February 22, 2007

Mr. Marty Kay
South Coast Air Quality Management District
Science and Technology Advancement
21865 E. Copley Drive
Diamond Bar, CA 91765

Dear Mr. Kay:

Eastern Municipal Water District (EMWD) appreciates the opportunity to comment on Proposed Amended Rule (PAR) 1110.2 for internal combustion engines (ICE) over 50 bhp. EMWD provides drinking water, fire flow, wastewater collection, treatment and reclamation services to a 555 square mile service area in western Riverside County including the communities of Moreno Valley, Perris, Hemet, San Jacinto, Menifee, Sun City, Murrieta, Temecula and surrounding unincorporated areas. In support of EMWD's mission, EMWD operates approximately 70 ICEs that range from a low of 95 brake horsepower (bhp) to a high of 1970 bhp. Only 16 of these engines are greater than 500 bhp and only 1 is greater than 1000 bhp. One of the primary reasons EMWD operates these engines is to ensure and maintain the reliability of our services, especially during catastrophic events such as fires, floods and earthquakes.

As noted above, reciprocating engines are an integral part of our operating philosophy given our continuous need to have reliable pumping and electrical power generation at all times. Engines are also an important means for the effective management and utilization of digester gas, a byproduct of the wastewater treatment processes, which EMWD views as a valuable resource of renewable energy. In addition, the State of California through its Climate Action Plan and AB32 has intended that renewable fuels be part of the solution for reducing the State's greenhouse gas carbon footprint. This fact should be considered by the South Coast Air Quality Management District (SCAQMD) as it formulates new requirements affecting the utilization of digester gas (and landfill gas) by ICEs.

The comments presented below identify issues that EMWD believes will have significant negative impact, both operational and financial, upon EMWDs and other public agencies ability to continue to provide the above noted essential public services.

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Subsection (d)(1)(B) – Concentration Limits
Relying upon proposed Control Measure #2007MCS-01 (Facility Modernization) contained in the SCAQMD's proposed draft 2007 AQMP, the SCAQMD is proposing to lower the Rule 1110.2 emission limits from BARCT levels to current BACT levels for ICEs.

With regard to requiring natural gas fueled ICEs to meet current BACT levels, it should be noted that achieving these lower limits relies heavily upon a robust emission control system, which for the majority of regulated ICEs (e.g. rich burn), will mean a non-selective catalytic reduction (NSCR) system that includes an air to fuel ratio controller (AFRC). At current BACT levels, these systems cannot continuously maintain compliance. This is primarily due to the inability of existing AFRCs to maintain control over all operating conditions and to catch gradual changes as they occur. This issue was the focus of field studies conducted by the Rule 1110.2 Industry Stakeholder Work Group and have been brought to the attention of the SCAQMD several times over the last two to three years. Recognizing the need for additional emission reductions to achieve required ambient air quality standards, EMWD understands the need to lower emissions from ICEs, especially when current BACT determinations have in theory demonstrated that these limits can be attained. However, it should be further noted that BACT determinations are not based upon continuous emissions monitoring. Rather, they are based upon individual, short duration (30-60 minute) source tests. There are very few rich burn, natural gas ICEs in the basin that have continuous emissions monitoring systems (CEMS) on them. And as documented by the SCAQMDs own field testing, of those tested there was a high failure rate in attaining the CO limit on rich burn engines with a NOx CEMS. This only confirms the difficulty operators of rich burn ICEs face in their effort to maintain delicate balance of NOx and CO emissions with current AFRC and NSCR technology. The South Coast Air Basin (SoCAB) is in attainment for CO and a re-designation of the SoCABs attainment status for CO is pending at the United States Environmental Protection Agency (USEPA). EMWD believes that allowing the CO limit to be a little higher would help significantly with both achieving and maintaining compliance with lower emission limits overall. Because Rule 1110.2 is a Best Available Retrofit Control Technology (BARCT) rule, the SCAQMD has discretion in establishing BARCT standards. Hence, the SCAQMD could utilize this flexibility with regard to allowing a higher CO limit in the rule than the current proposed BACT level of 70 ppm. EMWD would propose that the SCAQMD adjust the proposed CO limit from 70 to 500 ppm. This is a 400% reduction over the current CO limit in Rule 1110.2. Establishing this higher CO limit would give operators the room to meet the lower NOx limits and have a reasonable chance of maintaining overall compliance with Rule 1110.2 requirements.

