Bay Area Air Quality Management District

939 Ellis Street
San Francisco, CA 94109
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STATEMENT OF BASIS

for

MAJOR FACILITY REVIEW PERMIT: SIGNIFICANT REVISION

for

West Contra Costa Sanitary Landfill, Inc.
Facility Number A1840

Facility Address:
Foot of Parr Boulevard
Richmond, CA 94801

Mailing Address:
3260 Blume Drive, Suite 200
Richmond, CA 94806

Application Engineer: Jane H. Lundquist
Site Engineer: Jane H. Lundquist

Application Number: 11374

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Title V Statement of Basis for MFR Permit: Significant Revision

West Contra Costa Sanitary Landfill, Inc.; Site Number A1840

Application Number 11374

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Title 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review (MFR) because it is a major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the "potential to emit," as defined by BAAQMD Regulation 2-6-218, of more than 100 tons per year of carbon monoxide, a regulated air pollutant.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

In the Bay Area, state and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

West Contra Costa Sanitary Landfill, Inc. (WCCSL), Site Number A1840, was issued a Major Facility Operating Permit (Title V Permit) on May 29, 2002 with an expiration date of April 30, 2007. In July 2004, the District reopened the permit to add the NESHAP for Municipal Solid Waste Landfills (40 CFR 63, Subpart AAAA) and to make other administrative amendments and minor revisions; the revised permit was issued on September 29, 2004. On October 25, 2005, a revised permit was issued, for the minor revision, to add the S46 Hazardous Waste Management Facility, the proposed gas collection system (19 horizontal collectors) for S46, and the proposed control system (A11 Landfill Gas Flare) for S46.

This document addresses the significant revisions pursuant to the New Source Review (NSR) Application Number (AN) 11375 and the minor revision pursuant to the NSR AN 13247.

Under AN11375, WCCSL requested increasing the permitted capacity of the facility. Previously, this facility was subject to the federal new source performance standards (NSPS) of 40 CFR Part 60, Subpart Cc Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills. Because the proposed expansion of the landfill results in an increase in the permitted design capacity as of May 30, 1991, this facility becomes subject to 40 CFR Part 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills, instead of Subpart Cc, and is considered a modification under 40 CFR Part 60 Subpart WWW. In accordance with BAAQMD Regulation 2-6-226.2, this change requires a significant permit revision to the MFR permit because it incorporates a change considered a modification under 40 CFR Part 60. The proposed revision to the MFR permit includes increased permit capacities and

emissions for the existing sources, and changes to reflect the NSPS requirements to which the facility will now be subject. The engineering evaluation for AN 11375 is enclosed in Appendix A and contains detailed emission calculations and discussions of the proposed changes.

Under AN13247, WCCSL is proposing to operate a new solid waste transfer station where waste will be consolidated from multiple collection vehicles into larger, high-volume transfer vehicles for more economical shipment to distant disposal sites. The Class II landfill (S15) is scheduled to be closed in the fall of 2006 and will no longer be accepting waste. The engineering evaluation for AN 13247 is enclosed in Appendix B and contains detailed emission calculations and discussions of the proposed changes.

The proposed MFR permit shows all changes to the existing permit in strikeout/underline format. When the permit is issued, all strikeout language will be deleted and all underline language will be retained.

B. Facility Description

The WCCSL facility includes the active 160-acre Class II landfill (S15) with a landfill gas collection system and flare (A8); the 28-acre closed Class I landfill site also known as the Hazardous Waste Management Facility (HWMF, S46) with a landfill gas collection system and flare (A11); three landfill gas fired internal combustion engines (S5, S6 and S37); and leachate collection and treatment equipment (S22 through S30, S38, S39 and S40). The engines produce electricity using the landfill gas as a fuel and also serve as abatement equipment. Leachate, liquid runoff that contains small amounts of organic and toxic compounds, is collected and treated by a series of physical, chemical, and biological processes to remove heavy metals and toxic organic compounds from the water. Air emissions from the leachate treatment equipment are controlled by carbon adsorbers (A1 through A6).

C. Emissions

WCCSL proposes to increase the permitted capacity of the landfill (S15), the flare (A8), the IC engines (S5, S6 and S37), and the leachate treatment system (S22 through S30, S38, S39 and S40). There will be no increase in the permitted daily disposal rate of 2500 tons per day. The increase in capacity, which is to be accomplished by an increase in the fill height, will allow the facility to continue accepting waste through 2006. The proposed increases will result in a potential to emit, for the landfill operations, of 26.41 tons per year of non-methane organic compounds (NMOC), 49.18 tons per year of nitrogen oxides (NOx), 192.14 tons per year of carbon monoxide (CO), 11.00 tons per year of particulate matter (PM10) and 33.87 tons per year of sulfur oxides (SOx). The calculations for the potential to emit are in the engineering evaluation in for AN 11375 in Appendix A and AN13247 in Appendix B. The following table shows the potential to emit breakdown by source.

Potential to Emit						
Description	NMOC, tons/yr	NOx, tons/yr	CO, tons/yr	PM10, tons/yr	SOx, tons/yr	Estimated Under Applic. #
Class II Landfill, S15	12.44			158.1*		AN11375 & 13247
Flare for S15, A3	2.01	13.44	67.22	3.76	19.33	AN11375
IC Engine, S5	2.61	11.93	43.33	2.30	4.65	AN11375
IC Engine, S6	2.61	11.93	43.33	2.30	4.65	AN11375
IC Engine, S37	2.30	10.52	31.40	2.25	4.10	AN11375
Leachate System, S22-30 & S38-40	2.68					AN11375
HWMF Landfill, S46	1.43					AN2789 & 8514
Flare for S46, A11	0.34	1.37	6.86	0.39	1.14	AN2789 & 8514
Transfer Station, S50				1.39*		AN13247
PTE Totals	26.41	49.18	192.14	170.49*	33.87	

* Value includes fugitive vehicle traffic emissions.

D. Permit Content

Since Statements of Basis were prepared for the initial MFR Permit, the July 2004 reopening of this MFR Permit, and the October 2005 minor revision that fully describe and explain the legal and factual basis for the MFR Permit, this report will only address the proposed revisions to the MFR Permit associated with NSR AN 11375 and 13247. Changes to the permit sections are described in the order that they are presented in the permit.

I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities. No changes are recommended for this section of the MFR Permit.

II. Equipment

This section of the permit lists all permitted or significant sources and all abatement or control devices for these sources. This revision will increase the permitted capacities of all the sources at this facility except the Hazardous Waste Management Facility (closed Class I landfill), S46, and its associated flare, A11. The increase in capacity of the landfill, S15, will be accomplished by an increase in the fill height. Landfill gas (LFG) emissions from S15 are combusted in three IC engines, S5, S6 and S37, and a flare, A8. Previous permit conditions limited the flare throughput to protect the established cumulative increase for the facility. At the new maximum LFG generation rate for the landfill, operation of the flare at its actual flow capacity concurrently with the engines will be necessary to handle the gas flow. This revision will increase the

allowed capacities of the engines and the flare to rates at which they have been tested and/or designed. Likewise, this revision will increase the permitted throughput for the leachate treatment system, S22 through S30, S38, S39 and S40. New potential to emit and emissions increase calculations are in the engineering evaluation in for AN 11375 in Appendix A for this increase in capacity.

The Class II landfill (S15) is scheduled to be closed in the fall of 2006 and will no longer be accepting waste. Instead a new Solid Waste Transfer Station that will be installed where waste will be accepted and consolidated into large, high-volume transfer vehicles for more economical shipment to distant disposal sites. This revision includes the new Solid Waste Transfer Station, source S50. New potential to emit and emissions increase calculations are in the engineering evaluation in for AN 13247 in Appendix B for S50.

III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources, portable equipment, and temporary sources that may not require a District permit. Dates of adoption or approval of the rules have been updated.

IV. Source-Specific Applicable Requirements

Section IV of the MFR permit contains citations to all the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The text of the requirements is found in the regulations, which are readily available on the District's or EPA's websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and monitoring requirements.

Previously, this facility was subject to the federal new source performance standards of 40 CFR Part 60, Subpart Cc Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills. Because the proposed expansion of the landfill results in an increase in the permitted design capacity as of May 30, 1991, this facility becomes subject to 40 CFR Part 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills, instead of Subpart Cc. The following table summarizes the proposed revisions to this section in the MFR Permit.

Section IV - Source-Specific Applicable Requirements		
Table	Sources	Change
IV-A	S5, IC Lean Burn Engine S6, IC Lean Burn Engine	Delete references to 40 CFR Part 60, SubpartCc. Add references to 40 CFR Part 60, Subpart WWW. Add "offsets" as basis for the limits in BAAQMD Condition #5771, Part 4 and Part 8.

Section IV - Source-Specific Applicable Requirements		
Table	Sources	Change
IV-B	S15 West Contra Costa Sanitary (Class II) Landfill and A8 Landfill Gas Flare	Delete references to 40 CFR Part 60, SubpartCc. Add references to 40 CFR Part 60, Subpart WWW. Add "cumulative increase" as basis for the limits in BAAQMD Condition #17821, Part 1 and Part 10.
IV-F	S37, IC Lean Burn Engine	Delete references to 40 CFR Part 60, SubpartCc. Add references to 40 CFR Part 60, Subpart WWW. Add "offsets" as basis for the limits in BAAQMD Condition #17812, Part 5.
IV-G	S46 Hazardous Waste Management Facility (Class I Landfill) with LFG Collection System and A11 Landfill Gas Flare for HWMF	Delete references to 40 CFR Part 60, SubpartCc. Add references to 40 CFR Part 60, Subpart WWW.
IV-H	S50 Solid Waste Transfer Station and A50 Water Mist System	Add references to BAAQMD Regulation 6 Add references to BAAQMD Condition #22792

V. Schedule of Compliance

No changes to this section are proposed.

VI. Permit Conditions

During the Title V permit development, the District has reviewed the existing permit conditions, deleted the obsolete conditions, and as appropriate, revised the conditions for clarity and enforceability. Each permit condition is identified with a unique numerical identifier, up to five digits. Where necessary to meet Title V requirements, additional monitoring, recordkeeping, or reporting has been added to the permit.

The District is proposing changes to the permit conditions to reflect the increase in permitted capacities, the limitations on emissions to protect offsets and cumulative increases, and to allow for concurrent operation of the engines and flare at the Class II landfill. The proposed changes to each condition are discussed below.

Condition #5771 for S5, Internal Combustion Lean Burn Engine and S6, Internal Combustion Lean Burn Engine

Part 2 The restriction that the A8 flare shall not be operated when all three engines are operating concurrently will be deleted. At the maximum LFG generation rate,

concurrent operation of the engines and flare will be necessary to handle and abate the increased LFG flow rates.

Part 4 The NOx concentration limit from the engine exhaust will be lowered to reflect results from source testing and to protect offsets.

Part 8 The heat input to each engine will be increased to reflect actual capacity.

Condition #7463 for S22, Primary Oil/Water Separator; S23, Secondary Oil/Water Separator; S24, Load Equalization Tank; S25, Photo-oxidizer Tank; S26, Neutralization Tank; S27, First Stage Clarifier; S28, Air Stripper Sump; S29, Flocculation/Mixing Tank; S30, Air Stripper; S38, Secondary Oil/Water Separator; S39, Sludge Storage Tank; S40, Equalization Tank; A1, A2, A3, A4, A5 and A6, Carbon Adsorbers

Part 5 The wastewater throughput rates will be increased.

Condition #17812 for S37, Internal Combustion Lean Burn Engine

Part 2 The heat input to each engine will be increased to reflect actual capacity.

Part 4 The restriction that the A8 flare shall not be operated when all three engines are operating concurrently will be deleted. At the maximum LFG generation rate, concurrent operation of the engines and flare will be necessary to handle and abate the increased LFG flow rates.

Part 5 The NOx concentration limit from the engine exhaust will be lowered to reflect results from source testing and to protect offsets.

Condition #17821 for S15, Active Landfill with Landfill Gas Collection System and A8, Landfill Gas Flare

Part 1 The limit on the cumulative amount (tons) of all waste placed in the landfill and the maximum design capacity (total volume of all waste and cover materials in cubic yards) will be increased.

Part 8 The restriction that the A8 flare shall not be operated when all three engines are operating concurrently will be deleted and the heat input to the flare will be increased to reflect actual capacity. At the maximum LFG generation rate, concurrent operation of the engines and flare will be necessary to handle and abate the increased LFG flow rates.

Part 10 The concentration limit of total reduced sulfur compounds in the landfill gas will be lowered, as requested, to reflect results from source testing and reduce SOx potential to emissions from combustion of the LFG.

Part 12 Four new compounds will be added to the list for annual landfill gas characterization because recent source test showed that there were significant concentrations. One compound on the list will be deleted because recent source test showed insignificant concentrations.

Part 13 One new compound will be added because source test results showed a concentration level that could contribute to health impacts.

The District is proposing new permit condition #22792 for the new source S50.

Condition #22792 for S50, Solid Waste Transfer Station and A50, Water Mist System

Part 1 Limits the total quantity of waste accepted at the waste transfer station.

Part 2 Requires that wastes (mixed wastes, green material and wood wastes) be removed from the transfer station within 48 hours after being received at the facility.

Part 3 Limits the visible particulate emissions from the operations at S50.

Part 4 Requires maintenance of roads to prevent visible particulate emissions.

Part 5 Limits the number of vehicle trips per day to both the landfill, S15, and the transfer station, S50.

Part 6 Allows an increase in the number of vehicle trips per day to S50 upon the termination of waste acceptance at S15

Part 7 Requires record keeping of waste throughput, vehicle route maintenance events, the number of vehicle trips per day to S15 and the number of vehicle trips per day to S50.

VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements that apply to each source. The summary includes a citation for each monitoring requirement, frequency, and type. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

Monitoring decisions are typically the result of a balancing of several different factors including: 1) the likelihood of a violation given the characteristics of normal operation, 2) the degree of variability in the operation and in the control device, if there is one, 3) the potential severity of impact of an undetected violation, 4) the technical feasibility and probative value of indicator monitoring, 5) the economic feasibility of indicator monitoring, and 6) some other factor, such as a different regulatory restriction applicable to the same operation, that also provides some assurance of compliance with the limit in question.

These factors are the same as those historically applied by the District in developing monitoring for applicable requirements**.** It follows that, although Title V calls for a re-examination of all monitoring**,** there is a presumption that these factors have been appropriately balanced and incorporated in the District's prior rule development and/or permit issuance. When a rule or permit requirement has historically had no monitoring associated with it, no monitoring may still be appropriate in the Title V permit if, for instance, there is little likelihood of a violation**.** Compliance behavior and associated costs of compliance are determined in part by the frequency and nature of associated monitoring requirements. As a result, the District will generally revise the nature or frequency of monitoring only when it can support a conclusion that existing monitoring is inadequate**.**

The proposed revisions to this section in the MFR Permit reflect the changes in capacity of the existing sources, the addition of a new solid waste transfer station source, and the federal requirements to which the facility will become subject. The following table summarizes the proposed revisions.

Section VII - Applicable Limits and Compliance Monitoring Requirements		
Table	Sources	Change
VII-A	S5, IC Lean Burn Engine S6, IC Lean Burn Engine	Limit for NMOC per 40 CFR 60.752(b)(2)(iii)(B) will be added. NOx concentration limit will be lowered per change in BAAQMD Condition #5771, Part 4. This NOx concentration was used to calculate the new potential to emit for S5 and S6. CO concentration limit will be corrected to reflect existing BAAQMD Condition #5771, Part 5. Heat Input limit will be increased to reflect the change in BAAQMD Condition #5771, Part 8. This heat input was used to calculate the new potentials to emit for S5 and S6. Limit for gas flow will be added per 40 CFR 60.753(a) and (e). Emission control system startup, shutdown or malfunction limit will be added per 40 CFR

Section VII - Applicable Limits and Compliance Monitoring Requirements		
Table	Sources	Change
		60.755(e).
VII-B	S15 West Contra Costa Sanitary (Class II) Landfill and A8 Landfill Gas Flare	Collection system installation dates will be added per 40 CFR 60.753 (a)(1), (a)(2) and 60.755 (b)(1), (b)(2). Limit for gas flow will be added per 40 CFR 60.753(a) and (e). Collection and control system startup, shutdown or malfunction limit will be added per 40 CFR 60.755(e). Wellhead pressure, gas temperature and gas concentration limit will be added per 40 CFR 60.753(b) and (c). Total organic compounds limit will be added per 40 CFR 60.753(d). Non-methane organic compounds limit will be added for A8 Flare per 40 CFR 60.752(b)(2)(iii)(B). Combustion zone temperature limit will be added for A8 Flare per 40 CFR 60.758(c)(1)(i) Total reduced sulfur concentration in the landfill gas will be lowered per change in BAAQMD Condition #17821, Part 10. This sulfur concentration was used to calculate the new potential to emit SOx for S5, S6, S37 and A8. Cumulative tons of all waste and cumulative yards of all waste and cover materials will be increased per change in BAAQMD Condition #17821, Part 1. The new cumulative throughput of all waste was used to calculate the new potential to emit for the landfill fugitive emissions. Heat Input to the A8 flare will be increased to reflect the change in BAAQMD Condition #17821, Part 8. This heat input was used to calculate the new potentials to emit for A8.
		Perchloroethylene concentration limit will be added to reflect the change in BAAQMD Condition #17821, Part 12. This concentration was used to calculate emissions for the health risk analysis.
VII-C	S22, Primary Oil/Water Separator; S23 and S38 Secondary Oil Water Separators; A1 and A2 Carbon Adsorbers	The wastewater throughput will be increased to reflect the change in BAAQMD Condition #7463, Part 5. This new throughput was used to calculate the new potentials to emit for these sources.

Section VII - Applicable Limits and Compliance Monitoring Requirements		
Table	Sources	Change
VII-D	S24, Load Equalization Tank; S25 Photo-Oxidizer Tank; S26 Neutralization Tank; S27 First Stage Clarifier; S28 Air Stripper Sump; S39 Sludge Storage Tank; S40 Equalization Tank	The wastewater throughput will be increased to reflect the change in BAAQMD Condition #7463, Part 5. This new throughput was used to calculate the new potentials to emit for these sources.
VII-E	S30, Air Stripper; A3, A4, A5 and A6 Carbon Adsorbers	The wastewater throughput will be increased to reflect the change in BAAQMD Condition #7463, Part 5. This new throughput was used to calculate the new potentials to emit for these sources.
VII-F	S37, IC Lean Burn Engine	Limit for NMOC will be added per 40 CFR 60.752(b)(2)(iii)(B). NOx concentration limit will be lowered per change in BAAQMD Condition #17812, Part 5. This NOx concentration was used to calculate the new potential to emit for S37. Heat Input will be increased to reflect the change in BAAQMD Condition #17812, Part 2. This heat input was used to calculate the new potentials to emit for S37
		Limit for gas flow will be added per 40 CFR 60.753(a) and (e).
		Emission control system startup, shutdown or malfunction limit will be added per 40 CFR 60.755(e).
VII-G	S46, Hazardous Waste Management Facility (Class I Landfill) with LFG Collection System and A11 Landfill Gas Flare for HWMF	Collection system installation dates will be added per 40 CFR 60.753 (a)(1), (a)(2) and 60.755 (b)(1), (b)(2). Limit for gas flow will be added per 40 CFR 60.753(a) and (e). Collection and control system startup, shutdown or malfunction limit will be added per 40 CFR 60.755(e). Wellhead pressure, gas temperature and gas concentration limit will be added per 40 CFR 60.753(b) and (c). Total organic compounds limit will be added per 40 CFR 60.753(d). Non-methane organic compounds limit will be added

Section VII - Applicable Limits and Compliance Monitoring Requirements		
Table	Sources	Change
		for A8 Flare per 40 CFR 60.752(b)(2)(iii)(B). Combustion zone temperature limit will be added for A8 Flare per 40 CFR 60.758(c)(1)(i)
VII-H	S50, Solid Waste Transfer Station and A50, Water Mist System	Ringelmann limit will be added per BAAQMD Regulation 6-301. Limit on the amount of waste accepted will be added per BAAQMD Condition #22792, Part 1. Limits on the number of vehicle trips per day will be added per BAAQMD Condition #22792, Part 5 and 6.

VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. Test methods for the applicable 40 CFR Part 60, Subpart WWW requirements and for BAAQMD Condition #22792, Part 3 requirement will be added.

IX. Permit Shield

This facility has no permit shields, and no changes to this section are proposed.

X. Revision History

This section summarizes the revisions that have been made to the permit since it was initially issued. The changes associated with this proposed revision are summarized in Section X.

XI. Glossary

This section explains words, phrases, acronyms, symbols, and usage unit abbreviations that are used in this permit. No changes to this section are proposed.

XII. Applicable State Implementation Plan

This section provides the web site address for the SIP versions of BAAQMD rules and regulations. No changes to this section are proposed.

E. Alternate Operating Scenarios:

No alternate operating scenarios have been requested for this facility. No changes to this section are proposed.

F. Differences between the Application and the Proposed Permit:

The District is proposing to make administrative amendments that were requested by the applicant; this includes correcting the responsible official and contact information on the Title Page.

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APPENDIX A

ENGINEERING EVALUATION

for

APPLICATION # 11375

ENGINEERING EVALUATION
West Contra Costa Sanitary Landfill, Inc., Plant #1840
Application Number 11375
April 27, 2005

I. BACKGROUND

West Contra Costa Sanitary Landfill, Inc. (WCCSL) operates a municipal solid waste landfill facility in Richmond, California. The WCCSL facility is a 340-acre site where solid waste disposal operations began in 1952. This facility includes the active 160-acre Class II landfill (S15) with a landfill gas flare (A8); the 28-acre closed Class I landfill site also known as the Hazardous Waste Management Facility (HWMF, S46) with a landfill gas flare (A11); three landfill gas fired internal combustion engines (S5, S6 and S37); and leachate collection and treatment equipment (S22 through S30, S38, S39 and S40). The engines produce electricity using the landfill gas as a fuel and also serve as abatement equipment. When any engine is not operating, collected landfill gas that exceeds the capacity of the operating engines is vented to the flare. Leachate, liquid runoff that contains small amounts of organic and toxic compounds, is collected and treated by a series of physical, chemical, and biological processes to remove heavy metals and toxic organic compounds from the water. Air emissions from the leachate treatment equipment are controlled by carbon adsorbers (A1 through A6).

This application is for an increase in the capacity of the landfill (S15), the flare (A8) permitted capacity, the IC engines (S5, S6 and S37) permitted capacities, and the leachate treatment system (S22 through S30, S38, S39 and S40) permitted capacity. There will be no increase in the permitted daily disposal rate of 2500 tons per day. The increase in capacity will allow the facility to continue accepting waste to 2007. The increase in landfill capacity will be accomplished by an increase in the fill height. The projected maximum landfill gas (LFG) generation rate is 2169 cfm. Seventy five percent of the LFG generated is expected to be collected and processed. The combined LFG processing capacity of the three engines is 1026 cfm. At the maximum LFG generation rate, operation of the flare (1481 cfm) concurrently with the engines will be necessary to handle the gas flow. The current permit conditions allow operation of the flare only when one or more of the engines are not operating. WCCSL is requesting the flexibility to operate the flare while all three engines are also operating as well as when any of the engines are down.

II. EMISSION CALCULATIONS

A. Landfill Gas Generation and Processing Rates: The maximum landfill gas (LFG) generation rate for the expanded landfill, S15, was determined using EPA's Landfill Gas Emissions Model version 2.01, September 1998 and WCCSL's reported amounts of waste accepted and proposed to be accepted. Data from the Western Regional Climate Centers indicates that the annual average precipitation in Richmond is 23.11 inches. As such, the AP-42 recommended default value (0.02/yr) for the methane generation rate constant for dry areas (< 25 inches/yr) was used in the model run. The model results are presented in Appendix A-1. Table 1 shows the proposed maximum generation rates and gas processing rates. No changes are proposed for the Hazardous Waste Management Facility, S46, and the associated flare, A11.

Table 1 - Proposed LFG Generation or Processing Rates

Device#	Description	LFG, scfm	LFG, MMBtu/yr [(1)]
S15	Class II Landfill	2169	-
A8	Flare for S15	1481	433,693
S5	IC Engine	356	104,250
S6	IC Engine	356	104,250
S37	IC Engine	314	91,951
		Leachate, MMgal/yr	
S21-33 & S38-40	Leachate Treatment System	15.0	

*(1) MMBtu/yr = (scfm LFG) * (60m/hr) * (8760 hr/yr) * (55 scf CH_4/100 scf LFG) * (1.013 E-3 MMBtu/ scf CH_4)*

II. EMISSION CALCULATIONS (continued)

Table 2 lists the LFG generation rates and gas processing rates determined in the Statement of Basis for this facility's Major Facility Review Permit.

Table 2 - Current LFG Generation or Processing Rates			
Device#	Description	LFG, scfm	LFG, MMBtu/yr (1)
S15	Class II Landfill	1520	-
A8	Flare for S15	678	198,560
S5	IC Engine	323	94,608
S6	IC Engine	323	94,608
S37	IC Engine	285	83,658
		Leachate, MMgal/yr	
S21-33 & S38-40	Leachate Treatment System	10.512	

B. Emission Factors: The following describes the basis for calculating the emission factors that are used to determine potential to emit emissions. The emission factors and the data used to calculate them are presented in Appendix A-2.

Landfill Fugitive Emission Factor: The LFG collection system is assumed to collect a minimum of 75% of the generated Non-Methane Organic Compounds (NMOC). The remaining 25% of the generated NMOC is emitted as fugitive emissions. The potential to emit emission factor for the landfill fugitive emissions is based on the LFG generation rate, the percent of the generated gas that is emitted as fugitive, the NMOC concentration in the LFG (from source tests conducted in May 2004), and the maximum tons of waste in-place.

