



Roseville Rail Yard Study

**Presentation for the Placer County
Air Pollution Control Board
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California Air Resources Board

Overview

- ◆ Background
- ◆ Roseville Rail Yard
- ◆ Study Approach
- ◆ Results
 - Diesel PM Emission Inventory
 - Health Risk Assessment
- ◆ Conclusions and Recommendations



Background

Study Objectives

- ◆ Estimate diesel PM emissions from locomotive activities at the Yard
- ◆ Conduct air dispersion modeling to estimate the ambient concentration of diesel PM
- ◆ Characterize the exposures to nearby residents and estimate increased potential cancer risk

Why Are We Concerned About Diesel PM?

- ◆ Diesel PM is a toxic air contaminant
 - Causes cancer
 - Increases premature deaths, hospital admissions, respiratory diseases
- ◆ Diesel NO_x and ROG contribute to ozone and PM formation



What is a Health Risk Assessment?

- ◆ Evaluation of the potential for a chemical to cause cancer or other illness
 - uses mathematical models to estimate exposures (risk)
 - risk expressed as number of excess cancers in a population of a million over a 70-year lifetime



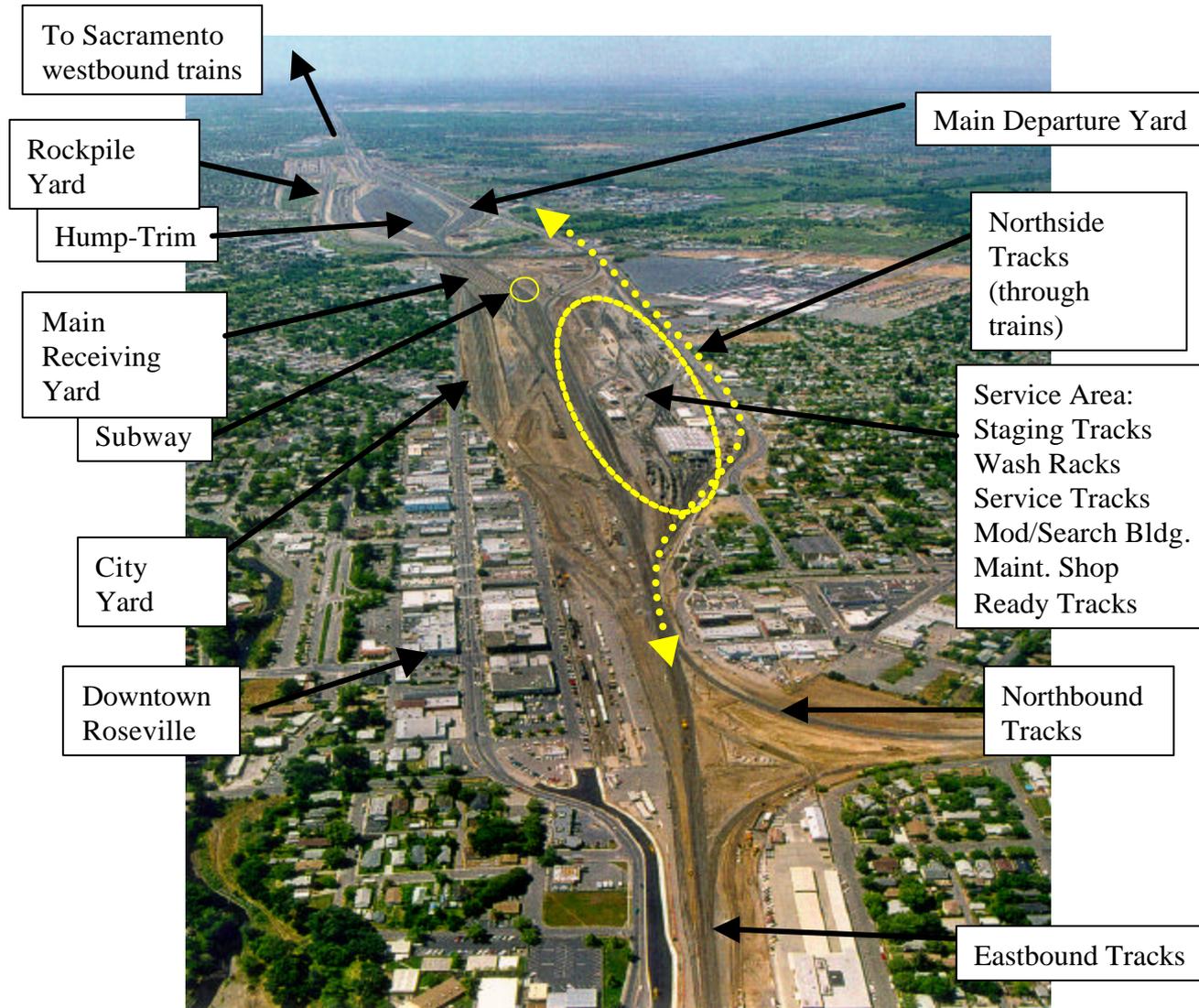
Roseville Rail Yard



Roseville Rail Yard

- ◆ Located near City of Roseville
 - Occupies about 950 acres, 2/3 in Placer County and 1/3 in Sacramento County
- ◆ Maintenance, service and classification yard (24/7 operation)
- ◆ In operation since 1905
- ◆ About 31,000 locomotives stopped at the Yard in 2000
 - additional 15,000 trains passed through on northside tracks

Roseville Rail Yard





Study Approach

Study Approach

- ◆ Estimated diesel PM emissions from all locomotive activities
 - movement
 - idling
 - testing
- ◆ Allocated emissions to appropriate area in Yard
- ◆ Key activity assumptions and data inputs provided by UPRR

Study Approach (cont.)

- ◆ U.S. EPA ISCST3 model
- ◆ Two meteorological datasets (Roseville and McClellan)
- ◆ Urban dispersion for near source risks and rural for regional
- ◆ Followed OEHHA Guidelines for Health Risk Assessments

