CHAPTER 10

AIR QUALITY AND ODOR

The evaluation of potential air quality and odor impacts of the proposed Bulk Materials Processing Center (BMPC) use permit amendment changes and related actions (Project) is presented in this chapter. The assessment of potential air quality impacts focuses on proposed Project emission sources associated with vehicular traffic and construction/operational equipment. The odor evaluation focuses on the potential for nuisance odor associated with proposed Project activities

A. SETTING

The West Contra Costa Sanitary Landfill (WCCSL) lies in the western most portion of Contra Costa County (County) in the San Francisco Bay Area Air Basin (Air Basin). The site is within the jurisdictional boundaries of the Bay Area Air Quality Management District (BAAQMD). The existing environment in the vicinity of the Project is presented below and includes climate and meteorology, ambient air quality standards, existing air quality, sensitive receptors, and previous odor complaints.

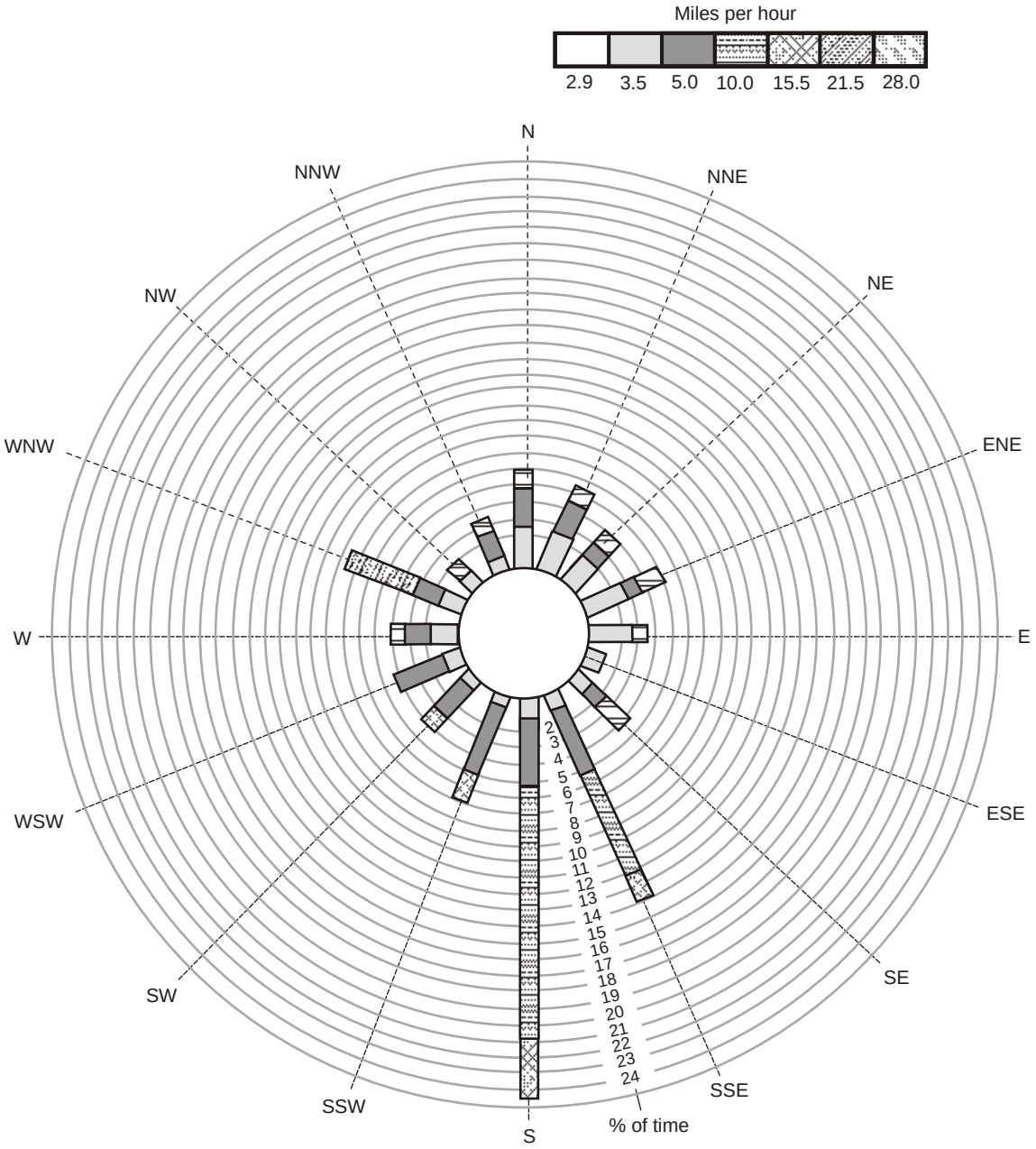
1. Climate and Meteorology

The WCCSL is located on the shore of San Pablo Bay. Seabreezes dominate the area during the spring and summer months. The dominance of the seabreeze results in a mild, relatively cool climate. Low clouds and fog are common in spring and summer.

Figure 10-1 shows a wind rose (illustrating wind speed by direction) from the nearby Chevron Refinery meteorological station. The prevailing wind direction is from the south. Average wind speed at the site is approximately 8.0 miles per hour. The pollution potential of the site area is relatively low compared to other portions of the Bay Area. Ventilation is relatively good, and there is limited transport of pollutants from other upwind urban areas. However, during periods of light or calm winds, which typically occur in the fall and winter months, the entire Air Basin is subject to stagnation and poor air quality.

2. Ambient Air Quality Standards

Both the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants which represent safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality



Note: Wind direction is the direction the wind is blowing from.
Wind rose for all stabilities 100.00 percent occurrence.

Source: RCSI, reference 1.

Figure 10-1 Wind Rose for Chevron Refinery Meterological Station 1981-1983 Data

standards cover what are called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. Table 10-1 identifies the major criteria pollutants, characteristics, health effects and typical sources.

The Federal and State ambient air quality standards are summarized in Table 10-2 for important pollutants. The Federal and State ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health-related effects. As a result, the Federal and State standards differ in some cases. In general, the State standards are more stringent. This is particularly true for ozone and PM_{10} (particulate matter less than 10 microns in size).

The USEPA established new national air quality standards for ground-level ozone and for fine particulate matter in 1997. The existing 1-hour ozone standard of 0.12 parts per million (PPM) is to be phased out and replaced by an 8-hour standard of 0.08 PPM. Implementation of the 8-hour standard was delayed by litigation, but was determined by the U.S. Supreme Court to be valid and enforceable in a decision issued in February of 2001. However, the new Federal ozone standard is not yet in effect pending final resolution of this litigation and adoption of implementing regulations.

In 1997, new national standards for fine Particulate Matter (diameter 2.5 microns or less) were adopted for 24-hour and annual averaging periods. The current PM_{10} standards were to be retained, but the method and form for determining compliance with the standards were to be revised. Implementation of this standard was delayed by litigation and will not occur until the USEPA has issued court-approved guidance.

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants.

3. Existing Air Quality

The BAAQMD operates a network of monitoring sites throughout the Bay Area. The closest monitoring site to the WCCSL is located in San Pablo (a few miles west of the WCCSL site). Table 10-3 summarizes air quality data from this monitoring site during the period 1999-2001. The table shows the number of days that the Federal or State standard was exceeded for four criteria pollutants.

Table 10-1. Major Criteria Pollutants

Pollutant	Characteristics	Health effects	Major sources
Ozone	• A highly reactive photochemical pollutant created by the action of sunshine on ozone precursors (primarily reactive hydrocarbons and oxides of nitrogen). Often called photochemical smog.	• Eye irritation • Respiratory function impairment.	• Combustion sources such as factories and automobiles, and evaporation of solvents and fuels.
Carbon monoxide	• Carbon monoxide is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels.	• Impairment of oxygen transport in the bloodstream. • Aggravation of cardiovascular disease. • Fatigue, headache, confusion, dizziness. • Can be fatal in the case of prolonged exposure to very high concentrations.	• Automobile exhaust, combustion of fuels, combustion of wood in woodstoves and fireplaces.
Nitrogen dioxide	• Reddish-brown gas formed during combustion that discolors the air.	• Increased risk of acute and chronic respiratory disease.	• Automobile and diesel truck exhaust, industrial processes, fossil-fueled power plants.
Sulfur dioxide	• A colorless gas with a pungent, irritating odor.	• Aggravation of chronic obstruction lung disease. • Increased risk of acute and chronic respiratory disease.	• Diesel vehicle exhaust, oil-powered power plants, industrial processes.
Particulate matter (e.g., $PM_{2.5}$, PM_{10})	• Solid and liquid particles of dust, soot, aerosols and other matter that are small enough to remain suspended in the air for a long period of time.	• Aggravation of chronic disease and heart/lung disease symptoms.	• Combustion, automobiles, field burning, earthmoving, factories and unpaved roads. Also a result of photochemical processes.

