

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

Commonwealth of Pennsylvania
Environmental Resources
October 16, 1991

Subject: Source Test Review

To: Data File
Millcreek Township Asphalt Plant
Erie, Pennsylvania

From: William Schneider *WS*
Air Pollution Control Engineer
Division of Technical Services and Monitoring
Bureau of Air Quality Control

Through: Chief, Source Testing and Monitoring Section *WS*

Millcreek Township operates an asphalt plant in Erie, Pennsylvania. The plant is rated at 150 tons per hour. Emissions are controlled by a baghouse. Hemeon Associates, Inc. conducted three Method 5 particulate runs and three Method 9 visible emission runs on June 23, 1991. A pretest protocol was approved by the Department.

Run No. 1 is unacceptable to the Department, since the isokinetic rate of 143.7% was well outside the acceptable limit. Run Nos. 2 and 3 are acceptable, even though the respective isokinetic rates of 89.2% and 111.2% are outside the acceptable range of $100 \pm 10\%$. The particulate concentrations for Runs 2 and 3 were well below the acceptable limit that the slight variation in isokinetic would not adversely affect the final results.

In addition to the above, it is noteworthy to point out that plan approval 25-303-009 indicates a plant capacity of 150 tons per hour top mix. Testing was conducted while the facility was producing top mix at a rate of only 80 tons per hour.

Page 5 of the test report indicates a stack diameter of 38 inches. However, the diagram on page 7 show a 25.75" x 34.75" stack. The particulate mass emission rate (lb/hr) shown below is recalculated using a 25.75" x 34.75" stack.

Page 6 of the test report specifies that 8 points would be sampled at each of three points for three minutes each for a total of 72 minutes. However, the diagram on Page 7 has five samples points at four ports. This diagram corresponds with the actual test sheets.

October 16, 1991

The following test results were extracted from the test reports:

Particulate Emissions

Run No.	Gr/dscf	Lb/Hr
1	0.009	0.88
2	0.006	0.70
3	0.008	0.83
Allowable	0.02	

Opacity

Run No.	%
1	0
2	0
3	0
Allowable	20

cc: File No. 25-103-009
Pradul R. Shah, Meadville Regional Office
Krishnan Ramamurthy, A&C
EPA/MSL
Reading File - Source Testing

WSham

HEMEON ASSOCIATES INC.

Air Pollution Consulting Engineers
125 Thirty-Ninth Street
Pittsburgh, PA 15201

(412) 683-2100

FAX (412) 683-4100

**PARTICULATE EMISSION TESTING
MILLCREEK TOWNSHIP ASPHALT PLANT
ERIE, PA**

Report To:
Mr. Paul Martin
Millicreek Township
3608 West 26th Street
Erie, PA 16506

Report By:
Mr. Christopher J. Michael
Project Manager
Hameon Associates, Inc.
125 Thirty-ninth Street
Pittsburgh, PA 15201

July 9, 1991

RECEIVED

SEP 10 1991

ENVIRONMENTAL RESOURCES
MEADVILLE REGIONAL OFFICE

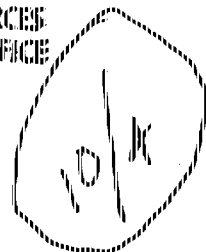


TABLE OF CONTENTS

- 1.0 Introduction
- 2.0 Summary of Results
- 3.0 Sampling Procedure

APPENDICES

- A. Formulas and Calculations
- B. Test Methodology
- C. Laboratory Data
- D. Field Data Sheets
- E. Process Data
- F. V. E. Certificates

1.0 INTRODUCTION

On June 28, 1991, particulate and visible emission testing was conducted on the asphalt plant baghouse at Millcreek Township, Erie, PA. The test program was authorized by Mr. Paul Martin of Millcreek Township. Testing was performed by Mr. John C. Parry, Mr. Amy Parry and Mr. James Campbell of Hemecor Associates, Inc. Process Coordination was provided by Millcreek Township's personnel. Testing was observed by Mr. Davendra Varma of the Pennsylvania Department of Environmental Resources (D.E.R.), Meadville office.

PURPOSE

The purpose of this test program was to determine whether particulate matter and visible emissions from the baghouse exit were in compliance with the PA D.E.R. regulations during normal operation.

2.0 SUMMARY OF RESULTS

TABLE NO. 1

Particulate Emission Results

Date 1991	Sample Location	Test No.	Particulate Emissions		
			a	b	b
			gr/dscf	measured lb/hr	allowable lb/hr
6/28	Baghouse Outlet	1	0.009	1.11	10.16
6/28	Baghouse Outlet	2	0.053 A	0.29	10.16
6/28	Baghouse Outlet	3	0.008	1.05	10.16
		Average	0.007	0.97	10.16

a - grains per dry standard cubic feet

b - pounds per hour

According to regulations of the PA D.E.R., the allowable emission rate is based on process feed rate. Based on the test results, the baghouse is in compliance with D.E.R. regulations for particulate emissions.

Test No. 1 was not included in the average because the percent isokinetic was too high.

TABLE NO. 2

Visible Emission Results

Date 1991	Sample Location	Test No.	Lowest Percent	Highest Percent	Average Percent a
6/28	Baghouse Outlet	1	0	0	0
6/28	Baghouse Outlet	2	0	0	0
6/28	Baghouse Outlet	3	0	0	0

a - highest six (6) minute average

TABLE NO. 2
SUMMARY OF FLUE GAS PARAMETERS

MCTFLO2

TEST NO.	1	2	3
TEST DATA			
Test Date	6/28/91	6/28/91	6/28/91
Static Pres., in. WC	- .95	- .95	- .95
Pitot Readings, rms	.792	1.02	1.07
Gas Temp., deg. F	221.3	231.7	238.2
Flowmeter Ave., "WC	2.6	3.36	2.12
Gasmeter Avg. Temp., deg. F	96.4	101.6	107.1
Sampling Time, min.	60	60	60
Sample Vol., acf	56.953	63.44	52.574
Barom. Pres. in. Hg	29.48	29.53	29.53
Condensate, ml	585	438	523
Desiccate Gain, g	22.3	23	26.5
GAS COMPOSITION			
CO ₂ , mole fraction	.045	.045	.045
O ₂ , mole fraction	.145	.145	.145
N ₂ , mole fraction	.81	.81	.81
AREAS			
Stack Diameter, in.	38	38	38
Stack Area, sq. ft.	7.876	7.876	7.876
Nozzle Diameter, in.	.25	.299	.25
Nozzle Area, sq. ft.	.000341	.000488	.000341
CALCULATED RESULTS			
Gas, Dry vol. wt.	29.3	29.3	29.3
Gas Density, lb/cu. ft.	.0758	.0758	.0758
Sample volume, dry scf	53.5	59.1	48.5
Gas sample, dry lb	4.06	4.48	3.68
Water in Sample, lb	1.339	1.016	1.211
Water Content lb/lb	.33	.227	.329
Water, volume %	25	27	34.9
Water, weight %	24.8	18.5	24.8
Gas Mol. Wt., Actual	25.35	26.25	25.36
Gas Density in Stack	.0501	.0512	.049
Stack Gas, acfm	28842	32360	33500
Stack Gas, lb/hr	86690	99470	99670
Stack Gas, lb/hr dry	65180	81072	75000
Stack Gas, scfm dry	14332	17825	16491
Percent Inokinetic	143.7	89.2	113.2

3.0 TEST PROGRAM AND SAMPLING PROCEDURE

Sampling Procedure

Sampling was conducted at the baghouse outlet as shown in Figure No. 1. A total of 24 sample points were used to traverse the rectangular exit duct. There were three sample ports located equidistant on one side. Eight points were sampled in each port for 3 minutes a point for a total test time of 72 minutes for all tests.

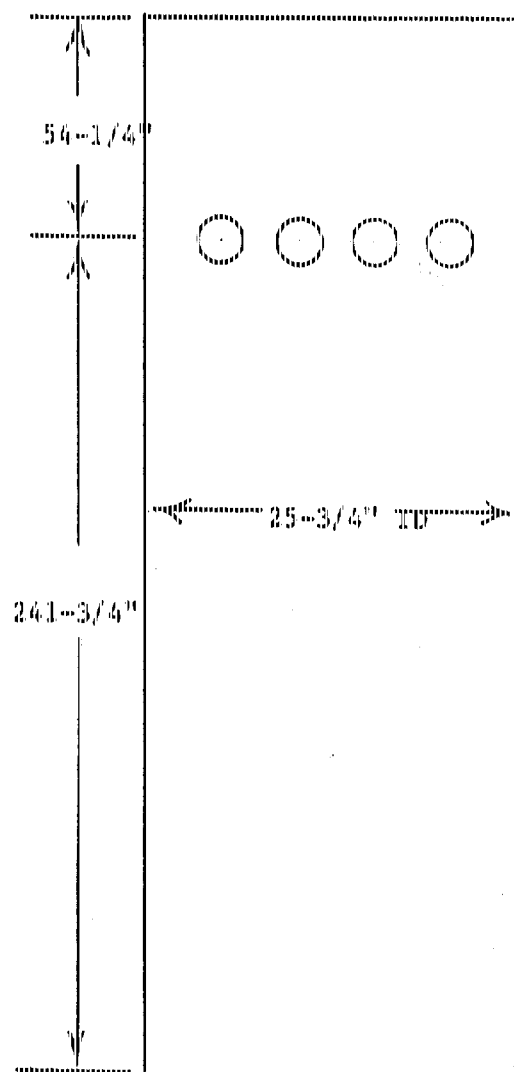
After selecting the sampling site and the minimum number of traverse points, the stack pressure, temperature, moisture and range of velocity head were measured according to the procedures described in the Federal Register.*

Approximately 200 grams of silica gel were weighed in a sealed impinger prior to each test. Glass fiber filters (4 inch diameter) were desiccated for at least 24 hours and weighed to the nearest 0.1 mg on an analytical balance. One-hundred ml of distilled water was placed in each of the first two impingers; the third impinger was initially empty; and the impinger containing the silica gel was placed next in series. The sampling train was leak-checked at the sampling site prior to each test run by plugging the inlet to the nozzle and pulling a 15 inch Hg vacuum, and at the conclusion of the test by plugging the inlet to the nozzle and pulling a vacuum equal to the highest vacuum reached during the test run.

