



31 January 2003

Al Linero  
Bureau of Air Regulation  
Mail Station 5505  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Dear Mr. Linero:

Please find 4 copies of the Air Construction Permit Application (and supporting documents) for the Oak Hammock Disposal facility in Osceola County, Florida. A check of \$5,000 towards the application processing fee is also included.

If you have any questions or need additional information, please do not hesitate to contact the undersigned.

Sincerely,

Kenneth W. Cargill, P.E.  
Principal

AG:ag

Attachments

**RECEIVED**

FEB 03 2003

BUREAU OF AIR REGULATION



*Prepared for*



**Omni Waste of Osceola County, LLC  
100 Church Street  
Kissimmee, Florida 34741**

**APPLICATION FOR AN  
AIR CONSTRUCTION PERMIT  
OAK HAMMOCK  
DISPOSAL FACILITY**

*Prepared by*



**GEOSYNTEC CONSULTANTS**

**14055 Riveredge Drive, Suite 300  
Tampa, Florida 33637**

**Project Number FW0400**

**January 2003**

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**PERMIT APPLICATION**

**REPORT**

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**ATTACHMENT 1 – AIR POLLUTANTS/LFG CONSTITUENTS EMISSION FOR  
WASTE DISPOSAL RATE OF 474,000 TONS/YEAR**

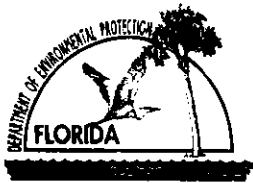
**ATTACHMENT 2 – LANDFILL GAS CONSTITUENTS EMISSION  
ESTIMATED USING AP-42 SECTION 2.4**

**ATTACHMENT 3 – LANDFILL GAS CONSTITUENTS EMISSION  
ESTIMATED USING USEPA SOFTWARE**

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BUREAU OF AIR REGULATION



# Department of Environmental Protection

## Division of Air Resources Management

### APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

#### I. APPLICATION INFORMATION

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#### Identification of Facility

1. Facility Owner/Company Name: <b>Omni Waste of Osceola County, LLC</b>	
2. Site Name: <b>Oak Hammock Disposal (OHD) Facility</b>	
3. Facility Identification Number:	<input checked="" type="checkbox"/> Unknown
4. Facility Location: <b>Approximately 6.5 miles south of Holopaw, Florida, on Highway</b> Street Address or Other Locator: <b>U.S. 441</b> City: _____ County: <b>Osceola</b> Zip Code: _____	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Permitted Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

#### Application Contact

1. Name and Title of Application Contact: <b>Kenneth W. Cargill, P.E.</b> <b>Principal and Branch Manager</b>	
2. Application Contact Mailing Address: Organization/Firm: <b>GeoSyntec Consultants</b> Street Address: <b>14055 Riveredge Drive, Suite 300</b> City: <b>Tampa</b> State: <b>FL</b> Zip Code: <b>33637</b>	
3. Application Contact Telephone Numbers: Telephone: <b>(813) 558-0990</b> Fax: <b>(813) 558-9726</b>	

#### Application Processing Information (DEP Use)

1. Date of Receipt of Application:	<i>0970079-001-AC</i>
2. Permit Number:	<i>2/3/03</i>
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

**Purpose of Application**

**Air Operation Permit Application**

This Application for Air Permit is submitted to obtain: (Check one)

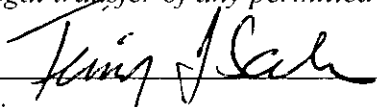
- Initial Title V air operation permit for an existing facility which is classified as a Title V source.
- Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.  
Current construction permit number: \_\_\_\_\_
- Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.  
Current construction permit number: \_\_\_\_\_  
Operation permit number to be revised: \_\_\_\_\_
- Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)  
Operation permit number to be revised/corrected: \_\_\_\_\_
- Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.  
Operation permit number to be revised: \_\_\_\_\_  
Reason for revision: \_\_\_\_\_

**Air Construction Permit Application**

This Application for Air Permit is submitted to obtain: (Check one)

- Air construction permit to construct or modify one or more emissions units.
- Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.
- Air construction permit for one or more existing, but unpermitted, emissions units.

**Owner/Authorized Representative or Responsible Official**

1. Name and Title of Owner/Authorized Representative or Responsible Official: <b>Timothy J. Salopek, President</b>
2. Owner/Authorized Representative or Responsible Official Mailing Address: Organization/Firm: <b>Omni Waste of Osceola County, LLC</b> Street Address: <b>100 Church Street</b> City: <b>Kissimmee</b> State: <b>FL</b> Zip Code: <b>34741</b>
3. Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: <b>(407) 957 - 7284</b> Fax: <b>(407) 957 - 7202</b>
4. Owner/Authorized Representative or Responsible Official Statement: <i>I, the undersigned, am the owner or authorized representative*(check here [ ], if so) or the responsible official (check here [ X ], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.</i>  Signature: <u></u> Date: <u>1/30/03</u>

\* Attach letter of authorization if not currently on file.

**Professional Engineer Certification**

1. Professional Engineer Name: <b>Kenneth W. Cargill</b> Registration Number: <b>54435</b>
2. Professional Engineer Mailing Address: Organization/Firm: <b>GeoSyntec Consultants</b> Street Address: <b>14055 Riveredge Drive, Suite 300</b> City: <b>Tampa</b> State: <b>FL</b> Zip Code: <b>33637</b>
3. Professional Engineer Telephone Numbers: Telephone: <b>(813) 558-0990</b> Fax: <b>(813) 558-9726</b>

4. Professional Engineer Statement:

*I, the undersigned, hereby certify, except as particularly noted herein\*, that:*

*(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and*

*(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.*

*If the purpose of this application is to obtain a Title V source air operation permit (check here [  ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.*

*If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [  ], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.*

*If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [  ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.*

Signature: \_\_\_\_\_

(seal)

Date

30 January 2003

\* Attach any exception to certification statement.

**Scope of Application**

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
1	Class I MSW landfill with up to 2 flares installed as part of gas extraction and control system during the first 5 years of operation.	AC1B	\$ 5,000

**Application Processing Fee**

Check one: [ X ] Attached - Amount: \$ 5,000 [ ] Not Applicable



**Construction/Modification Information**

1. Description of Proposed Project or Alterations:

**Construction of a Class I MSW landfill with maximum waste disposal rate of 4,000 tons/day.**

**In the first 5 years (corresponding to the duration of solid waste construction and operation permit issued by FDEP), Phase 1 of the OHD facility will be constructed. Phase 1 includes four landfill cells with a footprint of approximately 53 acres and ancillary support facilities.**

2. Projected or Actual Date of Commencement of Construction: **April, 2003**

3. Projected Date of Completion of Construction: **September 2003**

**Application Comment**

**During the first 5 years of operation of the OHD facility, the maximum emissions from the proposed landfill are:**

**< 50 tons/yr prior to installing a gas extraction and control system and  
< 190 tons/yr after installing a gas extraction and control system using flare(s) as the control device.**

**See attached report for details.**

## II. FACILITY INFORMATION

### A. GENERAL FACILITY INFORMATION

#### Facility Location and Type

1. Facility UTM Coordinates: <b>Section 11 &amp; 14 Township 28S Range 33E</b> Zone: 17                                      East (km): <b>190.4</b> North (km): <b>413.5</b>			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): <b>28° 03' 56.9"</b> Longitude (DD/MM/SS): <b>81° 05' 51.9"</b>			
3. Governmental Facility Code: <b>0</b>	4. Facility Status Code: <b>C</b>	5. Facility Major Group SIC Code: <b>95</b>	6. Facility SIC(s): <b>9511</b>
7. Facility Comment (limit to 500 characters):  <b>Proposed OHD facility is a Class I MSW landfill with a maximum waste disposal rate of 4,000 tons/day.</b>  <b>It is anticipated that during the first 5 years of operation, the OHD facility will not exceed a waste disposal rate of 2,000 tons/day. However, in order to preclude any required modification to the air permit, a worst-case waste disposal rate of 4,000 tons/day has been assumed in the calculation of air emissions. See attached report for details.</b>			

#### Facility Contact

1. Name and Title of Facility Contact: <b>Timothy J. Salopek, President</b>		
2. Facility Contact Mailing Address: Organization/Firm: <b>Omni Waste of Osceola County, LLC</b> Street Address: <b>100 Church Street</b> City: <b>Kissimmee</b> State: <b>FL</b> Zip Code: <b>33637</b>		
3. Facility Contact Telephone Numbers: Telephone: <b>(407) 957-7284</b> Fax: <b>(407) 957-7202</b>		

**Facility Regulatory Classifications**

**Check all that apply:**

1. <input type="checkbox"/> Small Business Stationary Source?	<input checked="" type="checkbox"/> Unknown
2. <input checked="" type="checkbox"/> Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	
3. <input type="checkbox"/> Synthetic Minor Source of Pollutants Other than HAPs?	
4. <input type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)?	
5. <input type="checkbox"/> Synthetic Minor Source of HAPs?	
6. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS?	
7. <input type="checkbox"/> One or More Emission Units Subject to NESHAP?	
8. <input checked="" type="checkbox"/> Title V Source by EPA Designation?	
9. Facility Regulatory Classifications Comment (limit to 200 characters):	
<p><b>The facility is only a major source of Carbon Monoxide (CO) due to CO emissions from flare(s). Flare(s) will be installed as part of the gas extraction and control system as required by 40 CFR 60.752 for MSW landfills having a design capacity greater than 2.75 million tons.</b></p>	

**List of Applicable Regulations**

40 CFR 60, Subpart WWW	
40 CFR 60.18	
62-4.050 (4)(a)2.	
62-204.800(7)(b)72.	
62-210.200 & 62-210.300	
62-212.400	
62-296.100	

## B. FACILITY POLLUTANTS

### List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap		4. Basis for Emissions Cap	5. Pollutant Comment
		lb/hour	tons/year		
CO	A		249	ESCPSD	Carbon Monoxide
TRS	B				Total Reduced Sulfur
NMOC	B				Nonmethane Organic Compounds
VOC	B				Volatile Organic Compounds
H001 to H189	B				Any Individual HAP
HAPS	B				Total Hazardous Air Pollutants
H106	B				Hydrogen Chloride
H114	B				Mercury
NOX	B				Nitrogen Dioxide
PM	B				Particulate Matter - Total

C. FACILITY SUPPLEMENTAL INFORMATION

**Supplemental Requirements**

1. Area Map Showing Facility Location: <input checked="" type="checkbox"/> Attached, Document ID: <u>Attached Report</u> <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
2. Facility Plot Plan: <input checked="" type="checkbox"/> Attached, Document ID: <u>Attached Report</u> <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
3. Process Flow Diagram(s): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
5. Fugitive Emissions Identification: <input checked="" type="checkbox"/> Attached, Document ID: <u>Attached Report</u> <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
6. Supplemental Information for Construction Permit Application: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
7. Supplemental Requirements Comment:  <b>In the first 5 years of operation, the OHD facility is expected to emit all pollutants, except for CO, considerably below the threshold levels. CO emission level exceeds the threshold level of 100 tons/year only due to the flares(s) that will be installed as part of the gas extraction and control system.</b>

**Additional Supplemental Requirements for Title V Air Operation Permit Applications**

8. List of Proposed Insignificant Activities: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
9. List of Equipment/Activities Regulated under Title VI: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Equipment/Activities On site but Not Required to be Individually Listed <input type="checkbox"/> Not Applicable
10. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
11. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
12. Identification of Additional Applicable Requirements: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
13. Risk Management Plan Verification: <input type="checkbox"/> Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID: _____) or previously submitted to DEP (Date and DEP Office: _____) <input type="checkbox"/> Plan to be submitted to CEPPO (Date required: _____) <input type="checkbox"/> Not Applicable
14. Compliance Report and Plan: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
15. Compliance Certification (Hard-copy Required): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable

**III. EMISSIONS UNIT INFORMATION**

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION  
(All Emissions Units)**

**Emissions Unit Description and Status**

<p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p>			
<p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p>			
<p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):  <b>Class I MSW landfill with up to 2 flares installed as part of the gas extraction and control system during the first 5 years of operation.</b></p>			
<p>4. Emissions Unit Identification Number: ID:</p>		<p><input checked="" type="checkbox"/> No ID  <input type="checkbox"/> ID Unknown</p>	
<p>5. Emissions Unit Status Code:  C</p>	<p>6. Initial Startup Date:  <b>Landfill – Sept, 2003</b>  <b>Flare(s) – Sept, 2006</b></p>	<p>7. Emissions Unit Major Group SIC Code:  95</p>	<p>8. Acid Rain Unit?  <input type="checkbox"/>  No</p>
<p>9. Emissions Unit Comment: (Limit to 500 Characters)  <b>Emissions reported in this application are for the first 5 years of landfill operation corresponding to the 5-year solid waste construction and operation permit issued by FDEP for Phase 1 development of the OHD facility.</b></p>			

**Emissions Unit Control Equipment**

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

**Equipment: Up to 2 landfill gas flare(s) in the first 5 years of operation.**

**Method: Flaring MSW landfill gas collected by the gas extraction and control system.**

2. Control Device or Method Code(s): **023**

**Emissions Unit Details**

1. Package Unit:	
Manufacturer:	Model Number:
2. Generator Nameplate Rating:	MW
3. Incinerator Information:	
Dwell Temperature:	°F
Dwell Time:	seconds
Incinerator Afterburner Temperature:	°F



**B. EMISSIONS UNIT CAPACITY INFORMATION  
(Regulated Emissions Units Only)**

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		
<p><b>Information regarding the flare(s) will be provided in the Title V Air Operation Permit, which will be submitted to FDEP within 180 days of start of waste disposal at the OHD facility.</b></p>		



**D. EMISSION POINT (STACK/VENT) INFORMATION  
(Regulated Emissions Units Only)**

**Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram?		2. Emission Point Type Code:	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code:	6. Stack Height: feet	7. Exit Diameter: feet	
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone:                      East (km):                      North (km):			
14. Emission Point Comment (limit to 200 characters):  <b>Information regarding the flare(s) will be provided in the Title V Air Operation Permit, which will be submitted to FDEP within 180 days of start of waste disposal at the OHD facility.</b>			

**E. SEGMENT (PROCESS/FUEL) INFORMATION**  
(All Emissions Units)

**Segment Description and Rate:** Segment  1  of  2

1. Segment Description (Process/Fuel Type) (limit to 500 characters):  <b>Potential/fugitive emissions related to Class I MSW landfill with a maximum waste disposal rate of 4,000 tons/day.</b>		
2. Source Classification Code (SCC): <b>50200602</b>		3. SCC Units: <b>Tons Stored</b>
4. Maximum Hourly Rate:	5. Maximum Annual Rate: <b>1.144 million tons</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):  <b>Waste storage at the OHD facility assumes landfill operation for 5.5 days per week corresponding to 286 equivalent full days per year.</b>  <b>See attached report for details.</b>		

**Segment Description and Rate:** Segment  2  of  2

1. Segment Description (Process/Fuel Type ) (limit to 500 characters):  <b>Emissions related to MSW landfill gas burned in the flare(s) that will be installed as part of the gas extraction and control system.</b>		
2. Source Classification Code (SCC): <b>50200601</b>		3. SCC Units: <b>Million Cubic Feet Burned</b>
4. Maximum Hourly Rate:	5. Maximum Annual Rate: <b>907 million cu. ft. burned</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):  <b>Maximum landfill gas generation rate in the first 5 years of operation of the OHD facility is approximately 1,210 million cu. ft. per year. Assuming a 75 percent collection efficiency of the gas extraction and control system, the maximum landfill gas burned at the flare(s) is approximately 907 million cu. ft. per year.</b>  <b>See attached report for details (landfill gas generation rate is discussed in Attachment 2 of the report).</b>		

**F. EMISSIONS UNIT POLLUTANTS  
(All Emissions Units)**

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			EL
TRS			EL
NMOC	023		EL
VOC	023		EL
Any Individual HAP (H001 to H189)	023		EL
HAPS	023		EL
H106			NS
H114			EL
NOX (Nitrogen Dioxide)			EL
PM			EL
<b>Note : For OHD MSW landfill, emission unit is same as the facility.</b>			

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted:  <b>CO</b>	2. Total Percent Efficiency of Control:
3. Potential Emissions:  lb/hour <b>188.1<sup>(a)</sup></b> tons/year	4. Synthetically Limited? [ <input type="checkbox"/> ]
5. Range of Estimated Fugitive Emissions: [ <input type="checkbox"/> ] 1 [ <input type="checkbox"/> ] 2 [ <input checked="" type="checkbox"/> ] 3 <sup>(b)</sup> to tons/year	
6. Emission Factor: <b>See attached report</b> Reference: <b>USEPA AP-42 Section 2.4 (1998)</b>	7. Emissions Method Code: <b>3</b>
8. Calculation of Emissions (limit to 600 characters):  <b>See attached report and associated attachments.</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  <b>(a) Potential emission reported represents CO emissions at the end of 5 years. It is noted that the gas extraction and control system with flare(s) will be installed in the third year of the OHD facility operation for waste disposal rate of 4,000 tons/day.</b>  <b>(b) For OHD MSW landfill, emission unit is same as the facility.</b>	

**Allowable Emissions** Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: <b>ESCPD</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>249 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>249</b> tons/year
5. Method of Compliance (limit to 60 characters):  <b>Will be provided in the Title V Air Operation Permit, which will be submitted to FDEP within 180 days of start of waste disposal at the OHD facility.</b>	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: <b>TRS (as SO<sub>2</sub>)</b>	2. Total Percent Efficiency of Control: <b>99.7</b>
3. Potential Emissions: lb/hour <b>4.6<sup>(a)</sup></b> tons/year	4. Synthetically Limited? [ <input type="checkbox"/> ]
5. Range of Estimated Fugitive Emissions: [ <input checked="" type="checkbox"/> ] 1 <sup>(b)</sup> [ <input type="checkbox"/> ] 2 [ <input type="checkbox"/> ] 3 to tons/year	
6. Emission Factor: <b>See attached report</b> Reference: <b>USEPA AP-42 Section 2.4 (1998)</b>	7. Emissions Method Code: <b>3</b>
8. Calculation of Emissions (limit to 600 characters): <b>See attached report and associated attachments.</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): <b>(a) Potential emission reported represents SO<sub>2</sub> emissions at the end of 5 years. It is noted that the gas extraction and control system with flare(s) will be installed in the third year of the OHD facility operation for waste disposal rate of 4,000 tons/day.</b> <b>(b) Less than the reporting threshold of 5 tons/year.</b>	

**Allowable Emissions** Allowable Emissions  1  of  1 

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>4.6 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>4.6 tons/year</b>
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>See attached report and associated attachments.</b>	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted:  <b>NMOC</b>	2. Total Percent Efficiency of Control:  <b>99.2</b>
3. Potential Emissions:  lb/hour <b>49.4<sup>(a)</sup></b> tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: <b>See attached report</b> Reference: <b>USEPA AP-42 Section 2.4 (1998)</b>	7. Emissions Method Code: <b>3</b>
8. Calculation of Emissions (limit to 600 characters):  <b>See attached report and associated attachments.</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  <b>(a) Potential emission reported conservatively represents NMOC emissions at the end of 3 years of the OHD facility operation. It is noted that the gas extraction and control system with flare(s) will be installed in the third year of operation for waste disposal rate of 4,000 tons/day.</b>  <b>Also note that for OHD MSW landfill, emission unit is same as the facility.</b>	

**Allowable Emissions** Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>49.4 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>49.4 tons/year</b>
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>See attached report and associated attachments.</b>	



**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: <b>VOC</b>	2. Total Percent Efficiency of Control: <b>98.0 to 99.7</b>
3. Potential Emissions: lb/hour <b>17.6<sup>(a)</sup></b> tons/year	4. Synthetically Limited? [ <input type="checkbox"/> ]
5. Range of Estimated Fugitive Emissions: [ <input checked="" type="checkbox"/> ] 1 <sup>(b)</sup> [ <input type="checkbox"/> ] 2 [ <input type="checkbox"/> ] 3 to _____ tons/year	
6. Emission Factor: <b>See attached report</b> Reference: <b>USEPA AP-42 Section 2.4 (1998)</b>	7. Emissions Method Code: <b>3</b>
8. Calculation of Emissions (limit to 600 characters): <b>See attached report and associated attachments.</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): <b>(a) Potential emission reported conservatively represents VOC emissions at the end of 3 years of the OHD facility operation. It is noted that the gas extraction and control system with flare(s) will be installed in the third year of operation for waste disposal rate of 4,000 tons/day.</b> <b>(b) For OHD MSW landfill, emission unit is same as the facility.</b>	

