AP42 Section: 11.1

Reference Number: 73

Title: Results Of The September 30, 1994 NSPS Particulate Emission Compliance Test On The River City Portable Asphalt Plant Located In Hugo, Minnesota,

Interpoll Laboratories, Inc., Circle Pines, MN,

October 26, 1994.

AP-42 Section 11.1
Reference
Report Sect. 4
Reference 73

Interpoll Laboratories, Inc.
4500 Ball Road N.E.
Circle Pines, Minnesota 55014-1819

TEL: (612) 786-6020
FAX: (612) 786-7854

RESULTS OF THE SEPTEMBER 30, 1994 NSPS PARTICULATE EMISSION COMPLIANCE TEST ON THE RIVER CITY PORTABLE ASPHALT PLANT LOCATED IN HUGO, MINNESOTA.

Submitted to:

RIVER CITY ASPHALT
P.O. Box 183
Savage, Minnesota 55378

Attention:

Rich Carron

AQD FILE # 3766
CDU Staff [illegible]
Foxpro 12/1/94
Received 11/30/94
Acknowledged 12/1/1994
Quick-Checked 12/1/94
Priority = 1 2 3 4 5
Reviewed 12/6/94
Final letter draft 12/6/94
Final letter sent 12/7/94

Approved by:

Daniel Despen
Manager
Stationary Source Testing Department

Report Number 4-4038
October 26, 1994
EJ/ehj

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APPENDICES:

ABBREVIATIONS

ACFM	actual cubic feet per minute
cc (ml)	cubic centimeter (milliliter)
DSCFM	dry standard cubic foot of dry gas per minute
DSML	dry standard milliliter
DEG-F (°F)	degrees Fahrenheit
DIA.	diameter
FP	finished product for plant
FT/SEC	feet per second
g	gram
GPM	gallons per minute
GR/ACF	grains per actual cubic foot
GR/DSCF	grains per dry standard cubic foot
g/dscm	grams per dry standard cubic meter
HP	horsepower
HRS	hours
IN.	inches
IN.HG.	inches of mercury
IN.WC.	inches of water
LB	pound
LB/DSCF	pounds per dry standard cubic foot
LB/HR	pounds per hour
LB/10^6BTU	pounds per million British Thermal Units heat input
LB/MMBTU	pounds per million British Thermal Units heat input
LTPD	long tons per day
MW	megawatt
mg/Nm^3	milligrams per dry standard cubic meter
ug/Nm^3	micrograms per dry standard cubic meter
microns (um)	micrometer
MIN.	minutes
ng	nanograms
ohm-cm	ohm-centimeter
PM	particulate matter
PPH	pounds per hour
PPM	parts per million
ppmC	parts per million carbon
ppm,d	parts per million, dry
ppm,w	parts per million, wet
ppt	parts per trillion
PSI	pounds per square inch
SQ.FT.	square feet
TPD	tons per day
ug	micrograms
v/v	percent by volume
w/w	percent by weight
<	≤ (when following a number)

Standard conditions are defined as 68°F (20°C) and 29.92 IN. of mercury pressure.

g:\stack\wp\misc\abbrev.frm

INTERPOLL LABORATORIES, INC.
(612) 786-6020

Certifications Required For Performance Test Reports

Note: All performance test reports must contain a certification by the responsible parties that the test results have been reported accurately, that the field data is a true representation of the sampling procedures, and that the process data is a true indicator of the operating parameters of the emissions unit at the time of the performance test. (Ref. Minn. Rules pt. 7017.2040). Performance test results will not be accepted without certification of the report.

1. Certification of sampling procedures by the team leader of the personnel conducting the sampling procedures:

"I certify under penalty of law that the sampling procedures were performed in accordance with the approved test plan and that the data presented in this test report are, to the best of my knowledge and belief, true, accurate, and complete. All exceptions are listed and explained below."

Signature: _____ Printed Name of Person Signing: Edward Jurs
Title: Env. Technician Date: 9-30-94

2. Certification of analytical procedures by the person responsible for the laboratory analysis of field samples:

"I certify under penalty of law that the analytical procedures were performed in accordance with the requirements of the test methods and that the data presented for use in the test report were, to the best of my knowledge and belief, true, accurate, and complete. All exceptions are listed and explained below."

Signature: David Schneider Printed Name of Person Signing: David Schneider
Title: QA Officer Date: 10/14/94

3. Certification of test report by the senior staff person at the testing company who is responsible for compiling and checking the test report:

"I certify under penalty of law that this test report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the test information submitted. Based on my inquiry of the person or persons who performed sampling and analysis relating to the performance test, the information submitted in this test report is, to the best of my knowledge and belief, true, accurate, and complete. All exceptions are listed and explained below."

Signature: _____ Printed Name of Person Signing: _____
Title: _____ Date: _____

4. Certification of test report by owner or operator of the emission facility:

"I certify under penalty of law that the information submitted in this test report accurately reflects the operating conditions at the emission facility during this performance test and describes the date and nature of all operational and maintenance activities that were performed on process and control equipment during the month prior to the performance test. Based on my inquiry of the person or persons who performed the operational and maintenance activities, the information submitted in this test report is, to the best of my knowledge and belief, true, accurate, and complete. All exceptions are listed and explained below."

Signature: _____ Printed Name of Person Signing: Todd Siedschlaw
Title: Plant Manager Date: 9.30.94

1-5-94-G:\STACK\WP\FORMS\S-480

1 INTRODUCTION

On September 30, 1994 Interpoll Laboratories personnel conducted a NSPS Particulate and Visible Emission Compliance Test on the River City Asphalt, Inc. Stationary Asphalt Plant located in Hugo, Minnesota. On-site testing was performed by E. Juers, Duane VanHoever, and S. Bergeron. Coordination between testing activities and plant operation was provided by Todd Smedshammer of River City Asphalt, Inc. A portion of the test was witnessed Robert Servian of the Minnesota Pollution Control Agency.

The unit tested is a Boeing 400 Portable Drum Mix Plant. It has a rated capacity of 400 TONS/HR at an aggregate moisture content of 4 percent. The plant typically produces 350 TONS/HR at an aggregate moisture content of 5 percent. A Stan Steel Model 2F50 Baghouse is used to control particulate emissions from the plant. The process equipment burned No. 6 fuel oil, processed 75 percent virgin aggregate, 25 percent recycle, and operated normally during testing.

Evaluations were performed in accordance with EPA Methods 1-5 and 9, CFR Title 40, Part 60, Appendix A (revised July 1, 1994). A preliminary determination of the gas linear velocity profile was made before the first particulate determination to allow selection of the appropriate nozzle diameter required for isokinetic sample withdrawal. An Interpoll Labs sampling train which meets or exceeds specifications in the above-cited reference was used to extract particulate samples by means of a heated glass-lined probe. Wet catch samples were collected in the back half of the Method 5 sampling train and analyzed as per Minnesota Rules, Part 7011.0725.

