

**Letter No. 10**

**COUNTY OF SACRAMENTO**  
**Environmental Management Department**  
**Mel Knight, Director**

Bonnie Coleman, Manager  
*Administrative Services*  
 Raymond E. Hackett, Manager  
*Environmental Health*  
 Jeanette M. Musil, Manager  
*Hazardous Materials*

December 15, 2000

Patrick Angell  
 City of Elk Grove  
 8949 Elk Grove Boulevard  
 Elk Grove, CA 95624

Dear Mr. Angell:

**Subject: Draft Environmental Impact Report, Lent Ranch Marketplace,  
 Elk Grove, California**

Thank you for the opportunity to review the Draft Environmental Impact Report for the Lent Ranch Marketplace Project. Our comments are as follows:

**EXISTING CONDITIONS**

**Underground and Aboveground Storage Tanks**

Please change Sacramento County Environmental Health Department (EHD) to Environmental Management Department (EMD). | 1

**PROJECT IMPACTS**

**Dominant Hazards Posed by Suburban Propane and Georgia-Pacific Facilities**

**Explosion Overpressure**

The overpressure vulnerability zone due to a BLEVE event in the EIR and its appendix appear to be distances estimated based on the rupture or catastrophic failure of a single tank/vessel in each of the five areas. However, the cumulative vulnerability zone distances for overpressure involving all tanks/vessels in each of the five areas should be considered. This is because the catastrophic failure of a single vessel could lead to the failure of other tanks/vessels in that area. Similarly, the catastrophic failure of one railcar could lead to failure of all railcars on site. Therefore, we recommend including the vulnerability zone distances for overpressure cumulatively for each area. | 2

Specifically, the explosion overpressure depiction illustrated in Figure 4.5-3 in the EIR and Tables 3-16 and 3-18 of the Quantitative Risk Analysis (QRA) in Appendix 1 show the explosion overpressure distance due to BLEVE or cold catastrophic failure events involving a single tank truck, railcar, or a pressurized storage tank. We recommend including the cumulative impact distance.

Patrick Angell  
December 15, 2000  
Page 2

Although unlikely, if a cumulative impact of a catastrophic event in each area noted above could cause a larger vulnerability zone, then the impact of a catastrophic event of one area upon another also should be evaluated. For example, if one of the four pressurized storage tanks were to BLEVE causing the other three to fail, then it is also possible that the blast wave could lead to the failure of the refrigerated storage tanks or railcars.

2

Similarly, based on the aforementioned scenarios, a greater overpressure vulnerability zone may extend to the Georgia-Pacific facility. For that reason, the same analysis should be performed to evaluate the potential release scenario at Georgia-Pacific and surrounding facilities.

### Thermal Radiation

Similar to the cumulative distance discussed under the overpressure section above, we recommend that Table 3-15 of the QRA (Appendix 1), Maximum Distance to Fatality Level due to Radiant Exposure from BLEVE Events, be revised to reflect the cumulative distance of four pressurized storage tanks rather than one in a BLEVE event.

Additionally, although an adequate discussion of the thermal radiation effects on an individual is offered in the EIR, a discussion and analysis of the effects of thermal radiation on other tanks/vessels at the Suburban Propane facility is warranted since thermal impacts on these other vessels could result in their damage, which in turn could lead to scenarios involving more severe fire or explosion. For example, if sufficient heat were produced in a pool fire involving the refrigerated storage tanks, the radiant energy produced could cause the pressurized storage tank to fail. If such analysis reveals that thermal impacts to tanks/vessels could be severe enough to cause tank failure, then the individual risk contours presented in Figure 4.5-6 should also reflect the risk of tank failure due to thermal impacts.

3

As an aside, it is worthy to note that the EIR uses a measurement of injury (i.e. second degree burn) as a function of distance to develop the dispersion vulnerability zone rather than mortality percentage, as is the case in the QRA. From a public safety perspective, the injury measurement is a superior measurement since it provides information to planners and decision-makers for the prevention of injuries. The use of dispersion vulnerability zone distance as a measure of mortality percentage would not provide such information; it would only provide the distance to which a certain percentage of mortality would occur. As such, it would be helpful to include the injury measurement (i.e., second degree burn) in Table 4.5-2 of the EIR and Tables 3-15 and 3-20 of the QRA (Appendix 1).