**Allowable Emissions** Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>17.6 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>17.6 tons/year</b>
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>See attached report and associated attachments.</b>	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: <b>Any Individual HAP (H001 to H189)</b>	2. Total Percent Efficiency of Control: <b>98.0 to 99.7</b>
3. Potential Emissions: lb/hour <b>3.5<sup>(a)</sup></b>	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ <b>X</b> ] 2 <sup>(b)</sup> [ ] 3 to tons/year	
6. Emission Factor: <b>See attached report</b> Reference: <b>USEPA AP-42 Section 2.4 (1998)</b>	7. Emissions Method Code: <b>3</b>
8. Calculation of Emissions (limit to 600 characters): <b>See attached report and associated attachments.</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): <b>(a) Potential emission reported conservatively represents maximum emissions for any individual HAP at the end of 3 years of the OHD facility operation. It is noted that the gas extraction and control system with flare(s) will be installed in the third year of operation for waste disposal rate of 4,000 tons/day.</b> <b>(b) For OHD MSW landfill, emission unit is same as the facility.</b>	

**Allowable Emissions** Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>3.5 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>3.5 tons/year</b>
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>See attached report and associated attachments.</b>	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: <b>HAPS</b>	2. Total Percent Efficiency of Control: <b>98.0 to 99.7</b>
3. Potential Emissions: lb/hour <b>10.3<sup>(a)</sup></b> tons/year	4. Synthetically Limited? [ <input type="checkbox"/> ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ <input checked="" type="checkbox"/> ] 2 <sup>(b)</sup> [ ] 3 to tons/year	
6. Emission Factor: <b>See attached report</b> Reference: <b>USEPA AP-42 Section 2.4 (1998)</b>	7. Emissions Method Code: <b>3</b>
8. Calculation of Emissions (limit to 600 characters): <b>See attached report and associated attachments.</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): <b>(a) Potential emission reported conservatively represents HAPS emissions at the end of 3 years of the OHD facility operation. It is noted that the gas extraction and control system with flare(s) will be installed in the third year of operation for waste disposal rate of 4,000 tons/day.</b> <b>(b) For OHD MSW landfill, emission unit is same as the facility.</b>	

**Allowable Emissions** Allowable Emissions  1  of  1 

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>10.3 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>10.3</b> tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>See attached report and associated attachments.</b>	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: <b>H106</b>	2. Total Percent Efficiency of Control: <b>98.0</b>
3. Potential Emissions: lb/hour <b>2.4</b> <sup>(a)</sup>	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: <b>See attached report</b> Reference: <b>USEPA AP-42 Section 2.4 (1998)</b>	7. Emissions Method Code: <b>3</b>
8. Calculation of Emissions (limit to 600 characters):  <b>See attached report and associated attachments.</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):  <b>(a) Potential emission reported represents H106 (HCl) emissions at the end of 5 years. It is noted that the gas extraction and control system with flare(s) will be installed in the third year of the OHD facility operation for waste disposal rate of 4,000 tons/day.</b>	

**Allowable Emissions** Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>2.4 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>2.4 tons/year</b>
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>See attached report and associated attachments.</b>	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: <b>H114 (Mercury)</b>	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour <b>4.9x10<sup>-5</sup> (a)</b>	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: <b>See attached report</b> Reference: <b>USEPA AP-42 Section 2.4 (1998)</b>	7. Emissions Method Code: <b>3</b>
8. Calculation of Emissions (limit to 600 characters): <b>See attached report and associated attachments.</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): <b>(a) Potential emission reported represents H114 (Hg) emissions at the end of 3 years of the OHD facility operation.</b>	

**Allowable Emissions** Allowable Emissions  1  of  1 

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>4.9x10<sup>-5</sup> tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>4.9x10<sup>-5</sup> tons/year</b>
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>See attached report and associated attachments.</b>	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: <b>NOX (Nitrogen Dioxide)</b>	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour <b>10.1<sup>(a)</sup></b> tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ <input checked="" type="checkbox"/> ] 1 <sup>(b)</sup> [ ] 2 [ ] 3 to tons/year	
6. Emission Factor: <b>See attached report</b> Reference: <b>USEPA AP-42 Section 2.4 (1998)</b>	7. Emissions Method Code: <b>3</b>
8. Calculation of Emissions (limit to 600 characters): <b>See attached report and associated attachments.</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): <b>(a) Potential emission reported represents NOX (NO<sub>2</sub>) emissions at the end of 5 years. It is noted that the gas extraction and control system with flare(s) will be installed in the third year of the OHD facility operation for waste disposal rate of 4,000 tons/day.</b> <b>(b) For OHD MSW landfill, emission unit is same as the facility.</b>	

**Allowable Emissions** Allowable Emissions  1  of  1 

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>10.1 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>10.1 tons/year</b>
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>See attached report and associated attachments.</b>	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

1. Pollutant Emitted: <b>PM</b>	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour <b>4.2<sup>(a)</sup></b> tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ <input checked="" type="checkbox"/> ] 1 <sup>(b)</sup> [ ] 2 [ ] 3 to tons/year	
6. Emission Factor: <b>See attached report</b> Reference: <b>USEPA AP-42 Section 2.4 (1998)</b>	7. Emissions Method Code: <b>3</b>
8. Calculation of Emissions (limit to 600 characters): <b>See attached report and associated attachments.</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): <b>(a) Potential emission reported represents PM emissions at the end of 5 years. It is noted that the gas extraction and control system with flare(s) will be installed in the third year of the OHD facility operation for waste disposal rate of 4,000 tons/day.</b> <b>(b) Less than the reporting threshold of 5 tons/year.</b>	

**Allowable Emissions** Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>4.2 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>4.2</b> tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>See attached report and associated attachments.</b>	

**H. VISIBLE EMISSIONS INFORMATION**  
 (Only Regulated Emissions Units Subject to a VE Limitation)

**Visible Emissions Limitation:** Visible Emissions Limitation  1  of  1

1. Visible Emissions Subtype: VE00 <sup>(a)</sup>	2. Basis for Allowable Opacity: [ X ] Rule <sup>(a)</sup> [ ] Other
3. Requested Allowable Opacity: 0 % <sup>(a)</sup> Normal Conditions: 0 % Exceptional Conditions: 100 % Maximum Period of Excess Opacity Allowed: 5 minutes during any 2 consecutive hours.	
4. Method of Compliance: 40 CFR 60, Appendix A-7, Method 22 as specified in 40 CFR 60.18 (f)(1).	
5. Visible Emissions Comment (limit to 200 characters):  <sup>(a)</sup> According to 40 CFR 60.18 (c)(1), flares shall be designed and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.	

**I. CONTINUOUS MONITOR INFORMATION**  
 (Only Regulated Emissions Units Subject to Continuous Monitoring)

**Continuous Monitoring System:** Continuous Monitor \_\_\_\_\_ of \_\_\_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	



**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION  
(Regulated Emissions Units Only)**

**Supplemental Requirements**

1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
3. Detailed Description of Control Equipment <b>See note below</b> <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable
6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
7. Operation and Maintenance Plan <b>See note below</b> <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <b>BACT</b>
9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10. Supplemental Requirements Comment:  <p><b>Information will be provided in the Title V Air Operation Permit, which will be submitted to FDEP within 180 days of start of waste disposal at the OHD facility.</b></p>

**Additional Supplemental Requirements for Title V Air Operation Permit Applications**

11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
15. Acid Rain Part Application (Hard-copy Required) <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input type="checkbox"/> Not Applicable

**AIR CONSTRUCTION PERMIT – TITLE V SOURCE  
OAK HAMMOCK DISPOSAL FACILITY  
OSCEOLA COUNTY, FLORIDA**

**INTRODUCTION**

A solid waste construction and operation permit was issued for the Oak Hammock Disposal (OHD) facility in Osceola County, Florida on 18 October 2002. The permit was issued to Omni Waste of Osceola County, LLC (Omni) by the Florida Department of Environmental Protection (FDEP) and is valid for a period of 5 years. Specific Condition No. 55 of this solid waste permit addresses the requirements for "*Prevention of Significant Deterioration (PSD)*".

To satisfy the PSD requirements addressed in the Specific Condition No. 55 of the above referenced permit, Omni is hereby submitting an Air Construction Permit Application - Title V Source not requiring a PSD Pre-construction Review. This report supports the Air Construction Permit Application to which it is attached. It establishes the inapplicability of the PSD pre-construction review requirements of Chapter 62-212, Florida Administrative Code (F.A.C.), to the Phase 1 development of the OHD facility. Phase 1 includes the first 5 years of the OHD facility construction and operation, for which the solid waste permit was issued by FDEP.

The remainder of this report presents: (i) a project background; (ii) applicable regulations; (iii) approach used to establish the inapplicability of the PSD review requirements; (iv) methodology, analyses, and assumptions used for estimating the emissions of various pollutants; and (v) the applicability/inapplicability of the PSD pre-construction review requirements.

**PROJECT BACKGROUND**

The OHD site comprises a total of 2178.8 acres and is located in eastern Osceola County in Florida, west of highway U.S. 441, approximately 6.5 miles south of Holopaw. The OHD site is located in Sections 11, 13, and 14 of Township 28 South, Range 32 East, and Sections 17 and 18 of Township 28 South, Range 33 East, Osceola County, Florida.

The complete build-out of the OHD facility includes 21 landfill cells with a total footprint of approximately 264 acres. The center of the 264-acre landfill is located at latitude 28° 03' 32" and longitude 81° 05' 46" or a Northing of 1354222 and an Easting of 625229 in the Florida State Plane Coordinate System. The 5-year solid waste construction and operation permit was issued for the Phase 1 development of the OHD facility. Phase

1 includes 4 landfill cells with a total footprint of approximately 53 acres and ancillary facilities supporting the operation of the landfill. The center of Phase 1 development is located at latitude 28° 03' 56.9" and longitude 81° 05' 51.9" or a Northing of 1356639 and an Easting of 624641. The site location, the 264-acre landfill footprint, and the Phase 1 development of the OHD facility are presented in Figure 1 of this report.

The solid waste permit application to construct and operate the OHD Class I municipal solid waste (MSW) landfill was submitted to FDEP in May 2002. Based on the permit drawings presented in this permit application, the estimated volume of waste and initial cover soils that can be disposed in the OHD landfill after complete build-out is approximately 23.7 million cubic yards. This landfill capacity is expected to provide airspace for a period of approximately 30 years based on an average waste disposal rate of 474,000 tons/year (approximately 1,657 tons/day) used in the solid waste permit application. The 30-year life of the OHD facility was computed assuming an average in-place unit weight of 1,500 pounds/cubic yard, 20 percent of the available volume occupied by the initial cover, and landfill operations for 5.5 days per week or 286 equivalent full days per year. Phase 1 development of the OHD facility is expected to provide airspace for a period greater than 5 years based on the waste disposal rate of 474,000 tons/year (1,657 tons/day).

As discussed in Section 5 of the solid waste permit application, entitled "*Landfill Gas Management*", the gas extraction and control system (GECS) will be installed in conjunction with the construction of the final cover system. The GECS will consist of vertical gas extraction wells, gas transmission pipes, and, ultimately, 4 flare stations as indicated on Sheet 29 of 50 of the permit drawings. The installation of 3-ft diameter vertical gas extraction wells at a spacing of approximately 300 feet will begin when the total quantity of disposed waste reaches approximately 2.75 million tons, in compliance with 40 CFR Part 60, Subpart WWW.

## **APPLICABLE REGULATIONS**

The regulations related to the PSD pre-construction requirements of Chapter 62-212, F.A.C., are listed below. The applicability to the PSD requirements of each of the following regulations is also briefly discussed below.

- Chapter 62-4, Permits
- Chapter 62-204, Air Pollution Control – General Provisions
- Chapter 62-210, Stationary Sources – General Requirements
- Chapter 62-212, Stationary Sources – Preconstruction Review
- Chapter 62-296, Stationary Sources – Emission Standards

40 CFR 60, Subpart WWW, Standards of Performance for MSW Landfills  
40 CFR 60.18, General Control Device Requirements

Chapter 62-4, F.A.C., sets forth the procedures and requirements for obtaining permits from FDEP. Chapter 62-4, F.A.C., lists the permit processing fee for Air Construction Permit Application - Title V Source not requiring a PSD Pre-construction Review in Rule 62-4.050(4)(a)2., F.A.C.

Chapter 62-204, F.A.C., adopts and incorporates the federal air pollution control regulations by reference. Chapter 62-204, F.A.C., adopts and incorporates 40 CFR 60 Subpart WWW in Rule 62-204.800(7)(b)72, F.A.C.

Chapter 62-210, F.A.C., provides the criteria for determining the need to obtain an air construction or operation permit. Rule 62-210.200, F.A.C., includes definitions of words and phrases used in this chapter and in Chapters 62-212 and 62-296, F.A.C.

Chapter 62-212, F.A.C., establishes the preconstruction review requirements for proposed new emissions units or facilities and their modifications. The PSD preconstruction review requirements for new emissions units or facilities are included in Rule 62-212.400(2)(d)1. and 2.

Chapter 62-296, F.A.C., establishes the emission limiting standards and compliance requirements for stationary sources of air pollution. With respect to MSW landfills, Rule 62-296.100, F.A.C., states that standards for any "new" facility or emissions unit shall be the federal standards of performance for new stationary sources adopted by reference in Rule 62-204.800(7), F.A.C.

40 CFR 60, Subpart WWW establishes the standards for air emissions (with respect to operation, test methods and procedure, compliance, monitoring, reporting, and record keeping) for MSW landfills constructed after 30 May 1991. The 40 CFR 60.754(c) in Subpart WWW recommends using USEPA AP-42 for estimating MSW landfill emissions for PSD purposes.

40 CFR 60.18 contains the requirements for control devices used to comply with applicable rules in 40 CFR 60 and 61. 40 CFR 60.18 (b) through (f) details the design, operation, monitoring, and compliance requirements for flares used as control devices.

## **APPROACH**

A maximum waste disposal rate of 4,000 tons/day was conservatively assumed for the OHD facility for the purpose of this Air Construction Permit Application. This rate

of waste disposal is over twice the rate anticipated for Phase 1 development of the OHD facility. However, since the rate of waste disposal determines the gas emissions, a highly conservative rate has been assumed for this Air Construction Permit Application. The intent of assuming a highly conservative rate is to assure that, even if disposal rates double at the landfill, this permit will continue to be applicable to Phase 1 and a modification will not be required until Phase 2 is permitted.

It will be shown that even for this highly conservative waste disposal rate of 4,000 tons/day, the pollutants emitted in the first 5 years of operation of the OHD facility (Phase 1 development) are less than 190 tons/year. Therefore, Phase 1 development of the OHD facility is not subject to the PSD pre-construction review requirements in accordance with Rule 62-212.400(2)(d)2.a., F.A.C. It will also be shown that the OHD facility is a *major facility* during the first 5 years of operation, in accordance with Rule 62-210.200(157), F.A.C., only because of the carbon monoxide emissions from the flare(s), which will be used as control device in the gas extraction system.

The operating life of the OHD facility at a waste disposal rate of 4,000 tons/day is 12.4 years. The mass emission rates of the air pollutants/landfill gas (LFG) constituents over this 12.4-year operating life are presented and discussed in the following sections. For the waste disposal rate of 4,000 tons/day, the proposed 264-acre landfill, with a total capacity of approximately 23.7 million cubic yards, is calculated to provide airspace for a period of about 12.4 years by assuming an average in-place unit weight of 1,500 pounds/cubic yard, 20 percent of the available volume occupied by the initial cover, and landfill operations for 5.5 days per week or 286 equivalent full days per year. Further, for the waste disposal rate of 4,000 tons/day, the GECS will be installed in the 3<sup>rd</sup> year of the landfill operation when the total quantity of disposed waste reaches approximately 2.75 million tons, in compliance with 40 CFR Part 60, Subpart WWW.

It is noted that the conservatively assumed waste disposal rate of 4,000 tons/day is about 2.5 times the expected average annual waste disposal rate of 474,000 tons/year (1,657 tons/day), which was used in the engineering analyses and design presented in the solid waste permit application. To be consistent with the solid waste permit application, mass emission rates of the air pollutants/LFG constituents were also computed for average annual waste disposal rate of 474,000 tons/year (1,657 tons/day). These emission rates are presented and discussed in Attachment 1 of this report. It is noted that for the average annual waste disposal rate of 474,000 tons/year (1,657 tons/day): (i) the proposed 264-acre landfill is expected to provide airspace for a period of approximately 30 years and (ii) the GECS installation will begin in the 6<sup>th</sup> year of the landfill operation when the total quantity of disposed waste reaches approximately 2.75 million tons, in compliance with 40 CFR Part 60, Subpart WWW.

## AIR POLLUTANTS/LANDFILL GAS CONSTITUENTS

The major air pollutants are listed in Chapter 62-212, F.A.C., Table 212.400-2 (Specific Authority 403.061 Florida Statutes (FS)). The LFG constituents for MSW landfills are listed in USEPA AP-42 Section 2.4 (1998), entitled "*Emission Factor Documentation for Municipal Solid Waste Landfills*". It is noted that 40 CFR 60.754(c) in Subpart WWW recommends using USEPA AP-42 for estimating MSW landfill emissions for PSD purposes.

The air pollutants/LFG constituents include carbon monoxide (CO), total reduced sulfur compounds (TRS measured as sulfur, S, or sulfur dioxide, SO<sub>2</sub>), non-methane organic compounds (NMOC), total volatile organic compounds (VOC), total hazardous air pollutants (HAPS), chlorides (as Cl<sup>-</sup> or HCl), and mercury (Hg or H114). The mass emission rates of these air pollutants/LFG constituents were computed for the waste disposal rate of 4,000 tons/day, using the methodology outlined in USEPA AP-42, and are presented in Table 1 and in Figures 2 through 7, respectively, included with this report. The mass emission rates of Hg are included in the table but are not presented in the figures since Hg emissions were less than 0.35 pounds per year for the life of the OHD facility.

The OHD facility after complete build-out will use up to 4 flares as control devices in the proposed GECS. However, it is expected that no more than 2 flares will be installed during Phase 1. As a result of the installation of the flare(s), nitrogen dioxide (NO<sub>x</sub> as NO<sub>2</sub>) and particulate matter (PM), which are also major air pollutants, will also be emitted at the OHD facility. The mass emission rates of these two air pollutants from the flare(s) were also computed using the methodology outlined in USEPA AP-42 and are presented in Figures 8 and 9, respectively.

The USEPA AP-42 methodology used in computing the mass emission rates of the LFG constituents and the air pollutants from the flare(s) is detailed in the calculation package included as Attachment 2 of this report. Some of the results presented in Figures 2 through 7 were verified with the uncontrolled mass emission rates obtained using USEPA software entitled "*Landfill Gas Emissions Model (LandGEM)*", version 2.01. The uncontrolled mass emission rates computed using this software are included in Attachment 3 of this report.

Figures 2 through 9 present uncontrolled and controlled mass emission rates of the air pollutants/LFG constituents over the anticipated 12.4-year operating life of the OHD facility assuming a waste disposal rate of 4,000 tons/day. The *uncontrolled emissions* represent mass emission rates without the GECS. The *controlled emissions* are mass emission rates assuming that the proposed GECS is installed beginning in the 3<sup>rd</sup> year of

the landfill operation. The controlled mass emission rates represent the sum of the potential emissions and the quantifiable fugitive emissions from the OHD facility in accordance with Rule 62-212.400(2)(f), F.A.C.

