APPENDIX CAM

Compliance Assurance Monitoring Requirements

Compliance Assurance Monitoring Requirements

Pursuant to Rule 62-213.440(1)(b)1.a., F.A.C., the CAM plans that are included in this appendix contain the monitoring requirements necessary to satisfy 40 CFR 64. Conditions 1. – 17. are generic conditions applicable to all emissions units that are subject to the CAM requirements. Specific requirements related to each emissions unit are contained in the attached tables, as submitted by the applicant and approved by the Department.

40 CFR 64.6 Approval of Monitoring.

1. The attached CAM plan(s), as submitted by the applicant, is/are approved for the purposes of satisfying the requirements of 40 CFR 64.3.
[40 CFR 64.6(a)]

2. The attached CAM plan(s) include the following information:
(i) The indicator(s) to be monitored (such as temperature, pressure drop, emissions, or similar parameter);
(ii) The means or device to be used to measure the indicator(s) (such as temperature measurement device, visual observation, or CEMS); and
(iii) The performance requirements established to satisfy 40 CFR 64.3(b) or (d), as applicable.
[40 CFR 64.6(c)(1)]

3. The attached CAM plan(s) describe the means by which the owner or operator will define an exceedance of the permitted limits or an excursion from the stated indicator ranges and averaging periods for purposes of responding to (see **CAM Conditions 5. - 14.)** and reporting exceedances or excursions (see **CAM Conditions 15. – 16.**).
[40 CFR 64.6(c)(2)]

4. The permittee is required to conduct the monitoring specified in the attached CAM plan(s) and shall fulfill the obligations specified in the conditions below (see **CAM Conditions 5. - 16.**).
[40 CFR 64.6(c)(3)]

40 CFR 64.7 Operation of Approved Monitoring.

5. Commencement of operation. The owner or operator shall conduct the monitoring required under this appendix upon the effective date of this Title V permit.
[40 CFR 64.7(a)]

6. Proper maintenance. At all times, the owner or operator shall maintain the monitoring, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment.
[40 CFR 64.7(b)]

7. Continued operation. Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the owner or operator shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the pollutant-specific emissions unit is operating. Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for purposes of this part, including data averages and

calculations, or fulfilling a minimum data availability requirement, if applicable. The owner or operator shall use all the data collected during all other periods in assessing the operation of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

[40 CFR 64.7(c)]

8. Response to excursions or exceedances.

a. Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions, if allowed by this permit). Such actions may include initial inspection and evaluation, recording that operations returned to normal without operator action (such as through response by a computerized distribution control system), or any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.

b. Determination of whether the owner or operator has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include but is not limited to, monitoring results, review of operation and maintenance procedures and records, and inspection of the control device, associated capture system, and the process.

[40 CFR 64.7(d)(1) & (2)]

9. Documentation of need for improved monitoring. If the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the Title V permit to address the necessary monitoring changes. Such a modification may include, but is not limited to, reestablishing indicator ranges or designated conditions, modifying the frequency of conducting monitoring and collecting data, or the monitoring of additional parameters.

[40 CFR 64.7(e)]

40 CFR 64.8 Quality Improvement Plan (QIP) Requirements.

10. Based on the results of a determination made under **CAM Condition 8.b.,** above, the permitting authority may require the owner or operator to develop and implement a QIP. Consistent with **CAM Condition 4.**, an accumulation of exceedances or excursions exceeding 5 percent duration of a pollutant-specific emissions unit's operating time for a reporting period, may require the implementation of a QIP. The threshold may be set at a higher or lower percent or may rely on other criteria for purposes of indicating whether a pollutant-specific emissions unit is being maintained and operated in a manner consistent with good air pollution control practices.

[40 CFR 64.8(a)]

11. Elements of a QIP:

a. The owner or operator shall maintain a written QIP, if required, and have it available for inspection.

b. The plan initially shall include procedures for evaluating the control performance problems and, based on the results of the evaluation procedures, the owner or operator shall modify the plan to include procedures for conducting one or more of the following actions, as appropriate:

(i) Improved preventive maintenance practices.
(ii) Process operation changes.
(iii) Appropriate improvements to control methods.
(iv) Other steps appropriate to correct control performance.
(v) More frequent or improved monitoring (only in conjunction with one or more steps under **CAM Condition 11.b(i)** through **(iv)**, above).