An integrated flue gas sample was extracted simultaneously with each particulate sample using a specially designed gas sampling system. Integrated flue gas samples were collected in 44-liter Tedlar bags housed in a protective aluminum container. After sampling was complete, the bags were sealed and returned to the laboratory for Orsat analysis. Prior to sampling, the Tedlar bags are leak checked at 15 IN.HG. vacuum with an in-line rotameter. Bags with any detectable inleakage are discarded.

Testing was conducted from a horizontal row of five test ports on the rectangular stack. These ports are 4.11 equivalent duct diameters downstream and 1.25 diameters

upstream of the stack exit. A 25-point traverse was used to collect representative particulate samples. Each traverse point was sampled 2.5 minutes to give a total sampling time of 62.5 minutes per run. Visible emission determinations were performed by S. Bergeron, an EPA-certified observer.

The important results of the test are summarized in Section 2. Air emission results are presented in Section 3. Fuel analysis results are presented in Section 4. Field data and all other supporting information are presented in the appendices.

2 SUMMARY AND DISCUSSION

The results of the particulate emission test are summarized in Table 1a and 1b. The particulate concentration averaged 0.0477 GR/DSCF (Dry + Organic Wet Catch) and 0.0099 GR/DSCF (Dry Catch Only). New Source Performance Standards limit particulate emissions (Dry Catch Only) from asphaltic concrete plants to 0.04 GR/DSCF (CFR Title 40 Part 60 Subpart I). Opacity averaged 0.42 percent.

No difficulties were encountered in the field or in the laboratory evaluation of the samples. On the basis of this fact and a complete review of the entire data and results, it is our opinion that the results reported herein are accurate and closely reflect the actual values which existed at the time the test was performed.

Table 1a. Summary of the Results of the September 30, 1994 NSPS Particulate Emission Compliance Test on the Portable Asphalt Plant Stack at the River City Ashphalt Plant Located in Hugo, Minnesota.

ITEM	Run 1	Run 2	Run 3
Date of test	09-30-94	09-30-94	09-30-94
Time runs were done (HRS)	846/ 955	1025/1135	1200/1310
Process rate (TON/HR)			
recycle	114.0	116.0	120.3
aggregate	253.5	256.4	263.8
asphalt	15.8	16.0	16.4
total	383.3	388.4	400.5
Volumetric flow			
actual (ACFM)	50247	48075	49528
standard (DSCFM)	23877	22449	23399
Gas temperature (DEG-F)	241	250	255
Moisture content (%V/V)	34.63	35.00	33.75
Gas composition (%V/V,dry)			
carbon dioxide	8.00	8.70	8.30
oxygen	11.20	10.50	10.90
nitrogen	80.80	80.80	80.80
Isokinetic variation (%)	95.3	98.5	98.2
Part. emission rate (LB/HR)	5.48	9.57	13.38
Particulate concentration			
actual (GR/ACF)	.0127	.0232	.0315
standard (GR/DSCF)	.0268	.0497	.0667

Note: Dry + Organic Wet Catch

Table 1b. Summary of the Results of the September 30, 1994 NSPS Particulate Emission Compliance Test on the Portable Asphalt Plant Stack at the River City Ashphalt Plant Located in Hugo, Minnesota.

ITEM		Run 1	Run 2	Run 3
Date of test		09-30-94	09-30-94	09-30-94
Time runs were done	(HRS)	846/ 955	1025/1135	1200/1310
Process rate	(TON/HR)	114.0	116.0	120.3
recycle		253.5	256.4	263.8
aggregate		15.8	16.0	16.4
asphalt		383.3	388.4	400.5
total				
Volumetric flow				
actual	(ACFM)	50247	48075	49528
standard	(DSCFM)	23877	22449	23399
Gas temperature	(DEG-F)	241	250	255
Moisture content	(%V/V)	34.63	35.00	33.75
Gas composition	(%V/V,dry)			
carbon dioxide		8.00	8.70	8.30
oxygen		11.20	10.50	10.90
nitrogen		80.80	80.80	80.80
Isokinetic variation	(%)	95.3	98.5	98.2
Part. emission rate	(LB/HR)	2.16	1.95	1.78
Particulate concentration				
actual	(GR/ACF)	.00502	.00474	.00419
standard	(GR/DSCF)	.0106	.0101	.00886

Note: Dry Catch Only

* Federal regulations restrict particulate emissions from portable asphalt plants to .04 GR/DSCF, CFR Title 40, Part 60, Subpart I.

3 RESULTS

The results of all field and laboratory evaluations are presented in this section. Gas Composition (Orsat and Moisture) are presented first followed by the computer printout of the particulate results, the opacity determinations, and the preliminary flow rate determination.

The results have been calculated on a personal computer using programs written in extended basic specifically for source testing calculations. EPA-Published equations have been used as the basis of the calculation techniques in these programs. The particulate emission rate has been calculated using the product of the concentration times flow method.

3.1 Results of Orsat & Moisture Analyses

Test No. 1
Portable Asphalt Plant Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	Run 1	Run 2	Run 3
Date of run	09-30-94	09-30-94	09-30-94
Dry basis (orsat)			
carbon dioxide.....	8.00	8.70	8.30
oxygen.....	11.20	10.50	10.90
nitrogen.....	80.80	80.80	80.80
Wet basis (orsat)			
carbon dioxide.....	5.23	5.66	5.50
oxygen.....	7.32	6.83	7.22
nitrogen.....	52.82	52.52	53.53
water vapor.....	34.63	35.00	33.75
Dry molecular weight.....	29.73	29.81	29.76
Wet molecular weight.....	25.67	25.68	25.79
Specific gravity.....	0.887	0.887	0.891
Water mass flow.....(LB/HR)	35475	33907	33441
FO	1.213	1.195	1.205