Source: BAAQMD, reference 11.

Table 10-2. Federal and State Ambient Air Quality Standards

Pollutant	Averaging time	Federal primary standard[a,b]	State standard[a,b]
Ozone	1-hour	0.12 PPM	0.09 PPM
	8-hour	0.08 PPM	--
Carbon monoxide	1-hour	9.0 PPM	9.0 PPM
	8-hour	35.0 PPM	20.0 PPM
Nitrogen dioxide	Annual average	0.05 PPM	--
	1-hour	--	0.25 PPM
Sulfur dioxide	Annual average	0.03 PPM	--
	24-hour	0.14 PPM	0.05 PPM
	1-hour	--	0.25 PPM
PM_{10}	Annual average	50 $\mu g/m^3$	20 $\mu g/m^3$
	24-hour	150 $\mu g/m^3$	50 $\mu g/m^3$
$PM_{2.5}$	Annual average	15 $\mu g/m^3$	12 $\mu g/m^3$
	24-hour	65 $\mu g/m^3$	--

a. PPM = Parts per million

b. $\mu g/m^3$ = Micrograms per cubic meter

Source: California Air Resources Board, reference 65.

Table 10-3. Air Quality Data Summary for San Pablo BAAQMD Monitoring Site, 2000-2002

Pollutant	Standard	Days standard exceed in:		
		2000	2001	2002
Ozone	Federal 1-hour	0	0	0
Ozone	State 1-hour	0	0	0
Ozone	Federal 8-hour	0	0	0
Sulfur dioxide	Federal 24-hour	0	0	0
Sulfur dioxide	State 24-hour	0	0	0
Carbon monoxide	State/Federal 8-hour	0	0	0
Nitrogen dioxide	State 1-hour	0	0	0

Source: California Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2003.

Table 10-3 shows that the ambient air quality standards are met in the Project area. PM_{10} and $PM_{2.5}$ are not monitored in western Contra Costa County. The closest monitoring site for these pollutants is in Concord. At the Concord monitoring site, the Federal PM_{10} standard was not exceeded during the period 2000-2002. The State PM_{10}standard was exceeded on 0-2 days per year, and the Federal $PM_{2.5}$ was exceeded twice during the 3-year period. The Federal and State standards for ozone are also exceeded in other portions of the Air Basin, as is the State PM_{10} standard.

4. Sensitive Receptors

The BAAQMD defines sensitive receptors as facilities where sensitive receptor population groups (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.

Land uses near the Project site, as discussed in Chapter 4, are largely open space and industrial uses. The nearest sensitive receptors are residences approximately 1 mile to the east and southeast of the WCCSL.

B. REGULATORY AND PLANNING FRAMEWORK

An overview of the regulatory framework for air quality and odor is presented in this section. Discussion is included on attainment status and regional air quality plans, rules and regulations of the BAAQMD, the California Code of Regulations, and County and City of Richmond (City) requirements.

1. Attainment Status and Regional Air Quality Plans

The Federal Clean Air Act and the State Clean Air Act of 1988 require that CARB, based on air quality monitoring data, designate portions of the state where the Federal or State ambient air quality standards are not met as “nonattainment areas”. Because of the difference between Federal and State standards, the designation of nonattainment areas is different under the Federal and State legislation.

The Bay Area has attained all Federal standards with the exception of ozone. In June of 1998, the USEPA reclassified the Bay Area from “maintenance area” to nonattainment for ozone based on violations of the Federal standards at several locations in the Air Basin. This decision reversed the Air Basin’s reclassification to a maintenance area for ozone in 1995. Reclassification required an update to the region’s federal air quality plan.

Under the California Clean Air Act, the County is a nonattainment area for ozone and PM_{10}. The County is either attainment or unclassified for other pollutants. The Act requires local air pollution control districts to prepare air quality attainment plans. These plans must provide for district-wide emission reductions of five percent per year averaged over consecutive three-year periods or if not, provide for adoption of "all feasible measures on an expeditious schedule".

The California Legislature, when it passed the California Clean Air Act in 1988, recognized the relative intractability of the PM_{10} problem with respect to the State ambient standard and excluded it from the basic planning requirements of the Act. The Act did require CARB to prepare a report to the Legislature regarding the prospect of achieving the State ambient air quality standard for PM_{10}. This report recommended a menu of actions, but did not recommend imposing a planning process similar to that for ozone or other pollutants for achievement of the standard within a certain period of time.

2. Bay Area Air Quality Management District

Air quality and odor regulation in the Bay Area is provided by the BAAQMD.

a. Air Quality. BAAQMD regulates the emissions of stationary sources in the Bay Area. Additionally, the BAAMD is responsible for development and enforcement of regional air quality plans required by Federal and State air quality legislation.

The WCCSL operates under permits from the BAAMQD. The landfill operation, gas collection system, landfill gas (LFG)-powered generators and leachate treatment and storage equipment are regulated under one permit (No. 1840). The existing concrete, asphalt, wood recycling and composting operations are regulated under a different permit (No. 198). In both cases, the permits provide throughput limitations, performance standards for abatement or emission control devices, and include record-keeping requirements of amounts of material processed.

The BAAQMD administers the Title V program authorized by the U.S. Congress in the 1990 Amendments to the Federal Clean Air Act. The intent of the program is to enhance inventories and provide a standard means to implement other programs in the Federal Clean Air Act regarding Hazardous Air Pollutants, periodic monitoring and acid rain. The WCCSL was issued its Title V permit in May of 2002.[31]

BAAQMD Regulation 2, Rule 2 normally requires that Best Available Control Technology (BACT) be applied to new or modified sources (including stationary and mobile sources). BACT is potentially applicable to any new or modified source and requires stringent emission controls if a source's emissions exceed a threshold. BAAQMD requires BACT for any source of air emissions that results in more than 10 pounds of a pollutant per day (on a worst case day).

Emissions offsets (reduction credits)for a project may also be required under Regulation 2, Rule 2. Emission reduction credits can be generated either by the shut down of an existing source or by controlling the emissions from an existing source above and beyond any control levels required by BAAQMD, the State, or Federal regulations. Emission reduction credits for a project are only supplied (granted by the BAAQMD) once and are not required to be supplied annually even though they are expressed in terms of tons per year. In the same manner that emission increases are charged to a facility once (upon issuance of an Authority to Construct) with the emissions considered to continue indefinitely, emission reduction credits are also required once (before the issuance of an Authority to Construct) with the emission reduction credits considered to continue for the life of the project.

b. Odor. The BAAQMD has enacted an odorous substance control program as part of its effort to control the use and emission of odorous substances within the Bay Area. This program places general limitations on odorous substances and provides the BAAQMD with authority to respond to public complaints about offensive odors. The regulation is intended to help the public identify and control offensive odors that are not otherwise controlled by other federal or state air quality laws.

Regulation 1-301 is a general public nuisance standard that is used to address odors. The standard states "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which causes or has a natural tendency to cause injury or damage to business or property." The BAAQMD established a policy and defined "considerable number of persons or the public." This policy states that if there are five confirmed (confirmed by a BAAQMD Air Pollution Control Officer [APCO]) odor complaints within 24 hours, the BAAQMD will take action.