As discussed in Attachment 2, the controlled emission rates presented in the figures assume that the collection efficiency of the GECS is 75 percent, i.e., only 75 percent of the gas generated by the landfill is collected by the GECS and flared whereas the remaining 25 percent escapes as uncontrolled emissions. It is noted that 75 percent collection efficiency is the recommended average collection efficiency for landfill GECS by USEPA AP-42. The controlled emission rates presented in the figures also incorporate control device efficiency (i.e., flare(s) efficiency), ranging from 98.0 to 99.7 percent, as recommended by USEPA AP-42.

As expected, the controlled emission rates of the regulated air pollutants/LFG constituents are less than the uncontrolled emission rates except for CO. The controlled emission rates for CO are higher than the uncontrolled emission rates because of the CO generated by the flares (which will be used as control devices in the GECS at the OHD facility). It is noted that NO<sub>2</sub> and PM are not LFG constituents and are generated only by the flare(s). Therefore, only controlled emission rates are presented for NO<sub>2</sub> and PM, which will be generated after installation of the GECS beginning in the 3<sup>rd</sup> year of the landfill operation assuming a waste disposal rate of 4,000 tons/day.

The uncontrolled and controlled emission rates presented in Table 1 represent maximum mass emission rates for the first 5 years of operation and at the end of operating life of the OHD facility (12.4 years). It is noted that for the first 5 years of operation, the uncontrolled emission rates presented in Table 1 are conservatively reported at the end of the 3<sup>rd</sup> year of operation even though the installation of the GECS will begin in the 3<sup>rd</sup> year of the landfill operation.

## **APPLICABILITY OF PSD REQUIREMENTS**

### **First 5 Years of Operation – Phase 1 Development**

As noted in Table 1, during the first 5 years of the OHD facility operation, the maximum uncontrolled emission rates of the air pollutants/LFG constituents are less than 18 tons per year except for the emission rate of NMOC of about 49 tons per year. The maximum controlled emission rates of the air pollutants/LFG constituents are about 20 tons per year except for the emission rate of CO of about 188 tons per year. In essence, the maximum uncontrolled or controlled emission rate of any applicable regulated air pollutant is less than 250 tons per year.



The controlled emission rate of CO exceeds 250 tons per year only at the end of the 7<sup>th</sup> year of OHD facility operation (see Figure 2). Therefore, for the first 5 years of operation (corresponding to the duration of the solid waste construction and operation permit issued by FDEP), the OHD facility is not subject to the PSD pre-construction review requirements in accordance with Rule 62-212.400(2)(d)2.a., F.A.C.

As noted in Figure 2, the uncontrolled emission rate of CO (assuming no flares) at the end of the 5<sup>th</sup> year of operation is only about 6 tons per year, i.e., practically all CO is generated by the flares installed as part of the GECS. In summary, except for the emission rate of CO from the flares, the OHD facility is a *minor facility* (in accordance with Rule 62-210.200(165), F.A.C.) during the first 5 years of operation.

#### **12.4 Years – End of Operating Life**

As noted in Table 1, at the end of operating life (12.4 years) of the OHD facility for the highly conservative waste disposal rate of 4,000 tons/day, the maximum controlled emission rates of the applicable regulated air pollutants are less than 44 tons per year except for the emission rate of CO of about 406 tons per year. It is noted that the maximum mass emission rate of CO from the landfill without the GECS (i.e., uncontrolled emission) is about 13 tons per year, i.e., practically all CO is generated by the flares in the controlled situation. In essence, except for the emission rate of CO from the flares, the OHD facility is a *minor facility* throughout its 12.4-year operating life even for the assumed highly conservative waste disposal rate of 4,000 tons/day.

The emission rate of CO from the flare was computed using the default emission factors recommended in USEPA AP-42. The GECS installation is expected to begin in the 3<sup>rd</sup> year of the landfill operation and will incorporate flare(s) as the control device. Prior to future phased developments of the OHD facility, the emission rate of CO from the flare(s) will be analyzed. The results of the analysis will be used to re-evaluate CO emission rates for the future developments and air construction permits for the OHD facility.

#### **CONCLUSION**

A highly conservative waste disposal rate of 4,000 tons/day was assumed for the OHD facility for the purpose of this Air Construction Permit Application. This rate of waste disposal is over twice the rate anticipated for Phase 1 development of the OHD facility. The intent of assuming a highly conservative rate is to assure that, even if disposal rates double at the landfill, this permit will continue to be applicable to Phase 1 and a modification will not be required until Phase 2 is permitted.

Even for this highly conservative waste disposal rate of 4,000 tons/day, the mass emission rates of the air pollutants/LFG constituents in the first 5 years of operation of the OHD facility (Phase 1 development) are less than 190 tons/year. Therefore, Phase 1 development of the OHD facility is not subject to the PSD pre-construction review requirements. It is further noted that except for the emission rate of CO from the flares, the OHD facility is a *minor facility* throughout its operating life even for the assumed highly conservative waste disposal rate of 4,000 tons/day. CO is emitted as a collateral pollutant from the flares that will be installed solely for the purpose of reducing the NMOC emissions as required by 40 CFR 60, Subpart WWW.

Table 1

**MASS EMISSION RATES FOR REGULATED AIR  
POLLUTANTS AND LANDFILL GAS CONSTITUENTS  
(WASTE DISPOSAL RATE = 4,000 tons/day)**






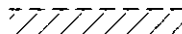
Air Pollutant/LFG Constituent <sup>1</sup>	Maximum Mass Emission Rates (tons/yr)			
	Phase 1 Development		End of Operating Life	
	End of 3rd year Uncontrolled <sup>2</sup>	End of 5th year Controlled <sup>3</sup>	12.4 years Uncontrolled <sup>2</sup>	12.4 years Controlled <sup>3</sup>
Carbon Monoxide (CO)	3.8	188.1	13.1	405.8
Total Reduced Sulfur (TRS as S or SO <sub>2</sub> ) <sup>4</sup>	1.4	4.6	5.0	10.0
Non-Methane Organic Compounds (NMOC)	49.4	20.3	170.7	43.7
Total Volatile Organic Compounds (VOC)	17.6	7.2	60.8	15.5
Any Individual HAP (H001 through H189) <sup>5</sup>	3.5	1.4	12.1	3.0
Total Hazardous Air Pollutants (HAPS)	10.3	4.2	35.5	9.1
Chlorides (as Cl <sup>-</sup> or HCL) <sup>6</sup>	1.4	2.4	5.0	5.1
Mercury (Hg or H114)	4.9x10 <sup>-5</sup>	--	1.7x10 <sup>-4</sup>	--
Nitrogen Dioxide (NOX as NO <sub>2</sub> )	NA <sup>7</sup>	10.1	NA <sup>7</sup>	21.8
Particulate Matter (PM)	NA <sup>7</sup>	4.2	NA <sup>7</sup>	9.1

**Notes:**

- <sup>1</sup> Per USEPA AP-42 Section 2.4 (1998).
- <sup>2</sup> Assuming no gas extraction and control system (GECS) is installed.
- <sup>3</sup> Assuming the proposed GECS is installed beginning in the 3rd year of operation. See text for other assumptions.
- <sup>4</sup> Uncontrolled and controlled emissions are reported as S and SO<sub>2</sub>, respectively.
- <sup>5</sup> Maximum emissions for any individual HAP. Emissions reported are for Toluene (H169).
- <sup>6</sup> Uncontrolled and controlled emissions are reported as Cl<sup>-</sup> and HCL (H106), respectively.
- <sup>7</sup> Not Applicable. NO<sub>2</sub> and PM are not landfill gas constituents and are generated only by the flare(s).

# LAYOUT OF OAK HAMMOCK DISPOSAL FACILITY

## LEGEND

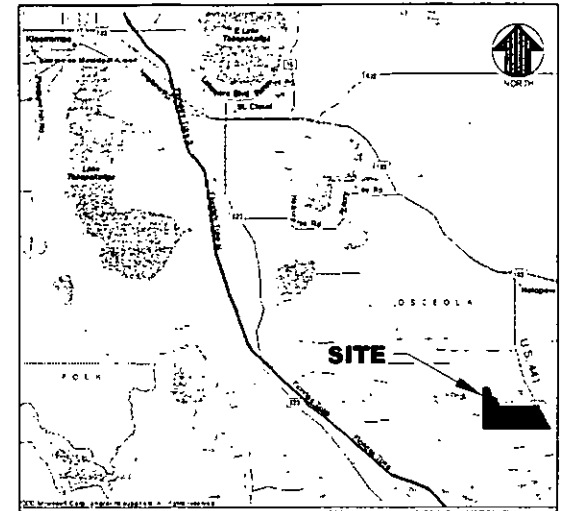
-  PROPERTY BOUNDARY
-  WETLAND
-  LANDFILL CELL NUMBER
-  STORMWATER MANAGEMENT AREA
-  BORROW AREA BOUNDARY
-  CONSERVATION AREA

## PROPERTY DESCRIPTION

Sections 13 and 14 and portion of Section 11 west of Bull Creek in Township 28 South, Range 32 East.

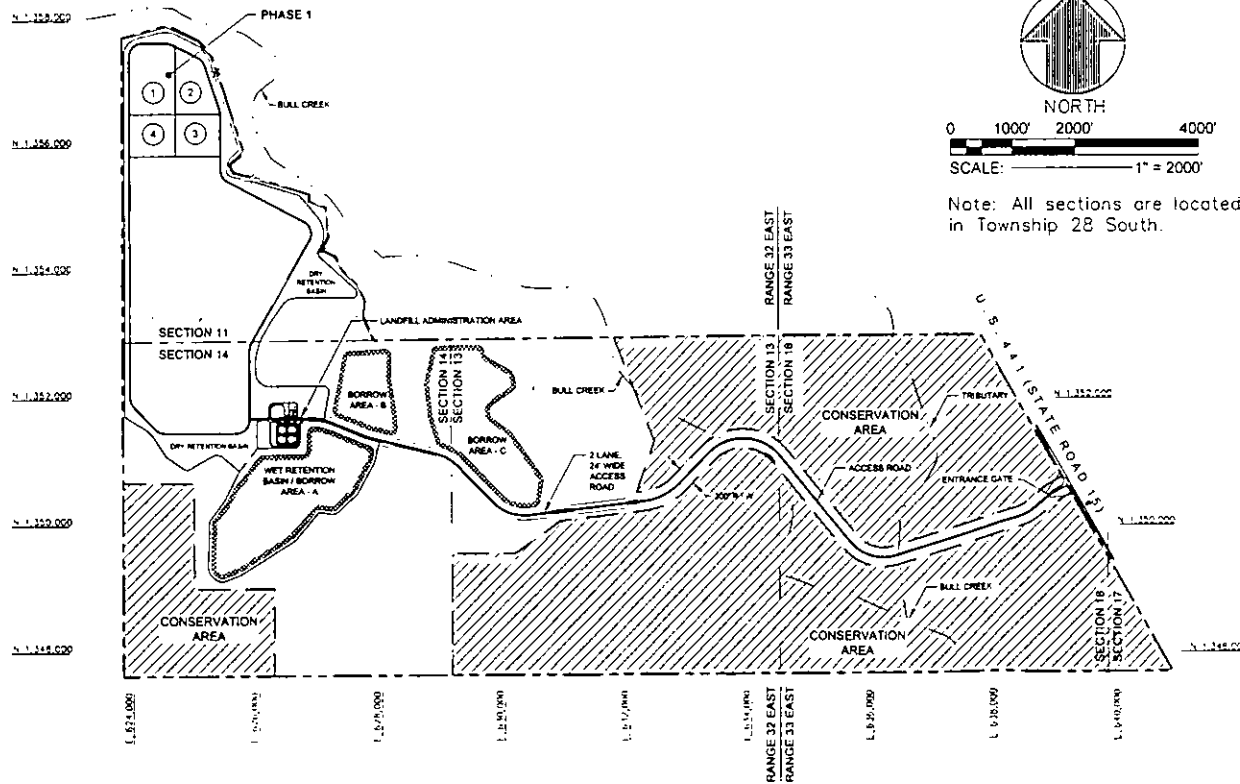
Portions of Sections 17 and 18 west of Highway 441 (State Road No. 15) in Township 28 South, Range 33 East.

Entire site lies in Osceola County, Florida.



## AREA MAP

0 1 2 3 6  
SCALE: 1" = 6 MILES



NORTH

0 1000' 2000' 4000'

SCALE: 1" = 2000'

Note: All sections are located in Township 28 South.



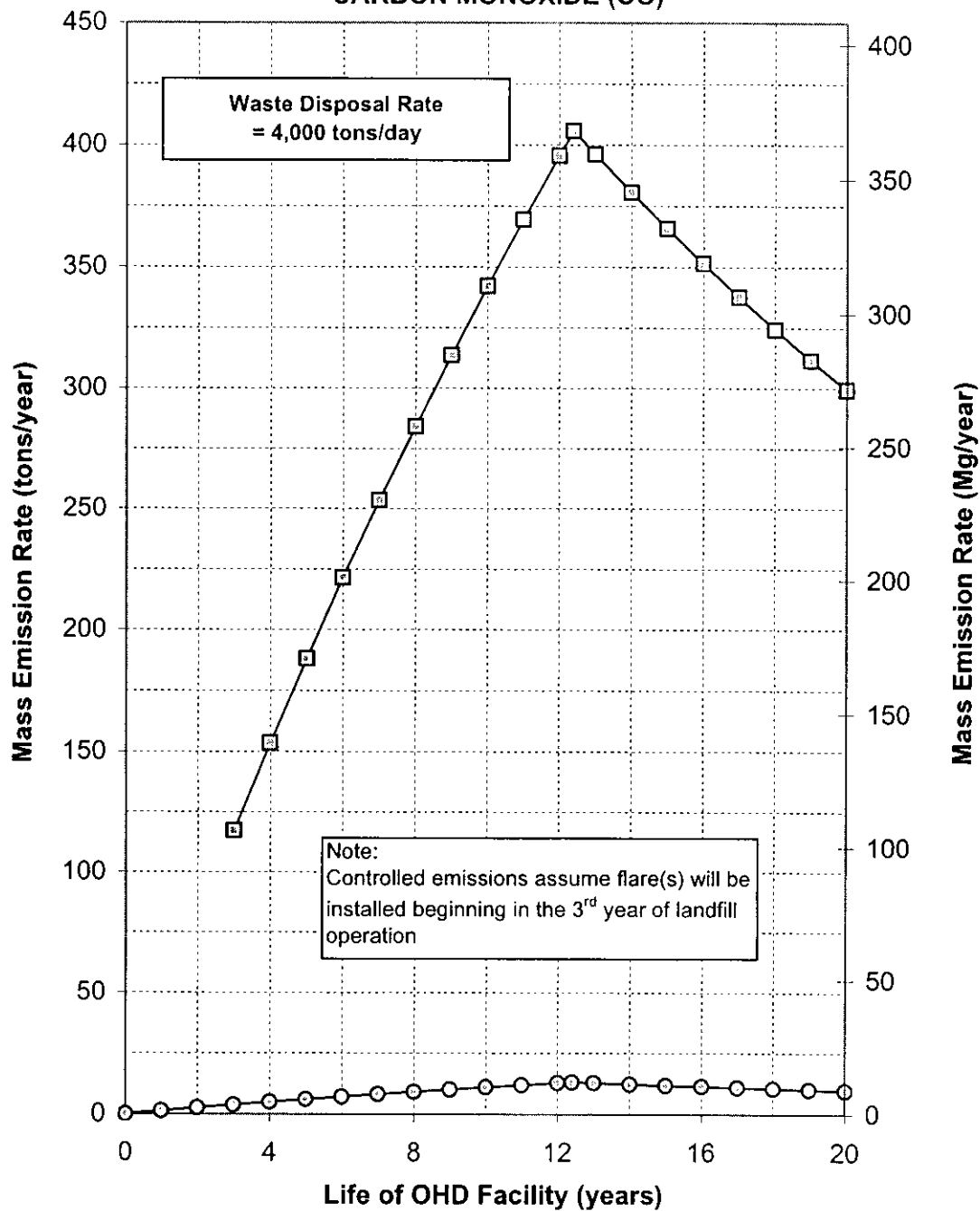
OAK HAMMOCK DISPOSAL FACILITY  
OSCEOLA COUNTY, FLORIDA



PROJECT NO. FW0400 | FIGURE NO. 1  
DATE: 29 JAN 03 | FILE NO. 0400FIG15

Figure 2

MASS EMISSION RATES  
CARBON MONOXIDE (CO)



- Uncontrolled Emissions (without GECS)
- Controlled Emissions (with proposed GECS)

Figure 3

MASS EMISSION RATES  
TOTAL REDUCED SULFUR (TRS as S or SO<sub>2</sub>)

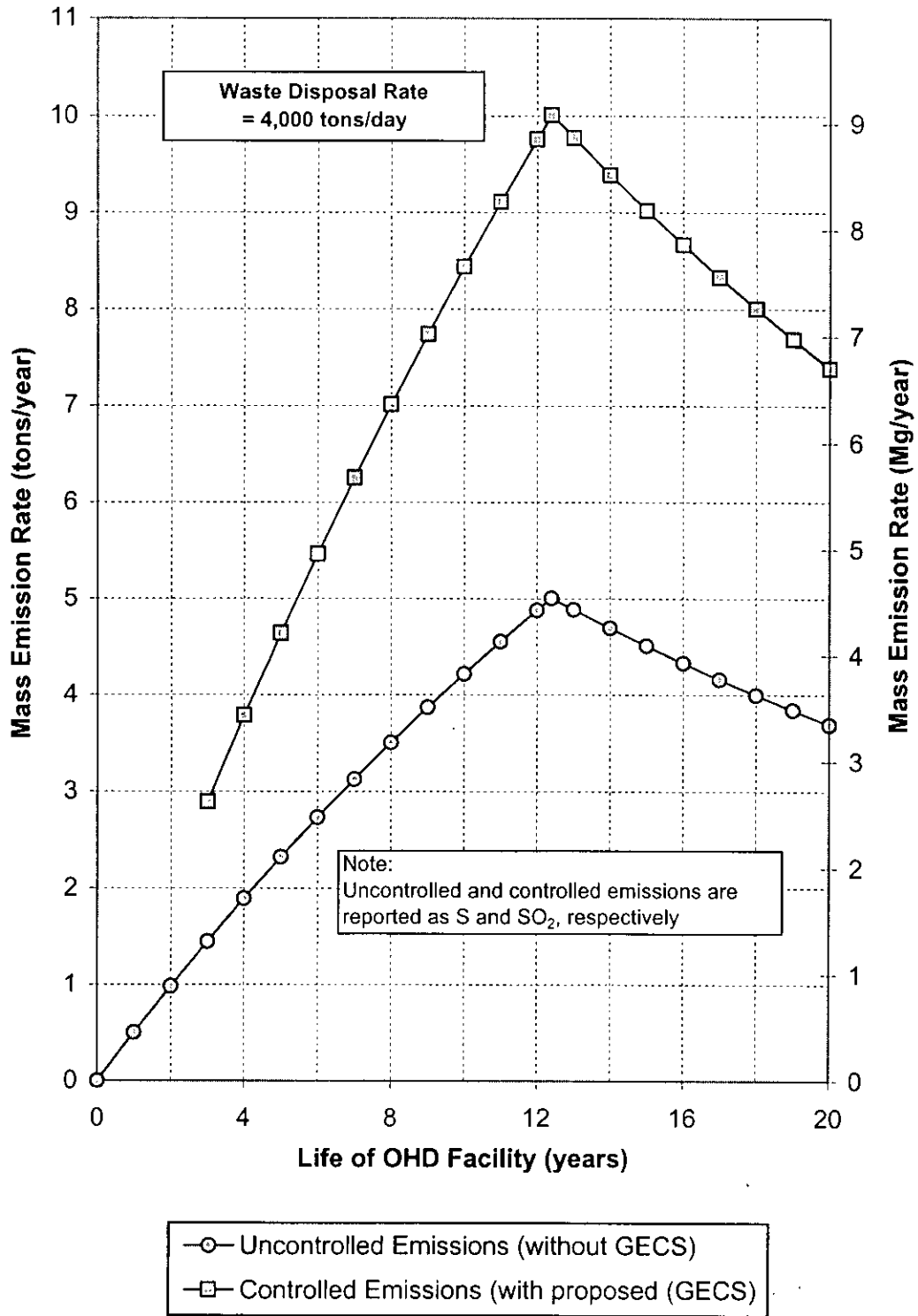


Figure 4

MASS EMISSION RATES  
NON-METHANE ORGANIC COMPOUNDS (NMOC)

