

January 23, 2025

CARB LMR staff,

Thank you for your thoughtful analysis and proposals to update the LMR. The differing viewpoints of the panelists were interesting and preliminary research results from Dave Risk with St Francis Xavier University valuable news.

Statements that rang strongly:

Global methane pledge is not achievable without waste sector action.

The waste sector is the 2nd largest source of methane in CA.

These highlight the urgency to require better landfill gas controls as soon as possible and leveraging new technologies available appears the most efficient way to accomplish this.

Proposals to Improve monitoring:

1. Satellite detection of leaks - requiring operators to follow up with leak monitoring when alerted by ARB.

With this data now available, we support requiring operators to investigate and remediate leaks quickly. One commenter mentioned concerns about the ongoing cost of satellite data. We suggest CARB consider collecting a fee from landfill operators if repeated notifications are required to fix leaks.

2. Alternative leak detection technologies

We encourage CARB to require more stringent alternative leak detection technologies, particularly for landfills with significant emissions and those with residents located in close proximity. We see too many areas being excluded from traditional SEM, and the study results about the current grid spacing missing most leaks is compelling. We also note that landfill operators rarely report leaks resulting from SEM, however our inspectors find many leaks during inspections. The current SEM requirements are not working. This is of global concern with respect to methane, but a serious health concern to people who live or work in proximity to a landfill.

3. Monitoring of temperature and air intrusion at collection wells

We strongly support addition of these requirements to the LMR. We have seen many landfills with reduced gas collection because high levels of air intrusion have been ignored. In these instances, we have commonly been told that high air intrusion is due to lack of landfill gas generation, due to the age of the waste. However, well gas data after repairs to the gas collection system eliminated air intrusion show collection of high levels of landfill gas. Air intrusion was diagnostic of GCS damage/non-functionality rather than lack of gas generation.

4. Shorten leak correction timelines, notification to agency of uncorrected exceedance, leak reappearance/corrective action not durable, 1 month check and well installation requirements. Alignment with EG installation dates.

We agree that shortened correction timelines are reasonable since the remedy may be some immediate measure – such as improving cover, checking well seals. We also support required notifications for uncorrected exceedances. We permit many landfills, landfills operate many wells, and we have limited inspection resources to comb through records. Self-reporting of uncorrected exceedances will help preserve inspection staff time to be spent physically inspecting facilities.

5. Reduce grid spacing, monitor to establish full area of exceedance, remediate then re-monitor entire area, integrated monitoring to include adjacent grids to prevent simply diverting the location of the leak.

We support these measures. In particular, reduced grid spacing since the research shows the current spacing misses many leaks, and nested monitoring to identify the extent and source of the leak. As mentioned by one commenter, more detailed reporting of the source of the leak and remediation measures would be helpful to identify if the same remediation is occurring repeatedly, signaling that expansion of the gas collection system is instead the correct remedy.

6. More frequent (quarterly) SEM for closed LF if leaks are discovered through SEM or inspections:

We support this improvement. We are finding an increased number of closed landfills with significant leaks and/or possible gas migration due to the less frequent monitoring requirements and poor maintenance of the GCS.

7. Wellhead monitoring to align with federal EG:

We strongly support all efforts to aligning the LMR with the federal EG requirements and eliminate the need to implement terms from the federal plan. This will greatly

reduce the administrative burden to air districts related to adding multiple regulation references to Title V permits.

Proposal for Improvements to the GCCS:

8. Limit GCCS downtime, minimize emissions when down - reconnect to vacuum daily after construction, mitigation measures, limited number of wells down simultaneously for construction, limit size of working face and construction area. We strongly support these measures. Our landfill regulation limits the number of wells that can be taken offline simultaneously for construction and maintenance to help prevent emissions. We recommend prohibiting lengthy periods of downtime while awaiting construction to occur – only wells directly under construction should be offline and should be placed back into service before construction moves to a different area. Regarding placing the wells back in service at the end of a construction day, one commenter mentioned it was impossible to do so in some circumstances. We are interested in hearing in detail what circumstances would prevent doing so.

9. To improve steady vacuum, require installation of continuous pressor sensors with a setpoint and range. We support the requirement for continuous pressure monitoring in general since one of the causes of reduced collection is operators ignoring/not remediating loss of vacuum to a section of the GCS. Regarding setpoint and range, we have seen data presented on the numerous daily adjustments made by automated well monitoring systems in response to weather and diurnal changes. Review of this data could help identify if a specific setpoint and range should be added to the regulation.

10. Additional monitoring and analysis for persistent leaks – increase monitoring if recurring leaks are found in a grid over 3 years, recurring pressure loss; ineffective collection.

For frequent/persistent leak and well operating problems, we support requiring installation of a continuous well monitoring system. We have seen installation of this type of system at various sites, how effective it is at improving collection, and diagnosing GCS problems, as also supported by your panelists. Some commenters were concerned about cost, but our understanding is that a basic system can be installed for relatively low cost and that these systems are adjustable and removable. Such a system could be installed to diagnose the GCS improvements

needed, and once the GCS improvements have been made and steady operation achieved, the system could be removed or portions of the system removed.

11. Managing declining gas generation – request for standards for well decommissioning, conditions under which non-continuous operation should be allowed, permanent GCCS shutdown.

We strongly agree that a required element in any request for decommissioning, non-continuous operation, and/or shutdown should be a demonstration that low gas collection is due to low gas generation. We have reviewed many requests for non-continuous operation. At some landfills, problems operating the flare resulted from GCS repairs not being made, rather than low gas production. The GCCS should be shown to be in proper operating condition with minimal to no air intrusion before consideration of non-continuous operation.

Another common issue we have seen is a closed site operating an old large, oversized flare. Downsizing to a smaller flare should be considered in these cases, before considering non-continuous operation, particularly if the flare has already been in service through its expected lifetime.

For removal of the GCCS, in the bay area, our landfill Regulation 8-34 requires a landfill operator must first demonstrate health risk impacts from removal of the GCCS (exposure to unabated landfill gas) will comply with the health risk limits in Regulation 2, Rule 5. Therefore, we agree that any GCCS removal should be a request, requiring approval by the administrator.

There were comments made during the workshop about gas generation re-starting at the Berkeley Landfill due to tidal influences. We wish to clarify that the Berkeley Landfill has reported no tidal influences on the landfill waste to the Regional Water Quality Control Board. It is likely that high levels of rainwater intrusion have been allowed due to animal burrows in the landfill cap. Berkeley also recently reported that they cannot locate several leachate sumps and do not know the status. As such, leachate accumulation within the waste mass and within the GCS may be the cause of deficient gas collection in those areas. Well gas data from this site has demonstrated that neglect of the GCS and loss of vacuum resulted in loss of gas collection in some areas of the landfill. In the areas repairs GCS have been made and vacuum established, gas collection is now occurring. While this may appear like gas generation re-starting, it was actually loss of gas collection rather than loss of gas generation.

Active face emissions:

Though not discussed with respect to proposed LMR changes, the study results citing the significance of the LFG emissions from the active face were striking. We encourage CARB to investigate and consider all possible control measures available to limit emissions from the active face.

Thank you again for your important work in this sector and this opportunity to comment,

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