Subsection (d)(1)(C) – Concentration Limits for Landfill & Digester Gas-fired Engines
The SCAQMD is also proposing to require digester and landfill gas fueled ICEs to meet current natural gas BACT standards. It is also proposed that these standards be met as early as July 1, 2010 and at the latest by July 1, 2012. The difference in compliance time lines is dependent upon the size of the engine (in bhp) and upon the annual throughput of digester (or landfill) gas.

First, it should be noted that the only way to achieve these stringent emission limits would be by the use of post combustion emission control devices (Selective Catalytic Reduction [SCR] and Oxidation Catalyst). This is unproven technology when applied to digester gas ICE applications

and in the past, these systems have failed. The only way that emission control systems might be effective is if fuel pretreatment is implemented and again, use of fuel pretreatment coupled with SCR and oxidation catalysts is unproven, especially with regard to attaining emission rates equal to that of controlled natural gas-fired ICEs. Even the SCAQMD staff report does not cite any cases where current natural gas ICE BACT emission rates have been attained by ICEs combusting biogas. Another issue in the SCAQMD staff report is that it states that biogas applications are generally larger, lean burn ICEs. While this statement may be accurate, it does nothing to address what operators of smaller ICEs are to do. EMWD operates 4 digester gas-fired ICEs ranging from 275-550 bhp. Because of their smaller size, these engines do not have the same sophistication as the more typical 2000 bhp and larger ICEs found at landfills. These engines would face significant difficulty in trying to attain these proposed lower standards in the absence of proven control technology.

While the proposed rule appears to provide for a longer compliance time frame for biogas applications, in reality, the requirement only applies to operations where the digester or landfill gas is 90 percent of the fuel throughput on an annual basis. Most biogas applications will not meet this requirement and will therefore have to comply with the 2010 or 2011 compliance dates (depending on ICE bhp rating). Most operators would likely abandon the beneficial re-use of these waste gases to generate mechanical or electrical power. As discussed earlier in this correspondence, this would be in direct conflict with state mandates to increase the use of renewable fuels. The SCAQMD should reduce this 90 percent throughput requirement to a floor of 50% and allow the SCAQMD permit engineer the flexibility to determine the actual blend based on project specific requirements. This would allow operators to handle fluctuations in production that accompany both sewage treatment plant and landfill operations and for the blending of fuels which could add to fuel quality stability and thereby enable more stable emissions. Additionally, the SCAQMD should adjust the compliance time frame to July 1, 2015 to ensure that industry can identify, test and implement technologies that will attain the required limits.

A preferable compliance alternative to the above would be to post-pone adopting more stringent emission limits for biogas applications and instead, include a requirement to work with the landfill and sanitation agencies to perform a technology assessment to determine what future emission limits should be and over what time line these new limits can be attained. The rule would specify that this assessment be completed within one year of the adoption date of PAR 1110.2.

Subsection (d)(1)(E)-Mandatory Requirement to Install Air-to-Fuel Ratio Controller.
EMWD is opposed to limiting the use of control technology by regulation. As written this will prevent development of new control technology since an air-to-fuel ratio controller would always be required by the rule. We recommend that this language be modified to include any control technology that would meet the rule limits.

Subsection (d)(1)(F) – New Non-Emergency Electrical Generators
The SCAQMD is proposing to adopt new emission standards for new non-emergency ICE-driven distributed generation. While these proposed standards are in line with the California Air Resources Board (ARB) guidance for permitted distributed generation, EMWD requests that the

SCAQMD delay adoption of these standards at this time. Again, since this is a BARCT rule and the proposed standards are recommended guidance from the ARB, the SCAQMD has the leeway in establishing standards in this case.