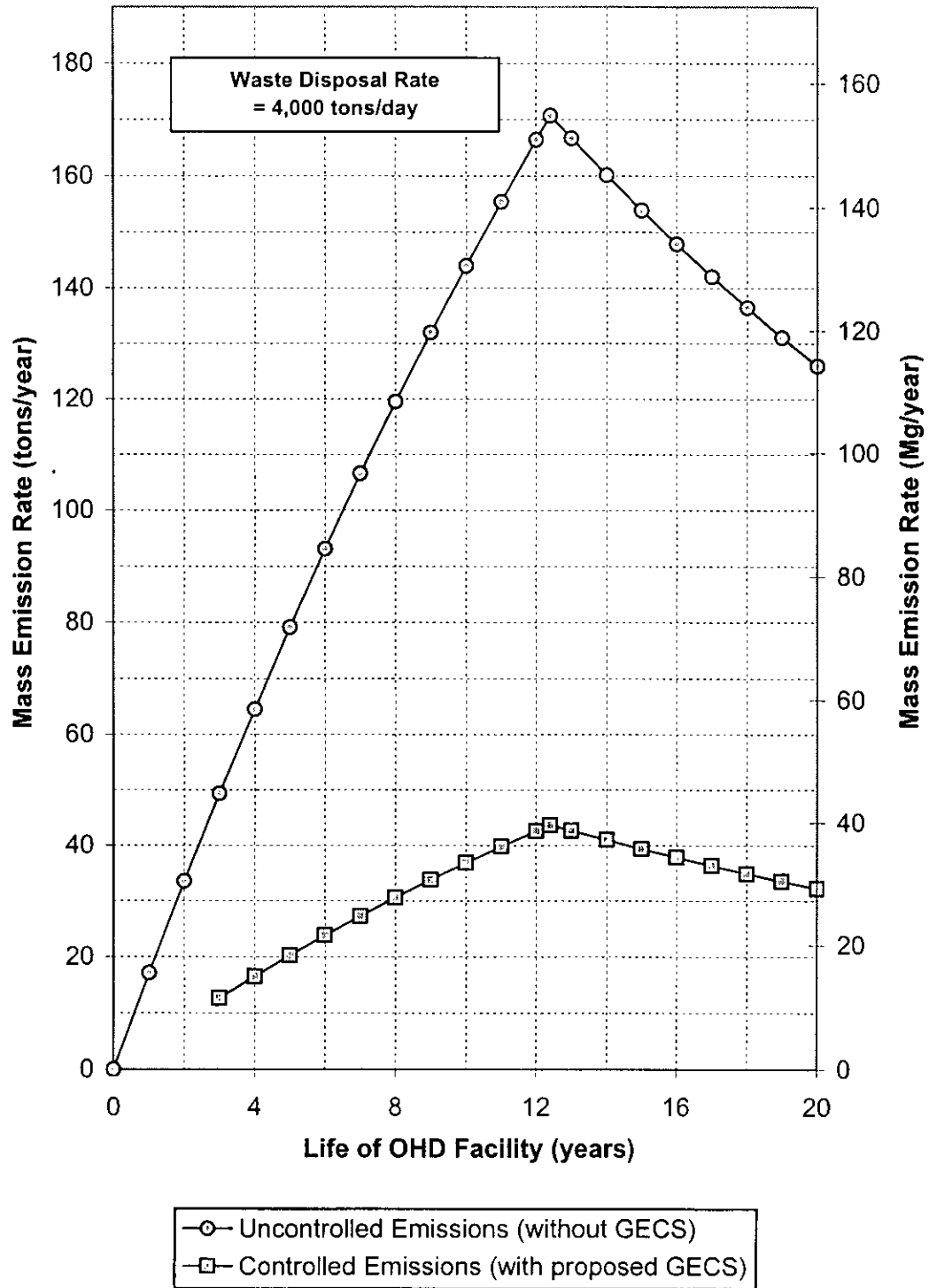


Figure 5

MASS EMISSION RATES  
TOTAL VOLATILE ORGANIC COMPOUNDS (VOC)

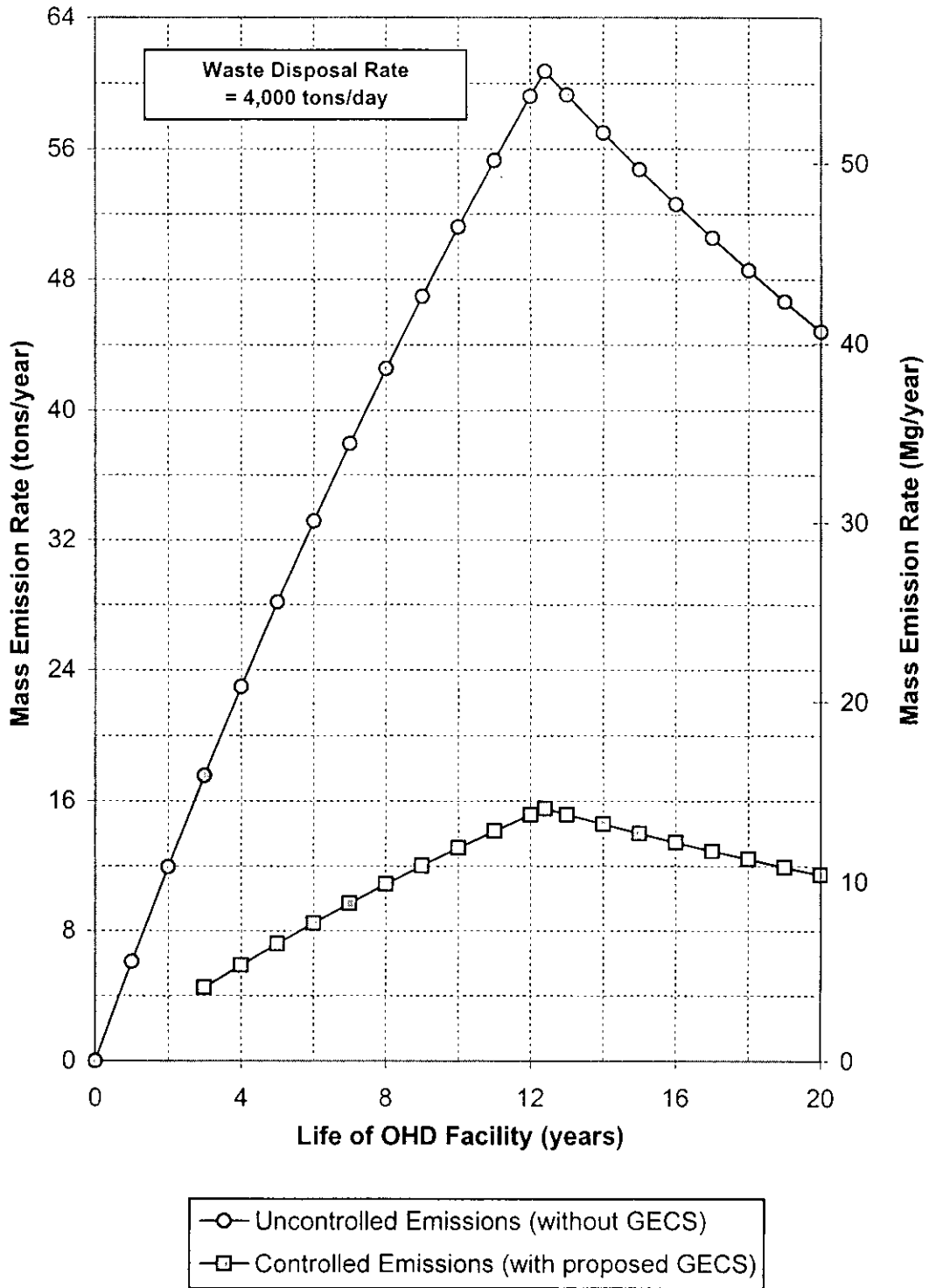
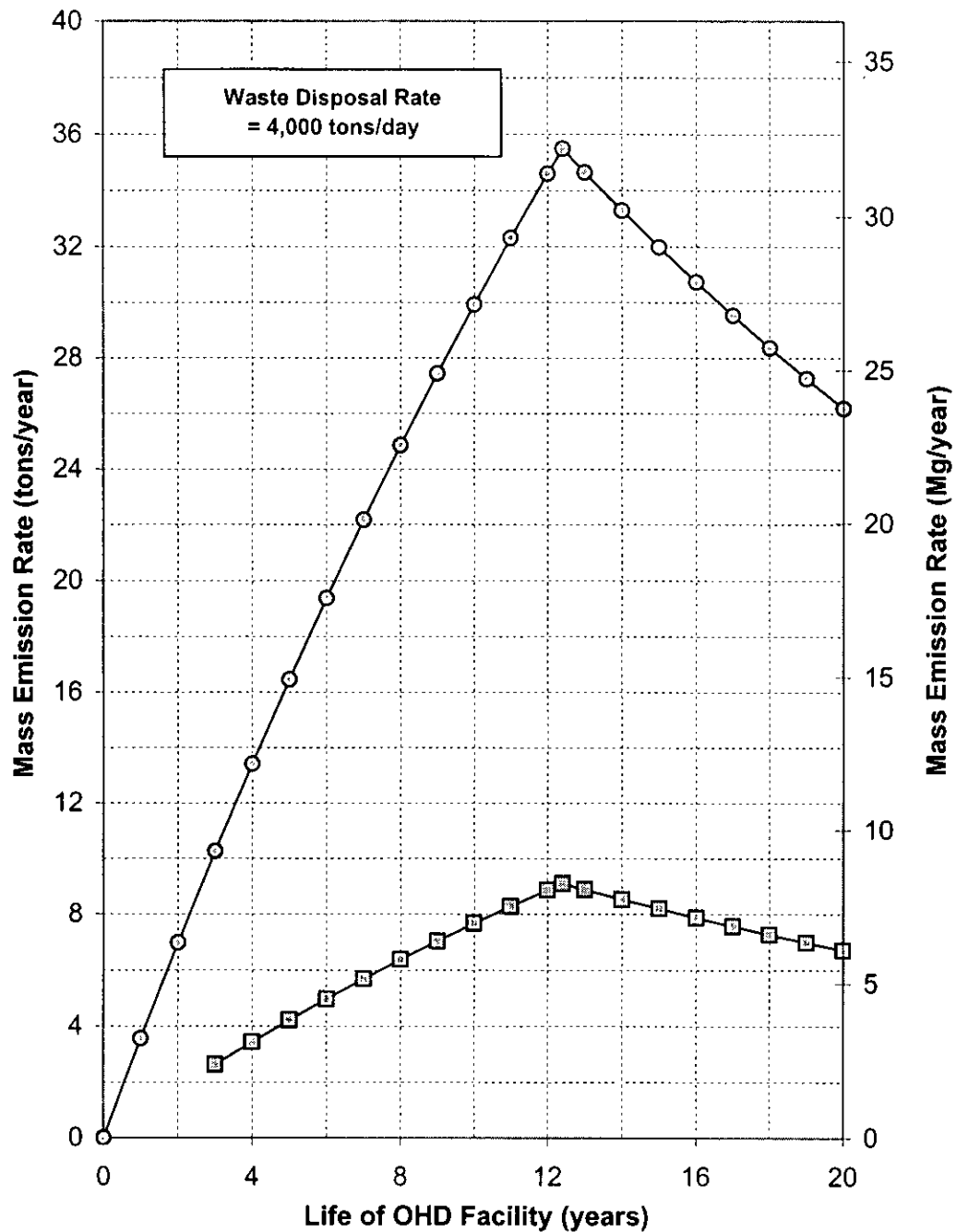




Figure 6

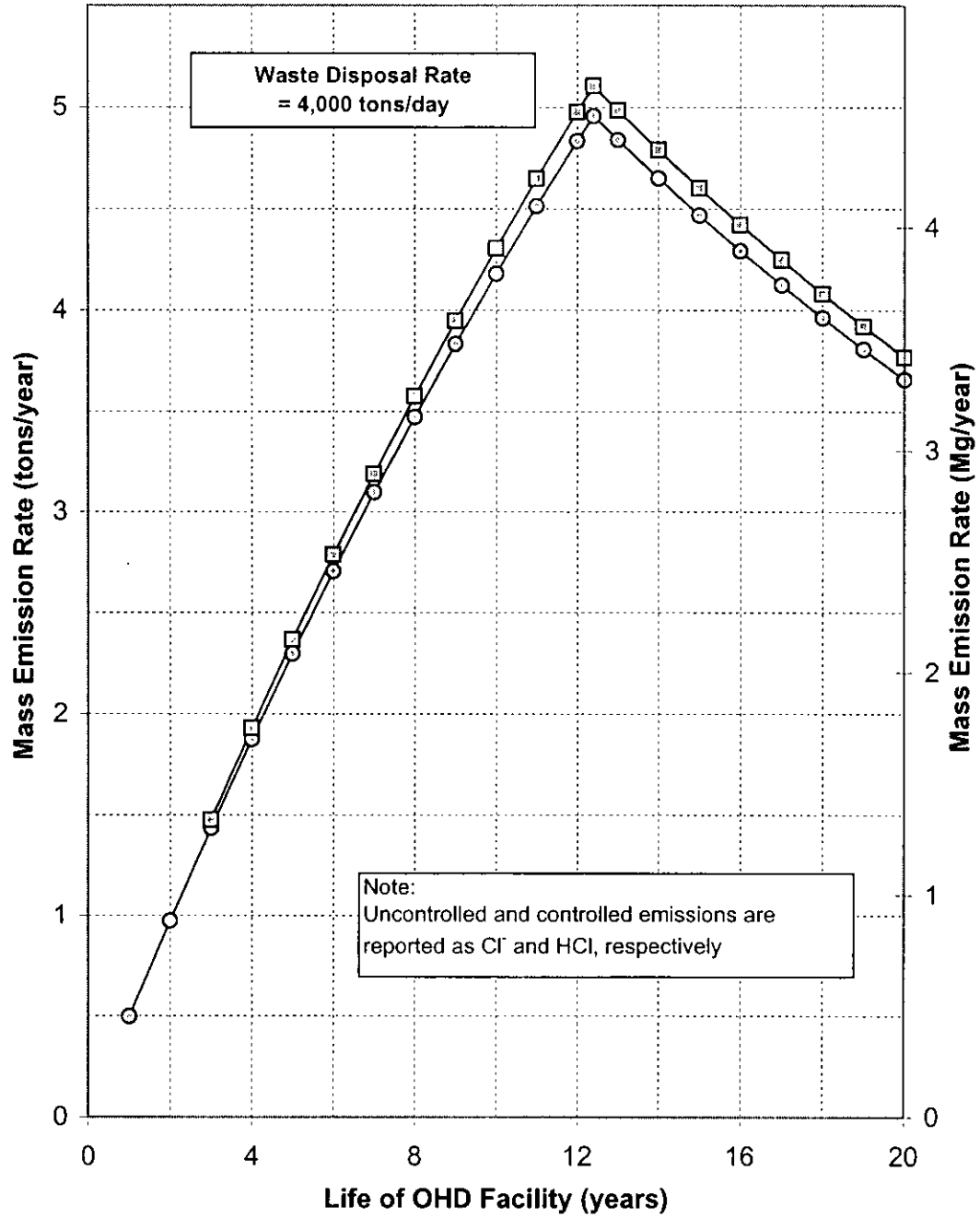
MASS EMISSION RATES  
TOTAL HAZARDOUS AIR POLLUTANTS (HAPS)



○ Uncontrolled Emissions (without GECS)  
□ Controlled Emissions (with proposed GECS)

Figure 7

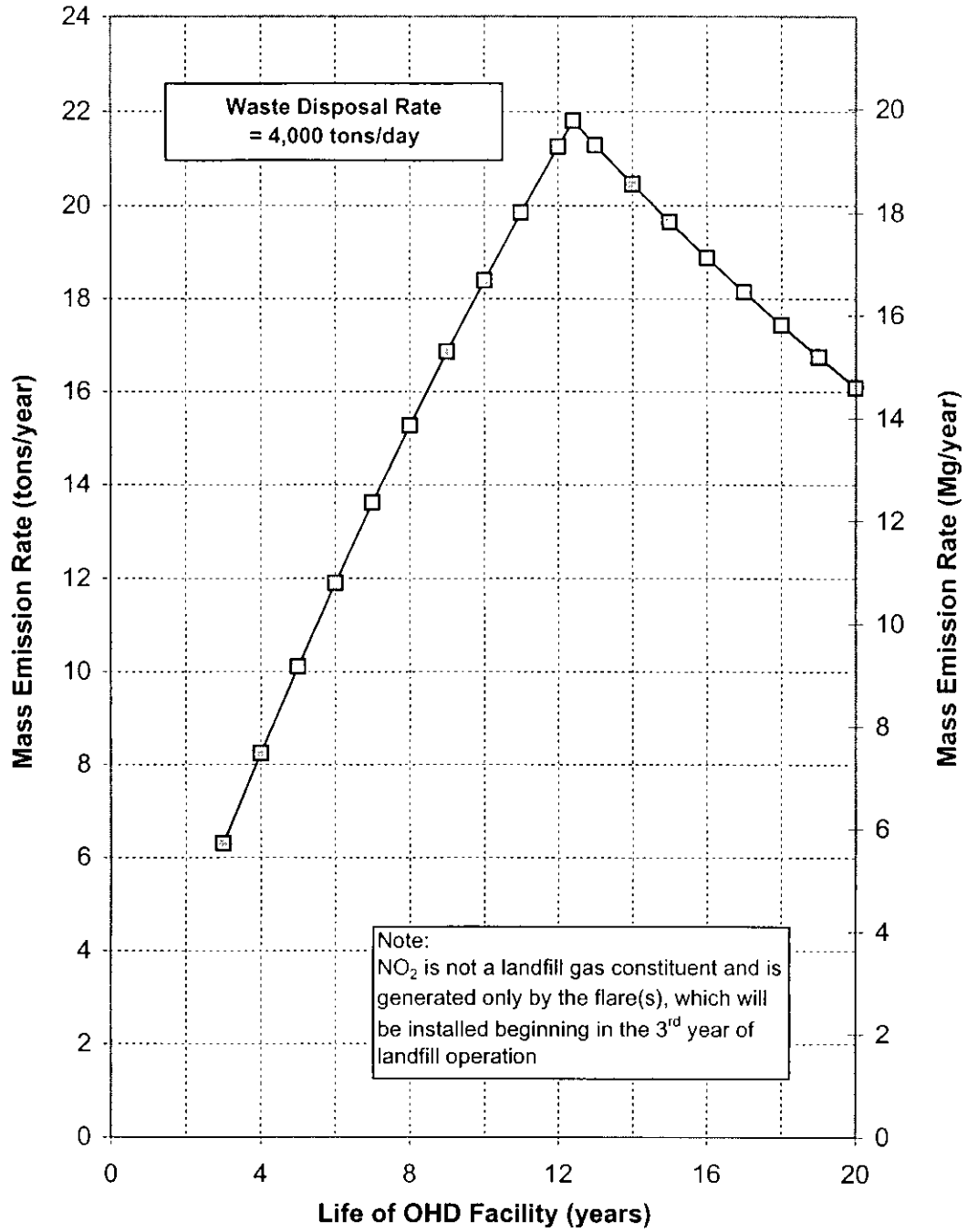
MASS EMISSION RATES  
CHLORIDES (as Cl<sup>-</sup> or HCl)



- Uncontrolled Emissions (without GECS)
- Controlled Emissions (with proposed (GECS))