[40 CFR 64.8(b)]

12. If a QIP is required, the owner or operator shall develop and implement a QIP as expeditiously as practicable and shall notify the permitting authority if the period for completing the improvements contained in the QIP exceeds 180 days from the date on which the need to implement the QIP was determined.

[40 CFR 64.8(c)]

13. Following implementation of a QIP, upon any subsequent determination pursuant to **CAM Condition 8.b.**, the permitting authority may require that an owner or operator make reasonable changes to the QIP if the QIP is found to have:

a. Failed to address the cause of the control device performance problems; or
b. Failed to provide adequate procedures for correcting control device performance problems as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.

[40 CFR 64.8(d)]

14. Implementation of a QIP shall not excuse the owner or operator of a source from compliance with any existing emission limitation or standard, or any existing monitoring, testing, reporting or recordkeeping requirement that may apply under federal, state, or local law, or any other applicable requirements under the Act.

[40 CFR 64.8(e)]

<u>40 CFR 64.9 Reporting And Recordkeeping Requirements.</u>

15. <u>General reporting requirements.</u>

a. Commencing from the effective date of this permit, the owner or operator shall submit monitoring reports semi-annually to the permitting authority in accordance with Rule 62-213.440(1)(b)3.a., F.A.C.

b. A report for monitoring under this part shall include, at a minimum, the information required under Rule 62-213.440(1)(b)3.a., F.A.C., and the following information, as applicable:

(i) Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;
(ii) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable); and
(iii) A description of the actions taken to implement a QIP during the reporting period as specified in **CAM Conditions 10.** through **14.** Upon completion of a QIP, the owner or

operator shall include in the next summary report documentation that the implementation of the plan has been completed and reduced the likelihood of similar levels of excursions or exceedances occurring.

[40 CFR 64.9(a)]

16. General recordkeeping requirements.

a. The owner or operator shall comply with the recordkeeping requirements specified in Rule 62-213.440(1)(b)2., F.A.C. The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to **CAM Conditions 10.** through **14.** and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained under this part (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions).

b. Instead of paper records, the owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.

[40 CFR 64.9(b)]

40 CFR 64.10 Savings Provisions.

17. It should be noted that nothing in this appendix shall:

a. Excuse the owner or operator of a source from compliance with any existing emission limitation or standard, or any existing monitoring, testing, reporting or recordkeeping requirement that may apply under federal, state, or local law, or any other applicable requirements under the Act. The requirements of this appendix shall not be used to justify the approval of monitoring less stringent than the monitoring which is required under separate legal authority and are not intended to establish minimum requirements for the purpose of determining the monitoring to be imposed under separate authority under the Act, including monitoring in permits issued pursuant to title I of the Act. The purpose of this part is to require, as part of the issuance of a permit under Title V of the Act, improved or new monitoring at those emissions units where monitoring requirements do not exist or are inadequate to meet the requirements of this part.

b. Restrict or abrogate the authority of the Administrator or the permitting authority to impose additional or more stringent monitoring, recordkeeping, testing, or reporting requirements on any owner or operator of a source under any provision of the Act, including but not limited to sections 114(a)(1) and 504(b), or state law, as applicable.

c. Restrict or abrogate the authority of the Administrator or permitting authority to take any enforcement action under the Act for any violation of an applicable requirement or of any person to take action under section 304 of the Act.

[40 CFR 64.10]

STAR PACKAGING CORPORATION CAM PLAN September, 2011

Note: This CAM Plan is in two parts. Part 1 addresses destruction efficiency. Part 2 addresses capture efficiency.