A more detailed description of sampling and analytical procedure is given in Appendix 3.

*Federal Register, Part 60, App. A, July 1, 1966

**Glass fiber filters, Type 934 AH



Traverse Point Location

Point Number	Location
1	3-1/2"
2	10-3/8"
3	17-3/8"
4	24-3/8"
5	31-1/4"

4 Access Ports

Rectangular Stack $25-3/4'' \times 34-3/4''$ ID

5 Points Per Port

20 Total Sample Points

McLlcrcek Township Asphalt Plant
Baghouse Stack
Erie, PA

Hemrich Associates, Inc. report of 7/9/91
to Millcreek Township, Erie, PA

A. FORMULAS AND CALCULATIONS

NOMENCLATURE

A_s "	Cross-sectional area of stack, (ft^2).
A_n "	Cross-sectional area of nozzle, (ft^2).
c_p "	Concentration of particulate matter in stack gas, dry basis corrected to standard conditions, (g/dscf).
C_p "	Pitot tube coefficient.
D_g "	Flue gas density (lbs. per scf).
D_{gs} "	Flue gas density at stack conditions (lbs/ft^3).
E_r "	Emission rate (lbs/hr).
GVW "	Gas sample volume weight (lbs).
H_{fg} "	Humidity of flue gas ($\text{lbs of H}_2\text{O}/\text{lb. dry gas}$).
I "	Percent of isokinetic sampling ($\%$).
m_m "	Total amount of particulate matter collected, g .
P_{bar} "	Barometric pressure at the sampling site, (in. Hg).
P_a "	Absolute stack gas pressure, (in. Hg).
P_{std} "	Standard absolute pressure, (29.92 in. Hg).
P_s "	Static pressure of stack.
SE "	Stack volumetric flow (ACFM).
SEf "	Stack weight flow at stack conditions ($\text{lbs.}/\text{hr}$).
$SEfd$ "	Stack weight flow dry basis ($\text{lbs.}/\text{hr}$).
T_m "	Absolute average dry gas meter temperature ($^{\circ}\text{R}$).
T_s "	Absolute average stack gas temperature ($^{\circ}\text{R}$).
T_{std} "	Standard absolute temperature, (528°R).

V_m	Volume of gas sample as measured by dry gas meter, (dcf).
$V_m(\text{std})$	Volume of gas sample measured by the dry gas meter, corrected to standard conditions, (dcf).
W_{fg}	Water in flue gas sample (lbs. of H_2O).
W_p	Weight of particulate (10^{-3} lbs.).
W_p/g	Pounds of particulate per 1000 lbs. of gas (lbs. particulate/1000 lbs. gas).
Y	Dry gas meter calibration factor.
ΔH	Average pressure differential across the orifice meter (in. H_2O).
θ	Total sampling time, min.

Hemion Associates, Inc.

Example Calculations for Particulate Emissions

1. Volume of dry gas sampled corrected to standard conditions. Note: V_m must be corrected for leakage if any leakage rates exceed L_a .

$$V_{mstd} = 17.65 \times V_m \times Y \left[\frac{P}{\text{bar}} + \frac{\Delta H}{T_m} \right]$$

2. Weight of water in flue gas sample (lbs.).

$$Wfg = \frac{(\text{ml condensate} + \text{grams desicc. gain})}{453.6}$$

3. Water vapor concentration (%).

$$Wvc = \frac{(21.5 \times Wfg \times 100)}{(21.5 \times Wfg + V_{mstd})}$$

4. Dry molecular weight of stack gas.

$$M_d = 0.44 (\% \text{ CO}_2) + 0.32 (\% \text{ O}_2) + 0.28 (\% \text{ N}_2 + \% \text{ CO})$$

5. Stack gas density (lbs./cccf).

$$Dg = \left(\frac{M_d}{29} \right) \times .0753$$

6. Stack gas density at stack conditions (lbs./ft.³).

$$Dgs = .0753 \times \left(\frac{M_d}{29} \right) \times \frac{P_s}{29.92 \text{ in. Hg}} \times \left(\frac{528}{T_s R} \right)$$

7. Molecular weight of stack gas.

$$M_g = M_d (1 - Wvc) + 18 Wvc$$

8. Stack velocity at stack conditions, fps.

$$V_g = 85.49 C_p \sqrt{\Delta P} \quad \text{avg.} \quad \sqrt{\frac{T_g}{P_g M_g}}$$

9. Actual volumetric flow rate (ACFM).

$$Sf = \frac{1096.7 \times Cp \times \sqrt{V_{AP}(RMS)} \times Aa}{\sqrt{Dg}}$$

10. Stack weight flow at stack conditions (lbs./hr.).

$$Swf = Sf \times Dg \times 60$$

11. Gas sample weight (lbs.).

$$Gaw = V_{std} \times Dg$$

12. Humidity of flue gas (lbs. of H₂O/lbs. dry gas).

$$Hfg = \left(\frac{Wfg}{Gaw} \right)$$

13. Stack weight flow on dry basis (lbs./hr.).

$$Swfd = \left(\frac{Swf}{1 + Hfg} \right)$$

14. Stack volumetric flow at standard conditions (SCFM).

$$Sfd = \left(\frac{Swfd}{60 \times Dg} \right)$$

15. Isokinetic sampling rate (%).

$$I = \left(\frac{V_{std} \times Aa \times 100}{Sfd \times Aa \times 60} \right)$$