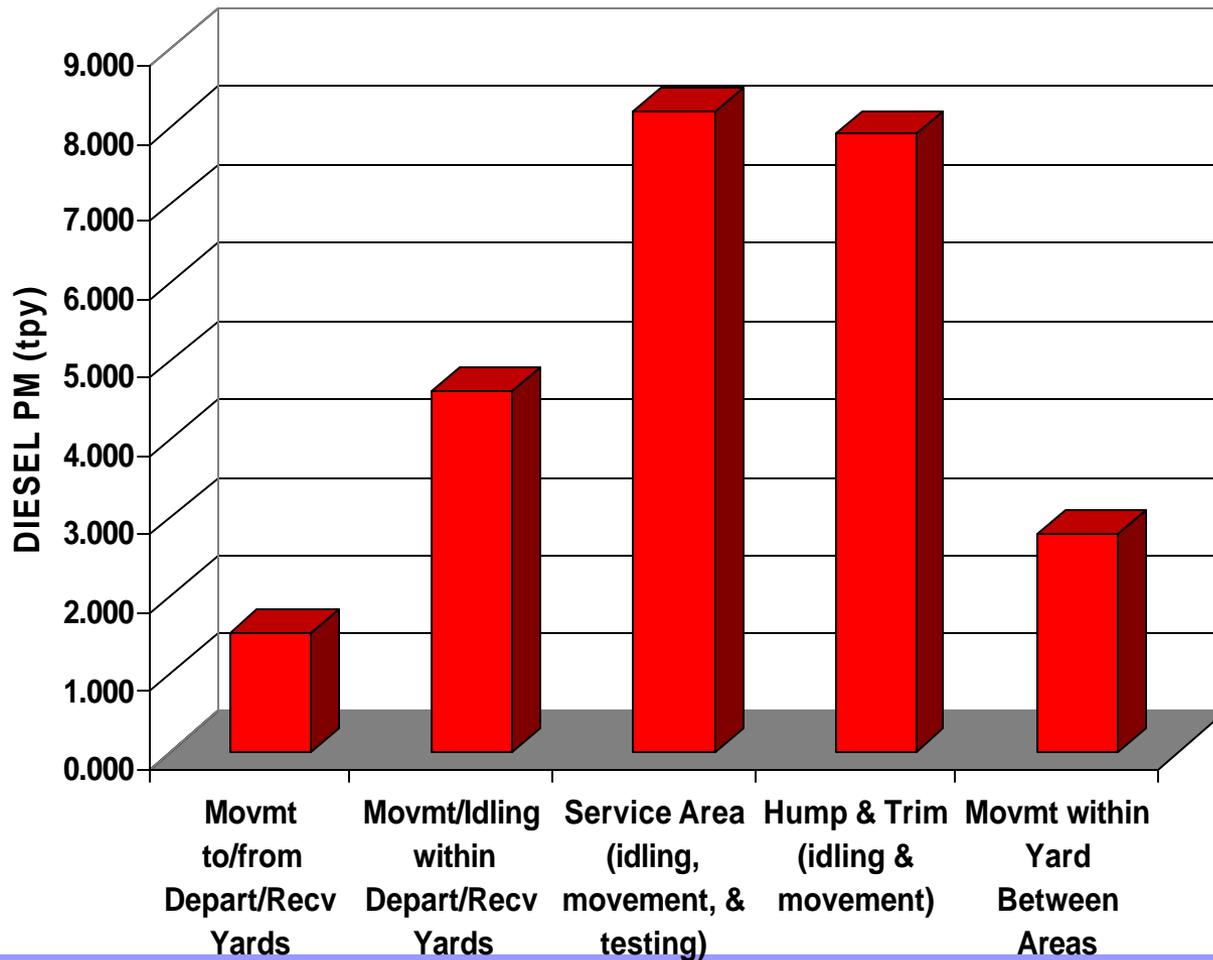
Results



Diesel PM Emission Inventory at the Roseville Rail Yard

- ◆ Estimated 22-25 tons of diesel PM in 2000
- ◆ Monthly and hourly emissions fairly constant
- ◆ Locomotive movement, idling, testing responsible for about 50%, 45% and 5% of emissions, respectively

