

Angela Knight (MS 305)  
East Bay Municipal Utility District  
375 Eleventh Street  
Oakland, CA 94623

August 2, 2001

Dear Ms Knight:

This letter presents comments on the Draft Environmental Impact Report (DEIR) for the East Bay Municipal Utility District (EBMUD) Bayside Groundwater Project dated March 2001. These comments, many of which were raised during the seven public comments meetings, are listed below:

***Project Alternatives***

1) Pg. 6-1 of the DEIR (summary of the California Environmental Quality Act (CEQA) guidelines Section 15126.6) states that an EIR must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. However, this DEIR does not present a reasonable *range* of alternatives, because all proposed sites are located within the same general area. Why does EBMUD not discuss the results and or findings from its proposed groundwater projects in the San Joaquin County, or other areas? Why are other groundwater alternatives, which do not have negative impacts on the health and property of neighboring homeowners (i.e. projects in rural, not residential areas), not considered nor presented for public input and participation?

EBMUD should fully evaluate all of its potential drought relief projects (not just the Bayside Groundwater Project) to allow the public to understand and consider a reasonable range of alternatives. What makes the Bayside Project higher in priority over all the other water supply/drought relief projects? Pg. 1-7 of the DEIR essentially states that EBMUD has given up on the San Joaquin Project as "successful conclusion of these efforts remains speculative"- why? Pg. 1-7 states that the raising of Pardee study scope was reduced and completed in June 1998 with no further work performed since that time. Why was the Raising Pardee project discontinued with no explanation? Pg. 6-1 of the EIR (summary CEQA guidelines Section 15126.6) states that the reasons for rejected alternatives (San Joaquin, Raising Pardee, etc.) should be identified. It appears that EBMUD has some great alternatives available to provide drought relief that would not negatively affect the health and property of nearby homeowners, and these should be presented to the public for consideration.

### ***Ground Water Contamination- General***

2) Pg. 3.8-5 of the DEIR states that the deep aquifer is naturally recharged with water through rainfall infiltration, stream seepage, agricultural return flow, pipe leakage, and subsurface inflow. It is further described that vertical gradients are present throughout the study area. Pg. 3.4-17 of the DEIR states that central facility sites are located in an area with several known unmitigated releases of gasoline, diesel, and waste oil with the potential for MTBE's to be encountered in the soil and groundwater. Why does EBMUD not recognize the danger of toxic pollutants entering the proposed deep aquifer drinking water supply through natural recharge? Natural recharge is how the Bayside groundwater originally made its way to the aquifer.

Why is EBMUD building the Bayside pipelines and wet well water holding tank right in the middle of known contaminants in the soil and shallow aquifer? Why does EBMUD not recognize the danger of toxic pollutants entering the proposed drinking water supply through direct contact with the water treatment structures? Why does EBMUD make no mention of cleaning the known hazardous material in the soil and natural groundwater above the deep aquifer? Why has EBMUD not recognized or mitigated the potential for the proposed aeration towers to strip potential contaminants in the water supply (from vertical conduits or natural recharge) into the air for the community to breathe?

### ***Ground Water Contamination- Vertical Conduits***

3) Why did the DEIR not disclose nor account for the fact that the South East Bay Plain Groundwater Basin deep aquifer has tested positive for contamination (only 6 miles from the Bayside project site), which is evidenced by recent well testing at the EBMUD Oakport site near the Oakland Coliseum? Pg. 3-2 of the EBMUD Regional Hydrogeologic Investigation South East Bay Plain records this contamination of the deep aquifer and also states that contamination in the area may have migrated to deeper zones through improperly abandoned wells. Why does EBMUD not recognize/mitigate/eliminate the high risk of toxic pollutants entering the proposed drinking water supply through abandoned wells at the Bayside groundwater Project site (a historic farm and well field area with a high potential for unknown improperly abandoned wells) or any other contaminated site above the aquifer? Why has EBMUD not considered the transport of contamination through subsurface inflow from other contaminated areas like Oakport? These risks of drinking water supply contamination are borne only to those EBMUD customers receiving Bayside water (as stated by EBMUD during public comment meetings, those customers south of High Street in Oakland down to San Lorenzo will only receive Bayside water).

