WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

STEPHEN R. MAGUIN
Chief Engineer and General Manager

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Ms. Mary Nichols
California Air Resources Board
1001 "I" Street
P.O. Box 2815
Sacramento, California 95812

Dear Ms. Nichols:

Consideration for Waste-Derived Alternative Fuels
In the Proposed Low Carbon Fuel Standard (LCFS)

The primary goal of the proposed Low Carbon Fuel Standard (LCFS) is to reduce the carbon intensity of California's transportation fuel supply by ten percent come 2020. This goal will require a dramatic expansion in the use of alternative fuels including but not limited to electricity, compressed natural gas (CNG), liquefied natural gas (LNG), hydrogen, biodiesel, cellulosic ethanol, etc. We are writing this letter because the Sanitation Districts of Los Angeles County (Sanitation Districts) are concerned that the menu of waste-to-alternative fuel options that are potentially available is only implicitly and not explicitly recognized in the draft regulation. California generates a broad array and tonnage of waste products. The ability to convert these wastes into creditable alternative fuels for ultimate compliance with the LCFS represents a golden opportunity for a win: win situation-the productive use of waste materials while reducing the transportation sector's overall carbon impact. The proposed LCFS is not particularly waste-based alternative fuel friendly and we think this should be changed.

More GREET Pathways for Waste-Derived Alternative Fuels Are Needed

Only a limited number of alternative fuel pathways, including corn ethanol, sugar cane ethanol, compressed gaseous hydrogen, biodiesel from soybeans, cellulosic ethanol from farmed trees, average/marginal electricity, and CNG from landfill gas (LFG), have been generated by your staff using the GREET model to estimate the potential energy consumption and greenhouse gas (GHG) emissions of these alternative fuels. Many of these are works in progress and may not include final numbers or important considerations such as evaluation of land use changes [or use of marginal versus prime agricultural land for growing such crops], a point we will come back to later in this letter. While we are appreciative of the landfill gas to CNG pathway analysis[1], this is only one of a large array of GREET pathway analyses that are

[1] The well-to-tank (WTT) analysis for LFG to CNG shows the LARGEST NEGATIVE contribution (and therefore the best scenario) to the overall GHG footprint of the alternative fuels analyzed by requiring – 814,896 Btu/MMBtu (the energy required to produce a unit of energy of the alternative fuel) and –

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needed to encompass the attractive options available in the waste-to-alternative fuel arena. We need other GREET pathway analyses including but not limited to the following:

- Landfill gas (LFG) to liquefied natural gas (LNG), pipeline natural gas, electricity, and hydrogen.
- Sewage digester gas (DG) to compressed natural gas (CNG), liquefied natural gas (LNG), pipeline natural gas, electricity, and hydrogen.
- Biosolids to compressed natural gas (CNG), liquefied natural gas (LNG), pipeline natural gas, electricity, hydrogen and biodiesel.
- Green waste to cellulosic ethanol.
- Fats and grease (collected from restaurants or sewers) to biodiesel.
- Municipal waste to ethanol, Fischer-Tropsch (FT) diesel, and electricity.

While the draft rule does not preclude developing any pathway and obtaining CARB approval ourselves, it is unknown territory and a hurdle to develop the alternative fuels system California needs. Staff should develop or at least commit to developing more waste-derived alternative fuel pathways such as the ones listed above so that the potential fuel developer has an *approved* pathway (and not just a promise) that it can use to negotiate with the major transportation fuel suppliers.

Pathway Needed for Biofuel Crops Grown on Marginal Land Not Suited for Food Crops

A variation on most of the alternative fuel feedstock pathways developed by staff that has been overlooked in the proposed LCFS is biofuel crops grown on marginal lands not suited for food crops. The published pathways for cellulosic ethanol from farmed trees via fermentation, sugarcane ethanol and soybean biodiesel should not be the only biofuel crops that are supported within the LCFS. The use of these typical feedstocks have raised a number of concerns such as the consequences of rainforest removal and the diversion of crops to biofuel production that otherwise would be used for the human food supply. Many other biofuel crops can be grown on marginal lands enhanced by biosolids compost and re-used wastewater that overall are much greener operations than their traditional counterparts. Examples of these biofuel crops include:

- Biodiesel from sunflower, safflower, winter canola, flax, and camelina.
- Ethanol from grain sorghum and 3-grain mix.
- Cellulosic ethanol from sudangrass.
- Algae grown in detention ponds (or inside a controlled environment).