3.2 Results of Particulate Loading Determinations

Test No. 1
Portable Asphalt Plant Stack

Results of Particulate Loading Determinations-------Method 5

	Run 1	Run 2	Run 3
Date of run	09-30-94	09-30-94	09-30-94
Time run start/end.....(HRS)	846/ 955	1025/1135	1200/1310
Static pressure.....(IN.WC)	-0.19	-0.19	-0.19
Cross sectional area (SQ.FT)	14.91	14.91	14.91
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	542.0	527.0	511.0
desiccant.....(GRAMS)	12.0	20.0	27.0
total.....(GRAMS)	554.0	547.0	538.0
Total particulate material..			
.....collected(grams)	0.0856	0.1544	0.2153
Gas meter coefficient.....	1.0023	1.0023	1.0023
Barometric pressure..(IN.HG)	28.90	28.90	28.90
Avg. orif.pres.drop..(IN.WC)	2.07	1.99	2.13
Avg. gas meter temp..(DEF-F)	73.6	79.2	80.5
Volume through gas meter....			
at meter conditions...(CF)	51.23	50.29	52.38
standard conditions.(DSCF)	49.32	47.90	49.79
Total sampling time....(MIN)	62.50	62.50	62.50
Nozzle diameter.....(IN)	.308	.308	.308
Avg.stack gas temp ..(DEG-F)	241	250	255
Volumetric flow rate.....			
actual.....(ACFM)	50247	48075	49528
dry standard.....(DSCFM)	23877	22449	23399
Isokinetic variation.....(%)	95.3	98.5	98.2
Particulate concentration...			
actual.....(GR/ACF)	0.01272	0.02322	0.03151
dry standard.....(GR/DSCF)	0.02678	0.04974	0.06673
Particle mass rate...(LB/HR)	5.481	9.571	13.383

3.3 Results of Opacity Observations

Test No. 1
Portable Asphalt Plant Stack

Results of Opacity Observations ---------- EPA Method 9

PERCENT OPACITY	OPTICAL DENSITY	RELATIVE FREQUENCY (%)
0	0.0000	91.67
5	0.0223	8.33
10	0.0458	0.00
15	0.0706	0.00
20	0.0969	0.00
25	0.1249	0.00
30	0.1549	0.00
35	0.1871	0.00
40	0.2219	0.00
45	0.2596	0.00
50	0.3010	0.00
55	0.3468	0.00
60	0.3979	0.00
65	0.4559	0.00
70	0.5229	0.00
75	0.6021	0.00
80	0.6690	0.00
85	0.8239	0.00
90	1.0000	0.00
95	1.3010	0.00
99	2.0000	0.00
Avg Opac 0.42	Avg OD 0.0019	Time average

Observer: Sheryl Bergeron
Cert. Date: 04-07-94
Date of Observation: 09-30-94
Time of Observation: 1025/1125

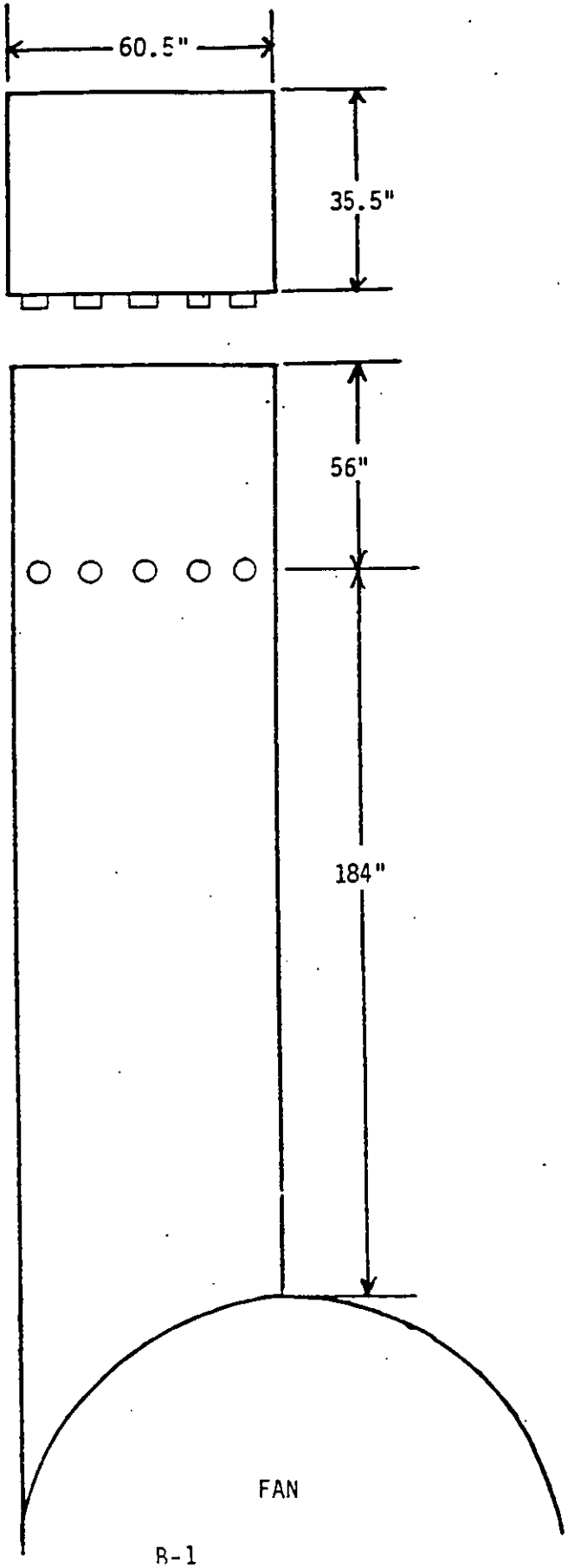
4 FUEL AND AGGREGATE ANALYSIS RESULTS

APPENDIX B

LOCATION OF TEST PORTS

RIVER CITY ASPHALT, INC.

PORTABLE BOEING 400



Not to scale

DJD 10/91

APPENDIX A

PRELIMINARY VOLUMETRIC FLOWRATE DETERMINATION

Test No. 1
Portable Asphalt Plant Stack

Results of Volumetric Flow Rate Determination-------Method 2

Date of Determination.....	09-30-94
Time of Determination.....(HRS)	815
Barometric pressure.....(IN.HG)	28.9
Pitot tube coefficient.....	.84
Number of sampling ports.....	5
Total number of points.....	25
Shape of duct.....	Rectangular
Duct width.....(IN)	35.5
Duct length.....(IN)	60.5
Duct area.....(SQ.FT)	14.91
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.19
Avg. gas temp.....(DEG-F)	242
Moisture content.....(% V/V)	34.63
Avg. linear velocity.....(FT/SEC)	54.5
Gas density.....(LB/ACF)	.04840
Molecular weight.....(LB/LBMOLE)	29.73
Mass flow of gas.....(LB/HR)	141673
Volumetric flow rate.....	
actual.....(ACFM)	48785
dry standard.....(DSCFM)	23158