NMOC emission factor, lbs/ton-in-place = (LFG generation rate, cfm) * (60 m/hr) * (8760 hr/yr) * (NMOC ppmv/ 1E6) * (lbmol/386.9 scf) * (16.04 lb/lbmol) * (% Fugitive)/(Waste, tons-in-place)

LFG-fired IC Engine Emission Factors: Potential to emit emission factors for the IC engines are calculated based on Regulation 8, Rule 34 Section 301.4, concentration limit for NMOC; permit condition concentration limits for NOx and CO; and the measured exhaust flow rate, oxygen content and fuel flow rate (from source tests conducted for Source S5 on May 27, 2004; February 24, 2004 and March 27, 2003; Source S6 on May 26, 2004; December 21, 2004 and July 31, 2003; and Source S37 on May 26, 2004 and July 15, 2002).

Pollutant emission factor, lbs/Mscf = [(Exhaust flow rate @ specified % O2, cfm) * (Pollutant conc. @ specified % O2, ppm/1E6) * (lbmol Pollutant/386.9 scf) * (Pollutant mol. wt., lb/lbmol) / (Fuel Flow rate, scfm)] * (1000 scf/Mcf)

PM_{10} emission factors for the IC engines are from AP-42, Chapter 2.4 Municipal Solid Waste Landfills, Table 2.4-5 Emission Rates for Secondary Compounds Exiting Control Devices. The conversion from MMscf methane to Mscf LFG is:

PM_{10} emission factor, lbs/Mscf LFG = (48 lbs/MMscf CH4 from AP-42) * (MMscf/1000 Mscf) * (average CH4 ppm/1E6 LFG).

SOx emission factors are based on the proposed permit concentration limit of 300 ppmv reduced sulfur in the landfill gas and were calculated as:

SOx emission factor, lbs/Mscf = (0.300 scf H2S/Mscf LFG) * (lbmol H2S/386.9 scf H2S) * (lbmol SO2/ lbmol H2S) * (64.06 lbs SO2/lbmol SO2)

II. EMISSION CALCULATIONS (continued)

LFG Flare Emission Factors: Potential to emit emission factors for the flare are calculated based on Regulation 8, Rule 34 Section 301.3, concentration limit for NMOC and the measured exhaust flow rate, oxygen content and fuel flow rate (from source tests conducted for the flare A8 on May 27, 2004). NOx and CO emissions are based on RACT levels established in application number 8514 for the flare A11. PM_{10} emission factors are derived from AP-42, Chapter 2.4 Municipal Solid Waste Landfills, Table 2.4-5 Emission Rates for Secondary Compounds Exiting Control Devices. SOx emission factors are based on the proposed permit concentration limit of 300 ppmv reduced sulfur in the landfill gas. The calculation method for these factors is the same as that described for IC engines above.

C. Potential to Emit for the Expanded Landfill: The potential to emit for the expanded landfill was calculated using the factors described above and the maximum proposed capacity of the landfill, the IC engines and flare. Emissions for the leachate treatment system are based on the new maximum throughput and tank emission calculation methods and emission factors determined in previous applications. These calculations are also presented in Appendix A-2. Table 3 shows the potential to emit emissions for each source.

Table 3 - Potential to Emit for the Expanded Landfill

Description	NMOC, tons/yr	NOx, tons/yr	CO, tons/yr	PM10, tons/yr	SOx, tons/yr	Estimated Under Application#
Class II Landfill, S15	12.44					AN11375
Flare for S15, A3	2.01	13.44	67.22	3.76	19.33	AN11375
IC Engine, S5	2.61	11.93	43.33	2.30	4.65	AN11375
IC Engine, S6	2.61	11.93	43.33	2.30	4.65	AN11375
IC Engine, S37	2.30	10.52	31.40	2.25	4.10	AN11375
Leachate System, S22-30 & S38-40	2.68					AN11375
HWMF Landfill, S46	1.43					AN2789 & 8514
Flare for S46, A11	0.34	1.37	6.86	0.39	1.14	AN2789 & 8514
PTE Totals	26.41	49.18	192.14	11.00	33.87	

D. Emissions Increase: Using the same methodology described for calculating the potential to emit, the emissions increase for the expanded landfill was calculated based on the incremental increase in the capacity of the landfill, the IC engines, flare and the leachate treatment system. These calculations are also presented in Appendix A-2. Table 4 shows the increase in emissions for each source.

Table 4 – Increase in Emissions

Description	POC, tons/yr	NOx, tons/yr	CO, tons/yr	PM10, tons/yr	SOx, tons/yr
Class II Landfill, S15	3.71				
Flare for S15, A3	1.09	7.29	36.45	2.04	10.48
IC Engine, S5	0.24	1.10	4.01	0.21	0.43
IC Engine, S6	0.24	1.10	4.01	0.21	0.43
IC Engine, S37	0.21	0.95	2.83	0.20	0.37
Leachate System, S22-30 & S38-40	0.76				
HWMF Landfill, S46	no change				
Flare for S46, A11	no change				
Total Emission Increase	6.25	10.44	47.29	2.67	11.71

II. EMISSION CALCULATIONS (continued)

E. Cumulative Emission Increases and Offset Requirements: A complete application was received prior to the December 21, 2004 adoption of amendments to Regulation 2, Rule 2. As such, the offset requirements are evaluated under the rule in effect at the time the completed application was received. Since permitted emissions of POC and NOx will exceed 15 tons per year but are less than 50 tons per year, POC and NO_x offsets are required and may be provided from the Small Facility Banking Account (SFBA) at a ratio of 1.0 to 1.0. Offsets are not required for PM10 or SOx emission increases, because this facility is not a Major Facility for PM10 or SOx (non-fugitive emissions < 100 tons per year). Table 5 shows the facility's cumulative increases and the offsets required.

Table 5 – Cumulative Increases and Offsets

Description	POC, tons/yr	NOx, tons/yr	CO, tons/yr	PM10, tons/yr	SOx, tons/yr
Cumulative Emission Increase (post 4/5/1991) Established in AN8514	0.000	0.000	6.378	0.429	4.094
Emission Increase from this application (AN11375)	6.25	10.44	47.29	2.67	11.71
New Cumulative Emission Totals	6.25	10.44	53.67	3.10	15.80
Offsets Required from the SFBA	6.25	10.44	none	none	none

F. Emission of Toxic Air Contaminants: The following describes the method that was used to calculate toxic air contaminant (TAC) emissions. The TAC emission factors, maximum TAC emissions and the data used to calculate them are presented in Appendix A-3.

Fugitive LFG TAC Emissions: The fugitive LFG TAC emissions are based on the LFG generation rate, the TAC concentration in the LFG (from source tests conducted in May 2004) and the AP42 assumption that 25% of the gas generated is emitted as fugitive emissions.

Fugitive LFG TAC emissions, lbs/yr = (LFG generation rate, cfm) * (60 m/hr) * (8760 hr/yr) * (TAC ppmv/ 1E6) * (lbmol/386.9 scf) * (TAC mol. wt. lb/lbmol) * (% Fugitive)

IC Engine and Flare Emission Factors: TAC emissions from the IC engine and the flare are based on the calculated NMOC emissions and the concentrations of TACs in the LFG, assuming that the weight fraction of TAC in the NMOC component of the exhaust is the same as the weight fraction of TAC in the NMOC component of the LFG. The emission of HCl, formed during the combustion of the chlorinated pollutants in the LFG, is calculated based on the number of chloride ions in the chlorinated pollutant that were determined by source testing using the equations in AP42. ARB's California Air Toxics Emission Factor Database values were used for those pollutants that were not source tested.

TAC Emissions, lbs/yr = (LFG processed, Mscf) * (NMOC emission factor, lbs/Mscf) * (Weight fraction of TAC in NMOC)

HCl emissions, lbs/yr = (LFG processed, Mscf) * (1000 scf/Mscf) * (Cl- ppmv/1E6) * (lbmol/386.9 scf) * (lbmol HCl/lbmol Cl-) * (36.46 lbs/lbmol)

Leachate Treatment System TAC Emissions: The TAC emissions from the leachate treatment system were estimated by calculating the weight fraction of TAC measured in the leachate and multiplying the total POC emissions by the weight fraction for each TAC.

TAC Emissions, lbs/yr = (POC emissions, lbs/yr) * (Weight fraction of TAC in POC)

III. HEALTH RISK ANALYSIS: This project will result in the emissions of several TACs in quantities that would trigger the requirement for a health risk assessment. Although there are no changes proposed to the HWMF flare (A11), the HWMF flare, which was permitted within the last two years, is considered a related project under the District's Risk Management Policy. The Policy requires that the cumulative impacts from all related projects permitted within the last two years be included in the risk screening analysis. As such, the health risk analysis includes the impacts from the landfill fugitive emissions, the three landfill gas-fired IC engines, the A8 flare, the A11 flare and the leachate treatment system.

A. TAC Emissions: TAC emissions for this project were estimated as described in section II. F. TAC emissions for the HWMF flare are from the engineering evaluation for application number 8514. The emission rate input into the model for the cancer risk run is the sum of the product of each carcinogenic TAC emission rate (g/s), unit risk factor $(\mu g/m^3)^{-1}$ and a scalar (1E6) so that the resulting output from the model would be the increased cancer risk. Likewise, the emission rate input into the model for the chronic hazard index is the sum of the each TAC emission rate (g/s) divided by the TAC reference exposure level so that the resulting output from the model would be the increased chronic hazard index. These model inputs are calculated and presented in Appendix A-3.

B. Health Values: The health values used in this analysis for toxic air contaminants (TACs) that have only an inhalation pathway are from Table 1 – Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values, updated August 23, 2004. For the speciated PAHs, the unit risk values include the contributions from the inhalation, soil ingestion and dermal absorption pathways and were derived from the California Air Resources Board's Hotspots Analysis and Reporting Program (HARP), version 1.0 for a unit concentration. Likewise, for mercury the reference exposure level include the contributions from the inhalation, soil ingestion and dermal absorption pathways and was also derived from the California Air Resources Board's Hotspots Analysis and Reporting Program (HARP), version 1.0 for a unit concentration.

C. Dispersion Modeling: The ISCST3 dispersion model was run with the emissions inputs described in section A above, Chevron Refinery meteorological data and the rural land use option to determine the maximum cancer risk and chronic hazard index.

D. Cancer Risk: The modeling results show that the maximum incremental cancer risk, 3 in a million, is located in an area (mud flats) at the northeast boundary of the facility that has no residential or industrial receptors. Estimates of residential are based on the assumption that residents are exposed to continuous annual average pollutant concentrations over a 70-year lifetime. The maximum incremental cancer risk for a residential receptor (located to the southeast of the facility) is 0.1 in a million. Estimates of non-residential off-site worker risk are based on the assumption that an off-site worker is exposed 8 hours per day, 240 days per year for 46 years out of a 70-year lifetime. The cancer risk exposure adjustment factor for the worker receptor is 0.144. The maximum incremental cancer risk for a worker receptor (located at the wastewater treatment facility to the east of the facility) is 0.2 in a million (1.2 x 0.144).

E. Hazard Index: The modeling results show that the maximum incremental chronic hazard index, 0.09, is located in an area (mud flats) at the northeast boundary of the facility that has no residential or industrial receptors. Estimates of residential are based on the assumption that residents are exposed to continuous annual average pollutant concentration. The maximum incremental chronic hazard index for a residential receptor (located to the southeast of the facility) is 0.002. Estimates of non-residential off-site worker risk are based on the assumption that an off-site worker is exposed 8 hours per day, 240 days per year. The chronic hazard index exposure adjustment factor for the worker receptor is 0.22. The maximum incremental chronic hazard index for a worker receptor is 0.006 (0.025 x 0.22).

Additional details of the analysis are included in Appendix A-4.

IV. MONITORING REQUIREMENTS: No changes are being made to the number of sources and abatement devices at this facility. However, the proposed capacity changes will now subject the facility to the requirements of 40 CFR Part 60, Subpart WWW Standards of Performance for Municipal Solid Waste Landfills. The facility's continued compliance with the monitoring requirements of District Regulation 8, Rule 34 "Solid Waste Disposal Sites" will also satisfy the monitoring requirements of Subpart WWW. References to the monitoring requirements of Subpart WWW will be included in the MFR Permit revision.

V. STATEMENT OF COMPLIANCE

A. California Environmental Quality Act Requirements (CEQA, Regulation 2-1-310 and 426): The increase in throughput at the Leachate Treatment System (S22-30 & S38-40) is evaluated in accordance with District Permit Handbook Chapter 11.9 "Miscellaneous Organic Operations" and the increases in LFG to the IC Engines (S5, S6 and S37) are evaluated in accordance with District Permit Handbook Chapter 2.3 "Internal Combustion Engine"; as such, these sources qualify for a ministerial exemption from CEQA review. The modification for the Flare (A8) is categorically exempt from CEQA review pursuant to Regulation 2-1-312.2, because the flare is an abatement device. The Permit Handbook chapter for landfills has not yet been written, as such, a case-by-case CEQA Determination has to be made for the expansion of the Landfill with Gas Collection System (S15). The Lead Agency under CEQA is the Contra Costa County Community Development Department. The applicant has submitted a Draft and Final Environmental Impact Report prepared under the supervision of the Lead Agency. This complies with the CEQA-Related Information Requirements under Regulation 2-1-426.2.

B. Public Notice, Schools (Regulation 2-1-412): The project is over 1000 feet from the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

C. Best Available Control Technology (BACT, Regulation 2-2-301): This project will result in both daily and annual emission increases of Precursor Organic Compounds (POC), Nitrogen Oxides (NOx), Carbon Monoxide (CO), Particulate Matter (PM10), and Sulfur Oxides (Sox) at the IC engines and the flare.

BACT for the IC Engines: Maximum daily emissions from each of the IC Engines (S5, S6 and S37) will exceed 10 pounds/day and BACT is required. These existing sources had been previously determined to meet BACT under application number 6272 (for S5 and S6) and application number 27193 (for S37). Recent source testing (February, May and December 2004) show that the emissions from these sources are below the permit conditions concentration limits and will continue to meet the BACT requirement (District's BACT/TBACT Workbook Document # 96.2.1 06/02/95).

BACT and RACT for the Flare: Maximum daily POC emissions from the flare (A8) will exceed 10 pounds/day and BACT is required. Since the Flare satisfies a Best Available Retrofit Control Technology (BARCT) requirement (Regulation 8-34-301.3) for control of NMOC emissions from the S15 Landfill, the secondary pollutant emissions (NO_x, CO, PM_{10}, and SO_2) are exempt from BACT requirements pursuant to Regulation 2-2-112. Regulation 2-2-112 requires that Reasonably Available Control Technology (RACT) be used to control secondary pollutant emissions.

From the District's BACT/TBACT Workbook Document # 80.1 12/16/91, BACT for POC emissions from a landfill gas flare is the use of an enclosed ground flare with (1) a minimum retention time of 0.6 seconds, (2) a minimum combustion zone temperature of 1400 °F, and (3) automatic controls for combustion air, gas shut-off, and flare restart. The applicant has confirmed that the A8 Flare is an enclosed ground flare that meets the three criteria identified above and satisfies the BACT requirements for POC emissions.

V. STATEMENT OF COMPLIANCE (continued)

Based on recent source test (May 2004), the A8 Flare would comply with the RACT limits of 0.06 pounds of NO_x per MM BTU and 0.30 pounds of CO per MM BTU. The landfill gas at this facility is expected to contain no more than 150 ppmv of total reduced sulfur compounds, which is considered RACT for SO_2 emissions. This flare is equipped with a fuel filter and a condenser to remove particulate matter and water from the landfill gas prior to combustion. Such fuel pretreatment systems are considered RACT for PM_{10} emissions from landfill gas flares.

D. Offsets (Regulation 2-2-302 and 303): A complete application for this project was received prior to the December 21, 2004 amendment to Regulation 2-2-302 lowering the threshold under which a facility would be qualified to use offsets from the small facilities bank. As such, for the purpose of compliance with section 302, this project will be evaluated under the version that was in effect at the time that the complete application was received: Facilities with POC or NOx emission less than 50 tons per year are allowed to use offsets from the Small Facility Banking Account (SFBA).

POC and NOx: With the implementation of this expansion, the maximum potential emissions from WCCSL are 26.4 tons per year of POC and 49.2 tons per year of NOx. Since facility-wide emissions will exceed 15 tons per year, POC and NOx offsets are required for any emission increases of these pollutants. WCCSL is qualified to use the SFBA for the required offsets, because facility-wide maximum permitted emissions will be less than 50 tons per year of each pollutant. As discussed in section II.E., cumulative emission increases for this application plus any current balances are 6.27 tons per year of POC and 10.44 tons per year of NOx. The offset ratio for facilities using the SFBA is 1.0 to 1.0. The SFBA will provide 6.27 tons per year of POC emission reduction credits and 10.44 tons per year of NOx emission reduction credits for this application.

PM10 and SO_2: The PM10 and SO_2 offset requirements in Regulation 2-2-303 only apply if the facility is considered a Major Facility for those pollutants. Total facility-wide emissions are 33.87 tons per year of SO_2 and 11.00 tons per year of PM10. Since facility-wide PM10 and SO_2 emissions are less than 100 tons per year, the WCCSL is not a Major Facility for these pollutants and offsets are not required.

E. Prevention of Significant Deterioration (PSD, Regulation 2-2-304, 305 and 306): WCCSL is a Title V Major Facility because CO emissions exceed 100 tons per year. However, WCCSL is not a new Major Facility, this project is not considered a major modification and CO emission increases are less than 100 tons per year; thus, the PSD requirements of Regulation 2-2-305 do not apply. Emissions of POC, NOx, SO_2, or PM10 are less than 100 tons per year and this facility is not a Major Facility for any of these pollutants; thus, the PSD requirements of Regulation 2-2-304 do not apply. Emission from WCCSL will not exceed the annual average amounts of the non-criteria pollutants specified in Regulation 2-2-306 and the PSD requirements of this section do not apply.

F. Maximum Achievable Control Technology (MACT, Regulation 2-2-317): Total Hazardous Air Pollutant (HAP) emissions from WCCSL are less than 25 tons per year with no single HAP emissions exceeding 10 tons per year; thus, WCCSL is not major facility of HAPs and Regulation 2-2-317 does not apply.

G. New Source Review for Toxic Air Contaminants: As discussed in section III, the District's Risk Management Policy requires that the cumulative impacts from all related projects permitted within the last two years be included in the health risk analysis. The cumulative impacts due to the TAC emissions from the HWMF flare permitted under application number 8514 and the TAC emissions from the sources in this application were evaluated. The maximum incremental cancer risk is 0.6 in a million and the maximum incremental chronic hazard index is 0.006. With these levels of risk, the project complies with the District's Toxic Risk Management Policy.

V. STATEMENT OF COMPLIANCE (continued)

H. Major Facility Review (MFR, Regulation 2, Rule 6): A Title V Permit has been issued for this facility. The proposed expansion of the landfill is considered a modification under 40 CFR Part 60, Subpart WWW Standards of Performance for Municipal Solid Waste Landfills and will require a significant revision to the MFR Permit pursuant to Regulation 2-6-226.2. The necessary Title V MFR Permit revisions will be proposed under application number 11374 in a separate document. This evaluation report serves as the statement of basis for the significant MFR permit revision.

I. Regulation 8, Rule 34: The operation of the S15 landfill, the S5, S6, and S37 LFG-fired IC engines and the A8 LFG flare are subject to Regulation 8, Rule 34 "Solid Waste Disposal Sites". WCCSL is expected to comply with Regulation 8, Rule 34 by complying with the monitoring requirements of section 500, maintaining a LFG collection system and sending the LFG collected to the three engines and the flare for combustion.

A8 LFG Flare: Section 301.3 requires that the flare either reduces non-methane organic compound (NMOC) emissions by 98 wt% or emits no more than 30 ppmv of NMOC, expressed as methane at 3% oxygen. Based on the May 2004 source test, the flare complies with section 301.3 with emissions at 1.1 ppmv NMOC, expressed as methane and corrected to 3% oxygen.

S5, S6 and S37 LFG-fired IC Engines: Section 301.4 requires that the IC engines either reduces non-methane organic compound (NMOC) emissions by 98 wt% or emits no more than 120 ppmv of NMOC, expressed as methane at 3% oxygen. Based on the May 2004 source test, the engines comply with section 301.4 with average emissions less than 110 ppmv NMOC, expressed as methane and corrected to 3% oxygen.

J. Regulation 8, Rule 2: The operation of the leachate treatment system (S22-S30, S38, S39 and S40) is subject to Regulation 8, Rule 2 "Miscellaneous Operations". Combined emissions from all the sources comprising the leachate treatment system will be less than 15 pounds per day and less than 300 ppm total carbon, which will meet the requirements of section 301.

K. Regulation 9, Rule 8: The operation of the LFG-fired IC engines (S5, S6 and S37) are subject to Regulation 9, Rule 8 "Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines." Based on the May 2004 source test, these lean-burn engines complies with section 302 with NOx concentration less than 37 ppmv at 15% oxygen and CO concentration less than 310 ppmv at 15% oxygen.

L. Regulation 6: The operation of the Landfill is subject to Regulation 6 "Particulate Matter and Visible Emissions." Compliance with the current permit condition #17821, part 4 is expected to ensure compliance with sections 301 and 305.

M. Federal Requirements: WCCSL's proposed increase in landfill capacity is considered a modification that occurs after May 30, 1991 and would subject the facility to the requirements of 40 CFR Part 60, Subpart WWW, the NSPS for Municipal Solid Waste (MSW) Landfills. WCCSL will continue to be subject to 40 CFR Part 63, Subpart AAAA, the NESHAPs for MSW Landfills. Per 40 CFR Part 60.33c(d)(1), this facility is no longer subject to 40 CFR Part 60, Subpart Cc, the NSPS Emission Guidelines and Compliance Times for MSW Landfills. Based on their current compliance with Regulation 8, Rule 34 and their Title V permit, WCCSL is expected to be in compliance with the NSPS (subpart WWW) under which they will now be subject.

VI. PERMIT CONDITIONS: The changes presented below, in strikeout and underline text, are the revisions to permit condition for this project.

A. For sources S5 and S6, Internal Combustion Lean Burn Engines Condition # 5771:

2. The A-8 Flare shall be operated when one or more Internal Combustion Engines (S-5, S-6, or S-37) are not operating~~, but A-8 shall not be operated when all three engines are operating concurrently~~. An automatically controlled landfill gas valve shall be installed and maintained to insure that landfill gas is immediately made available for flaring to the Flare, A-8, when one or more engines are down. Under no circumstances shall raw landfill gas be vented to the atmosphere. This limitation does not apply to unavoidable landfill gas emissions that occur during control system installation, maintenance, or repair that is performed in compliance with Regulation 8, Rule 34, Sections 113, 116, 117, or 118 or to inadvertent component leaks that do not exceed the limits specified in 8-34-301.2. (basis: Regulation 8-34-301)

4. Nitrogen Oxide (NOX) emissions from each Internal Combustion Engine (S-5 and S-6) shall not exceed ~~76~~63 ppmv, corrected to 15% O2, dry basis. (basis: BACT, Offsets)

8. The heat input to each internal combustion engine shall not exceed ~~259.2~~285.6 million BTU per day nor ~~94,608~~104,250 million BTU per year. (basis: Regulation 2-1-301, Offsets)

B. For sources S37, Internal Combustion Lean Burn Engine Condition # 17812:

2. The heat input to S-37 shall not exceed ~~229.2~~251.9 million BTUs per day nor ~~83,658~~91,951 million BTUs during any consecutive 12-month period. (basis: Offsets and Cumulative Increase)

4. In the event of shutdown of S-37, landfill gas shall be automatically diverted to the A-8 Flare. The A-8 Flare shall be operated when one or more Internal Combustion Engines (S-5, S-6, or S-37) are not operating~~, but A-8 shall not be operated when all three engines are operating concurrently~~. Raw landfill gas shall not be vented to the atmosphere, except for unavoidable landfill gas emissions that occur during control system installation, maintenance, or repair that is performed in compliance with Regulation 8, Rule 34, Sections 113, 116, 117, or 118 and for inadvertent component leaks that do not exceed the limits specified in 8-34-301.2. (basis: Regulation 8-34-301)

5. S-37 shall emit no more than ~~71~~63 ppmv of nitrogen oxides on dry basis, corrected to 15% oxygen. (basis: BACT, Offsets)

VI. PERMIT CONDITIONS (continued)

C. For source S15, Landfill with Landfill Gas Collection System and A8 Landfill Gas Flare Condition # 17821:

1. Total waste accepted and placed at the landfill shall not exceed 2,500 tons in any single day. The total cumulative amount of all wastes placed in the landfill shall not exceed ~~10.92~~13.0 million tons. The maximum design capacity of the landfill (total volume of all wastes and cover materials placed in the landfill, excluding final cover) shall not exceed ~~18.2~~21.47 million cubic yards. (basis: Regulation 2-1-301, Cumulative Increase)

8. The A-8 Landfill Gas Flare shall be operated when one or more engines (S-5, S-6, or S-37) are not operating. ~~The A-8 Landfill Gas Flare shall not be operated when all three engines (S-5, S-6, and S-37) are operating.~~ The Heat Input to the A-8 Landfill Gas Flare shall not exceed ~~544~~1,188 million BTU per day nor ~~198,560~~433,693 million BTU per year. In order to demonstrate compliance with this part, the Permit Holder shall calculate and record on a monthly basis the maximum daily and total monthly heat input to the flare based on the landfill gas flow rate recorded pursuant to part 14, the average methane concentration in the landfill gas based on the most recent source test, and a high heating value for methane of 1013 BTU/ft3 at 60 degrees F. (basis: Cumulative Increase and Regulation 2-1-301)

10. Total reduced sulfur compounds in the collected landfill gas shall be monitored as a surrogate for monitoring sulfur dioxide in control system's exhaust. The concentration of total reduced sulfur compounds in the collected landfill gas shall not exceed ~~1300~~300 ppmv (dry). In order to demonstrate compliance with this part, the Permit Holder shall measure the total sulfur content in collected landfill gas on a quarterly basis using a draeger tube. The landfill gas sample shall be taken from the main landfill gas header. The Permit Holder shall follow the manufacturer's recommended procedures for using the draeger tube and interpreting the results. The Permit Holder shall conduct the first draeger tube test no later than 3 months after the issue date of the MFR Permit and quarterly thereafter. (basis: Regulation 9-1-302, Cumulative Increase)

VI. PERMIT CONDITIONS (continued)

C. For source S15, Landfill with Landfill Gas Collection System and A8 Landfill Gas Flare Condition # 17821:

12. The Permit Holder shall conduct a characterization of the landfill gas concurrent with the annual source test required by part 11 above. The landfill gas sample shall be drawn from the main landfill gas header. In addition to the compounds listed in part 11.b, the landfill gas shall be analyzed for all the organic compounds below. All concentrations shall be reported on a dry basis. The test report shall be submitted to the Compliance and Enforcement Division within 45 days of the test date. (basis: Toxic Risk Management Policy, AB-2588 Air Toxics Hot Spots Act, and Regulation 8-34-412)

Organic Compounds	Organic Compounds
acrylonitrile	ethylene dibromide
benzene	fluorotrichloromethane
benzyl chloride	hexane
1,3 butadiene	isopropyl alcohol
carbon tetrachloride	methylene chloride
chlorobenzene	methyl ethyl ketone
chlorodifluoromethane	methyl tert butyl ether
~~chloroethane~~	perchloroethylene
chloroform	styrene
1,1 dichloroethane	toluene
1,1 dichloroethene	1,1,1 trichloroethane
1,2 dichloroethane	1,1,2,2 tetrachloroethane
1,4 dichlorobenzene	trichloroethylene
dichlorodifluoromethane	vinyl acetate
dichlorofluoromethane	vinyl chloride
1,4 dioxane	xylenes
ethylbenzene	

*13. If the concentrations (dry basis) of toxic air contaminants in the collected landfill gas exceed any of the limits listed below, the Permit Holder shall submit a permit application for a Change of Permit Conditions within 30 days of receiving the test results.