Regulation 7, Odorous Substances, establishes general limitations on odorous substances and specific limitations on certain odorous compounds. Regulation 7-302 stipulates that a person shall not discharge any odorous substances that cause the ambient air at or beyond the property line to be odorous and remain odorous after dilution with four parts of odor-free air. Regulation 9-2-301 places limitations on hydrogen sulfide emissions because of its human toxicity and environmental effects on vegetation. The rule states that hydrogen sulfide shall not be emitted during any 24-hour period in such quantities as to result in ground-level concentrations in excess of 0.06 PPM over 3 consecutive minutes or 0.03 PPM averaged over 60 consecutive minutes.

Regulation 7-102 addresses odor complaints. Regulation 7-102 is triggered when the APCO receives odor complaints from ten or more complainants within a 90-day period, alleging that a person has caused odors perceived at or beyond the property line of such person and deemed to be objectionable by the complainants in the normal course of their work, travel, or residence. When the limits of Regulation 7-102 become effective as a result of citizen complaints described above, the limits shall remain effective until such time as no citizen complaints have been received by the APCO for 1 year. The limits of Regulation 7-102 shall

become applicable again when the APCO receives odor complaints from five or more complainants within a 90-day period.

3. California Code of Regulations.

Existing requirements in Title 14, of the California Code of Regulations (14 CCR) and 27 CCR address facility operation and control as follows:

- 14 CCR §17408.5. Each transfer/processing station shall be operated and maintained to prevent the creation of a nuisance.
- 27 CCR §17867. All composting activities shall be conducted in a manner that minimizes odor impacts.
- 27 CCR §20680. Except as otherwise provided, the owners or operators of all municipal solid waste landfill units shall cover disposed solid waste with a minimum of 6 inches of compacted earthen material or alternative daily cover (ADC) at the end of each operating day, or at more frequent intervals if necessary, to control vectors, fires, odors, blowing litter and scavenging.
- 27 CCR §20760. Each disposal site shall be operated and maintained so as not to create a public nuisance.

Solid Waste Facility Permit (SWFP) No. 07-AA-001 and Composting Facility Permit No. 07-AA-0044 currently apply these requirements to the WCCSL.

14 CCR, Division 7, Chapters 3.1 and 5 are currently undergoing revision by the California Integrated Waste Management Board (CIWMB). The revised regulations were adopted by the CIWMB at its November 19-20, 2002, meeting. CIWMB staff are currently preparing the final rulemaking file for submittal to the Office of Administrative Law. Chapter 3.1 addresses composting operations regulatory requirements. Section 17863.4 of Chapter 3.1 requires all compostable material handling operations and facilities to prepare, implement, and maintain a site-specific odor impact minimization plan (OIMP). The Applicant's OIMP is included as Appendix 10B. Key elements of the OIMP include the following:

- Odor monitoring protocol that describes the proximity of possible odor receptors and a method for assessing odor impacts at the location of the possible odor receptors.
- Description of meteorological conditions.
- Complaint response protocol.
- Design measures and operational measures for minimizing odor.

- Mechanism for OIMP revision.
- Annual review by the operator to determine if any revisions are necessary.
- Use by the Local Enforcement Agency (LEA) to determine facility compliance with the OIMP.
- Provisions for the LEA to force operator compliance with the OIMP or for the operator to take necessary additional measures to minimize odors.

4. County and City

County and City Use Permits for the existing BMPC require the Applicant to comply with the terms of the Authority to Construct and Permit to Operate entitlements issued by the BAAQMD, and to operate the facility in a manner that prevents odors from being detected off site. Under the terms of the existing permits, either the County or City may require physical improvements or management practices, as necessary, to alleviate any confirmed odor problem at the BMPC. All odor complaints received by the County or City must be responded to within 2 working days, detailing the problem and remedial action taken. Both the County and City have the authority through the use permits to require the Applicant to cease operations of part or all of the facility to control odors. The Applicant has requested that both use permits be amended to allow development and operation of the proposed Project.

C. SIGNIFICANCE CRITERIA

The BAAQMD California Environmental Quality Act (CEQA) Guidelines provides the following definitions of a significant air quality impact[11].

- A project contributing to carbon monoxide (CO) concentrations exceeding the State Ambient Air Quality Standard of 9 PPM averaged over 8 hours or 20 PPM for 1 hour would be considered to have a significant impact.
- A project that generates criteria air pollutant emissions in excess of the BAAQMD annual or daily thresholds would be considered to have a significant air quality impact. The current thresholds are 15 tons/year or 80 pounds/day for Reactive Organic Gases (ROG), Nitrogen Oxides (NO_x) or PM_{10}. Any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact.
- Any project with the potential to frequently expose members of the public to objectionable odors would be deemed to have a significant impact. According to

the BAAQMD CEQA Guidelines, a significant odor impact exists where there has been:[11]

- More than one confirmed complaint per year averaged over a 3-year period, or
- Three unconfirmed complaints per year averaged over a 3-year period.

- Any project with the potential to expose sensitive receptors or the general public to substantial levels of TACs would be deemed to have a significant impact. For substances that are carcinogenic, an exposure is significant if the probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million. For purposes of evaluating potential non-cancer health effects related to diesel exhaust, the chronic inhalation Reference Exposure Level (REL) is 5 micrograms per cubic meter ($\mu g/m^3$). The REL is the concentration at or below which no adverse non-cancer health effects are anticipated.

The BAAQMD significance threshold for construction dust impact is based on the appropriateness of construction dust controls. The BAAQMD guidelines provide feasible control measures for construction emission of PM_{10}. If the appropriate construction controls are to be implemented, then air pollutant emissions for construction activities would be considered less-than-significant.

D. IMPACTS AND MITIGATION MEASURES

Potential air quality and odor impacts and mitigation measures are discussed in this section.

1. Impacts Considered not to be Significant

The Project is considered to not have a significant impact on exposure to emissions of TACs from within the Project site because of the lack of substantial TAC emission sources, on-site control measures, favorable wind conditions (winds frequently blow away from sensitive receptors as indicated on Figure 10-1), and distance to sensitive receptors (about 1 mile to the closest residence). The anaerobic decomposition of refuse in solid waste landfills creates LFG, which can be a source of TAC emissions. As LFG passes through the refuse, it carries ROG and other air pollutants present in the refuse to the surface. The composition of LFG is roughly 50 percent methane and 50 percent carbon dioxide with trace constituents of ROG. The ROG fraction may contain traces of TACs[66]. However, LFG is collected and combusted in a LFG power plant at the WCCSL, with only a very small fraction of the ROG fraction and TAC emissions being emitted. The volume of LFG production will decrease over time as will diesel exhaust particulates from on-site equipment, another source of TAC emissions.

2. Methodology

Existing operations and processes at the WCCSL site are a source of several different types of emissions. Each of these emissions were identified and quantified. Future emissions associated with the proposed Project were forecast for two future years (2008 and 2015). The methodology used for each source is described below.

a. Process Emissions. This source includes LFG combustion, emissions from equipment used in the crushing and screening of concrete and asphalt, emissions from mechanical handling of compost materials, and emissions from material handling in the soil reclamation, biosolids/dredged material spreading, and wet/dusty material blending operations. Future emissions from the collection and combustion of LFG were estimated by factoring BAAQMD estimates of existing emissions to reflect anticipated gas production in 2008 and 2015 as estimated by the Applicant. Similarly, BAAQMD estimates of existing emissions from equipment used in the concrete/asphalt recycling and composting operations were adjusted to reflect the proposed increased annual throughputs (amount of material processed) for those operations. Emissions from the soil reclamation, biosolids/dredged material spreading, and wet/dusty materials blending operations were calculated using BAAQMD emission factors for soil handling.