Contribution of Diesel PM by Area and Activity



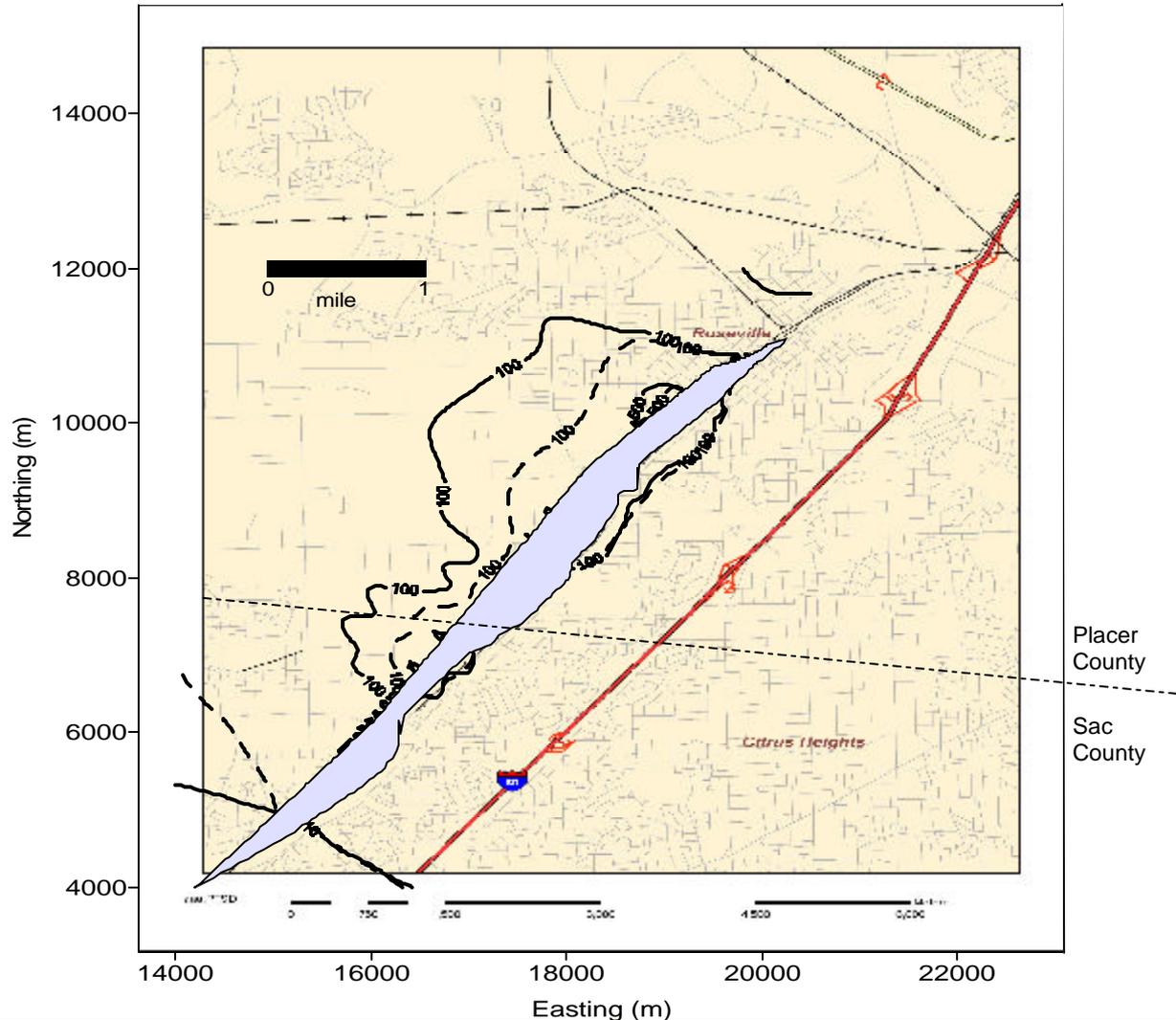
Health Risk Assessment Results

- ◆ Risks are depicted as isopleths overlaid on a regional map
- ◆ Near source risk is high by two areas
 - Nearby the *Service Track* and *Hump and Trim* areas
- ◆ Elevated concentrations and risks extend over a very large area