Figure 8

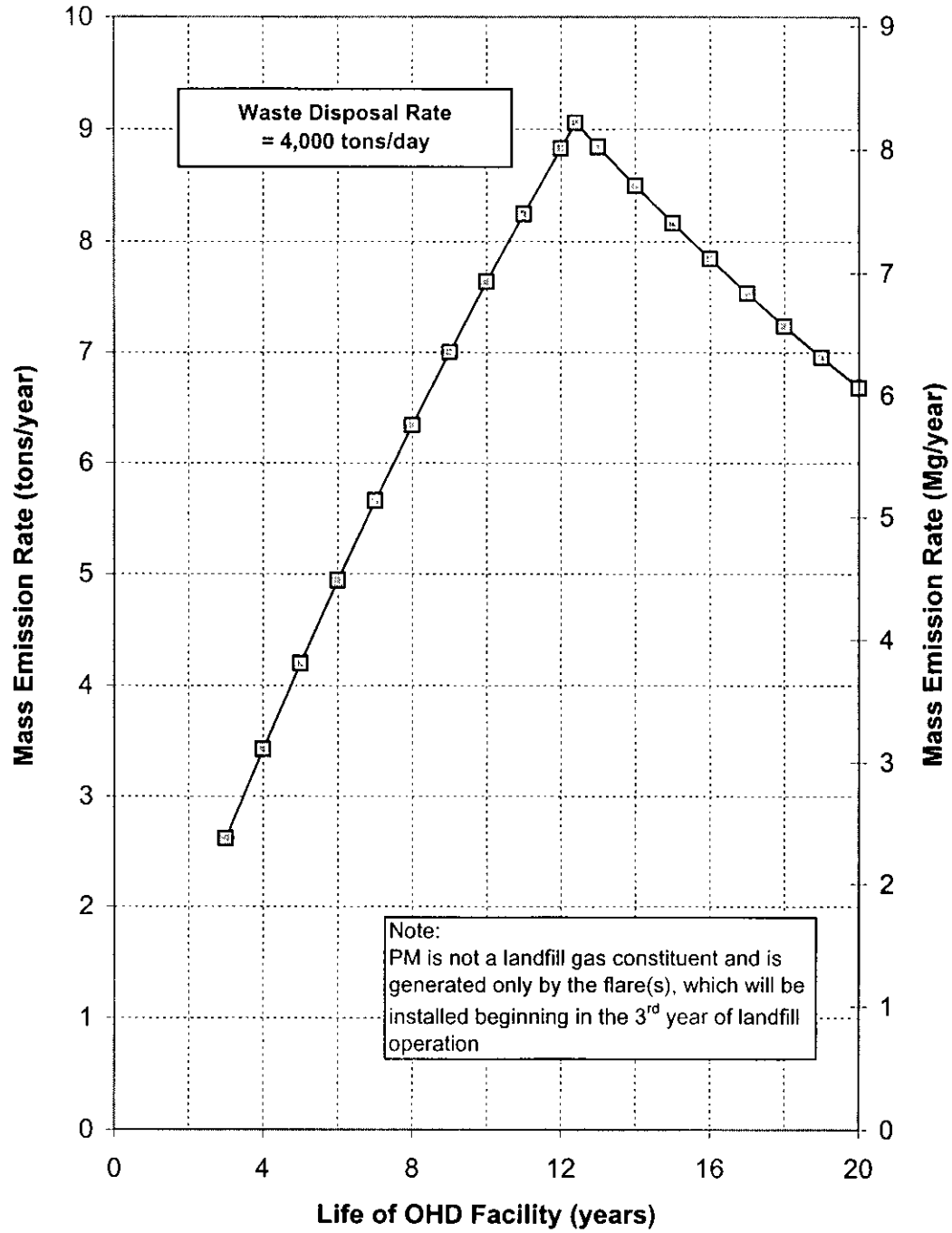
MASS EMISSION RATES  
NITROGEN DIOXIDE (NOX as NO<sub>2</sub>)



—□— Controlled Emissions (with proposed GECS)

Figure 9

MASS EMISSION RATES  
PARTICULATE MATTER (PM)



—■— Controlled Emissions (with proposed GECS)

## Attachment 1

### AIR POLLUTANTS/LFG CONSTITUENTS EMISSION FOR WASTE DISPOSAL RATE OF 474,000 TONS/YEAR

#### INTRODUCTION

A maximum waste disposal rate of 4,000 tons/day was conservatively assumed for the OHD facility for the purpose of this Air Construction Permit Application. The waste disposal rate of 4,000 tons/day is about 2.5 times the expected average annual waste disposal rate of 474,000 tons/year (approximately 1,657 tons/day), which was used in the engineering analyses and design presented in the solid waste permit application. To be consistent with the solid waste permit application, mass emission rates of the air pollutants/LFG constituents were also computed for average annual waste disposal rate of 474,000 tons/year (1,657 tons/day) and are presented in this attachment.

Based on the permit drawings presented in the solid waste permit application, the estimated volume of waste and initial cover soils that can be disposed in the OHD landfill after complete build-out is approximately 23.7 million cubic yards. For the average waste disposal rate of 474,000 tons/year (1,657 tons/day), an average in-place unit weight of 1,500 pounds/cubic yard, 20 percent of the available volume occupied by the initial cover, and landfill operations for 5.5 days per week or 286 equivalent full days per year, the proposed 264-acre landfill is expected to provide airspace for a period of approximately 30 years.

Phase 1 development of the OHD facility is expected to provide airspace for a period greater than 5 years for the waste disposal rate of 474,000 tons/year (1,657 tons/day). The installation of the initial final cover system and the GECS is expected to begin in the 6<sup>th</sup> year of the landfill operation for the waste disposal rate of 474,000 tons/year (1,657 tons/day), when the total quantity of disposed waste reaches approximately 2.75 million tons, in compliance with 40 CFR Part 60, Subpart WWW.

#### APPROACH

The mass emission rates of the applicable regulated air pollutants/LFG constituents for the expected 30-year operating life of the OHD facility are presented and discussed in the following sections. Based on the computed maximum mass emission rates, it will be shown that the OHD facility is not a *major facility* during the first 5 years of operation in accordance with Rule 62-210.200(157), F.A.C. Therefore, the OHD facility is a *minor facility* (in accordance with Rule 62-210.200(165), F.A.C.) for the duration of the construction and operation permit issued by FDEP. In accordance with Rule 62-212.400(2)(d)1, F.A.C., new minor facilities are not subject to the PSD pre-construction

review requirements. Therefore, for the Phase 1 development of the OHD facility, Omni is not subject to the PSD pre-construction review requirements of Chapter 62-212, F.A.C.

## **AIR POLLUTANTS/LANDFILL GAS CONSTITUENTS**

As discussed earlier, the air pollutants/LFG constituents include CO, TRS measured as S or SO<sub>2</sub>, NMOC, VOC, HAPS, chlorides as Cl<sup>-</sup> or HCl, and Hg or H114. The mass emission rates of these air pollutants/LFG constituents were computed for the waste disposal rate of 474,000 tons/year (1,657 tons/day), using the methodology outlined in USEPA AP-42, and are presented in Table A1-1 and in Figures A1-1 through A1-6, respectively. The mass emission rates of Hg are included in the table but are not presented in the figures since Hg emissions were less than 0.3 pounds per year for the life of the OHD facility.

The OHD facility after complete build-out will use up to 4 flares as control devices in the proposed GECS. However, it is expected that no more than 2 flares will be installed during Phase 1. The mass emission rates of NOX (as NO<sub>2</sub>) and PM from the flare(s) for the waste disposal rate of 474,000 tons/year (1,657 tons/day), were also computed using the methodology outlined in USEPA AP-42 and are presented in Figures A1-7 and A1-8, respectively.

The uncontrolled and controlled emission rates presented in Table A1-1 represent maximum mass emission rates for the first 5 years of operation and at the end of operating life of the OHD facility (30 years). Figures A1-1 through A1-8 present uncontrolled and controlled mass emission rates of the air pollutants/LFG constituents over the anticipated 30-year operating life of the OHD facility assuming a waste disposal rate of 474,000 tons/year (1,657 tons/day). The *uncontrolled emissions* represent mass emission rates without the GECS. The *controlled emissions* are mass emission rates assuming that the proposed GECS is installed beginning in the 6<sup>th</sup> year of the landfill operation.

As discussed earlier, the controlled emission rates presented in the figures assume that the collection efficiency of the GECS is 75 percent, i.e., only 75 percent of the gas generated by the landfill is collected by the GECS and flared whereas the remaining 25 percent escapes as uncontrolled emissions. The controlled emission rates presented in the figures also incorporate flare(s) efficiency ranging from 98.0 to 99.7 percent, as recommended by USEPA AP-42.

As expected, the controlled emission rates of the air pollutants/LFG constituents are less than the uncontrolled emission rates except for CO. The controlled emission rates for CO are higher than the uncontrolled emission rates because of the CO generated by

the flare(s). It is noted that NO<sub>2</sub> and PM are not LFG constituents and are generated only by the flare(s). Therefore, only controlled emission rates are presented for NO<sub>2</sub> and PM, which will be generated after installation of the GECS beginning in the 6<sup>th</sup> year of the landfill operation for a waste disposal rate of 474,000 tons/year (1,657 tons/day).

## APPLICABILITY OF PSD REQUIREMENTS

In accordance with Rule 62-210.200(157), F.A.C., a “*Major Facility*”, is any facility that emits or has potential to emit:

- (a) 5 tons per year of lead or lead compounds, measured as elemental lead;
- (b) 30 tons per year or more of acrylonitrile; or
- (c) 100 tons per year or more of any other air pollutant subject to regulation under Chapter 403, FS.

In accordance with USEPA AP-42, lead or lead compounds are not a constituent of the LFG or the emissions generated by a flare, which will be used as the control device in the GES at the OHD facility. As noted in Table A1-1, the maximum mass emission rate of acrylonitrile is less than 1 ton per year. The mass emission rates of air pollutants/LFG constituents are discussed below.

### First 5 Years of Operation – Phase 1 Development

As noted in Table A1-1, during the first 5 years of the OHD facility operation, the maximum uncontrolled emission rates of the air pollutants/LFG constituents are less than 12 tons per year except for the emission rate of NMOC of about 33 tons per year. The maximum controlled emission rates of the air pollutants/LFG constituents are less than 9 tons per year except for the emission rate of CO of about 78 tons per year. In essence, the maximum uncontrolled or controlled emission rate of any air pollutant/LFG constituent is less than 100 tons per year. Therefore, the OHD facility is not a *major facility* during the first 5 years of operation. Thus, for the duration of the construction and operation permit issued by FDEP for the Phase 1 development, the OHD facility is a *minor facility* in accordance with Rule 62-210.200(165), F.A.C.

In accordance with Rule 62-212.400(2)(d)1, F.A.C., new minor facilities are not subject to the PSD pre-construction review requirements. Therefore, for the Phase I development of the OHD facility, Omni is not subject to the PSD pre-construction review requirements of Chapter 62-212, F.A.C.

### 30 Years – End of Operating Life

As noted in Table A1-1, for the 30-year operating life of the OHD facility, the maximum controlled emission rates of the air pollutants/LFG constituents are less than 33 tons per year except for the emission rate of CO of about 300 tons per year. It is noted that the maximum mass emission rate of CO from the landfill without the GES (i.e., uncontrolled emission) is less than 10 tons per year, i.e., practically all of the CO is generated by the flares in the controlled situation. In essence, except for the emission rate of CO from the flares, the OHD facility is a minor facility throughout its 30-year operating life.

The emission rate of CO from the flare was computed using the default emission factors recommended in USEPA AP-42. The GES installation is expected to begin in the 6<sup>th</sup> year of the landfill operation and will incorporate flare(s) as the control device. Prior to future phased developments of the OHD facility, the emission rate of CO from the flare(s) will be analyzed. The results of the analysis will be used to re-evaluate CO emission rates for the future developments and air construction permits for the OHD facility.

### CONCLUSION

To be consistent with the solid waste permit application, mass emission rates of the air pollutants/LFG constituents for average annual waste disposal rate of 474,000 tons/year (1,657 tons/day) were presented in this attachment. As noted, the OHD facility is a *minor facility* during the first 5 years of operation. Therefore, Phase 1 development of the OHD facility is not subject to the PSD pre-construction review requirements.

Further, the OHD facility is a *minor facility* throughout its operating life for the waste disposal rate of 474,000 tons/year (1,657 tons/day), except for the emission rate of CO from the flares. It is noted that CO is emitted as a collateral pollutant from the flares that will be installed solely for the purpose of reducing the NMOC emissions as required by 40 CFR 60, Subpart WWW.



Table A1-1

**MASS EMISSION RATES FOR REGULATED AIR  
POLLUTANTS AND LANDFILL GAS CONSTITUENTS  
(WASTE DISPOSAL RATE = 1,657 tons/day)**

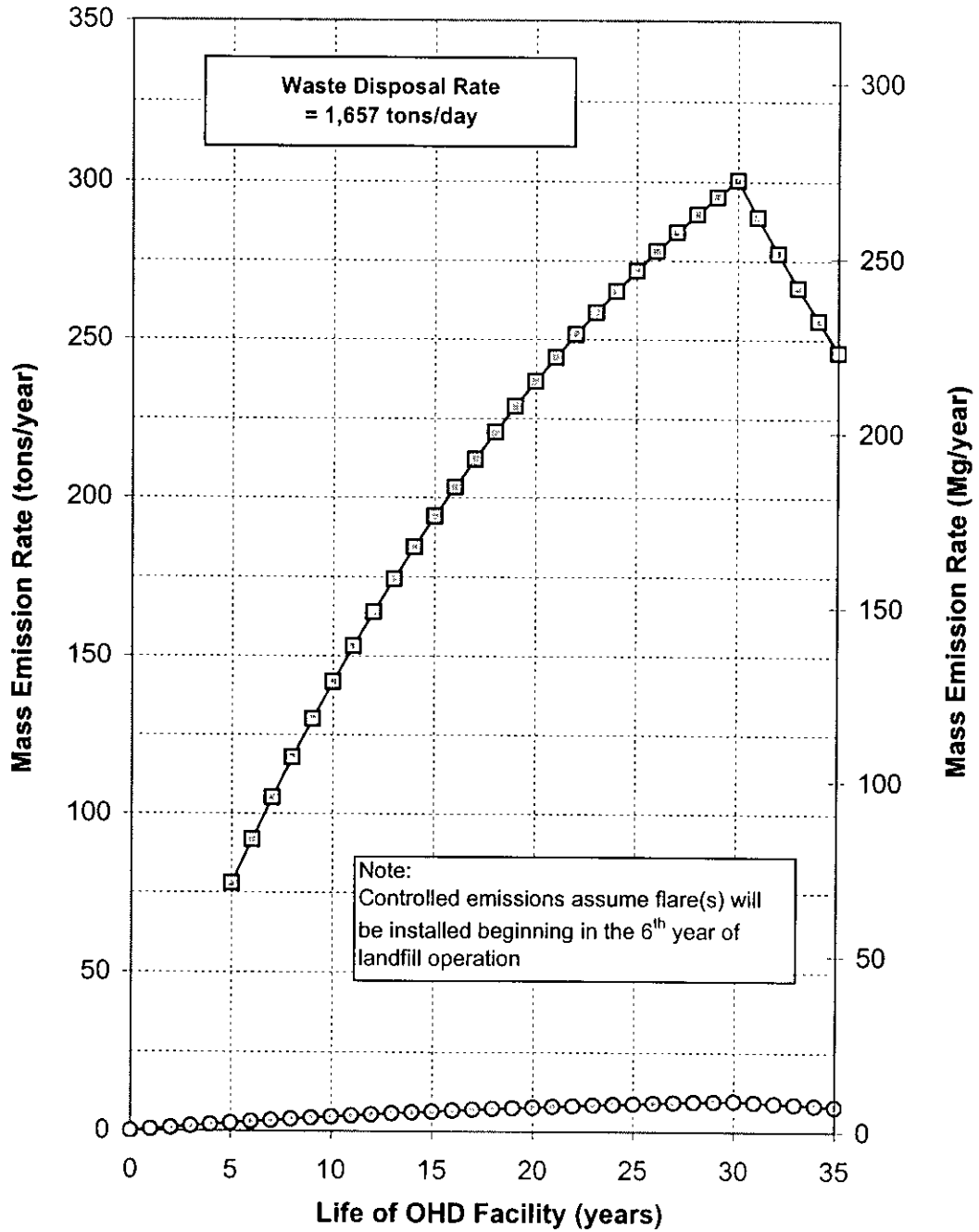
Air Pollutant/LFG Constituent <sup>1</sup>	Maximum Mass Emission Rates (tons/yr)			
	5 Years - Phase 1 Development		30 Years - End of Operating Life	
	Uncontrolled <sup>2</sup>	Controlled <sup>3</sup>	Uncontrolled <sup>2</sup>	Controlled <sup>3</sup>
Carbon Monoxide (CO)	2.5	77.9	9.7	300.5
Total Reduced Sulfur (TRS as S or SO <sub>2</sub> ) <sup>4</sup>	1.0	1.9	3.7	7.4
Non-Methane Organic Compounds (NMOC)	32.8	8.4	126.4	32.4
Total Volatile Organic Compounds (VOC)	11.7	3.0	45.0	11.5
Acrylonitrile (H009 - a HAP)	0.21	0.05	0.83	0.21
Any individual HAP (H001 through H189) <sup>5</sup>	2.3	0.6	8.9	2.3
Total Hazardous Air Pollutants (HAPS)	6.8	1.7	26.3	6.7
Chlorides/HCl or H106 (as Cl <sup>-</sup> or HCL) <sup>6</sup>	1.0	1.0	3.7	3.8
Mercury (Hg or H114)	3.2x10 <sup>-5</sup>	--	1.3x10 <sup>-4</sup>	--
Nitrogen Dioxide (NOX as NO <sub>2</sub> )	NA <sup>7</sup>	4.2	NA <sup>7</sup>	16.1
Particulate Matter (PM)	NA <sup>7</sup>	1.7	NA <sup>7</sup>	6.7

**Notes:**

- <sup>1</sup> Per USEPA AP-42 Section 2.4 (1998).
- <sup>2</sup> Assuming no gas extraction and control system (GECS) is installed.
- <sup>3</sup> Assuming the proposed GECS is installed beginning in the 6th year of operation. See text for other assumptions.
- <sup>4</sup> Uncontrolled and controlled emissions are reported as S and SO<sub>2</sub>, respectively.
- <sup>5</sup> Maximum emissions for any individual HAP. Emissions reported are for Toluene (H169).
- <sup>6</sup> Uncontrolled and controlled emissions are reported as Cl<sup>-</sup> and HCL (H106), respectively.
- <sup>7</sup> Not Applicable. NO<sub>2</sub> and PM are not landfill gas constituents and are generated only by the flare(s).

