



County of Riverside

BUILDING AND SAFETY DEPARTMENT



MEMORANDUM

DATE: November 1, 2004

TO: Building and Safety Staff

FROM: Nick J. Anderson, Deputy Director

SUBJECT: Methane Protocol

Introduction

Methane is a gas in the sub-surface, common in many residential developments where organic material, such as grass, leaves, wood, manure, etc., is present in the soil. Methane is a colorless, odorless gas and is widely found in nature. It is non-toxic. However, it is combustible and potentially explosive at concentrations above 55,000 parts per million (ppm). Since early 2002 the Building and Safety Department has adopted methane mitigation guidelines in effect to mitigate potential effects of methane gas and to reduce the potential for methane to enter the interior of homes on various lots. These guidelines outline precautionary measures that are to be taken in the design and construction of houses.

Each lot within a project is required to be tested for the presence of sub-surface methane in accordance with Building and Safety guidelines. Where methane was detected the appropriate precautionary measures, identified in the guidelines, were incorporated into the design and construction of the house. Similar design features may be required for any room additions or similar improvements that are constructed on the property in the future. The developer requires the buyer to agree not to interfere or modify such mitigation measures. Buyers are required to agree to comply with all mitigation measures in the event the buyer constructs improvements on the lots in the future.

Technical Study

To further improve mitigation requirements, a technical working group of professional engineering firms (Geokinetics, Geomatrix, and Petra) was formed with the Building Industry Association as the proponent of the study. This technical working group developed a computer model, referred to as MTRANS (Methane Transport Model), which allowed for the simulation of methane migration within a residential development in the dairy preserve area.

Together, the cities of Chino and Ontario hired an independent environmental engineering firm (Lowney Associates) to provide a critical review of the Methane Transport Model and to provide any recommendations for future studies. Their review did not disagree with the conclusion of the report, which was: "the average methane concentrations in the interior of an unmitigated home constructed at a former dairy site would not approach the typical action

level to warrant any mitigation measures”. However, the firm did recommend that the cities have some methane mitigation requirements.

Building and Safety Proposal

After reviewing the Methane Transport Model presented by Geokinetics, Geomatrix and Petra, and analyzing Lowney Associates opinion of the model, the County of Riverside Building and Safety Department has agreed with both cities’ requirements and developed new guidelines for development within the Eastvale area and any other dairy preserve within the County of Riverside. At the initial Planning Department process, prior to project approval, the applicant is still required to address in a Preliminary Methane Investigation report, prepared by a licensed engineer, geologist or registered environmental assessor whether the property in question was ever used as a dairy and to identify the potential methane generation areas within and adjacent to the site. The Preliminary Methane Investigation report, which requires the project applicant to identify areas for studies and site-specific geotechnical mitigation, has not changed from our current protocol. Any areas identified as non-dairy use, will be required to provide evidence that will be reviewed at the initial Planning Department process.

This protocol requires the design engineer to incorporate the engineer’s remediation and place minimum mitigation guidelines into the construction plans for each dwelling for construction. The Building and Safety’s plan check staff will now review the engineer’s methane design guidelines. The engineer’s methane design guidelines, recommendations or findings will be incorporated into the building plans and submitted into plan check for review and accepted. The plan will identify what mitigation measures are required prior to footing, slab grade, framing or final.

Methane Inspections

County Building Inspectors will continue inspections on footings and concrete slabs; however, the installation and approval of methane mitigation measures will be certified and approved by the design engineer. A letter certifying the installation of methane mitigation measures on each lot or cluster of lots will be required and presented to the County of Riverside Building Inspector prior to footing, slab grade, framing or final inspection. Letters will be filed with the office-approved plans.

Conditions of Approval

Prior to issuance: Upon approval of construction plans, the plan checker will forward an approval for the Eastvale condition to the staff in subdivision for release of conditions.

Prior to final inspection: At the final inspection, the field inspector will receive from the job site superintendent a letter certifying the installation of methane mitigation measures. The letter will be returned to the office and presented to the subdivision staff for release of conditions, which are prior to final.