16. Weight of particulate (10⁻³ lbs.).

$$Wp = (M_w \text{ wt. grams}) \times 2.2046$$

17. Pounds of particulate per 1000 lbs. of gas
(lbs. part./1000 lbs. gas).

$$(Wp/g) = \left(\frac{Wp}{GVW} \right)$$

18. Concentration of particulate in stack, dry basis corrected to standard conditions (g/dacf).

$$C_d = \left(\frac{7}{V_m \text{ std}} \right) \times W_p$$

19. Particulate emission rate (lb./hr.)

$$E_r = S_{std} \times (W_p/g) \times 10^{-3}$$

STACK GAS FLOW AND PARTICULATE EMISSIONS
 ~~~~~

| Test No.                | 1                  | 2                   | 3                  |
|-------------------------|--------------------|---------------------|--------------------|
| Date                    | 6/28/91            | 6/28/91             | 6/28/91            |
| Overall sampling period | 7:43 AM<br>8:50 AM | 9:41 AM<br>12:14 AM | 1:04 PM<br>2:10 PM |
| Net sampling time, min. | 60                 | 60                  | 60                 |

STACK GAS

|                     |       |       |       |
|---------------------|-------|-------|-------|
| Temperature, deg. F | 221.3 | 231.7 | 238.2 |
| Flow rates:         |       |       |       |
| Actual lb/hr        | 85690 | 99470 | 99670 |
| Dry basis lb/hr     | 65180 | 81070 | 75000 |
| Acfm                | 28840 | 32380 | 33900 |
| Scfm, dry           | 14332 | 17825 | 16491 |

PARTICULATE MATTER

|                           |       |      |      |
|---------------------------|-------|------|------|
| Concentration             |       |      |      |
| Dry Basis:                |       |      |      |
| lb dust per 1000 lb gas   | .017  | .011 | .014 |
| Grains per scf            | .009  | .006 | .008 |
| DUST EMISSION RATE, lb/hr | 1.108 | .892 | 1.05 |

Hammann Associates, Inc. report of 7/9/91  
to Millcreek Township, Erie, PA

#### CALCULATION OF ALLOWABLE EMISSION RATE

$$A = 0.76E \quad \text{Where:}$$

E = Emission Index = F x W tons per hour

F = Process factor in pounds per unit

W = Charging rate in units per hour

$$\text{Allowable Emission Rate, } A = .76 (W \times F)$$

Average Production Rate: 80 tons per hour

$$A = .76 (W \times F)$$

$$A = .76 (80 \times 6)$$

$$A = 10.16 \text{ Lbs/Hr}$$

Hammco Associates, Inc. report of 7/9/91  
to Millcreek Township, Erie, PA

### 3. TEST METHODOLOGY

DETERMINATION OF PARTICULATE EMISSIONS  
EPA METHOD 5

The following method was used in this test program. Sampling procedures follow those described in Method 5 of the Federal Register\* and Department of Environmental Resources\*\*.

SAMPLING APPARATUS

The particulate sampling train used in these tests at the exit stack met certain design specifications established by the Federal EPA and was assembled by Hameon personnel. It consisted of:

Nozzle - Stainless steel (316) with sharp, tapered leading edge and accurately measured round opening.

Probe - Glass lined with a heating system capable of maintaining a minimum gas temperature of 2500F at the exit end during sampling.

Pitot Tube - Type S pitot tube that met all geometry standards was used to monitor stack gas velocity.

Filter Holder - Pyrex glass with heating system capable of maintaining a filter temperature of approximately 2500F.

Draft Gauge - An inclined manometer made by Dwyer with a readability of 0.01 inches H<sub>2</sub>O in the 0-1 inch range was used.

Impingers - Four impingers connected in series with glass ball joints. The first, third and fourth impingers were of the Greensburg-Smith design, modified by replacing the tip with a 1/2 inch I.D. glass tube extending to 1/2 inch from the bottom of the flask.

Measuring System - Vacuum gauge, leak-free pump, thermometers capable of measuring temperature to within 5°F, calibrated dry gas meter, and related equipment, to maintain an isokinetic sampling rate and to determine sample volume. The dry gas meter is made by Rockwell and the fiber vane pump is made by Gast.

Barometer - Aneroid type to measure atmospheric pressures to ±0.1 inch Hg.

\*Federal Register, CFR 40, Part 60, July 1, 1987

\*\*D.E.R.L. Source Testing Manual, January 1983

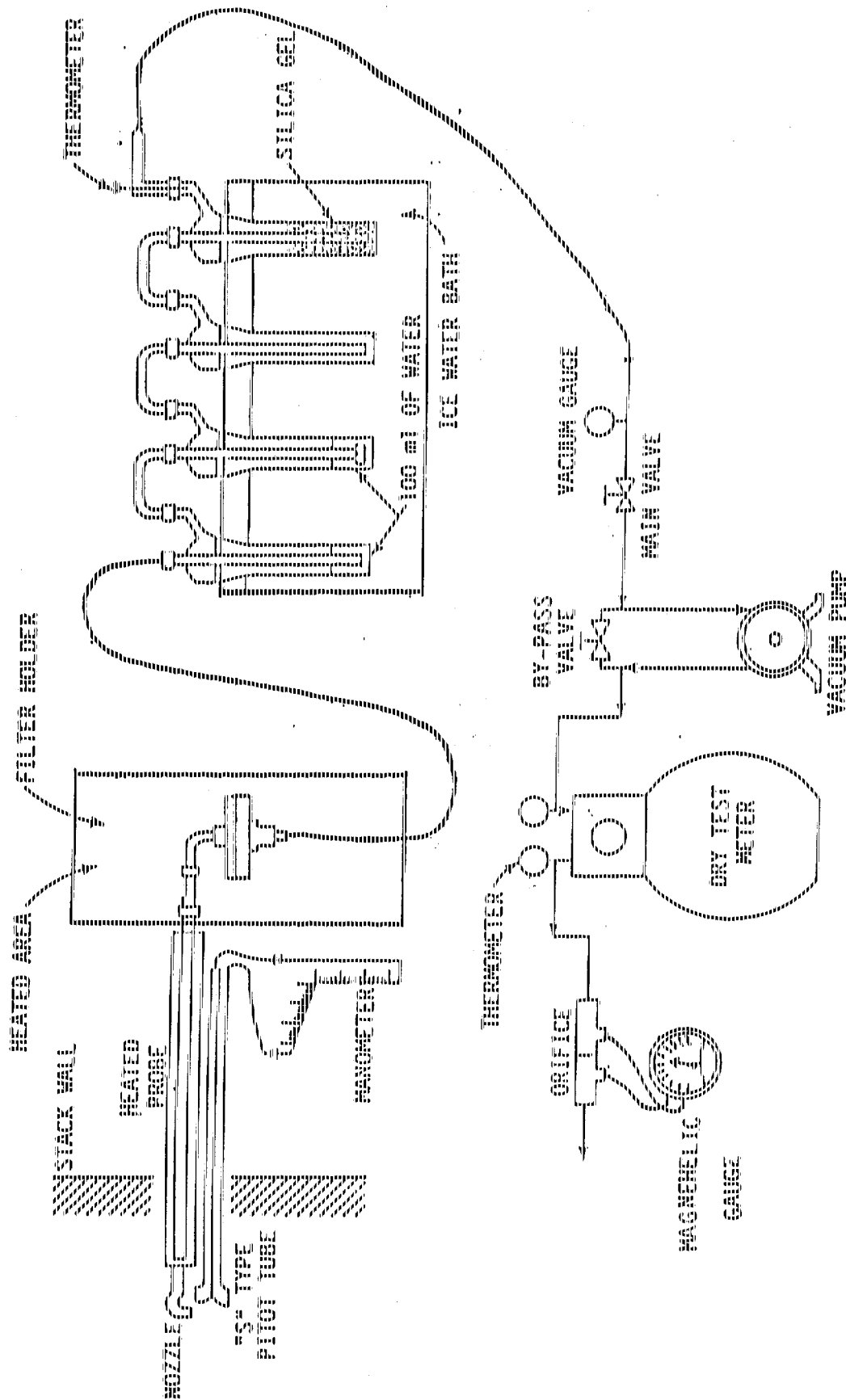
#### SAMPLING PROCEDURE - PARTICULATE

After selecting the sampling site and the minimum number of traverse points, the stack pressure, temperature, moisture and range of velocity head were measured according to the procedures described in the Federal Register.

Approximately 200 grams of silica gel were weighed in a sealed impinger prior to each test. Glass fiber filters (4 inch diameter) were desiccated for at least 24 hours dried at 125°C for two hours and weighed to the nearest 0.1 mg on an analytical balance. One-hundred ml of distilled water was placed in each of the first two impingers; the third impinger was initially empty and the impinger containing the silica gel was placed next in series. The train was set up with the probe as shown in Figure A-1. The sampling train was leak-checked at the sampling site prior to each test run by plugging the inlet to the nozzle and pulling a 15 inch Hg vacuum, and at the conclusion of the test by plugging the inlet to the nozzle and pulling a vacuum equal to the highest vacuum reached during the test run.

The pitot tube and lines were leak-checked at the test site prior to and following the initial velocity traverse. The check is made by blowing into the impact opening of the pitot tube until 3 or more inches of water are recorded on the manometer and then capping the impact opening and holding it for 15 seconds to assure it was leak free. The static pressure side of the pitot tube was leak-checked using the same procedure, except suction was used to obtain the 3 inch H<sub>2</sub>O manometer reading. Crushed ice was placed around the impingers to keep the temperature of the gases leaving the last impinger at 68°F or less.

During sampling, stack gas and sampling train data were recorded at each sampling point and when significant changes in stack flow conditions occurred. Isokinetic sampling rates were set throughout the sampling period with the aid of isokinetic sampling equations. All sampling data was recorded on the Particulate Field Data Sheet.



Particulate sampling train

#### SAMPLE RECOVERY PROCEDURE

The sampling train was moved carefully from the test site to the cleanup area. Samples of the acetone and distilled water used in the sample recovery were taken for use as blanks. The volume of water from the first three impingers were measured. Sample fractions were recovered as follows:

Container No. 1 - The filter was removed from its holder and placed in a petri dish and sealed.

Container No. 2 - Loose particulate and water washings from all sample-exposed surface prior to the filter were placed in a sample container, sealed and labeled. Particulate was removed from the probe with the aid of a brush and water rinsing. The liquid level was marked after the container was sealed.

Container No. 3 - Loose particulate and acetone washings from all sample-exposed surface prior to the filter were placed in a glass jar, labeled and sealed. Particulate was removed from the probe with the aid of a brush and acetone rinsing. The liquid level was marked after the container was sealed.

Container No. 4 - A minimum of 200 ml of acetone was taken for the blank analysis. The blank was obtained and treated in a similar manner as the acetone washing.

Container No. 5 - Distilled water in the impinger section of the sampling train was placed in a sample container. The impingers and connecting glassware were rinsed with distilled H<sub>2</sub>O and this rinse added to the container for shipment to the laboratory.

Container No. 6 - Acetone washings from all sample-exposed surfaces in the impingers were placed in a sample container, labeled and sealed. The liquid level was marked after the container was sealed.

Container No. 7 - A minimum of 200 ml of distilled water was taken for the blank analysis. The blank was obtained and treated in a similar manner as the water rinse.

The silica gel from the fourth impinger was weighed and the gain recorded on the Sample Recovery Data Sheet with other pertinent data.

## ANALYTICAL PROCEDURES

The following procedures were used and follow the methods prescribed by the Department of Environmental Resources.

Container No. 1 - The filter and any loose particulate matter from this sample container were placed into a tared glass weighing dish, dried at 105°C, desiccated for 24 hours to a constant weight and weighed to the nearest 0.1 mg.

Container No. 2 - The distilled water washings were transferred to a tared beaker and evaporated to dryness at 105°C temperature and pressure, desiccated for 24 hours to a constant weight and weighed to the nearest 0.1 mg.

Container No. 3 - The acetone washings was transferred to a tared beaker and evaporated to dryness at ambient temperature and pressure, desiccated for 24 hours to a constant weight and weighed to the nearest 0.1 mg.

Container No. 4 - The acetone blank was transferred to a tared beaker and evaporated to dryness at ambient temperature and pressure. The blank was then desiccated 24 hours to a constant weight and weighed to the nearest 0.1 mg.

Container No. 5 - The contents of this container were filtered through tared (0.8u - 0.22u) filters to remove insoluble particulate. The filters and filtrates were put in tared beakers, evaporated to dryness at 105°C, desiccated to constant weight and weighed on an analytical balance to nearest 0.1 mg.

Container No. 6 - The contents of this container were evaporated to dryness at ambient temperature and pressure, desiccated to constant weight and weighed on an analytical balance to the nearest 0.1 mg.

Container No. 7 - The distilled water blank was transferred to a tared beaker and evaporated to dryness at 105°C. The blank was then desiccated to a constant weight and weighed on an analytical balance to the nearest 0.1 mg.

The term "constant weight" means a difference of no more than 0.5 mg or 1% of total weight less tare weight, whichever is greater between two consecutive readings, with no less than 6 hours of desiccation between weighings.

Hemich Associates, Inc. report of 7/9/91  
to Millcreek Township, Erie, PA

C. LABORATORY DATA

TABLE I  
TOTAL SOLIDS ANALYSIS  
HEMEON ASSOCIATES  
125 THIRTY-NINTH STREET  
PITTSBURGH, PA 15201  
PURCHASE ORDER #3691 MILLCREEK TOWNSHIP ASPHALT PLANT  
SAMPLES RECEIVED: JULY 1, 1991

| HEMEON<br>SAMPLE<br>NUMBER | AQS<br>LABORATORY<br>NUMBER | SAMPLE<br>TYPE | SAMPLE<br>VOLUME<br>MILLILITER | TOTAL<br>SOLIDS<br>MILLIGRAMS |
|----------------------------|-----------------------------|----------------|--------------------------------|-------------------------------|
| 8161                       | 58772                       | ACETONE        | 92                             | 6.6                           |
| 8162                       | 58773                       | ACETONE        | 88                             | 4.0                           |