Estimated Cancer Risk from the Yard

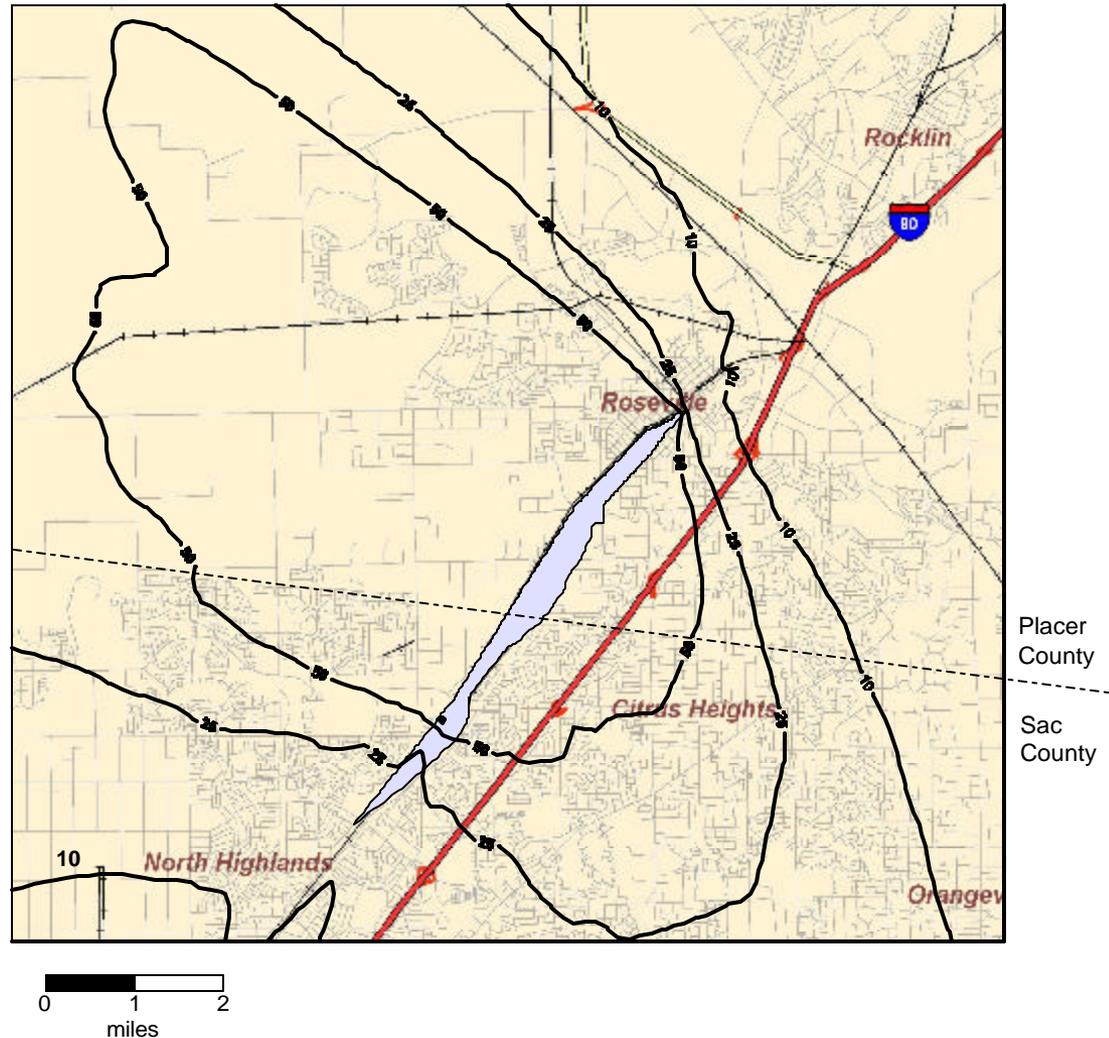
100 and 500 in a million risk isopleths

Solid line - Roseville Met data; Dashed lines - McClellan Met Data



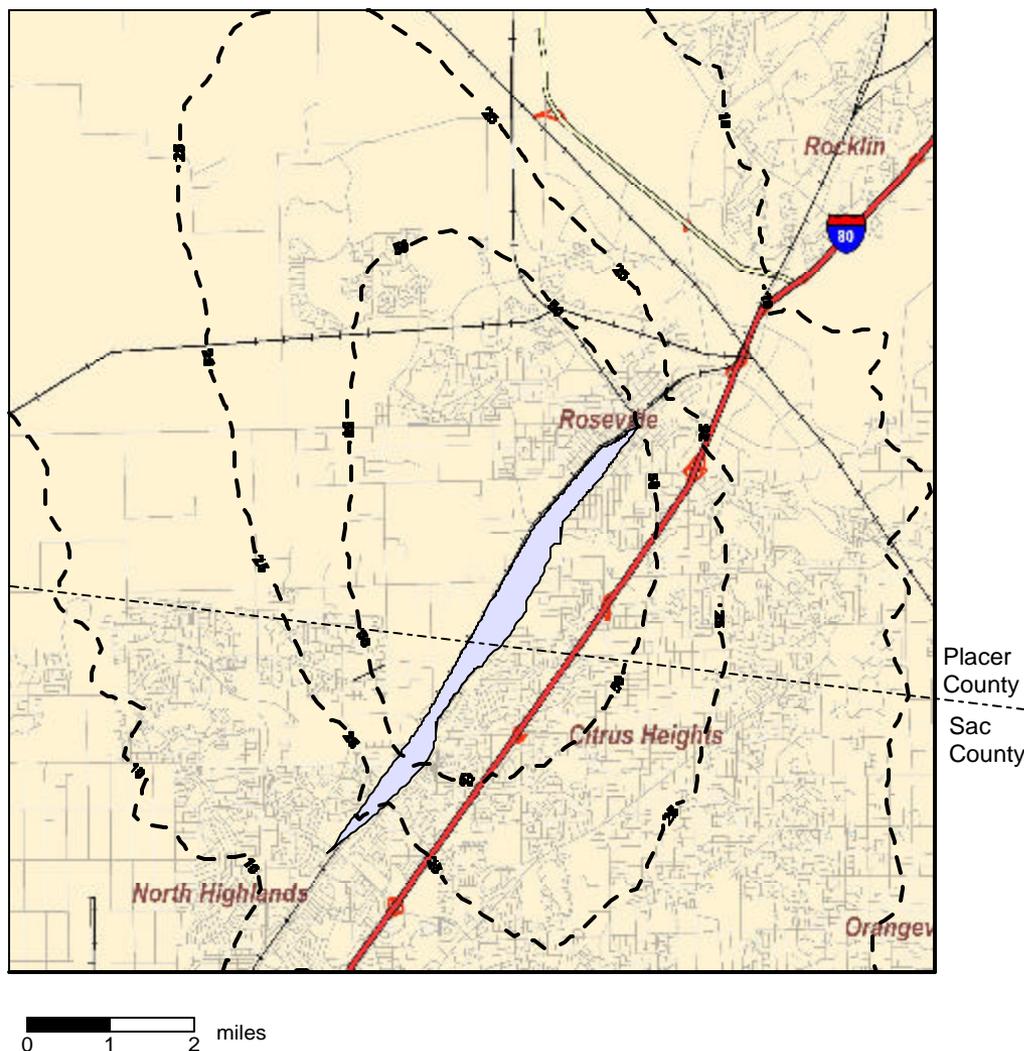
Estimated Cancer Risk from the Yard

10, 25, and 50 in a million risk isopleths, Roseville Met Data

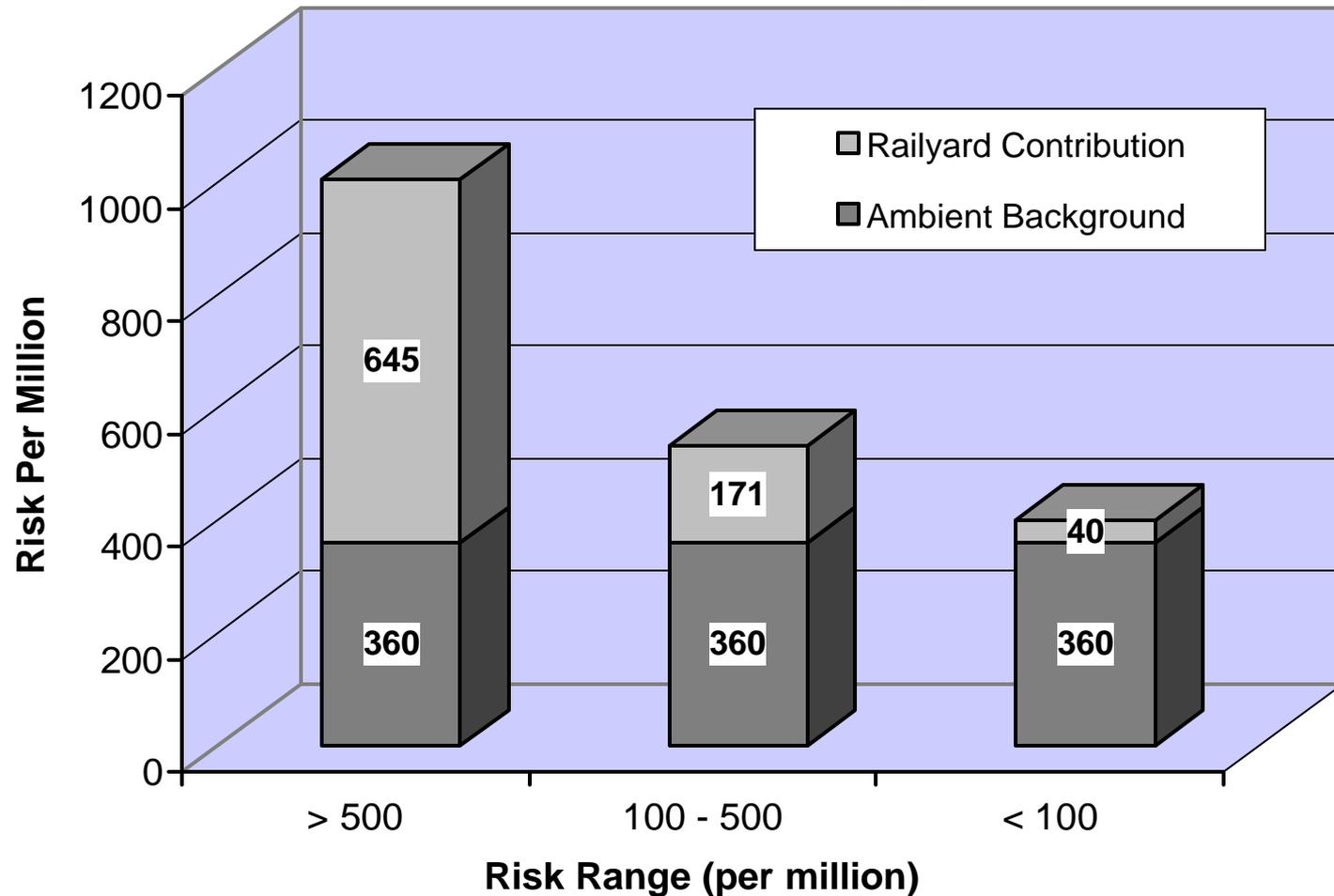


Estimated Cancer Risk from the Yard

(10, 25, and 50 in a million risk isopleths, McClellan Met Data)



Comparison of Roseville Rail Yard Risks to Ambient Background Level in Sacramento Region



Findings

- ◆ Year 2000 Diesel PM emissions: 25 tons
 - Moving locomotives account for about 50 percent of emissions, idling locomotive about 45% and testing accounts for about 5%
- ◆ Large region impacted by the Diesel PM emissions from the Yard
 - Potential cancer risks greater than 500 in a million occur northwest of the Service Track area and Hump and Trim (10-40 acres)
 - Potential cancer risks greater than 100 in a million occur over a 700-1600 acres
 - Potential cancer risk greater than 10 in a million occur over 46,000-56,000 acres impacted between 140,000 and 155,000 people

Air Resources Board Recommendations

- ◆ Short-term and long-term mitigation measures are needed
 - Cleaner fuels
 - Idling reduction
 - Accelerate rebuilt/replacement
 - Inspection & maintenance practices
 - Improved engine technology & exhaust aftertreatment



Technical Contact

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www.arb.ca.gov/diesel/documents/rrstudy.htm