Part 1 DESTRUCTION EFFICIENCY

I. Background

A. Emissions Unit

Description:	15,000 cfm Anguil Environmental Systems, Inc. Model 150 Regenerative Thermal Oxidizer (RTO)
Emission Point:	Stack
Facility ID#:	0570293
Location:	6932 S. Manhattan Ave. Tampa, Florida

B. Applicable Regulation, Emission Limit, and Monitoring Requirements

Regulation No.:	Permit # 0570293-022-AC
Regulated pollutant (PSEU):	VOC
Emission limit:	90 percent reduction
Monitoring requirements in permit:	Continuously monitor chamber temperature

C. Control Technology: Regenerative Thermal Oxidizer (RTO)

II. Monitoring Approach

The key elements of the monitoring approach, including the indicators to be monitored, indicator ranges, and performance criteria are presented in Table A.1a-1.

III. Data Availability

The data availability determination will not include periods of control device start up and shut down. For an hour to be considered a valid hour of monitoring data, a minimum of 45 minutes of data must be available.

MONITORING APPROACH JUSTIFICATION

I. Background

Star Packaging Corp. manufactures custom printed bags for a variety of customers. A flexographic press places ink onto a continuous roll of polyethylene film which is then cut into plastic bags. Concentrated ink is mixed with solvent for use in the presses. The film, in long rolls, is fed through the press. Air is blown onto the wet ink evaporating the solvent. The coated film then proceeds further in the press for additional ink (different colors) application as necessary.

The solvent laden air, containing Volatile Organic Compounds (VOC) emissions, from each press is ducted to a 15,000 cfm regenerative thermal oxidizer (RTO). The RTO oxidizes the VOC's at a minimum destruction efficiency of 90%. The oxidizer is fired on natural gas at a maximum heat input rate of 4.0 MMBtu/hr. A total of 2 printing presses are connected to the oxidizer.

II. Rationale for Selection of Performance Indicators

The oxidizer chamber temperature was selected as the key performance indicator. If the chamber temperature decreases significantly, complete combustion may not occur.

The control efficiency achieved by the thermal oxidizer is a function of its operating temperature. By maintaining the operating temperature at or above a minimum, a level of control efficiency can be expected to be achieved.

The work practice comprised of an annual inspection and tuning of the oxidizer burner was selected because an inspection verifies equipment integrity and periodic tuning will maintain proper burner operation and efficiency. Note that the unit includes a UV flame detector which will not allow the RTO to operate when there is no flame. There is also a monthly observation of the ductwork.

[Note: Dampers operate automatically during operation of the presses or are locked in place based on the settings from last stack test.]

Another significant component of the RTO operation is the cycle time of the switching valves controlling the airflow through the RTO. The valves are used to alternate the inlet and outlet airflow across the two beds in order to maximize the thermal recovery and overall efficiency of the unit. The RTO has initially been set with a switching cycle time of 3 minutes. Changing of the cycle time can affect the performance of the system and its ability to comply with the appropriate standard. Any changes to the switching valve cycle time should only be done in conjunction with the manufacturer's recommendation and with prior notification to the EPC.

III. Rationale for Selection of Indicator Ranges

It is inherent in the design and specifications for the oxidizer that a minimum of 90% destruction efficiency is achieved at a set point of 1500F inlet temperature. The RTO set point is set at 1550F. Maximum variation plus or minus around the set point could be 50F. Thus the excursion temperature is 1500F on a 60-minute average, but it would never be expected to occur. A margin of safety has been achieved by the installation of a continuous temperature recorder. The recorder indicates the alarm point at 1500F for the inlet temperature, which is the excursion point in the following table.

When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation. Furthermore, if the duration of a temperature excursion exceeds 30 minutes, as shown in the following table, the RTO and presses are shut down. All excursions will be documented and reported. The selected QIP threshold level is six excursions per semiannual reporting period. This level is less than 0.05 percent of the process operating time (based on 8,760 operating hours). If the QIP threshold is exceeded in a semiannual reporting period, a QIP will be developed and implemented.