EBMUD's Policy 71, Environmental Responsibility (see Attachment 1) states that "no community in the District shall bear an inequitable environmental risk burden as a result of District facilities, operations, or practices". It is clear that this project does in fact give our community (Bayside Project groundwater - stores water beneath known contaminants) an inequitable risk burden of drinking supply water contamination than other communities (Mokelumne surface water - stored water in reservoirs with no potential for contamination). In addition, contamination is not addressed in any of the circumstances listed below:

- a) According to the United States Geological Survey (USGS) and the Regional Water Quality Board, there will be opportunities for contaminated ground water to enter into

the aquifer through abandoned wells in the East Bay Plain acting as "vertical conduits" as well as through natural recharge. In fact, the San Leandro Bay/San Leandro Creek, has been labeled a "Toxic Hot Spot" by the State Water Resources Control Board, citing elevated concentrations of contaminants such as Hg, Pb, Se, Zn, PCB's, PAHs, DDT, chlordane dieldrin, ppDDe, hexachlorobenzene, heptachlor and chlorpyrifos. It is plausible for the water stored in the aquifer to become contaminated to levels that are unsafe for drinking. EBMUD has not discussed this possibility or its ramifications in the DEIR.

- b) The Regional Water Quality Control Board reports that "in the range of 15,000 wells were drilled in the East Bay Plain between 1860 and 1950...many were 200 to 500 feet deep with the deepest reaching 1000 feet below ground surface...Virtually none of these wells were properly destroyed". Furthermore, the USGS claims that within the project area there are at least 12-15 wells in the Rogers well field that extend down to the deep aquifer. The USGS also reports that there are no records of their location or destruction. This is a huge loophole in the proposed Bayside project. Once the proposed system is pressurized, it could cause these abandoned wells to "bubble up" spewing the above mentioned contaminants and water into the area. These wells could be under a home, they could be in a backyard, or they could be in a federally protected wetland area that lies within the scope of the proposed project, compromising wildlife.

The possibility of flowing wells has not been addressed in the DEIR. Page 3.8-24 of the DEIR states that "some wells screened across the deep aquifer and overlying units might not be located during the District's well identification program. These wells may remain as flowing until identified and modified." This residual impact of flowing wells, which may push known contaminants to the surface, is not acceptable or fair to our community. Again, EBMUD's Policy 71 (see Attachment 1), Environmental Responsibility states that "no community in the District shall bear an inequitable environmental risk burden as a result of District facilities, operations, or practices." It is clear that the Bayside project does in fact give our community an inequitable risk burden as the DEIR states that we may have flowing wells, pushing known contaminants from the shallow aquifer, into our community. Has any of EBMUD's well testing programs ever caused abandoned wells to flow at the surface? If so, where?

- c) According to the DEIR, "there is a 17 percent probability of an M 6.7 or greater earthquake occurring on the Southern region of the Hayward fault in the next 30 years." It goes on to say on page 3.7-10 that "it is likely that the (project) area (would be) placed within the potentially liquefiable zone." In fact, according to the liquefaction hazard map for San Leandro prepared by the Association of Bay Area Governments (ABAG) for a Hayward fault earthquake, our community (the proposed Bayside Project area) is currently rated as the highest hazard possible for the Bay Area. The mitigation's offered in the DEIR are not thorough, and only speak of the EBMUD above ground structures and pipelines. The possibility of wells being ruptured is not evaluated. The effect of a ruptured well could create increased movement of contaminated waters to the deep aquifer. This action of breaking wells could also damage surface structures such as

nearby homes. Further, the effects of a breaking pipeline are not fully investigated or mitigated. What are the ramifications to the project area if the system is destroyed in an earthquake? These effects could be devastating to local residents and wildlife.

#### *Air Quality*

4) This DEIR proposes the use of aeration towers to remove radon and chloroform (toxic air contaminant known to cause cancer) in an area completely surrounded by residential neighborhoods and protected wetlands which house endangered species of animals such as the Clapper Rail. Up to 3,700lbs. per year of chloroform alone will be emitted into the air (pg. 3.12-16 of the DEIR) and the Bay Area Air Quality Management District's (BAAQMD) toxic air contaminant trigger is 36 lb./yr. At 3,700 lbs/yr. of chloroform emissions, this project may produce the highest toxic chloroform emissions of all facilities in the Bay Area (per BAAQMD Toxic Air Contaminants 1999 annual report, highest current level is 2,500 lb./yr). Please note again that this facility is sited in the heart of residential neighborhoods (with a high percentage of elderly), schools, business and protected wetlands.