### Risk Analysis

Please clarify Figure 4.5-6, Individual Risk Contours. It is unclear whether this figure illustrates the annual risk of lethal exposure to any of the hazards associated with all possible releases within Suburban Propane and Georgia-Pacific facilities as described on Page 4.5-21 of the EIR or whether it illustrates the risk of tank failure to Suburban Propane and Georgia-Pacific due to Earthquake as the title of the Figure suggests.

4

Patrick Angell  
December 15, 2000  
Page 3

Comparison of Quest Study to Other Risk and Hazard Assessments Prepared on the Suburban Propane Facility

We recommend to include the Risk Management Plans (RMPs) for Suburban Propane and Georgia-Pacific facilities to Tables 4.5-3 to 4.5-12 since the RMPs provide two additional sources of information for comparison on the risks posed by these two facilities.

5

Storage and Handling of Hazardous Materials

Regarding the hazardous materials in use on-site at Lent Ranch, Sacramento County Environmental Management Department (SCEMD), in accordance with Federal and State laws, requires a Hazardous Materials Plan (HMP) to be submitted by businesses that use or store hazardous materials. This HMP includes a hazardous materials inventory, a site map, and an emergency/contingency plan. Similarly, businesses that generate hazardous waste must also submit the HMP to SCEMD.

6


**CONSISTENCY WITH GENERAL PLAN POLICIES**

Please change Sacramento County Environmental Health Department to Sacramento County Environmental Management Department in Table 4.5-14.

7

If you have any questions regarding these comments, please feel free to contact me at 875-8469 or Anthony Chu at 875-8405.

Sincerely,

  
Jeanette M. Musil, M.S.  
Hazardous Materials Program Manager

JMM:AC:cc

- c: Mel Knight
- Elise Rothschild
- Anthony Chu
- Ralph Roberts

10. Letter from County of Sacramento Environmental Management Department, Jeanette M. Musil, dated December 15, 2000

**Response 1**

Text of the Final EIR has been corrected to reflect comment. Please refer to Final EIR **Section 4.0, Minor Edits to the Draft EIR**, contained within this document.

**Response 2**

The sequence of events that could lead up to a BLEVE of a pressurized vessel often take several minutes or more. For the most common type of BLEVE, a fire induced BLEVE; the subject pressure vessel will have to be exposed to direct flame impingement for several minutes or more before the vessel fails catastrophically. If at that time the pressure wave from the vessel failure causes a nearby vessel to fail, this subsequent failure will most likely be in the form of broken piping as the vessel is moved by the pressure wave. This broken piping could then lead to another fire impingement scenario whose end result might be another BLEVE. However, the second BLEVE would occur some period of time, perhaps minutes, after the first one. Thus, the two events would not "combine" to make a single overpressure wave. Instead, the result would be two pressure waves separated in time by the time it took for the second tank to BLEVE.

In the extremely unlikely event that the BLEVE of one tank led directly to the immediate catastrophic failure of a neighboring tank, the time sequencing would still be off. After all, it is the pressure wave from the first failure that caused the second failure. Thus the pressure waves cannot be produced at the same instant in time. An example of this would be a string of firecrackers. The situation of sequential explosions can best be thought of as sounding like a string of firecrackers. The first pressure vessel fails. That failure may or may not lead to subsequent failures. If subsequent failures do occur, they do not happen on the same time scale. Thus the pressure waves are produced at different times and cannot be additive.

Thus, the vulnerability zone for explosion overpressure is defined by the individual pressure vessel's potential for overpressure production. For example, the largest railcar would define the railcar overpressure vulnerability zone and it would not matter if one, two or three railcars were in the vicinity and whether one, two or three railcars eventually failed.

The impact from one event (catastrophic or minor) on neighboring equipment that may lead to a second event is often referred to "knock-on" or "domino" effects. These events were included in the analysis. For example, a BLEVE of a pressure vessel is the end result of a series of events that take place (e.g., pipe failure followed by ignition and direct flame impingement on a vessel for a period of time). The data for defining the frequency of these domino events is contained in the historical database used in the analysis.