Benzene	=	8.9	ppmv
Chlorobenzene	=	1.5	ppmv
Trichloroethylene	=	0.873	ppmv
Ethylbenzene	=	41	ppmv
Vinyl Chloride	=	6.4	ppmv
Xylene	=	78	ppmv
Toluene	=	110	ppmv
Perchloroethylene	=	4	ppmv

(basis: Toxic Risk Management Policy and AB-2588 Air Toxics Hot Spots Act)

VI. PERMIT CONDITIONS (continued)

D. For sources S22 Primary Oil/Water Separator, TK-2
S23 SECONDARY OIL/WATER SEPARATOR
S24 Load Equalization Tank, TK-7
S25 Photo-Oxidizer Tank, TK-5
S26 Neutralization Tank, TK-9
S27 First Stage Clarifier, TK-8
S28 Air Stripper Sump
S29 Floculation/Mixing Tank, TK-8A
S30 Air Stripper
S38 Secondary Oil/Water Separator, TK-4
S39 Sludge Storage Tank, TK-3
S40 Equalization Tank, TK-1

Condition # 7463:

5. The wastewater throughput rate to the leachate collection, recovery, and treatment system (LCRTS) shall not exceed ~~1200~~1,700 gallons per hour; nor ~~28,800~~40,800 gallons per day; nor ~~10,512,000~~14,892,000 gallons per year. (basis: Cumulative Increase)

VII. RECOMMENDATION: Issue a revised Permit to Operate with the above change in conditions for the sources listed below.

S15 Landfill with Landfill Gas Collection System abated by A8 Landfill Gas Flare
S5 Internal Combustion Lean Burn Engines
S6 Internal Combustion Lean Burn Engines
S37 Internal Combustion Lean Burn Engine
S22 Primary Oil/Water Separator, TK-2 abated by A1 and A2 Carbon Adsorbers
S23 SECONDARY OIL/WATER SEPARATOR abated by A1 and A2 Carbon Adsorbers
S24 Load Equalization Tank, TK-7 abated by A1 and A2 Carbon Adsorbers
S25 Photo-Oxidizer Tank, TK-5 abated by A1 and A2 Carbon Adsorbers
S26 Neutralization Tank, TK-9 abated by A1 and A2 Carbon Adsorbers
S27 First Stage Clarifier, TK-8 abated by A1 and A2 Carbon Adsorbers
S28 Air Stripper Sump abated by A3, A4, A5 and A6 Carbon Adsorbers
S29 Floculation/Mixing Tank, TK-8A abated by A1 and A2 Carbon Adsorbers
S30 Air Stripper abated by A3, A4, A5 and A6 Carbon Adsorbers
S38 Secondary Oil/Water Separator, TK-4 abated by A1 and A2 Carbon Adsorbers
S39 Sludge Storage Tank, TK-3 abated by A1 and A2 Carbon Adsorbers
S40 Equalization Tank, TK-1 abated by A1 and A2 Carbon Adsorbers

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Jane H. Lundquist
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Engineering Division
April 27, 2005

Appendix A-1

Landfill Gas Emissions Model Results

RICHMOND, CALIFORNIA (047414)

Period of Record Monthly Climate Summary

Period of Record : 12/1/1950 to 9/30/2004

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	57.6	61.5	63.9	66.6	69.0	71.0	70.4	71.0	74.1	72.2	64.7	58.1	66.7
Average Min. Temperature (F)	42.5	45.2	46.8	48.9	51.8	54.5	55.4	56.1	56.3	53.3	47.9	43.3	50.2
Average Total Precipitation (in.)	4.86	3.86	3.07	1.54	0.50	0.17	0.04	0.08	0.23	1.24	3.10	4.44	23.11
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 97.5% Min. Temp.: 97.4% Precipitation: 98.8% Snowfall: 99% Snow Depth: 99%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Source: http://www.wrcc.dri.edu/summary/climsmsfo.html

Source: C:\LFGASEM\EXPANDRY.PRM

Model Parameters

Lo : 100.00 m^3 / Mg ***** User Mode Selection *****
k : 0.0200 1/yr ***** User Mode Selection *****
NMOC : 4000.00 ppmv ***** User Mode Selection *****
Methane : 50.0000 % volume
Carbon Dioxide : 50.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1953 Current Year : 2008 Closure Year: 2008
Capacity : 11793600 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 0.00 Mg/year

Model Results

Year	Refuse In Place (Mg)	Methane Emission Rate (Mg/yr)	Methane Emission Rate (Cubic m/yr)
1954	1.588E+05	2.118E+02	3.175E+05
1955	3.175E+05	4.195E+02	6.288E+05
1956	4.763E+05	6.230E+02	9.338E+05
1957	6.350E+05	8.225E+02	1.233E+06
1958	7.938E+05	1.018E+03	1.526E+06
1959	9.526E+05	1.210E+03	1.813E+06
1960	1.111E+06	1.398E+03	2.095E+06
1961	1.270E+06	1.582E+03	2.371E+06
1962	1.429E+06	1.762E+03	2.641E+06
1963	1.588E+06	1.939E+03	2.907E+06
1964	1.746E+06	2.113E+03	3.167E+06
1965	1.905E+06	2.283E+03	3.421E+06
1966	2.064E+06	2.449E+03	3.671E+06
1967	2.223E+06	2.613E+03	3.916E+06
1968	2.381E+06	2.773E+03	4.156E+06
1969	2.540E+06	2.930E+03	4.391E+06
1970	2.699E+06	3.083E+03	4.622E+06
1971	2.858E+06	3.234E+03	4.848E+06
1972	3.016E+06	3.382E+03	5.069E+06
1973	3.175E+06	3.527E+03	5.287E+06
1974	3.334E+06	3.669E+03	5.499E+06
1975	3.493E+06	3.808E+03	5.708E+06
1976	3.651E+06	3.944E+03	5.912E+06
1977	3.810E+06	4.078E+03	6.113E+06
1978	3.969E+06	4.209E+03	6.309E+06
1979	4.128E+06	4.338E+03	6.502E+06
1980	4.287E+06	4.464E+03	6.691E+06
1981	4.445E+06	4.587E+03	6.876E+06
1982	4.604E+06	4.708E+03	7.057E+06
1983	4.763E+06	4.827E+03	7.235E+06
1984	4.922E+06	4.943E+03	7.409E+06
1985	5.080E+06	5.057E+03	7.580E+06
1986	5.239E+06	5.169E+03	7.747E+06
1987	5.538E+06	5.465E+03	8.192E+06
1988	5.829E+06	5.745E+03	8.612E+06
1989	6.141E+06	6.048E+03	9.065E+06
1990	6.453E+06	6.345E+03	9.510E+06
1991	6.714E+06	6.567E+03	9.843E+06
1992	6.943E+06	6.743E+03	1.011E+07
1993	7.143E+06	6.876E+03	1.031E+07
1994	7.391E+06	7.071E+03	1.060E+07

Model Results

Year	Refuse In Place (Mg)	Methane Emission Rate (Mg/yr)	Methane Emission Rate (Cubic m/yr)	
1995	7.657E+06	7.286E+03	1.092E+07	
1996	7.959E+06	7.544E+03	1.131E+07	
1997	8.239E+06	7.769E+03	1.164E+07	
1998	8.645E+06	8.156E+03	1.223E+07	
1999	8.913E+06	8.352E+03	1.252E+07	
2000	9.167E+06	8.526E+03	1.278E+07	
2001	9.406E+06	8.676E+03	1.300E+07	
2002	9.682E+06	8.872E+03	1.330E+07	
2003	9.960E+06	9.068E+03	1.359E+07	
2004	1.022E+07	9.241E+03	1.385E+07	
2005	1.049E+07	9.417E+03	1.412E+07	
2006	1.114E+07	1.010E+04	1.514E+07	
2007	1.179E+07	1.077E+04	1.614E+07	m3/yr CH4 = 2169 cfm LFG
2008	1.179E+07	1.055E+04	1.582E+07	
2009	1.179E+07	1.034E+04	1.550E+07	
2010	1.179E+07	1.014E+04	1.520E+07	
2011	1.179E+07	9.938E+03	1.490E+07	
2012	1.179E+07	9.741E+03	1.460E+07	
2013	1.179E+07	9.548E+03	1.431E+07	
2014	1.179E+07	9.359E+03	1.403E+07	
2015	1.179E+07	9.174E+03	1.375E+07	
2016	1.179E+07	8.992E+03	1.348E+07	
2017	1.179E+07	8.814E+03	1.321E+07	
2018	1.179E+07	8.639E+03	1.295E+07	
2019	1.179E+07	8.468E+03	1.269E+07	
2020	1.179E+07	8.301E+03	1.244E+07	
2021	1.179E+07	8.136E+03	1.220E+07	
2022	1.179E+07	7.975E+03	1.195E+07	
2023	1.179E+07	7.817E+03	1.172E+07	
2024	1.179E+07	7.662E+03	1.149E+07	
2025	1.179E+07	7.511E+03	1.126E+07	
2026	1.179E+07	7.362E+03	1.103E+07	
2027	1.179E+07	7.216E+03	1.082E+07	
2028	1.179E+07	7.073E+03	1.060E+07	
2029	1.179E+07	6.933E+03	1.039E+07	
2030	1.179E+07	6.796E+03	1.019E+07	
2031	1.179E+07	6.661E+03	9.985E+06	
2032	1.179E+07	6.529E+03	9.787E+06	
2033	1.179E+07	6.400E+03	9.593E+06	
2034	1.179E+07	6.273E+03	9.403E+06	
2035	1.179E+07	6.149E+03	9.217E+06	
2036	1.179E+07	6.027E+03	9.035E+06	
2037	1.179E+07	5.908E+03	8.856E+06	
2038	1.179E+07	5.791E+03	8.680E+06	
2039	1.179E+07	5.676E+03	8.508E+06	
2040	1.179E+07	5.564E+03	8.340E+06	
2041	1.179E+07	5.454E+03	8.175E+06	
2042	1.179E+07	5.346E+03	8.013E+06	
2043	1.179E+07	5.240E+03	7.854E+06	
2044	1.179E+07	5.136E+03	7.699E+06	
2045	1.179E+07	5.035E+03	7.546E+06	
2046	1.179E+07	4.935E+03	7.397E+06	
2047	1.179E+07	4.837E+03	7.250E+06	
2048	1.179E+07	4.741E+03	7.107E+06	
2049	1.179E+07	4.647E+03	6.966E+06	
2050	1.179E+07	4.555E+03	6.828E+06	
2051	1.179E+07	4.465E+03	6.693E+06	
2052	1.179E+07	4.377E+03	6.560E+06	
2053	1.179E+07	4.290E+03	6.431E+06	
2054	1.179E+07	4.205E+03	6.303E+06	

Model Results

Year	Refuse In Place (Mg)	Methane Emission Rate (Mg/yr)	Methane Emission Rate (Cubic m/yr)
2055	1.179E+07	4.122E+03	6.178E+06
2056	1.179E+07	4.040E+03	6.056E+06
2057	1.179E+07	3.960E+03	5.936E+06
2058	1.179E+07	3.882E+03	5.819E+06
2059	1.179E+07	3.805E+03	5.703E+06
2060	1.179E+07	3.730E+03	5.590E+06
2061	1.179E+07	3.656E+03	5.480E+06
2062	1.179E+07	3.583E+03	5.371E+06
2063	1.179E+07	3.512E+03	5.265E+06
2064	1.179E+07	3.443E+03	5.161E+06
2065	1.179E+07	3.375E+03	5.058E+06
2066	1.179E+07	3.308E+03	4.958E+06
2067	1.179E+07	3.242E+03	4.860E+06
2068	1.179E+07	3.178E+03	4.764E+06
2069	1.179E+07	3.115E+03	4.670E+06
2070	1.179E+07	3.054E+03	4.577E+06
2071	1.179E+07	2.993E+03	4.486E+06
2072	1.179E+07	2.934E+03	4.398E+06
2073	1.179E+07	2.876E+03	4.311E+06
2074	1.179E+07	2.819E+03	4.225E+06
2075	1.179E+07	2.763E+03	4.142E+06
2076	1.179E+07	2.708E+03	4.060E+06
2077	1.179E+07	2.655E+03	3.979E+06
2078	1.179E+07	2.602E+03	3.900E+06
2079	1.179E+07	2.551E+03	3.823E+06
2080	1.179E+07	2.500E+03	3.747E+06
2081	1.179E+07	2.451E+03	3.673E+06
2082	1.179E+07	2.402E+03	3.600E+06
2083	1.179E+07	2.354E+03	3.529E+06
2084	1.179E+07	2.308E+03	3.459E+06
2085	1.179E+07	2.262E+03	3.391E+06
2086	1.179E+07	2.217E+03	3.324E+06
2087	1.179E+07	2.173E+03	3.258E+06
2088	1.179E+07	2.130E+03	3.193E+06
2089	1.179E+07	2.088E+03	3.130E+06
2090	1.179E+07	2.047E+03	3.068E+06
2091	1.179E+07	2.006E+03	3.007E+06
2092	1.179E+07	1.967E+03	2.948E+06
2093	1.179E+07	1.928E+03	2.889E+06
2094	1.179E+07	1.890E+03	2.832E+06
2095	1.179E+07	1.852E+03	2.776E+06
2096	1.179E+07	1.815E+03	2.721E+06
2097	1.179E+07	1.779E+03	2.667E+06
2098	1.179E+07	1.744E+03	2.614E+06
2099	1.179E+07	1.710E+03	2.563E+06
2100	1.179E+07	1.676E+03	2.512E+06
2101	1.179E+07	1.643E+03	2.462E+06
2102	1.179E+07	1.610E+03	2.413E+06
2103	1.179E+07	1.578E+03	2.366E+06
2104	1.179E+07	1.547E+03	2.319E+06
2105	1.179E+07	1.516E+03	2.273E+06
2106	1.179E+07	1.486E+03	2.228E+06
2107	1.179E+07	1.457E+03	2.184E+06
2108	1.179E+07	1.428E+03	2.141E+06
2109	1.179E+07	1.400E+03	2.098E+06
2110	1.179E+07	1.372E+03	2.057E+06
2111	1.179E+07	1.345E+03	2.016E+06
2112	1.179E+07	1.318E+03	1.976E+06
2113	1.179E+07	1.292E+03	1.937E+06
2114	1.179E+07	1.267E+03	1.899E+06

Model Results

Year	Refuse In Place (Mg)	Methane Emission Rate (Mg/yr)	Methane Emission Rate (Cubic m/yr)
2115	1.179E+07	1.242E+03	1.861E+06
2116	1.179E+07	1.217E+03	1.824E+06
2117	1.179E+07	1.193E+03	1.788E+06
2118	1.179E+07	1.169E+03	1.753E+06
2119	1.179E+07	1.146E+03	1.718E+06
2120	1.179E+07	1.123E+03	1.684E+06
2121	1.179E+07	1.101E+03	1.650E+06
2122	1.179E+07	1.079E+03	1.618E+06
2123	1.179E+07	1.058E+03	1.586E+06
2124	1.179E+07	1.037E+03	1.554E+06
2125	1.179E+07	1.016E+03	1.524E+06
2126	1.179E+07	9.963E+02	1.493E+06
2127	1.179E+07	9.766E+02	1.464E+06
2128	1.179E+07	9.573E+02	1.435E+06
2129	1.179E+07	9.383E+02	1.406E+06
2130	1.179E+07	9.197E+02	1.379E+06
2131	1.179E+07	9.015E+02	1.351E+06
2132	1.179E+07	8.837E+02	1.325E+06
2133	1.179E+07	8.662E+02	1.298E+06
2134	1.179E+07	8.490E+02	1.273E+06
2135	1.179E+07	8.322E+02	1.247E+06
2136	1.179E+07	8.157E+02	1.223E+06
2137	1.179E+07	7.996E+02	1.198E+06
2138	1.179E+07	7.837E+02	1.175E+06
2139	1.179E+07	7.682E+02	1.152E+06
2140	1.179E+07	7.530E+02	1.129E+06
2141	1.179E+07	7.381E+02	1.106E+06
2142	1.179E+07	7.235E+02	1.084E+06
2143	1.179E+07	7.092E+02	1.063E+06
2144	1.179E+07	6.951E+02	1.042E+06
2145	1.179E+07	6.814E+02	1.021E+06
2146	1.179E+07	6.679E+02	1.001E+06
2147	1.179E+07	6.546E+02	9.812E+05
2148	1.179E+07	6.417E+02	9.618E+05
2149	1.179E+07	6.290E+02	9.428E+05
2150	1.179E+07	6.165E+02	9.241E+05
2151	1.179E+07	6.043E+02	9.058E+05
2152	1.179E+07	5.923E+02	8.879E+05
2153	1.179E+07	5.806E+02	8.703E+05
2154	1.179E+07	5.691E+02	8.531E+05
2155	1.179E+07	5.578E+02	8.362E+05
2156	1.179E+07	5.468E+02	8.196E+05
2157	1.179E+07	5.360E+02	8.034E+05
2158	1.179E+07	5.254E+02	7.875E+05
2159	1.179E+07	5.150E+02	7.719E+05
2160	1.179E+07	5.048E+02	7.566E+05
2161	1.179E+07	4.948E+02	7.416E+05
2162	1.179E+07	4.850E+02	7.269E+05
2163	1.179E+07	4.754E+02	7.125E+05
2164	1.179E+07	4.659E+02	6.984E+05
2165	1.179E+07	4.567E+02	6.846E+05
2166	1.179E+07	4.477E+02	6.710E+05
2167	1.179E+07	4.388E+02	6.577E+05
2168	1.179E+07	4.301E+02	6.447E+05
2169	1.179E+07	4.216E+02	6.320E+05
2170	1.179E+07	4.133E+02	6.194E+05
2171	1.179E+07	4.051E+02	6.072E+05
2172	1.179E+07	3.971E+02	5.952E+05
2173	1.179E+07	3.892E+02	5.834E+05
2174	1.179E+07	3.815E+02	5.718E+05

Model Results

Year	Refuse In Place (Mg)	Methane Emission Rate (Mg/yr)	Methane Emission Rate (Cubic m/yr)
2175	1.179E+07	3.739E+02	5.605E+05
2176	1.179E+07	3.665E+02	5.494E+05
2177	1.179E+07	3.593E+02	5.385E+05
2178	1.179E+07	3.522E+02	5.279E+05
2179	1.179E+07	3.452E+02	5.174E+05
2180	1.179E+07	3.383E+02	5.072E+05
2181	1.179E+07	3.316E+02	4.971E+05
2182	1.179E+07	3.251E+02	4.873E+05
2183	1.179E+07	3.186E+02	4.776E+05
2184	1.179E+07	3.123E+02	4.682E+05
2185	1.179E+07	3.062E+02	4.589E+05
2186	1.179E+07	3.001E+02	4.498E+05
2187	1.179E+07	2.941E+02	4.409E+05
2188	1.179E+07	2.883E+02	4.322E+05
2189	1.179E+07	2.826E+02	4.236E+05
2190	1.179E+07	2.770E+02	4.152E+05
2191	1.179E+07	2.715E+02	4.070E+05
2192	1.179E+07	2.662E+02	3.989E+05
2193	1.179E+07	2.609E+02	3.910E+05
2194	1.179E+07	2.557E+02	3.833E+05
2195	1.179E+07	2.507E+02	3.757E+05
2196	1.179E+07	2.457E+02	3.683E+05
2197	1.179E+07	2.408E+02	3.610E+05
2198	1.179E+07	2.361E+02	3.538E+05
2199	1.179E+07	2.314E+02	3.468E+05
2200	1.179E+07	2.268E+02	3.400E+05
2201	1.179E+07	2.223E+02	3.332E+05
2202	1.179E+07	2.179E+02	3.266E+05
2203	1.179E+07	2.136E+02	3.202E+05
2204	1.179E+07	2.094E+02	3.138E+05
2205	1.179E+07	2.052E+02	3.076E+05
2206	1.179E+07	2.012E+02	3.015E+05
2207	1.179E+07	1.972E+02	2.955E+05

Appendix A-2

Criteria

Emission Calculations

Summary of Criteria Emissions

Potential to Emit Emissions							
Device#	Description	NMOC Emissions, tons/yr	NOx Emissions, tons/yr	CO Emissions, tons/yr	PM10 Emissions, tons/yr	SOx Emissions, tons/yr	Emissions Estimated Under
S15	Class II Landfill	12.44					AN11375
A8	Flare for S15	2.01	13.44	67.22	3.76	19.33	AN11375
S5	IC Engine	2.61	11.93	43.33	2.30	4.65	AN11375
S6	IC Engine	2.61	11.93	43.33	2.30	4.65	AN11375
S37	IC Engine	2.30	10.52	31.40	2.25	4.10	AN11375
S22-30 & S38-40	Leachate System	2.68					AN11375
S46	HWMF Landfill	1.43					AN2789 & 8514
A11	Flare for S46	0.34	1.37	6.86	0.39	1.14	AN2789 & 8514
	PTE TOTALS	26.41	49.18	192.14	11.00	33.87	

Incremental Emissions Increase for AN11375						
Device#	Description	NMOC Emissions, tons/yr	NOx Emissions, tons/yr	CO Emissions, tons/yr	PM10 Emissions, tons/yr	SOx Emissions, tons/yr
S15	Class II Landfill	3.71				
A8	Flare for S15	1.09	7.29	36.45	2.04	10.48
S5	IC Engine	0.24	1.10	4.01	0.21	0.43
S6	IC Engine	0.24	1.10	4.01	0.21	0.43
S37	IC Engine	0.21	0.95	2.83	0.20	0.37
S22-30 & S38-40	Leachate System	0.76				
S46 & A11	HWMF Landfill		no change			
	Increase TOTALS	6.25	10.44	47.29	2.67	11.71

Criteria Emission Calculations - Potential to Emit

FUGITIVE LANDFILL EMISSIONS						
Device #	Description	Landfill, tons-in-place	Pollutant	Emission factor, lbs/ton-in-place	NMOC Emissions, lbs/yr	NMOC Emissions, tons/yr
S15	Class II Landfill	13000000	NMOC	1.91E-03	24872	12.44

ENGINE AND FLARE EMISSIONS						
Device #	Description	LFG Processing Rate, scfm	Pollutant	Emission factor, lbs/Mscf	Emissions, lbs/yr	Emissions, tons/yr
S5	IC Engine	356	NMOC	2.79E-02	5220	2.61
S5	IC Engine	356	NOx	1.27E-01	23851	11.93
S5	IC Engine	356	CO	4.63E-01	86658	43.33
S5	IC Engine	356	PM10	2.46E-02	4600	2.30
S5	IC Engine	356	SOx	4.97E-02	9294	4.65
S6	IC Engine	356	NMOC	2.79E-02	5220	2.61
S6	IC Engine	356	NOx	1.27E-01	23851	11.93
S6	IC Engine	356	CO	4.63E-01	86658	43.33
S6	IC Engine	356	PM10	2.46E-02	4600	2.30
S6	IC Engine	356	SOx	4.97E-02	9294	4.65
S37	IC Engine	314	NMOC	2.79E-02	4603	2.30
S37	IC Engine	314	NOx	1.27E-01	21032	10.52
S37	IC Engine	314	CO	3.81E-01	62799	31.40
S37	IC Engine	314	PM10	2.73E-02	4502	2.25
S37	IC Engine	314	SOx	4.97E-02	8198	4.10
A8	Flare for S15	1481	NMOC	5.16E-03	4017	2.01
A8	Flare for S15	1481	NOx	3.45E-02	26890	13.44
A8	Flare for S15	1481	CO	1.73E-01	134449	67.22
A8	Flare for S15	1481	PM10	9.66E-03	7521	3.76
A8	Flare for S15	1481	SOx	4.97E-02	38665	19.33