In addition EBMUD did not include results of an air toxics impact analysis for a San Lorenzo Air Stripper in the DEIR. This analysis, made available to the public for viewing on April 20, 2001 at the EBMUD office, included an incremental lifetime cancer risk study and illustrated the chloroform cancer risk contours resulting from operation of the proposed air strippers. This impact analysis, dated March 9, 2001 should have been made available for the entire public to review in the March 23, 2001 DEIR as this information sheds light on the cancer risks to the community. Even more concerning is that this analysis does not reflect the toxic effects of the EBMUD preferred alternative sites closest to residential neighborhoods. To illustrate our concerns, we have sketched the chloroform cancer risk contours in the EBMUD preferred site next to the Heron Bay and San Lorenzo residential communities (see Attachment 2). It is noted that EBMUD did attempt to address this situation by posting the above mentioned March 9th report on its website after May, 1, 2001, but changed the original report (changed pg. 3 from +/- 50% accuracy to 10% accuracy) during the DEIR process.

How is EBMUD allowed to change results from an original air toxics analysis memorandum during the DEIR process, immediately after the public showed outrage during the May 1, 2001 public comment meeting over the recently disclosed air toxics analysis? How can there be two of the same documents presenting different information floating around during a public comment period? Please see Attachment 3 (pg. 3 of the 3/19/01 memo with a +/- 50% accuracy made available for public viewing at EBMUD offices) and Attachment 4 (pg. 3 of the 3/19/01 memo with a +/- 10% accuracy made available for public viewing on the internet).

No other community in EBMUD area has aeration towers that will emit the cancer causing substances. Why is EBMUD subjecting our community to greater health and environmental risks from chloroform and radon emissions through aeration towers than other communities in the EBMUD District? In addition, the Ora Loma treatment plant adjacent to the proposed Bayside site also emits chloroform (490 lb./yr. per BAAQMD 1999 Annual report). EBMUD should

consider the cumulative effects of the Ora Loma chloroform emissions with those emissions from the proposed EBMUD aeration towers.

Why has EBMUD not investigated nor presented any other alternatives for radon removal in the DEIR. Please note that residents asked during several public comment meetings if there are any type of filters that could be put on the treatment system to prevent the neighbors from breathing the cancer causing emissions from the aeration towers and EBMUD representative responded that filters do not exist. Why is the Granular Activated Carbon filter option (discussed as a feasible option in the U.S. Environmental Protection Agency Technologies and Costs for the Removal of Radon From Drinking Water report dated May 1999 - a DEIR supplemental document made available for public viewing) not analyzed in the DEIR? Why were the Granular Activated Carbon filters not disclosed to residents when asked of EBMUD during the public comment meetings?

### *Water Quality*

5) It has been described in the DEIR and presented by EBMUD during the public comment meetings that the Bayside Project will provide water to only EBMUD customers south of High Street in Oakland down to San Lorenzo. It is also been described in the DEIR and presented by EBMUD during the public comment meetings that the Bayside water is not of the same quality as the water from the Mokelumne River Supply that all other customers would receive. Table 3.10-1 and pg. 3.10-18 of the DEIR show that the bayside ground water will have higher levels of radon and arsenic than the Mokelumne supply. Yes, these values are below the Maximum Contaminant level, but they are still higher than that of which other EBMUD customers (in more affluent areas) receive. Why should our community not receive the same quality of water as other communities (water with lower levels of harmful components such as radon and arsenic) during a drought when there are still alternatives available, such as raising Pardee or San Joaquin Groundwater that would give all customers an equal quality of water?

### *Subsidence*

6) It is noteworthy that many references are made to USGS study results in this DEIR while the final report is not due until 2002. Also, it appears that EBMUD has been selective about what information it will provide from USGS research that may be available thus far. For example, the USGS admits that there could be a "broadscale regional lowering," which has been mentioned in the DEIR as the only type of subsidence likely to occur. However, the USGS also claims that "localized and intense changes in land surface elevation" could result from this project. This is not mentioned in the DEIR. In any case, there is damage to homeowners since a broadscale lowering could make home locations qualify as flood zones. Localized subsidence could cause damage to surface structures. These possibilities, particularly the possibility of localized subsidence, have not been fully studied or discussed in the DEIR.

The houses in the Heron Bay community risk loss of home value due to several factors, including damage or contamination of air, water and land. EBMUD has made a commitment to the San Leandro/San Lorenzo communities at the public comment meetings that EBMUD will not pursue the Bayside project if one community bears more of a burden than others as a result of the Bayside project. It is clearly true that Heron Bay bears more than a fair share of burden and

risk. EMBUD has made no "mitigations" in the DEIR to loss of property value, property damage or negative health effects that could be incurred by residents as a result of this project. EBMUD has also made a commitment to the San Leandro/San Lorenzo community at public comment meetings that the Bayside Project will go forward only if science confirms there would not be adverse impact to your home values or your property (see Attachment 5, copy of two overhead transparencies presented by EBMUD at the May 15, 2001 Bayside Project public comment meeting - hard copy requested by Sally Law, Heron Bay Resident, and provided by Angela Knight)

