- A list of all fuel burning, construction related equipment used,
- A determination of the suitability of each piece of equipment to work appropriately with an oxidizing particulate trap,
- If a piece of equipment is determined to be suitable, a statement by the independent California Licensed Mechanical Engineer that the oxidizing soot filter has been installed and is functioning properly, and
- If a piece of equipment is determined to be unsuitable, an explanation by the independent California Licensed Mechanical Engineer as to the cause of this determination.

Subsequent Suitability Reports:

- If a piece of construction related equipment is subsequently determined to be unsuitable for an oxidizing particulate trap subsequent after installation has occurred, the trap may be removed immediately. However notification must be sent to the SCAQMD for approval containing an explanation for the change in suitability within 10 days.
- Changes in suitability are restricted to three explanations which must be identified in any subsequent suitability report:
    1. The oxidizing particulate trap is reducing normal availability of the construction equipment due to increased downtime, and/or power output due to increased back pressure by 20% or more.
    2. The oxidizing particulate trap is causing or reasonably expected to cause significant damage to the construction equipment engine.
    3. The oxidizing particulate trap is causing or reasonably expected to cause a significant risk to nearby workers or the public.

5-104 cont'd

Further, if additional mitigation is required to reduce either construction or project emissions below the significance threshold, we additionally recommend that Ultramar consider retrofitting a fleet of trucks similar to the ARCO bus fleet project.

II.E.5 Other Engine Exhaust Measures

In addition to using PuriNOx, requiring 20% CARB-certified engines, and using post-combustion controls, there are other mitigation measures that the DEIR should have evaluated and recommended for this project to control engine exhaust emissions. The DEIR only included seven mitigation measures for exhaust emissions, which collectively would result in mitigation of very little of the NOx, VOCs, or PM10, even if fully implemented. There are other technically

5-105

feasible measures identified in the CEQA guidelines of air districts and/or routinely required by other agencies.

These include measures contained in the CEQA guidelines of several air districts including the Bay Area Air Quality Management District (BAAQMD 1996, pp. 12-14),[46] the Monterey Bay Unified Air Pollution Control District (MBUAPCD 1995, pp.),[47] the Ventura County Air Pollution Control District (VCAPCD 1989, pp. 7-2 to 7-4),[48] the San Luis Obispo County Air Pollution Control District (SLOCAPCD 1995, pp. 23-27),[49] the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD 1998, pp. 22, 62, 63),[50] the Sacramento Metropolitan Air Quality Management District (SMAQMD 1994, pp. 10, 20),[51] the Santa Barbara County Air Pollution Control District (SBCAPCD 1997, pp. 16-18),[52] Butte County Air Quality Management District (BCAQMD 1997),[53] the Yolo-Solano Air Quality Management District (YSAQMD 1996, Appx. D),[54] as well as measures listed by the South Coast Air Quality Management District in its CEQA Guidelines (SCAQMD 1993, pp. 11-3, 11-4, 11-13 to 11-15).[55] All of these measures should be evaluated and implemented for this project by requiring them as standard contract language. These are as follows: 5-105 cont'd

- Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use. (SJVUAPCD) 5-106

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[46] Bay Area Air Quality Management District, BAAQMD CEQA Guidelines. Assessing the Air Quality Impacts of Projects and Plans, April 1996.

[47] Monterey Bay Unified Air Pollution Control District ("MBUAPCD"), CEQA Air Quality Guidelines, October 1995.

[48] Ventura County Air Pollution Control District ("VCAPCD"), Guidelines for the Preparation of Air Quality Impact Analyses, October 24, 1989.

[49] San Luis Obispo Air Pollution Control District ("SLOAPCD"), CEQA Air Quality Handbook, August 1995.

[50] San Joaquin Valley Unified Air Pollution Control District ("SJVUAPCD"), Guide for Assessing and Mitigating Air Quality Impacts, August 20, 1998.

[51] Sacramento Metropolitan Air Quality Management District ("SMAQMD"), Air Quality Thresholds of Significance, 1994.

[52] Santa Barbara County Air Pollution Control District ("SBCAPCD"), Scope and Content of Air Quality Sections in Environmental Documents, September 1997.