TABLE A.1a-1. MONITORING APPROACH

	Indicator No. 1	Indicator No. 2
I. Indicator	RTO chamber temperature.	Work practice.
Measurement Approach	Continuously record the operating temperature of the RTO.	Inspection and maintenance of the burner and RTO ductwork.
II. Indicator Range	The RTO set-point shall be a minimum of 1550°F. An **excursion** is defined as a 1-hour average chamber temperature average less than 1500°F.	An excursion is defined as failure to perform annual inspection and normal required maintenance on the RTO and associated capture system.
Corrective Action	Excursions trigger an inspection, corrective action, and a reporting requirement.	
QIP Threshold[a]	No more than six excursions below the indicator range in any semiannual reporting period.	Not applicable.

III. Performance Criteria A. Data Representativeness	The sensors are located in the oxidizer chamber as an integral part of the oxidizer's design. The minimum tolerance of the thermocouple is ± 0.5% or ± 5°F, whichever is greater.[b] The minimum chart recorder sensitivity (minor division) is 20 °F. The thermocouples are checked annually as part of the oxidizer manufacturer's annual inspection.	Not applicable.
B. Verification of Operational Status	Not applicable.	Not applicable.
C. QA/QC Practices and Criteria	Accuracy of the thermocouples will be verified during the annual oxidizer manufacturer's inspection by disconnecting the wire from the thermocouples at the oxidizer and measuring the electrical signal from the thermocouple by a meter at the unit. This validation check will be conducted at least annually.	Not applicable.
D. Monitoring Frequency	Measured continuously with data collected at a minimum of every 10 minutes.	Annual inspection of the RTO and its burner and monthly observation of RTO and associated ductwork.
Data Collection Procedure	Recorded continuously on a Data Acquisition system (Chart Recorder or equivalent). Records shall include PC-based weekly backup of recorder data.	Record results of annual inspections and monthly observations.
Averaging Period	Data shall be monitored on at least a 1-hr average and updated at least once every 15 minutes.	Not applicable.

[a]The QIP is optional; QIP thresholds are not required in the CAM submittal.
[b] From EPA's January 2005 guidance on Catalytic Oxidizers, Appendix D, "Monitoring Protocols for the Printing and Flexible Packaging Industries", page D-52, at http://www.epa.gov/ttn/emc/cam.html.

E. Record Keeping	Maintain for 5 years, records of chart recorder paper or electronic media and corrective actions taken in response to excursions.	Maintain for 5 years, records of maintenance and inspections and corrective actions taken in response to excursions.
F. Reporting	Number, duration, cause of any excursion and the corrective action taken.	Number, duration, cause of any excursion and the corrective action taken.

Frequency	Semiannually.	Semiannually.

Part 2 CAPTURE EFFICIENCY

I Background

A. Emissions Unit

Description:	2 flexographic presses vented to a 15,000 cfm Anguil Environmental Systems, Inc. Model 150 Regenerative Thermal Oxidizer (RTO)
Emission Point:	Stack
Facility ID#:	0570293
Location:	6932 S. Manhattan Ave. Tampa, Florida

B Applicable Regulation, Emission Limit, and Monitoring Requirements

Regulation No.:	Permit # 0570293-022-AC	
Regulated pollutant (PSEU):	VOC	
Emission limit/Standard:	Press No.	Capture Efficiency
	2	65%
	5A	85%

C. Control Technology:	Captured emissions vented to Regenerative Thermal Oxidizer (RTO)

II. Monitoring Approach

The key elements of the monitoring approach, including the indicators to be monitored, are presented in Table A.1a-2.

MONITORING APPROACH JUSTIFICATION

I. Background

Star Packaging Corp. manufactures custom printed bags for a variety of customers. A flexographic press places ink onto a continuous roll of polyethylene film which is then cut into plastic bags. Concentrated ink is mixed with solvent for use in the presses. The film, in long rolls, is fed through the press. Air is blown onto the wet ink evaporating the solvent. The coated film then proceeds further in the press for additional ink (different colors) application as necessary.

The solvent laden air, containing Volatile Organic Compounds (VOC) emissions, from each press is ducted to a 15,000 cfm regenerative thermal oxidizer (RTO). The RTO oxidizes the VOC's at a minimum destruction efficiency of 90%. The oxidizer is fired on natural gas at a maximum heat input rate of 4.0 MMBtu/hr. A total of 2 printing presses are connected to the oxidizer.