| 8163                       | 58774                       | ACETONE        | 94                             | 3.5                           |
| 8170                       | 58775                       | ACETONE        | 100                            | 0.013 mg/ml                   |

THE SAMPLES WERE WEIGHED ON A BALANCE CALIBRATED WITH WEIGHTS  
TRACEABLE TO THE NATIONAL BUREAU OF STANDARDS.  
THE DATA HAS NOT BEEN CORRECTED FOR THE BLANK.

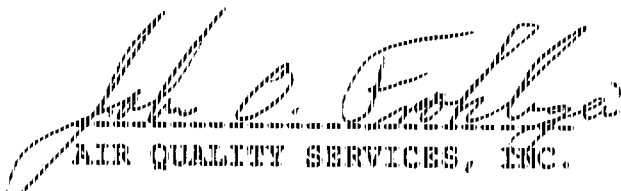
*John O. Folger*  
AIR QUALITY SERVICES, INC.

JOB 2970

TABLE II  
TOTAL SOLIDS ANALYSIS  
HEMBON ASSOCIATES  
125 THIRTY-NINTH STREET  
PITTSBURGH, PA 15201  
PURCHASE ORDER #3691 MILLCREEK TOWNSHIP ASPHALT PLANT  
SAMPLES RECEIVED: JULY 1, 1991

| HEMBON<br>SAMPLE<br>NUMBER | AQS<br>LABORATORY<br>NUMBER | SAMPLE<br>TYPE | SAMPLE<br>VOLUME<br>MILLILITER | TOTAL<br>SOLIDS<br>MILLIGRAMS |
|----------------------------|-----------------------------|----------------|--------------------------------|-------------------------------|
| 8158                       | 58768                       | WATER          | 120                            | 7.5                           |
| 8159                       | 58769                       | WATER          | 146                            | 7.2                           |
| 8160                       | 58770                       | WATER          | 85                             | 1.8                           |

THE SAMPLES WERE WEIGHED ON A BALANCE CALIBRATED WITH WEIGHTS  
TRACEABLE TO THE NATIONAL BUREAU OF STANDARDS.  
THE DATA HAS NOT BEEN CORRECTED FOR THE BLANK.

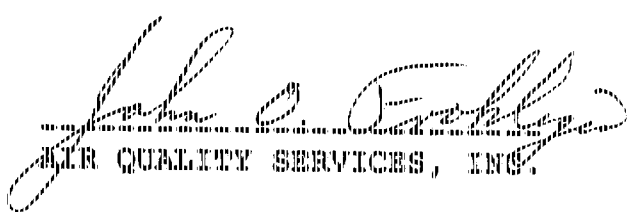
  
AIR QUALITY SERVICES, INC.

JOB 2970

TABLE III  
ANALYSIS OF SAMPLES FOR SOLUBLE-INSOLUBLE SOLIDS  
HEMEON ASSOCIATES, INC.  
125 THIRTY-NINTH STREET  
PITTSBURGH, PA 15201  
PURCHASE ORDER #3691 MILLCREEK TOWNSHIP ASPHALT PLANT  
SAMPLES RECEIVED: JULY 1, 1991

| HEMEON<br>SAMPLE<br>NUMBER | AQS<br>LABORATORY<br>NUMBER | SAMPLE<br>VOLUME<br>MILLILITERS | INSOLUBLE<br>SOLIDS<br>MILLIGRAMS | SOLUBLE<br>SOLIDS<br>MILLIGRAMS |
|----------------------------|-----------------------------|---------------------------------|-----------------------------------|---------------------------------|
| 8164                       | 58776                       | 910                             | 6.49                              | 76.0                            |
| 8165                       | 58777                       | 1010                            | 5.12                              | 4.8                             |
| 8166                       | 58778                       | 910                             | 12.74                             | 7.5                             |

THE FILTERS WERE WEIGHED ON A MICRO BALANCE CALIBERATED WITH WEIGHTS  
TRACEABLE TO THE NATIONAL BUREAU OF STANDARDS.  
THE DATA HAS NOT BEEN CORRECTED FOR A BLANK.

  
AIR QUALITY SERVICES, INC.

JOB 2970

# SAMPLE WEIGHTS AND DUST CONCENTRATIONS

| Test No.                   | 1       | 2       | 3       |
|----------------------------|---------|---------|---------|
| Test Date                  | 6/28/91 | 6/28/91 | 6/28/91 |
| Filter No.                 | 120595  | 120596  | 120597  |
| Probe Rinse, Water, mg     | 7.5     | 7.2     | 1.8     |
| Probe Rinse, Acetone, mg   | 6.6     | 4       | 3.5     |
| Impinger Soltn Sol., mg    | 76      | 4.8     | 7.5     |
| Impinger Soltn Insol., mg  | 6.49    | 5.12    | 12.74   |
| Filter Tare, mg            | 667     | 657     | 674.7   |
| Filter + Sample, mg        | 676.9   | 663.5   | 680.7   |
| Sample Weight, mg          | 9.9     | 6.5     | 6       |
| Total Filterable Catch, mg | 30.49   | 22.82   | 24.04   |
| Sample Gas Volume scf      | 53.5    | 59.1    | 48.5    |
| Sample Gas Weight, lb      | 4.06    | 4.48    | 3.68    |
| PM Conc., #/1000 cc gas    | .017    | .012    | .015    |
| PM Conc., gr/dry scf       | .009    | .006    | .008    |

Hemecm Associates, Inc. report of 7/5/91  
to Millcreek Township, Erie, PA

D. FIELD DATA SHEETS

MEMON ASSOCIATES, INC.  
PARTICULATE FIELD DATA SHEET

Plant Millcreek Twp. Wastewater

Location Baghouse Street

Stack Dimension 38"

Pitot Coefficient .84

Motorbox (Cal. Y) 1.007

Test No. 115-1

Desiccant No. D-247

Pitot No. 21

Nozzle Diameter 1/4"

Operator M. Perry

Date 6-28-91

Filter No. 120595

Motorbox No. RAC 2518

Nozzle I.D.

| Trav. Point No. | Velocity Head (ΔP) H <sub>2</sub> O | Gas Temp. °F | Orifice Uncorr. Inches (H <sub>2</sub> O) | ΔP Corr. For Moist. Inches (H <sub>2</sub> O) | Corr. Time | Sample Time Mins. | Vacuum "HG | Meter Read Cu. Ft. | Meter Temperature Degrees F In | Meter Temperature Degrees F Out | Temperature Probe 238 275 | Filter Box | Degrees Last Impinger 68 degree or less |
|-----------------|-------------------------------------|--------------|-------------------------------------------|-----------------------------------------------|------------|-------------------|------------|--------------------|--------------------------------|---------------------------------|---------------------------|------------|-----------------------------------------|
| Init.           | XXXXXX                              | XXXXX        | Factor                                    |                                               |            |                   |            |                    |                                |                                 |                           |            |                                         |
| A-1             | .60                                 | 207          |                                           | 1.9                                           | 7.43       | 0                 | XXXX       | 779                | XXXX                           | XXXX                            | XXXX                      | XXXXXX     | XXXXXX                                  |
| 2               | .55                                 | 205          |                                           | 1.8                                           | 7.46       | 3                 | 30         | 781                | 81                             | 82                              | 253                       | 232        | 68                                      |
| 3               | 1.20                                | 211          |                                           | 3.9                                           | 7.49       | 6                 | 30         | 784                | 86                             | 82                              | 267                       | 254        | 66                                      |
| 4               | 1.25                                | 210          |                                           | 4.1                                           | 7.52       | 9                 | 70         | 787                | 92                             | 82                              | 249                       | 271        | 65                                      |
| 5               | .73                                 | 210          |                                           | 2.3                                           | 7.55       | 12                | 80         | 791                | 96                             | 86                              | 241                       | 254        | 63                                      |
| R-1             | .48                                 | 219          |                                           | 1.5                                           | 7.58       | 15                | 45         | 793                | 98                             | 86                              | 245                       | 234        | 62                                      |
| 2               | .65                                 | 233          |                                           | 2.0                                           | 8.06       | 18                | 30         | 796                | 98                             | 86                              | 261                       | 230        | 60                                      |
| 3               | 1.05                                | 231          |                                           | 3.3                                           | 8.09       | 21                | 4.0        | 798                | 102                            | 88                              | 263                       | 234        | 59                                      |
| 4               | 1.03                                | 228          |                                           | 3.3                                           | 8.12       | 24                | 6.0        | 801                | 102                            | 90                              | 268                       | 244        | 59                                      |
| 5               | .73                                 | 225          |                                           | 2.3                                           | 8.15       | 27                | 6.0        | 805                | 106                            | 90                              | 257                       | 253        | 58                                      |
|                 |                                     |              |                                           |                                               | 8.18       | 30                | 4.5        | 807                | 102                            | 92                              | 255                       | 262        | 57                                      |
| Sum-REV         | 0.792                               | 221.3        |                                           | 2.60                                          |            | 60                | 100        | 36                 | 56                             | 96.4                            |                           |            |                                         |
|                 | RMS                                 |              |                                           |                                               |            |                   |            | 557                | 953                            |                                 |                           |            |                                         |

Ambient Temp. 80° F

Bar. Press. 29.48 "Hg

Stat. Press. 95 "WC

IMPINGER WATER

Final 785 ml

Init. 200 ml

Conc. 585 ml

DESICCANT

Final 402.2 gms

Init. 406.8 gms

Gain 4.6 gms

ORGANIC ANALYSES

Time 4.00

CO<sub>2</sub> 4 1/2 %

O<sub>2</sub> 14 1/2 %

Final Leak rate 0.00 cfm 0.0 inches Hg

Notes:

# HEMEON ASSOCIATES, INC. PARTICULATE FIELD DATA SHEET

Plant Millbrook Superfund City Eliz., Pa. Operator M. Darry  
 Location Baghouse Street Test No. M5-1 Date 6-28-91  