In addition, the homes of Heron Bay appear to be constructed on recently placed soil fill. EBMUD should consider/evaluate the potential settlement of this recently placed fill when combined with the subsidence/settlement effects from the Bayside project, as our homes may be subjected to greater risks of structural damage and overall elevation lowering. EBMUD should evaluate all potential risks of settlement and evaluate them cumulatively. Please note that our homes are now only a few feet about sea level, and this project only adds to the likelihood that our homes will drop in elevation, endangering the community to flood effects. The DEIR should evaluate and consider the non-uniform layers of soil (sediment, peat, etc.) that may contribute to non-uniform settlement in the area. EBMUD'S mitigation plans to only monitor for subsidence/settlement and adjust project operations after settlement has occurred is not acceptable, as it can never reverse the original subsidence/settlement effects that were initially caused.

#### ***Energy/Resource Conservation***

7) EBMUD should analyze the overall energy/resource efficiency associated with the operation of the Bayside plant, considering the fact that this project will pump previously treated water (to drinking water standards) into the ground. It appears that EBMUD will treat the high quality Mokelumne river water once at the Upper San Leandro Treatment Plant, then pipe the treated water down to the Bayside project, pump the treated water into the ground (where contaminants are known to exist in the shallow aquifer), then treat the water a second time at the proposed Bayside water treatment plant. By treating the water twice, it appears that EBMUD is not only wasting the electricity used in the treatment process, but the chemicals, manpower and all other resources necessary to treat the Mokelumne water once to drinking water standards. As ratepayers of EBMUD, we feel that EBMUD should use our rate payer dollars and conserve energy/resources responsibly. EBMUD should perform a cost/resource analysis comparing the Bayside project to other groundwater projects, such as the San Joaquin that would pump only raw water into the ground that was not already treated to drinking water standards. EBMUD should also consider/discuss/mitigate the issue of pumping previously treated water into the ground and its effect of increasing the amount of chloroform emissions in the community when treating the water a second time, such as at the proposed Bayside plant.

#### ***Rationing assumptions***

8) Page 1-1 of the DEIR states that "rationing of up to 68% may be necessary in the future without additional water supplies ....(EDAW, 1993)". A EBMUD handout given at the June 5, 2001 Bayside Public comment meeting (Question and Answer Summary) states that "Without more water supplies available during drought, EBMUD customers face up to 60% rationing in

prolonged severe drought". EBMUD should provide documentation/calculations in the EIR that proves that these levels of rationing would be required. EBMUD should also use more recent studies on rationing than of 1993 (now 8 years old), as referenced on pg. 1-1 of the DEIR.

*Seismicity*

9) Page 3.8-26 of the DEIR states that "Minor increases in pore water pressure in the upper 500 feet of sediment along a short section of the fault should not cause or contribute to the generation of or increase the magnitude of an earthquake". The use of the term "should not" in the above statement leads to the possibility that an earthquake may be triggered by injection of water into the ground. Please note that cases have been documented which have confirmed induced seismicity or "triggered earthquakes" caused by injection of fluids into the ground (described in a report by John Fortuna titled "an Overview of Induced Seismicity, with a special emphasis on fluid injection"). For example, in 1966, in Denver, Colorado at the Rocky Mountain Arsenal, an earthquake was caused by injection of fluids into the ground.

EBMUD has made a commitment to the San Leandro/San Lorenzo communities that the "Bayside Project will go forward only if science confirms there is **no reason** to anticipate an increased risk for seismic impact" (see Attachment 5, copy of two overhead transparencies presented by EBMUD at the May 15, 2001 Bayside Project public comment meeting - hard copy requested by Sally Law, Heron Bay Resident and provided by Angela Knight). Earthquake engineering and induced seismicity are new and very complex fields of study. Therefore, these sciences are not as clear cut as other engineering fields of study and conclusions cannot be as easily and definitively drawn as implied in the Bayside DEIR. EBMUD should thoroughly research and evaluate the potential induced seismicity risks and present these calculations/risk assessments for public review and comment. EBMUD should also recognize that this project is in very close proximity to the Hayward Fault, and as described in an Abstract titled "Induced Seismicity and the potential for Liability Under American Law" by Darlene A. Cyper, Attorney at Law, and Scott D. Davis, Geophysicist, USGS, that under American Law, the inducer of an earthquake can be made to pay for damages resulting from the quake.

