



Joseph E. Kernan
Governor

Lori F. Kaplan
Commissioner

October 21, 2004

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.in.gov/idem

TO: Interested Parties / Applicant
RE: Flying J, Inc. / 089-20116-00493
FROM: Paul Dubenetzky
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Registration

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 4-21.5-3-4(d) this order is effective when it is served. When served by U.S. mail, the order is effective three (3) calendar days from the mailing of this notice pursuant to IC 4-21.5-3-2(e).

If you wish to challenge this decision, IC 4-21.5-3-7 requires that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FN-REGIS.dot 9/16/03



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live.

Joseph E. Kernan
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.in.gov/idem

October 21, 2004

Leigh Beem
Flying J, Inc.
333 West Center Street
North Salt Lake, Utah, 84054

Re: Registration 089-20116-00493

Dear Leigh Beem:

The application from Flying J, Inc., received on September 24, 2004, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.5, it has been determined that the following stationary soil and/or groundwater remediation system, to be located at 1401 Ripley Street, Lake Station, Indiana 46405 is classified as registered:

- (1) One (1) soil vapor extraction system (SVE), identified as S-1, constructed in 2004, to extract soil vapor from wells screened above the water table at proposed operating air flow rate of two hundred (200) cubic feet per minute (cfm).
- (2) One (1) regenerative thermal oxidation (RTO) system identified as C-1 for the thermal destruction of petroleum hydrocarbons in extracted soil vapor, exhausting to stack S-1.

The source may also operate the above emission unit in a Multiphase Extraction (MPE) mode, where soil vapor, groundwater, and/or free product liquids are extracted from wells that are screened into the water table. In the permit application, the source stated that it is anticipated that the air volume and level of total petroleum hydrocarbon emissions for the MPE mode would be significantly less than compared to the SVE mode of operation. Therefore, in the Technical Support Document for this Registration, it was assumed that the SVE mode of operation would result in the greatest potential emissions and the MPE mode was not evaluated.

The following condition shall be applicable:

- (1) Pursuant to 326 IAC 5 1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following:
 - (a) Opacity shall not exceed an average of twenty percent (20%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor in a six (6) hour period
- (2) Any change or modification that may increase the potential to emit of Volatile Organic Compounds (VOCs) or a combination of hazardous air pollutants (HAPs) to 25 tons per year or greater, or that of individual HAP to 10 tons per year or greater, shall require prior approval of the Office of Air Quality

This registration the first registration issued to this source. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Quality that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

**Compliance Data Section
Office of Air Quality
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015**

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source. If you have any questions on this matter, please contact Nathan C. Bell, c/o OAQ, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, at 317-234-3350 or at 1-800-451-6027 (ext 43350).

Sincerely,

Original signed by

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

NCB

cc: File - Lake County
Lake County Health Department
Air Compliance - Rick Massoels
Northwest Regional Office
Permit Tracking
Technical Support and Modeling - Michele Boner
Compliance Data Section - Karen Nowak
Administrative and Development

Registration Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.5-4(a)(3)

Company Name:	Flying J, Inc.
Address:	1401 Ripley Street
City:	Lake Station, Indiana 46405
Authorized individual:	Leigh Beem
Phone #:	801-296-7712
Registration #:	089-20116-00493

I hereby certify that Flying J, Inc. is still in operation and is in compliance with the requirements of Registration 089-20116-00493.

Name (typed):
Title:
Signature:
Date:

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name: Flying J, Inc.
Source Location: 1401 Ripley Street, Lake Station, Indiana 46405
County: Lake County
SIC Code: 5541
Exemption No.: 089-20116-00493
Permit Reviewer: Nathan C. Bell

The Office of Air Quality (OAQ) has reviewed an application from Flying J Inc. relating to the construction and operation of a stationary soil and/or groundwater remediation system.

Emission Units and Pollution Control Equipment

The source consists of the following emission unit:

- (1) One (1) soil vapor extraction system (SVE), identified as S-1, constructed in 2004, to extract soil vapor from wells screened above the water table at proposed operating air flow rate of two hundred (200) cubic feet per minute (cfm).
- (2) One (1) regenerative thermal oxidation (RTO) system identified as C-1 for the thermal destruction of petroleum hydrocarbons in extracted soil vapor, exhausting to stack S-1.