 Stack Dimension 38" Deducant No. D-247 Filter No. 120595  
 Pitot Coefficient .84 Pitot No. 21 Meterbox No. RAC 2518  
 Meterbox (Cal. V) 1.007 Nozzle Diameter 1/4" Nozzle I.D. \_\_\_\_\_

| Trav. Point No. | Velocity Head (AP) H <sub>2</sub> O | Gas Temp. ° F | Orifice Uncorr. Inches (H <sub>2</sub> O) | $\Delta H$ Corr. for Moist. Inches (H <sub>2</sub> O) | Clock Time | Sample Time Mins. | Vacuum "HG | Meter Read Cu. Ft. | Meter Temperature Degrees F |        | Temperatures Probe Filter Box |         | Last Impinger 48 degree or less |
|-----------------|-------------------------------------|---------------|-------------------------------------------|-------------------------------------------------------|------------|-------------------|------------|--------------------|-----------------------------|--------|-------------------------------|---------|---------------------------------|
|                 |                                     |               |                                           |                                                       |            |                   |            |                    | In                          | Out    | 230 275                       | 230 275 |                                 |
| Init.           | XXXXXX                              | XXXXXX        | Factor                                    |                                                       |            |                   | XXXX       |                    | XXXXXX                      | XXXXXX | XXXXXX                        | XXXXXX  | XXXXXXXXXX                      |
| C-1             | .40                                 | 226           |                                           | 1.2                                                   | 8:15       |                   |            |                    |                             |        |                               |         |                                 |
| 2               | .45                                 | 226           |                                           | 1.4                                                   | 8:18       | 33                | 3.0        | 810                | 102                         | 92     | 259                           | 273     | 60                              |
| 3               | .70                                 | 225           |                                           | 2.2                                                   | 8:21       | 36                | 3.0        | 812                | 104                         | 92     | 266                           | 263     | 59                              |
| 4               | 1.05                                | 225           |                                           | 3.4                                                   | 8:24       | 39                | 5.0        | 814                | 106                         | 94     | 264                           | 257     | 58                              |
| 5               | 1.02                                | 225           |                                           | 3.3                                                   | 8:27       | 42                | 7.5        | 817                | 106                         | 94     | 262                           | 250     | 57                              |
| D-1             | .60                                 | 223           |                                           | 1.9                                                   | 8:30       | 45                | 7.5        | 821                | 108                         | 94     | 254                           | 239     | 56                              |
| 2               | .67                                 | 224           |                                           | 2.1                                                   | 8:35       | 48                | 4.5        | 823                | 106                         | 96     | 262                           | 243     | 56                              |
| 3               | 1.02                                | 224           |                                           | 3.3                                                   | 8:38       | 51                | 4.5        | 826                | 108                         | 96     | 267                           | 244     | 55                              |
| 4               | 1.06                                | 225           |                                           | 3.4                                                   | 8:41       | 54                | 7.0        | 829                | 110                         | 98     | 265                           | 233     | 55                              |
| 5               | 1.03                                | 224           |                                           | 3.3                                                   | 8:44       | 57                | 7.0        | 832                | 110                         | 98     | 258                           | 234     | 55                              |
|                 |                                     |               |                                           | 3.3                                                   | 8:47       | 60                | 7.0        | 835                | 110                         | 98     | 255                           | 240     | 55                              |

# MEMON ASSOCIATES, INC. PARTICULATE FIELD DATA SHEET

Plant Milwaukee Trap Station

City Phila. Pa.

Operator M. Perry

Location Baghouse Stack

Test No. M5-2

Date 6-28-91

Stack Dimension 38"

Desiccant No. D-234

Filter No. 120596

Pitot Coefficient .84

Pitot No. 21

Meterbox No. RAC 2518

Meterbox (Cal. V) 1.007

Nozzle Diameter 5/16"

Nozzle I.D.

| Trav. Point No. | Velocity Head (ΔP) H <sub>2</sub> O | Gas Temp. °F | Orifice Uncorr. Inches (H <sub>2</sub> O) | ΔH Corr. for Moist. Inches (H <sub>2</sub> O) | Clock Time | Sample Time Min. | Vacuum "Hg | Meter Read Cu. Ft. | Meter Temperature Degrees F |       | Temperature Degrees |            | Last Impinger 60 degree or less |
|-----------------|-------------------------------------|--------------|-------------------------------------------|-----------------------------------------------|------------|------------------|------------|--------------------|-----------------------------|-------|---------------------|------------|---------------------------------|
|                 |                                     |              |                                           |                                               |            |                  |            |                    | In                          | Out   | Probe 230 275       | Filter Box |                                 |
| Inst.           | XXXXXX                              | XXXXX        | Factor                                    | (C.22)                                        | 9:41       | 30               | XXXX       | 135                | XXXX                        | XXXX  | XXXX                | XXXX       | XXXX                            |
| A-1             | 1.02                                | 234          |                                           | 3.3                                           | 9:44       | 3                | 6.0        | 838                | 104                         | 90    | 272                 | 272        | 68                              |
| 2               | .62                                 | 240          |                                           | 1.9                                           | 9:47       | 6                | 4.5        | 841                | 108                         | 90    | 262                 | 262        | 66                              |
| 3               | .90                                 | 242          |                                           | 2.8                                           | 10:00      | 9                | 5.5        | 842                | 108                         | 90    | 246                 | 261        | 63                              |
| 4               | 1.06                                | 243          |                                           | 3.3                                           | 10:03      | 12               | 6.0        | 847                | 110                         | 94    | 243                 | 260        | 62                              |
| 5               | 1.50                                | 242          |                                           | 4.8                                           | 10:08      | 15               | 7.5        | 849                | 110                         | 94    | 234                 | 250        | 60                              |
| B-1             | .53                                 | 227          |                                           | 1.7                                           | 11:21      | 18               | 4.5        | 849                | 88                          | 90    | 252                 | 230        | 68                              |
| 2               | .62                                 | 227          |                                           | 2.0                                           | 11:30      | 21               | 5.5        | 850                | 96                          | 90    | 267                 | 232        | 67                              |
| 3               | 1.05                                | 228          |                                           | 3.4                                           | 11:33      | 24               | 6.5        | 861                | 98                          | 90    | 268                 | 234        | 66                              |
| 4               | 1.25                                | 229          |                                           | 4.1                                           | 11:36      | 27               | 7.0        | 864                | 104                         | 92    | 258                 | 230        | 65                              |
| 5               | .72                                 | 223          |                                           | 2.3                                           | 11:40      | 30               | 5.0        | 867                | 106                         | 92    | 253                 | 232        | 65                              |
|                 |                                     |              |                                           |                                               |            |                  |            | 862                |                             |       |                     |            |                                 |