HERON BAY TASK FORCE,

cc: Katy Foulkes, EBMUD Board President  
John A. Coleman, EBMUD Board Member  
Doug Linney, EBMUD Board Member  
Lesa R. McIntosh, EBMUD Board Member  
Frank Mellon, EBMUD Board Member  
William B. Paterson, EBMUD Board Member  
David Richardson, EBMUD Board Member  
Dennis M. Dicmer, EBMUD General Manager  
Lynelle Lewis, EBMUD District Secretary  
Sheila Young, Mayor of San Leandro  
Bob Glaze, Vice-Mayor of San Leandro  
Surlene Grant, San Leandro City Councilmember  
Glenda Nardine, San Leandro City Councilmember  
Garry Loeffler, San Leandro City Councilmember  
Tony Santos, San Leandro City Councilmember  
Orval Badger, San Leandro City Councilmember  
Alice Lai-Bitker, Alameda County Supervisor  
Nate Miley, Alameda County Supervisor  
Scott Hagerty, Alameda County Supervisor  
Ellen Corbett, Assemblywoman  
Liz Figueroa, State Senator  
Pete Stark, U.S. Congressman  
Roberta Cooper, Mayor of Hayward

**Attachments:**

- 1) EBMUD Policy 71, Environmental Responsibility
- 2) Chloroform Cancer Risk Contour Figure Reflecting EBMUD Preferred Site
- 3) March 19, 2001 Air Toxics Memo with +/- 50% accuracy (4 pages)
- 4) March 19, 2001 Air Toxics Memo with +/- 10% accuracy (3 pages)
- 5) EBMUD commitments to the San Leandro/San Lorenzo Communities - copy of two overhead transparencies presented by EBMUD at the May 15, 2001 Bayside Project public comment meeting - hard copy requested by Sally Law, Heron Bay Resident, and provided by Angela Knight (2 pages)



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Additional Sources for items 3(Ground Water Contamination- Vertical Conduits), 6(Subsidence), and 9(Seismicity) are as follows:

- Conversation with John Izbicki, Project Chief of USGS study "Source, Movement, and Age of Groundwater in the San Leandro and San Lorenzo Alluvial Cones of the East Bay Plains Groundwater System." Project Period: October, 1999 – September, 2001.
- "East Bay Plain Groundwater Basin Beneficial Use Evaluation Report (Draft)." August 4, 1999 by the San Francisco Bay Regional Water Quality Control Board.
- "Consolidated Toxic Hot Spots Cleanup Plan Volume II: Regional Cleanup Plans." June 1999 by the State of California Water Resources Control Board.
- A report by John Fortuna titled "an Overview of Induced Seismicity, with a special emphasis on fluid injection"- [www.umich.edu/~gs265/induced.htm](http://www.umich.edu/~gs265/induced.htm)
- An abstract titled "Induced Seismicity and the potential for Liability Under American Law" by Darlene A. Cyper, Attorney at Law, and Scott D. Davis, Geophysicist, U.S.G.S. - [www.nyx.net/~dcypser/induceq/iugglabs.html](http://www.nyx.net/~dcypser/induceq/iugglabs.html)



# Policy 71

EFFECTIVE 22 SEP 98

## ENVIRONMENTAL RESPONSIBILITY

SUPERSEDES 13 SEP 94

IT IS THE POLICY OF THE EAST BAY MUNICIPAL UTILITY DISTRICT TO:

Provide reliable, high-quality drinking water and wastewater service with operational, maintenance and construction activities that avoid, minimize or mitigate adverse environmental effects to the maximum extent feasible.

**Objective** The District will integrate environmental values and awareness into its decision-making, policies, programs and work practices, and regularly evaluate the success of this integration; promote an environmental stewardship ethic in its staff and among other drinking water and wastewater treatment agencies; assure that the District adheres to the principles of environmental justice; encourage pollution prevention whenever possible to reduce risk to the ratepayers and communities near District facilities; and foster communication with employees and the public about the environmental significance of its current and future operations.

**Responsibilities** To facilitate compliance with environmental laws and regulations, the District will conduct compliance audits, administer staff training and assist in the development and implementation of management and operational practices that ensure compliance. The District will maintain strong working relationships with local regulatory agencies, exchanging information on District plans and procedures for environmental compliance, thereby supporting the development of regulatory agency environmental guidelines for the water and wastewater industry at large.

To advance environmental leadership and awareness, the District will participate in drinking water and wastewater organizations and associations, and work cooperatively with and solicit input from the environmental community and public on District activities.

The District will prepare, and routinely update a Regulatory Compliance Plan. The Plan will describe the efforts that are to be implemented to meet the objective of this policy and to achieve and keep the District in compliance with environmental regulations. An annual report on the status of the District's compliance will be presented to the Board of Directors.