APPENDIX C

FIELD DATA SHEETS

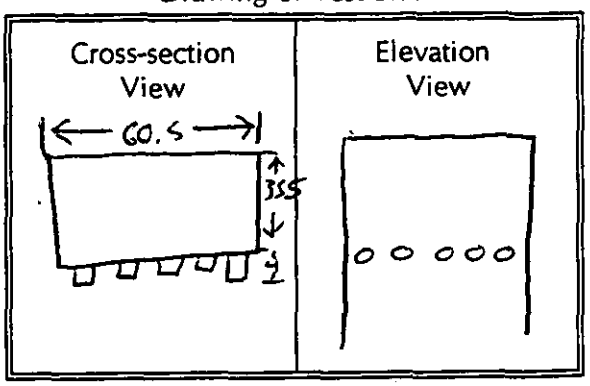
TABLE OF CONTENTS

INTERPOLL LABORATORIES, INC.
(612) 786-6020

EPA Method 2 Field Data Sheet

Job River City Asphalt
Source Asphalt plant
Test 1 Run Date ~~8-16-94~~ 9-30-94
Stack Dimen. 55.5" x 60.5 IN.
Dry Bulb 242 °F Wet bulb 164 °F
Manometer ☒ Reg. ☐ Exp ☐ Elec.
Barometric Pressure ~~29.82~~ 28.90 IN.HG
Static Pressure -.19 IN.WC
Operators E. Tuers - T.
Pitot No. 39V-4 C_p .840

Drawing of Test Site



Traverse Point No.	Fraction of Diameter	Distance From Stack Wall (IN.)	Distance From End of Port (IN.)	Velocity	Temp. of Gas (°F)
		Port Length: 4	IN.	Time Start:	HRS
A - 1	0.10	3.55	7.55	.48	
2	0.30	10.65	14.65	.48	
3	0.50	17.75	21.75	.42	
4	0.70	24.85	28.85	.35	
5	0.90	31.95	35.95	.27	
B - 1				.52	
2				.53	
3				.48	
4				.45	
5				.45	242
C - 1				.64	
2				.65	
3				.66	
4				.67	
5				.69	
D - 1				.73	
2				.78	
3				.81	
4				.82	
5				.74	
E - 1				.64	
2				.74	
3				.83	
4				.86	
5				.62	
Temp. Meas. Device & S/N: 12				Time End:	HRS

R or nothing = reg. manometer; S = expanded; E = electronic

INTERPOLL LABORATORIES, INC.
(612) 786-6020

Interpoll Laboratories EPA Method 5/17 Sample Log Sheet

Job River City Asphalt
Source Asphalt Plant
Method 5 Filter holder: Glass

Date ~~9-16-94~~ 9-30-94 Test 1 Run 1
No. of traverse points 25
Filter type: 4" GF

Sample Train Leak Check:
Pretest: ≤ 0.02 cfm at 15 IN.HG (vac) ☒
Post test: 0 cfm at 15 IN. HG (vac) ☒

Particulate Catch Data:
No. of filters used: 6968

Recovery solvent(s)
☒acetone
☐other(s)

No. of probe wash bottles: 1
Sample recovered by: EJ

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	650	500	150
Impinger No. 2	687	295	392
Impinger No. 3			
Condenser			
Desiccant	1341	1332	12
			1
Total			554

Integrated Gas Sampling Data:

Bag Pump No. 73B
Box No. ~~5~~ 5 Bag No. 1
Bag Material: 5-layer Aluminized Tedlar
Size: 44 L
Pretest leak check: 0 cc/min at 15 IN.HG
Time start: 846 (HRS) Time end: 955 (HRS)
Sampling rate: 400 cc/min Operator: EJ

S/N of O_2 Analyzer used to monitor train outlet: 28B

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INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job: River City Asphalt
Source: Asphalt Plant
Date: ~~[illegible]~~ 9-30-94 Test 1 Run 1

Operators: EJ DVH
Meter Box No. 43 ΔH@ 1.76 in WC
Gas meter coeff. ~~[illegible]~~ 1.0023

Pitot No. 29V-4 Cp .840
Bar. Press. 28.90 inHg H2O 38 %
Nozzle No. 7-3 Nozzle Dia .308 in.

Traverse Point No.		Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Dev. Vol. (cf)	VAC. inHg	Stack (°F)	Probe (°F)	Oven (°F)	Impg. (°F)	Cnd In (°F)	Cnd Out (°F)	Oxygen (xv/v)
		(846)	878.73											
E	5	2.5	881.06	.83	2.66	1.09	12	242	272	267	43	66	60	
	4	5.0	883.40	.84	2.70	3.43	14	244				72	62	
	3	7.5	885.75	.89	2.75	5.80	15	244				73	63	
	2	10.0	888.07	.85	2.63	8.12	15	243	271	269	45	74	63	
	1	12.5	890.37	.81	2.51	0.39	14	244				74	64	
D	5	15.0	892.56	.76	2.36	2.59	11	244				74	64	
	4	17.5	894.86	.86	2.66	4.92	13	245	258	254	44	77	65	
	3	20.0	897.24	.88	2.74	7.29	15	244				78	66	
	2	22.5	899.60	.88	2.75	9.67	15	243				78	66	
	1	25.0	901.96	.83	2.59	1.98	14	244	257	263	49	78	67	
C	5	27.5	904.17	.72	2.25	4.14	11	245				76	66	
	4	30.0	906.28	.69	2.15	6.24	11	242				80	68	
	3	32.5	908.35	.69	2.17	8.36	11	242	251	264	51	82	68	
	2	35.0	910.47	.70	2.20	0.50	11	243				83	68	
	1	37.5	912.61	.69	2.19	2.63	11	237				84	69	
B	5	40.0	914.46	.49	1.55	4.43	7	239	244	270	36	81	69	
	4	42.5	916.19	.47	1.48	6.19	7	240				84	70	
	3	45.0	917.94	.48	1.52	7.97	7	242				86	71	
	2	47.5	919.80	.52	1.65	9.83	7	243	248	264	39	87	71	
	1	50.0	921.80	.57	1.82	1.78	9	238				87	72	
A	5	52.5	923.31	.33	1.05	3.27	5	238				83	71	
	4	55.0	924.83	.35	1.11	4.79	5	239	242	274	41	84	72	
	3	57.5	926.39	.38	1.21	6.39	5	236				84	72	
	2	60.0	928.10	.43	1.37	8.08	7	237				84	72	
	1	62.5	929.96	.53	1.70	9.97	9	234	248	272	47	84	72	
		θ = 62.5 (955)	Vm = 51.23		ΔH = 2.07							Avg. =	73.6	

S-0037R

INTERPOLL LABORATORIES, INC.
(612) 786-6020

Interpoll Laboratories EPA Method 5/17 Sample Log Sheet

Job River City Asphalt Date ~~5-16-94~~ 9-30-94 Test 1 Run 2
Source Asphalt Plant No. of traverse points 25
Method 5 Filter holder: Glass Filter type: 4" GF

Sample Train Leak Check:
Pretest: ≤ 0.02 cfm at 15 IN.HG (vac) ☒
Post test: 0 cfm at 15 IN. HG (vac) ☒