[53] Butte County Air Quality Management District ("BCAQMD"), Indirect Source Review Guidelines, March 20, 1997.

[54] Yolo-Solano Air Quality Management District, Air Quality Handbook, May 1996 (Construction mitigation is identical to SMAQMD).

[55] South Coast Air Quality Management District, CEQA Air Quality Handbook, April 1993.

- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing construction activity during the peak-hour of vehicular traffic on adjacent roadways. (SJVUAPCD) 5-107
- Implement activity management (e.g., rescheduling activities to reduce short-term impacts). (SJVUAPCD) 5-108
- The engine size of construction equipment shall be the minimum practical size. (SBCAPCD) 5-109
- Construction equipment operating onsite shall be equipped with two to four degree engine timing retard or precombustion chamber engines. (SBCAPCD, SLOCAPCD) 5-110
- Construction worker trips should be minimized by requiring carpooling and by providing for lunch onsite. (SBCAPCD) 5-111
- During smog season (May through October), the construction period should be lengthened so as to minimize the number of vehicles and equipment operating at the same time. (VCAPCD) 5-112
- Emission offsets if ROG or NOx emissions exceed 6.0 tons/quarter. (SLOCAPCD) 5-113

II.E.6 Fugitive Dust Mitigation Measures

As discussed in Comment II.D, the DEIR includes six mitigation measures that would be part of a Fugitive Dust Emission Control Plan that would be developed in the future. These six measures are already required by SCAQMD regulations and therefore do not constitute valid mitigation. (DEIR, pp. 4-18/19.) 5-114

Fugitive dusts arise from excavating, grading, trenching for the pipelines, and wind erosion of storage piles and other disturbed areas. These PM10 emissions can be readily reduced using a wide range of technically feasible and economic mitigation measures, contained in the CEQA Guidelines of other agencies and the Rule 403 Implementation Plan. These measures include, but are not limited to: 5-115

- When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions, or at least six inches of freeboard space from the top of the container shall be maintained (BAAQMD, SJVUAPCD, Rule 403 Handbook). 5-116
- Trucks transporting fill material to and from the site shall be tarped from the point of origin. (SBCAPCD, Rule 403 Handbook) 5-117
- Where feasible, use bedliners in bottom-dumping haul vehicles. (Rule 403 Handbook) 5-118

- Use 3- to 5-foot barriers with 50% or less porosity located adjacent to roadways or urban areas to reduce windblown material leaving site (Rule 403 Handbook). 5-119
- Install wind breaks at windward side(s) of construction areas (BAAQMD, SJVUAPCD). 5-120
- Grade each phase separately, timed to coincide with construction phase or grade entire project, but apply chemical stabilizers or ground cover to graded areas where construction phase begins more than 60 days after grading phase ends (Rule 403 Handbook). 5-121
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (BAAQMD) *(The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)* (SJVUAPCD). 5-122
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant (SJVUAPCD). 5-123
- Cover inactive storage piles. (BAAQMD, BCAQMD, SBCAPCD, MBUAPCD) 5-124
- Cover active storage piles. (Rule 403 Handbook) 5-125
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1% (BAAQMD, SJVUAPCD). 5-126
- Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site (BAAQMD, SJVUAPCD). 5-127
- Limit areas subject to excavation, grading, and other construction activity at any one time (BAAQMD, SJVUAPCD). 5-128
- During initial grading, earth moving, or site preparation, projects 5 acres or greater may be required to construct a paved (or dust palliative treated) apron, at least 100 ft in length, onto the project site from the adjacent site if applicable. (BCAQMD) 5-129
- Hydroseed or apply soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more). (BAAQMD) 5-130
- Replant vegetation in disturbed areas as quickly as possible. (BAAQMD) 5-131

- Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 24 hrs. (BCAQMD, MBUAPCD) 5-132
- Prior to final occupancy, the applicant demonstrates that all ground surfaces are covered or treated sufficiently to minimize fugitive dust emissions. (BCAQMD) 5-133
- Gravel pads must be installed at all access points to prevent tracking of mud on to public roads. (SBCAPCD) 5-134
- The contractor or builder shall designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. (SBCAPCD, SLOCAPCD) 5-135
- Prior to land use clearance, the applicant shall include, as a note on a separate informational sheet to be recorded with map, these dust control requirements. All requirements shall be shown on grading and building plans. (SBCAPCD, SLOCAPCD) 5-136
- All roadways, driveways, sidewalks, etc. to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used. (SLOCAPCD) 5-137
- Sweep streets at the end of each day (or as needed) if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible. (BAAQMD, SLOCAPCD, VCAPCD, MBUAPCD, BAAQMD, SCAQMD) 5-138
- During high wind conditions, cease all land clearing and earth moving operations or apply water within 15 minutes to any soil surface which is being moved or otherwise disturbed. (Rule 403 Handbook) 5-139

Many of these measures are routinely required elsewhere. See, for example, the construction mitigation program proposed for the El Toro Airport in Exhibit 2. 5-140

III. OPERATIONAL IMPACTS WERE UNDERESTIMATED

III.A Railcar Emissions Underestimated

Ethanol would be transported via railcar to the Wilmington area. (DEIR, p. 4-10.) The DEIR underestimated railcar emissions by only considering emissions within the South Coast airbasin and by using a very high fuel efficiency factor that is not representative of conditions in the South Coast. 5-141

When these errors are corrected, railcar emissions increase by about a factor of five. In addition, the SOx emissions were underestimated by assuming that low sulfur diesel would be used in the locomotive engines. However, the DEIR has not imposed any conditions that would assure that low sulfur diesel is actually used. When a higher, more representative value is used for fuel sulfur content, SOx emissions are significant.

5-141 cont'd

III.A.1 All Emissions Within California Must Be Considered

The DEIR separately estimated rail car emissions within the South Coast and elsewhere in California, outside of the South Coast. CEQA requires that all emissions that occur within the State be considered in determining project significance. Excluding emissions that occur outside of the South Coast significantly underestimates railcar emissions, as demonstrated by the following table:

5-142

	Railcar Emissions (lb/day)		
	Within South Coast	Outside South Coast	Total
CO	8.3	19.0	27.3
VOCs	3.1	7.1	10.2
NOx	84.4	193.0	277.4
SOx	5.3	12.2	17.5
PM10	2.1	4.8	6.9

III.A.2 Wrong Fuel Efficiency Used

Locomotive combustion emission factors are expressed in pounds of pollutant per gallon of fuel consumed. Emissions are estimated by multiplying the emission factors by the total amount of fuel consumed. The amount of fuel consumed is estimated by dividing the ton miles transported by a fuel efficiency factor, expressed as ton-miles per gallon or "ton-mi/gal." (DEIR, p. B-17.)

5-143

The DEIR estimated railcar emissions assuming a fuel efficiency of 401 ton-mi/gal. This is an average efficiency for the entire state. Fuel consumption varies dramatically by both type of rail operation and by basin due to differences in mix of train services and geography. In the South Coast, for example, moving gross tons eastbound, up the Cajon Pass, requires more work to be performed than moving the same gross tons westbound, down the Pass. Thus, in the South Coast, it takes more fuel to move a ton-mile of freight due to the need to traverse mountain ranges to get into and out of the area. This is important here as ethanol will be imported from the midwest.

CARB commissioned a study of locomotive emissions in 1991. This study found that the average statewide fuel efficiency is 401 ton-mi/gal, identical to the value used in the DEIR. However, it reported that in the South Cost, the fuel efficiency drops to 262 ton-mi/gal.[56] Therefore, the DEIR underestimated locomotive emissions by a factor of about 1.5. The revised emissions, using the correct fuel efficiency factor, are:

	Revised Railcar Emissions (lb/day)		
	Within South Coast	Outside South Coast	Total
CO	12.7	29.1	41.8
VOCs	4.7	10.9	15.6
NOx	129.2	295.4	424.6
SOx	8.1	18.7	26.8
PM10	3.2	7.3	10.6

5-144

Although this change does not result in any new significant impacts, it increases the amount of VOCs and NOx emissions that must be mitigated.

The DEIR suggests that railcar emissions have been overestimated "since it is expected that the additional nine railcars will be added to the existing trains that currently deliver material to the Los Angeles area." (DEIR, p. 4-11.) This is not correct because the DEIR's calculations are based on the increase in weight to haul the project's ethanol and do no include any additional weight associated with the locomotive itself and other cars in the train.