Limited air sampling at green material composting facilities in southern California has demonstrated that such facilities are a source of ammonia and Volatile Organic Compounds (VOC).[129,130] The emissions data are in the form of emissions flux measurements (in lbs per hour per 1,000 square feet of surface) for various components found at a composting facility (e.g., tipping pile, static pile, fines and windrows). In general, ammonia emission levels were extremely low, and VOC emissions varied widely. Since these emission factors are in emission fluxes, emission estimates would require a thorough site engineering analysis. The BAAQMD has not adopted the use of these factors. Therefore, emissions from green waste are not included in the inventory of on-site emissions presented in this EIR.[131]

VOC and ammonia emissions from green waste decomposition are a natural or biogenic source of pollutants that will occur whether or not green waste is collected and composted on the site. These emissions have not been considered additive to the regional inventory of emissions as they are a component of biogenic emissions whose magnitude would be unaffected whether the Project were approved or not.

b. On-Site Mobile Equipment/Vehicle Exhaust. Existing and future emissions from various mobile equipment and vehicles used on the site were estimated using the Applicant's estimates of the number and daily usage of mobile equipment vehicles for the existing site, and full operation under the proposed Project in 2015. Appendix 3I summarizes existing and proposed equipment usage at the WCCSL. Equipment/vehicle usage in 2008 is based on operation of the proposed Waste Recycling Center (WRC) at 85 percent and other BMPC operations at 75 percent of capacity.

Emission factors for each type of equipment or vehicle were multiplied by appropriate emission factors reflecting the anticipated number and type of equipment/vehicles in 2003, 2008 and 2015 to produce estimates of emissions in pounds per day.[60]

c. On-Road Vehicle Exhaust. On-road emissions associated with Project vehicle use were calculated using EMFAC-2002 emission factors and estimated vehicle miles traveled (VMT) for each vehicle classification. Daily VMT was estimated using estimated daily trip generation (see Chapter 8) and assumed average one-way trip length of 10 miles for collection trucks, 20 miles for other large trucks, 10 miles for self haulers and 15 miles for all other vehicles.

d. Fugitive Emissions. Fugitive emissions refer to dust generated by vehicles/ equipment moving over unpaved surfaces. An emission factor for construction sites was used as a conservative approximation of emissions from the operation of vehicles and equipment on unpaved areas. The published emission factor was reduced by 75 percent to reflect the implementation of BAAQMD's required dust control practices. The proposed maximum acreages of the composting and concrete/asphalt operations in 2003 and 2015 were multiplied by the emission factor to estimate emissions. Emissions were calculated based on the estimated average acreage of the area of operation regardless of the proposed flexible boundary (changing location) within the site. Emissions from this source in 2008 were taken as 75 percent of the emission at full capacity in 2015.

The resulting estimates of current and future emissions are shown in Tables 10-4, 10-5, and 10-6 for existing, 2008, and 2015, respectively. Spreadsheet printouts showing the calculation of these emissions are included in Appendix 10A.

e. Diesel Health Risk Assessment. Diesel exhaust consists of a complex mix of substances formed in the combustion processes of a diesel engine. The mix includes compounds in a vapor phase and very fine particles with a carbon core coated by condensed organic compounds.[135]

For the proposed Project, a diesel health risk assessment was prepared focusing on two residential areas bordering Richmond Parkway. Diesel exhaust exposure in these areas results from diesel exhaust from Project-related trucks approaching and leaving the WCCSL and other truck traffic on Richmond Parkway. The exposure scenario used in this assessment represents worst-case exposure to new diesel particulate matter from both Project and cumulative traffic increases.

A risk assessment is a technical procedure that combines data on how people and the environment potentially come into contact with chemicals in the air, water, or soil (exposure) with data from health effects studies (toxicology) into a mathematical or statistical estimate of the "risk" or potential for adverse health effects. Although the risk assessment produces numerical estimates of risk, these estimates do not necessarily predict actual health outcomes.

Table 10-4. Existing Project-Generated Emissions

Emission source	ROG[a]	NO_X[a]	PM_{10}[a]
On-site emissions, pounds/day			
Process emissions			
Landfill gas collection	0.2	0.0	144.0
Landfill gas combustion	9.0	57.1	9.0
Concrete crushing	0.0	0.0	5.0
Asphalt crushing	0.0	0.0	5.0
Concrete screening	0.0	0.0	13.0
Concrete/asphalt storage	0.0	0.0	61.0
Wood shredder	0.0	0.0	52.0
Wood waste screener	0.0	0.0	20.0
Soil handling	0.0	0.0	0
Dusty material handling	0.0	0.0	0
Mobile equipment/ vehicle exhaust	39.8	296.6	12.3
Fugitive emissions	--	--	91.7
On-site total	49.0	353.7	413.0
Off-site emissions, pounds/day			
Off-site road vehicle exhaust	44.5	366.6	9.2
Total emissions, pounds/day			
Grand total, on and off site	93.5	720.3	422.2

a. ROG = Reactive Organic Gases
NO_x = Nitrogen Oxides
PM_{10} = Particulate Matter, 10 Microns

Source: Don Ballanti, Air Quality Consultant, March 2003.

Table 10-5. Year 2008 Project-Generated Emissions

Emission source	ROG[a]	NO_X[a]	PM_{10}[a]
On-site emissions, pounds/day			
Process emissions			
Landfill gas collection	0.0	0.0	0.0
Landfill gas combustion	8.2	52.0	8.2
Concrete crushing	0.0	0.0	62.3
Asphalt crushing	0.0	0.0	62.3
Concrete screening	0.0	0.0	162.0
Concrete/asphalt storage	0.0	0.0	760.1
Wood shredder	0.0	0.0	218.4
Wood waste screener	0.0	0.0	84.0
Soil handling	0.0	0.0	4.2
Dusty material handling	0.0	0.0	17.0
Mobile equipment/ vehicle exhaust	26.8	156.1	4.4
Fugitive emissions	--	--	96.2
On-site total	35.0	208.1	1179.0
Off-site emissions, pounds/day			
Off-site road vehicle exhaust	39.1	425.8	11.2
Total emissions, pounds/day			
Grand total, on and off site	74.1	633.9	1490.2
Change from existing	-19.3	-86.4	+1068.0

a. ROG = Reactive Organic Gases
NO_x = Nitrogen Oxides
PM_{10} = Particulate Matter, 10 Microns

Source: Don Ballanti, Air Quality Consultant, March 2003.

Table 10-6. Year 2015 Project-Generated Emissions

Emission source	ROG[a]	NO_X[a]	PM_{10}[a]
On-site emissions, pounds/day			
Process emissions			
Landfill gas collection	0.0	0.0	0.0
Landfill gas combustion	5.3	34.0	5.4
Concrete crushing	0.0	0.0	83.0
Asphalt crushing	0.0	0.0	83.0
Concrete screening	0.0	0.0	215.8
Concrete/asphalt storage	0.0	0.0	1012.6
Wood shredder	0.0	0.0	291.2
Wood waste screener	0.0	0.0	352.8
Soil handling	0.0	0.0	6.0
Dusty material handling	0.0	0.0	22.6
Mobile equipment/ vehicle exhaust	32.6	189.3	5.3
Fugitive emissions	--	--	128.3
On-site total	37.9	261.2	2206.0
Off-site emissions, pounds/day			
Off-site road vehicle exhaust	29.9	267.2	10.2
Total emissions, pounds/day			
Grand total, on and off site	67.8	528.4	2216.2
Change from existing	-25.6	-191.9	+1794.0

a. ROG = Reactive Organic Gases
NO_x = Nitrogen Oxides
PM_{10} = Particulate Matter, 10 Microns

Source: Don Ballanti, Air Quality Consultant, March 2003.

The estimates are hypothetical, and include many conservative assumptions. As estimates, numbers generated by risk assessment methods represent probabilities, not present realities. In fact, there may be no actual adverse health effects.

The health risk assessment for this EIR was prepared to estimate diesel exhaust risk at two residential areas. These locations are at the northeast corner of the intersection of Richmond Parkway and Gertrude Avenue and along the west side of Richmond Parkway, both south and north of its intersection with Hilltop Drive. The analysis was conducted using a meteorological file from a monitoring site at the Chevron Refinery that was provided by the BAAQMD. Appendix 10B provides technical support information for this analysis.

The health risk assessment utilized estimated new daily heavy-duty diesel truck trip volumes in 2015. Two separate models were constructed. The model used in this assessment was the U.S. EPA-approved guideline model, Industrial Source Complex for Short-Term Impacts (ISCST3).[132] At the Richmond Parkway/Gertrude Avenue intersection, a single receptor was utilized, located at the closest corner of what is the closest residential building. Near Hilltop Drive, a series of eight receptors were located along the western edge of the Richmond Parkway right-of-way.