Particulate Catch Data:
No. of filters used: 6933

Recovery solvent(s)
☒ Acetone
☐ other(s)

No. of probe wash bottles:
Sample recovered by:

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	684	505	179
Impinger No. 2	640	292	348
Impinger No. 3			
Condenser			
Desiccant	1425	1405	20
	1		
Total			547

Integrated Gas Sampling Data:

Bag Pump No. 238 Box No. 5 Bag No. 2
Bag Material: 5-layer Aluminized Tedlar Size: 44 L
Pretest leak check: 0 cc/min at 14 IN.HG
Time start: 1025 (HRS) Time end: 1133 (HRS)
Sampling rate: 400 cc/min Operator: EJ

S/N of O_2 Analyzer used to monitor train outlet:

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INTERPULL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job River City Asphalt
Source Asphalt Plant
Date ~~9-29-94~~ 9-30-94 Test 1 Run 2

Operators EJ ~~DS~~ DVH
Meter Box No. #3 ΔH 1.75 Tm 110
Coeff. ~~.9956~~ 1.0023

Pitot No. 29V-4 Cp .840
Bar. Press. ~~28.80~~ 28.80 inHg H2O 36 %
Nozzle No. 2-5 Nozzle Dia .308 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Dry. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Cyclone	Gas/Out	Oxygen (v/v)
	(1025)	930.31											
E 5	2.5	932.69	.84	2.78	2.70	11	241	244	238	43	73	69	
4	5.0	934.97	.75	2.47	4.96	13	242				82	71	
3	7.5	937.30	.82	2.72	7.34	14	244				83	71	
2	10.0	939.62	.76	2.53	9.63	14	243	257	239	47	84	72	
1	12.5	941.99	.73	2.43	1.88	13	245				84	72	
O 5	15.0	944.10	.72	2.39	4.12	10	245				80	72	
4	17.5	946.45	.83	2.73	6.50	16	249	246	262	45	82	72	
3	20.0	948.80	.83	2.74	8.88	16	249				82	72	
2	22.5	951.14	.81	2.66	1.24	16	251				83	73	
1	25.0	953.52	.77	2.53	3.53	15	253	249	272	48	84	73	
C 5	27.5	955.62	.62	2.04	5.60	11	253				83	74	
4	30.0	957.69	.65	2.14	7.72	11	252				86	74	
3	32.5	959.78	.63	2.11	9.82	11	253	257	274	43	87	74	
2	35.0	961.89	.64	2.11	1.93	11	253				89	75	
1	37.5	964.04	.67	2.22	4.09	11	252				90	75	
B 5	40.0	965.79	.42	1.40	5.81	7	251	258	264	37	85	75	
4	42.5	967.52	.42	1.39	7.52	7	250				87	75	
3	45.0	969.24	.42	1.39	9.23	7	251				88	76	
2	47.5	971.99	.45	1.50	1.01	7	251	262	264	37	88	76	
1	50.0	972.85	.50	1.66	2.88	7	252				88	76	
A 5	52.5	974.12	.22	.73	4.12	4	252				83	75	
4	55.0	975.53	.29	.96	5.54	5	253	266	248	39	85	76	
3	57.5	977.05	.33	1.09	7.06	5	251				86	76	
2	60.0	978.79	.44	1.46	8.81	8	252				85	78	
1	62.5	980.60	.47	1.56	0.62	8	251	264	251	44	86	78	
	θ = 62.5	Vm = 50.29		ΔH = 1.99							Avg. = 79.2		

(1135)

C-5

S-0037R

INTERPOLL LABORATORIES, INC.
(612) 786-6020

Interpoll Laboratories EPA Method 5/17 Sample Log Sheet

Job River City Asphalt Date ~~8-16-94~~ 9-30-94 Test 1 Run 3
Source Asphalt Plant No. of traverse points 25
Method 5 Filter holder: Glass Filter type: 4" GF

Sample Train Leak Check:

Pretest: ≤ 0.02 cfm at 15 IN.HG (vac) ☑
Post test: 0 cfm at 17 IN. HG (vac) ☒

Particulate Catch Data:

No. of filters used: 6967

Recovery solvent(s)
☒acetone
☐other(s)

No. of probe wash bottles:
Sample recovered by:

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	651	502	149
Impinger No. 2	654	292	362
Impinger No. 3			
Condenser			
Desiccant	1410	1383	27
Total			538

Integrated Gas Sampling Data:

Bag Pump No. 238 Box No. 5 Bag No. 3
Bag Material: 5-layer Aluminized Tedlar Size: 44 L
Pretest leak check: 0 cc/min at 14 IN.HG
Time start: 1200 (HRS) Time end: 1310 (HRS)
Sampling rate: 400 cc/min Operator: EJ

S/N of O_2 Analyzer used to monitor train outlet:

052394-G:\STACK\WP\FORMS\S-0046RR

INTERPULL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job: River City Asphalt — Operators: EJ DVH — Pitot No. 23-V-4 — Cp .840
Source: Asphalt Plant — Meter Box No. #3 ΔH .676 TH 70 — Bar. Press. 28.90 inHg — H2O 35 #
Date: 9-30-94 — Test 1 — Run 3 — Counter coeff.: ~~1.0026~~ 1.0023 — Nozzle No. 7-5 — Nozzle Dia .308 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH2O)	Orifice Meter (inH2O)	Dec. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas In	Gas Out	Oxygen (%v/v)
	(1200)	981.00											
E 5	2.5	983.32	.76	2.57	3.31	12	252	232	230	48	77	74	
4	5.0	985.60	.78	2.62	5.65	13	252				85	75	
3	7.5	988.94	.78	2.65	8.00	15	252				86	75	
2	10.0	990.29	.76	2.58	0.33	15	261	264	226	42	87	76	
1	12.5	992.58	.71	2.41	2.58	15	253				87	76	
D 5	15.0	994.99	.76	2.58	4.90	13	253				83	75	
4	17.5	997.29	.86	2.90	7.36	16	255	253	248	43	84	75	
3	20.0	999.74	.85	2.86	9.81	17	257	257			84	75	
2	22.5	1002.22	.83	2.79	2.22	17	257				84	75	
1	25.0	1004.53	.81	2.72	4.61	17	257	248	262	47	83	75	
C 5	27.5	1006.93	.73	2.45	6.87	13	257				82	75	
4	30.0	1009.09	.71	2.40	9.11	13	254				82	75	
3	32.5	1011.26	.67	2.26	1.28	13	255	257	258	52	82	76	
2	35.0	1013.46	.66	2.23	3.44	13	255				83	76	
1	37.5	1015.53	.60	2.02	5.49	11	256				83	76	
B 5	40.0	1017.48	.53	1.79	7.43	8	256	251	270	43	83	76	
4	42.5	1019.38	.51	1.73	9.33	8	254				86	77	
3	45.0	1021.20	.47	1.60	1.17	8	254				88	77	
2	47.5	1023.07	.50	1.70	3.06	8	255	258	272	45	89	78	
1	50.0	1025.04	.54	1.84	5.03	9	255				89	78	
A 5	52.5	1026.54	.28	.95	6.45	5	255				84	77	
4	55.0	1028.02	.34	1.15	8.01	6	254	255	271	42	87	77	
3	57.5	1029.67	.39	1.32	9.68	7	255				87	78	
2	60.0	1031.47	.44	1.49	1.45	8	258				87	78	
1	62.5	1033.38	.51	1.73	3.36	8	258	251	268	45	89	79	
	θ = 62.5	Vm = 52.38		ΔH = 2.13							Avg. =	80.5	