Department of Environmental Health

Based on the recommendation from the technical working group of professional engineering firms, the Department of Environmental Health approves of the proposed protocol. The Department of Environmental Health will not be notifying the Department of Building and Safety to release any conditions of approvals.

Procedures

1. Initial Planning Department process: Applicant required to provide Preliminary Methane Investigation report prepared by a licensed engineer, geologist or registered environmental assessor identifying site methane conditions and any potential geotechnical issues resulting from past dairy/livestock activities.
2. Building plan check: Applicant starts plan check process, submits plans with engineer's methane recommendations showing detailed installation method.
3. Building permit issuance: Prior to issuance of permits, plan checker forwards approval of the Eastvale condition to staff in subdivision for release of LMS conditions.
4. Permit issued: Construction starts; contractor installs methane mitigation measures prior to Building and Safety footing and slab grade inspection. Engineer of record provides letter certifying mitigation measures installed as designed to job site superintendent and presented to the Building inspector at footing and slab grade inspection.
5. Final inspection: Final inspection by Building and Safety inspector, all methane mitigation measures installed. Engineer of record provides letter-certifying mitigation measures installed as designed to the job site superintendent and presented to the Building inspector at final inspection. Certification letters shall be kept in a binder on the second floor in the subdivision area, until the tract has been completed (built out). Once the tract has been completed, the certifications will be maintained for ninety-days (90).

Disclosure Statement

This methane protocol does not relieve any developer of any requirements designed by the engineer of record. The developer is also required to disclose the soil conditions in a methane disclosure statement and provide such statement to future homeowners in the Department of Real Estate White Report. In addition, as is typically required, the Environmental Constraints Sheets (ECS) shall include a note relative to past dairy activities and the requirement for mitigation in accordance with County Protocol.

This statement will be placed on the title sheet of the approved construction plans.

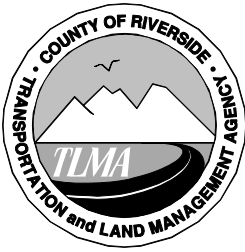
This protocol does not remove, change or alter any other conditions applied to a project.

Whereas, all other **Conditions of Approval** apply prior to map recordation, prior to building permit issuance and prior to final inspection.

The following "Methane Design Guidelines " is the minimum design standard for the engineer of record.

Effective Date

This procedure shall take effect on November 1, 2004.



COUNTY OF RIVERSIDE TRANSPORTATION AND LAND MANAGEMENT AGENCY



Building and Safety Department

Methane Design Guidelines

This protocol for The Department of Building and Safety's **METHANE DESIGN GUIDELINES** as outlined below does not remove or alter any established requirements for projects at the initial Planning Department process. The applicant is still required to address in a soils report, prepared by a licensed engineer whether the property in question was ever used as a dairy, poultry ranch, hog ranch, livestock feed operation, manure stockpile site, manure/livestock burial site, run-off ponds or for any other purpose that might result in the deposition of materials which might produce significant methane.

The protocol below for **METHANE DESIGN** will be reviewed at plan check. Building and Safety plan check staff will review the engineer's methane design guidelines/recommendations, which are based on the above paragraph. The engineer's methane design guidelines, recommendations or findings will be incorporated into the building plans and submitted to the Department of Building and Safety for plan check, review and acceptance.

METHANE DESIGN GUIDELINES

Measured Methane Concentration (ppm)	Minimum Mitigation Guidelines
<15,000	Provide a 10-mil moisture barrier. Seal utility conduits and other penetration in an approved method.
>15,000	Provide a 10-mil moisture barrier. Seal utility conduits and other penetrations in an approved method. Also include any remediation required by the Engineer of record.
Waste, Burial Site, Pond, Lowland	Required methane report prepared by an Engineer addressing required remediation.

- All finished lots in potential methane areas, as identified by a Methane Site Assessment, shall be tested 30 days after grading is performed.
- Any lots requiring methane mitigation measures shall be identified and the type of mitigation shall be described in the approved County Building Plans. Prior to plan check approval and permit issuance, the methane test reports and mitigation requirements shall be reviewed and approved.