5-145

III.B Operational SOx Emissions Are Significant

The DEIR underestimated SOx emissions by assuming locomotives would burn low-sulfur fuel and by omitting several sources of SOx. When these errors are corrected, operational SOx emissions increase from 5 lb/day to 346 lb/day.[57] These emissions exceed the significance threshold of 150 lb/day and are significant.

5-146

III.B.1 Railcar Emissions Are Underestimated

The SOx railcar emissions were underestimated because a very low fuel sulfur content was assumed in calculations. The DEIR assumes that the fuel used

[56] California Air Resources Board (CARB), Locomotive Emission Study, Prepared by Booz-Allen & Hamilton, Inc., January 1991, Exhibit 4-10.

[57] Total revised SOx emissions = 325.0 + 26.3 - 5 = 346 lb/day.

by the locomotive contains 0.0375 pounds of SOx per gallon. (DEIR, p. B-17.) This is equivalent to 0.03% sulfur by weight.[58] This is reasonable for on-road vehicles.

Fuels used in locomotives typically have far more sulfur than assumed in the DEIR's analysis because there are no regulatory sulfur requirements for fuel used in locomotive engines. The DEIR does not contain any conditions or mitigation measures that would require the use of low-sulfur fuel in locomotives used to haul project ethanol.

The sulfur content is normally determined by the tolerance of the engine. Low-speed engines can tolerate more sulfur than their high-speed counterparts because they operate under relatively constant speed and load conditions. It is not unusual for residual-type fuels used in the larger, slower-speed engines to have a sulfur content of 3.0% by weight or even higher. On the other hand, fuel for high-speed use generally has a sulfur content of 0.4% by weight or less to avoid excessive wear.[59] Locomotive engines are generally between these two extremes and use medium-speed engines. The U.S. EPA, for example, uses a fuel sulfur content of 0.4% to estimate SOx emissions from locomotives. (AP-42,[60] v. II, Table II-2.1.)

5-146 cont'd

If the SOx emissions from locomotives are estimated using EPA's fuel sulfur content of 0.4%, the SOx emissions from importing ethanol by rail would be 325 lb/day.[61] These emissions alone exceed the significance threshold of 150 lb/day and are significant.

III.B.2 The DEIR Omits Other Sources Of SOx

The trucks used to deliver material to the Refinery and to transport ethanol from the Carson Terminal to satellite blending terminals burn diesel fuel with 0.05% sulfur. Worker vehicles would also emit SOx, but these amounts are comparatively small. The DEIR did not estimate SOx emissions from these sources. See Table 4-4, which contains dashes (--) for SOx emissions from new heavy diesel trucks, ethanol trucks, and worker vehicles. (DEIR, Table 4-4.)

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[58] Fuel sulfur content = (0.0375 lb SO_2/gal)(32 lb S/64 lb SO_2)/[(0.9)(62.4 lb/gal)](100) = 0.033%

[59] C.H. Jewitt and others, Fuels for Land and Marine Diesel Engines and for Nonaviation Gas Turbines, In: Manual on Significance of Tests for Petroleum Products, 6th Ed., 1993, pp. 54-68.

[60] U.S. EPA, Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, Report AP-42, 4th Ed., September 1985, Section II-2. Locomotives.

[61] SOx emissions from importing ethanol by rail = (26.8 lb/day)(0.4%/0.033%) = 324.8 lb/day.

The SOx emissions from truck travel can be estimated by using the SOx emission factor of 0.45 lb/hr for trucks that was relied by the DEIR to estimate construction emissions. (DEIR, p. B-1.) The total distance traveled by trucks each day is 2,920 miles.[62] Assuming that these trucks travel at an average speed of 50 mph, they would operate 58.4 hours per day. Therefore, the SOx emissions from truck travel would be 26.3 lb/day.

