Highway Administration require consideration of noise abatement when predicted noise levels of Type I projects substantially exceed the existing noise levels, or when they approach or exceed 67-dBA Leq in residential areas. A substantial increase is when post project noise levels exceed pre project noise levels by 12-dBA Leqh. Caltrans noise policy is contained in Caltrans Traffic Noise Analysis Protocol (CATNAP) dated May 2011. A Type II project involves construction of noise abatement on an existing highway with no changes to highway capacity or alignment. A Type III project is a project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise analysis.

Affected Environment

The project is situated in a primarily urban section of Santa Barbara County in the City of Goleta. There are scattered residences near the highway within the project limits.

Permanent (Long-term) Impacts

Since no capacity will be added to the highway and the vertical profile of the new bridges will be the same after construction, this would be considered a Type 3 project, it is assumed that local noise levels will be the same after completion of the project as they were before. Long-term noise abatement measures are not anticipated with this project.

Temporary (Construction) Impacts

It is inevitable that local noise levels in the vicinity of any given location will experience a short-term increase due to construction activities. The amount of construction noise will vary with the particular activities associated with each location and the models and types of equipment used by the contractor. Caltrans policy states that normal construction equipment should not emit noise levels greater than 86-dBA at 50-feet from the source during nighttime operations. Extraordinary activities like pile driving (that can emit much higher noise levels) are anticipated on this project, and would be right at the acceptable limit per Caltrans specifications. Typically pile driving only lasts a few days at each location, but there is a possibility the foundation type might be CIDH due to the presence aquatic species and hydro-acoustic concerns.

Since the traffic management strategy amongst the stages is to utilize the existing bridges during construction, night work is not anticipated for the pile driving (if necessary) or any other operation associated with this project.

Minimization

Adverse noise impacts from construction are not anticipated because noticeable construction noise would be temporary and intermittent, conducted in accordance with Caltrans Standard

Specifications, and because local noise levels are significantly influenced by local traffic noise. To minimize impacts on resident's normal nighttime sleep activities it is recommended that whenever possible construction work be done during the day, especially when work is near sensitive receptors. If nighttime construction is necessary, the noisiest construction activities should be done nearest the residences as early in the evening as possible. Caltrans Standard Specifications (Section 14-8.02) requires the contractor to control and monitor noise resulting from work activities and not to exceed 86 dBA Lmax at 50 feet from the job site from 9:00 p.m. to 6:00 a.m.

Include the following measures in the contract special provisions:

- The Contractor shall comply with all local sound control and noise level rules, regulations, and ordinances which apply to any work performed pursuant to the contract.
- Each internal combustion engine, used for any purpose on the job, or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the job site without an appropriate muffler.
- Notify surrounding residences in advance of the construction schedule when unavoidable construction noise and upcoming construction activities likely to produce an adverse noise environment are expected. This notice shall be given two weeks in advance. Notice should be published in local news media of the dates and duration of proposed construction activity. The District 5 Public Information Office posts notice of the proposed construction and potential community impacts after receiving notice from the Resident Engineer.

Include the following general measures in the RE binder and implement as appropriate to further minimize temporary construction-noise impacts.

- Limit all phases of construction to acceptable hours, Monday through Friday as required by local ordinance;
- Shield especially loud pieces of stationary construction equipment;
- Locate portable generators, air compressors, etc. away from sensitive noise receptors;
- Limit grouping major pieces of equipment operating in one area to the greatest extent feasible;
- Place heavily trafficked areas such as the maintenance yard, equipment, tool, and other construction oriented operations in locations that would be the least disruptive to surrounding sensitive noise receptors;
- Use newer equipment that is quieter and ensure that all equipment items have the manufacturers' recommended noise abatement measures, such as mufflers, engine covers, and engine vibration isolators intact and operational. Internal combustion engines used for any purpose on or related to the job shall be equipped with a muffler or baffle of a type recommended by the manufacturer; and,
- Consult District noise staff if complaints are received during the construction process.

No further minimization measures are recommended.