Emissions = Throughput x Emission Factor

Criteria Emission Calculations - Potential to Emit

LEACHATE TREATMENT SYSTEM EMISSIONS

Source	Max.Throughput, Mgal/yr	POC Emission Factor, lbs/Mgal	Abatement Factor	Maximum POC PTE, tpy
S22	14892	0.005	0.05	1.86E-03
S23	14892	0.004	0.05	1.49E-03
S27	14892	0.046	0.05	1.71E-02
S29	14892	0.02	0.05	7.45E-03
S30	14892	2.2	0.05	8.19E-01
S38	14892	0.005	0.05	1.86E-03
Subtotal				8.49E-01

Maximum POC PTE, tpy = (Throughput, Mgal/yr) * (Emission factor, lbs/Mgal) * (Abatement factor) * (ton/2000 lbs)

Source	M=Mol. Wt., g/mol	P' =Reduced Pressure, psia	D=Tank Diameter, ft.	H=Vapor Space, feet	T=Delta Temp., deg F	F1=Paint Factor	F2=Small Tank Factor	A=Abatement Factor	B=Breathing Loss, POC tpy
S24	66	0.011	4	4	15	1.3	0.2	0.5	3.90E-04
S25	66	0.011	3	3	15	1.15	0.15	0.5	1.36E-04
S26	66	0.011	4	4	15	1.3	0.2	0.5	3.90E-04
S28	66	0.011	4	4	15	1.6	0.2	0.5	4.80E-04
S39	66	0.011	9	9	15	1.6	0.2	0.5	2.95E-03
S40	66	0.011	40	40	15	1.6	0.2	0.5	8.35E-02
Subtotal									8.78E-02

B = 0.0226 M (P')^0.68 D^1.73 H^0.51 T^0.5 F1 F2 A /2000

Source	Q=Throughput, Mgal	M=Mol. Wt., g/mol	P=Vapor Pressure, psia	K4=Turnover Factor	K2=Product Factor	A=Abatement Factor	W=Working Loss, POC tpy
S24	14892	66	0.4	0.1979	1	0.05	4.67E-02
S25	14892	66	0.4	0.1767	1	0.05	4.17E-02
S26	14892	66	0.4	0.5158	1	0.05	1.22E-01
S28	14892	66	0.4	0.1923	1	0.05	4.54E-02
S39	14892	66	0.4	1.13476	1	0.05	2.68E-01
S40	14892	66	0.4	5.158	1	0.05	1.22E+00
Subtotal							1.74E+00

W = 0.024 Q M P K4 K2 A /2000

Total Leachate Emissions, tpy	**2.68E+00**

Criteria Emissions Increase for AN11375

FUGITIVE LANDFILL EMISSIONS								
Device #	Description	Proposed PTE LFG Generation Rate, scfm	SOB PTE LFG Generation Rate, scfm	Increase in LFG Generation Rate, scfm	NMOC ppmv as hexane	Capture Efficiency, %	Increase in NMOC Emissions, lbs/yr	Increase in NMOC Emissions, tons/yr
S15	Class II Landfill	2169	1520	649	391	75	7425	3.71

ENGINE AND FLARE EMISSIONS								
Device #	Description	Proposed PTE LFG Processing Rate, scfm	SOB PTE LFG Processing Rate, scfm	Increase in LFG Processing Rate, scfm	Pollutant	Emission factor, lbs/Mscf	Increase in Emissions, lbs/yr	Increase in Emissions, tons/yr
S5	IC Engine	356	323.1	32.9	NMOC	2.79E-02	483	0.24
S5	IC Engine	356	323.1	32.9	NOx	1.27E-01	2206	1.10
S5	IC Engine	356	323.1	32.9	CO	4.63E-01	8015	4.01
S5	IC Engine	356	323.1	32.9	PM10	2.46E-02	425	0.21
S5	IC Engine	356	323.1	32.9	SOx	4.97E-02	860	0.43
S6	IC Engine	356	323.1	32.9	NMOC	2.79E-02	483	0.24
S6	IC Engine	356	323.1	32.9	NOx	1.27E-01	2206	1.10
S6	IC Engine	356	323.1	32.9	CO	4.63E-01	8015	4.01
S6	IC Engine	356	323.1	32.9	PM10	2.46E-02	425	0.21
S6	IC Engine	356	323.1	32.9	SOx	4.97E-02	860	0.43
S37	IC Engine	314	285.7	28.3	NMOC	2.79E-02	415	0.21
S37	IC Engine	314	285.7	28.3	NOx	1.27E-01	1897	0.95
S37	IC Engine	314	285.7	28.3	CO	3.81E-01	5664	2.83
S37	IC Engine	314	285.7	28.3	PM10	2.73E-02	406	0.20
S37	IC Engine	314	285.7	28.3	SOx	4.97E-02	739	0.37
A8	Flare for S15	1481	678.1	802.9	NMOC	5.16E-03	2178	1.09
A8	Flare for S15	1481	678.1	802.9	NOx	3.45E-02	14579	7.29
A8	Flare for S15	1481	678.1	802.9	CO	1.73E-01	72893	36.45
A8	Flare for S15	1481	678.1	802.9	PM10	9.66E-03	4078	2.04
A8	Flare for S15	1481	678.1	802.9	SOx	4.97E-02	20963	10.48

Criteria Emissions Increase for AN11375

LEACHATE TREATMENT SYSTEM EMISSIONS

Source	Proposed Maximum Throughput, Mgal/yr	Current Maximum Throughput, Mgal/yr	Increase in Throughput, Mgal/yr	POC Emission Factor, lbs/Mgal	Abatement Factor	Increase in Maximum POC PTE, tpy
S22	14892	10512	4380	0.005	0.05	5.48E-04
S23	14892	10512	4380	0.004	0.05	4.38E-04
S27	14892	10512	4380	0.046	0.05	5.04E-03
S29	14892	10512	4380	0.02	0.05	2.19E-03
S30	14892	10512	4380	2.2	0.05	2.41E-01
S38	14892	10512	4380	0.005	0.05	5.48E-04
Subtotal						2.50E-01

Maximum POC PTE, tpy = (Throughput, Mgal/yr) * (Emission factor, lbs/Mgal) * (Abatement factor) / 2000

Since breathing loss are not a function of the throughput, no emissions increase is calculated for the increase in throughput.

Source	Proposed Maximum Throughput, Mgal/yr	Current Maximum Throughput, Mgal/yr	Q=Increase Throughput, Mgal/yr	M=Mol. Weight, g/mol	P=Vapor Pressure, psia	K4= Turnover Factor	K2=Product Factor	A= Abatement Factor	W=Working Loss, POC tpy
S24	14892	10512	4380	66	0.4	0.1979	1	0.05	1.37E-02
S25	14892	10512	4380	66	0.4	0.1767	1	0.05	1.23E-02
S26	14892	10512	4380	66	0.4	0.5158	1	0.05	3.58E-02
S28	14892	10512	4380	66	0.4	0.1923	1	0.05	1.33E-02
S39	14892	10512	4380	66	0.4	1.13476	1	0.05	7.87E-02
S40	14892	10512	4380	66	0.4	5.158	1	0.05	3.58E-01
Subtotal									5.12E-01

W = 0.024 Q M P K4 K2 A /2000

Total Increase in Leachate Emissions, tpy 7.61E-01

Criteria Emission Factor Calculations

S15 Fugitive Landfill Emission Factor					
Maximum LFG Generation Rate, scfm	NMOC ppmv as methane (1)	% Fugitive	NMOC Emissions, lbs/yr	Tons-in-Place	NMOC Emission Factor, lbs/ton-in-place (2)
2169	2105	25	24872	13000000	1.91E-03

(1) NMOC concentration in the LFG from source test conducted in May 2004
(2) NMOC emission factor, lbs/ton-in-place = (LFG generation rate, cfm) * (60 m/hr) * (8760 hr/yr) * (NMOC ppmv/1E6) * (% Fugitive) * (lbmol/386.9 scf) * (16.04lb/lbmol) / (Waste, tons-in-place)

A8 Flare Emission Factors				
	May 27, 2004 Source Test			Average
Fuel Flow rate, scfm	375	375	291	347
LFG THC, ppm as CH4				568350
Exhaust Flow rate, scfm	3006	3006	3006	
%O2	12.1	12.6	12.6	
Exhaust Flow rate @ 3% O2, cfm (1)	1478	1394	1394	
NMOC measured, ppm @ 3%O2	1	1.1	1.1	
NMOC, lbs/min (2)	0.0001	0.0001	0.0001	
NMOC emission factor, lbs/Mscf (3)	0.0002	0.0004	0.0005	0.00033
NMOC reg. limit, ppm @ 3%O2	30	30	30	
NMOC at reg. conc. limit, lbs/min (2)	0.0018	0.0017	0.0017	
NMOC PTE emission factor, lbs/Mscf (3)	0.0049	0.0046	0.0060	0.00516
NOx measured, ppm	18.7	18.5	18.4	
NOx, lbs/min (2)	0.007	0.007	0.007	
NOx emission factor, lbs/Mscf (3)	0.0178	0.0176	0.0226	0.0194
NOx PTE emission factor, lbs/Mscf (4)				0.0345
CO measured, ppm	18.7	18.5	18.4	
CO, lbs/min (2)	0.004	0.004	0.004	
CO emission factor, lbs/Mscf (3)	0.0109	0.0107	0.0138	0.0118
CO PTE emission factor, lbs/Mscf (4)				0.173
PM10 emission factor, lbs/Mscf (5)				0.00966
SOx emission factor, lbs/Mscf (6)				0.0497

(1) Exhaust Flow rate @ 3% O2, cfm = (Measured Exhaust flow rate, cfm) * [(20.9 - measured %O2)/(20.9 - 3)]
(2) Pollutant emission rate, lbs/min = (Exhaust flow rate @ specified % O2, cfm) * (Pollutant conc. @ specified % O2, ppm/1E6) * (lbmol Pollutant/386.9 scf) * (Pollutant mol. wt., lb/lbmol)
(3) Pollutant emission factor, lbs/Mscf = [(Pollutant emission rate, lbs/min) / (Fuel Flow rate, scfm)] * (1000 scf/Mcf)
(4) Based on RACT limits established in AN8514 of 0.06 lbs NOx/MMBtu and 0.30 lbs CO/MMBtu.
Conversion to lbs/Mscf = (lbs pollutant/MMBtu) * (MMBtu/1000000 Btu) * (1013 Btu/scf CH4) * (THC as CH4, ppm/1E6 LFG) * 1000scf/Mscf
(5) PM10 emission factor from AP-42, Table 2.4-5 Emission Rates for Secondary Compounds Exiting Control Devices.
Conversion to lbs/Mscf = (17 lbs/MMscf CH4) * (MMscf/1000 Mscf) * (average CH4 ppm/1E6 LFG)
(6) SOx emission factor is based on proposed permit limit maximum of 300 ppmv total reduced sulfur in LFG.
SOx emission factor, lbs/Mscf = (0.300 scf H2S/Mscf LFG) * (lbmol H2S/386.9 scf H2S) * (lbmol SO2/ lbmol H2S) * (64.06 lbs SO2/lbmol SO2)

Criteria Emission Factor Calculations

S5 and S6 IC Engine Emission Factors							
	S5 5/27/2004 Source Test	S5 2/24/2004 ST#4138	S5 3/27/2003 ST#3132	S6 12/21/2004 ST#5109	S6 5/26/2004 Source Test	S6 7/31/2003 ST#4014	S5 and S6 Average
Fuel Flow rate, scfm	347.5	300.0	350.0	345.0	336.9	403.0	
LFG THC, ppm as CH4		538100	479000	529100	568350	446200	512150
Exhaust Flow rate, scfm	3230	2540	2970	3450	3189	3790	
%O2	9.6	9.8	9.9	10.1	9.8	10.6	
Exhaust Flow rate @ 3% O2, cfm (1)	2039	1575	1825	2082	1978	2181	
Exhaust Flow rate @ 15% O2, cfm (1)	6186	4779	5537	6315	6000	6616	
Methane (THC-NMOC measured), ppm	3036	2700	3410	3440	3071	3270	
Methane, lbs/min (2)	0.41	0.28	0.42	0.49	0.41	0.51	
Methane emission factor, lbs/Mscf (3)	1.17	0.95	1.20	1.43	1.21	1.27	1.20
NMOC measured, ppm @ 3%O2	94.3	131	113	41	108.1	100	
NMOC, lbs/min (2)	0.008	0.009	0.009	0.004	0.009	0.009	
NMOC emission factor, lbs/Mscf (3)	0.0229	0.0285	0.0244	0.0103	0.0263	0.0224	0.0225
NMOC reg. limit, ppm @ 3%O2	120	120	120	120	120	120	
NMOC at reg. conc. limit, lbs/min (2)	0.010	0.008	0.009	0.010	0.010	0.011	
NMOC PTE emission factor, lbs/Mscf (3)	0.0292	0.0261	0.0259	0.0300	0.0292	0.0269	0.0279
NOx measured, ppm @ 15%O2	35.9	45.0	13.4	39.0	24.3	21.0	
NOx, lbs/min (2)	0.026	0.026	0.009	0.029	0.017	0.017	
NOx emission factor, lbs/Mscf (3)	0.0760	0.0852	0.0252	0.0849	0.0515	0.0410	0.0606
NOx permit limit ppm @ 15%O2	63	63	63	63	63	63	new limit!
NOx at permit limit conc., lbs/min (2)	0.046	0.036	0.041	0.047	0.045	0.050	
NOx PTE emission factor, lbs/Mscf (3)	0.133	0.119	0.119	0.137	0.133	0.123	0.127
CO measured, ppm @ 15%O2	309.5	291.0	299.8	330.0	308.0	330.0	
CO, lbs/min (2)	0.139	0.101	0.120	0.151	0.134	0.158	
CO emission factor, lbs/Mscf (3)	0.399	0.336	0.343	0.437	0.397	0.392	0.384
CO permit limit ppm @ 15%O2	376	376	376	376	376	376	
CO at permit limit conc., lbs/min (2)	0.168	0.130	0.151	0.172	0.163	0.180	
CO PTE emission factor, lbs/Mscf (3)	0.485	0.434	0.431	0.498	0.485	0.447	0.463
PM10 emission factor, lbs/Mscf (4)							0.0246
SOx emission factor, lbs/Mscf (5)							0.0497

(1) Exhaust Flow rate @ specified % O2, cfm = (Measured Exhaust flow rate, cfm) * [(20.9 - measured % O2)/(20.9 - specified % O2)]
(2) Pollutant emission rate, lbs/min = (Exhaust flow rate @ specified % O2, cfm) * (Pollutant conc. @ specified % O2, ppm/1E6) * (lbmol Pollutant/386.9 scf) * (Pollutant mol. wt., lb/lbmol)
(3) Pollutant emission factor, lbs/Mscf = [(Pollutant emission rate, lbs/min) / (Fuel Flow rate, scfm)] * (1000 scf/Mcf)
(4) PM10 emission factor from AP-42, Table 2.4-5 Emission Rates for Secondary Compounds Exiting Control Devices
Conversion to lbs/Mscf = (48 lbs/MMscf CH4) * (MMscf/1000 Mscf) * (average CH4 ppm/1E6 LFG)

(5) SOx emission factor is based on proposed permit limit maximum of 300 ppmv total reduced sulfur in LFG.
SOx emission factor, lbs/Mscf = (0.300 scf H2S/Mscf LFG) * (lbmol H2S/386.9 scf H2S) * (lbmol SO2/ lbmol H2S) * (64.06 lbs SO2/lbmol SO2)

Criteria Emission Factor Calculations

S37 IC Engine Emission Factors			
	5/26/2004 Source Test	7/15/2002 Source Test	Average
Fuel Flow rate, scfm	373.5	365.1	
LFG THC, ppm as CH4	568350		568350
Exhaust Flow rate, scfm	3227	3110	
%O2	9.5	8.9	
Exhaust Flow rate @ 3% O2, cfm (1)	2055	2085	
Exhaust Flow rate @ 15% O2, cfm (1)	6235	6325	
Methane (THC-NMOC measured), ppm	2918	2493	
Methane, lbs/min (2)	0.39	0.32	
Methane emission factor, lbs/Mscf (3)	1.05	0.88	0.963
NMOC measured, ppm @ 3%O2	57.4	74.6	
NMOC, lbs/min (2)	0.00	0.01	
NMOC emission factor, lbs/Mscf (3)	0.0131	0.0177	0.0154
NMOC reg. limit, ppm @ 3%O2	120	120	
NMOC at reg. conc. limit, lbs/min (2)	0.01	0.01	
NMOC PTE emission factor, lbs/Mscf (3)	0.0274	0.0284	0.0279
NOx measured, ppm @ 15%O2	36.8	25.5	
NOx, lbs/min (2)	0.027	0.019	
NOx emission factor, lbs/Mscf (3)	0.0731	0.0525	0.0628
NOx permit limit ppm @ 15%O2	63	63	new limit!
NOx at permit limit conc., lbs/min (2)	0.047	0.047	
NOx PTE emission factor, lbs/Mscf (3)	0.125	0.130	0.127
CO measured, ppm @ 15%O2	293.9	269.3	
CO, lbs/min (2)	0.133	0.123	
CO emission factor, lbs/Mscf (3)	0.355	0.338	0.346
CO permit limit ppm @ 15%O2	309	309	
CO at permit limit conc., lbs/min (2)	0.139	0.142	
CO PTE emission factor, lbs/Mscf (3)	0.373	0.388	0.381
PM10 emission factor, lbs/Mscf (4)			0.0273
SOx emission factor, lbs/Mscf (5)			0.0497

(1) Exhaust Flow rate @ specified % O2, cfm = (Measured Exhaust flow rate, cfm) * [(20.9 - measured % O2)/(20.9 - specified % O2)]
(2) Pollutant emission rate, lbs/min = (Exhaust flow rate @ specified % O2, cfm) * (Pollutant conc. @ specified % O2, ppm/1E6) * (lbmol Pollutant/386.9 scf) * (Pollutant mol. wt., lb/lbmol)
(3) Pollutant emission factor, lbs/Mscf = [(Pollutant emission rate, lbs/min) / (Fuel Flow rate, scfm)] * (1000 scf/Mcf)
(4) PM10 emission factor from AP-42, Table 2.4-5 Emission Rates for Secondary Compounds Exiting Control Devices
Conversion to lbs/Mscf = (48 lbs/MMscf CH4) * (MMscf/1000 Mscf) * (average CH4 ppm/1E6 LFG)
(5) SOx emission factor is based on proposed permit limit maximum of 300 ppmv total reduced sulfur in LFG.
SOx emission factor, lbs/Mscf = (0.300 scf H2S/Mscf LFG) * (lbmol H2S/386.9 scf H2S) * (lbmol SO2/ lbmol H2S) * (64.06 lbs SO2/lbmol SO2)

Appendix A-3

Toxic Air Contaminant
(TAC)
Emission Calculations

TAC Emission Calculations and Health Risk Screen Model Inputs

Maximum LFG Generation Rate, scfm	2169	% Fugitive	25	Tons-in-Place in 2004	13000000

S15 Landfill Fugitive TAC Emissions, Emission Factors and Model Inputs									
TAC	Molecular Weight (g/Mol)	TAC Concentration In LFG (ppmv)[1]	LFG Unabated Emission Factor, lbs/Mscf[2]	Annual Fugitive Pollutant Emissions, lbs/yr[3]	LFG Fugitive Emission Factor, lbs/ton-in-place[4]	Unit Risk (ug/m3)-1	Cancer Risk Model Input (URV Weighted Emissions) [5]	Chronic REL (ug/m3)	Chronic HI Model Input (Chronic REL Weighted Emissions) [6]
Total Non-Methane Organics (NMOCs) as CH4	16.04	2,105	8.73E-02	2.49E+04	1.91E-03				
Acrylonitrile	53.06	0.0003	3.43E-08	9.77E-03	7.52E-10	2.9E-04	4.1E-05	5.0E+00	2.8E-08
Benzene	78.11	1.2660	2.56E-04	7.28E+01	5.60E-06	2.9E-05	3.0E-02	6.0E+01	1.7E-05
Bromodichloromethane	163.83	0.0003	1.27E-07	3.62E-02	2.79E-09			1.7E+00	3.1E-07
1,3-Butadiene	54.09	0.0084	1.17E-06	3.35E-01	2.57E-08	1.7E-04	8.2E-04	2.0E+01	2.4E-07
Carbon disulfide	76.13	0.0250	4.92E-06	1.40E+00	1.08E-07			8.0E+02	2.5E-08
Carbon tetrachloride	153.84	0.0003	9.94E-08	2.83E-02	2.18E-09	4.2E-05	1.7E-05	4.0E+01	1.0E-08
Chlorobenzene	112.56	0.2000	5.82E-05	1.66E+01	1.28E-06			1.0E+03	2.4E-07
Chlorodifluoromethane	86.47	4.8360	1.08E-03	3.08E+02	2.37E-05			5.0E+04	8.9E-08
Chloroethane (ethyl chloride)	64.52	0.3660	6.10E-05	1.74E+01	1.34E-06			3.0E+04	8.3E-09
Chloroform	119.39	0.0003	7.71E-08	2.20E-02	1.69E-09	5.3E-06	1.7E-06	3.0E+02	1.1E-09
Dichlorobenzene (1,4-Dichlorobenzene)	147.00	0.0003	9.50E-08	2.71E-02	2.08E-09	1.1E-05	4.3E-06	8.0E+02	4.9E-10
Dichlorodifluoromethane	120.91	2.5750	8.05E-04	2.29E+02	1.76E-05			7.0E+02	4.7E-06
1,1-Dichloroethane (ethylidene dichloride)	98.97	0.1150	2.94E-05	8.38E+00	6.45E-07	1.6E-06	1.9E-04		
1,2-Dichloroethane (ethylene dichloride)	98.96	0.0005	1.28E-07	3.64E-02	2.80E-09	2.1E-05	1.1E-05	4.0E+02	1.3E-09
1,1-Dichloroethene (vinylidene chloride)	96.94	0.0003	7.52E-08	2.14E-02	1.65E-09			7.0E+01	4.4E-09
Dichlorofluoromethane	102.92	0.2520	6.70E-05	1.91E+01	1.47E-06			7.0E+02	3.9E-07
Dichloromethane (Methylene Chloride)	84.94	0.0970	2.13E-05	6.07E+00	4.67E-07	1.0E-06	8.7E-05	4.0E+02	2.2E-07
1,4-Dioxane	88.11	0.0810	1.84E-05	5.26E+00	4.04E-07	7.7E-06	5.8E-04	3.0E+03	2.5E-08
Ethylbenzene	106.16	8.9930	2.47E-03	7.03E+02	5.41E-05			2.0E+03	5.1E-06
Ethylene dibromide (1,2-Dibromoethane)	187.88	0.0003	1.21E-07	3.46E-02	2.66E-09	7.1E-05	3.5E-05	8.0E-01	6.2E-07
Fluorotrichloromethane	137.40	0.0810	2.88E-05	8.20E+00	6.31E-07			7.0E+02	1.7E-07
Hexane	86.18	2.2230	4.95E-04	1.41E+02	1.09E-05			7.0E+03	2.9E-07
Hydrogen Sulfide	34.08	102.0000	8.98E-03	2.56E+03	1.97E-04			1.0E+01	3.7E-03
Mercury [7]	200.61	0.0003	1.51E-07	4.32E-02	3.32E-09			1.5E-02	4.3E-05
Methyl ethyl ketone	72.11	0.2660	4.96E-05	1.41E+01	1.09E-06			1.0E+03	2.0E-07
Methyl tert butyl ether	88.15	0.3720	8.48E-05	2.42E+01	1.86E-06	2.6E-07	9.0E-05	8.0E+03	4.3E-08
Perchloroethylene (tetrachloroethylene)	165.83	0.4090	1.75E-04	5.00E+01	3.84E-06	5.9E-06	4.2E-03	3.5E+01	2.1E-05
2-Propanol (isopropyl alcohol)	60.11	0.2130	3.31E-05	9.43E+00	7.26E-07			7.0E+03	1.9E-08
Styrene	104.15	0.3960	1.07E-04	3.04E+01	2.34E-06			9.0E+02	4.9E-07
1,1,2,2-Tetrachloroethane	167.85	0.0003	1.08E-07	3.09E-02	2.38E-09	5.8E-05	2.6E-05		
Toluene	92.13	14.7390	3.51E-03	1.00E+03	7.69E-05			3.0E+02	4.8E-05
1,1,1-Trichloroethane (methyl chloroform)	133.41	0.0100	3.45E-06	9.83E-01	7.56E-08			1.0E+03	1.4E-08
Trichloroethylene (trichloroethene)	131.40	0.3250	1.10E-04	3.15E+01	2.42E-06	2.0E-06	9.0E-04	6.0E+02	7.5E-07

TAC Emission Calculations and Health Risk Screen Model Inputs

Maximum LFG Generation Rate, scfm	2169	% Fugitive	25	Tons-in-Place in 2004	13000000

S15 Landfill Fugitive TAC Emissions, Emission Factors and Model Inputs (continued)

TAC	Molecular Weight (g/Mol)	TAC Concentration In LFG (ppmv)[1]	LFG Unabated Emission Factor, lbs/Mscf[2]	Annual Fugitive Pollutant Emissions, lbs/yr[3]	LFG Fugitive Emission Factor, lbs/ton-in-place[4]	Unit Risk (ug/m3)-1	Cancer Risk Model Input (URV Weighted Emissions) [5]	Chronic REL (ug/m3)	Chronic HI Model Input (Chronic REL Weighted Emissions) [6]
Trichlorotrifluoroethane	187.38	0.0180	8.72E-06	2.48E+00	1.91E-07			7.0E+02	5.1E-08
Vinyl acetate	86.09	0.0920	2.05E-05	5.83E+00	4.49E-07			2.0E+02	4.2E-07
Vinyl chloride	62.50	1.1110	1.79E-04	5.12E+01	3.93E-06	7.8E-05	5.7E-02	2.6E+01	2.8E-05
Xylenes	106.16	13.1890	3.62E-03	1.03E+03	7.93E-05			7.0E+02	2.1E-05
						Sum	9.48E-02		3.88E-03
						Sq. meters	647499.2		647499.2
						g/s/ m2	1.46E-07		5.99E-09

Notes:
(1) Except for mercury, which is based on AP42, Table 2.4-1, pollutant concentrations were taken from source test conducted May 26-27, 2004.
(2) LFG Unabated Emission Factor, lbs/Mscf = (conc., scf TAC/scf LFG) * (lbmol TAC/386.9 scf TAC) * (mol. wt, lbs TAC/lbmol TAC) * (1000scf LFG/ Mscf LFG)
These emissions will be abated 98% by the flare, A8 and engines S5, S6 and S37.
(3) Annual pollutant emissions, lbs/yr = (maximum LFG generation rate, scfm) * (concentration ppmv / 1E6) * (lbmol/386.9 scf) * (mol. Wt, lbs/lbmol) * (60 min/hr) * (8760 hr/yr)
(4) Pollutant emission factor, lbs/tons-in-place = (annual pollutant emissions, lbs/yr) / (tons-in-place/yr)
(5) Cancer Risk Model Input = [Sum of (Annual emissions, lbs/yr) * (453.6g/lb) * (yr/8760hr) * (hr/3600s) * (Unit Risk, (ug/m3)-1) * 1E6] / (Area, 160 acres per site plan)
(6) Chronic Hazard Index Model Input = [Sum of (Annual emissions, lbs/yr) * (453.6g/lb) * (yr/8760hr) * (hr/3600s) / (Chronic REL, ug/m3)] / (Area, 160 acres)
(7) Mercury is a multipathway pollutant. HI input includes inhalation, dermal adsorption, ingestion and mother's milk pathways (derived from ARB's HARP program).