Currently there are new products under development and testing that will help attain these standards. But more time is needed to bring these to fruition. EMWD supports the request of other industry asking the SCAQMD to convene an industry work group to further assess these standards and an appropriate compliance time frame.

EMWD also requests that the SCAQMD revise the current requirement to include biogas fueled ICE-driven distributed generation under these new requirements (e.g. any biogas application where the annual fuel throughput is less than 90% would fall under this requirement). As noted earlier, it has not yet been demonstrated that biogas fueled ICEs can even attain current natural gas BACT levels with existing technology, much less these proposed emission limitations. Even the ARB during its latest technology assessment realized that biogas applications need additional time to meet the ARB 2007 distributed generation emission limits.

Subsection (e)(3)(B) - Stationary Engine CEMS

EMWD requests that the schedule proposed for the installation of new CEMS on existing engines be modified to accommodate entities that may have to install multiple CEMS as a result of proposed amendments to Rule 1110.2. This is especially important for public agencies that must undergo mandated contracting and procurement processes under state law. EMWD may have to install as many as 26 individual CEMS as a result of the currently proposed amendments and would not be able to meet the cited compliance time frames as stated in subsection (e)(3)(B). EMWD requests that the SCAQMD add additional language that would provide adequate time to budget, design, obtain appropriate permits, fund, acquire, construct and test and certify multiple CEMS projects. This schedule could be set-up to require the largest ICEs to be retrofitted with CEMS early in the schedule and smaller ICEs later, thereby maximizing emission reductions.

Subsection (e)(4) – Stationary Engine Inspection and Monitoring (I&M) Plans

Again, EMWD is a large operator of ICEs. EMWD could have as many as 50 or more ICEs affected by the I&M program. EMWD requests that some consideration be made with regard to compliance schedules for large operators by offering extended or tiered compliance dates. One option would be an allowance for operators with multiple engines to submit a compliance plan that would include time lines to achieve compliance in lieu of meeting the currently specified deadlines.

Subsection (e)(5) – Stationary Engine Air to Fuel Ratio Controllers

As discussed earlier, EMWD is opposed to limiting the use of control technology by regulation. As written this will prevent development of new control technology since air-to-fuel ratio controller would always be required by the rule. We recommend that this language be modified to include any control technology that would meet the rule limits and requests that some consideration is made with regard to compliance schedules for large operators by offering extended or tiered compliance dates.

Subsection (f)(1)(A)(ii) – Monitoring, Testing, Recordkeeping and Reporting
The SCAQMD is proposing to require operators with facilities where there is an aggregated total bhp exceeding 1000 bhp to install CEMS on these engines.

Many factors are considered by a company when making an investment in capital equipment. All aspects of a planned installation, including the regulatory burden that may accompany any given operation are considered. Some agencies may indeed choose to utilize smaller engines to avoid high capital, operating and/or regulatory costs that may accompany installation of a CEMS. These determinations are all made within the confines of existing regulation. In EMWDs case, the majority of our co-located ICE installations are utilizing ICEs with bhp ratings below 750 bhp. In fact, EMWD operates only 6 ICEs rated above 750 bhp one of which is rated at 1970 bhp and already has an ACEMS. Because EMWD provides essential public services (drinking water supply, sewage collection and treatment), when ICEs are utilized to power an operation, EMWD typically has redundancy in order to provide reliability. As an example, at each wastewater treatment plant, EMWD has 3 ICE-driven aeration blowers to provide aeration to biological wastewater treatment processes. Yet at each location only one or two of these ICEs is operated at any given time. The remaining ICE is a standby. Therefore, EMWD does not support the SCAQMDs position to significantly increase the applicability of CEMS.

In the proposed I&M plan, emissions monitoring with a portable analyzer is also being required. Utilization of this strategy is more than sufficient to provide a level of increased monitoring to ensure a higher compliance rate. It would also be more cost effective for industry. EMWD has estimated that the capital cost for a CEMS would be in the neighborhood of $200,000 each. This cost can exceed the cost of the engines the CEMS is monitoring. As currently proposed, EMWD would have to install up to 26 CEMS if each ICE is retrofitted with a CEMS. The capital cost alone would exceed 5 million dollars. The majority of these costs would be used to install CEMS on engines less than 700 bhp. We have provided a list identifying engines that would require a CEMS as an attachment.