|                 |                                     |              |                                           |                                               |            |                  |            | 869                |                             |       |                     |            |                                 |
| Sum             | 1.02                                | 231.7        |                                           | 3.36                                          |            | 60               |            | 63                 |                             |       |                     |            |                                 |
| RMSE            |                                     |              |                                           |                                               |            |                  |            | 470                |                             | 101.6 |                     |            |                                 |

Ambient Temp. 82 F  
Bar. Press. 29.83 "Hg  
Stat. Press. - .95 "WC

IMPINGER WATER  
Final 4.38 ml  
Init. 2.00 ml  
Conc. 4.38 ml

DESICCANT  
Final 2.22 gms  
Init. 400.7 gms  
Gain 402.52 gms

ORSAT ANALYSED  
Time - 1:15  
CO<sub>2</sub> - 4 1/2 %  
O<sub>2</sub> - 14 1/2 % CO -

Final Leak Rate 2.00 cfm 10.5 inches Hg

Notes:

CEMEON ASSOCIATES, INC.  
PARTICULATE FIELD DATA SHEET

Plant Millersburg High School City Millersburg, Pa. Operator M. Perry  
Location Baghouse Stack Test No. 45-2 Date 6-28-91  
Stack Dimension 38" Desiccant No. D-234 Filter No. 120596  
Pitot Coefficient .84 Pitot No. 21 Meterbox No. RMC 2518  
Meterbox (Cal. Y) 1.007 Nozzle Diameter 5/16" Nozzle I.D. \_\_\_\_\_

| Trav. Point No. | Velocity Head ( $\Delta P$ ) H <sub>2</sub> O | Gas Temp. ° F | Orifice Uncorr. Inches (H <sub>2</sub> O) | $\Delta H$ Corr. for Moist. Inches (H <sub>2</sub> O) | Clock Time | Sample Time Mins. | Vacuum "HG | Meter Read Cu. Ft | Meter Temperature Degrees F |        | Temperatures Degrees F |            |                                 |
|-----------------|-----------------------------------------------|---------------|-------------------------------------------|-------------------------------------------------------|------------|-------------------|------------|-------------------|-----------------------------|--------|------------------------|------------|---------------------------------|
|                 |                                               |               |                                           |                                                       |            |                   |            |                   | In                          | Out    | Probe 230 275          | Filter Box | Last Impinger 68 degree or less |
| Init.           | XXXXXX                                        | XXXXXX        | Factor                                    | (32)                                                  | 11:41      |                   | XXXX       |                   | XXXXXX                      | XXXXXX | XXXXXX                 | XXXXXX     | XXXXXXXXXX                      |
| C-1             | 1.16                                          | 229           |                                           | 3.8                                                   | 11:44      | 33                | 7.5        | 870               |                             |        |                        |            |                                 |
| 2               | 1.43                                          | 231           |                                           | 4.7                                                   | 11:47      | 36                | 7.5        | 873               | 110                         | 94     | 263                    | 232        | 67                              |
| 3               | 1.51                                          | 233           |                                           | 4.9                                                   | 11:50      | 39                | 8.0        | 877               | 112                         | 95     | 265                    | 236        | 65                              |
| 4               | 1.40                                          | 232           |                                           | 4.5                                                   | 11:53      | 42                | 7.5        | 881               | 114                         | 96     | 257                    | 241        | 63                              |
| 5               | 1.41                                          | 230           |                                           | 4.6                                                   | 11:56      | 45                | 7.5        | 884               | 116                         | 97     | 255                    | 246        | 61                              |
| D-1             | .57                                           | 224           |                                           | 1.8                                                   | 12:00      | 48                | 4.5        | 887               | 116                         | 98     | 253                    | 249        | 60                              |
| 2               | .68                                           | 230           |                                           | 2.1                                                   | 12:05      | 51                | 5.0        | 895               | 110                         | 97     | 259                    | 251        | 65                              |
| 3               | 1.20                                          | 231           |                                           | 3.9                                                   | 12:08      | 54                | 7.0        | 895               | 112                         | 98     | 267                    | 256        | 63                              |
| 4               | 1.05                                          | 236           |                                           | 3.3                                                   | 12:11      | 57                | 6.5        | 895               | 116                         | 98     | 266                    | 261        | 61                              |
| 5               | 1.25                                          | 233           |                                           | 4.0                                                   | 12:14      | 60                | 7.5        | 898               | 118                         | 100    | 263                    | 268        | 60                              |
|                 |                                               |               |                                           |                                                       |            |                   |            | 865               | 120                         | 100    | 260                    | 265        | 60                              |

# MEMON ASSOCIATES, INC. PARTICULATE FIELD DATA SHEET

Plant Millmont Steel Mill City Pitt. Pa. Operator M. Pany  
 Location Baghouse Stack Test No. 145-3 Date 6-28-91  
 Stack Dimension 38" Desiccant No. D-227 Filter No. 120597  
 Pitot Coefficient .84 Pitot No. 21 Meterbox No. RAC 2518  
 Meterbox (Cal. Y) 1.007 Nozzle Diameter 1/4" Nozzle I.D. \_\_\_\_\_

| Trav. Point No. | Velocity Head (ΔP) H <sub>2</sub> O | Gas Temp. ° F | Orifice Uncorr. Inches (H <sub>2</sub> O) | ΔH Corr. for Moist. Inches (H <sub>2</sub> O) | Clock Time | Sample Time Min. | Vacuum "HG | Meter Read Cu. Ft. | Meter Temperature Degree F In | Meter Temperature Degree F Out | Probe 230 275 | Filter Box | Last Impinger 45 degree or less |
|-----------------|-------------------------------------|---------------|-------------------------------------------|-----------------------------------------------|------------|------------------|------------|--------------------|-------------------------------|--------------------------------|---------------|------------|---------------------------------|
| Init.           | XXXXXX                              | XXXXX         | Factor                                    | (.50)                                         | 104        | 0                | XXXX       | 399                | XXXX                          | XXXX                           | XXXX          | XXXX       | XXXX                            |
| A-1             | .85                                 | 225           |                                           | 1.7                                           | 107        | 3                | 3.0        | 392                | 96                            | 97                             | 271           | 230        | 68                              |
| 2               | .75                                 | 228           |                                           | 1.5                                           | 110        | 6                | 2.5        | 903                | 102                           | 98                             | 272           | 237        | 66                              |
| 3               | 1.15                                | 229           |                                           | 2.3                                           | 113        | 9                | 4.0        | 906                | 108                           | 98                             | 267           | 244        | 64                              |
| 4               | 1.23                                | 232           |                                           | 2.5                                           | 116        | 12               | 4.0        | 909                | 110                           | 98                             | 257           | 247        | 62                              |
| 5               | 1.25                                | 233           |                                           | 2.5                                           | 119        | 15               | 4.0        | 912                | 112                           | 98                             | 255           | 250        | 60                              |
| B-1             | .57                                 | 243           |                                           | 1.1                                           | 125        | 18               | 2.0        | 914                | 116                           | 100                            | 259           | 240        | 65                              |
| 2               | 1.08                                | 240           |                                           | 2.1                                           | 128        | 21               | 3.5        | 915                | 118                           | 100                            | 271           | 250        | 63                              |