TAC Emission Calculations and Health Risk Screen Model Inputs

Engine & Flare TAC Emission Factors Based on Fraction of TAC in the LFG									
TAC	Mol. Wt. (g/Mol)	TAC Conc. in LFG (ppmv)[1]	# of Chloride ions in TAC	Cl- ion Conc. In LFG (ppmv)[2]	Wt. in LFG (basis 1 MMscf LFG), lbs [3]	TAC as a Wt. Fraction of TNMOC [4]	S5 & S6 Estimated Emission Factor, lbs/Mscf[5]	S37 Estimated Emission Factor, lbs/Mscf[5]	A8 Estimated Emission Factor, lbs/Mscf[5]
Total Non-Methane Organics (NMOCs) as CH4	16.04	2,105			8.73E+01		2.79E-02	2.79E-02	5.2E-03
Acrylonitrile	53.06	0.0003			3.43E-05	3.929E-07	1.10E-08	1.10E-08	2.03E-09
Benzene	78.11	1.2660			2.56E-01	2.929E-03	8.17E-05	8.17E-05	1.51E-05
Bromodichloromethane	163.83	0.0003	2	0.0006	1.27E-04	1.456E-06	4.06E-08	4.06E-08	7.51E-09
1,3-Butadiene	54.09	0.0084			1.17E-03	1.346E-05	3.75E-07	3.75E-07	6.94E-08
Carbon disulfide	76.13	0.0250			4.92E-03	5.637E-05	1.57E-06	1.57E-06	2.91E-07
Carbon tetrachloride	153.84	0.0003	4	0.0010	9.94E-05	1.139E-06	3.18E-08	3.18E-08	5.88E-09
Chlorobenzene	112.56	0.2000	1	0.2000	5.82E-02	6.667E-04	1.86E-05	1.86E-05	3.44E-06
Chlorodifluoromethane	86.47	4.8360	1	4.8360	1.08E+00	1.238E-02	3.46E-04	3.45E-04	6.39E-05
Chloroethane (ethyl chloride)	64.52	0.3660	1	0.3660	6.10E-02	6.994E-04	1.95E-05	1.95E-05	3.61E-06
Chloroform	119.39	0.0003	3	0.0008	7.71E-05	8.840E-07	2.47E-08	2.47E-08	4.56E-09
Dichlorobenzene (1,4-Dichlorobenzene)	147.00	0.0003	2	0.0005	9.50E-05	1.088E-06	3.04E-08	3.04E-08	5.62E-09
Dichlorodifluoromethane	120.91	2.5750	2	5.1500	8.05E-01	9.221E-03	2.57E-04	2.57E-04	4.76E-05
1,1-Dichloroethane (ethylidene dichloride)	98.97	0.1150	2	0.2300	2.94E-02	3.371E-04	9.40E-06	9.40E-06	1.74E-06
1,2-Dichloroethane (ethylene dichloride)	98.96	0.0005	2	0.0010	1.28E-04	1.465E-06	4.09E-08	4.09E-08	7.56E-09
1,1-Dichloroethene (vinylidene chloride)	96.94	0.0003	2	0.0006	7.52E-05	8.613E-07	2.40E-08	2.40E-08	4.44E-09
Dichlorofluoromethane	102.92	0.2520	2	0.5040	6.70E-02	7.681E-04	2.14E-05	2.14E-05	3.96E-06
Dichloromethane (Methylene Chloride)	84.94	0.0970	2	0.1940	2.13E-02	2.440E-04	6.81E-06	6.81E-06	1.26E-06
1,4-Dioxane	88.11	0.0810			1.84E-02	2.114E-04	5.90E-06	5.90E-06	1.09E-06
Ethylbenzene	106.16	8.9930			2.47E+00	2.828E-02	7.89E-04	7.89E-04	1.46E-04
Ethylene dibromide (1,2-Dibromoethane)	187.88	0.0003			1.21E-04	1.391E-06	3.88E-08	3.88E-08	7.18E-09
Fluorotrichloromethane	137.40	0.0810	3	0.2430	2.88E-02	3.296E-04	9.20E-06	9.19E-06	1.70E-06
Hexane	86.18	2.2230			4.95E-01	5.674E-03	1.58E-04	1.58E-04	2.93E-05
Hydrogen Sulfide	34.08	102.0000			8.98E+00	1.030E-01	H2S oxidized to SO2 during combustion		
Mercury	200.61	0.0003			1.51E-04	1.735E-06	4.84E-08	4.84E-08	8.95E-09
Methyl ethyl ketone	72.11	0.2660			4.96E-02	5.681E-04	1.58E-05	1.58E-05	2.93E-06
Methyl tert butyl ether	88.15	0.3720			8.48E-02	9.712E-04	2.71E-05	2.71E-05	5.01E-06
Perchloroethylene (tetrachloroethylene)	165.83	0.4090	4	1.6360	1.75E-01	2.009E-03	5.60E-05	5.60E-05	1.04E-05
2-Propanol (isopropyl alcohol)	60.11	0.2130			3.31E-02	3.792E-04	1.06E-05	1.06E-05	1.96E-06
Styrene	104.15	0.3960			1.07E-01	1.222E-03	3.41E-05	3.41E-05	6.30E-06
1,1,2,2-Tetrachloroethane	167.85	0.0003	4	0.0010	1.08E-04	1.243E-06	3.47E-08	3.47E-08	6.41E-09
Toluene	92.13	14.7390			3.51E+00	4.022E-02	1.12E-03	1.12E-03	2.08E-04
1,1,1-Trichloroethane (methyl chloroform)	133.41	0.0100	3	0.0300	3.45E-03	3.951E-05	1.10E-06	1.10E-06	2.04E-07
Trichloroethylene (trichloroethene)	131.40	0.3250	3	0.9750	1.10E-01	1.265E-03	3.53E-05	3.53E-05	6.53E-06
Trichlorotrifluoroethane	187.38	0.0180	3	0.0540	8.72E-03	9.989E-05	2.79E-06	2.79E-06	5.16E-07
Vinyl acetate	86.09	0.0920			2.05E-02	2.346E-04	6.54E-06	6.54E-06	1.21E-06
Vinyl chloride	62.50	1.1110	1	1.1110	1.79E-01	2.057E-03	5.74E-05	5.74E-05	1.06E-05
Xylenes	106.16	13.1890			3.62E+00	4.147E-02	1.16E-03	1.16E-03	2.14E-04
Hydrogen Chloride	36.46			15.5345			1.46E-03	1.46E-03	1.46E-03

Notes: (1) Except for mercury, which is based on AP42, Table 2.4-1, pollutant concentrations were taken from source test conducted May 26-27, 2004.

(2) Chloride ion concentration in the LFG, ppmv = (# of Cl- in pollutant) * (pollutaint concentration, ppmv). This will be used to calculate HCl emissions from combustion of LFG.

(3) Weight in LFG (based on 1MMscf), lbs = (concentration ppmv) * (lbmol/386.9 scf) * (mol. Wt, lbs/lbmol)

(4) Pollutant as a Weight Fraction of TNMOC = (Weight of pollutant in LFG) / (Weight of TNMOC in LFG)

(5) TNMOC Emission Factor is based on source test: TAC Emission Factor, lbs/Mscf = (Weight fraction of TAC in TNMOC) * (TNMOC emission factor, lbs/Mscf)
HCl emission factor, lbs/mscf = (1000 scf) * (Cl- ppmv/1E6) * (lbmol/386.9 scf) * (lbmol HCl/lbmol Cl-) * (36.46 lbs/lbmol)

TAC Emission Calculations and Health Risk Screen Model Inputs

S5 AND S6 TAC Emission Factors Used, Calculated Emissions and Model Inputs per Engine									
TAC	CATEF Emission Factor, lbs/Mscf	Calculated TAC Emission Factor, lbs/Mscf	TAC Emission Factor Use, lbs/Mscf	Emissions per engine @356scfm, lbs/yr[1]	S5 & S6 Emission per engine, g/s[2]	Unit Risk (ug/m3)-1	Cancer Risk Model Input (URV Weighted Emissions) [3]	Chronic REL (ug/m3)	Chronic HI Model Input (REL Weighted Emissions) [4]
Acrylonitrile		1.10E-08	1.10E-08	2.05E-03	2.95E-08	2.9E-04	8.6E-06	5.0E+00	5.9E-09
Benzene	1.82E-04	8.17E-05	8.17E-05	1.53E+01	2.20E-04	2.9E-05	6.4E-03	6.0E+01	3.7E-06
Bromodichloromethane		4.06E-08	4.06E-08	7.60E-03	1.09E-07			1.7E+00	6.4E-08
1,3-Butadiene		3.75E-07	3.75E-07	7.02E-02	1.01E-06	1.7E-04	1.7E-04	2.0E+01	5.1E-08
Carbon disulfide		1.57E-06	1.57E-06	2.94E-01	4.23E-06			8.0E+02	5.3E-09
Carbon tetrachloride	7.78E-06	3.18E-08	3.18E-08	5.95E-03	8.55E-08	4.2E-05	3.6E-06	4.0E+01	2.1E-09
Chlorobenzene		1.86E-05	1.86E-05	3.48E+00	5.01E-05			1.0E+03	5.0E-08
Chlorodifluoromethane		3.46E-04	3.46E-04	6.47E+01	9.30E-04			5.0E+04	1.9E-08
Chloroethane (ethyl chloride)		1.95E-05	1.95E-05	3.65E+00	5.25E-05			3.0E+04	1.8E-09
Chloroform	6.02E-06	2.47E-08	2.47E-08	4.61E-03	6.64E-08	5.3E-06	3.5E-07	3.0E+02	2.2E-10
Dichlorobenzene (1,4-Dichlorobenzene)		3.04E-08	3.04E-08	5.68E-03	8.17E-08	1.1E-05	9.0E-07	8.0E+02	1.0E-10
Dichlorodifluoromethane		2.57E-04	2.57E-04	4.81E+01	6.92E-04			7.0E+02	9.9E-07
1,1-Dichloroethane (ethylidene dichloride)		9.40E-06	9.40E-06	1.76E+00	2.53E-05	1.6E-06	4.0E-05		
1,2-Dichloroethane (ethylene dichloride)	5.01E-06	4.09E-08	4.09E-08	7.65E-03	1.10E-07	2.1E-05	2.3E-06	4.0E+02	2.8E-10
1,1-Dichloroethene (vinylidene chloride)		2.40E-08	2.40E-08	4.50E-03	6.47E-08			7.0E+01	9.2E-10
Dichlorofluoromethane		2.14E-05	2.14E-05	4.01E+00	5.77E-05			7.0E+02	8.2E-08
Dichloromethane (Methylene Chloride)	2.11E-04	6.81E-06	6.81E-06	1.27E+00	1.83E-05	1.0E-06	1.8E-05	4.0E+02	4.6E-08
1,4-Dioxane		5.90E-06	5.90E-06	1.10E+00	1.59E-05	7.7E-06	1.2E-04	3.0E+03	5.3E-09
Ethylbenzene		7.89E-04	7.89E-04	1.48E+02	2.12E-03			2.0E+03	1.1E-06
Ethylene dibromide (1,2-Dibromoethane)	9.51E-06	3.88E-08	3.88E-08	7.26E-03	1.04E-07	7.1E-05	7.4E-06	8.0E-01	1.3E-07
Fluorotrichloromethane		9.20E-06	9.20E-06	1.72E+00	2.48E-05			7.0E+02	3.5E-08
Formaldehyde	6.95E-04		6.95E-04	1.30E+02	1.87E-03	6.0E-06	1.1E-02	3.0E+00	6.2E-04
Hexane		1.58E-04	1.58E-04	2.96E+01	4.26E-04			7.0E+03	6.1E-08
Hydrogen Chloride	1.57E-03	1.46E-03	1.46E-03	2.74E+02	3.94E-03			9.0E+00	4.4E-04
Mercury [5]		4.84E-08	4.84E-08	9.06E-03	1.30E-07			1.5E-02	8.9E-06
Methyl ethyl ketone		1.58E-05	1.58E-05	2.97E+00	4.27E-05			1.0E+03	4.3E-08
Methyl tert butyl ether		2.71E-05	2.71E-05	5.07E+00	7.29E-05	2.6E-07	1.9E-05	8.0E+03	9.1E-09
Perchloroethylene (tetrachloroethylene)	1.26E-05	5.60E-05	5.60E-05	1.05E+01	1.51E-04	5.9E-06	8.9E-04	3.5E+01	4.3E-06
Benzo(a)anthracene [6]	2.06E-07		2.06E-07	3.85E-02	5.54E-07	1.7E-03	9.1E-04		
Benzo(a)pyrene [6]	3.20E-07		3.20E-07	5.99E-02	8.61E-07	1.7E-02	1.4E-02		
Benzo(b)fluoranthene [6]	3.26E-07		3.26E-07	6.10E-02	8.77E-07	1.7E-03	1.4E-03		
Benzo(k)fluoranthene [6]	4.12E-07		4.12E-07	7.71E-02	1.11E-06	1.7E-03	1.8E-03		
Chrysene [6]	3.38E-07		3.38E-07	6.32E-02	9.10E-07	1.7E-04	1.5E-04		
Dibenz(a,h)anthracene [6]	1.91E-08		1.91E-08	3.57E-03	5.14E-08	6.5E-03	3.3E-04		
Indeno(1,2,3-cd)pyrene [6]	1.27E-07		1.27E-07	2.38E-02	3.42E-07	1.7E-03	5.6E-04		
Naphthalene	1.82E-05		1.82E-05	3.41E+00	4.90E-05	3.4E-05	1.7E-03	9.0E+00	5.4E-06
2-Propanol (isopropyl alcohol)		1.06E-05	1.06E-05	1.98E+00	2.85E-05			7.0E+03	4.1E-09
Styrene		3.41E-05	3.41E-05	6.38E+00	9.17E-05			9.0E+02	1.0E-07

TAC Emission Calculations and Health Risk Screen Model Inputs

S5 AND S6 TAC Emission Factors Used, Calculated Emissions and Model Inputs per Engine (continued)									
TAC	CATEF Emission Factor, lbs/Mscf	Calculated TAC Emission Factor, lbs/Mscf	TAC Emission Factor Use, lbs/Mscf	Emissions per engine @356scfm, lbs/yr[1]	S5 & S6 Emission per engine, g/s[2]	Unit Risk (ug/m3)-1	Cancer Risk Model Input (URV Weighted Emissions) [3]	Chronic REL (ug/m3)	Chronic HI Model Input (REL Weighted Emissions) [4]
1,1,2,2-Tetrachloroethane		3.47E-08	3.47E-08	6.49E-03	9.33E-08	5.8E-05	5.4E-06		
Toluene		1.12E-03	1.12E-03	2.10E+02	3.02E-03			3.0E+02	1.0E-05
1,1,1-Trichloroethane (methyl chloroform)	6.75E-06	1.10E-06	1.10E-06	2.06E-01	2.97E-06			1.0E+03	3.0E-09
Trichloroethylene (trichloroethene)	8.31E-06	3.53E-05	3.53E-05	6.60E+00	9.50E-05	2.0E-06	1.9E-04	6.0E+02	1.6E-07
Trichlorotrifluoroethane		2.79E-06	2.79E-06	5.21E-01	7.50E-06			7.0E+02	1.1E-08
Vinyl acetate		6.54E-06	6.54E-06	1.22E+00	1.76E-05			2.0E+02	8.8E-08
Vinyl chloride	3.95E-06	5.74E-05	5.74E-05	1.07E+01	1.54E-04	7.8E-05	1.2E-02	2.6E+01	5.9E-06
Xylenes		1.16E-03	1.16E-03	2.16E+02	3.11E-03			7.0E+02	4.4E-06
						Sum	5.22E-02		1.11E-03

Notes:

(1) Emissions per engine, lbs/yr = (356 scfm/1000) * (60m/hr) * (8760hr/yr) * (Emission factor, lbs/Mscf)

(2) Emissions per engine, g/s = (Emissions per engine, lbs/yr) * (453.6 g/lb) * (yr/8760hr) * (hr/3600s)

(3) Cancer Risk Model Input = (Annual emissions, g/s) * (Unit Risk, (ug/m3)-1) * 1E6

(4) Chronic Hazard Index Model Input = (Annual emissions, g/s) / (Chronic REL, ug/m3)

(5) Mercury is a multipathway pollutant. REL includes inhalation, dermal adsorption, ingestion and mother's milk pathways (values derived from ARB's HARP program).

(6) Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene are multipathway pollutants. Unit risk value includes inhalation, dermal adsorption, ingestion and mother's milk pathways (values derived from ARB's HARP program).

TAC Emission Calculations and Health Risk Screen Model Inputs

S37 Engine TAC Emissions and Model Inputs									
TAC	CATEF Emission Factor, lbs/Mscf	Estimated Emission Factor, lbs/Mscf	Use Emission Factor, lbs/Mscf	S37 Emissions @314scfm, lbs/yr (1)	S37 Emission , g/s (2)	Unit Risk (ug/m3)-1	Cancer Risk Model Input (URV Weighted Emissions) (3)	Chronic REL (ug/m3)	Chronic HI Model Input (Chronic REL Weighted Emissions) (4)
Acrylonitrile		1.10E-08	1.10E-08	1.81E-03	2.60E-08	2.9E-04	7.5E-06	5.0E+00	5.2E-09
Benzene	1.82E-04	8.17E-05	8.17E-05	1.35E+01	1.94E-04	2.9E-05	5.6E-03	6.0E+01	3.2E-06
Bromodichloromethane		4.06E-08	4.06E-08	6.70E-03	9.64E-08			1.7E+00	5.7E-08
1,3-Butadiene		3.75E-07	3.75E-07	6.19E-02	8.91E-07	1.7E-04	1.5E-04	2.0E+01	4.5E-08
Carbon disulfide		1.57E-06	1.57E-06	2.59E-01	3.73E-06			8.0E+02	
Carbon tetrachloride	7.78E-06	3.18E-08	3.18E-08	5.24E-03	7.54E-08	4.2E-05	3.2E-06	4.0E+01	1.9E-09
Chlorobenzene		1.86E-05	1.86E-05	3.07E+00	4.41E-05			1.0E+03	4.4E-08
Chlorodifluoromethane		3.45E-04	3.45E-04	5.70E+01	8.20E-04			5.0E+04	1.6E-08
Chloroethane (ethyl chloride)		1.95E-05	1.95E-05	3.22E+00	4.63E-05			3.0E+04	1.5E-09
Chloroform	6.02E-06	2.47E-08	2.47E-08	4.07E-03	5.85E-08	5.3E-06	3.1E-07	3.0E+02	2.0E-10
Dichlorobenzene (1,4-Dichlorobenzene)		3.04E-08	3.04E-08	5.01E-03	7.21E-08	1.1E-05	7.9E-07	8.0E+02	9.0E-11
Dichlorodifluoromethane		2.57E-04	2.57E-04	4.24E+01	6.11E-04			7.0E+02	8.7E-07
1,1-Dichloroethane (ethylidene dichloride)		9.40E-06	9.40E-06	1.55E+00	2.23E-05	1.6E-06	3.6E-05		
1,2-Dichloroethane (ethylene dichloride)	5.01E-06	4.09E-08	4.09E-08	6.75E-03	9.70E-08	2.1E-05	2.0E-06	4.0E+02	2.4E-10
1,1-Dichloroethene (vinylidene chloride)		2.40E-08	2.40E-08	3.96E-03	5.70E-08			7.0E+01	8.1E-10
Dichlorofluoromethane		2.14E-05	2.14E-05	3.54E+00	5.09E-05			7.0E+02	7.3E-08
Dichloromethane (Methylene Chloride)	2.11E-04	6.81E-06	6.81E-06	1.12E+00	1.62E-05	1.0E-06	1.6E-05	4.0E+02	4.0E-08
1,4-Dioxane		5.90E-06	5.90E-06	9.73E-01	1.40E-05	7.7E-06	1.1E-04	3.0E+03	
Ethylbenzene		7.89E-04	7.89E-04	1.30E+02	1.87E-03			2.0E+03	9.4E-07
Ethylene dibromide (1,2-Dibromoethane)	9.51E-06	3.88E-08	3.88E-08	6.40E-03	9.21E-08	7.1E-05	6.5E-06	8.0E-01	1.2E-07
Fluorotrichloromethane		9.19E-06	9.19E-06	1.52E+00	2.18E-05			7.0E+02	3.1E-08
Formaldehyde	6.95E-04		6.95E-04	1.15E+02	1.65E-03	6.0E-06	9.9E-03	3.0E+00	5.5E-04
Hexane		1.58E-04	1.58E-04	2.61E+01	3.76E-04			7.0E+03	5.4E-08
Hydrogen Chloride	1.57E-03	1.46E-03	1.46E-03	2.42E+02	3.48E-03			9.0E+00	3.9E-04
Mercury		4.84E-08	4.84E-08	7.99E-03	1.15E-07			1.5E-02	7.9E-06
Methyl ethyl ketone		1.58E-05	1.58E-05	2.62E+00	3.76E-05			1.0E+03	3.8E-08
Methyl tert butyl ether		2.71E-05	2.71E-05	4.47E+00	6.43E-05	2.6E-07	1.7E-05	8.0E+03	8.0E-09
Perchloroethylene (tetrachloroethylene)	1.26E-05	5.60E-05	5.60E-05	9.25E+00	1.33E-04	5.9E-06	7.8E-04	3.5E+01	3.8E-06
Benzo(a)anthracene (6)	2.06E-07		2.06E-07	3.40E-02	4.89E-07	1.7E-03	8.1E-04		
Benzo(a)pyrene (6)	3.20E-07		3.20E-07	5.28E-02	7.60E-07	1.7E-02	1.3E-02		
Benzo(b)fluoranthene (6)	3.26E-07		3.26E-07	5.38E-02	7.74E-07	1.7E-03	1.3E-03		
Benzo(k)fluoranthene (6)	4.12E-07		4.12E-07	6.80E-02	9.78E-07	1.7E-03	1.6E-03		
Chrysene (6)	3.38E-07		3.38E-07	5.58E-02	8.02E-07	1.7E-04	1.3E-04		
Dibenz(a,h)anthracene (6)	1.91E-08		1.91E-08	3.15E-03	4.53E-08	6.5E-03	2.9E-04		
Indeno(1,2,3-cd)pyrene (6)	1.27E-07		1.27E-07	2.10E-02	3.01E-07	1.7E-03	5.0E-04		
Naphthalene	1.82E-05		1.82E-05	3.00E+00	4.32E-05	3.4E-05	1.5E-03	9.0E+00	4.8E-06
2-Propanol (isopropyl alcohol)		1.06E-05	1.06E-05	1.75E+00	2.51E-05			7.0E+03	3.6E-09
Styrene		3.41E-05	3.41E-05	5.62E+00	8.09E-05			9.0E+02	9.0E-08

TAC Emission Calculations and Health Risk Screen Model Inputs

S37 Engine TAC Emissions and Model Inputs (continued)									
TAC	CATEF Emission Factor, lbs/Mscf	Estimated Emission Factor, lbs/Mscf	Use Emission Factor, lbs/Mscf	S37 Emissions @314scfm, lbs/yr (1)	S37 Emission , g/s (2)	Unit Risk (ug/m3)-1	Cancer Risk Model Input (URV Weighted Emissions) (3)	Chronic REL (ug/m3)	Chronic HI Model Input (Chronic REL Weighted Emissions) (4)
1,1,2,2-Tetrachloroethane		3.47E-08	3.47E-08	5.72E-03	8.23E-08	5.8E-05	4.8E-06		
Toluene		1.12E-03	1.12E-03	1.85E+02	2.66E-03			3.0E+02	8.9E-06
1,1,1-Trichloroethane (methyl chloroform)	6.75E-06	1.10E-06	1.10E-06	1.82E-01	2.62E-06			1.0E+03	2.6E-09
Trichloroethylene (trichloroethene)	8.31E-06	3.53E-05	3.53E-05	5.82E+00	8.37E-05	2.0E-06	1.7E-04	6.0E+02	1.4E-07
Trichlorotrifluoroethane		2.79E-06	2.79E-06	4.60E-01	6.61E-06			7.0E+02	9.4E-09
Vinyl acetate		6.54E-06	6.54E-06	1.08E+00	1.55E-05			2.0E+02	7.8E-08
Vinyl chloride	3.95E-06	5.74E-05	5.74E-05	9.47E+00	1.36E-04	7.8E-05	1.1E-02	2.6E+01	5.2E-06
Xylenes		1.16E-03	1.16E-03	1.91E+02	2.75E-03			7.0E+02	3.9E-06
						Sum	4.6E-02		9.76E-04

Notes:
(1) Emissions, lbs/yr = (314 scfm/1000) * (60m/hr) * (8760hr/yr) * (Emission factor, lbs/Mscf)
(2) Emissions, g/s = (Emissions, lbs/yr) * (453.6 g/lb) * (yr/8760hr) * (hr/3600s)
(3) Cancer Risk Model Input = (Annual emissions, g/s) * (Unit Risk, (ug/m3)-1) * 1E6
(4) Chronic Hazard Index Model Input = (Annual emissions, g/s) / (Chronic REL, ug/m3)
(5) Mercury is a multipathway pollutant. REL includes inhalation, dermal adsorption, ingestion and mother's milk pathways (values derived from ARB's HARP program).
(6) Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene are multipathway pollutants. Unit risk value includes inhalation, dermal adsorption, ingestion and mother's milk pathways (values derived from ARB's HARP program).