5-147 cont'd

III.C Operational PM10 Emissions Are Significant

The DEIR estimated that PM10 emissions from project operation would be 35 lb/day. Most of this PM10, 83%, is from entrained road dust. (DEIR, Table 4-4.) The DEIR concluded that these emissions are not significant because they are less than the significance threshold of 150 lb/day. (DEIR, Table 4-6, p. 4-20.) However, the DEIR's calculation contains a number of errors and omissions. When these are corrected, PM10 emissions increase from 35 lb/day to 189 lb/day. The revised emissions exceed the significance threshold of 150 lb/day and must be mitigated. This is a new significant impact that was not discussed in the DEIR.

5-148

III.C.1 Entrained Road Dust From Ethanol Transport Omitted

The project would require about 30 trucks per day to transport ethanol. (DEIR, p. 4-10.) The DEIR's emission inventory in Table 4-4 includes exhaust emissions from these 30 trucks, but does not include entrained road dust PM10 emissions.

5-149

The entrained road dust PM10 emissions from hauling ethanol can be estimated using the SCAQMD CEQA Guideline procedures (SCAQMD 3/93, Table A9-9-C, p. A9-96) and trip lengths reported in the DEIR. (DEIR, p. B-14.) Assuming 100% of the miles are on freeways without street cleaning, the PM10 emissions are:

Trucks (paved) = (1,920 mi)(0.77[(0.00065)(0.35)]$^{0.3}$ = **119.4 lb/day**

III.C.2 Entrained Road Dust From Other Mobile Sources Underestimated

As discussed in Comment I.D, the DEIR underestimated entrained road dust PM10 emissions from employee and delivery vehicles because it assumed that they would use roadways with street cleaning. The DEIR does not include any mitigation measures or other conditions to assure that this traffic only uses swept streets. Thus, these emission calculations must be revised, or appropriate mitigation measures included.

5-150

[62] Total operational truck miles = (960)(2) = (10)(2)(50) = 2,920. (DEIR, pp. B-14 and B-16.)

Entrained road dust is recalculated here, using the same procedures discussed above in Comment I.D. Assuming 100% of truck travel is on freeways (yielding the smallest emissions) and 100% of passenger vehicle travel is on swept major highways and using the DEIR's assumptions as to number, type, and distance traveled (DEIR, p. B-16) and SCAQMD emission factors (SCAQMD 3/93, Tables A9-9-B/C):

Passenger vehicles (paved) = (0.0064 lb/mi)(8)(2)(11.5 mi) = **1.2 lb/day**

Trucks (paved) = $(10)(2)(50)(0.77[(0.00065)(0.35)]^{0.3}$ = **62.2 lb/day**

Total Entrained Road Dust = **63.4 lb/day**

The revised entrained PM10 emissions from employees and heavy duty truck delivering to the refinery are 63.4 lb/day, compared to 29.0 lb/day estimated in the DEIR by assuming that 100% of paved roadways used by project vehicles would be swept. Actual emissions could be substantially higher if workers and trucks used local and collector streets, rather than highways or major streets.

III.D Off-Site Blending Terminal Emissions Omitted

Ethanol would be imported by rail, presumably to a central terminal in Carson. (DEIR, p. B-14.) The ethanol would then be transported by tanker truck to third-party blending and distribution terminals located in Colton, Orange, and Wilmington. (DEIR, p. 2-14.) The DEIR did not estimate the VOC emissions that would occur when product is transferred from railcars into storage tanks at the Carson Terminal, from Carson storage tanks into tanker trucks, from the tanker trucks into tanks at the blending terminal, and emissions from tanks, pumps, valves, and flanges at the blending facility, including in the cumulative analysis. (DEIR, Table 5-2.)

These emissions cannot be accurately quantified because the DEIR does not contain any information on off-site terminal operations. However, they are likely to be substantial. Assuming vapor recovery systems designed to meet 0.08 pounds of VOC per 1000 gallons (Rule 462) are used to control transfer emissions, the loading and unloading of 5,000 barrels per day of ethanol (DEIR, p. 6-2) would emit 50.4 lb/day of VOCs.[63] Because VOC emissions are already significant, including these emissions increases the mitigation obligation.

III.E Indirect Emissions From Electricity Generation Omitted

[63] Ethanol transfer VOC emissions = (3 transfers)(0.08 lb/1000 gal)(5000 bbl/day)(42 gal/bbl) = 50.4 lb/day.