For your information, the Sanitation Districts have been researching the feasibility of growing biofuel crops on marginal lands we own in the San Joaquin Valley and on sites in Lancaster and Palmdale, which total approximately 20,000 acres of land. If the Sanitation Districts decide to move forward with this project, it will be a massive undertaking, which will require at a minimum, a sizeable initial capital investment to prepare the land for cropping,

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46.69gCO2e/MJ i.e., the lowest (best) overall carbon intensity of the alternative fuels analyzed. The LFG to CNG pathway is a simple yet important example of the benefits of producing fuels from local waste streams. Many other waste-derived alternative fuels should look equally appealing.

contracting farming labor, upgrading pipelines to re-route tertiary treated water from our local water reclamation plants to serve as irrigation water, contracting with local processing/crushing plants and biofuel refineries to take the feedstock, coordinating transportation of the feedstock to the various cropping plants/refineries, and implementing any other associated best management practices to ensure all environmental regulations are met. There is little incentive in the current form of the draft regulation to offset the massive investment of time, man-power and capital cost. A clear GREET pathway analysis by CARB of this alternative could go a long way to developing this resource.

Additional Draft Regulation (December 2008) Language Comments

- Section 95420 definitions, some of which reference fuel specification standards, will be tough for small volume, waste-derived alternative fuel suppliers to meet.

We understand the need and desire to have alternative fuels and additives comply with statewide transportation fuel standards such as ASTM D975 or ASTM D4806 and be registered under Section 211 of the Clean Air Act (40 CFR Part 79). We think that a major hurdle faced by waste-derived alternative fuel producers will be complying with all of the requirements in the cited regulations to the letter. For example, 40 CFR Part 79 consists of over 90 pages of small type requirements for fuels and additives including testing requirements for registration in Subpart F [Testing Requirements for Registration]. These include subchronic toxicity studies with specific health effects testing, fertility assessments/teratology, in vivo micronucleus assays, in vivo sister chromatid exchange assays, neuropathology assessments, glial fibrillary acidic protein assays, and analysis for numerous compounds such as polycyclic aromatic hydrocarbons (PAHs), nitrated polycyclic aromatic hydrocarbons (NPAHs), poly-chlorinated dibenzodioxins and dibenzofurans (PCDD/PCFDs), among others. Small volume alternative fuel producers will have great difficulty complying with these requirements without agreements with the larger producers who have adequate testing facilities, laboratory equipment, overall expertise and funding to meet these registration requirements. Given that alternative fuels are currently estimated at only 1 percent of the total volume of petroleum-based fuels, smaller volume alternative fuel producers are at a significant disadvantage in negotiating such agreements with the big producers, despite the low carbon intensity of the additives.

Staff should evaluate the practicality of small volume, alternative fuel producers complying with these requirements themselves as opposed to, preferably, CARB taking on the obligations on their behalf or in a partnership, to advance the penetration of these fuels into the marketplace should a small producer not be able to get the large transportation fuel suppliers to take on the task.

- In Section 95420 (a)(25), the definition of "renewable biomass" should be revised to include waste-derived alternative fuel feedstocks from any solid waste and liquid waste streams, including but not limited to, greenwaste, biosolids, fats/oils/grease from municipal wastewater and solid waste, and crops from marginal lands.

- The Sanitation Districts submitted two comment letters previously, one on July 15, 2008 and one on December 16, 2008. We were led to believe that our July 15 comments would be addressed in a later revised draft of the December 2008 Draft LCFS. We are still waiting to see those responses.

Finally, the Sanitation Districts have long been the poster-child in the contest to support, invest, and further advance technology in the fuel production-from-waste arena. While we have discussed our concerns several times with Mr. John Courtis of your staff, who has truly done his best to assuage our fears, there is no better assurance than having our concerns written directly into the regulatory language. We hope that this appeal to you will cause specific language to be included in the regulation that favorably treats the waste-derived alternative fuels industry. The "favorable treatment" by CARB should consist of more alternative fuel pathways as we suggested earlier, changing some definitions, removing disincentives as discussed in earlier letters and CARB serving as a technical resource to aid the waste-derived alternative fuel industry to comply with the technical specifications governing the fuels.

Thank you for your attention. If you have any questions or would like to discuss any of above the matter further, please do not hesitate to contact the undersigned at (562) 699-7411, extension 2113.

Very truly yours,

Stephen R. Maguin

Gregory M. Adams

Gregory M. Adams
Assistant Departmental Engineer
Air Quality Engineering Section
Technical Services Department

GMA:TL:bb

cc: James Goldstene
John Courtis
Edie Chang