The source may also operate the above emission unit in a Multiphase Extraction (MPE) mode, where soil vapor, groundwater, and/or free product liquids are extracted from wells that are screened into the water table. In the permit application, the source has stated that it is anticipated that the air volume and level of total petroleum hydrocarbon emissions for the MPE mode would be significantly less than compared to the SVE mode of operation. Therefore, for this TSD, it is assumed that the SVE mode of operation will result in the greatest potential emissions and the MPE mode will not be evaluated.

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

A complete application for the purposes of this review was received on July 22, 2004.

Unless otherwise stated, information used in this review was derived from the application and additional information provided by the applicant.

Stack Summary

Stack ID	Operation	Height (ft)	Diameter (inch)	Flow Rate (acfm)	Temperature (°F)
S-1	SVE System	23.5	20	200	450 - 700

Emission Calculations

Potential Emissions Before Controls

SVE removes residual and vapor phase volatile organic compounds (VOCs) from the semi-saturated subsurface (i.e., vadose zone) by applying a vacuum to a sealed well screened the zone of interest, inducing volatilization and subsurface air flow. For the potential to emit (PTE) calculation of this TSD, it will be assumed that the pollutants generated during SVE and operation of the RTO natural gas burner will not be treated by thermal oxidation (i.e., exhausted to atmosphere with no pollution controls).

Based on SVE flow rate and soil vapor concentration data provided by the source, the potential emission of VOCs were determined using the following calculation:

$$ER = \frac{(Q) * (C) * (28.317 \text{ L/cf}) * (60 \text{ min/hr}) * (8760 \text{ hr/yr})}{(1000 \text{ mg/g}) * (453.59 \text{ g/lb}) * (2000 \text{ lb/ton})}$$

where: ER = Emission Rate in tons per year (tons/yr)
 Q = SVE air flow rate in cubic feet per minute (cfm)
 C = Soil vapor gas concentration in milligrams per liter of air (mg/L)

In the permit application, the source proposes to perform SVE at a flow rate of 200 cfm. Based on this flow rate, simultaneous extraction both within the source area and in areas around the source area, and the anticipated exponential decrease in soil vapor concentrations with time, the source estimates a potential soil vapor concentration of total petroleum hydrocarbons (TPH) of 6.0 mg/L-air. Assuming that each of the TPH components is considered a VOC, the PTE value for VOCs removed from the subsurface by the SVE system is calculated to be:

Proposed SVE air flow rate = 200 cfm (provided by source)
 Concentration of VOCs in soil vapor = 6.0 mg/L-air (provided by source)
PTE of VOCs = 20.0 tons per year

The source also estimated potential soil vapor concentrations of hazardous air pollutants (HAPs) as presented in the table below. No data was provided for some HAPs typically found in unleaded gasoline, therefore, concentrations of these HAPs were estimated using an average composition of unleaded gasoline as presented in "Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 2. Composition of Petroleum Mixtures." Potential HAP emissions were calculated as above.

Hazardous Air Pollutants (HAPs) in Typical Unleaded Gasoline	CAS#	Average Composition (% wt) ¹	Potential Soil Vapor Concentration (mg/L of air)	Potential Emission Rate (tons/yr)
Data Provided by Source				
Benzene	71-43-2		0.09	0.30
Toluene	108-88-3		0.06	0.20
Ethylbenzene	100-41-4		0.02	0.07
m,p-Xylenes			0.06	
m-Xylene	108-38-3	4.60	~0.04	0.14
o-Xylene	95-47-6		0.01	0.03
p-Xylene	106-42-3	1.90	~0.02	0.06
Estimated HAPs				
1,3-Butadiene	106-99-0	0.004	2.4E-04	7.3E-04
2,2,4-Trimethylpentane	540-84-1	2.40	0.14	0.47
n-Hexane	110-54-3	2.40	0.14	0.47
Naphthalene	91-20-3	0.25	0.02	0.05
Methyl-tert-butylether	1634-04-4	0.33	0.02	0.06
Total HAPs				1.85

¹Composition Data Obtained from: Potter, T.L. and K.E. Simmons. 1998. Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 2. Composition of Petroleum Mixtures. The Association for Environmental Health and Science. Available on the Internet at: <http://www.aehs.com/publications/catalog/contents/tph.htm>

A summary of the potential emission generated during SVE and operation of the RTO natural gas burner without thermal oxidation treatment is provided in TSD Appendix A, Page 2 of 2.