(1310)

C-7

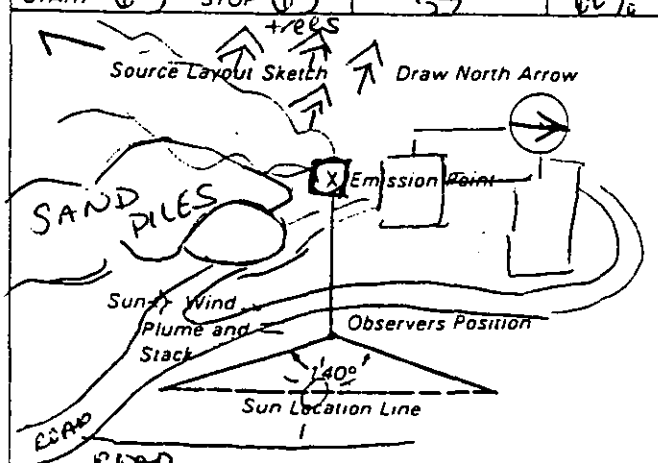
S-0037R

Interpoll Laboratories
(612)786-6020

Visible Emissions Form

Sun location

SOURCE NAME: RIVER CITY MATERIALS		OBSERVATION DATE: 9/30/94	START TIME: 1025
ADDRESS:			STOP TIME: 1125
CITY: Hugo	STATE: MN	ZIP:	
PHONE:	SOURCE ID NUMBER:		
PROCESS EQUIPMENT: ASPHALT PLANT STACK	OPERATING MODE: 100%		
CONTROL EQUIPMENT: BAGHOUSE	OPERATING MODE: NA		
DESCRIBE EMISSION POINT: START Southmost rectangular stack	STOP SAME		
HEIGHT ABOVE GROUND LEVEL: START ~20'	STOP SAME	HEIGHT RELATIVE TO OBSERVER: START ~15'	STOP SAME
DISTANCE FROM OBSERVER: START 120 yards	STOP SAME	DIRECTION FROM OBSERVER: START W	STOP SAME
DESCRIBE EMISSIONS: START mostly steam	STOP SAME		
EMISSION COLOR: START Gray	STOP	PLUME TYPE: CONTINUOUS X	
		FUGITIVE ☐ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☐ YES X		IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED X	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: START ~100' S/ plume (South)	STOP 100' N of plume		
DESCRIBE BACKGROUND: START SKY	STOP SAME		
BACKGROUND COLOR: START GREY	STOP SAME	SKY CONDITIONS: START Cloudy	STOP SAME
WIND SPEED: START 5-8 mph	STOP SAME	WIND DIRECTION: START N Shifts S & back to N	STOP
AMBIENT TEMP: START 63	STOP 65	WET BULB TEMP. 55	RH percent 60%



SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	5	0	5	31	0	0	5	0
2	0	0	0	0	32	0	0	0	0
3	5	0	0	0	33	0	0	0	0
4	0	0	5	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	5	36	0	0	0	0
7	5	0	0	0	37	0	0	0	0
8	0	0	5	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	5	0	0	0	40	0	0	0	0
11	0	0	0	0	41	5	0	0	0
12	0	0	0	0	42	5	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	5	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	5	0	0	5	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	5	0
20	0	0	0	0	50	0	0	0	5
21	0	0	0	5	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	5	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	5	0	0	0	58	0	0	0	0
29	0	5	0	5	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

AVERAGE OPACITY FOR HIGHEST PERIOD	NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS: MINIMUM	MAXIMUM 5
OBSERVER'S NAME (PRINT): SHERYL BERGERON	
COMMENTS: POOR BACKGROUND - SAME AS PLUME	OBSERVER'S SIGNATURE: Sheryl A. Bergeron — DATE 9/30/94
	ORGANIZATION: INTERPOLL LABORATORIES INC
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	CERTIFIED BY: ETA — DATE 4-7-94
TITLE — DATE	VERIFIED BY — DATE

APPENDIX D

INTERPOLL LABORATORIES ANALYTICAL DATA

Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job: River City Asphalt
Team Leader: ES
Date Submitted: 9-30-94
Test No.: 1
Date of Analysis: 10-3-94

Source: Asphalt Plant
Test Site: Stack
Date of Test: 9-3?-94
No. of Runs Completed: 3
Technician: B. [illegible]

Test/Run	Sample Log Number and Type	No. of An.	Buret Readings (ml) Zero Pt.	After CO_2	After O_2	Conc. CO_2 %v/v Dry	Conc. O_2 %v/v Dry	F_o
1/1	4038-05	1	0.00	8.00	19.20	8.00	11.20	1.21
		2	0.00	8.00	19.20	8.00	11.20	1.21
	☑ B ☐ F	Avg				8.00	11.20	
1/2	-06	1	0.00	8.70	19.20	8.70	10.50	1.20
		2	0.00	8.70	19.20	8.70	10.50	1.20
	☑ B ☐ F	Avg				8.70	10.50	
1/3	-07	1	0.00	8.30	19.20	8.30	10.90	1.20
		2	0.00	8.30	14.20	8.30	10.90	1.20
	☑ B ☐ F	Avg				8.30	10.90	
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						

☑ Ambient Air QA Check
☑ Orsat Analyzer System Leak Check
☐ F_o Within EPA M-3 Guidelines for fuel type.