Figure A1-1

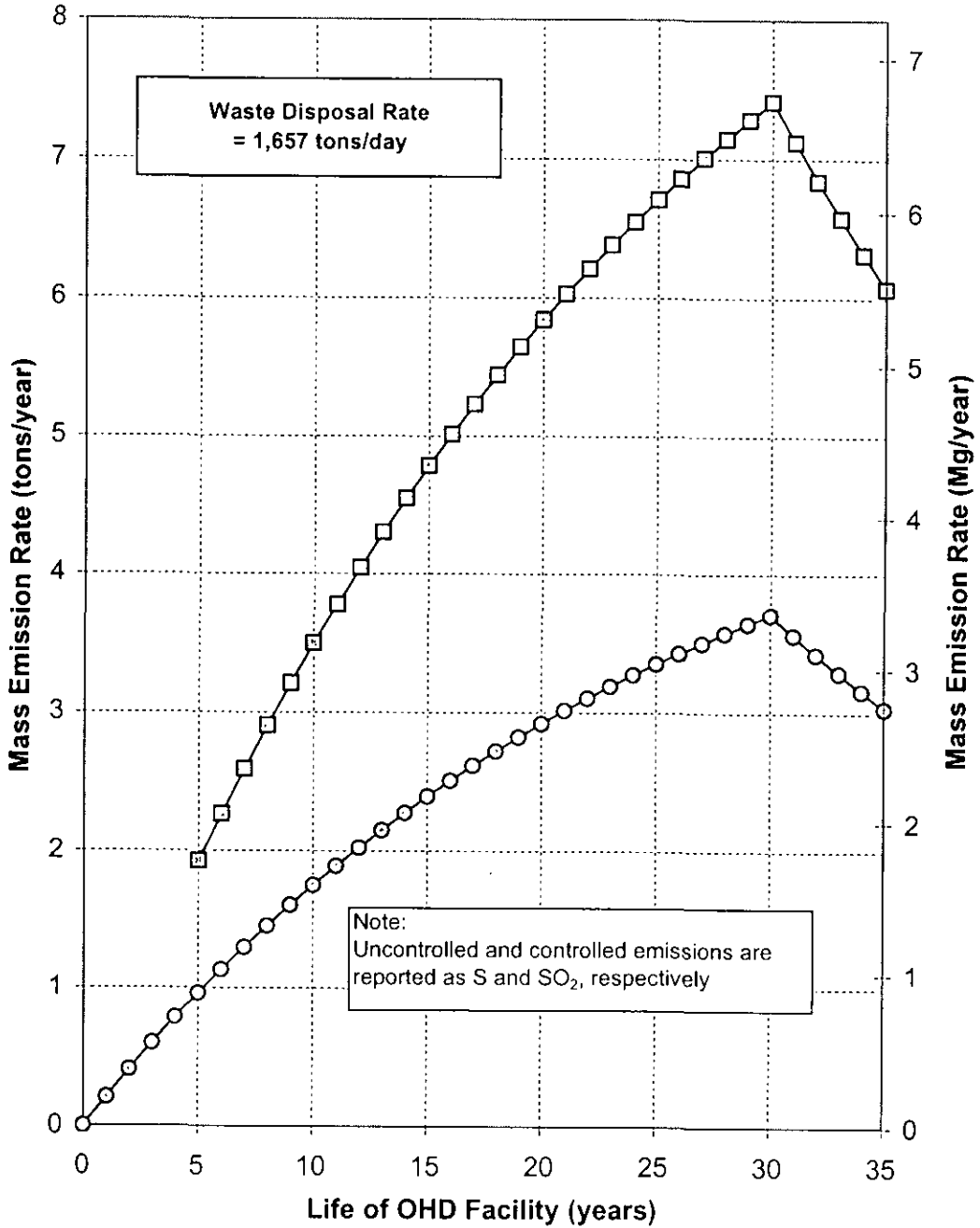
MASS EMISSION RATES  
CARBON MONOXIDE (CO)



—□— Controlled Emissions (with proposed GECS)  
—○— Uncontrolled Emissions (without GECS)

Figure A1-2

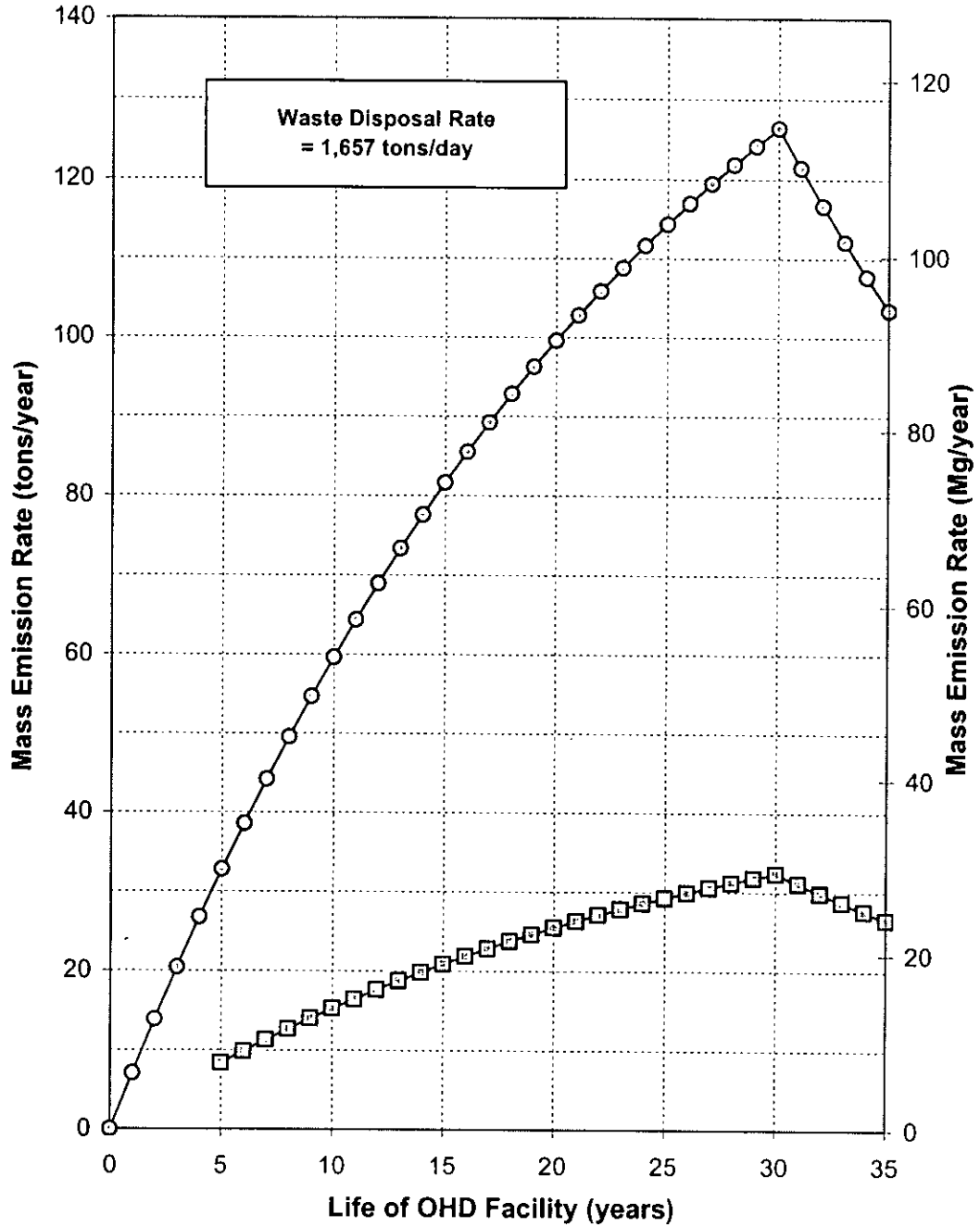
MASS EMISSION RATES  
TOTAL REDUCED SULFUR (TRS as S or SO<sub>2</sub>)



- Uncontrolled Emissions (without GECS)
- Controlled Emissions (with proposed GECS)

Figure A1-3

**MASS EMISSION RATES  
NON-METHANE ORGANIC COMPOUNDS (NMOC)**



- Uncontrolled Emissions (without GECS)
- Controlled Emissions (with proposed GECS)

Figure A1-4

**MASS EMISSION RATES  
TOTAL VOLATILE ORGANIC COMPOUNDS (VOC)**

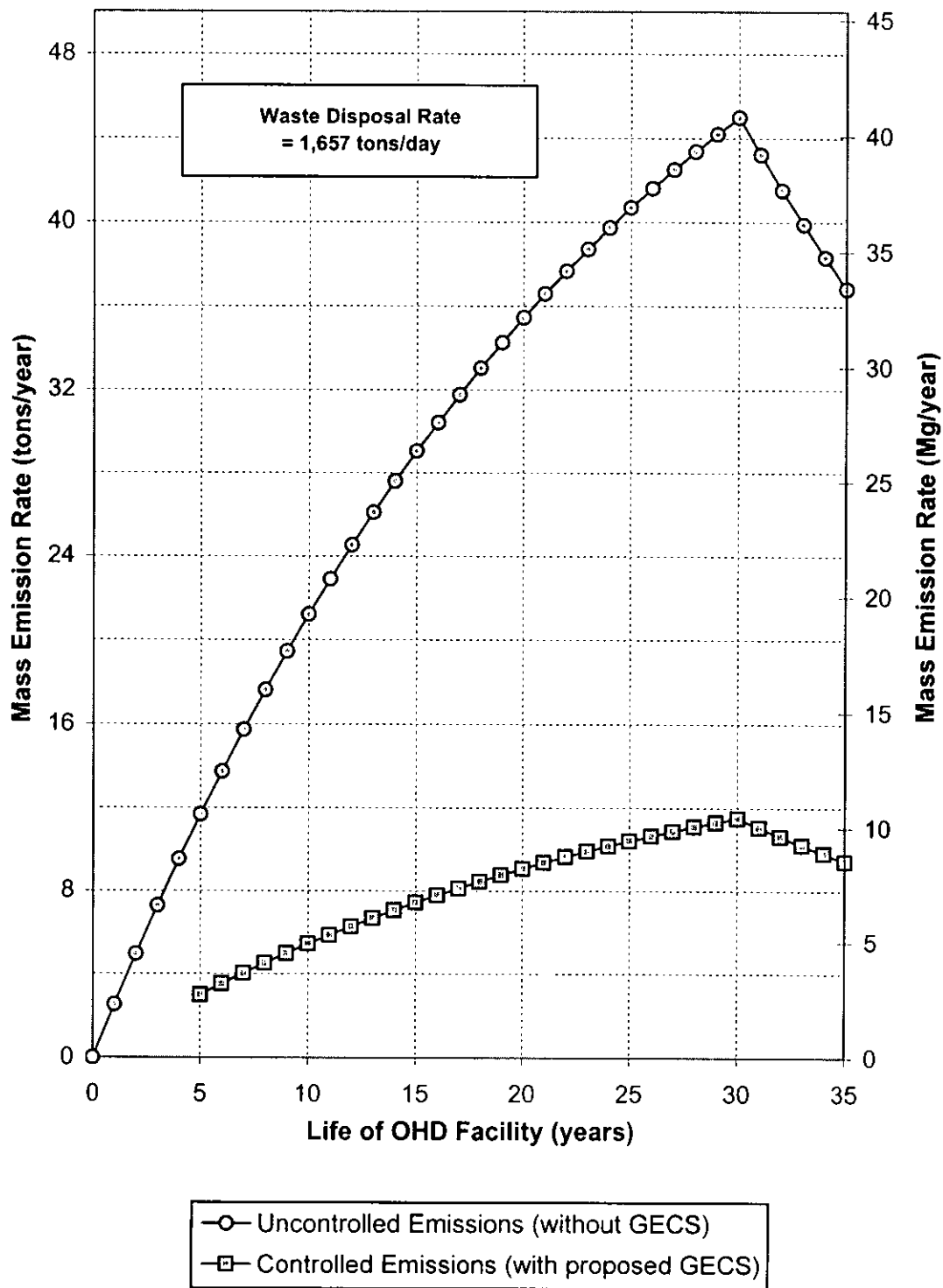


Figure A1-5

MASS EMISSION RATES  
TOTAL HAZARDOUS AIR POLLUTANTS (HAPS)

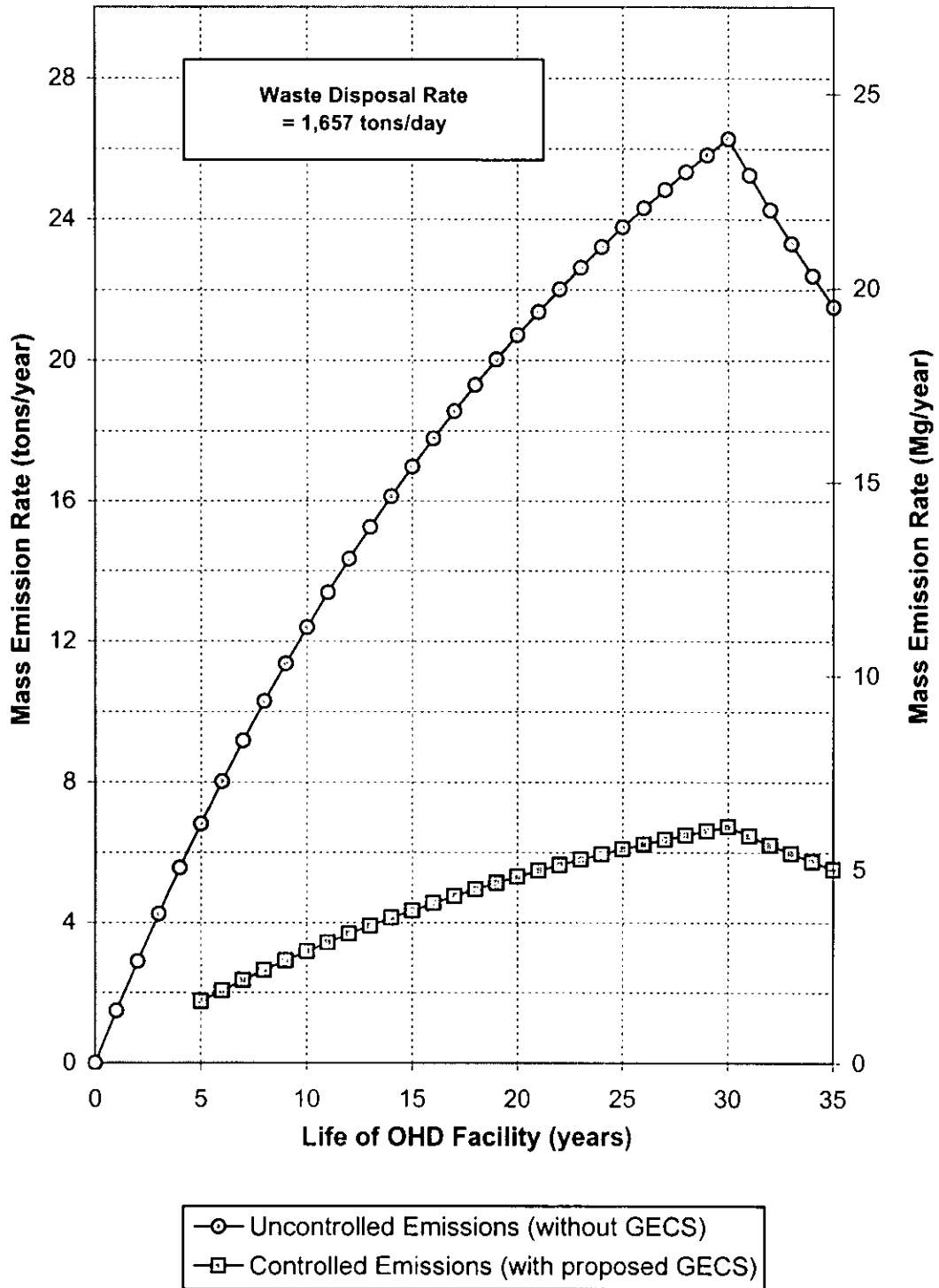
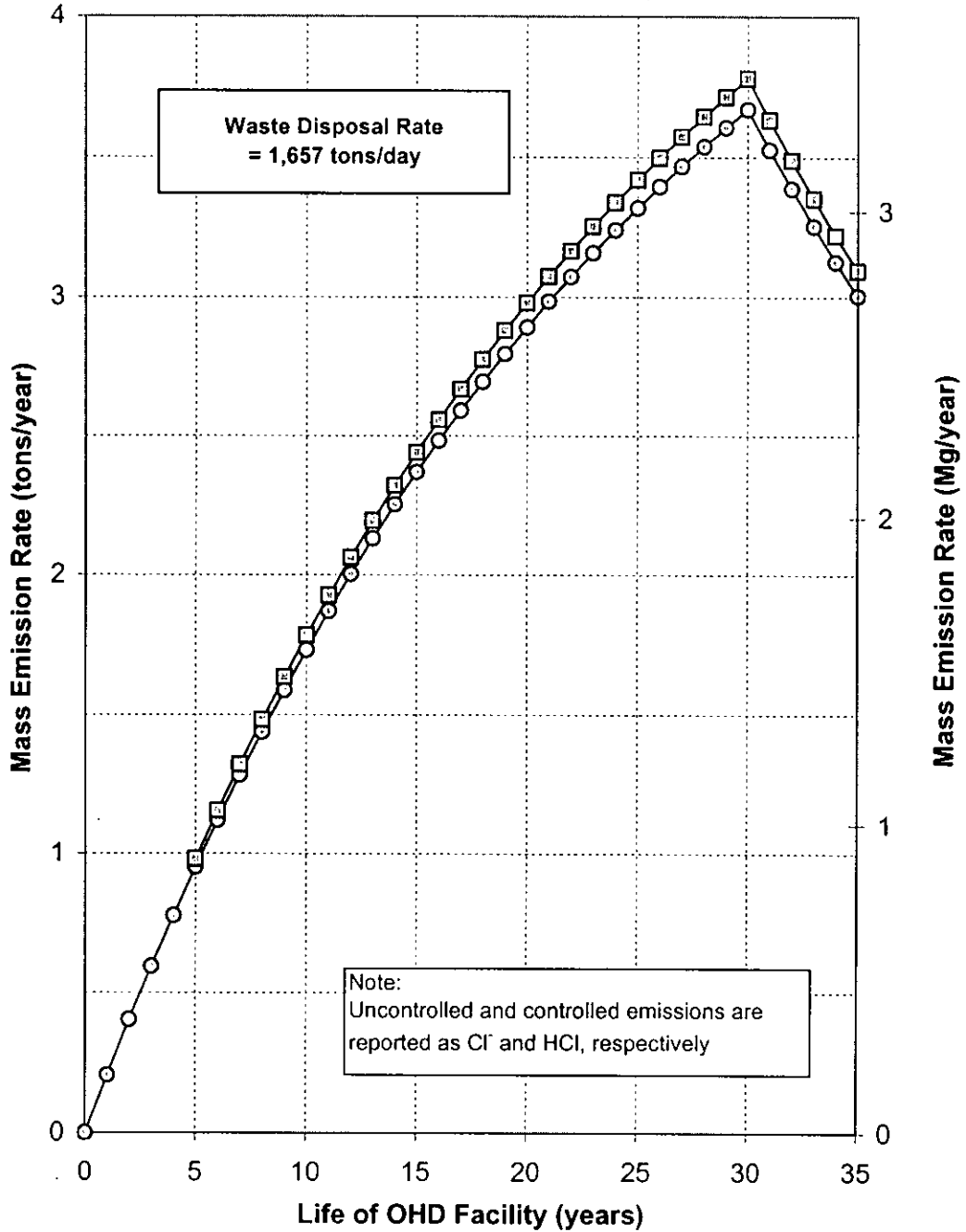


Figure A1-6

**MASS EMISSION RATES  
CHLORIDES (as Cl<sup>-</sup> or HCl)**



- Uncontrolled Emissions (without GECS)
- Controlled Emissions (with proposed GECS)