TAC Emission Calculations and Health Risk Screen Model Inputs

A8 Flare TAC Emissions and Model Inputs							
TAC	Calcuated Emission Factor, lbs/Mscf	A8 Emissions @ 1481scfm, lbs/yr (1)	A8 Emissions, g/s (2)	Unit Risk (ug/m3)-1	Cancer Risk Model Input (URV Weighted Emissions) (3)	Chronic REL (ug/m3)	Chronic HI Model Input (REL Weighted Emissions) (4)
Acrylonitrile	2.03E-09	1.58E-03	2.27E-08	2.9E-04	6.6E-06	5.0E+00	4.5E-09
Benzene	1.51E-05	1.18E+01	1.69E-04	2.9E-05	4.9E-03	6.0E+01	2.8E-06
Bromodichloromethane	7.51E-09	5.85E-03	8.41E-08			1.7E+00	4.9E-08
1,3-Butadiene	6.94E-08	5.41E-02	7.78E-07	1.7E-04	1.3E-04	2.0E+01	3.9E-08
Carbon disulfide	2.91E-07	2.26E-01	3.26E-06			8.0E+02	4.1E-09
Carbon tetrachloride	5.88E-09	4.58E-03	6.58E-08	4.2E-05	2.8E-06	4.0E+01	1.6E-09
Chlorobenzene	3.44E-06	2.68E+00	3.85E-05			1.0E+03	3.9E-08
Chlorodifluoromethane	6.39E-05	4.98E+01	7.16E-04			5.0E+04	1.4E-08
Chloroethane (ethyl chloride)	3.61E-06	2.81E+00	4.04E-05			3.0E+04	1.3E-09
Chloroform	4.56E-09	3.55E-03	5.11E-08	5.3E-06	2.7E-07	3.0E+02	1.7E-10
Dichlorobenzene (1,4-Dichlorobenzene)	5.62E-09	4.37E-03	6.29E-08	1.1E-05	6.9E-07	8.0E+02	7.9E-11
Dichlorodifluoromethane	4.76E-05	3.70E+01	5.33E-04			7.0E+02	7.6E-07
1,1-Dichloroethane (ethylidene dichloride)	1.74E-06	1.35E+00	1.95E-05	1.6E-06	3.1E-05		
1,2-Dichloroethane (ethylene dichloride)	7.56E-09	5.89E-03	8.47E-08	2.1E-05	1.8E-06	4.0E+02	2.1E-10
1,1-Dichloroethene (vinylidene chloride)	4.44E-09	3.46E-03	4.98E-08			7.0E+01	7.1E-10
Dichlorofluoromethane	3.96E-06	3.09E+00	4.44E-05			7.0E+02	6.3E-08
Dichloromethane (Methylene Chloride)	1.26E-06	9.80E-01	1.41E-05	1.0E-06	1.4E-05	4.0E+02	3.5E-08
1,4-Dioxane	1.09E-06	8.49E-01	1.22E-05	7.7E-06	9.4E-05	3.0E+03	4.1E-09
Ethylbenzene	1.46E-04	1.14E+02	1.63E-03			2.0E+03	8.2E-07
Ethylene dibromide (1,2-Dibromoethane)	7.18E-09	5.59E-03	8.04E-08	7.1E-05	5.7E-06	8.0E-01	1.0E-07
Fluorotrichloromethane	1.70E-06	1.32E+00	1.90E-05			7.0E+02	2.7E-08
Hexane	2.93E-05	2.28E+01	3.28E-04			7.0E+03	4.7E-08
Hydrogen Chloride	1.46E-03	1.14E+03	1.64E-02			9.0E+00	1.8E-03
Mercury	8.95E-09	6.97E-03	1.00E-07			1.5E-02	6.9E-06
Methyl ethyl ketone	2.93E-06	2.28E+00	3.28E-05			1.0E+03	3.3E-08
Methyl tert butyl ether	5.01E-06	3.90E+00	5.61E-05			8.0E+03	7.0E-09
Perchloroethylene (tetrachloroethylene)	1.04E-05	8.07E+00	1.16E-04	5.9E-06	6.8E-04	3.5E+01	3.3E-06
2-Propanol (isopropyl alcohol)	1.96E-06	1.52E+00	2.19E-05			7.0E+03	3.1E-09
Styrene	6.30E-06	4.91E+00	7.06E-05			9.0E+02	7.8E-08
1,1,2,2-Tetrachloroethane	6.41E-09	4.99E-03	7.18E-08	5.8E-05	4.2E-06		
Toluene	2.08E-04	1.62E+02	2.32E-03			3.0E+02	7.7E-06
1,1,1-Trichloroethane (methyl chloroform)	2.04E-07	1.59E-01	2.28E-06			1.0E+03	2.3E-09
Trichloroethylene (trichloroethene)	6.53E-06	5.08E+00	7.31E-05	2.0E-06	1.5E-04	6.0E+02	1.2E-07
Trichlorotrifluoroethane	5.16E-07	4.01E-01	5.77E-06			7.0E+02	8.2E-09
Vinyl acetate	1.21E-06	9.42E-01	1.36E-05			2.0E+02	6.8E-08
Vinyl chloride	1.06E-05	8.26E+00	1.19E-04	7.8E-05	9.3E-03	2.6E+01	4.6E-06
Xylenes	2.14E-04	1.67E+02	2.40E-03			7.0E+02	3.4E-06
				Sum	1.5E-02		1.85E-03

Notes:
(1) Emissions, lbs/yr = (1481 scfm/1000) * (60m/hr) * (8760hr/yr) * (Emission factor, lbs/Mscf)
(2) Emissions, g/s = (Emissions, lbs/yr) * (453.6 g/lb) * (yr/8760hr) * (hr/3600s)
(3) Cancer Risk Model Input = (Annual emissions, g/s) * (Unit Risk, (ug/m3)-1) * 1E6
(4) Chronic Hazard Index Model Input = (Annual emissions, g/s) / (Chronic REL, ug/m3)
(5) Mercury is a multipathway pollutant. REL includes inhalation, dermal adsorption, ingestion and mother's milk pathways (values derived from ARB's HARP program).

TAC Emission Calculations and Health Risk Screen Model Inputs

Leachate System Organic Emissions, tpy	2.68

S22-S30 and S38-S40 Leachate System Model Inputs							
TAC	Leachate Conc., ug/l [1]	TAC Weight Fraction [2]	Annual Emissions, g/s [3]	Unit Risk (ug/m3)-1	Cancer Risk Model Input (URV Weighted Emissions) [4]	Chronic REL (ug/m3)	Chronic HI Model Input (REL Weighted Emissions) [5]
Benzene	1500	0.00506	3.89E-04	2.9E-05	1.13E-02	6.0E+01	6.49E-06
Bromoform	90	0.00030	2.34E-05			1.7E+00	1.37E-05
Bromomethane	181	0.00061	4.70E-05			1.7E+00	2.76E-05
Bromodichloromethane	90	0.00030	2.34E-05			1.7E+00	1.37E-05
Carbon disulfide	101	0.00034	2.62E-05			8.0E+02	3.28E-08
Carbon tetrachloride	106	0.00036	2.75E-05	4.2E-05	1.16E-03	4.0E+01	6.88E-07
Chlorobenzene	1300	0.00438	3.37E-04			1.0E+03	3.37E-07
Chloroethane (ethyl chloride)	2200	0.00742	5.71E-04			3.0E+04	1.90E-08
Chloroform	200	0.00067	5.19E-05	5.3E-06	2.75E-04	3.0E+02	1.73E-07
Dibromochloromethane	90	0.00030	2.34E-05			1.7E+00	1.37E-05
Dichlorobenzene (1,4-Dichlorobenzene)	90	0.00030	2.34E-05	1.1E-05	2.57E-04	8.0E+02	2.92E-08
1,1-Dichloroethane (ethylidene dichloride)	550	0.00185	1.43E-04	1.6E-06	2.28E-04		
1,2-Dichloroethane (ethylene dichloride)	2200	0.00742	5.71E-04	2.1E-05	1.20E-02	4.0E+02	1.43E-06
Dichloromethane (Methylene Chloride)	9740	0.03283	2.53E-03	1.0E-06	2.53E-03	4.0E+02	6.32E-06
Ethylbenzene	410	0.00138	1.06E-04			2.0E+03	5.32E-08
Freons	91	0.00031	2.36E-05			7.0E+02	3.37E-08
Isophorone	19000	0.06404	4.93E-03			2.0E+03	2.47E-06
Methyl ethyl ketone	134000	0.45165	3.48E-02			1.0E+03	3.48E-05
Phenol	22000	0.07415	5.71E-03			2.0E+02	2.85E-05
Perchloroethylene (tetrachloroethylene)	100	0.00034	2.60E-05	5.9E-06	1.53E-04	3.5E+01	7.41E-07
Styrene	90	0.00030	2.34E-05			9.0E+02	2.60E-08
1,1,2,2-Tetrachloroethane	90	0.00030	2.34E-05	5.8E-05	1.35E-03		
Toluene	2200	0.00742	5.71E-04			3.0E+02	1.90E-06
1,1,1-Trichloroethane (methyl chloroform)	212	0.00071	5.50E-05			1.0E+03	5.50E-08
1,1,2-Trichloroethane	117	0.00039	3.04E-05	1.6E-05	4.86E-04		
Trichloroethylene (trichloroethene)	520	0.00175	1.35E-04	2.0E-06	2.70E-04	6.0E+02	2.25E-07
Trichlorofluoroethane	90	0.00030	2.34E-05			7.0E+02	3.34E-08
Vinyl acetate	181	0.00061	4.70E-05			2.0E+02	2.35E-07
Vinyl chloride	290	0.00098	7.53E-05	7.8E-05	5.87E-03	2.6E+01	2.89E-06
Xylenes	2000	0.00674	5.19E-04			7.0E+02	7.41E-07
Total	296693	1.00000	7.70E-02		3.59E-02		1.57E-04

Notes:
(1) Leachate concentrations taken from data submitted under application number 844.
(2) TAC Weight Fraction = (TAC concentration, ug/l) / (Total organics concentration, ug/l)
(3) TAC Emissions, g/s = (Total organic emissions, tons/yr) * (2000 lbs/ton) * (453.6 g/lb) * (yr/8760hr) * (hr/3600s) * (TAC Weight Fraction)
(4) Cancer Risk Model Input = (Annual emissions, g/s) * (Unit Risk, (ug/m3)-1) * 1E6
(5) Chronic Hazard Index Model Input = (Annual emissions, g/s) / (Chronic REL, ug/m3)

Appendix A-4

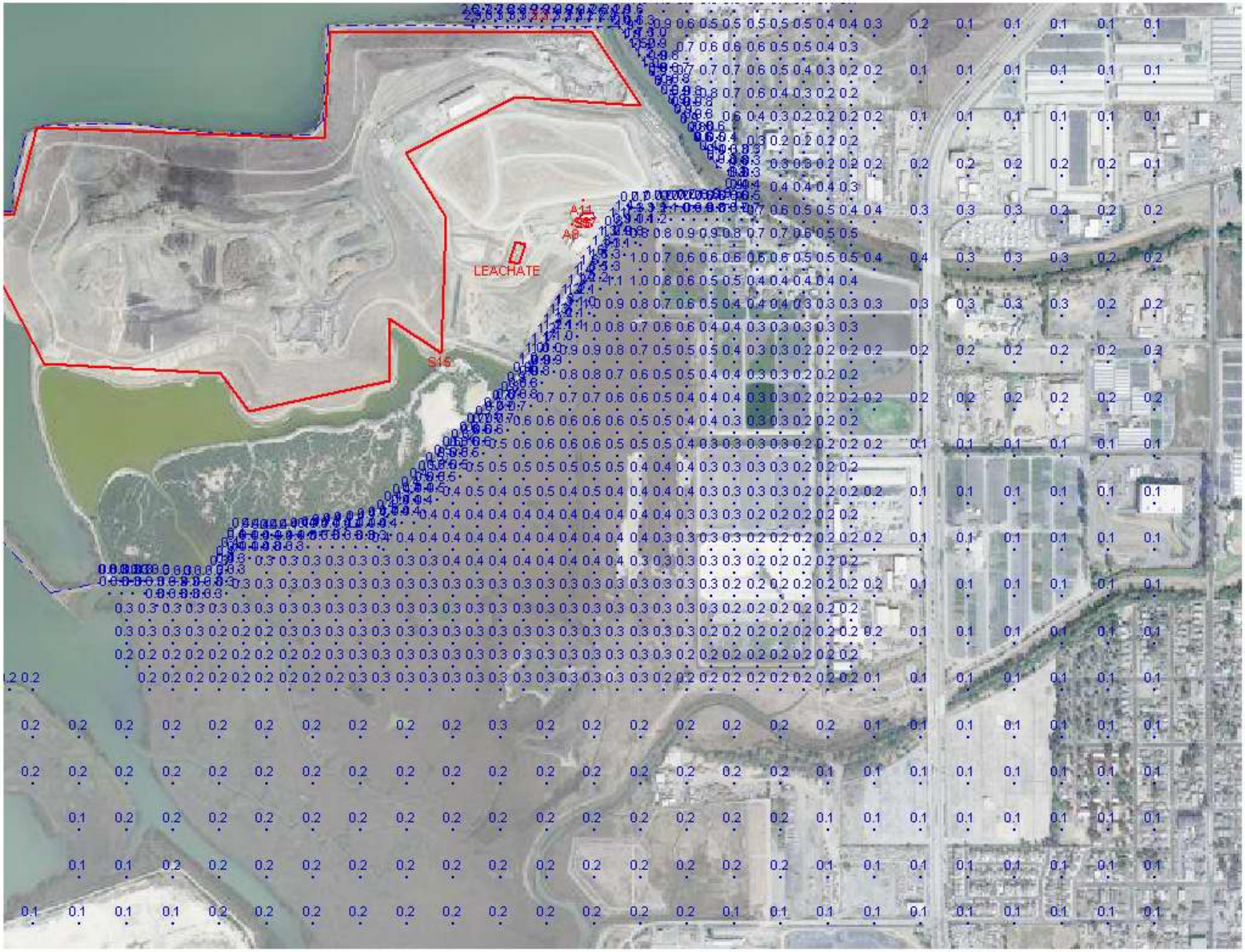
Health Risk Analysis
Data and Results

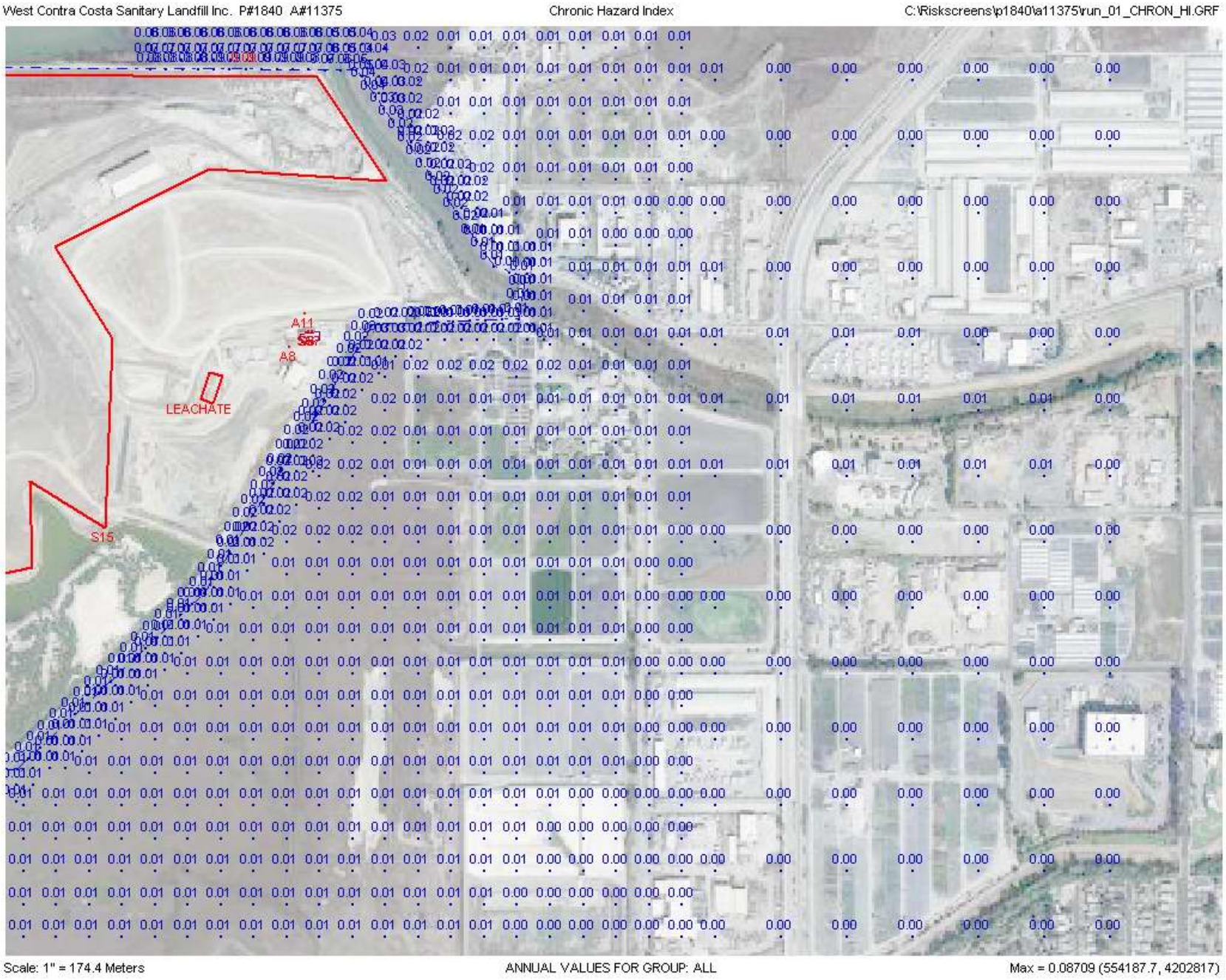
Health Risk Analysis

The ISCST3 dispersion model was run with Chevron Refinery meteorological data and the rural land use option. The sources modeled were the S15 landfill; the A8 and A11 flares; the S5, S6 and S37 IC engines; and the leachate treatment system (S22-30, S38, S39 and S40). The source emissions input for the cancer risk is the sum of the product for each TAC (emission rate) x (cancer unit risk value) x 1 E6; the resulting model output is the cancer risk in a million. The emissions input for the chronic hazard index is the sum of the quotient for each TAC (emission rate) / (reference exposure level); the result model output is the chronic hazard index.

The receptor location and health risk values are presented in the table below:

Receptor	Location (UTME; UTMN)	Unadjusted Result	Exposure Adjustment	Cancer Risk in a Million
Maximum (mud flats)	554,188; 4,202,817	3.2	1	3.2
Worker	554,440; 4,202,406	1.2	0.14	0.2
Residence	555,100; 4,201,100	0.1	1	0.1
				Chronic Hazard Index
Maximum (mud flats)	554,188; 4,202,817	0.087	1	0.087
Worker	554,440; 4,202,406	0.025	0.22	0.006
Residence	555,300; 4,201,200	0.002	1	0.002


West Contra Costa Sanitary Landfill Inc. P#1840 A#11375
Cancer Risk in a Million
C:\Riskscreens\p1840\a11375\run_01_CANCRISK.GRF
LEACHATE
A11
A8
S15
Scale: 1" = 250.0 Meters
ANNUAL VALUES FOR GROUP: ALL
Max = 3.24362 (554187.7, 4202817)


West Contra Costa Sanitary Landfill Inc. P#1840 A#11375
Chronic Hazard Index
C:\Riskscreens\p1840\a11375\run_01_CHRON_HI.GRF
A11
S87
A8
LEACHATE
S15
Scale: 1" = 174.4 Meters
ANNUAL VALUES FOR GROUP: ALL
Max = 0.08709 (554187.7, 4202817)

```
Input File - C:\Riskscreens\p1840\a11375\run_01_CANCRISK.DTA
Output File - C:\Riskscreens\p1840\a11375\run_01_CANCRISK.LST
   Met File - C:\Riskscreens\metdata\ChevronRefinery\CHV013RA.ASC

 *** ISCST3 - VERSION 02035 ***    *** West Contra Costa Sanitary Landfill Inc.  P#1840  A#11375           ***        05/02/05
                                   *** Landfill Expansion & Increase in Engine Flare and Leachate System Ca ***        14:26:24
                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
**Intermediate Terrain Processing is Selected
**Model Is Setup For Calculation of Average CONCentration Values.
  --  SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION.  DDPLETE =  F
**Model Uses NO WET DEPLETION.  WDPLETE =  F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations
**Model Uses RURAL Dispersion.
**Model Uses Regulatory DEFAULT Options:
**Model Assumes Receptors on FLAT Terrain.
**Model Assumes No FLAGPOLE Receptor Heights.
**Model Calculates ANNUAL Averages Only
**This Run Includes:     7 Source(s);      5 Source Group(s); and    1141 Receptor(s)
**Misc. Inputs:  Anem. Hgt. (m) =    10.00 ;    Decay Coef. =    0.000     ;    Rot. Angle =     0.0


                                                *** POINT SOURCE DATA ***
            NUMBER EMISSION RATE                      BASE     STACK   STACK    STACK     STACK    BUILDING EMISSION RATE
   SOURCE    PART.  (GRAMS/SEC)     X         Y      ELEV.    HEIGHT  TEMP.   EXIT VEL. DIAMETER   EXISTS   SCALAR VARY
     ID      CATS.                (METERS)  (METERS) (METERS) (METERS) (DEG.K) (M/SEC)  (METERS)              BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  A8           0   0.15300E-01  554254.4 4202395.0     0.0     6.16  1033.15     6.77     1.03      YES
  S5           0   0.52200E-01  554279.7 4202418.0     0.0     8.23   705.37    12.07     0.41      YES
  S6           0   0.52200E-01  554283.6 4202418.5     0.0     8.23   705.37    12.07     0.41      YES
  S37          0   0.46100E-01  554287.8 4202419.0     0.0     7.32   658.15    12.63     0.40      YES
  A11          0   0.23346E+00  554277.0 4202446.0     0.0     4.88  1144.26    13.00     0.71      NO


                                                *** AREA SOURCE DATA ***
            NUMBER EMISSION RATE  COORD (SW CORNER)  BASE     RELEASE  X-DIM     Y-DIM    ORIENT.    INIT.  EMISSION RATE
   SOURCE    PART.  (GRAMS/SEC       X         Y      ELEV.    HEIGHT  OF AREA   OF AREA   OF AREA     SZ     SCALAR VARY
     ID      CATS.   /METER**2)   (METERS)  (METERS) (METERS) (METERS) (METERS)  (METERS)   (DEG.)   (METERS)       BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  LEACHATE     0   0.40982E-04  554119.2 4202315.0     0.0     0.00     20.00     43.80     18.00     0.00


                                                *** AREAPOLY SOURCE DATA ***
            NUMBER EMISSION RATE   LOCATION OF AREA  BASE     RELEASE  NUMBER      INIT.   EMISSION RATE
   SOURCE    PART.  (GRAMS/SEC       X         Y      ELEV.    HEIGHT  OF VERTS.     SZ      SCALAR VARY
     ID      CATS.   /METER**2)   (METERS)  (METERS) (METERS) (METERS)            (METERS)       BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  S15          0   0.14600E-06  553973.7 4202120.0     0.0     0.00      16         0.00
```

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: A8

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK
1	0.0,	0.0,	0	2	0.0,	0.0,	0	3	0.0,	0.0,	0	4	0.0,	0.0,	0	5	0.0,	0.0,	0	6	0.0,	0.0,	0
7	0.0,	0.0,	0	8	0.0,	0.0,	0	9	0.0,	0.0,	0	10	0.0,	0.0,	0	11	0.0,	0.0,	0	12	0.0,	0.0,	0
13	0.0,	0.0,	0	14	0.0,	0.0,	0	15	0.0,	0.0,	0	16	0.0,	0.0,	0	17	0.0,	0.0,	0	18	0.0,	0.0,	0
19	0.0,	0.0,	0	20	0.0,	0.0,	0	21	0.0,	0.0,	0	22	6.1,	28.3,	0	23	6.1,	25.8,	0	24	6.1,	22.5,	0
25	6.1,	18.5,	0	26	6.1,	14.0,	0	27	0.0,	0.0,	0	28	0.0,	0.0,	0	29	0.0,	0.0,	0	30	0.0,	0.0,	0
31	0.0,	0.0,	0	32	0.0,	0.0,	0	33	0.0,	0.0,	0	34	0.0,	0.0,	0	35	0.0,	0.0,	0	36	0.0,	0.0,	0