### Response 3

The sequence of events leading to one or more BLEVEs is the same. A BLEVE fireball for the pressure vessels evaluated in this study would last about 15 to 20 seconds. Thus for two or more fireballs to interact, the BLEVEs would have to occur within seconds of each other. There is no historical precedent for this. Multiple BLEVE events have occurred in the past and the pattern is clear - the failures occur over a period of time, not simultaneously.

The QRA report uses fatality as the basis of developing the risk as a function of distance from the Suburban Propane and Georgia-Pacific facilities. The inclusion of several example vulnerability zones (based on injury endpoints) in the QRA report (e.g., Draft EIR Figure 4.5-5) was intended to allow the reader to compare several example injury level calculations to similar calculations from the previously published hazard analysis reports. As discussed in the section titled "Comparison of Quest Study to Other Risk and Hazards Assessments Prepared on the Suburban Propane Facility" beginning on page 4.5-24, it is impossible to directly compare the consequence modeling results since different models, assumptions, and releases were analyzed by the authors of the various studies.

The Draft EIR does not use a measurement of injury, but rather use the QRA. It should also be kept in mind that a QRA does not specifically consider injury in the consequence modeling calculations. The QRA simply cannot develop a "risk of injury" contour. The reason is straightforward. There is no accepted method of equating injury due to overpressure (e.g., broken leg, coma, etc.) to injury due to fire radiation (e.g., 2nd degree skin burns, 3rd degree burns, irritation), to injury due to toxic gas inhalation (e.g., nervous system problems, lung damage, skin rash), or to injury due to blunt trauma (e.g., being hit by a piece of shrapnel). Thus, to date, it has been impossible to develop a set of equivalent injury criteria (i.e., endpoints) for use in quantitative studies.

Please note that Draft EIR Figure 4.5-5 is mislabeled. The caption should read Maximum Fire Radiation Vulnerability Zone (same as Figure ES-3 in Quest report). This has been corrected in the Final EIR. Please refer to **Section 4.0, Minor Edits to the Draft EIR**, contained within this document.

**Response 4**

Draft EIR Figure 4.5-6 represents the total risk attributed to the Suburban Propane facility and Georgia-Pacific's formalin tank. The risk is composed of all the events that were evaluated in the two facilities, including the earthquake events that caused a catastrophic failure of the refrigerated storage tanks and the formalin tank. The earthquake frequency used in the analysis that would result in a refrigerated tank failure is  $1.0 \times (10)^{-4}$  /year. This frequency is included in the result presented in Draft EIR Figure 4.5-6. In order to clarify this for the reader, the title of Figure 4.5-6 has been revised to state: Individual Risk Contours (Including tank failure of Suburban Propane's refrigerated storage tanks and Georgia-Pacific's formalin tank due to earthquake). Please refer to **Section 4.0, Minor Edits to the Draft EIR**, contained within this document.

**Response 5**

Please be advised that the EPA mandated RMPs do not address risk, rather the RMP documents require the calculation of worst-case scenarios. In the broad-based RMP approach, very little consideration is given to whether the postulated worst-case scenario can physically occur. As an example, for the pressurized vessels in the Suburban Propane facility, each vessel would have to empty in exactly 10 minutes. This release rate would then be used as the source term in the EPA worst-case dispersion analysis. No consideration is given for the cause of failure, piping size, etc. Thus, many of the mandated RMP-type consequence modeling calculations are inappropriate for inclusion into any analysis evaluating credible accidental releases.

In this context, there are no RMP releases that would be compatible with those listed in Draft EIR Table 4.5-12. Thus, any comparison of RMP releases with those provided in the report would be impossible. In reference to Draft EIR Table 4.5-3, the addition of the EPA RMP radiant endpoint would not provide any new or meaningful information. The EPA RMP radiant endpoint is exposure to 5 kW/m<sup>2</sup> for 40 seconds (EPA defined level for 2<sup>nd</sup> degree burns).

**Response 6**

Text of the Final EIR has been corrected to reflect comment. Please refer to **Section 4.0, Minor Edits to the Draft EIR**, contained within this document.

**Response 7**

Text of the Final EIR has been corrected to reflect comment. Please refer to **Section 4.0, Minor Edits to the Draft EIR**, contained within this document.