Potential Emissions After Controls

Soil vapors extracted by the SVE system will be treated by one (1) regenerative thermal oxidation (RTO) system (C-1) for the thermal destruction of petroleum hydrocarbons. Regenerative thermal oxidization destroys VOCs through the process of high temperature thermal oxidation, converting the VOCs to carbon dioxide and water vapor. For this TSD, it is assumed that the RTO system burner will utilize natural gas at a heat input capacity of 1.0 MMBtu/hour and will have a VOC consumption (destruction) efficiency of 95 percent. In addition, VOCs and organic HAPs emitted from the natural gas burner are assumed to be treated by the RTO system. See Page 1 of 2 TSD Appendix A for potential emission calculations for the RTO system. A summary of the potential emission generated during SVE and operation of the RTO natural gas burner with thermal oxidation treatment is provided in TSD Appendix A, Page 2 of 2.

Potential To Emit Before Controls

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit (PTE) is defined as “the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U.S. EPA, the department, or the appropriate local air pollution control agency.”

Pollutant	Potential To Emit (tons/year)
PM	0.01
PM-10	0.03
SO ₂	Negligible
VOC	20
CO	0.37
NO _x	0.22

HAP's	Potential To Emit (tons/year)
Benzene	0.30
Toluene	0.20
Ethylbenzene	0.07
m-Xylene	0.14
o-Xylene	0.03
p-Xylene	0.06
1,3-Butadiene	Negligible
2,2,4-Trimethylpentane	0.47
n-Hexane	0.48
Naphthalene	0.05
Methyl-tert-butyl ether	0.06
Dichlorobenzene	Negligible
Formaldehyde	Negligible
Lead	Negligible
Cadmium	Negligible
Chromium	Negligible
Manganese	Negligible
Nickel	Negligible
TOTAL	1.86

- (a) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of regulated criteria pollutants are less than twenty-five (25) tons per year, but greater than ten (10) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-5.5. A registration will be issued.

- (b) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of any single HAP is less than ten (10) tons per year and the potential to emit of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, the source is not subject to the provisions of 326 IAC 2-7.
- (c) **Fugitive Emissions**
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

County Attainment Status

The source is located in Lake County.

Pollutant	Status
PM-10	attainment
SO ₂	primary nonattainment
NO ₂	unclassifiable
1-hour Ozone	severe nonattainment
8-hour Ozone	moderate nonattainment
CO	maintenance attainment
Lead	attainment

- (a) Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone.
 - (1) On January 28, 1996 in 40 CFR 52.777(i), the U.S. EPA granted a waiver of the requirements of Section 182(f) of the CAA for Lake and Porter Counties, including the lower NOx threshold for nonattainment new source review. Therefore, VOC emissions alone are considered when evaluating the rule applicability relating to the 1-hour ozone standard. Lake County has been designated as nonattainment in Indiana for the 1-hour ozone standard. Therefore, VOC emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3. See the State Rule Applicability for the source section.
 - (2) VOC and NOx emissions are considered when evaluating the rule applicability relating to the 8-hour ozone standard. Lake County has been designated as nonattainment for the 8-hour ozone standard. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for nonattainment new source review.
- (a) Lake County has been classified as attainment in Indiana for PM-10, CO, and Lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability for the source section.
- (b) Lake County has been classified as nonattainment in Indiana for SO₂. Therefore, SO₂ emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3. See the State Rule Applicability for the source section.

Source Status

New Source PSD Definition (emissions after thermal oxidation pollution controls, based on 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/yr)
PM	0.01
PM-10	0.03
SO ₂	Negligible
VOC	1.00
CO	0.37
NO _x	0.22
Worst Single HAP	0.02
Combined HAPs	0.09

- (a) This new source is not a major PSD stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.
- (b) This new source is not a major stationary source because VOC is not emitted at a rate of 25 tons per year or greater. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than 100 tons per year,
- (b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
- (c) any combination of HAPs is less than 25 tons/year.

This is the first air approval issued to this source.

Federal Rule Applicability

- (a) This stationary soil and/or groundwater remediation system is not subject to the requirements of 40 CFR 63, Subpart GGGGG, (63.7880 through 63.7957), National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Site Remediation, because the remediation is conducted at a gasoline service station in order to clean up remediation material from a leaking underground storage tank (40 CFR 63.7881(b)(4)).
- (b) The natural gas-fired burner of the RTO system is not subject to the requirements of 40 CFR 63, Subpart DDDDD, (63.7480 through 63.7575), NESHAPs for Industrial, Commercial, and Institutional Boilers and Process Heaters. The natural gas-fired burner of the RTO system is part of the affected source for the small gaseous fuel subcategory, as defined by 40 CFR 63.7575, because they each have a rated capacity of less than or equal to 10 million British thermal units per hour heat input. However, pursuant to 40 CFR 63.7506(c), there are no applicable requirements from 40 CFR 63, Subpart DDDDD and 40 CFR, Subpart A for the affected source for the small gaseous fuel subcategory.
- (c) This source is not subject to the requirements of 40 CFR Subpart EEE (63.1200 through 63.1214), NESHAPs from Hazardous Waste Combustors (326 IAC 20-28-1), because the natural gas-fired RTO will not be combusting a solid waste that meets the definition of a hazardous waste (40 CFR 261.3). Contaminated soil gas extracted during SVE is not a "solid waste" as defined by Section 1004(27) of the "Solid Waste Disposal Act" (42 U.S.C. 6903(27)).