EMWD requests that the SCAQMD revise the proposed CEMS requirement to eliminate the aggregated bhp CEMS applicability threshold and instead to lower the single engine applicability threshold to 800 bhp. This lower threshold, coupled with the periodic monitoring of engines with portable analyzers included in the proposed I&M program, will provide a significant increase in emissions monitoring of engines in the basin as well as concentrate the CEMS requirement on the larger, higher emitting engines, while minimizing the significant financial impacts of CEMS on the essential public service agencies and small businesses in the basin.

Subsection (f)(1)(C)(ii) – Source Testing
Currently, ICEs are tested once every 3 years at one load condition (typically maximum operating load). The SCAQMD is now proposing significant changes to this monitoring regime. The changes include: requiring more ICEs to be monitored by CEMS, requiring the periodic monitoring (weekly to monthly) of all ICEs that do not have CEMS, increasing the source test requirement from once every 3 years to once every two years and finally, requiring that during these source tests, the engines be tested at 3 load conditions (normal, peak and minimum). In one instance, industry must go from **one** test every 3 years to weekly testing, CEMS (NOx and CO) and multi-load source testing every two years. The costs and operational impacts are

staggering. Additionally, many engines are installed and operated in base load or steady-state load conditions. Hence, testing at multiple loads does not make sense and causes the operator to incur additional costs. EMWD proposes that language be included in the rule that allows the operator to negotiate a test program where less than 3 loads are tested if warranted by the specific operation. This provides flexibility to both the operator and the SCAQMD to conduct a test program that most accurately reflects the operational conditions being tested.

Subsection (f)(1)(C)(vi) – Source Testing

Under this proposed provision, the SCAQMD is requiring that source test reports be submitted to the SCAQMD within 45 days of the test. EMWD requests that the submittal of the final report within 45 days be modified to 60 days. Currently, it takes a substantial amount of time to complete the analytical analyses, QA/QC the test results, obtain a draft copy of the test report from the testing contractor and to review and final the report in order to submit it to the SCAQMD. Fifteen additional days would significantly assist industry in submitting timely reports. The SCAQMD should also consider that there will be substantially more tests to perform and reports to submit under the proposed monitoring requirements (more CEMS RATA tests, more frequent source tests, portable analyzer testing, etc.) and this new burden will overwhelm testing and analytical contractors for at least a couple of years until they can expand to handle the new demand for testing. The SCAQMD should also consider the new work load that it will receive due to the same increase in monitoring. Again, an additional 15 days to submit the report will only help all affected parties and will not negatively impact compliance.

Subsection (f)(1)(D) – Inspection and Monitoring (I&M) Plan

The SCAQMD is proposing to require that an I&M plan be developed and implemented by operators of ICEs that are not required to have CEMS. Again, the SCAQMD is significantly increasing monitoring requirements across the board for ICEs at great cost and operational burden to industry. The I&M plan is especially egregious with part of it already required by permit condition (e.g. to keep ICEs in proper maintenance and operating condition), the inclusion of weekly periodic portable analyzer monitoring, requirements to develop a parametric monitoring program that must be repeated every time an oxygen sensor (a component integral to the AFRC) is changed, requirements to include malfunction alarming capabilities, requirements to perform very labor intensive daily monitoring, inspection and recordkeeping and requirements to notify the SCAQMD of non-compliant events.