| 3               | 1.10                                | 242           |                                           | 2.1                                           | 131        | 24               | 3.5        | 919                | 116                           | 100                            | 266           | 251        | 61                              |
| 4               | 1.40                                | 248           |                                           | 2.7                                           | 134        | 27               | 4.0        | 921                | 116                           | 100                            | 260           | 250        | 59                              |
| 5               | 1.12                                | 240           |                                           | 2.2                                           | 137        | 30               | 3.5        | 924                | 118                           | 102                            | 255           | 252        | 58                              |
|                 |                                     |               |                                           |                                               |            |                  | 1.007 X    | 309                |                               |                                |               |            |                                 |
| Sum-Only        | 1.07                                | 238.2         |                                           | 2.12                                          |            | 60               |            | 574                |                               | 107.1                          |               |            |                                 |

Ambient Temp. 28° F  
 Bar. Pres. 29.52 "Hg  
 Stat. Pres. -.95 "WC

IMPINGER WATER  
 Final 723 ml  
 Init. 200 ml  
 Cond. 223 ml

DESICCANT  
 Final 342.2 gms  
 Init. 402.4 gms  
 Gain 60.2 gms

ORSAT ANALYSED  
 Time 14:42  
 CO<sub>2</sub> 4.7%  
 O<sub>2</sub> 14.2% CO 0.0%

Final Leak Rate 0.000 cfm 7.5 inches Hg

Notes: \_\_\_\_\_

HEMEON ASSOCIATES, INC.  
PARTICULATE FIELD DATA SHEET

Plant Mill Creek Sup. Station City Mill Creek, Pa. Operator A. Denny  
 Location Baghouse Stack Test No. 115-3 Date 6-28-91  
 Stack Dimension 38" Desiccant No. D-227 Filter No. 120597  
 Pitot Coefficient .84 Pitot No. 21 Meterbox No. RAC 2518  
 Meterbox (Cal. Y) 1007 Nozzle Diameter 1/4" Nozzle I.D. \_\_\_\_\_

| Trav. Point No. | Velocity Head (H <sub>P</sub> ) | Gas Temp. °F | Orifice Uncorr. Inches (H <sub>2</sub> O) | Δ H. Corr. for Moist. Inches (H <sub>2</sub> O) | Clock Time | Sample Time Mins. | Vacuum "HG | Meter Read Cu. Ft | Meter Temperature Degrees F |       | Temperatures Degrees F |            |                                 |
|-----------------|---------------------------------|--------------|-------------------------------------------|-------------------------------------------------|------------|-------------------|------------|-------------------|-----------------------------|-------|------------------------|------------|---------------------------------|
|                 |                                 |              |                                           |                                                 |            |                   |            |                   | In                          | Out   | Probe 230 275          | Filter Box | Last Impinger 68 degree or less |
| Init.           | XXXXXX                          | XXXXXX       | Factor                                    |                                                 |            |                   | XXXX       |                   | XXXXX                       | XXXXX | XXXXX                  | XXXXXX     | XXXXXXXXXX                      |
| C-1             | 1.10                            | 244          |                                           | 2.1                                             | 1:40       |                   |            | 926               |                             |       |                        |            |                                 |
| 2               | 1.07                            | 252          |                                           | 2.1                                             | 1:43       | 33                | 3.5        | 965               | 110                         | 102   | 265                    | 252        | 67                              |
| 3               | 1.34                            | 248          |                                           | 2.6                                             | 1:46       | 36                | 3.5        | 990               | 112                         | 102   | 263                    | 250        | 66                              |
| 4               | 1.28                            | 245          |                                           | 2.5                                             | 1:49       | 39                | 4.0        | 935               | 114                         | 104   | 260                    | 252        | 65                              |
| 5               | 1.05                            | 240          |                                           | 2.1                                             | 1:52       | 42                | 4.0        | 933               | 116                         | 105   | 257                    | 253        | 63                              |
| D-1             | .98                             | 237          |                                           | 1.9                                             | 1:55       | 45                | 3.5        | 905               | 118                         | 106   | 254                    | 251        | 63                              |
| 2               | .88                             | 235          |                                           | 1.7                                             | 1:58       | 48                | 3.5        | 925               | 110                         | 104   | 263                    | 257        | 65                              |
| 3               | 1.04                            | 238          |                                           | 2.0                                             | 2:05       | 51                | 3.5        | 945               | 112                         | 104   | 260                    | 255        | 64                              |
| 4               | 1.10                            | 235          |                                           | 2.2                                             | 2:08       | 54                | 3.5        | 945               | 114                         | 104   | 259                    | 254        | 63                              |
| 5               | 1.25                            | 229          |                                           | 2.5                                             | 2:11       | 57                | 3.5        | 995               | 116                         | 105   | 256                    | 254        | 62                              |
|                 |                                 |              |                                           |                                                 | 2:14       | 60                | 4.0        | 601               | 118                         | 106   | 253                    | 252        | 60                              |

HUMPHON ASSOCIATED VELOCITY - SHEET NO. 1

Date 6-28-91

Plant & equipment Midwest Sup. Station

Vol. Sept. 92

|             |                 |                        |              | Stack dimen.<br><u>35" x 26 1/2"</u> |                 |                        |              | Pitot no.   |                 |                        |              | Pitot coeff. |                 |                        |              |
|-------------|-----------------|------------------------|--------------|--------------------------------------|-----------------|------------------------|--------------|-------------|-----------------|------------------------|--------------|--------------|-----------------|------------------------|--------------|
| Time of day | Trav. point no. | Pitot reading in. w.c. | Gas temp. °F | Time of day                          | Trav. point no. | Pitot reading in. w.c. | Gas temp. °F | Time of day | Trav. point no. | Pitot reading in. w.c. | Gas temp. °F | Time of day  | Trav. point no. | Pitot reading in. w.c. | Gas temp. °F |
|             | A-1             | 1.0                    | 158          |                                      | C-1             | 1.15                   | 222          |             |                 |                        |              |              |                 |                        |              |
|             | 2               | 1.4                    | 166          |                                      | 2               | 1.45                   | 244          |             |                 |                        |              |              |                 |                        |              |
|             | 3               | 1.6                    | 183          |                                      | 3               | 1.60                   | 252          |             |                 |                        |              |              |                 |                        |              |
|             | 4               | 1.5                    | 195          |                                      | 4               | 1.84                   | 280          |             |                 |                        |              |              |                 |                        |              |
|             | 5               | 1.4                    | 207          |                                      | 5               | 2.1                    | 284          |             |                 |                        |              |              |                 |                        |              |
|             | B-1             | 1.50                   | 217          |                                      | D-1             | 1.55                   | 226          |             |                 |                        |              |              |                 |                        |              |
|             | 2               | 1.20                   | 229          |                                      | 2               | 1.65                   | 244          |             |                 |                        |              |              |                 |                        |              |