- (d) There are no National Emission Standards for Hazardous Air Pollutants (NESHAP)(326 IAC 14 and 20 and 40 CFR Parts 61 and 63) included for this source.
- (e) This source is not subject to the requirements of 40 CFR 60, Subpart E (60.50 through 60.54), Standards of Performance for Incinerators (326 IAC 12), because the natural gas-fired burner of the RTO system and have a charging rate less than fifty (50) tons per day and they do not burn refuse consisting of more than 50 percent municipal type waste (household, commercial/ retail, and/or institutional waste).
- (f) This source is not subject to the requirements of 40 CFR 60, Subpart Ea (60.50a through 60.59a), Standards of Performance for Large Municipal Waste Combustors for Which Construction is Commenced after December 20, 1989 and on or before September 20, 1994(326 IAC 12), because the natural gas-fired burner of the RTO system is not considered municipal waste combustors.
- (g) This source is not subject to the requirements of 40 CFR 60, Subpart Eb (60.50b through 60.59b), Standards of Performance for Large Municipal Waste Combustors for Which Construction is Commenced after September 20, 1994, or for Which Modification or Reconstruction is commenced after June 19, 1996 (326 IAC 12), because the natural gas-fired burner of the RTO system is not considered municipal waste combustors.
- (h) This source is not subject to the requirements of 40 CFR 60, Subpart Ec (60.50c through 60.58c), Standards of Performance for Hospital/Medical/Infectious Waste Incinerators for Which Construction is Commenced after January 20, 1996 (326 IAC 12), because the natural gas-fired burner of the RTO system is not considered Hospital/Medical/Infectious Waste Incinerators.
- (i) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) included for this source.

State Rule Applicability - Entire Source

326 IAC 2-3 (Emission Offset)

This source, located in Lake County, which is classified as severe nonattainment for 1-hour ozone and moderate nonattainment for 8-hour ozone, is not a major source of VOCs. Therefore, 326 IAC 2-3 does not apply.

326 IAC 2-6 (Emission Reporting)

This source is located in Lake County and the potential to emit of VOC and NOx are less than twenty five (25) tons per year and that of all other criteria pollutants are less than one hundred (100) tons per year. Therefore, 326 IAC 2-6 does not apply.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

The operation of this remediation unit at the source will emit less than ten (10) tons per year of a single HAP and less than twenty-five (25) tons per year of a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply.

326 IAC 5-1 (Opacity Limitations)

This source is located in the portion of Lake County noted in 326 IAC 5-1-1(c)(4). Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of twenty percent (20%) any one (1) six (6) minute averaging period unless otherwise specified in 326 IAC 6-1-10.1.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 8-7-2 (Specific VOC Reduction Requirements for Lake, Porter, Clark, and Floyd Counties)
The potential to emit of VOCs at this source, located in Lake County, is less than the applicability threshold of 25 tons per year. Therefore, 326 IAC 8-7-2 does not apply.

326 IAC 6-1 (Nonattainment Area Limitations)
Since the source does not have the potential to emit greater than 100 tons per year of particulate matter, or actual emissions of greater than 10 tons per year of particulate matter, and it is not one of the sources listed in 326 IAC 6-1-12, 326 IAC 6-1 does not apply.

State Rule Applicability - Individual Facilities

326 IAC 8-1-6 (VOC rules: General Reduction Requirements for New Facilities)
The VOC potential to emit of the remediation system are each less than the applicability threshold of 25 tons per year. Therefore, 326 IAC 8-1-6 does not apply.

State Rule Applicability – Natural Gas Combustion Sources

326 IAC 6-2 (Particulate Emissions from Indirect Heating Units)

The natural natural gas-fired burner of the RTO system is not subject to 326 IAC 6-2 as it is not a source of indirect heating.