The maximum annual concentration values obtained from each model was used in the calculation of potential cancer risk. The methodology for the analysis followed the guidelines developed for the preparation of health risk assessments required under the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (Health and Safety Code Section 44360 et seq.) and guidance provided by the BAAQMD.

3. Construction Emissions

IMPACT 10-1. The construction of various Project elements could result in dust nuisance. This impact is considered potentially significant.

The proposed Project would result in temporary construction emissions (equipment exhausts and fugitive dust) during closure of the Class II landfill and development of improvements and structures required for proposed operations and uses on the Project site. Impacts related to closure of the Class II landfill were evaluated in an Initial Study/Negative Declaration completed in 1996.[23] Impacts would be localized and variable. Construction impacts might last for a period of weeks or months for any one Project element. Construction dust impacts are considered to be potentially significant on a localized basis, but normally mitigable.

Control Measures Incorporated by Applicant: See control measures proposed by the Applicant presented under Impact 10-2.

EIR Recommendations:

MITIGATION MEASURES 10-1

a) All active construction areas would be watered at least twice daily and more often during windy periods (20 mph or higher).

b) All trucks hauling soil, sand, and other loose materials would be covered or required to maintain at least two feet of freeboard.

c) All unpaved access roads, parking areas and staging areas at construction sites would be paved, watered at least twice daily or more often if windy, or receive applications of non-toxic soil stabilizers.

d) All paved access roads, parking areas and staging areas at construction sites would be swept daily with water sweepers.

e) Inactive construction areas would be hydroseeded or non-toxic soil stabilizers would be applied.

f) Exposed stockpiles (dirt, sand, etc.) would either be enclosed, covered, watered twice daily or more often if windy, or receive application of non-toxic soil stabilizers.

g) Traffic signage would limit traffic speeds on unpaved roads to 15 mph.

The above measures include all feasible measures for construction emissions identified by the BAAQMD. Based on the BAAQMD threshold of significance for construction impacts, implementation of these measures would reduce construction impacts of the proposed Project to a less-than-significant level.

4. Operation Emissions

IMPACT 10-2: Emission increases from on-site sources would exceed the BAAQMD significance thresholds for PM_{10}. This impact is considered potentially significant.

Tables 10-4 through 10-6 (presented previously) shows the estimated existing and future Project-generated emissions for 2008 and 2015 from on-site and off-site activities. On-site emissions consist of process emissions (from stationary equipment and facilities), mobile equipment, and vehicles operating on and off the site and fugitive dust generated by the action of vehicles and equipment on unpaved surfaces. Emissions of ozone precursors (ROG and NO_x) would decline from existing levels primarily due to a gradual decline in the LFG generation and current and future State-mandated emissions standards

for heavy duty off-site road vehicles and equipment. Existing on-site PM_{10} emissions were calculated to be about 413 pounds per day. The proposed Project would result in an increase in on-site emissions of PM_{10}, primarily due to the proposed increase in throughput (materials processed) for the asphalt and concrete recycling operations and composting. PM_{10} emissions are calculated to increase from the existing 413 pounds per day to 1,179 pounds per day in 2008, and 2,206 pounds per day in 2015. The net increase of PM_{10} for both on and off site of 1,068 pounds per day in 2008 and 1,794 pounds per day in 2015 (Tables 10-5 and 10-6) would exceed the BAAQMD's threshold of significance of 80 pounds per day.

Control Measures Incorporated By Applicant:

General Measures:

a) The main access road would initially be graveled, treated with non-toxic soil stabilizers and watered at least twice daily. After land settlement, the main access road would be paved.

Waste Recycling Center:

b) Handling and sorting of mixed waste would occur within an enclosed or partially enclosed WRC structure.

c) Roads, unloading areas and the processing area of the WRC would be paved, and sweepers or vacuums would be used to keep these surfaces clean.

d) Periodic watering at least twice daily or more often when windy would be used on internal roads at the WRC as needed, and wind fences would be strategically located to control wind erosion.

e) Waste would be pre-screened to avoid dusty materials.

Green Waste/Woodwaste/Composting:

f) Green material and wood shredding/screening equipment would be equipped with water sprays.

g) Green waste, wood waste, and composting materials would be watered as unloaded.

h) Green waste, wood waste, and composting materials would be pre-screened to avoid dusty materials.

i) Windrows and intervening pathways would be watered prior to turning of windrow.

j) Internal roads in the Organic Materials Processing Area would be watered at least twice daily, more often when windy.

k) Finished stabilized compost would be screened and loaded during low wind speed conditions (less than 20 mph); handling of compost would be suspended if the wind speed increases (above 20 mph).

l) Berms would be used in the Organic Materials Processing Area to provide an upwind barrier to reduce wind effects.

m) Wind fences would be strategically located in the Organic Materials Processing Area to control wind erosion.

Wet/Dusty Material Blending:

n) A three-sided shelter would be constructed at the Wet/Dusty Material Blending Facility with fabric roof to contain dusty materials.

o) Dusty materials would be blended with high moisture wastes at the Wet/Dusty Material Blending Facility to help control fugitive dust.

p) Dusty materials at the Wet/Dusty Material Blending Facility would be stored in plastic bags until needed.

Soil Reclamation:

q) Water sprays would be used on the conveyor at the Soil Reclamation Facility.

r) The apron on two sides of the soil reclamation storage area would be graveled to provide an all-weather surface.

s) Periodic watering (at least twice daily, more often when windy) would be conducted at the soil reclamation operation areas for dust control.

Concrete/Asphalt Recycling:

t) Water sprays would be used on concrete/asphalt crushers, screens and conveyors.

u) Dust suppressants would be used and regular watering (at least twice daily, more often when windy) would be conducted at the Concrete/Asphalt Recycling Facility for general dust control.

The above controls were reflected in the on-site emissions estimates shown in Tables 10-4 through 10-6.

EIR Recommendations:

MITIGATION MEASURE 10-2

a) The Applicant would, at the earliest practical date, prepare applications to the BAAQMD for new sources proposed to be located at the site, obtain required BAAQMD permits, and comply with all permit conditions.

The Composting/Wood Waste and Concrete/Asphalt processing operations currently operate under an existing BAAQMD permit. There are specific limitations on the throughput of individual pieces of equipment and onsite storage of materials. For example, the current limitation on throughput for the concrete/asphalt operation is 30,000 tons per year of concrete and 5,000 tons per year for asphalt. Since the Project at full operation proposes a combined throughput of 528,000 tons per year for these materials, the increased throughput envisioned with the proposed Project would require the modification of existing permits and/or issuance of new permits for additional equipment on the Project site. The LFG collection and combustion system (Figure 10-2) would not be affected by the Project and it appears the Project would not require a modification to its LFG system permit.

New or modified sources of air pollutants are subject to the New Source Review process of the BAAQMD. Each individual source will be evaluated for potential to emit pollutants. Sources emitting more than 10 pounds per day of PM_{10} or other specified pollutants would require the application of Best Available Control Technology (BACT) as defined by the BAAQMD at the time of application. Existing sources that require a permit modification, such as the composting and concrete/asphalt operations, may be required to update to current definitions of BACT.

Application of enclosure and baghouse technology is more than 99 percent efficient in controlling PM_{10} emissions, but it cannot be applied to the major particulate emitters with the Project (concrete/asphalt storage and composting). If applied to the Project, it would not be able to reduce Project PM_{10} impacts to below the BAAQMD significance threshold. The definition of BACT for Project sources cannot be ascertained until the BAAQMD conducts their permitting process. It is unclear which, if any, Project components may be required by the BAAQMD to utilize baghouse technology. For purposes of this EIR, Project impacts are assumed to remain above 80 pounds per day of PM_{10} emissions and would represent a significant, unavoidable impact.

IMPACT 10-3. Increased vehicular traffic to the WCCSL could result in increased emissions and adverse air quality and health risk impacts. The impact is considered to be less than significant.

Figure 10-2. LFG Power Plant. Located in WCCSL Area A, this plant generates about 3 megawatts of electricity from LFG, enough to power about 3,000 homes.

