

4.8 AIR QUALITY

4.8.1 Impact Criteria and Methodology

Air quality impacts related to the proposed project are primarily associated with dredging and excavating. The Bay Area Air Quality Management District CEQA guidelines (BAAQMD 1996) treat most construction emissions as being addressed at a regional scale by state and federal air quality management plans. The BAAQMD guidelines emphasize implementing fugitive dust control measures for construction rather than quantifying emissions in detail.

Federal Clean Air Act conformity requirements set emissions thresholds for nonattainment and maintenance pollutants as a basis for determining the significance of direct and indirect emissions resulting from federal agency actions. The emissions thresholds applicable to the San Francisco Bay Area are 100 tons per year for reactive organic compounds (an ozone precursor), 100 tons per year for nitrogen oxides (an ozone precursor), and 100 tons per year for carbon monoxide. The San Francisco Bay Area is an attainment area for the federal PM₁₀ standards; consequently, Clean Air Act conformity requirements do not apply to PM₁₀ emissions. Although not directly applicable from a legal standpoint, the Clean Air Act conformity threshold of 100 tons per year provides a convenient criterion for evaluating the significance of PM₁₀ emissions.

Emissions from dredging and excavating have been estimated based on assumed equipment requirements, quantities of material to be removed, and the duration of dredging or excavating for different portions of Bolinas Lagoon. Dredging operations would require a hydraulic dredge and tugboats to move barges from Bolinas Bay to the disposal site. Removing vegetation on land and excavating would require typical construction equipment, such as bulldozers, power shovels, front-end loaders, chippers, and heavy trucks. Emissions from dredging and wet sediment disposal have been estimated using emissions rate data for appropriate vessel types. Emissions from excavating and clearing vegetation on land have been estimated using data for typical construction equipment types (US EPA 1991). Emissions from heavy trucks hauling material to the Redwood Landfill have been estimated using vehicle emissions rates from the California Air Resources Board EMFAC vehicle emission rate model.

4.8.2 Riparian Alternative

Less Than Significant Impacts

Emissions from Dredging and Excavating

Emissions from dredging and excavation have been estimated in terms of equipment engine emissions and fugitive dust emissions from excavating and clearing vegetation on land. Emissions also have been estimated for truck traffic hauling chipped or mulched vegetation and excavated sediments to the Redwood Landfill. The Riparian Alternative would require transporting approximately 4,730 truck loads of material to

the Redwood Landfill over the course of the project. Dredging and associated barge towing are assumed to occur on a seven-day, 24-hour work cycle, for between one and two months each year over nine years. The Riparian Alternative also would require transporting approximately 1,900 barge loads of sediment to the SFDODS over the course of the project. The assumption is that land will be excavated and associated material will be hauled to the Redwood Landfill in the daytime, for between one and two months each year over four years. The phasing of land excavation could be extended to achieve better coordination with dredging.

Table 4.8-1 summarizes the results of these emissions analyses for the Riparian Alternative. Total dredging emissions have been averaged over nine years, and total land-based activity emissions have been averaged over four years. Average yearly emissions associated with implementing the Riparian Alternative would be 3.3 tons per year of reactive organic compounds, 58.9 tons per year of nitrogen oxides, 13.4 tons per year of carbon monoxide, 14.3 tons per year of sulfur oxides, and 3.5 tons per year of PM₁₀. These emissions quantities are well below the Clean Air Act conformity threshold of 100 tons per year per pollutant. Consequently, the Riparian Alternative would have a less than significant air quality impact. A draft record of nonapplicability (RONA) is included in the Technical Appendices.

**Table 4.8-1
Summary of Emissions From the Riparian Alternative**

Activity Component	Years of Activity	Annual Average Emissions, Tons per Year				
		ROG	NO _x	CO	SO _x	PM ₁₀
Dredging and Ocean Disposal	9	2.83	55.47	11.38	14.00	2.71
Land-Based Excavation	4	0.28	2.72	1.18	0.23	0.42
Landfill Truck Traffic	4	0.18	0.74	0.85	0.05	0.39
Maximum Annual Emissions		3.29	58.93	13.41	14.28	3.52

Notes: Dredging operations are expected to be limited to one to two months per year over nine years. Land-based excavation operations and associated landfill truck traffic are expected to be limited to one to two months per year over four years.

Source: Tetra Tech analysis 2002

4.8.3 Estuarine Alternative

Less Than Significant Impacts

Emissions from Dredging and Excavating

Emissions from dredging and excavating have been estimated in terms of equipment engine emissions and fugitive dust emissions from excavating and clearing vegetation on land. Emissions also have been estimated for truck traffic hauling chipped or mulched vegetation and excavated sediments to the Redwood Landfill. The Estuarine Alternative would require transporting approximately 7,700 truck loads of material to the Redwood Landfill over the course of the project. Dredging and associated barge towing are assumed to occur on a seven-day, 24-hour work cycle, for between one and

two months each year over nine years. The Estuarine Alternative also would require transporting approximately 1,909 barge loads of sediment to the SFDODS over the course of the project. The assumption is that land will be excavated and associated material will be hauled to the Redwood Landfill in the daytime, for between one and two months each year over four years. The phasing of land-based excavation could be extended to achieve better coordination with dredging operations.

Table 4.8-2 summarizes the results of these emissions analyses for the Estuarine Alternative. Total dredging emissions have been averaged over nine years, and total land-based activity emissions have been averaged over four years. Average yearly emissions associated with implementing the Estuarine Alternative would be 3.6 tons per year of reactive organic compounds, 61.1 tons per year of nitrogen oxides, 14.6 tons per year of carbon monoxide, 14.5 tons per year of sulfur oxides, and 4.0 tons per year of PM₁₀. These emissions quantities are well below the Clean Air Act conformity threshold of 100 tons per year per pollutant. Consequently, the Estuarine Alternative would have a less than significant air quality impact. A draft RONA is included in the Technical Appendices.

**Table 4.8-2
Summary of Emissions From the Estuarine Alternative**

Activity Component	Years of Activity	Annual Average Emissions, Tons per Year				
		ROG	NO _x	CO	SO _x	PM ₁₀
Dredging and Ocean Disposal	9	2.85	55.73	11.43	14.06	2.73
Land-based Excavation	4	0.42	4.16	1.77	0.36	0.62
Landfill Truck Traffic	4	0.29	1.20	1.38	0.07	0.63
Maximum Annual Emissions		3.56	61.10	14.59	14.50	3.99

Notes: Dredging operations are expected to be limited to one to two months per year over nine years. Land-based excavation operations and associated landfill truck traffic are expected to be limited to one to two months per year over four years.

Source: Tetra Tech analysis 2002.

4.8.4 No Action Alternative

Under the No Action Alternative, there would be no lagoon dredging or land-based excavations. Existing management plans and policies would remain in place. The only emissions-generating activities associated with the No Action Alternative would be the annual gravel removal by MCOSD along the lower end of Pine Gulch Creek. This program removes about 1,000 cy of gravel each year. Existing annual equipment and truck emissions associated with this program would continue, but emissions quantities would be much smaller than those associated with either the Riparian Alternative or the Estuarine Alternative.