LAMPHIER-GREGORY

TECHNICAL MEMORANDUM

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SUBJECT: **EBMUD Dingee Backbone Pipeline Replacement Health Risk Assessment**

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INTRODUCTION

East Bay Municipal District (EBMUD) is a publicly-owned utility formed under the Municipal Utility District Act (MUD Act). EBMUD's water system serves approximately 1.3 million people in a 325-square mile area extending from Crockett in the north, southward to Castro Valley, eastward from San Francisco Bay to Walnut Creek, and south through the San Ramon Valley.

An important element in the EBMUD water transmission infrastructure serving residents in the East Bay Hills is the Dingee Backbone Pipeline that connects the Dingee Pumping Plant in Berkeley with the Estates Reservoir in Oakland and provides domestic water service to approximately 18,000 customers along its route. EBMUD is preparing to replace portions of the three-mile long Dingee Backbone Pipeline in order to correct underground water transmission lines that are failing due to age or fault creep or to minimize risks related to existing location within a fault zone, in a landside zone, or in Lake Temescal's embankment. Lamphier-Gregory has been asked to conduct an analysis of air quality and greenhouse emissions associated with the construction of the Dingee Backbone Pipeline Replacement Project to meet requirements of the California Environmental Quality Act (CEQA) in these areas.

SETTING

Toxic Air Contaminants (TACs) are a defined set of airborne pollutants that may pose a present or potential hazard to human health (cancers or acute or chronic non-cancerous effects). TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source. The health effects associated with TACs are quite diverse

and generally are assessed locally, rather than regionally. Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel exhaust is the predominant TAC in urban air, and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). The California Air Resource Board (CARB) reports that recent air pollution studies have shown an association that diesel exhaust and other cancer-causing toxic air contaminants emitted from vehicles are responsible for much of the overall cancer risk from TACs in California. Particulate matter emitted from diesel-fueled engines (diesel particulate matter [DPM]) was found to comprise much of that risk. In August, 1998, CARB formally identified DPM as a TAC. Fine particulate matter (PM2.5), a component of DPM as well as originating from other sources, is considered by the Bay Area Air Quality Management District (BAAQMD) to be the biggest contributor to public health impacts in this air basin.

PROJECT DESCRIPTION

According to the description provided by EBMUD, the project could span up to 2 years and would replace 19,000 linear feet of pipe. This does not include down-time, mobilization, demobilization or paving. Most of the project involves excavating a trench, installing new pipe, plugging the old pipe, backfilling the trench with aggregate base, and finally repaving the disturbed area to match the adjacent street surface. A small segment of the project may involve a 'slip-line' method (as opposed to replacement), whereby a smaller diameter new pipe is fed through the larger diameter old pipe. Slip-lining would require installation of a trench box every 560 feet instead of having to excavate the entire length. Final paving of disturbed areas would occur approximately every 1000 linear feet or every one to two weeks.

The trenching work would have a higher level of emissions than the slip-line work and would progress at 60 to 120 feet per day.

ANALYSIS AND IMPACT DISCUSSION

CEQA Checklist Items

This emissions analysis responds to the following CEQA checklist items:

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
III. **AIR QUALITY** — Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the Project:				
d) Expose sensitive receptors to substantial pollutant concentrations?	[ ]	[ ]	[4]	[ ]

"Sensitive receptors" are defined as facilities where sensitive population groups, such as children, the elderly, the acutely ill and the chronically ill, are likely to be located. These land

uses include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals and medical clinics. Sensitive uses, including residential homes, are located along portions of the project and could be exposed to potentially hazardous emissions from diesel-fueled construction equipment and trucks.

BAAQMD has adopted the following project-specific thresholds of significance for new sources of potentially hazardous emissions: increased cancer risk of greater than 10 in a million, increased non-cancer risk of greater than 1.0 Hazard Index, and ambient PM2.5 increases greater than 0.3 micrograms per meter squared annual average.

Method of Analysis

As a water transmission pipeline replacement project, the project would not be considered to have substantial emissions during operation. Lamphier-Gregory has prepared an assessment of the potential health risk during the construction-period for the proposed water transmission pipeline replacement project. Construction activities do not require a permit from BAAQMD as an emissions source.

BAAQMD recommends assessment of community risks and hazards within a 1,000 foot radius of a project boundary. As this is a linear project with an active construction site that will move at a rate of 60 to 120 feet per day, it is calculated that a receptor along the route could be within 1,000 feet of the active construction zone for up to approximately 33 days and that the surface area (using the widest proposed trench at 4 feet) along that distance would be approximately 0.18 acres.

The modeling of carcinogenic or chronic health risks is based upon long-term exposure and becomes inaccurate when used for shorter durations. The intended shortest duration for these modeling techniques is nine years. However, in reality, the local air districts in California are frequently assessing risk from short term activities related to construction, mitigation of contaminated soils, and so forth. BAAQMD has adopted the recommendations of the California Office of Environmental Health Hazard Assessment (OEHHA) and recommends use of the models for down to a minimum of 2 years of exposure.

The health risk models would not be accurate for an exposure duration of 33 days and the minimum 2 year period would be so much longer as to be unrelated to actual potential risks from this project. Therefore, the potential health risk is discussed qualitatively below.

BAAQMD has provided Screening Tables for Air Toxics Evaluation During Construction (BAAQMD, Version 1.0, May 2010) to estimate the potential for significant air quality health risk impacts associated with construction activity based on general project characteristics, such as type and size and includes worst-case and conservative assumptions. The table is specifically not intended to be used for projects substantially different from the residential, commercial and industrial projects included. Therefore, the table cannot be used for directly for this project. A brief comparison is included below for discussion purposes.

The smallest projects included in this screening table are construction of a 5 unit residential project on 1.7 acres and construction of a 5,000 square foot commercial project on 0.2 acres. The screening table reports that under worst-case conditions, there is the potential for significant

health risk if a sensitive receptor is located within 95 or 100 meters (up to 328 feet) of such a construction site.

As portions of the proposed project are along residential roadways, sensitive receptors will be located within 328 feet of the construction area. However, because of the progression of this linear construction project, sensitive receptors would only be within that distance to the construction zone for up to about 11 days and as presented earlier, within 1,000 feet for up to 33 days. As discussed above, BAAQMD used construction period durations of at least 2 years for this screening table. While it is inappropriate to use this table to quantify an approximate risk for such a different project than those listed, it stands to reason that emissions and the resultant health risks from this shorter 33 day exposure period would be substantially less than emissions over a 2 year period.

Given that the exposure duration would be shorter than that able to be accurately modeled and substantially shorter than projects in BAAQMD's screening table, it can reasonably be assumed that the potential health risk from construction-period emissions would be less than significant.

Additionally, note that as recommended by the Air District, standard and potentially also additional construction management practices will be implemented to reduce emissions, including particulate matter emissions. This will depend on the specifics of the construction schedule and is detailed in the separate Air Quality and GHG report.