Off-site emissions would be created by vehicle trips to and from the Project site. Existing off-site emissions were calculated to be 44.5 pounds per day of ROG; 366.6 pounds per day of NO_X; and 9.2 pounds per day of PM_{10}. The number of vehicles trips would be increased by the Project, but this would be offset by the introduction and use of cleaner vehicles in the future. The net effect would be a decline in ROG, and a slight increase (16 percent) in NO_X emissions, despite forecasts of increased trips. PM_{10} emissions from off-site vehicle use would increase by 2.0 pounds per day at 2008, and then decrease by 1.0 pound per day in 2015 to an emission level of 10.2 pounds per day (1.0 pound per day greater than existing levels). These emissions levels would not exceed the BAAQMD threshold of significance.

The proposed Project would increase diesel truck traffic traveling on Richmond Parkway near two residential neighborhoods near the intersection of Richmond Parkway with Gertrude Avenue and Hilltop Drive. The maximum calculated cancer risk near the intersection at Richmond Parkway and Gertrude Avenue is 1.25 in one million. The maximum calculated cancer risk near the intersection of Richmond Parkway and Hilltop Drive is 1.62 in one million. These risk estimates were based on a continuous 70-year exposure. Appendix 10B provides technical support for this analysis.

The above calculated risks are below the BAAQMD significance threshold of 10 in one million. The Annual Average Concentrations of 0.00418 $\mu g/m^3$ at Richmond Parkway/Gertrude Avenue and 0.00541 $\mu g/m^3$ at Richmond Parkway/Hilltop Drive) are also well below the chronic inhalation REL for diesel exhaust particulate of 5 $\mu g/m^3$. As discussed earlier, the REL is the concentration at or below which no adverse non-cancer health effects are anticipated. For perspective, the California Air Resources Board (CARB) has estimated that the average annual ambient concentration of diesel exhaust to which Californians are exposed is 1.54 $\mu g/m^3$ which includes both indoor and outdoor exposure.[135]

The Applicant does not own or operate fleet vehicles that deliver wastes and recyclable materials to the site. This component of the vehicle traffic comprises a wide variety of hauling companies and self-haul individuals. The Applicant cannot require or otherwise dictate emission abatement modifications of these vehicles utilizing the proposed Project facilities, or their timeframe for implementation. However, mobile source emissions are within the regulatory purview of the CARB. CARB's implementation of the Federal CAA and the State CAA requirements will result in the introduction of cleaner fuels and vehicles in the State. CARB has developed a Diesel Risk Reduction Plan that includes more stringent emission standards for off-road, heavy-duty equipment.[133] The Risk Reduction Plan is expected to result in reductions in diesel exhaust particulates of 75 percent by 2010 and 85 percent by 2020.

Control Measures Incorporated by Applicant: None.

EIR Recommendations:

MITIGATION MEASURE 10-3. None required.

5. Planning Consistency

IMPACT 10-4. Project impacts would be consistent with the regional air quality plan. This impact is considered to be less than significant.

The Air Basin is currently non-attainment for ozone (Federal and State ambient standards) and PM_{10} (State ambient standard). While air quality plans exist for ozone, none exists (or is currently required) for PM_{10}. The *Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard* is the current ozone air quality plan required under the Federal Clean Air.[63] The State-mandated regional air quality plan is the *Bay Area Clean AirPlan*.[64] These plans contain mobile source controls, stationary source controls and transportation control measures to be implemented in the region to attain the Federal and State ozone standards within the Air Basin.

A project would be judged to conflict with or obstruct implementation of the regional air quality plan if it would be inconsistent with the growth assumptions for population, employment or regional growth in vehicle miles traveled. The proposed Project would neither conflict with any of the growth assumptions made in the preparation of these plans nor obstruct implementation of any of the plan's proposed control measures. Therefore, the proposed Project does not conflict with the Bay Area Clean Air Plan.

Control Measures Incorporated by Applicant: None.

EIR Recommendations:

MITIGATION MEASURE 10-4. None required.

6. Odors

IMPACT 10-5. The Organic Materials Processing Area and expansion of the Composting Facility could create objectionable odors. This impact is considered potentially significant.

Currently at the WCCSL, the average daily throughput of compostibles is about 27 tons per day (365 days per year average or TPD7), or about 10,000 tons of compostibles received per year. Under the proposed Project, up to 164,300 tons of compostibles could be processed per year, which is equivalent to about 450 TPD7. The physical size of the

Composting Facility would be increased from the existing 18 acres up to 40 acres to allow flexibility in the operating boundary with the proposed relocated concrete/asphalt processing area (see Figure 3-3 in Chapter 3, Project Description). Additionally, composting feedstock materials would be expanded to also include food wastes, food processing industry wastes, biosolids (wastewater sludge), mixed waste paper, and agricultural residues (Appendix 3B).

The increase in types and quantities of feedstock to be processed, as well as the physical expansion of the composting operations, would increase the potential for nuisance odors at the Composting Facility. Of the various composting technologies in use, windrow composting method in place at the WCCSL, has a greater risk of odor production. However, there is long-term experience with full-scale operation in the United States. Additionally, the WCCSL is well buffered in this industrial setting of North Richmond. Wind conditions are also favorable. As shown on Figure 10-1, about 70 percent of the time, wind at the site is blowing away from developed areas. Seasonally, the wind at the WCCSL is predominantly from the south during February through November. During December and January, the winds are predominantly from the north. BAAQMD enforcement records over the last 5 years indicate the WCCSL has not received any violation notices, no confirmed odor complaints, and one unconfirmed odor complaint.[45] Thus, pursuant to the BAAQMD criteria, the WCCSL has not caused a significant odor impact.

The composting process is proposed continue to be conducted year-round. As described in Appendix 3B, initial composting operations include the use of shredding, conveyors, and screening equipment. The shredded materials are then formed into windrows approximately 14 to 18 feet wide at the base and 6 to 8 feet high. An 8- to 12-foot-wide equipment access road separates the windrows. Active composting in the windrows requires 8 to 12 weeks, during which time water is applied, the windrows are turned for aeration, and the necessary operation monitoring (such as checking temperature within the windrows) is conducted. Following the 8- to 12-week period, the composted materials are placed in maturing piles and, when sufficiently matured for its intended end-use purpose, the compost is screened and removed from the site.[4]

Moisture, temperature, pH, nutrient concentration and availability, and oxygen concentration are the principal factors that affect the efficiency and biological conditions of composting, as follows:[49]

Temperature: Most effective compost operation and destruction of pathogens is provided when temperature is between 125 and 150 degrees Fahrenheit. Temperatures above this range reduce the activity and diversity of microorganisms, thereby slowing the composting process.

pH	Optimum pH range is 6.0 to 7.5 for bacteria, and 5.5 to 8.0 for fungi. The pH of the pile is essentially self-regulating.
Nutrient concentration	Nitrogen is required as a nutrient for the degradation of biodegradable carbon. Carbon/nitrogen (C/N) ratios between 25 and 35 provide the best conditions. Generally, carbon is from woody wastes and nitrogen is from green material.
Oxygen supply	An oxygen concentration in the composting mix of at least 5 percent by volume is generally required to ensure continuous aerobic conditions.

The main odor sources at the Composting Facility relate to the following: initial receipt, storage, and processing of the feedstock materials; active compost windrows and, to a lesser extent, the compost maturing piles; and ponding of water in the operations area that has infiltrated the storage piles and windrows during the wet season (compost leachate). Odors from composting are principally the result of reduced nitrogen and sulfur compounds caused by partial anaerobic conditions. Storage of runoff water in the Area A retention basin would also be an odor source, but this water is expected to be substantially diluted and has not been and should not be a source of nuisance odors in the future.

The Applicant's Draft Report of Composting Site Information (RCSI) addresses a variety of subject matter, including the design, operation, monitoring, and site improvements associated with the proposed Composting Facility.[4] According to the draft RCSI, the Applicant would utilize best management practices, including rapid incorporation of food wastes and food processing industry waste with other compostible materials, and use shredded materials or compost to prevent nuisance odors; frequently turn the windrows to promote aeration; and frequently regrade the operations area to promote drainage and prevent ponding of compost leachate. The Applicant's OIMP is included as Appendix 10C.