**Environmental Justice**

Environmental justice assures that no community in the District bears an inequitable environmental risk burden as a result of District facilities, operations, or practices.

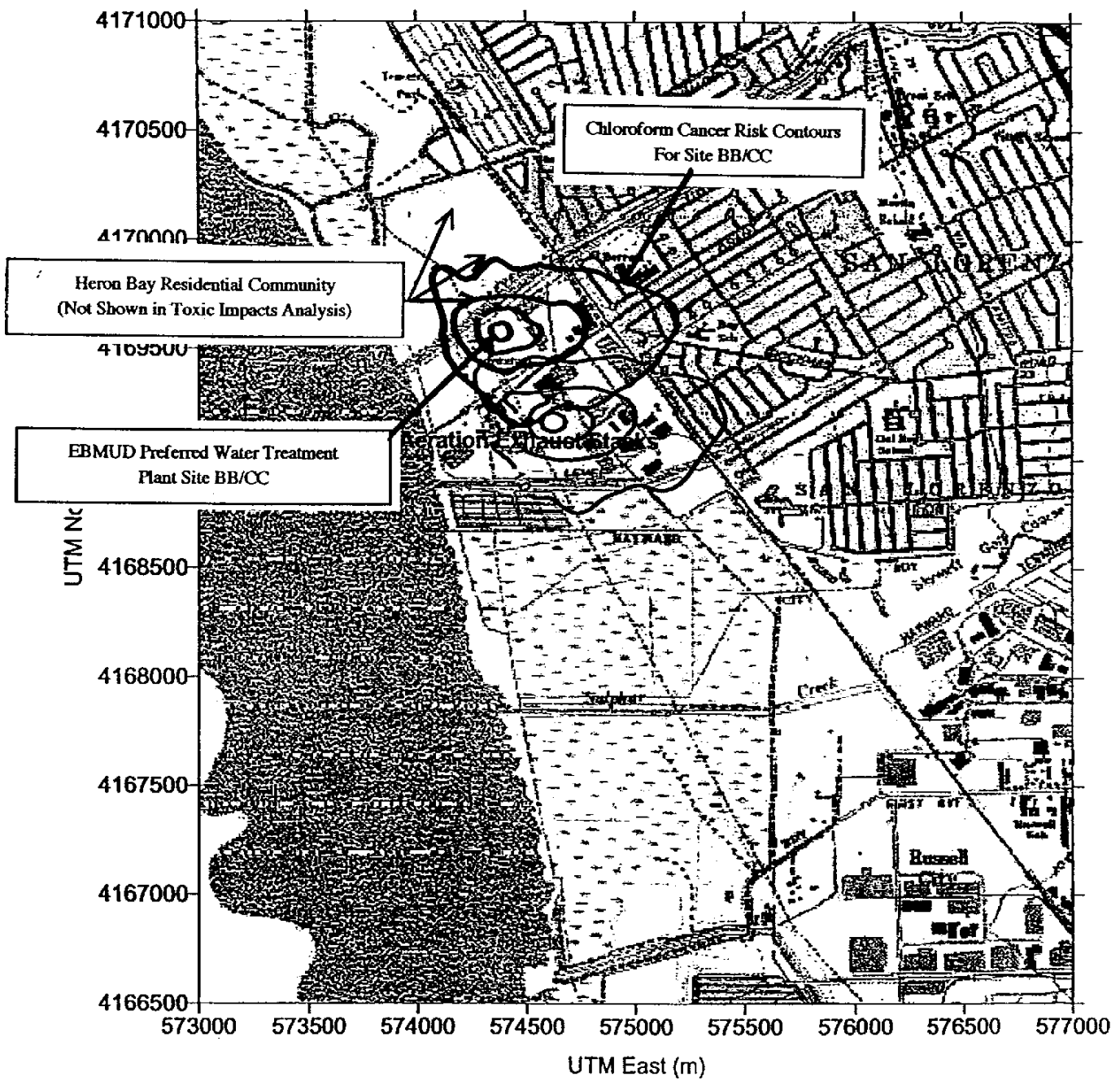


Figure 3

TECHNICAL MEMORANDUM

CH2MHILL

## Air Toxics Impact Analysis for San Lorenzo Air Stripper

PREPARED FOR: John Schroeter/EBMUD  
PREPARED BY: John Castleberry/CH2M Hill  
Keith McGregor/CH2M Hill  
COPIES: Jay Witherspoon/CH2M Hill  
DATE: March 9, 2001

### Introduction

This technical memorandum presents the methodology and results of an analysis of incremental lifetime cancer risk for a proposed air stripper in San Lorenzo, California. The risk analysis was conducted using a dispersion model approved by the U.S. EPA, and health risk factors developed by the California Office of Environmental Health Hazard Assessment (OEHHA). The inhalation exposure pathway was assessed for a single compound, chloroform, which is released to the atmosphere through 4 identical stacks.