Where $F_o = \frac{20.9 - O_2}{CO_2}$

EPA Method 3 Guidelines

Fuel Type	F0 Range
Coal:	
Anthracite/Lignite	1.016-1.130
Bituminous	1.083-1.230
Oil:	
Distillate	1.260-1.413
Residual	1.210-1.370
Gas:	
Natural	1.600-1.836
Propane	1.434-1.586
Butane	1.405-1.553
Wood/Wood Bark	1.000-1.130

F=Flask (250 cc all glass)
B=Tedlar Bag (5-layer)

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Impinger Catch/Minnesota Protocol

Job River City Asphalt
Team Leader E. Jeurs
Date Submitted 9-30-94
Test No. 1
Date of Analysis 10-10-94

Source Asphalt Plant
Test Site Stack
Date of Test 9-30-94
No. of Runs Completed 3
Technician J. Lorenz

0	Test 1 Run 0 Field Blank Log Number 4038-01 I Comments	Dish No. 609 Dish Tare Wt. 45.5602 g Dish+Sample Wt. 45.5602 g Sample Wt. .0000 g
1	Test 1 Run 1 Log Number -02 I Comments	Dish No. 705 Dish Tare Wt. 45.2705 g Dish+Sample Wt. 46.3223 g Sample Wt. .0518 g
2	Test 1 Run 2 Log Number -03 I Comments	Dish No. 706 Dish Tare Wt. 45.3881 g Dish+Sample Wt. 45.5110 g Sample Wt. .1229 g
3	Test 1 Run 3 Log Number -04 I Comments	Dish No. 707 Dish Tare Wt. 46.6000 g Dish+Sample Wt. 46.7867 g Sample Wt. .1867 g
4	Test ____ Run ____ Log Number Comments	Dish No. Dish Tare Wt. g Dish+Sample Wt. g Sample Wt. g
5	Test ____ Run ____ Log Number Comments Solvent blank	Dish No. 327 Dish Tare Wt. 44.5149 g Dish+Sample Wt. 44.5149 g Sample Wt. .0000 g

Blank Solvent Wt. .0000 g

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
.0000	.0518	.1229	.1867	D-2	

LSC-03.GR

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job River City Asphalt
Team Leader EJ
Date Submitted 9-30-94
Test No. 1
Date of Analysis 10-3-94
Transport Leakage ☒ None ☐ _____ ml

Source Asphalt Plant
Test Site stack
Date of Test 9-30-94
No. of Runs Completed 3
Technician K TOLLEF
Solvent Acetone

B	Test 1 Run B Field Blank Log Number 4038-DIF Vol. of Solvent 140 ml *Solvent Residue 5.0 ug/ml	Dish No. 43 Dish Tare Wt. 47.3880 g Dish+Sample Wt. 47.3807 g Sample Wt. .0007 g
1	Test 1 Run 1 Vol. of Solvent 130 ml Log Number -02F Comments	Dish No. 52 Dish Tare Wt. 49.8059 g Dish+Sample Wt. 49.8296 g Sample Wt. .0237 g
2	Test 1 Run 2 Vol. of Solvent 160 ml Log Number -03F Comments	Dish No. 115 Dish Tare Wt. 45.0686 g Dish+Sample Wt. 45.0985 g Sample Wt. .0299 g
3	Test 1 Run 3 Vol. of Solvent 160 ml Log Number -04F Comments	Dish No. 119 Dish Tare Wt. 47.7671 g Dish+Sample Wt. 47.7890 g Sample Wt. .0219 g
4	Test _____ Run _____ Vol. of Solvent _____ ml Log Number _____ Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test _____ Run _____ Vol. of Solvent _____ ml Log Number _____ Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

*Solvent Residue 5.0 ug/ml = [(Sample Wt. 0.0007 g)(10^6)]/Vol. of Sol. 140 ml
EPA-MS Acetone Residue Blank Spec. < 7.8 ug/ml

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0230	0.0291	0.0211	D-3	

LSC-01YR

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job River City Asphalt
Team Leader EJ
Date Submitted 9-30-94
Test No. 1
Date of Analysis 10-3-94

Source Asphalt Plant
Test Site Stack
Date of Test 9-30-94
No. of Runs Completed 3
Technician KDL

0	Test 1 Run 0 Field Blank Log Number 4038-01F Comments	Filter No. 6971 Filter Type 4"6F Filter Tare Wt. .9460 g Filter+Sample Wt. .9460 g Sample Wt. .0000 g
1	Test 1 Run 1 Log Number -02F Comments	Filter No. 6968 Filter Type 4"6F Filter Tare Wt. .9232 g Filter+Sample Wt. .9340 g Sample Wt. .0108 g
2	Test 1 Run 2 Log Number -03F Comments	Filter No. 6895 Filter Type 4"6F Filter Tare Wt. .9298 g Filter+Sample Wt. .9322 g Sample Wt. .0024 g
3	Test 1 Run 3 Log Number -04F Comments	Filter No. 6967 Filter Type 4"6F Filter Tare Wt. .9392 g Filter+Sample Wt. .9467 g Sample Wt. .0075 g
4	Test ____ Run ____ Log Number ____ Comments	Filter No. ____ Filter Type ____ Filter Tare Wt. ____ g Filter+Sample Wt. ____ g Sample Wt. ____ g
5	Test ____ Run ____ Log Number ____ Comments	Filter No. ____ Filter Type ____ Filter Tare Wt. ____ g Filter+Sample Wt. ____ g Sample Wt. ____ g

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0108	0.0024	0.0075		

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5

LSC-02PR

INTERPOLL LABORATORIES, INC.
(612) 786-6020

Sample Chain of Custody

4038
3645

Job River City Asphalt Source Asphalt Plant Site Stack Log No.
Field Engineer E. Juers Date of Test 8-16-94 Test No. 1 No. of Runs 3

No. Items	Sample Type		Analysis		Sequence No.	Comments
4	Probe Wash: ☒ Acetone ☐ $MeCl_2$	☐ DI Water ☐ _____	☒ EPA M-5 ☐ EPA M-29	☐ EPA M-201A ☐ _____		
4	Filter: ☒ 4" Glass ☐ SS Thimble	☐ Pallflex ☐ 2.5" Glass	☒ EPA M-5 ☐ EPA M-29 ☐ EPA M-201A	☐ EPA M-17		
~~4~~ 4	Impingers: ☒ DI Water ☐ 3% H_2O_2 ☐ 1N NaOH ☐ 2,4-DNPH	☐ H_2SO_4 ☐ HNO_3/H_2O_2 ☐ $KMnO_4/H_2SO_4$ ☐ _____	☒ MN Protocol ☐ WI Protocol ☐ EPA M-202 ☐ EPA M6,8 ☐ Acid Gases	☐ IA Protocol ☐ Formaldehyde ☐ EPA M-29 ☐ EPA M-26 ☐ _____		
3	Integrated Gas: ☒ Tedlar Bag	☐ _____	☒ EPA M-3 ☐ _____	☐ EPA M-10		
—	Oxides of Nitrogen:		☐ EPA M-7A ☐ _____			
—	Fuel Lab: ☐ Fuel Sample	☐ Aggregate	☐ Per S-0163			
—	Particle Sizing:		☐ X-Ray Sdgraph ☐ _____	☐ Cascade Imp		
—	Miscellaneous:	☐ _____	☐ _____			