The Applicant is proposing to expand the windrow composting operation from green and wood waste and unprocessed food waste (e.g., uncooked fruits and vegetables) to include feedstocks with a high nuisance odor potential, such as food wastes, biosolids, agricultural residues and waste (including manure and stable waste). Composting of these materials during the rainy season would be of particular concern as rainfall could saturate the windrows and possibly lead to creation of anaerobic conditions. Turning the windrows in the early stages of the composting process has a high odor potential since the internal portion of the pile can turn anaerobic due to lack of oxygen. All necessary operational details have not yet been developed by the Applicant that can assure nuisance conditions related to odor do not occur. Further operational experience is needed with these feedstocks to address the needed mix of these feedstocks with processed green and wood waste to achieve the optimum C/N ratio; the need for processing restrictions; the

need for seasonal use restrictions; the need to consider alternative composting technologies; as well as any other needed measures to control odors. Therefore, mitigation measures are recommended below.

Control Measures Incorporated by Applicant:

a) The Applicant would work with the LEA to assure facility compliance with the OIMP.

b) Food processing industry materials would be rapidly incorporated (within hours) with other compostible materials, shredded materials, or compost.

c) The windrows would be turned on an average of twice per week to maintain aerobic conditions.

d) A monitoring program would be implemented to track the composting process and implement operational adjustments as necessary.

e) The operations areas would be regraded as needed to ensure drainage and prevent ponding of compost leachate.

EIR Recommendations:

MITIGATION MEASURE 10-5

a) The turning of the windrows would be limited when the wind is blowing inland toward potential receptors. Turning and screening operations would be curtailed when wind speeds exceed 20 miles per hour (mph) toward developed areas.

b) An appropriately sited wind monitoring station would be installed with an alarm to indicate the occurrence of winds greater than 20 mph.

c) A one-year composting demonstration project would be conducted under the review and oversight of the LEA and BAAQMD. The demonstration project would focus on all feedstock materials with a high nuisance odor potential and would identify composting operations and controls necessary to ensure an efficient operation that would control odors under various climatic conditions. Based on the results of the demonstration project, the LEA and BAAQMD would specify the conditions these feedstocks could be used at the Composting Facility as part of the Composting Facility permitting process. The demonstration project shall include, but not be limited to, the following items:

- The scale of the demonstration project would duplicate the pile size and operational factors of the planned facility, so that valid data are collected at full-size operation.

- The span of feedstock combinations would encompass the range of expected future options, concentrating on worst-case combinations from processing, operations, and odor standpoints.

- Monitoring during the demonstration period would include standard compost processing monitoring parameters as well as odor emission data during different operating and climate/wind conditions. Odor data would include emissions of critical constituents such as reduced sulfur compounds and reduced nitrogen compounds, as well as total odor emission data collected via odor panel and with flux chamber protocols. Downwind odor data would be collected concurrent with pile or source emission data to correlate the impacts.

- Odor impacts from demonstration scale will be extrapolated for the full-scale system through odor modeling or similar approach that achieves valid predictions of odor from the large proposed system.

- Odor data collection would be identified for any compost leachate liquid or storm water runoff liquid coming from the demonstration piles/area.

Implementation of these measures would reduce potential odor impacts associated with the Organics Material Processing Area and Composting Facility to a less-than-significant level.

IMPACT 10-6. Operation of the WRC Mixed Waste Processing Area could create objectionable odors. This impact is considered to be less than significant.

The WRC would serve customers currently using the existing Waste Shuttle Facility, located on top of the landfill's central plateau (Figure 3-1). The Waste Shuttle Facility operations began at the end of 2000 and are conducted in an open-air environment on a paved asphalt pad. With the proposed WRC, mixed waste processing operations would be in an enclosed structure (see Appendix 3D, Figure 3D-1). The former Soil Remediation Building would be modified and expanded to accommodate the WRC.

The Applicant has prepared a WRC Transfer/Processing Report which details design and operational measures, and environmental safeguards [43.] The WRC Mixed Waste Processing Area would be a combination of solid waste materials recovery facility and transfer station. The facility would receive non-hazardous solid wastes, consisting of putrescible and non-putrescible solid wastes including garbage, and mixed construction and demolition debris. The processing of these materials would be a source of unpleasant odors. However, because of the various controls that are proposed as part of the Project,

objectionable odors should not be detectable beyond the boundary of the site. Consistent with the requirements of 14 CCR §17406.2(d), the Applicant would implement an odor control program that will comply with Regulation 7 of the BAAQMD.

Control Measures Incorporated by Applicant:

a) Only wastes that are consistent with 14 CCR §17863.4 and the OIMP would be accepted.

b) Loaded transfer vehicles would be covered and properly maintained to minimize odors.

c) Wastes would be processed within 48 hours of receipt to prevent significant odor buildup from waste decomposition.

d) Routine cleaning of floors, walls, and equipment would be conducted.

e) Wastes in the processing area would be treated with odor suppressants as deemed necessary, or as otherwise required by the LEA or BAAQMD.

f) Odor complaints documented by the LEA or BAAQMD would be responded to by WCCSL within 2 working days, detailing the problem and remedial action to be taken. Additional physical improvements or management practices would be implemented as necessary under the review and oversight of the LEA and BAAQMD.

Implementation of the odor control program would reduce potential impacts to a less-than-significant level.

EIR Recommendations:

MITIGATION MEASURE 10-6. None required.

IMPACT 10-7. Application of liquid anaerobically digested sludge to the southern and eastern sideslopes of the closed landfill could create objectionable odors. This impact is considered potentially significant.

Application of high-moisture-content biosolids obtained from the adjacent West County Wastewater District (WCWD) Wastewater Treatment Plant to closed landfill sideslopes is a proposed activity within the proposed Biosolids/Dredged Material Spreading operation. The biosolids would be anaerobically digested at the WCWD plant with a moisture content typically ranging from 94 to 98 percent (2 to 6 percent solids). It is proposed that 24 million gallons (MG) of these biosolids would be spray-applied during the dry months of the year (April to October) to about 22.5 acres of the southern and

eastern sideslopes of the landfill (Figure 3-3 and 3H-1). In the past, the Applicant has accepted dried sludge from the WCWD plant's sludge drying lagoons (20 to 60 percent moisture) for use as Alternative Daily Cover and to enhance the landfill's final cover soils without odor impact. It is expected this activity would continue without creation of nuisance odor conditions.

The Applicant conducted limited investigations in 2002 that included limited applications of liquid biosolids to landfill sideslope areas and a progress report was prepared.[25] According to the Applicant, no offensive odors were noted. Prior to full-scale implementation of biosolids spreading, the Applicant proposes to conduct further testing to refine the rates and methods of application. Analyses included in Section D of Chapter 6, however, indicate that the disposal of the large quantity of water included in 24 MG of sludge (about 22.5 to 23.5 MG) may not be feasible as proposed and that either more land area would be required, or the quantities of biosolids would need to be reduced.

The continued acceptance of dried lagoon sludge from the WCWD at the landfill could be operated to prevent nuisance odor conditions because that sludge, which has been anaerobically digested, has been stored in the lagoons for many months. This storage provides a large amount of stabilization of the sludge material where volatile solids and other odor-producing components of the sludge are further degraded. As a result, the odor nuisance of the dried product is substantially reduced because the dried sludge is much more stable. BAAQMD enforcement records over the last 5 years indicate the WCWD treatment plant has not received any violation notices, and one confirmed odor complaint.[45] Thus, pursuant to the BAAQMD criteria, the treatment plant has not caused a significant odor impact.

Anaerobic digestion is an effective sludge treatment process that serves to destroy typically 40 to 52 percent of the volatile solids, stabilizes remaining sludge, destroys pathogens, and reduces odor and vector attraction potential. However, even with 30 days or more of retention time in the digesters (the amount of time most sludge particles remain in the digesters for treatment) as commonly obtained at the WCWD plant, the spray application of this material at full-scale implementation on about 22.5 acres would have the potential to create nuisance odor conditions that would be experienced by surrounding land uses, including users of the proposed Public Access Trail (Trail). Additional evaluations of this concept are necessary, not only to refine various technical parameters, but also to evaluate water pollution potential and other potential environmental consequences.