SOURCE ID: S5

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK
1	6.1,	30.5,	0	2	6.1,	30.7,	0	3	6.1,	29.9,	0	4	6.1,	28.3,	0	5	6.1,	25.8,	0	6	6.1,	22.5,	0
7	6.1,	18.5,	0	8	6.1,	14.0,	0	9	6.1,	16.0,	0	10	6.1,	20.3,	0	11	6.1,	24.0,	0	12	6.1,	26.9,	0
13	6.1,	29.0,	0	14	6.1,	30.3,	0	15	6.1,	30.6,	0	16	6.1,	30.0,	0	17	6.1,	28.5,	0	18	6.1,	29.4,	0
19	6.1,	30.5,	0	20	6.1,	30.7,	0	21	6.1,	29.9,	0	22	6.1,	28.3,	0	23	6.1,	25.8,	0	24	6.1,	22.5,	0
25	6.1,	18.5,	0	26	6.1,	14.0,	0	27	6.1,	16.0,	0	28	6.1,	20.3,	0	29	6.1,	24.0,	0	30	6.1,	26.9,	0
31	6.1,	29.0,	0	32	6.1,	30.3,	0	33	6.1,	30.6,	0	34	6.1,	30.0,	0	35	6.1,	28.5,	0	36	6.1,	29.4,	0

SOURCE ID: S6

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK
1	6.1,	30.5,	0	2	6.1,	30.7,	0	3	6.1,	29.9,	0	4	6.1,	28.3,	0	5	6.1,	25.8,	0	6	6.1,	22.5,	0
7	6.1,	18.5,	0	8	6.1,	14.0,	0	9	6.1,	16.0,	0	10	6.1,	20.3,	0	11	6.1,	24.0,	0	12	6.1,	26.9,	0
13	6.1,	29.0,	0	14	6.1,	30.3,	0	15	6.1,	30.6,	0	16	6.1,	30.0,	0	17	6.1,	28.5,	0	18	6.1,	29.4,	0
19	6.1,	30.5,	0	20	6.1,	30.7,	0	21	6.1,	29.9,	0	22	6.1,	28.3,	0	23	6.1,	25.8,	0	24	6.1,	22.5,	0
25	6.1,	18.5,	0	26	6.1,	14.0,	0	27	6.1,	16.0,	0	28	6.1,	20.3,	0	29	6.1,	24.0,	0	30	6.1,	26.9,	0
31	6.1,	29.0,	0	32	6.1,	30.3,	0	33	6.1,	30.6,	0	34	6.1,	30.0,	0	35	6.1,	28.5,	0	36	6.1,	29.4,	0

SOURCE ID: S37

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK
1	6.1,	30.5,	0	2	6.1,	30.7,	0	3	6.1,	29.9,	0	4	6.1,	28.3,	0	5	6.1,	25.8,	0	6	6.1,	22.5,	0
7	6.1,	18.5,	0	8	6.1,	14.0,	0	9	6.1,	16.0,	0	10	6.1,	20.3,	0	11	6.1,	24.0,	0	12	6.1,	26.9,	0
13	6.1,	29.0,	0	14	6.1,	30.3,	0	15	6.1,	30.6,	0	16	6.1,	30.0,	0	17	6.1,	28.5,	0	18	6.1,	29.4,	0
19	6.1,	30.5,	0	20	6.1,	30.7,	0	21	6.1,	29.9,	0	22	6.1,	28.3,	0	23	6.1,	25.8,	0	24	6.1,	22.5,	0
25	6.1,	18.5,	0	26	6.1,	14.0,	0	27	6.1,	16.0,	0	28	6.1,	20.3,	0	29	6.1,	24.0,	0	30	6.1,	26.9,	0
31	6.1,	29.0,	0	32	6.1,	30.3,	0	33	6.1,	30.6,	0	34	6.1,	30.0,	0	35	6.1,	28.5,	0	36	6.1,	29.4,	0

*** THE ANNUAL (1 YRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): A8 , S5 , S6 , S37 , S15 , LEACHATE, A11 ,
*** DISCRETE CARTESIAN RECEPTOR POINTS ***
** CONC OF CANCRISK IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC		X-COORD (M)	Y-COORD (M)	CONC
554379.62	4202428.50	0.74376		554404.31	4202429.50	0.73997
554429.00	4202430.50	0.72389		554453.81	4202431.50	0.70240
554478.50	4202432.50	0.67844		554503.19	4202433.50	0.65378
554528.00	4202434.50	0.62342		554552.69	4202435.50	0.59215
554577.50	4202436.50	0.56242		554602.19	4202437.50	0.53422
554605.31	4202458.50	0.41351		554608.38	4202480.00	0.33300
554611.62	4202501.00	0.28934		554588.12	4202509.00	0.29909
554564.69	4202517.50	0.33318		554550.81	4202537.50	0.42775
554536.88	4202557.50	0.62977		554523.00	4202577.00	0.83952
554509.12	4202597.00	0.92268		554495.19	4202617.00	0.93033
554481.31	4202637.00	0.91044		554467.38	4202657.00	0.86286
554453.50	4202676.50	0.84196		554439.62	4202696.50	0.89867
554425.69	4202716.50	1.02987		554411.69	4202736.50	1.24750
554397.81	4202756.50	1.52037		554383.88	4202776.00	1.77394
554370.00	4202796.00	1.94810		554356.12	4202816.00	2.07039
554332.12	4202816.00	2.38112		554308.00	4202816.00	2.71363
554283.88	4202816.50	3.11767		554259.88	4202816.50	3.20405
554235.81	4202816.50	3.21093		554211.81	4202816.50	3.23073
554187.69	4202816.50	3.24362	mud flats	554163.62	4202817.00	3.19377
554139.62	4202817.00	3.13480		554115.50	4202817.00	3.09603
554091.38	4202817.00	3.05497		554067.38	4202817.00	3.00954
554043.31	4202817.00	2.94664		553264.19	4201632.00	0.33374
553286.88	4201632.00	0.33397		553309.69	4201631.50	0.33470
553332.38	4201631.00	0.33615		553355.12	4201631.00	0.33810
553377.81	4201631.00	0.33966		553400.62	4201630.50	0.34011
553423.31	4201630.00	0.33974		553446.00	4201630.00	0.33912
553468.81	4201630.00	0.33779		553491.50	4201629.50	0.33509
553503.19	4201649.50	0.34948		553514.88	4201670.00	0.36535
553526.62	4201690.00	0.38191		553538.31	4201710.50	0.40020
553550.12	4201730.50	0.41943		553570.19	4201730.00	0.41540
553590.38	4201729.50	0.40949		553610.50	4201729.50	0.40199
553630.69	4201729.00	0.39187		553650.81	4201728.50	0.38090
553674.50	4201731.50	0.37323		553698.31	4201735.00	0.36835
553722.00	4201738.00	0.36544		553745.69	4201741.00	0.36387
553769.38	4201744.50	0.36453		553793.19	4201747.50	0.36682
553816.88	4201751.00	0.36923		553840.62	4201754.00	0.37202
553858.38	4201771.00	0.38359		553876.12	4201787.50	0.39641
553893.81	4201804.00	0.41107		553911.50	4201821.00	0.42832
553929.19	4201838.00	0.44916		553947.00	4201854.50	0.47442
553964.69	4201871.00	0.50356		553982.38	4201888.00	0.53357

*** THE ANNUAL (1 YRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): A8 , S5 , S6 , S37 , S15 , LEACHATE, A11 ,
*** DISCRETE CARTESIAN RECEPTOR POINTS ***
** CONC OF CANCRISK IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC	
553890.00	4201756.00	0.38660	553915.00	4201756.00	0.40030	
553890.00	4201781.00	0.39793	553915.00	4201781.00	0.41086	
553940.00	4201781.00	0.42712	553915.00	4201806.00	0.42245	
553940.00	4201806.00	0.44128	553965.00	4201806.00	0.45165	
553940.00	4201831.00	0.45460	553965.00	4201831.00	0.47244	
553990.00	4201831.00	0.47200	553965.00	4201856.00	0.49246	
553990.00	4201856.00	0.49910	554015.00	4201856.00	0.49569	
553990.00	4201881.00	0.52846	554015.00	4201881.00	0.52543	
554040.00	4201881.00	0.53676	554015.00	4201906.00	0.56058	
554040.00	4201906.00	0.56711	554065.00	4201906.00	0.58656	
554040.00	4201931.00	0.60293	554065.00	4201931.00	0.62855	
554090.00	4201931.00	0.60284	554065.00	4201956.00	0.67467	
554090.00	4201956.00	0.65402	554115.00	4201956.00	0.65135	
554090.00	4201981.00	0.71526	554115.00	4201981.00	0.69975	
554140.00	4201981.00	0.71604	554115.00	4202006.00	0.75702	
554140.00	4202006.00	0.77317	554165.00	4202006.00	0.75141	
554140.00	4202031.00	0.84135	554165.00	4202031.00	0.81172	
554165.00	4202056.00	0.88288	554190.00	4202056.00	0.82689	
554165.00	4202081.00	0.96899	554190.00	4202081.00	0.90513	
554215.00	4202081.00	0.92525	554190.00	4202106.00	1.00861	
554215.00	4202106.00	1.01882	554215.00	4202131.00	1.11638	
554240.00	4202131.00	1.01656	554215.00	4202156.00	1.20235	
554240.00	4202156.00	1.10259	554265.00	4202156.00	1.08167	
554240.00	4202181.00	1.22243	554265.00	4202181.00	1.13036	
554240.00	4202206.00	1.30281	554265.00	4202206.00	1.14519	
554290.00	4202206.00	1.03575	554265.00	4202231.00	1.16224	
554290.00	4202231.00	1.09187	554290.00	4202256.00	1.23461	
554315.00	4202256.00	1.22106	554290.00	4202281.00	1.52862	
554315.00	4202281.00	1.46277	554340.00	4202281.00	1.30134	
554315.00	4202306.00	1.56084	554340.00	4202306.00	1.33030	
554340.00	4202331.00	1.29865	554365.00	4202331.00	1.12104	
554340.00	4202356.00	1.20834	554365.00	4202356.00	0.86436	
554390.00	4202356.00	0.81695	554365.00	4202381.00	0.86039	
554390.00	4202381.00	0.99430	554415.00	4202381.00	1.11350	
554440.00	4202381.00	1.16168	554390.00	4202406.00	1.32771	
554415.00	4202406.00	1.25927	554440.00	4202406.00	1.17001	worker
554465.00	4202406.00	1.08476	554490.00	4202406.00	1.01034	
554515.00	4202406.00	0.94378	554540.00	4202406.00	0.88018	
554565.00	4202406.00	0.82336	554590.00	4202406.00	0.77172	
554615.00	4202406.00	0.72457	554640.00	4202406.00	0.68190	

*** THE ANNUAL (1 YRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): A8 , S5 , S6 , S37 , S15 , LEACHATE, A11 ,
*** DISCRETE CARTESIAN RECEPTOR POINTS ***
** CONC OF CANCRISK IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC	
554400.00	4201000.00	0.17915	554500.00	4201000.00	0.17200	
554600.00	4201000.00	0.15556	554700.00	4201000.00	0.15322	
554800.00	4201000.00	0.13250	554900.00	4201000.00	0.12082	
555000.00	4201000.00	0.10881	555100.00	4201000.00	0.09998	resident
555200.00	4201000.00	0.09669	555300.00	4201000.00	0.09262	
555400.00	4201000.00	0.08577	555500.00	4201000.00	0.07670	
553200.00	4201100.00	0.14820	553300.00	4201100.00	0.15014	
553400.00	4201100.00	0.15907	553500.00	4201100.00	0.16875	
553600.00	4201100.00	0.17982	553700.00	4201100.00	0.19146	
553800.00	4201100.00	0.19598	553900.00	4201100.00	0.20656	
554000.00	4201100.00	0.20498	554100.00	4201100.00	0.21080	
554200.00	4201100.00	0.20532	554300.00	4201100.00	0.20421	
554400.00	4201100.00	0.19364	554500.00	4201100.00	0.18366	
554600.00	4201100.00	0.16976	554700.00	4201100.00	0.15894	
554800.00	4201100.00	0.13839	554900.00	4201100.00	0.12538	
555000.00	4201100.00	0.11256	555100.00	4201100.00	0.10673	
555200.00	4201100.00	0.10260	555300.00	4201100.00	0.09523	
555400.00	4201100.00	0.08546	555500.00	4201100.00	0.07221	
553000.00	4201200.00	0.17594	553100.00	4201200.00	0.17561	
553200.00	4201200.00	0.17067	553300.00	4201200.00	0.16530	
553400.00	4201200.00	0.16966	553500.00	4201200.00	0.18076	
553600.00	4201200.00	0.19145	553700.00	4201200.00	0.20443	
553800.00	4201200.00	0.21202	553900.00	4201200.00	0.22114	
554000.00	4201200.00	0.22351	554100.00	4201200.00	0.22917	
554200.00	4201200.00	0.22355	554300.00	4201200.00	0.22111	
554400.00	4201200.00	0.21110	554500.00	4201200.00	0.19557	
554600.00	4201200.00	0.18626	554700.00	4201200.00	0.16361	
554800.00	4201200.00	0.14582	554900.00	4201200.00	0.12985	
555000.00	4201200.00	0.11924	555100.00	4201200.00	0.11440	
555200.00	4201200.00	0.10650	555300.00	4201200.00	0.09603	
555400.00	4201200.00	0.08071	555500.00	4201200.00	0.06991	
552900.00	4201300.00	0.18907	553000.00	4201300.00	0.19617	
553100.00	4201300.00	0.20015	553200.00	4201300.00	0.19885	
553300.00	4201300.00	0.19130	553400.00	4201300.00	0.18675	
553500.00	4201300.00	0.19449	553600.00	4201300.00	0.20506	
553700.00	4201300.00	0.21857	553800.00	4201300.00	0.23231	
553900.00	4201300.00	0.23732	554000.00	4201300.00	0.24587	
554100.00	4201300.00	0.25007	554200.00	4201300.00	0.24498	
554300.00	4201300.00	0.24019	554400.00	4201300.00	0.23221	
554500.00	4201300.00	0.21077	554600.00	4201300.00	0.19984	

*** THE SUMMARY OF MAXIMUM ANNUAL (1 YRS) RESULTS ***

** CONC OF CANCRISK IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	3.24362 AT (554187.69, 4202816.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	3.23073 AT (554211.81, 4202816.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	3.21093 AT (554235.81, 4202816.50, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	3.20405 AT (554259.88, 4202816.50, 0.00, 0.00)	DC	NA
FLARE	1ST HIGHEST VALUE IS	0.02858 AT (554265.00, 4202856.00, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	0.02835 AT (554265.00, 4202831.00, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	0.02832 AT (554250.00, 4202900.00, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	0.02815 AT (554290.00, 4202856.00, 0.00, 0.00)	DC	NA
ENGINES	1ST HIGHEST VALUE IS	1.34018 AT (554308.00, 4202816.00, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	1.31634 AT (554283.88, 4202816.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	1.29419 AT (554332.12, 4202816.00, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	1.27211 AT (554315.00, 4202831.00, 0.00, 0.00)	DC	NA
FUGITIVE	1ST HIGHEST VALUE IS	1.45666 AT (554043.31, 4202817.00, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	1.42015 AT (554067.38, 4202817.00, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	1.38603 AT (554091.38, 4202817.00, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	1.35486 AT (554115.50, 4202817.00, 0.00, 0.00)	DC	NA
LEACHATE	1ST HIGHEST VALUE IS	1.02160 AT (554294.38, 4202293.00, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	0.94489 AT (554307.50, 4202314.00, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	0.90628 AT (554290.00, 4202281.00, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	0.89738 AT (554315.00, 4202306.00, 0.00, 0.00)	DC	NA

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

```
Input File - C:\Riskscreens\p1840\a11375\run_01_CHRON_HI.DTA
Output File - C:\Riskscreens\p1840\a11375\run_01_CHRON_HI.LST
   Met File - C:\Riskscreens\metdata\ChevronRefinery\CHV013RA.ASC

 *** ISCST3 - VERSION 02035 ***    *** West Contra Costa Sanitary Landfill Inc.  P#1840  A#11375           ***        03/03/05
                                   *** Landfill Expansion & Increase in Engine Flare and Leachate System Ca ***        10:05:48

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
**Intermediate Terrain Processing is Selected
**Model Is Setup For Calculation of Average CONCentration Values.
  --  SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION.  DDPLETE =  F
**Model Uses NO WET DEPLETION.  WDPLETE =  F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations
**Model Uses RURAL Dispersion.
**Model Uses Regulatory DEFAULT Options:
**Model Assumes Receptors on FLAT Terrain.
**Model Assumes No FLAGPOLE Receptor Heights.
**Model Calculates ANNUAL Averages Only
**This Run Includes:     7 Source(s);      5 Source Group(s); and    1141 Receptor(s)
**Misc. Inputs:  Anem. Hgt. (m) =    10.00 ;    Decay Coef. =    0.000     ;    Rot. Angle =     0.0


                                                *** POINT SOURCE DATA ***
            NUMBER EMISSION RATE                    BASE     STACK   STACK    STACK     STACK    BUILDING EMISSION RATE
   SOURCE    PART.  (GRAMS/SEC)     X         Y      ELEV.    HEIGHT  TEMP.   EXIT VEL. DIAMETER   EXISTS   SCALAR VARY
     ID      CATS.                (METERS) (METERS) (METERS) (METERS) (DEG.K)  (M/SEC)  (METERS)               BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  A8           0   0.18500E-02  554254.4 4202395.0     0.0     6.16  1033.15     6.77     1.03      YES
  S5           0   0.11100E-02  554279.7 4202418.0     0.0     8.23   705.37    12.07     0.41      YES
  S6           0   0.11100E-02  554283.6 4202418.5     0.0     8.23   705.37    12.07     0.41      YES
  S37          0   0.97600E-03  554287.8 4202419.0     0.0     7.32   658.15    12.63     0.40      YES
  A11          0   0.31536E-02  554277.0 4202446.0     0.0     4.88  1144.26    13.00     0.71      NO


                                                *** AREA SOURCE DATA ***
            NUMBER EMISSION RATE  COORD (SW CORNER)  BASE     RELEASE  X-DIM     Y-DIM    ORIENT.    INIT.  EMISSION RATE
   SOURCE    PART.  (GRAMS/SEC       X         Y      ELEV.    HEIGHT  OF AREA   OF AREA   OF AREA     SZ     SCALAR VARY
     ID      CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS) (METERS)  (METERS)   (DEG.)   (METERS)      BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  LEACHATE     0   0.18037E-06  554119.2 4202315.0     0.0     0.00     20.00     43.80     18.00     0.00


                                                *** AREAPOLY SOURCE DATA ***
            NUMBER EMISSION RATE   LOCATION OF AREA  BASE     RELEASE  NUMBER      INIT.   EMISSION RATE
   SOURCE    PART.  (GRAMS/SEC       X         Y      ELEV.    HEIGHT  OF VERTS.     SZ      SCALAR VARY
     ID      CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS)             (METERS)       BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  S15          0   0.59900E-08  553973.7 4202120.0     0.0     0.00      16         0.00
```

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: A8

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK
1	0.0,	0.0,	0	2	0.0,	0.0,	0	3	0.0,	0.0,	0	4	0.0,	0.0,	0	5	0.0,	0.0,	0	6	0.0,	0.0,	0
7	0.0,	0.0,	0	8	0.0,	0.0,	0	9	0.0,	0.0,	0	10	0.0,	0.0,	0	11	0.0,	0.0,	0	12	0.0,	0.0,	0
13	0.0,	0.0,	0	14	0.0,	0.0,	0	15	0.0,	0.0,	0	16	0.0,	0.0,	0	17	0.0,	0.0,	0	18	0.0,	0.0,	0
19	0.0,	0.0,	0	20	0.0,	0.0,	0	21	0.0,	0.0,	0	22	6.1,	28.3,	0	23	6.1,	25.8,	0	24	6.1,	22.5,	0
25	6.1,	18.5,	0	26	6.1,	14.0,	0	27	0.0,	0.0,	0	28	0.0,	0.0,	0	29	0.0,	0.0,	0	30	0.0,	0.0,	0
31	0.0,	0.0,	0	32	0.0,	0.0,	0	33	0.0,	0.0,	0	34	0.0,	0.0,	0	35	0.0,	0.0,	0	36	0.0,	0.0,	0

SOURCE ID: S5

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK
1	6.1,	30.5,	0	2	6.1,	30.7,	0	3	6.1,	29.9,	0	4	6.1,	28.3,	0	5	6.1,	25.8,	0	6	6.1,	22.5,	0
7	6.1,	18.5,	0	8	6.1,	14.0,	0	9	6.1,	16.0,	0	10	6.1,	20.3,	0	11	6.1,	24.0,	0	12	6.1,	26.9,	0
13	6.1,	29.0,	0	14	6.1,	30.3,	0	15	6.1,	30.6,	0	16	6.1,	30.0,	0	17	6.1,	28.5,	0	18	6.1,	29.4,	0
19	6.1,	30.5,	0	20	6.1,	30.7,	0	21	6.1,	29.9,	0	22	6.1,	28.3,	0	23	6.1,	25.8,	0	24	6.1,	22.5,	0
25	6.1,	18.5,	0	26	6.1,	14.0,	0	27	6.1,	16.0,	0	28	6.1,	20.3,	0	29	6.1,	24.0,	0	30	6.1,	26.9,	0
31	6.1,	29.0,	0	32	6.1,	30.3,	0	33	6.1,	30.6,	0	34	6.1,	30.0,	0	35	6.1,	28.5,	0	36	6.1,	29.4,	0

SOURCE ID: S6

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK
1	6.1,	30.5,	0	2	6.1,	30.7,	0	3	6.1,	29.9,	0	4	6.1,	28.3,	0	5	6.1,	25.8,	0	6	6.1,	22.5,	0
7	6.1,	18.5,	0	8	6.1,	14.0,	0	9	6.1,	16.0,	0	10	6.1,	20.3,	0	11	6.1,	24.0,	0	12	6.1,	26.9,	0
13	6.1,	29.0,	0	14	6.1,	30.3,	0	15	6.1,	30.6,	0	16	6.1,	30.0,	0	17	6.1,	28.5,	0	18	6.1,	29.4,	0
19	6.1,	30.5,	0	20	6.1,	30.7,	0	21	6.1,	29.9,	0	22	6.1,	28.3,	0	23	6.1,	25.8,	0	24	6.1,	22.5,	0
25	6.1,	18.5,	0	26	6.1,	14.0,	0	27	6.1,	16.0,	0	28	6.1,	20.3,	0	29	6.1,	24.0,	0	30	6.1,	26.9,	0
31	6.1,	29.0,	0	32	6.1,	30.3,	0	33	6.1,	30.6,	0	34	6.1,	30.0,	0	35	6.1,	28.5,	0	36	6.1,	29.4,	0

SOURCE ID: S37

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK
1	6.1,	30.5,	0	2	6.1,	30.7,	0	3	6.1,	29.9,	0	4	6.1,	28.3,	0	5	6.1,	25.8,	0	6	6.1,	22.5,	0
7	6.1,	18.5,	0	8	6.1,	14.0,	0	9	6.1,	16.0,	0	10	6.1,	20.3,	0	11	6.1,	24.0,	0	12	6.1,	26.9,	0
13	6.1,	29.0,	0	14	6.1,	30.3,	0	15	6.1,	30.6,	0	16	6.1,	30.0,	0	17	6.1,	28.5,	0	18	6.1,	29.4,	0
19	6.1,	30.5,	0	20	6.1,	30.7,	0	21	6.1,	29.9,	0	22	6.1,	28.3,	0	23	6.1,	25.8,	0	24	6.1,	22.5,	0
25	6.1,	18.5,	0	26	6.1,	14.0,	0	27	6.1,	16.0,	0	28	6.1,	20.3,	0	29	6.1,	24.0,	0	30	6.1,	26.9,	0
31	6.1,	29.0,	0	32	6.1,	30.3,	0	33	6.1,	30.6,	0	34	6.1,	30.0,	0	35	6.1,	28.5,	0	36	6.1,	29.4,	0