The results of this risk analysis are considered approximate because they are based on modeling a single year of meteorological data. Our preliminary discussions with a meteorologist at the Bay Area Air Quality Management District (BAAQMD) indicate that up to 5 years of meteorological data may be required in the model. Because of the delay in acquiring meteorological data from the National Climatic Data Center, the additional 4 years of data are not yet ready for use. Our experience suggests that the risk results from using 1 year of meteorological data could differ from the 5-year results by as much as  $\pm 50$  percent.

The following 3 operating scenarios were analyzed in this study:

- 41  $\mu\text{g}/\text{L}$  influent chloroform concentration, 25-foot release height
- 50  $\mu\text{g}/\text{L}$  influent chloroform concentration, 25-foot release height
- 82  $\mu\text{g}/\text{L}$  influent chloroform concentration, 25-foot release height

Results of the risk analysis are presented in the form of risk contours shown over a map of the project vicinity.

### Source Description

The proposed air stripper will be located near the intersection of Worthley and Grant Streets, within an area bounded by San Lorenzo Creek to the north, Bockman Slough to the south, the bay mudflats to the west, and the railroad tracks to the east. The exact location of

the stripper has not yet been determined. As a result, the stripper was arbitrarily modeled in the approximate geographic center of the project area. Because the terrain is relatively flat, the risk contours would simply follow the stripper to its actual location with no significant change in size or shape.

### Stack Parameters

The air stripper was modeled as a series of 4 identical stacks arranged along an east-west axis with an 18-foot center-to-center distance between stacks. Each stack was represented with the following parameters in the dispersion model:

Release height	25 feet
Exhaust port diameter	36 inches
Diameter of towers	12 feet
Exhaust flow rate	10,500 cfm per stack
Exhaust velocity	25 feet/sec
Exhaust temperature	65°F

The aerodynamic effects of the 12-foot diameter towers on plume dispersion were accounted for in the model.

### Emissions

Emissions were calculated by assuming all of the chloroform present in the influent water would be released to the atmosphere through the exhaust ports without abatement. A water influent rate of 15 million gallons per day was assumed. The following emission rates were used in the risk analysis:

Influent Chloroform Concentration ( $\mu\text{g/L}$ )	Chloroform Emission Rate, All 4 Stacks Combined (lb/yr)
41	1,874
50	2,285
82	3,747

### Modeling Approach

Annual average concentrations of chloroform in the project vicinity were predicted using the Industrial Source Complex - Short Term (ISCST3, v. 00101) dispersion model. ISCST3 is approved by the EPA for modeling a wide variety of stationary industrial facilities. The following options were selected in ISCST3:

- Rural dispersion coefficients
- Regulatory default features
- Flat terrain

Meteorological data from the Oakland International Airport were used in ISCST3. The data consists of 1 year of consecutive hourly parameters (such as wind speed, wind direction, temperature, mixing height, and atmospheric stability) for the year 1997. The BAAQMD

considers Oakland Airport data as representative of the project site (Jim Cordova, personal communication, March 5, 2001).

Four additional years (1993-1996) of meteorological data are currently on order with the National Climatic Data Center; these data are expected shortly. For a formal submittal, the BAAQMD may require up to 5 consecutive years of meteorological data to be used in the dispersion modeling. Therefore, the results in this memorandum, which are based on 1 year of data, should be considered preliminary and approximate. The risk results could change by up to ± 10 percent<sup>1</sup>, should additional years of meteorological data be used in a subsequent analysis.

Chloroform concentrations were calculated by ISCST3 over a grid of receptor points spaced at 100-meter intervals. The grid extended approximately 2.5 km in all directions from the stripper.

## Risk Assessment Approach

Incremental lifetime cancer risk (ILCR) is calculated by multiplying the OEHHA-approved cancer unit risk factor by the average chloroform concentration in air over an individual's 70-year lifetime. In this study, the 1-year average chloroform concentration (as predicted by ISCST3) was assumed to be representative of a lifetime concentration. The unit risk factor for chloroform is presented in the following table.