EMWD has many concerns regarding these proposed requirements. First, weekly monitoring of ICEs will be labor intensive and costly. And to go from what currently is required (an emission test every 3 years) to weekly emissions monitoring with a portable analyzer is an immense change in monitoring that alone should provide enormous benefit to the SCAQMD, even if no other monitoring provision were required. This requirement is also extremely burdensome for operators of multiple engines such as EMWD. A large portion of EMWD's inventory of non-emergency ICEs will likely fall under these I&M requirements. And as noted earlier, many ICEs are installed for standby availability. Additionally, other ICEs are utilized seasonally. An example is the well-head pumps used to pump additional water into the water supply system during the summer months to augment water supply. Many of these engines are not operated during the winter months. Hence, between the seasonal and standby ICEs and the weekly to monthly (and back if non-compliant emissions are noted during a monitoring event) monitoring,

where it will be very burdensome for EMWD to manage a portable emissions monitoring program where ICEs are on varying monitoring frequencies. EMWD requests that the SCAQMD revise this portable emissions monitoring requirement to be solely on a quarterly frequency. Coupled with other proposed monitoring requirements, this would provide a significant increase in monitoring and coupled with the SCAQMDs own unannounced monitoring, should be more than sufficient to reduce the frequency and level of non-compliance.

A second concern is the requirement to identify monitoring parameters (the proposed I&M requirements stipulate a number of parameters) that in theory would be indicators of compliance with emission limitations. The I&M plan would require an operator to develop a plan to map these parameters against emissions and then monitor them from that point forward. Any monitored values found outside the "compliant" range would then define an emission excursion and would have to be reported to the SCAQMD. A number of the parameters specified in the proposed requirements include engine load, oxygen sensor voltage, inlet and outlet catalyst temperature and temperature change across a catalyst. Based on data collected during the Rule 1110.2 Industry Stakeholders studies, it was determined that these parameters do not adequately indicate when an ICE is either nearing or out of compliance. Additionally, it should be noted that engines and emissions control components wear continuously thereby making it difficult to establish parameter ranges that are good for long-term monitoring and do not require re-establishing parameter ranges every time an oxygen sensor is replaced, an engine service is performed or is impacted by catalyst aging or ambient conditions (temperature and pressure). EMWD requests that the SCAQMD remove this component from the I&M program or work with industry to determine a more appropriate parametric monitoring provision.

EMWD also requests that the daily monitoring, inspection and recordkeeping be eliminated. EMWD supports the maintenance of records in order to provide a compliance demonstration. However, requiring an operator to perform daily inspections and recordkeeping of an engine system in addition to normal maintenance checks is labor intensive and provides little benefit in light of the significant emissions monitoring program being proposed in PAR 1110.2. This is especially significant for municipal water and wastewater agencies that operate engines because many of these engines are located at unmanned facilities. EMWD operates approximately 70 engines, the majority at unmanned facilities, located throughout a 555 square mile service area. EMWD currently employs 9 engine mechanics that routinely inspect and service these engines. Typically, every engine is inspected at least weekly when operating. To require daily inspections of every affected engine would require a significant increase in manpower at a very high cost. If done remotely as the proposed requirement allows, EMWD interprets the requirement to still require a review of the data daily. Again, this would be labor intensive to perform for the 50 or more engines that would likely be impacted by this requirement and would still require additional manpower to install and maintain the data acquisition and remote communications equipment and review the data daily. Once more, EMWD believes this is unnecessary in light of periodic portable analyzer testing, increased source tests and the proliferation of CEMS currently proposed by the SCAQMD.

With regard to the requirement to report non-compliance via procedures similar to those contained in Rule 430, EMWD requests that this requirement be deleted. This reporting requirement is more onerous than those that a major source facility would have to comply with under Title V (SCAQMD Regulation XXX). Operators of engines should not be required to

operate under a more stringent enforcement program than any other regulated sources. EMWD understands that the SCAQMD is trying to effect better compliance than what has been noted through their inspection program. However, as noted earlier, the SCAQMD has already improved compliance because of this new field presence. Continuing this engine inspection program will likely continue to effect higher compliance. Especially when coupled with other compliance strategies contained in PAR 1110.2. This requirement is unnecessary and should be deleted.

EMWD sincerely appreciates this opportunity to comment on PAR 1110.2. Should there be any questions or the need for additional information regarding these comments, please contact either Mr. Edward J. Filadelfia at (951) 926-3777 extension 4318 or Mr. Daniel McGivney at (951) 926-3777, extension 6329. Thank you.

Sincerely,

Anthony J. Pack
General Manager