*** THE ANNUAL (1 YRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): A8 , S5 , S6 , S37 , S15 , LEACHATE, A11 ,
*** DISCRETE CARTESIAN RECEPTOR POINTS ***
** CONC OF CHRON_HI IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC		X-COORD (M)	Y-COORD (M)	CONC
554379.62	4202428.50	0.01523		554404.31	4202429.50	0.01562
554429.00	4202430.50	0.01550		554453.81	4202431.50	0.01509
554478.50	4202432.50	0.01455		554503.19	4202433.50	0.01397
554528.00	4202434.50	0.01330		554552.69	4202435.50	0.01260
554577.50	4202436.50	0.01194		554602.19	4202437.50	0.01131
554605.31	4202458.50	0.00899		554608.38	4202480.00	0.00743
554611.62	4202501.00	0.00662		554588.12	4202509.00	0.00682
554564.69	4202517.50	0.00745		554550.81	4202537.50	0.00939
554536.88	4202557.50	0.01358		554523.00	4202577.00	0.01774
554509.12	4202597.00	0.01920		554495.19	4202617.00	0.01939
554481.31	4202637.00	0.01945		554467.38	4202657.00	0.01907
554453.50	4202676.50	0.01884		554439.62	4202696.50	0.02020
554425.69	4202716.50	0.02359		554411.69	4202736.50	0.02869
554397.81	4202756.50	0.03458		554383.88	4202776.00	0.04007
554370.00	4202796.00	0.04421		554356.12	4202816.00	0.04707
554332.12	4202816.00	0.05562		554308.00	4202816.00	0.06668
554283.88	4202816.50	0.08217		554259.88	4202816.50	0.08566
554235.81	4202816.50	0.08624		554211.81	4202816.50	0.08671
554187.69	4202816.50	0.08709	mud flats	554163.62	4202817.00	0.08607
554139.62	4202817.00	0.08542		554115.50	4202817.00	0.08496
554091.38	4202817.00	0.08476		554067.38	4202817.00	0.08457
554043.31	4202817.00	0.08396		553264.19	4201632.00	0.00966
553286.88	4201632.00	0.00968		553309.69	4201631.50	0.00970
553332.38	4201631.00	0.00972		553355.12	4201631.00	0.00974
553377.81	4201631.00	0.00976		553400.62	4201630.50	0.00976
553423.31	4201630.00	0.00976		553446.00	4201630.00	0.00977
553468.81	4201630.00	0.00976		553491.50	4201629.50	0.00973
553503.19	4201649.50	0.01015		553514.88	4201670.00	0.01063
553526.62	4201690.00	0.01112		553538.31	4201710.50	0.01167
553550.12	4201730.50	0.01225		553570.19	4201730.00	0.01215
553590.38	4201729.50	0.01203		553610.50	4201729.50	0.01189
553630.69	4201729.00	0.01171		553650.81	4201728.50	0.01151
553674.50	4201731.50	0.01136		553698.31	4201735.00	0.01121
553722.00	4201738.00	0.01103		553745.69	4201741.00	0.01084
553769.38	4201744.50	0.01067		553793.19	4201747.50	0.01048
553816.88	4201751.00	0.01030		553840.62	4201754.00	0.01012
553858.38	4201771.00	0.01025		553876.12	4201787.50	0.01037
553893.81	4201804.00	0.01049		553911.50	4201821.00	0.01062
553929.19	4201838.00	0.01078		553947.00	4201854.50	0.01095
553964.69	4201871.00	0.01113		553982.38	4201888.00	0.01132

*** THE ANNUAL (1 YRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): A8 , S5 , S6 , S37 , S15 , LEACHATE, A11 ,
*** DISCRETE CARTESIAN RECEPTOR POINTS ***
** CONC OF CHRON_HI IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC	
553890.00	4201756.00	0.00972	553915.00	4201756.00	0.00955	
553890.00	4201781.00	0.01012	553915.00	4201781.00	0.00991	
553940.00	4201781.00	0.00976	553915.00	4201806.00	0.01032	
553940.00	4201806.00	0.01015	553965.00	4201806.00	0.00994	
553940.00	4201831.00	0.01057	553965.00	4201831.00	0.01036	
553990.00	4201831.00	0.01007	553965.00	4201856.00	0.01083	
553990.00	4201856.00	0.01055	554015.00	4201856.00	0.01026	
553990.00	4201881.00	0.01108	554015.00	4201881.00	0.01077	
554040.00	4201881.00	0.01057	554015.00	4201906.00	0.01136	
554040.00	4201906.00	0.01111	554065.00	4201906.00	0.01097	
554040.00	4201931.00	0.01173	554065.00	4201931.00	0.01158	
554090.00	4201931.00	0.01129	554065.00	4201956.00	0.01226	
554090.00	4201956.00	0.01194	554115.00	4201956.00	0.01180	
554090.00	4201981.00	0.01266	554115.00	4201981.00	0.01240	
554140.00	4201981.00	0.01243	554115.00	4202006.00	0.01303	
554140.00	4202006.00	0.01301	554165.00	4202006.00	0.01299	
554140.00	4202031.00	0.01362	554165.00	4202031.00	0.01356	
554165.00	4202056.00	0.01416	554190.00	4202056.00	0.01412	
554165.00	4202081.00	0.01482	554190.00	4202081.00	0.01478	
554215.00	4202081.00	0.01518	554190.00	4202106.00	0.01551	
554215.00	4202106.00	0.01593	554215.00	4202131.00	0.01661	
554240.00	4202131.00	0.01671	554215.00	4202156.00	0.01714	
554240.00	4202156.00	0.01734	554265.00	4202156.00	0.01787	
554240.00	4202181.00	0.01799	554265.00	4202181.00	0.01837	
554240.00	4202206.00	0.01836	554265.00	4202206.00	0.01863	
554290.00	4202206.00	0.01852	554265.00	4202231.00	0.01875	
554290.00	4202231.00	0.01891	554290.00	4202256.00	0.01950	
554315.00	4202256.00	0.02004	554290.00	4202281.00	0.02049	
554315.00	4202281.00	0.02115	554340.00	4202281.00	0.01954	
554315.00	4202306.00	0.02120	554340.00	4202306.00	0.01929	
554340.00	4202331.00	0.02040	554365.00	4202331.00	0.01842	
554340.00	4202356.00	0.02065	554365.00	4202356.00	0.01441	
554390.00	4202356.00	0.01425	554365.00	4202381.00	0.01658	
554390.00	4202381.00	0.01970	554415.00	4202381.00	0.02243	
554440.00	4202381.00	0.02360	554390.00	4202406.00	0.02797	
554415.00	4202406.00	0.02668	554440.00	4202406.00	0.02482	worker
554465.00	4202406.00	0.02294	554490.00	4202406.00	0.02123	
554515.00	4202406.00	0.01968	554540.00	4202406.00	0.01825	
554565.00	4202406.00	0.01697	554590.00	4202406.00	0.01582	
554615.00	4202406.00	0.01480	554640.00	4202406.00	0.01389	

*** THE ANNUAL (1 YRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): A8 , S5 , S6 , S37 , S15 , LEACHATE, A11 ,
*** DISCRETE CARTESIAN RECEPTOR POINTS ***
** CONC OF CHRON_HI IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC	
554400.00	4201000.00	0.00406	554500.00	4201000.00	0.00380	
554600.00	4201000.00	0.00344	554700.00	4201000.00	0.00332	
554800.00	4201000.00	0.00294	554900.00	4201000.00	0.00267	
555000.00	4201000.00	0.00239	555100.00	4201000.00	0.00219	
555200.00	4201000.00	0.00210	555300.00	4201000.00	0.00202	
555400.00	4201000.00	0.00189	555500.00	4201000.00	0.00169	
553200.00	4201100.00	0.00430	553300.00	4201100.00	0.00439	
553400.00	4201100.00	0.00456	553500.00	4201100.00	0.00471	
553600.00	4201100.00	0.00482	553700.00	4201100.00	0.00484	
553800.00	4201100.00	0.00481	553900.00	4201100.00	0.00485	
554000.00	4201100.00	0.00479	554100.00	4201100.00	0.00475	
554200.00	4201100.00	0.00462	554300.00	4201100.00	0.00454	
554400.00	4201100.00	0.00436	554500.00	4201100.00	0.00402	
554600.00	4201100.00	0.00370	554700.00	4201100.00	0.00346	
554800.00	4201100.00	0.00306	554900.00	4201100.00	0.00274	
555000.00	4201100.00	0.00246	555100.00	4201100.00	0.00232	
555200.00	4201100.00	0.00223	555300.00	4201100.00	0.00210	
555400.00	4201100.00	0.00188	555500.00	4201100.00	0.00162	
553000.00	4201200.00	0.00469	553100.00	4201200.00	0.00478	
553200.00	4201200.00	0.00484	553300.00	4201200.00	0.00486	
553400.00	4201200.00	0.00497	553500.00	4201200.00	0.00515	
553600.00	4201200.00	0.00525	553700.00	4201200.00	0.00528	
553800.00	4201200.00	0.00522	553900.00	4201200.00	0.00524	
554000.00	4201200.00	0.00519	554100.00	4201200.00	0.00514	
554200.00	4201200.00	0.00500	554300.00	4201200.00	0.00490	
554400.00	4201200.00	0.00469	554500.00	4201200.00	0.00426	
554600.00	4201200.00	0.00400	554700.00	4201200.00	0.00359	
554800.00	4201200.00	0.00318	554900.00	4201200.00	0.00283	
555000.00	4201200.00	0.00259	555100.00	4201200.00	0.00248	
555200.00	4201200.00	0.00235	555300.00	4201200.00	0.00212	resident
555400.00	4201200.00	0.00180	555500.00	4201200.00	0.00158	
552900.00	4201300.00	0.00508	553000.00	4201300.00	0.00527	
553100.00	4201300.00	0.00543	553200.00	4201300.00	0.00551	
553300.00	4201300.00	0.00554	553400.00	4201300.00	0.00555	
553500.00	4201300.00	0.00568	553600.00	4201300.00	0.00577	
553700.00	4201300.00	0.00580	553800.00	4201300.00	0.00575	
553900.00	4201300.00	0.00568	554000.00	4201300.00	0.00564	
554100.00	4201300.00	0.00557	554200.00	4201300.00	0.00543	
554300.00	4201300.00	0.00531	554400.00	4201300.00	0.00507	
554500.00	4201300.00	0.00456	554600.00	4201300.00	0.00430	

APPENDIX B

ENGINEERING EVALUATION

for

APPLICATION # 13247

ENGINEERING EVALUATION
West Contra Costa Sanitary Landfill, Inc., Plant A1840
Application Number 13247
February 23, 2006

I. BACKGROUND

West Contra Costa Sanitary Landfill, Inc. (WCCSL) operates a municipal solid waste landfill facility in Richmond, California. The WCCSL facility is a 340-acre site where solid waste disposal operations began in 1952. This facility includes the active 160-acre Class II landfill (S15) and the 28-acre closed Class I landfill also known as the Hazardous Waste Management Facility (HWMF, S46). This application is for an Authority to Construct and Permit to Operate:

S50 Solid Waste Transfer Station abated by A50 Water Mist System, 2000 tons of waste per day maximum

The Class II landfill (S15) is scheduled to be closed and will no longer be accepting waste when it is filled to capacity. WCCSL is proposing to operate a new solid waste transfer station where waste will be consolidated from multiple collection vehicles into larger, high-volume transfer vehicles for more economical shipment to distant disposal sites. The new solid waste transfer station will receive trash, refuse, rubbish, green materials and wood wastes delivered by self-haulers, industrial debris boxes and commercial vehicles. The transfer station will include a waste receiving area, waste sorting areas, recyclables storage areas, household hazardous waste storage and non-recovered materials storage, and loadout areas. The mixed waste tipping area will be paved and roofed. The floor sorting and processing area will be enclosed within a building. Wastes (mixed wastes, green material and wood wastes) will be removed within 48 hours.

II. EMISSIONS: Particulate emissions are expected from vehicle traffic, vehicle unloading, material loadout from sorting and processing operations, and from bulk loading into transfer trailers.

A. Emission Factors:

Vehicle Traffic on Paved Roads: The emission factor for vehicle traffic on paved roads is calculated using the following equation found in EPA's AP42 Chapter 13.2.1 Paved Roads, December 2003.

$$E_{ext} = [\, k\,(sL/2)^{0.65}\,(W/3)^{1.5} - C\,]\,(\,1 - P / 4N\,)$$

Where E_{ext} = Emission factor, pounds per vehicle miles traveled (lbs/VMT)
- k = particle size multiplier (lbs/VMT)
  - = 0.016, for PM_{10} from Table 13.2.1-1
- sL = road surface silt loading (g/m^2)
  - = 7.4, mean value for municipal solid waste landfills from Table 13.2.1-4
- W = average weight of vehicles (tons)
  - = 5.05, estimate provided by applicant
- C = emission factor for 1980's vehicle fleet exhaust, brake and tire wear (lbs/VMT)
  - = 0.00047, for PM_{10} from Table 13.2.1-2

P = number of days with at least 0.01 in. of precipitation during the averaging period
= 50 days, estimated from Graph of Probability of 0.01" Precipitation for Richmond obtained from the Western Regional Climate Center Website (www.wrcc.dri.edu)
N = number of days in the averaging period
= 365 for annual

$E_{paved} = [0.016 (7.4/2)^{0.65} (5.05/3)^{1.5} – 0.00047] (1 – 50 / 4(365)) = 7.9 E-2$ lbs/VMT

Vehicle Traffic on Unpaved Roads: The emission factor for vehicle traffic on unpaved roads at industrial sites is calculated using the following equations found in EPA's AP42 Chapter 13.2.2 Unpaved Roads, December 2003.

$E = k (s/12)^a (W/3)^b$ and $E_{ext} = E [(365 - P) / 365]$

$E_{ext} = [k (s/12)^a (W/3)^b] [(365 – P) / 365]$

Where E_{ext} = Annual Emission factor (lbs/VMT)
k = empirical constant (lbs/VMT)
= 1.5, for PM_{10} and industrial roads from Table 13.2.2-2
a = empirical constant
= 0.9, for PM_{10} and industrial roads from Table 13.2.2-2
b = empirical constant
= 0.45, for PM_{10} and industrial roads from Table 13.2.2-2
s = surface material silt content (%)
= 6.4, mean value for municipal solid waste landfills from Table 13.2.2-1
W = mean vehicle weight (tons)
= 5.05, estimate provided by applicant
P = number of days with at least 0.01 in. of precipitation during the averaging period
= 50 days, estimated from Graph of Probability of 0.01" Precipitation for Richmond obtained from the Western Regional Climate Center Website (www.wrcc.dri.edu)

$E_{unpaved} = [1.5 (6.4/12)^{0.9} (5.05/3)^{0.45}] [(365 – 50) / 365] = 9.3 E-1$ lbs/VMT

Vehicle Loading and Unloading: Emissions factors are calculated using the following equation found in EPA's AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles, January 1995.

$E = k (0.0032) [(U/5)^{1.3} / (M/2)^{1.4}]$

Where E = Emission factor (lbs/ton)
K = particle size multiplier (dimensionless) = 0.35 for <10 μg particle size
U = mean wind speed (miles per hour)
M = material moisture content (%)

Vehicle Unloading (mixed waste tipping area): The mixed waste tipping area is described only as paved and roofed; therefore the mean wind speed in the area was used to determine the emission factor. Chevron 2001 meteorological data is representative for the area. The mean wind speed is 7.73 knots (7.73 knots / (1.15078 knots/mph) = 6.72 mph). Moisture content used for materials dropped in this area is 4.8%, which is the high end of the range recommended for the equation, but conservatively lower than that shown in AP42 table 13.2.4-1.

$E_{unloading} = 0.35 * 0.0032 * [(6.72/5)^{1.3} / (4.8/2)^{1.4}] = 4.86$ E-4 lbs/ton

Loadout from Sorting Operation and Bulk Loading into Transfer Trailers: The sorting areas are within the building. Wastes are dropped through a slot in the tipping room floor in to the top of the transfer trailer, which is located on the floor below. The mean wind speed used for this area is 1.3 mph (the low end of the range recommended in AP42). Although a moisture content of 11% is outside of the range, the building has a water mist abatement system and the 11% value is from AP42 table 13.2.4-1 for miscellaneous fill materials.

$E_{loading} = 0.35 * 0.0032 * [(1.3/5)^{1.3} / (11/2)^{1.4}] = 1.79$ E-5 lbs/ton

B. Emission Calculations:

Vehicle Traffic: The facility is scheduled to stop accepting waste at the landfill source, S15, by September 30, 2006. The reduction in vehicle traffic emissions associated with S15, when waste is no longer accepted at S15, can be used to offset vehicle traffic emissions associated with the new transfer station, S50. The road to S15 is 8,200 feet of unpaved road and the road to S50 is 1,400 feet paved and 6,800 feet unpaved.

The initial operation of S50 may occur more that 90 days prior to the cessation of waste acceptance at S15 and Regulation 2-2-410 restricts simultaneous operation to no more than 90 days when one source is providing offsets for the other. In order for both sources to operate simultaneously, initially the sum total of the number of vehicle trips per day to both S15 and S50 shall be limited by permit condition to no more than that currently traveling to S15 (601 vehicle trips per day). This results in no net increase in particulate emissions from vehicle traffic.

Although WCCSL plans to pave the entire road to S50, this will not occur for another 2 to 3 years after the landfill upon which the road is located settles. As such, upon the cessation of waste acceptance at S15, the number of vehicle trips per day to S50 shall be limited by permit condition to no more than which would be offset by the reduction in vehicle traffic to S15 and result in an increase in emission that would not trigger BACT. Vehicle emissions are calculated using the factors determined in section II.A., the vehicle trips per day (VTD) and the vehicle miles traveled (VMT). Table 1 shows the emissions estimated for the VTD to the new transfer station that would be offset by the emission reductions from the cessation of the current VTD to S15 and still result in an emissions increase that would not trigger BACT.

Table 1 – Vehicle Traffic Emissions Road to S50 Partially Paved					
Road	Number of Vehicle Trips per day (VTD)	Round-trip Distance per Vehicle (VMT)	PM_{10} Emission Factor, lbs/VMT	PM_{10} Emissions, lbs/day (1)	PM_{10} Emissions, tons/year
Transfer Station – paved (1,400 ft)	715	0.27	0.079	15.3	2.8
Transfer Station – unpaved (6,800 ft)	715	1.29	0.93	857.8	156.5
Landfill offset – unpaved (8,200 ft)	601	1.55	0.93	-866.3	-158.1
			Net	6.7	1.2

(1) PM_{10} Emissions, lbs/day = (VTD) * (VMT) * (Emission Factor)

WCCSL projects a growth in the VTD to 853 by 2015. However, in order to increase the VTD beyond 715, WCCSL must apply for a permit modification and show that the roads to and from the transfer station will meet BACT. Table 2 shows that there will be a significant net reduction in particulate emissions if the entire road to the transfer station were paved.

Table 2 – Vehicle Traffic Emissions Road to S50 If Completely Paved					
Road	Number of Vehicle Trips per day (VTD)	Round-trip Distance per Vehicle (VMT)	PM_{10} Emission Factor, lbs/VMT	PM_{10} Emissions, lbs/day (1)	PM_{10} Emissions, tons/year
Transfer Station – paved (8,200 ft)	1000	1.55	0.079	122.5	22.4
Landfill offset - unpaved (8,200 ft)	601	1.55	0.93	-866.3	-158.1
			Net	-761	-135.7

Solid Waste Transfer Station: The emissions from operations at the transfer station are calculated using the factors determined in section II.A. and the maximum proposed throughput of waste materials, 2000 tons per day and 730000 tons per year. Table 3 shows the maximum emissions for each loading/loadout operation at the transfer station.

Table 3 – Particulate Emissions from Transfer Station Operations					
Operation	Through-put, tons/day	Through-put, tons/year	PM_{10} Emission Factor, lbs/ton	PM_{10} Emissions, lbs/day (2)	PM_{10} Emissions, tons/year
Vehicle Unloading	2000	730000	4.86 E-4	0.97	0.177
Loadout from Sorting and Processing Operations	2000	730000	1.79 E-5	0.036	0.0065
Loading into Transfer Trailers	2000	730000	1.79 E-5	0.036	0.0065
			Totals	1.04	0.190

(2) PM_{10} Emissions, lbs/day = (Throughput, tons/day) * (Emission Factor, lbs/ton)

C. Cumulative Emissions: Table 4 shows the potential to emit emissions for the entire facility including the transfer station. Table 5 shows the cumulative emissions for this facility.

Table 4 - Potential to Emit for the Facility Including New Transfer Station						
Description	NMOC, tons/yr	NOx, tons/yr	CO, tons/yr	PM_{10}, tons/yr	SOx, tons/yr	Estimated Under Application#
Class II Landfill, S15	12.44			158.1(3)		AN11375 & 13247
Flare for S15, A3	2.01	13.44	67.22	3.76	19.33	AN11375
IC Engine, S5	2.61	11.93	43.33	2.30	4.65	AN11375
IC Engine, S6	2.61	11.93	43.33	2.30	4.65	AN11375
IC Engine, S37	2.30	10.52	31.40	2.25	4.10	AN11375
Leachate System, S22-30 & S38-40	2.68					AN11375
HWMF Landfill, S46	1.43					AN2789 & 8514
Flare for S46, A11	0.34	1.37	6.86	0.39	1.14	AN2789 & 8514
Transfer Station, S50				1.39(3)		AN13247
PTE Totals	26.41	49.18	192.14	170.49	33.87	

(3) Value includes fugitive vehicle traffic emissions.

Table 5 – Cumulative Increases					
Description	POC, tons/yr	NOx, tons/yr	CO, tons/yr	PM_{10}, tons/yr	SOx, tons/yr
Cumulative Emission Increase (post 4/5/1991) Established in AN8514	0.000	0.000	6.378	0.429	4.094
Emission Increase from AN11375 (4)	6.25	10.44	47.29	2.67	11.71
Emission Increase from this application (AN13247)				1.39	
New Cumulative Emission Totals	6.25	10.44	53.67	4.49	15.80

(4) Under application number 11375, offsets were provided for the 6.25 tpy POC and 10.44 tpy NOx cumulative increase from the small facilities bank account and must be reimbursed when any increase in the PTE for these pollutants trigger new offset requirements.

III. HEALTH RISK ANALYSIS: No significant emissions of toxic air contaminants (TAC) are expected from the operation of the transfer station. As such, a health risk analysis is not required.

IV. MONITORING REQUIREMENTS: The owner/operator shall maintain records of waste throughput, vehicle route maintenance events (cleaning of paved roads and application of water or dust suppressants on unpaved roads), the number of vehicle trips per day to S15 and the number of vehicle trips per day to S50 in a District-approved log. These records shall be retained on site for a minimum of five years from the date of entry and shall be made available to the District representatives upon request. (basis: Cumulative Increase, Regulations 2-6-501, and 6-305)

V. STATEMENT OF COMPLIANCE

A. California Environmental Quality Act Requirements (CEQA, Regulation 2-1-310 and 426): Under District Regulation 2-1-312.11, the operation of the waste transfer station is exempt from CEQA review because the project has no potential for causing a significant environmental effect.

B. Public Notice, Schools (Regulation 2-1-412): The project is over 1000 feet from the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

C. Best Available Control Technology (BACT, Regulation 2-2-301): BACT is not required because emission increases of PM_{10} from this project will not exceed 10 pounds per highest day.

D. Offsets (Regulation 2-2-303): Only cumulative increases of PM_{10} are affected by this application. Offsets will not be required because WCCSL is not a Major Facility, per Regulation 2-1-204.1, for PM_{10}.

E. Prevention of Significant Deterioration (PSD, Regulation 2-2-304): WCCSL is not a Major Facility for PM_{10} and the PSD requirements do not apply.

F. Maximum Achievable Control Technology (MACT, Regulation 2-2-317): Total Hazardous Air Pollutant (HAP) emissions from WCCSL are less than 25 tons per year with no single HAP emissions exceeding 10 tons per year; thus, WCCSL is not major facility of HAPs and Regulation 2-2-317 does not apply.

G. New Source Review for Toxic Air Contaminants (Regulation 2, Rule 5): No significant emissions of toxic air contaminants are expected from the operation of the transfer station. As such, new source review for TACs is not required.

H. Major Facility Review (MFR, Regulation 2, Rule 6): A Title V Permit has been issued for this facility. The proposed waste transfer station will require a minor revision to the MFR Permit pursuant to Regulation 2-6-215. The necessary Title V MFR Permit revisions will be proposed under application number 11374 in a separate document. This evaluation report serves as the statement of basis for the minor MFR permit revision.

I. Particulate Matter and Visible Emissions (Regulation 6): Operation of the transfer station in compliance with the proposed permit conditions, parts 3 and 4, are expected to ensure compliance with Regulation 6, Sections 301 and 305.

J. Federal Requirements: This application is not subject to federal NSPS or NESHAP requirements.

VI. PERMIT CONDITIONS: The following permit conditions are proposed for the transfer station.

1. The total quantity of waste accepted at the waste transfer station, S50, shall not exceed 2000 tons per day or 730,000 tons in any consecutive twelve month period. (Basis: Cumulative Increase)

2. Wastes (mixed wastes, green material and wood wastes) shall be removed from the transfer station within 48 hours after being received at the facility. (Basis: Regulation 1-301)

3. Visible particulate emissions from the operations at S50 shall not exceed Ringelmann 1.0 or result in fallout on neighboring property. (Basis: Regulation 6-301, 6-305, Regulation 1-301)

4. Water and/or dust suppressants shall be applied to all on-site unpaved roadways as necessary to prevent visible particulate emissions. Paved roadways at the facility shall be kept sufficiently clear of dirt and debris as necessary to prevent visible particulate emissions from vehicle traffic or wind. (Basis: Regulations 6-301, and 6-305)

5. Until the owner/operator ceases to accept waste at the landfill source, S15, the sum total of the number of vehicle trips per day to S15 and the number of vehicle trips per day to S50 shall not exceed 601 vehicle trips per day. (Basis: Cumulative increase)

6. Upon termination of waste acceptance at S15, the maximum number of vehicle trips per day to S50 may increase to, but not exceed, 715 vehicle trips per day. Within 10 working days following the termination of waste acceptance at S15, the owner/operator shall submit to the District written confirmation that waste is no longer accepted at S15. (Basis: Cumulative increase)

7. The owner/operator shall maintain records of waste throughput, vehicle route maintenance events (cleaning of paved roads and application of water or dust suppressants on unpaved roads), the number of vehicle trips per day to S15 and the number of vehicle trips per day to S50 in a District-approved log. These records shall be retained on site for a minimum of five years from the date of entry and shall be made available to the District representatives upon request. (Basis: Cumulative Increase, Regulations 2-6-501, and 6-305)

VII. RECOMMENDATION: Issue an Authority to Construct for the sources listed below.

S50 Solid Waste Transfer Station abated by A50 Water Mist System, 2000 tons of waste per day, maximum

_____

Jane H. Lundquist
Senior Air Quality Engineer
Engineering Division