Control Measures Incorporated by Applicant:

a) Prior to full-scale implementation of liquid biosolids spreading, further testing would be conducted to refine the rates and methods of application.

EIR Recommendations:

MITIGATION MEASURE 10-7

a) The feasibility of WCWD continuing to provide short-term lagoon storage (2 to 3 months) of anaerobically digested sludge (i.e., a slurry in a lagoon) with a liquid aerobic cap would be demonstrated and evaluated. This evaluation shall include, but is not limited to, the following measures:

- The proposed short-term lagoon storage approach would be demonstrated to reduce odor impacts with spraying of sludge on the landfill sideslopes.
- Volatile solids reductions from lagoon feedstock to lagoon withdrawal material would be identified.
- Odor monitoring at the short-term lagoon storage system would be conducted to confirm that this storage system in itself will not cause an odor problem.
- Operational criteria would be determined for lagoon feed rates and loading, sludge withdrawal, cap water maintenance, maintaining "aerobic" cap conditions, cap water covering all sludge material, lagoon supernatant handling, etc.

b) A liquid biosolids spreading demonstration project work plan would be prepared, under the review and oversight of the LEA and BAAQMD, and demonstrate whether residual odor would be consistent with impact standards of the BAAQMD and this EIR. The results of Mitigation Measure 10-7(a) would determine whether the sludge, which has received short-term storage, can be integrated into the work plan. The work plan shall include, but not be limited to, the following items:

- Identify the types of biosolids that will be spread in the demonstration program; i.e., digested sludge direct from digesters, sludge removed from lagoon after "X" months of storage, etc. Identify the analytical work that will be completed on such material to help identify odor impacts of spreading (percent solids, percent volatile solids, pH, ammonia, temperature, total reduced sulfur compounds (TRS), etc.
- Identify/define data that will be collected at the spray application site including area loading rates, spray flow rates and nozzle pressures, spray distances, and data collected during spraying such as odor monitoring in the vicinity and downwind. Spraying would be conducted in different climate/wind conditions to establish potential limitations for full-scale operation.

- Identify/define data that will be collected on water that runs off the application areas: quantity of water and data on BOD, SS, nutrient content (including ammonia). Fecal coliform density of any runoff solids would be determined.

- Identify the various conditions under which spraying will be limited such as time of day, wind/atmosphere conditions, precipitation conditions, frequency of application, and other conditions.

c) The liquid biosolids spreading demonstration project would be conducted under the review and oversight of the LEA and BAAQMD, and a report of findings prepared. The Applicant would demonstrate that liquid biosolids can be spray-applied as proposed without creating nuisance odor conditions. The LEA and BAAQMD would then determine under what conditions liquid biosolids can be spray-applied to the landfill slopes to provide the required odor control. The work plan shall include, but not be limited to, the following items:

- Analysis of data would be extrapolated to determine nearby area/downwind odor impacts from biosolids spraying operations. Atmospheric odor modeling would be used as necessary to make these predictions.

- Identify control measures that will provide acceptable odor control, to include: limits on loading rates (liquid and solids loading), limits on type of biosolids applied, climate/wind restrictions, time of day restrictions, frequency of application, and other appropriate limits.

- Analyze information to identify the fate of biosolids pollutants, such as nutrients (nutrients taken up by site vegetation, or percolate downward into the final landfill cover, or contained in site runoff, transformed into gaseous release to atmosphere, etc.), and similar fate for biosolids metals and also for residual pathogens within biosolids.

Implementation of these measures would reduce potential odor impacts associated with liquid biosolids application to less-than-significant levels.

IMPACT 10-8. Application of dredged materials obtained from local Bay and harbor dredging operations to the southern and eastern sideslopes of the closed landfill could create objectionable odors. This impact is considered to be less than significant.

Dredged materials are silty and sandy deposits that would require substantial drying time on the landfill slopes. These materials can include sulfide-containing organic materials that produce nuisance odors when exposed to air. Dredged materials are currently trucked periodically to the WCCSL, stockpiled , and dried prior to use as landfill cover

without odor incident. According to the Port of Oakland, about 5 million cubic yards have been dredged under their program and applied to upland sites over the last 15 years without an odor problem.[61]

Control Measures Incorporated by Applicant: None.

EIR Recommendations:

MITIGATION MEASURE 10-8. None required.

IMPACT 10-9. Increased landfill capacity would extend the filling operation to about 2005, which could create objectionable odors. This impact is considered to be less than significant.

The proposed Project includes a 30-foot height increase, thereby increasing landfill capacity. According to the most recent site life estimates, additional landfill capacity would extend landfill operations an additional 17 months or until 2005, assuming the WRC is sited at the former Soil Remediation Building as proposed (Table 3-4, Chapter 3). SWFP No. 07-AA-0001 for the WCCSL allows a maximum of 2,500 TPD at the landfill disposal site. This permit limitation would not be exceeded.

Extended landfill disposal would be a source of odor but, as noted in Section A5 of this chapter, the BAAQMD has no confirmed odor complaints or violations for the WCCSL for the last 5 years. According to the Applicant's Report of Disposal Site Information,[1] a variety of odor abatement measures will continue to be used at the landfill, as follows.

Control Measures Incorporated by Applicant:

a) Highly odorous MSW loads would be rejected.

b) Daily cover would be applied to landfilled wastes.

c) Operation of the LFG extraction system would be continued.

d) Ongoing maintenance of landfill sideslope areas would be continued to seal off cracks and fill erosion channels.

Implementation of these control measures would reduce odors associated with extended filling operations to a less-than-significant level.

EIR Recommendations:

MITIGATION MEASURE 10-9. None required.

7. Impacts of Mitigation Measures

The mitigation measures discussed in this section are beneficial in nature and are intended to reduce potentially significant adverse impacts to less-than-significant levels. Implementation if these mitigation measures would not result in any significant adverse impacts.

E. CUMULATIVE IMPACTS

Discussion in Section D addressed the air quality, health risk and odor issues associated with the proposed Project. Table 10-4 shows the existing combined emissions from both on-site and off-site activities. Total emissions for ozone precursors (ROG and NO_x) would decline, so the Project would have a less-than-significant cumulative impact on ozone. Combined on-site and off-site emissions of PM_{10} would exceed the BAAQMD significance threshold of 80 pounds per day, so the Project would have a significant unavoidable cumulative impact for PM_{10}.

The cumulative effect of increased diesel truck traffic from the proposed Project and the Central IRRF on diesel particulate health risk was analyzed for two residential neighborhoods near the intersections of Richmond Parkway at Gertrude Avenue and Hilltop Drive. The maximum calculated cumulative cancer risk near the intersection at Richmond Parkway and Gertrude Avenue was 4.23 in one million. The maximum calculated cancer risk near the intersection of Richmond Parkway and Hilltop Drive was 5.02 in one million. These risk estimates were based on a continuous 70-year exposure.

The above calculated risks are below the BAAQMD significant threshold of 10 in one million. The Annual Average Concentration (0.014 $\mu g/m^3$ at Richmond Parkway/Gertrude Avenue and 0.0167 $\mu g/m^3$ at Richmond Parkway/Hilltop Drive) are also below the chronic inhalation REL for diesel exhaust particulate of 5 $\mu g/m^3$.

The discussion in Section D included an analysis of the nuisance odor potential associated with individual Project operations. Areas of concern are associated with an expanded Composting Facility using open windrow composting, additional and new feedstock materials, and the application of liquid anaerobically digested sludge (biosolids) to the closed southern and eastern sideslopes and the landfill. Individually, and particularly on a cumulative basis, significant odor nuisance impacts could occur. Mitigation measures, however, would be implemented by the Applicant to conduct demonstration projects under the review and oversight of the LEA and BAAQMD, and to demonstrate that these activities can occur without creating nuisance odor conditions. The BAAQMD regulatory framework for odor abatement would require the correction of any odor problems in the future if they were to occur. Thus, potential Project and cumulative odor impacts would be reduced to a less-than-significant level.