|             | 3               | 1.85                   | 232          |                                      | 3               | 1.2                    | 274          |             |                 |                        |              |              |                 |                        |              |
|             | 4               | 1.80                   | 235          |                                      | 4               | 1.5                    | 288          |             |                 |                        |              |              |                 |                        |              |
|             | 5               | 1.60                   | 236          |                                      | 5               | 1.2                    | 296          |             |                 |                        |              |              |                 |                        |              |

RMS Average  $H_v$ ,  $h_v$  from 44 readings =

Average gas temp. °F from 233 readings =

Barometer pressure 29.48 in. Hg

Static pressure 0.95 in. w.c.

3.5  
8 1/2  
7 1/2  
4 1/2  
1 1/2

7  
14  
21  
28  
35

Mill Creek Twp

2:45 am To 8:45 am

ADDRESS

CITY

STATE

ZIP

PHONE

SOURCE ID NUMBER

PROCESS EQUIPMENT

OPERATING MODE

Asphalt Plant

80 Ton / hour

CONTROL EQUIPMENT

OPERATING MODE

Baghouse

Normal

DESCRIBE EMISSION POINT

HEIGHT ABOVE

GROUND LEVEL

HEIGHT RELATIVE

TO OBSERVER

DISTANCE FROM OBSERVER

DIRECTION FROM OBSERVER

24'

20'

35 yds

West

DESCRIBE EMISSIONS

EMISSION COLOR

PLUME TYPE: CONTINUOUS ☐

INTERMITTENT ☐

WATER DROPLETS PRESENT

IS WATER DROPLET PLUME

NO ☐

YES ☐

ATTACHED ☐

DETACHED ☐

AT WHAT POINT IN THE PLUME WAS OPACITY DETERMINED

DESCRIBE BACKGROUND

SKY

BACKGROUND COLOR

SKY CONDITIONS

Blue

Hazy

WIND SPEED

WIND DIRECTION

5-10

from West

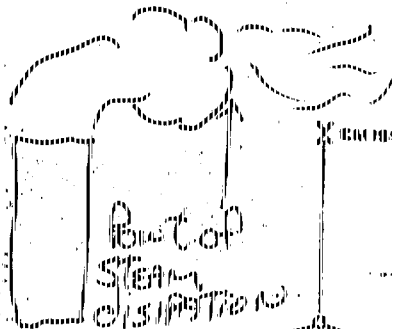
AMBIENT TEMP.

WET BULB TEMP.

RELATIVE HUMIDITY

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



X EMISSION POINT

Baghouse

OBSERVER'S POSITION

COMMENTS

Test Run #1

AVERAGE OPACITY FOR HIGHEST PERIOD

NUMBER OF READINGS ABOVE

RANGE OF OPACITY READINGS

4 WERE

MINIMUM

MAXIMUM

OBSERVER'S NAME (PRINT)

James Campbell

OBSERVER'S SIGNATURE

DATE

ORGANIZATION

HEMPON ASS.

CERTIFIED BY

ETA

VERIFIED BY

DATE

DATE

SIGNATURE

TITLE

DATE

DATE

DATE

Mill Creek Twp

9:45 AM

10:10 AM

10:08 AM

11:25 AM

ADDRESS

CITY

STATE

ZIP

PHONE

SOURCE ID NUMBER

PROCESS EQUIPMENT

Asphalt Plant

OPERATING MODE

50 Ton Per Hr.

CONTROL EQUIPMENT

Backhouse

OPERATING MODE

Normal

DESCRIPTOR EMISSION POINT

HEIGHT ABOVE

GROUND LEVEL 24'

HEIGHT RELATIVE

TO OBSERVER 20'

DISTANCE FROM OBSERVER

3500S

DIRECTION FROM OBSERVER

WEST

DESCRIPTOR EMISSION

EMISSION COLOR

PLUME TYPE: CONTINUOUS

POSITIVE ☐ INTERMITTENT ☐

WATER DROPLET PRESENT

NO ☐

YES ☐

IF WATER DROPLET PLUME

ATTACHED ☐ DETACHED ☐

AT WHAT POINT IN THE PLUME WAS OPACITY DETERMINED

DESCRIPTOR BACKGROUND

Sky

BACKGROUND COLOR

Blue

SKY CONDITIONS

Hazy

WIND DIRECTION

5-10

WIND DIRECTION

from west

AMBIENT TEMP.

WET BULB TEMP.

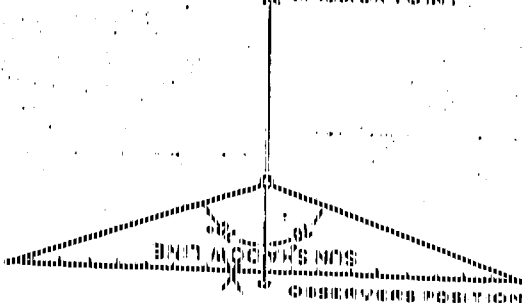
RELATIVE HUMIDITY

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



EMISSION POINT



| SEC | 0 | 15 | 30 | 45 | SEC | 0 | 15 | 30 | 45 |
|-----|---|----|----|----|-----|---|----|----|----|
| 1   | 0 | 0  | 0  | 0  | 31  | 0 | 0  | 0  | 0  |
| 2   | 0 | 0  | 0  | 0  | 32  | 0 | 0  | 0  | 0  |
| 3   | 0 | 0  | 0  | 0  | 33  | 0 | 0  | 0  | 0  |
| 4   | 0 | 0  | 0  | 0  | 34  | 0 | 0  | 0  | 0  |
| 5   | 0 | 0  | 0  | 0  | 35  | 0 | 0  | 0  | 0  |
| 6   | 0 | 0  | 0  | 0  | 36  | 0 | 0  | 0  | 0  |
| 7   | 0 | 0  | 0  | 0  | 37  | 0 | 0  | 0  | 0  |
| 8   | 0 | 0  | 0  | 0  | 38  | 0 | 0  | 0  | 0  |
| 9   | 0 | 0  | 0  | 0  | 39  | 0 | 0  | 0  | 0  |
| 10  | 0 | 0  | 0  | 0  | 40  | 0 | 0  | 0  | 0  |
| 11  | 0 | 0  | 0  | 0  | 41  | 0 | 0  | 0  | 0  |
| 12  | 0 | 0  | 0  | 0  | 42  | 0 | 0  | 0  | 0  |
| 13  | 0 | 0  | 0  | 0  | 43  | 0 | 0  | 0  | 0  |
| 14  | 0 | 0  | 0  | 0  | 44  | 0 | 0  | 0  | 0  |
| 15  | 0 | 0  | 0  | 0  | 45  | 0 | 0  | 0  | 0  |
| 16  | 0 | 0  | 0  | 0  | 46  | 0 | 0  | 0  | 0  |
| 17  | 0 | 0  | 0  | 0  | 47  | 0 | 0  | 0  | 0  |
| 18  | 0 | 0  | 0  | 0  | 48  | 0 | 0  | 0  | 0  |
| 19  | 0 | 0  | 0  | 0  | 49  | 0 | 0  | 0  | 0  |
| 20  | 0 | 0  | 0  | 0  | 50  | 0 | 0  | 0  | 0  |
| 21  | 0 | 0  | 0  | 0  | 51  | 0 | 0  | 0  | 0  |
| 22  | 0 | 0  | 0  | 0  | 52  | 0 | 0  | 0  | 0  |
| 23  | 0 | 0  | 0  | 0  | 53  | 0 | 0  | 0  | 0  |
| 24  | 0 | 0  | 0  | 0  | 54  | 0 | 0  | 0  | 0  |
| 25  | 0 | 0  | 0  | 0  | 55  | 0 | 0  | 0  | 0  |
| 26  | 0 | 0  | 0  | 0  | 56  | 0 | 0  | 0  | 0  |
| 27  | 0 | 0  | 0  | 0  | 57  | 0 | 0  | 0  | 0  |
| 28  | 0 | 0  | 0  | 0  | 58  | 0 | 0  | 0  | 0  |
| 29  | 0 | 0  | 0  | 0  | 59  | 0 | 0  | 0  | 0  |
| 30  | 0 | 0  | 0  | 0  | 60  | 0 | 0  | 0  | 0  |

AVERAGE OPACITY PER HIGHEST PERIOD 0 NUMBER OF READINGS ABOVE RANGE OF OPACITY READINGS 0 WERE 0

RANGE OF OPACITY READINGS 0 MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT) James Campbell

OBSERVER'S SIGNATURE DATE

ORGANIZATION

CERTIFIED BY

DATE

VERIFIED BY

DATE

COMMENTS

Test Run

Stop Test 1008 Truck full

Restart 11:25

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE

DATE

Miller Creek Twp

1:15 PM

2:15 PM

ADDRESS

CITY STATE ZIP

PHONE SOURCE ID NUMBER

PROCESS EQUIPMENT OPERATING MODE  
Asphalt Plant 80700 PPS hr

CONTROL EQUIPMENT OPERATING MODE  
Boilerhouse normal

DESCRIPTION EMISSION POINT

HEIGHT ABOVE GROUND LEVEL 24' HEIGHT RELATIVE TO OBSERVER 20'

DISTANCE FROM OBSERVER 36 YDS DIRECTION FROM OBSERVER WEST

DESCRIPTION EMISSIONS

EMISSION COLOR PLUME TYPE CONTINUOUS ☐ POSITIVE ☐ INTERMITTENT ☐

WATER DROPLETS PRESENT NO ☐ YES ☐ IF WATER DROPLET PLUME ATTACHED ☐ DETACHED ☐

AT WHAT POINT IN THE PLUME WAS OPACITY DETERMINED

DESCRIPTIVE BACKGROUND SKY

BACKGROUND COLOR BLUE SKY CONDITIONS CLEAR

WIND SPEED 5-10 WIND DIRECTION FROM WEST

AIR TEMP. WET BULB TEMP. RELATIVE HUMIDITY

|    | 100 | 0 | 15 | 30 | 45 | 100 | 0 | 15 | 30 | 45 |
|----|-----|---|----|----|----|-----|---|----|----|----|
| 1  | 0   | 0 | 0  | 0  | 0  | 31  | 0 | 0  | 0  | 0  |
| 2  | 0   | 0 | 0  | 0  | 0  | 32  | 0 | 0  | 0  | 0  |
| 3  | 0   | 0 | 0  | 0  | 0  | 33  | 0 | 0  | 0  | 0  |
| 4  | 0   | 0 | 0  | 0  | 0  | 34  | 0 | 0  | 0  | 0  |
| 5  | 0   | 0 | 0  | 0  | 0  | 35  | 0 | 0  | 0  | 0  |
| 6  | 0   | 0 | 0  | 0  | 0  | 36  | 0 | 0  | 0  | 0  |
| 7  | 0   | 0 | 0  | 0  | 0  | 37  | 0 | 0  | 0  | 0  |
| 8  | 0   | 0 | 0  | 0  | 0  | 38  | 0 | 0  | 0  | 0  |
| 9  | 0   | 0 | 0  | 0  | 0  | 39  | 0 | 0  | 0  | 0  |
| 10 | 0   | 0 | 0  | 0  | 0  | 40  | 0 | 0  | 0  | 0  |
| 11 | 0   | 0 | 0  | 0  | 0  | 41  | 0 | 0  | 0  | 0  |
| 12 | 0   | 0 | 0  | 0  | 0  | 42  | 0 | 0  | 0  | 0  |
| 13 | 0   | 0 | 0  | 0  | 0  | 43  | 0 | 0  | 0  | 0  |
| 14 | 0   | 0 | 0  | 0  | 0  | 44  | 0 | 0  | 0  | 0  |
| 15 | 0   | 0 | 0  | 0  | 0  | 45  | 0 | 0  | 0  | 0  |
| 16 | 0   | 0 | 0  | 0  | 0  | 46  | 0 | 0  | 0  | 0  |
| 17 | 0   | 0 | 0  | 0  | 0  | 47  | 0 | 0  | 0  | 0  |
| 18 | 0   | 0 | 0  | 0  | 0  | 48  | 0 | 0  | 0  | 0  |
| 19 | 0   | 0 | 0  | 0  | 0  | 49  | 0 | 0  | 0  | 0  |
| 20 | 0   | 0 | 0  | 0  | 0  | 50  | 0 | 0  | 0  | 0  |
| 21 | 0   | 0 | 0  | 0  | 0  | 51  | 0 | 0  | 0  | 0  |
| 22 | 0   | 0 | 0  | 0  | 0  | 52  | 0 | 0  | 0  | 0  |
| 23 | 0   | 0 | 0  | 0  | 0  | 53  | 0 | 0  | 0  | 0  |
| 24 | 0   | 0 | 0  | 0  | 0  | 54  | 0 | 0  | 0  | 0  |
| 25 | 0   | 0 | 0  | 0  | 0  | 55  | 0 | 0  | 0  | 0  |
| 26 | 0   | 0 | 0  | 0  | 0  | 56  | 0 | 0  | 0  | 0  |
| 27 | 0   | 0 | 0  | 0  | 0  | 57  | 0 | 0  | 0  | 0  |
| 28 | 0   | 0 | 0  | 0  | 0  | 58  | 0 | 0  | 0  | 0  |
| 29 | 0   | 0 | 0  | 0  | 0  | 59  | 0 | 0  | 0  | 0  |
| 30 | 0   | 0 | 0  | 0  | 0  | 60  | 0 | 0  | 0  | 0  |

AVERAGE OPACITY FOR HIGHEST PERIOD 0 NUMBER OF READINGS ABOVE 5 WERE 0

RANGE OF OPACITY READINGS MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT) JAMES CAMPBELL

OBSERVER'S SIGNATURE DATE

ORGANIZATION HEMLOCK ASS

CERTIFIED BY ETA DATE 2/12/99

VERIFIED BY DATE

COMMENTS Test #3

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE TITLE DATE

Hudson Associates, Inc. report of 7/9/91  
to Millcreek Township, Erie, PA

E. PROCESS DATA

JUL 09 '91 15:09 MILLCREEK TOWNSHIP

DATE: 6/28

PTP

P. 1

WEATHER: Partly Cloudy w/ CRUIS in the morning

|                                   |                             |
|-----------------------------------|-----------------------------|
| LOCATION:                         | Special Mill Run            |
| MATERIAL MIXTURE:                 | 7.5                         |
| TONS:                             | 380                         |
| AGGREGATE TON:                    | 80                          |
| ASPHALT TON:                      | 217                         |
| ASPHALT GEM:                      |                             |
| FEED BIN PERCENTAGE RPM:          | BIN #1 35                   |
|                                   | BIN #2 26                   |
|                                   | BIN #3                      |
| ASPHALT SETPOINT:                 |                             |
| ASPHALT CONTENT:                  | 62.5                        |
| SPECIFIC GRAVITY LBS/GAL:         | 8.17                        |
| MOISTURE PERCENTAGE:              | BIN #1 3                    |
|                                   | BIN #2 1                    |
|                                   | BIN #3                      |
| MOISTURE COMPENSATION PERCENTAGE: | 2                           |
| BURNER:                           | AUTO/MANUAL                 |
| BURNER RATE:                      | 35                          |
| DRUM OUTLET TEMP:                 | 215                         |
| STACK INLET TEMP:                 | 250                         |
| STACK OUTLET TEMP:                | 275                         |
| DAMPER CONTROL:                   | AUTO/MANUAL                 |
| EMULSION TANK:                    | START 4:27                  |
|                                   | ADDITIONAL SUPPLEMENTS 5:20 |
|                                   | SUB TOTAL 6:18              |
|                                   | USED 9:20                   |
|                                   | TOTAL 22:29                 |

25.00 30.00

Hampton Associates, Inc. report of 7/9/91  
to Mallicoak Township, Erie, PA

F. VISIBLE EMISSION CERTIFICATES

# VISIBLE EMISSIONS EVALUATION

*This is to certify that*

*James Campbell*

did complete a course in the methods of determining opacity of visible emissions from sources as specified by Federal Reference Method 9 conducted by Eastern Technical Associates of Raleigh, North Carolina



*February 11, 1991*

# VISIBLE EMISSIONS EVALUATOR

This is to certify that

James Campbell

met the specifications of Federal Reference Method, and qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, North Carolina. This certificate is valid for six months from date of issue.

Thomas H. Lee

W. Lee

W. Lee

330536

James

January 13, 1991