Figure A1-7

**MASS EMISSION RATES  
NITROGEN DIOXIDE (NO<sub>x</sub> as NO<sub>2</sub>)**

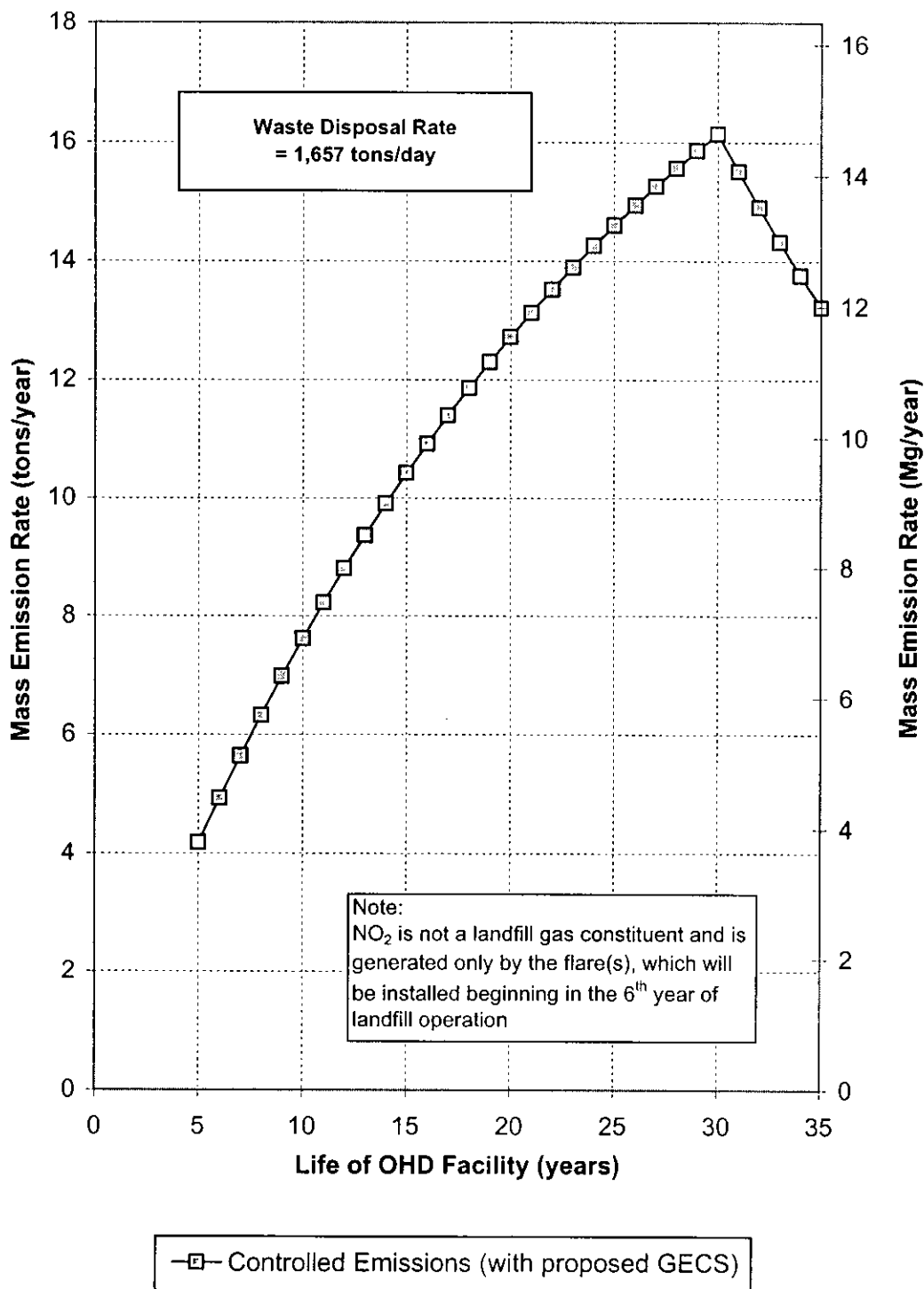
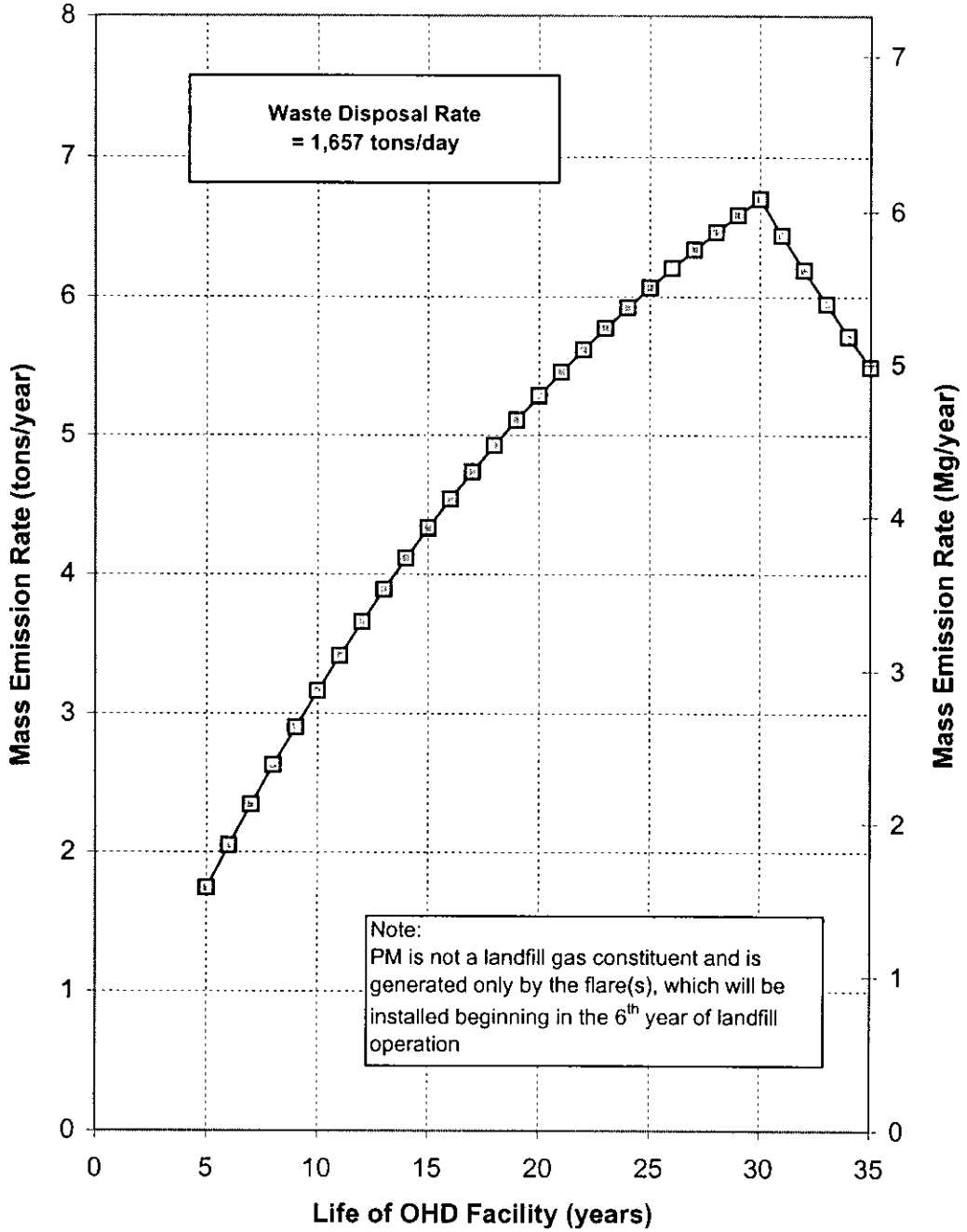




Figure A1-8

MASS EMISSION RATES  
PARTICULATE MATTER (PM)



—□— Controlled Emissions (with proposed GECS)

## Attachment 2

**LANDFILL GAS CONSTITUENTS EMISSION  
ESTIMATED USING AP-42 SECTION 2.4**

The methane (CH<sub>4</sub>) generation rate and the landfill gas (LFG) constituents emission rates were estimated using the procedure outlined in USEPA AP-42 (Fifth Edition, Volume I), entitled "*Compilation of Air Pollutant Emission Factors*". USEPA AP-42 Section 2.4, entitled "*Emission Factor Documentation for Municipal Solid Waste Landfills*", (Supplement E, November 1998), referenced herein simply as AP-42, was used to estimate the emissions of relevant LFG constituents for the Oak Hammock Disposal (OHD) facility.

The LFG constituents, for which uncontrolled and controlled mass emission rates were computed, include carbon monoxide (CO), total reduced sulfur compounds (TRS measured as sulfur, S, or sulfur dioxide, SO<sub>2</sub>), non-methane organic compounds (NMOC), total volatile organic compounds (VOC), total hazardous air pollutants (HAPS), chlorides (as Cl<sup>-</sup> or HCl), mercury (Hg or H114), and acrylonitrile (H009, a HAP). Flare(s) will be used as the control device in the proposed gas extraction and control system (GECS) at the OHD facility. Secondary compounds exiting the flare(s) for which controlled mass emission rates were computed include CO, nitrogen dioxide (NO<sub>x</sub> as NO<sub>2</sub>), and particulate matter (PM).

### Methane Generation Rate

The methane generation rate for the OHD facility was estimated using the following Landfill Air Emissions Estimation model equation developed by EPA:

$$Q_{CH_4} = L_0 R (e^{-kc} - e^{-kt}) \quad (1)$$

where:

- $Q_{CH_4}$  = CH<sub>4</sub> generation rate at time t, m<sup>3</sup>/yr;
- $L_0$  = CH<sub>4</sub> generation potential, m<sup>3</sup> of CH<sub>4</sub> per megagrams (Mg) of refuse;
- $R$  = average annual refuse acceptance rate during active life, Mg/yr;
- $e$  = natural log, unitless;
- $k$  = CH<sub>4</sub> generation rate constant, yr<sup>-1</sup>;
- $c$  = time since landfill closure, yrs (c=0 for active landfills); and
- $t$  = time since initial refuse placement, yrs.

An  $L_0$  value of  $100 \text{ m}^3/\text{Mg}$  was used as recommended in AP-42. A  $k$  value of  $0.04/\text{year}$  was used corresponding to areas with annual rainfall of 25 inches or more. As discussed earlier, two average annual refuse acceptance rates ( $R$ ) were considered to compute the air pollutants/LFG constituents. The two rates used in the above equation to estimate the methane generation rate included  $R$  of approximately  $1,038,000 \text{ Mg/yr}$  and  $430,000 \text{ Mg/yr}$ . These  $R$  correspond to waste disposal rates of  $4,000 \text{ tons/day}$  and  $1,657 \text{ tons/day}$ , respectively, assuming landfill operations for 286 equivalent full days per year. The methane generation rates were computed for each year of the anticipated life of the OHD facility and for a few years after closure of the facility. The methane generation rates computed for the two average annual refuse acceptance rates are presented in Figure A2-1.

### Uncontrolled Emissions

The uncontrolled emission rate of relevant LFG constituents (e.g. NMOC) were estimated using the following equation:

$$Q_P = 1.82 Q_{CH_4} * \frac{C_P}{(1 \times 10^6)} \quad (2)$$

where:

- $Q_P$  = uncontrolled emission rate of pollutant P (e.g. NMOC),  $\text{m}^3/\text{yr}$ ;
- $Q_{CH_4}$  =  $\text{CH}_4$  generation rate,  $\text{m}^3/\text{yr}$  (from Equation 1);
- $C_P$  = concentration of pollutant P in LFG, ppmv (ppm by volume); and
- 1.82 = multiplication factor assuming 55 percent of LFG (by volume) is  $\text{CH}_4$ .

The concentrations ( $C_P$ ) of relevant LFG constituents used in computing the uncontrolled emission rates are presented in Table A2-1. It is noted that a concentration of 595 ppmv (as hexane) was used for NMOC, as recommended by AP-42 for "no or unknown co-disposal", since the landfill will primarily contain municipal solid waste. Similarly, concentrations of 1.91 ppmv and 39.3 ppmv were used for hazardous air pollutants Benzene (H017) and Toluene (H169), respectively, as recommended by AP-42 for "no or unknown co-disposal".

The uncontrolled mass emissions rate of relevant LFG constituents (e.g. NMOC) were estimated using the following equation:

$$UM_P = Q_P * \left[ \frac{MW_P * 1 \text{ atm}}{(8.205 \times 10^{-5} \text{ m}^3 * \text{atm} / \text{gmol} * ^\circ\text{K}) (1000 \text{ g} / \text{kg}) (273 + T)} \right] \quad (3)$$

where:

- UM<sub>P</sub> = uncontrolled mass emission rate of pollutant P (e.g. NMOC), kg/yr;
- MW<sub>P</sub> = molecular weight of pollutant P, g/gmol;
- Q<sub>P</sub> = emission rate of pollutant P, m<sup>3</sup>/yr (from Equation 2); and
- T = temperature of landfill gas, °C.

The molecular weights (MW<sub>P</sub>) of relevant LFG constituents used in computing the uncontrolled mass emission rates are also presented in Table A2-1. It was assumed that the operating pressure of the system is 1 atmosphere and the temperature of the LFG is 25°C, as recommended by AP-42.

### Controlled Emissions

The controlled mass emission rate of relevant LFG constituents (except for TRS and Chlorides) were estimated using the following equation:

$$CM_P = \left[ UM_P * \left( 1 - \frac{\eta_{col}}{100} \right) \right] + \left[ UM_P * \frac{\eta_{col}}{100} * \left( 1 - \frac{\eta_{cnt}}{100} \right) \right] \quad (4)$$

where:

- CM<sub>P</sub> = controlled mass emission rate of pollutant P, kg/yr;
- UM<sub>P</sub> = uncontrolled mass emissions of pollutant P, kg/yr (from Equation 3);
- η<sub>col</sub> = collection efficiency of GECS, percent; and
- η<sub>cnt</sub> = control efficiency of the GECS control device (i.e., flare), percent.

A collection efficiency of 75 percent was assumed for the GECS (i.e., only 75 percent of the gas generated by the landfill is collected by the GECS and flared whereas the remaining 25 percent escapes as uncontrolled emissions). It is noted that 75 percent collection efficiency is the recommended average collection efficiency for landfill GECS in AP-42. Flare(s) will be used as the control device in the proposed GECS. Therefore, control efficiencies for flare(s), ranging from 98.0 to 99.7 percent, recommended in AP-42 were used in Equation 4.

The following equation was used to estimate the controlled mass emission rate of TRS (as SO<sub>2</sub>):

$$CM_{SO_2} = UM_S * \frac{\eta_{col}}{100} * 2.0 \quad (5)$$

where:

- $CM_{SO_2}$  = controlled mass emission rate of SO<sub>2</sub>, kg/yr;  
 $UM_S$  = uncontrolled mass emission rate of total reduced sulfur (as S),  
 kg/yr (from Equation 3);  
 $\eta_{col}$  = collection efficiency of the GECS, percent (assumed as 75 percent);  
 and  
 2.0 = ratio of the molecular weight of SO<sub>2</sub> to S.

The following equation was used to estimate the controlled mass emission rate of Chlorides (as HCl):

$$CM_{HCl} = UM_{Cl} * \frac{\eta_{col}}{100} * 1.03 * \left( \frac{\eta_{cnt}}{100} \right) \quad (6)$$

where:

- $CM_{HCl}$  = controlled mass emissions of HCl, kg/yr;  
 $UM_{Cl}$  = uncontrolled mass emission rate of chlorides (as Cl<sup>-</sup>); kg/yr  
 (from Equation 3);  
 $\eta_{col}$  = collection efficiency of the GECS, percent (assumed as 75 percent),  
 1.03 = ratio of the molecular weight of HCl to Cl<sup>-</sup>; and  
 $\eta_{cnt}$  = control efficiency of the GECS control device (i.e., flare), percent.

Controlled mass emissions of secondary compounds exiting the flare(s) (i.e., the control device in the proposed GECS) were estimated using the emission factors recommended in AP-42. It is noted that the controlled mass emissions of secondary compounds from the flare(s) were computed based on the amount of methane reaching the flare (i.e., 75% of the total methane generated by the landfill), corresponding to the assumed collection efficiency of the GECS. Further, the controlled mass emissions of secondary compounds from the flare(s) were estimated starting in the year in which the proposed GECS installation will begin at the OHD facility.

It is noted that:

- the controlled emission rates of CO presented include the CO emissions from the flare and the CO that will be released directly from the landfill due to the collection and control device inefficiencies;
- the controlled emission rates of TRS and Chlorides are presented as SO<sub>2</sub> and HCl, respectively (However, it is recognized that the TRS and Chlorides that will be

released directly from the landfill due to the collection and control device inefficiencies, will be released as S and Cl<sub>2</sub>, respectively); and

- the mass emission rates of total HAPs and total VOCs were estimated by summing the mass emission rates of individual HAPs and individual VOCs, respectively.

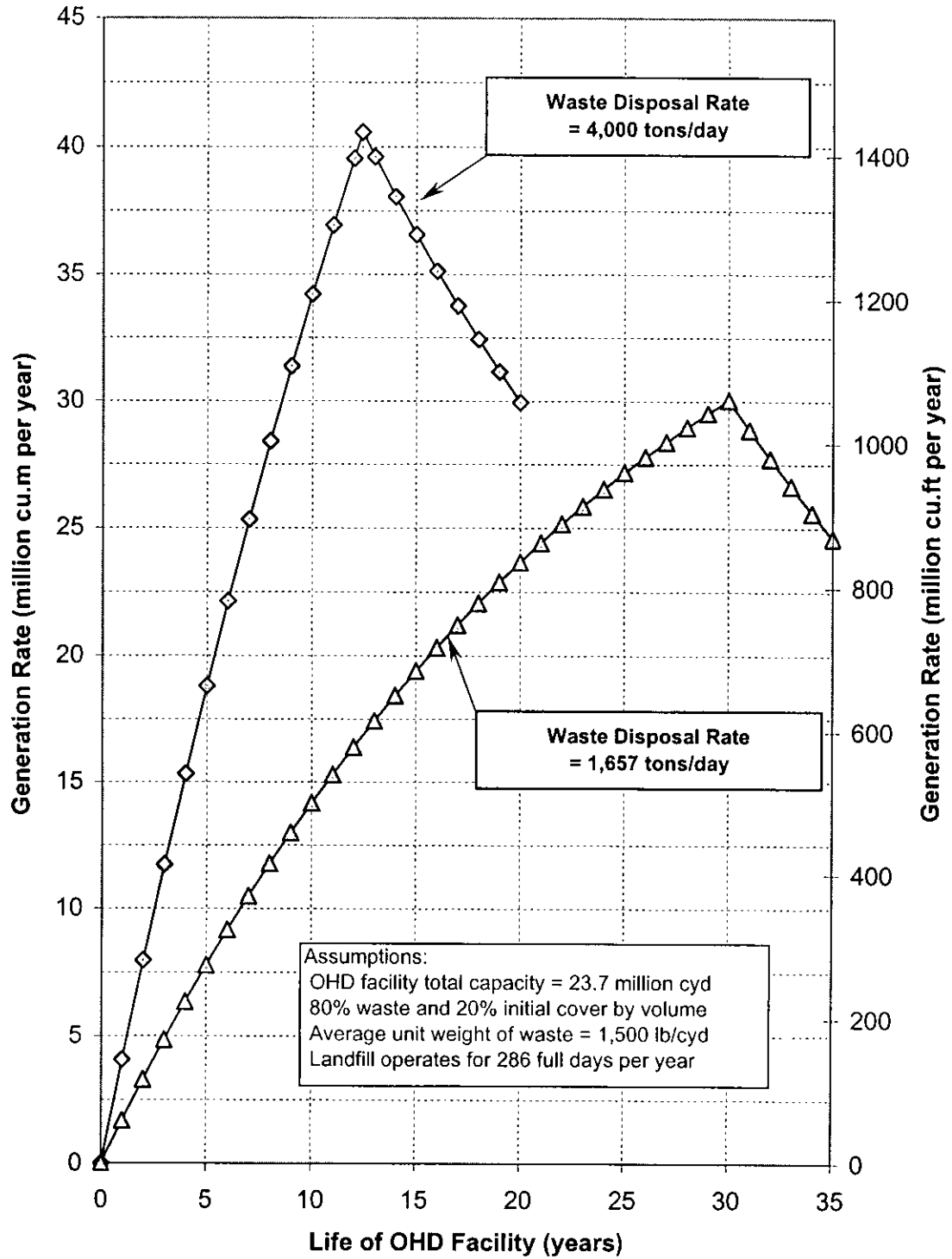
Table A2-1

**CONCENTRATIONS AND MOLECULAR WEIGHTS USED IN ESTIMATING  
LANDFILL GAS CONSTITUENTS EMISSIONS**

Pollutant/Constituent	Concentration C <sub>P</sub> (ppmv)	Molecular Weight MW <sub>P</sub> (g/gmol)	Pollutant/Constituent	Concentration C <sub>P</sub> (ppmv)	Molecular Weight MW <sub>P</sub> (g/gmol)
Carbon Monoxide (CO)	141.00	28.01	HAP & VOC (continued)		
Total Reduced Sulfur (TRS as S)	46.90	32.06	1,1-Dichloroethane	2.35	98.96
Non-Methane Organic Compound (NMOC)	595.00*	86.18	1,1-Dichloroethene	0.20	96.94
Chlorides (as Cl <sup>-</sup> )	42.00	35.45	1,2-Dichloroethane	0.41	98.96
Hazardous Air Pollutants (HAP)			1,2-Dichloropropane	0.18	112.99
1,1,1-Trichloroethane	0.48	133.41	Acrylonitrile	6.33	53.06
Dichloromethane	14.30	84.93	Benzene	1.91*	78.12
Mercury	2.53x10 <sup>-4</sup>	200.61	Carbon Disulfide	0.58	76.14
Volatile Organic Compounds (VOC)			Carbon Tetrachloride	0.004	153.84
2-Propanol	50.10	60.11	Carbonyl Sulfide	0.49	60.07
Bromodichloromethane	3.13	163.83	Chlorobenzene	0.25	112.56
Butane	5.03	58.12	Chloroethane	1.25	64.52
Chlorodifluoromethane	1.30	86.47	Chloroform	0.024	119.38
Dichlorodifluoromethane	15.70	120.91	Chloromethane	1.21	50.49
Dichlorofluoromethane	2.62	102.92	Dichlorobenzene	0.21	147.00
Dimethyl Sulfide	7.82	62.13	Ethylbenzene	4.61	106.17
Ethanol	27.20	46.08	Ethylene Dibromide	0.001	187.88
Ethyl Mercaptan	1.25	62.13	Hexane	6.57	86.18
Fluorotrichloromethane	0.76	137.37	Methyl Ethyl Ketone	7.09	72.11
Methyl Mercaptan	2.49	48.11	Methyl Isobutyl Ketone	1.87	100.16
Pentane	3.29	72.15	Perchloroethylene	3.73	165.83
Propane	11.10	44.10	Toluene	39.30*	92.14
HAP & VOC			Trichloroethene	2.82	131.38
1,1,2,2-Tetrachloroethane	1.11	167.85	Vinyl Chloride	7.34	62.50
1,1,2-Trichloroethane	0.10	133.41	Xylene	12.10	106.17
* Concentration corresponding to "No or Unknown co-disposal".					