326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-1(b)(14), the natural gas-fired burner of the RTO system is exempt from the requirements of 326 IAC 6-3 because it has potential particulate emissions less than five hundred fifty-one thousandths (0.551) pound per hour.

326 IAC 7-1.1-1 (Sulfur Dioxide Emission Limitations)

This rule does not apply to this source because the potential to emit is less than twenty-five (25) tons per year or ten (10) pounds per hour of Sulfur Dioxide.

Conclusion

The construction and operation of this soil and/or groundwater remediation system shall be subject to the conditions of the attached proposed Registration No. 089-20116-00493.

**Appendix A: Emissions Calculations
 Natural Gas Combustion Only
 MM BTU/HR <100
 Natural Gas Burner of RTO Unit C-1**

Company Name: Flying J, Inc.
Address City IN Zip: 1401 Ripley Street, Lake Station, Indiana 46405
Permit Number: 089-20116
Plt ID: 089-00493
Reviewer: Nathan C. Bell
Date: October 5, 2004

			Potential Emission before RTO Treatment					
			tons/yr					
NOx**	VOC	CO	PM*	PM10*	SO2	NOx**	VOC	CO
50	5.5	84.0	0.008	0.03	0.003	0.2	0.024	0.4

PM10 emission factor is filterable and condensable PM10 combined.

= 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

rate with an emission factor of 50 lbs of NOx per million standard cubic foot (scf) of gas burned

Hexane	Toluene
1.8E+00	3.4E-03

Potential Emission before RTO Treatment				
tons/yr				
Benzene	DCB	Formaldehyde	Hexane	Toluene
9.2E-06	5.3E-06	3.3E-04	7.9E-03	1.5E-05

Mn	Ni
3.8E-04	2.1E-03

Potential Emission before RTO Treatment				
tons/yr				
Pb	Cd	Cr	Mn	Ni
2.2E-06	4.8E-06	6.1E-06	1.7E-06	9.2E-06

Emission factors are provided above. Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Appendix A: Emissions Calculations
Total VOC, Particulate, and HAPs
SVE and Natural Gas Thermal Oxidization**

Company Name: Flying J, Inc.
Address City IN Zip: 1401 Ripley Street, Lake Station, Indiana 46405
Permit Number: 089-20116
Plt ID: 089-00493
Reviewer: Nathan C. Bell
Date: October 5, 2004

Emission Unit Information

Unit	RTO Treatment Efficiency***
C-1	95.0%

Category	Pollutant***	Potential Emissions Before RTO Treatment (tons/year)			Potential Emissions After RTO Treatment*** (tons/year)		
		Soil Vapor Extraction (S-1)	Natural Gas Burner	Total Source	Soil Vapor Extraction (S-1)	Natural Gas Burner	Total Source
Criteria Pollutants	PM	-	0.01	0.01	-	0.01	0.01
	PM10	-	0.03	0.03	-	0.03	0.03
	SO2	-	2.6E-03	2.6E-03	-	2.6E-03	2.6E-03
	NOx	-	0.22	0.22	-	0.22	0.22
	VOC***	20	0.02	20	1.0	1.20E-03	1.0
	CO	-	0.37	0.37	-	0.37	0.37
Hazardous Air Pollutants	Benzene***	0.30	9.2E-06	0.30	0.02	4.60E-07	0.02
	Toluene***	0.20	0.00	0.20	0.01	7.45E-07	0.01
	Ethylbenzene***	0.07	-	0.07	3.5E-03	-	3.5E-03
	m-Xylene***	0.14	-	0.14	7.0E-03	-	7.0E-03
	o-Xylene***	0.03	-	0.03	1.5E-03	-	1.5E-03
	p-Xylene***	0.06	-	0.06	3.0E-03	-	3.0E-03
	1,3-Butadiene***	7.30E-04	-	0.00	3.7E-05	-	3.7E-05
	2,2,4-Trimethylpentane***	0.47	-	0.47	0.02	-	0.02
	n-Hexane***	0.47	0.01	0.48	0.02	3.94E-04	0.02
	Naphthalene***	0.05	-	0.05	2.5E-03	-	2.5E-03
	Methyl-tert-butyl ether***	0.06	-	0.06	3.0E-03	-	3.0E-03
	Dichlorobenzene***	-	5.3E-06	5.26E-06	-	2.63E-07	2.63E-07
	Formaldehyde***	-	3.3E-04	3.29E-04	-	1.64E-05	1.64E-05
	Lead	-	2.2E-06	2.2E-06	-	2.2E-06	2.2E-06