Compound	Unit Risk Factor ( $\mu\text{g}/\text{m}^3$ ) <sup>-1</sup>
Chloroform	$5.3 \times 10^{-6}$

A unit risk factor of  $5.3 \times 10^{-6}$ , for example, means that an individual's risk of contracting cancer is 5.3 in one million if he is exposed to the compound at an average lifetime air concentration of  $1 \mu\text{g}/\text{m}^3$ . Exposure is assumed to be continuous for a 70-year period. This risk is in addition to the risk of contracting cancer from all other factors, which is about 1 in 3.

## Risk Results

Individual lifetime cancer risks were calculated at every receptor point in the grid modeled by ISCST3. The risk values were plotted by a contouring routine and are presented in the attached figures. Figures 1, 2, and 3 show the risks associated with influent concentrations of 41, 50, and  $82 \mu\text{g}/\text{L}$ , respectively. In all 3 scenarios, the maximum risk levels lie to the east of the stripper, in response to the predominant wind direction at the project site.

In Figure 1, which reflects an influent concentration of  $41 \mu\text{g}/\text{L}$ , the 1-in-one-million risk contour extends approximately 575 meters to the east of the stripper.

In Figure 2, which reflects an influent concentration of  $50 \mu\text{g}/\text{L}$ , the 1-in-one-million risk contour extends approximately 650 meters to the east of the stripper.

<sup>1</sup>Based on input from the Bay Area Air Quality Management District (BAAQMD), this number was changed from the estimate used in the previous draft. May 2, 2001

In Figure 3, which reflects an influent concentration of 82 µg/L, the 1-in-one-million risk contour extends approximately 900 meters to the east of the stripper.

## Air Toxics Impact Analysis for San Lorenzo Air Stripper

PREPARED FOR: John Schroeter/EBMUD

PREPARED BY: John Castleberry/CH2M Hill  
Keith McGregor/CH2M Hill

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- 41  $\mu\text{g}/\text{L}$  influent chloroform concentration, 25-foot release height
- 50  $\mu\text{g}/\text{L}$  influent chloroform concentration, 25-foot release height
- 82  $\mu\text{g}/\text{L}$  influent chloroform concentration, 25-foot release height

Results of the risk analysis are presented in the form of risk contours shown over a map of the project vicinity.

### Source Description

The proposed air stripper will be located near the intersection of Worthley and Grant Streets, within an area bounded by San Lorenzo Creek to the north, Bockman Slough to the south, the bay mudflats to the west, and the railroad tracks to the east. The exact location of the stripper has not yet been determined. As a result, the stripper was arbitrarily modeled in the approximate geographic center of the project area. Because the terrain is relatively



flat, the risk contours would simply follow the stripper to its actual location with no significant change in size or shape.

### Stack Parameters

The air stripper was modeled as a series of 4 identical stacks arranged along an east-west axis with an 18-foot center-to-center distance between stacks. Each stack was represented with the following parameters in the dispersion model:

Release height	25 feet
Exhaust port diameter	36 inches
Diameter of towers	12 feet
Exhaust flow rate	10,500 cfm per stack
Exhaust velocity	25 feet/sec
Exhaust temperature	65°F

The aerodynamic effects of the 12-foot diameter towers on plume dispersion were accounted for in the model.

### Emissions

Emissions were calculated by assuming all of the chloroform present in the influent water would be released to the atmosphere through the exhaust ports without abatement. A water influent rate of 15 million gallons per day was assumed. The following emission rates were used in the risk analysis:

Influent Chloroform Concentration ( $\mu\text{g/L}$ )	Chloroform Emission Rate, All 4 Stacks Combined (lb/yr)
41	1,874
50	2,285
82	3,747

## Modeling Approach

Annual average concentrations of chloroform in the project vicinity were predicted using the Industrial Source Complex - Short Term (ISCST3, v. 00101) dispersion model. ISCST3 is approved by the EPA for modeling a wide variety of stationary industrial facilities. The following options were selected in ISCST3:

- Rural dispersion coefficients
- Regulatory default features
- Flat terrain

Meteorological data from the Oakland International Airport were used in ISCST3. The data consists of 1 year of consecutive hourly parameters (such as wind speed, wind direction, temperature, mixing height, and atmospheric stability) for the year 1997. The BAAQMD considers Oakland Airport data as representative of the project site (Jim Cordova, personal communication, March 5, 2001).

## The Project will go forward ONLY if:

- Science confirms there would not be adverse impact to your home values or your property
- Science confirms that all existing or currently proposed standards & regulations for air and water quality are met or exceeded

## The Project will go forward ONLY if:

- Science confirms there is no reason to anticipate an increased risk for seismic impact
- This project is demonstrated to ask no more of this community than would be asked or expected of any other community within the EBMUD Service Area