Figure A2-1

METHANE GENERATION RATE





**Attachment 3**

**LANDFILL GAS CONSTITUENTS EMISSION  
ESTIMATED USING USEPA SOFTWARE**

The methane (CH<sub>4</sub>) generation rate and two of the landfill gas (LFG) constituents emission were also estimated using USEPA software entitled "*Landfill Gas Emissions Model (LandGEM)*", version 2.01. The software was downloaded from the USEPA's official website. The results obtained using the USEPA software were used to verify the CH<sub>4</sub> generation rate presented in Figure A2-1 and the uncontrolled mass emission rates of CO and NMOC presented in Figures 2 and 4, respectively.

A waste disposal rate of 4,000 tons/day (1.144 million tons/year) and the parameters discussed in Attachment 2 were used as input parameters in the USEPA software. The USEPA software output for CH<sub>4</sub> generation rate and uncontrolled mass emission rates of CO and NMOC are presented in Tables A3-1 through A3-3 and in Figures A3-1 through A3-3, respectively. As noted, the results obtained from the software are in close agreement with the results presented in Table 1 and in Figures 2, 4, and A2-1.

## METHANE GENERATION RATE

TABLE A3-1: METHANE GENERATION RATE  
FOR WASTE DISPOSAL RATE = 4,000 TONS/DAY

## Model Parameters

Lo : 100.00 m<sup>3</sup> / Mg  
 k : 0.0400 1/yr  
 NMOC : 595.00 ppmv  
 Methane : 55.0000 % volume  
 Carbon Dioxide : 45.0000 % volume

## Landfill Parameters

Landfill type : No Co-Disposal  
 Year Opened : 2003 Current Year : 2015 Closure Year: 2015  
 Capacity : 12903811 Mg  
 Average Acceptance Rate Required from  
 Current Year to Closure Year : 0.00 Mg/year

## Model Results

Year	Methane Emission Rate		
	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2004	1.038E+06	2.770E+03	4.152E+06
2005	2.076E+06	5.432E+03	8.142E+06
2006	3.114E+06	7.989E+03	1.198E+07
2007	4.152E+06	1.045E+04	1.566E+07
2008	5.191E+06	1.281E+04	1.920E+07
2009	6.229E+06	1.508E+04	2.260E+07
2010	7.267E+06	1.725E+04	2.586E+07
2011	8.305E+06	1.935E+04	2.900E+07
2012	9.343E+06	2.136E+04	3.202E+07
2013	1.038E+07	2.329E+04	3.491E+07
2014	1.142E+07	2.515E+04	3.770E+07
2015	1.246E+07	2.693E+04	4.037E+07
2016	1.246E+07	2.588E+04	3.879E+07
2017	1.246E+07	2.486E+04	3.727E+07
2018	1.246E+07	2.389E+04	3.581E+07
2019	1.246E+07	2.295E+04	3.440E+07
2020	1.246E+07	2.205E+04	3.305E+07
2021	1.246E+07	2.119E+04	3.176E+07
2022	1.246E+07	2.036E+04	3.051E+07
2023	1.246E+07	1.956E+04	2.932E+07
2024	1.246E+07	1.879E+04	2.817E+07
2025	1.246E+07	1.805E+04	2.706E+07
2026	1.246E+07	1.735E+04	2.600E+07
2027	1.246E+07	1.667E+04	2.498E+07
2028	1.246E+07	1.601E+04	2.400E+07
2029	1.246E+07	1.538E+04	2.306E+07
2030	1.246E+07	1.478E+04	2.216E+07
2031	1.246E+07	1.420E+04	2.129E+07
2032	1.246E+07	1.365E+04	2.045E+07
2033	1.246E+07	1.311E+04	1.965E+07
2034	1.246E+07	1.260E+04	1.888E+07
2035	1.246E+07	1.210E+04	1.814E+07
2036	1.246E+07	1.163E+04	1.743E+07
2037	1.246E+07	1.117E+04	1.675E+07
2038	1.246E+07	1.073E+04	1.609E+07
2039	1.246E+07	1.031E+04	1.546E+07
2040	1.246E+07	9.908E+03	1.485E+07
2041	1.246E+07	9.520E+03	1.427E+07
2042	1.246E+07	9.147E+03	1.371E+07
2043	1.246E+07	8.788E+03	1.317E+07
2044	1.246E+07	8.443E+03	1.266E+07

## CO EMISSION RATE

TABLE A3-2: MASS EMISSION RATE OF CO  
FOR WASTE DISPOSAL RATE = 4,000 TONS/DAY

## Model Parameters

Lo : 100.00 m<sup>3</sup> / Mg  
k : 0.0400 1/yr  
NMOC : 595.00 ppmv  
Methane : 55.0000 % volume  
Carbon Dioxide : 45.0000 % volume  
Air Pollutant : Carbon Monoxide  
Molecular Wt = 28.01    Concentration = 141.000000 ppmV

## Landfill Parameters

Landfill type : No Co-Disposal  
Year Opened : 2003    Current Year : 2015    Closure Year: 2015  
Capacity : 12903811 Mg  
Average Acceptance Rate Required from  
Current Year to Closure Year : 0.00 Mg/year

## Model Results

Year	Carbon Monoxide Emission Rate		
	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2004	1.038E+06	1.240E+00	1.065E+03
2005	2.076E+06	2.432E+00	2.087E+03
2006	3.114E+06	3.577E+00	3.070E+03
2007	4.152E+06	4.677E+00	4.014E+03
2008	5.191E+06	5.733E+00	4.921E+03
2009	6.229E+06	6.749E+00	5.793E+03
2010	7.267E+06	7.724E+00	6.630E+03
2011	8.305E+06	8.662E+00	7.435E+03
2012	9.343E+06	9.562E+00	8.208E+03
2013	1.038E+07	1.043E+01	8.951E+03
2014	1.142E+07	1.126E+01	9.664E+03
2015	1.246E+07	1.206E+01	1.035E+04
2016	1.246E+07	1.158E+01	9.944E+03
2017	1.246E+07	1.113E+01	9.554E+03
2018	1.246E+07	1.069E+01	9.179E+03
2019	1.246E+07	1.027E+01	8.819E+03
2020	1.246E+07	9.872E+00	8.474E+03
2021	1.246E+07	9.485E+00	8.141E+03
2022	1.246E+07	9.113E+00	7.822E+03
2023	1.246E+07	8.756E+00	7.515E+03
2024	1.246E+07	8.412E+00	7.221E+03
2025	1.246E+07	8.082E+00	6.938E+03
2026	1.246E+07	7.766E+00	6.666E+03
2027	1.246E+07	7.461E+00	6.404E+03
2028	1.246E+07	7.168E+00	6.153E+03
2029	1.246E+07	6.887E+00	5.912E+03
2030	1.246E+07	6.617E+00	5.680E+03
2031	1.246E+07	6.358E+00	5.457E+03
2032	1.246E+07	6.109E+00	5.243E+03
2033	1.246E+07	5.869E+00	5.038E+03
2034	1.246E+07	5.639E+00	4.840E+03
2035	1.246E+07	5.418E+00	4.650E+03
2036	1.246E+07	5.205E+00	4.468E+03
2037	1.246E+07	5.001E+00	4.293E+03
2038	1.246E+07	4.805E+00	4.125E+03
2039	1.246E+07	4.617E+00	3.963E+03
2040	1.246E+07	4.436E+00	3.807E+03
2041	1.246E+07	4.262E+00	3.658E+03
2042	1.246E+07	4.095E+00	3.515E+03
2043	1.246E+07	3.934E+00	3.377E+03
2044	1.246E+07	3.780E+00	3.245E+03

NMOC EMISSION RATE

TABLE A3-3: MASS EMISSION RATE OF NMOC  
FOR WASTE DISPOSAL RATE = 4,000 TONS/DAY

Model Parameters

Lo : 100.00 m<sup>3</sup> / Mg  
 k : 0.0400 1/yr  
 NMOC : 595.00 ppmv  
 Methane : 55.0000 % volume  
 Carbon Dioxide : 45.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal  
 Year Opened : 2003 Current Year : 2015 Closure Year: 2015  
 Capacity : 12903811 Mg  
 Average Acceptance Rate Required from  
 Current Year to Closure Year : 0.00 Mg/year

Model Results

Year	NMOC Emission Rate		
	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2004	1.038E+06	1.610E+01	4.492E+03
2005	2.076E+06	3.157E+01	8.808E+03
2006	3.114E+06	4.644E+01	1.296E+04
2007	4.152E+06	6.072E+01	1.694E+04
2008	5.191E+06	7.444E+01	2.077E+04
2009	6.229E+06	8.762E+01	2.445E+04
2010	7.267E+06	1.003E+02	2.798E+04
2011	8.305E+06	1.125E+02	3.137E+04
2012	9.343E+06	1.242E+02	3.464E+04
2013	1.038E+07	1.354E+02	3.777E+04
2014	1.142E+07	1.462E+02	4.078E+04
2015	1.246E+07	1.565E+02	4.367E+04
2016	1.246E+07	1.504E+02	4.196E+04
2017	1.246E+07	1.445E+02	4.032E+04
2018	1.246E+07	1.388E+02	3.874E+04
2019	1.246E+07	1.334E+02	3.722E+04
2020	1.246E+07	1.282E+02	3.576E+04
2021	1.246E+07	1.231E+02	3.436E+04
2022	1.246E+07	1.183E+02	3.301E+04
2023	1.246E+07	1.137E+02	3.171E+04
2024	1.246E+07	1.092E+02	3.047E+04
2025	1.246E+07	1.049E+02	2.928E+04
2026	1.246E+07	1.008E+02	2.813E+04
2027	1.246E+07	9.687E+01	2.703E+04
2028	1.246E+07	9.307E+01	2.597E+04
2029	1.246E+07	8.942E+01	2.495E+04
2030	1.246E+07	8.592E+01	2.397E+04
2031	1.246E+07	8.255E+01	2.303E+04
2032	1.246E+07	7.931E+01	2.213E+04
2033	1.246E+07	7.620E+01	2.126E+04
2034	1.246E+07	7.321E+01	2.043E+04
2035	1.246E+07	7.034E+01	1.962E+04
2036	1.246E+07	6.758E+01	1.885E+04
2037	1.246E+07	6.493E+01	1.812E+04
2038	1.246E+07	6.239E+01	1.741E+04
2039	1.246E+07	5.994E+01	1.672E+04
2040	1.246E+07	5.759E+01	1.607E+04
2041	1.246E+07	5.533E+01	1.544E+04
2042	1.246E+07	5.316E+01	1.483E+04
2043	1.246E+07	5.108E+01	1.425E+04
2044	1.246E+07	4.908E+01	1.369E+04

FIGURE A3-1

# Projected Methane Emissions

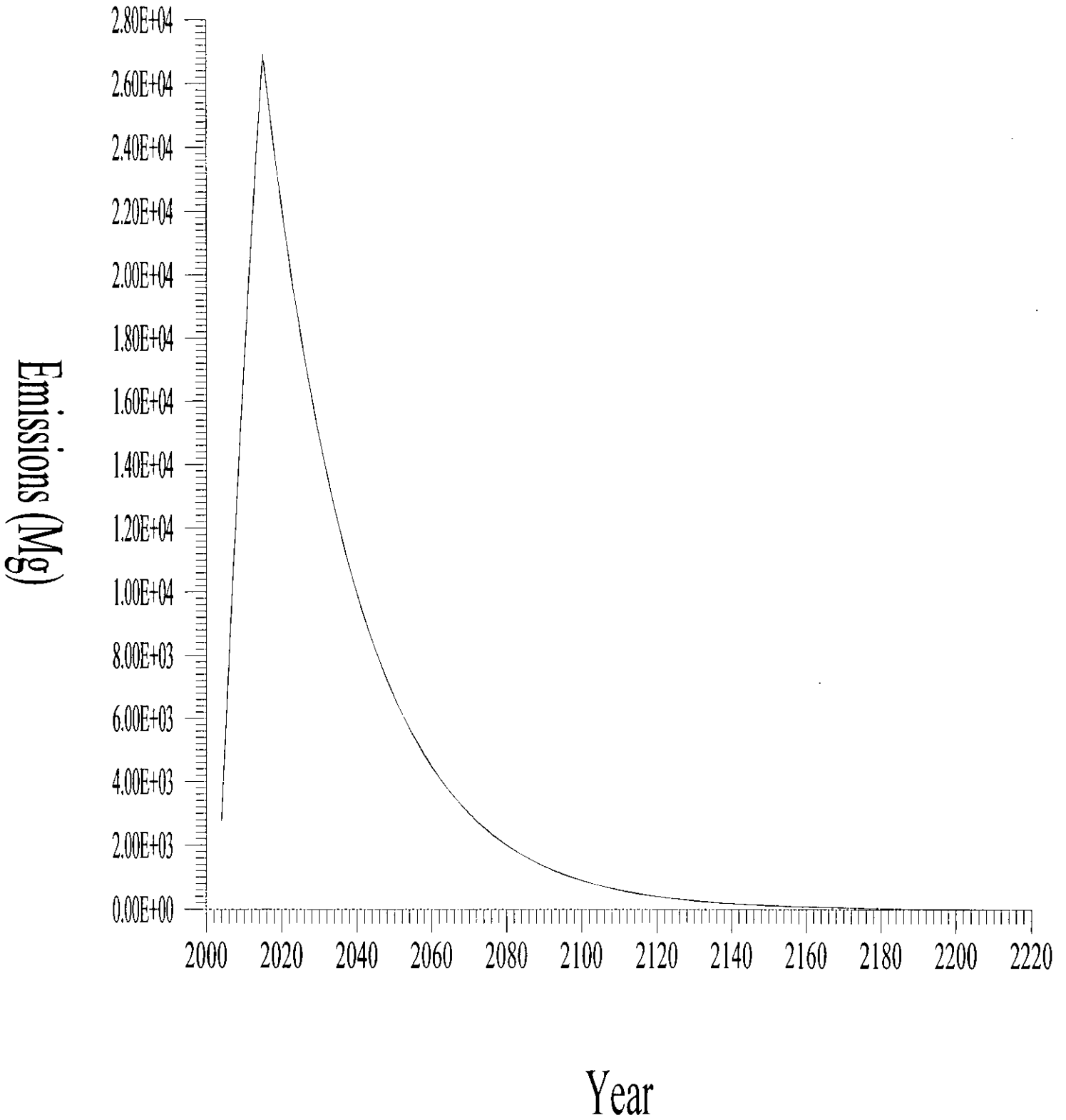


FIGURE A3-2

# Projected Carbon Monoxide Emissions

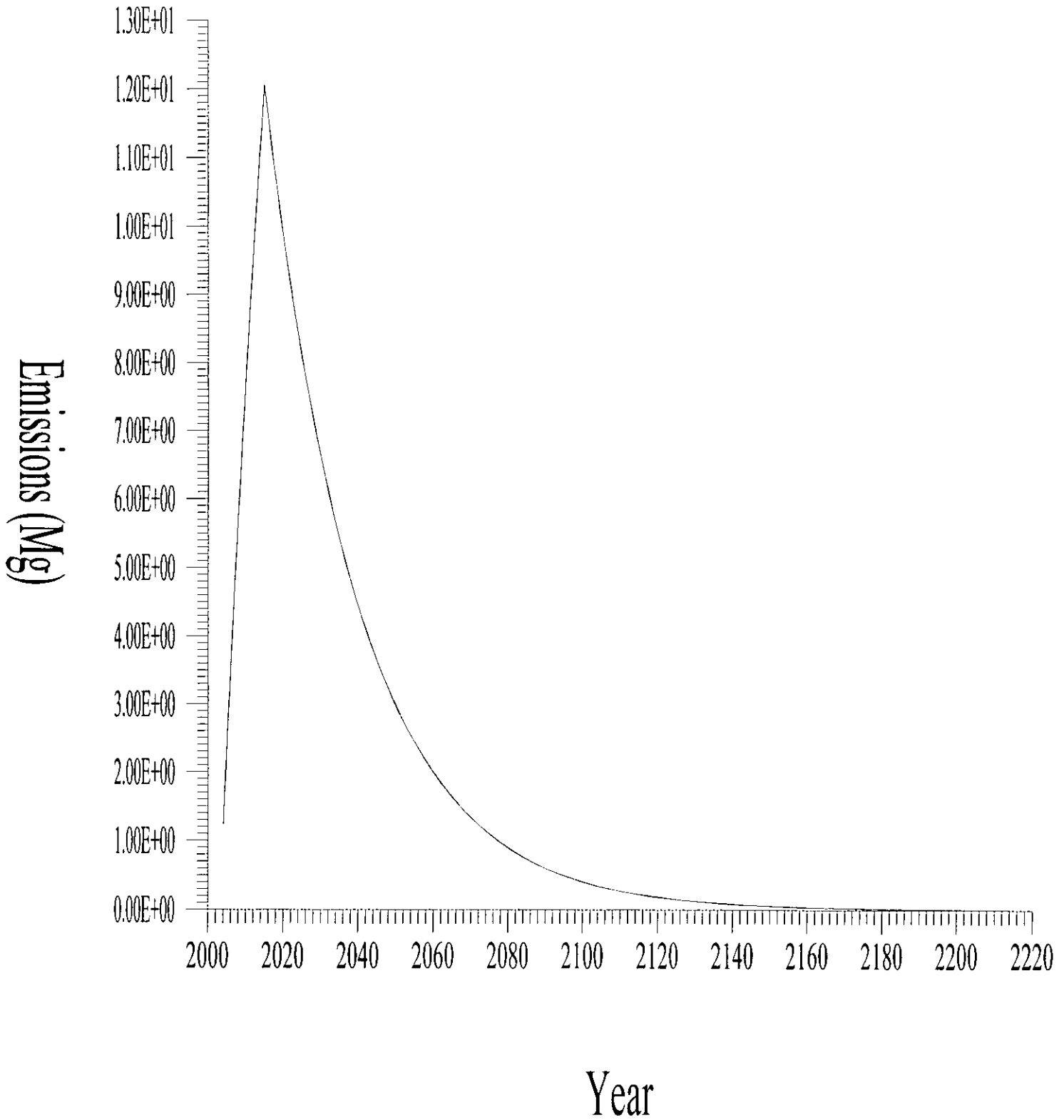


FIGURE A3-3

# Projected NMOC Emissions