II. Rationale for Selection of Performance Indicators

Capture efficiency for this system has established minimum performance standards as stated in the operating permit. An integral part of the efficiency of the capture system is the proper operation of the fans and dampers on the control ducts. Fan operation is monitored continuously for proper operation and the fan is inspected monthly and annually as part of the detailed RTO inspection. All dampers are controlled and monitored by the RTO control system, or are locked into stationary positions based on previous testing (balancing) of the flows. There are two types of dampers used in the system. On the ducts from each press prior to the main plenum are balancing dampers that are typically bolted into a fixed position during testing. These are all located on the roof. Near the RTO are actuator (cold-start) dampers. These automated dampers allow ambient air into the RTO during start-up and prevent airflow from the presses to enter the RTO until it has reached the minimum operating temperature.

Malfunctioning actuator dampers during normal oxidizer operation provide fault alarms. Once a week the actuator dampers (including arms, controllers, and linkage) around the RTO will be visually checked to verify that they are operating properly and records will be maintained at the facility. Additional detailed inspections of the integrity of the ductwork from the presses to the RTO exhaust, including corrective maintenance as required, are required monthly, as detailed in the O&M (Environmental Compliance) Plan. Capture efficiency testing will be conducted upon permit renewal, equipment modification, or change. Any operation of dampers that permits release of captured gases prior to the RTO shall be recorded.

Inspections of the rooftop balancing dampers are required to ensure that no movement of the dampers occurs outside the ranges established during compliance tests. If any of the balancing dampers move based on the control system, weekly inspections are required to ensure their proper operation. If all the balancing dampers are locked in a fixed position, then monthly inspections are sufficient.

Capture efficiency is also influenced by extraneous air currents from fans, open doors, etc. Thus, another key performance indicator for Star Packaging Corp. is the ensuring that all external doors are closed, and nonessential fans are off. The roof fans above Press No. 7 have been removed and the roof sealed.

TABLE A.1a-2. MONITORING APPROACH

	Indicator No. 1	Indicator No. 2
I. Indicator	Work practice; inspection and maintenance of the fans and duct system from presses to RTO.	Closed exterior doors.
Measurement Approach	Immediate response to fault alarms; weekly visual inspections of capture system including actuator (cold-start) dampers; monthly detailed inspection of fans, rooftop balancing dampers and control system ducts.	Not applicable.
II. Indicator Range	An excursion is defined as failure to perform weekly or monthly inspections, or failure to immediately respond to a fault alarm**. If all balancing dampers are fixed into position, then monthly inspections are sufficient to ensure the dampers integrity. If any of the balancing dampers are automated so they move based on the control system, then weekly inspections shall be conducted on each mobile damper. ** Applies when the plant runs production operations. May not apply under maintenance, shut down or other non-production operations at the plant.	A range is not applicable in this case; the exterior doors are either open or closed.

III. Performance Criteria A. Data Representativeness	Not applicable.	Not applicable.
B. Verification of Operational Status	Not applicable.	Not applicable.
C. QA/QC Practices and Criteria	Weekly and monthly inspections and corrective actions are included in the facility's O&M (Environmental Compliance) Plan procedures.	It is part of employee training, and all employees have been instructed in this aspect. In addition, the Shipping/Receiving Operator knows that he is subject to disciplinary action if a door is open while the presses are running. Furthermore, there is a sign in the production area regarding keeping the doors closed.
D. Monitoring Frequency	Weekly/monthly inspections performed; failure alarms provided through the RTO control system.	Not applicable
Data Collection Procedure	Documentation is included in the facility's maintenance records.	Not applicable.
Averaging Period	Not applicable.	Not applicable.

E. Record Keeping	Maintain maintenance records for 5 years.	Not applicable.
F. Reporting	Number, duration, cause of any excursion and the corrective action taken	Not applicable.
Frequency	Semiannually	Not applicable.