Fuel Type: Coal: ☐ Bituminous ☐ Anthracite ☐ Lignite
Wood: ☐ Wood Waste ☐ Dust ☐ Bark
Oil: ☐ Waste Oil ☐ No. 2 ☒ No. 6
Misc: ☐ Natural Gas ☐ RDF ☐ _____

Relinquished by/Affiliation	Accepted by/Affiliation	Date
Edward Juers / Interpoll	Interpoll 1500	9-30-94

033094-G:\STACK\WP\FORMS\S-278.2

APPENDIX E

ASPHALT INFORMATION SHEET

Interpoll Laboratories
(612)786-6020

Asphalt Plant Information Sheet

Manufacturer and Model No. of the Plant 1973 BOETUG 400

Owner and Operator of the Plant ~~Plant~~ City Rich Carron, DON Kelly

Location of Plant at time of Test (State, County and Address) MINN. Washington Co. 14000 Irish Ave.

Estimated Total Time of the Plant at this Site (from when to when) 5-1-94 - 11-30-94

Type of Pollution Control Equipment (wet scrubber, mechanical collector, etc. BAGHouse

Model No. of Pollution Control Equipment Stansteb| 2-50 w/mod

If wet scrubber, provide the following information:

Percent recycle of scrubber water _____ %

Flow of water to scrubber _____ GPM

Manufacturer recommended pressure drop across venturi _____ IN.WC.

Rated Capacity of Asphalt Plant 400 TONS/HR
at an aggregate moisture content of 4% %

Type of Fuel Used to Fire Plant:

- ☐ Natural Gas
- ☐ No. 2 Fuel Oil
- ☒ No. 6 Fuel Oil
- ☐ Propane

Normal Production Rate of Plant 350 TONS/HR
at an aggregate moisture content of 5% %

NOTE: Attach drawings of plant and pollution control equipment.

Name of Individual Supplying Information Todd Smedson

Date 9-30-94

S-0150R(2)

APPENDIX F

ASPHALT PLANT OPERATING DATA

ASPHALT PLANT OPERATING CONDITIONS DURING STACK TESTING

Test Date(s) 9-30-94

Plant Mfr. & Model Boring 400 Type(circle one): (Drum Mix) Conventional

This plant is (circle one): (portable) stationary Other: _____

Pollution Control Equipment(circle one): (Baghouse) Venturi Scrubber Wet Scrubber Cyclone Multiclone

If wet scrubbing: ___%scrubber water recycled

List Model: 2650 Normal pressure drop across control equipment: 6-7 inches water

Air flow through control equipment: 55000 acfm Was control equipment operating normally during test? YES

Date & procedure of last maintenance/cleaning of control equipment: 4-1-94

Fuel:

Itemize all fuels and materials added to the combustion process during the test period. List fuel type used during testing (if oil, specify type) #6oil. If other units of measure are used, specify and calculate appropriate heat input.

Test No.__	Fuel Input (Gal/hr)	BTU/GAL (as received)	Heat Input (BTU/HR)	Estimated % Moisture of virgin (or virgin & recycle)
Run 1	539/Hr			4.8%
Run 2	550/Hr			5.1%
Run 3	560/Hr			5.4%

Is the above fuel substantially the highest sulfur containing fuel normally burned? YES

Production specific fuel usage: (circle one) measured or calculated: ____ cubic foot/ton hot mix

1.4 gal/ton hot mix

No. of burners: 1 Burner(s) rating: 129 MMBTU/HR=100% setting

Other Control Equipment Parameters	Design	During Testing
Cleaning Cycles		
Air to Cloth Ratios		
No. of spray bars including delivery pressure		

Describe the location of the thermocouples reading exiting dryer temperature:

located: Back of Baghouse

Plant Operator's Certification: I certify that the information submitted herein is accurate and correct and that no information requested was withheld from the Division Manager.

By: _____, Phone: (616) 726-8175

Note: All information required must be completed and submitted as part of the performance test. Failure to submit the required information will results in an incomplete performance test report.

Time in 15 min. intervals	Burner Setting %	Aggregate Material Tons per Hour	Recycle Material Tons per Hour	Asphalt Tons per Hour	Total Tons per Hour	Temperature of Gases Exiting Dryer deg F	Dust Collector Pressure Drop inches water	Scrubber Water Flow Rate GPM	Water Supply Pressure psi	Other (list)	Other (list)
8:45	90%	254	115	15.8	385	284°	7"				
9:00	90%	257	116	15.9	384	279°	7"				
9:15	90%	253	114	15.7	382	281°	7"				
9:30	98%	250	112	15.6	381	283°	7"				
10:15	90%	257	117	16.0	390	305°	6½"				
10:30	90%	256	117	16.1	390	308°	6½"				
10:45	90%	257	117	16.0	390	304°	6½"				
11:00	90%	257	115	16.0	389	309°	6½"				
11:15	90%	255	114	15.9	385	308°	6½"				
11:30	90%	257	117	16.0	390	306°	6½"				
11:45	96%	258	116	16.0	390	301°	6½"				
12:10	90%	264	120	16.4	400	307°	7"				
12:25	90%	262	119	16.4	398	308°	7"				
12:40	90%	264	121	16.4	401	305°	7"				
12:55	90%	265	121	16.4	402	310	7"				
1:10	90%	265	120	16.3	401	308	7"				

Plant Operator's Certification: I certify that the information submitted herein is accurate and correct and that no information requested was withheld from the Division Manager.

By: Todd Smethurst, Position Plant Manager, Phone: (612) 426-8175

APPENDIX G

PROCEDURES

Particulate Loading and Emission Rates

The particulate emission rates were determined per EPA Methods 1 - 5, CFR Title 40, Part 60, Appendix A (revised July 1, 1992). In this procedure a preliminary velocity profile of the gases in the flue is obtained by means of a temperature and velocity traverse. On the basis of these values, sampling nozzles of appropriate diameter are selected to allow isokinetic sampling, a necessary prerequisite for obtaining a representative sample.

The sampling train consists of a heated glass-lined sampling probe equipped with a Type S pitot and a thermocouple. The probe is attached to a sampling module which houses the all-glass in line filter holder in a temperature controlled oven. The sampling module also houses the impinger case and a Drierite filled column. The sampling module is connected by means of an umbilical cord to the control module. The control module houses the dry test gas meter, the calibrated orifice, a leakless pump, two inclined manometers, and all controls required for operating the sampling train.

Particulate samples are collected as follows: The sample gas is drawn through the sampling probe isokinetically and passed through a 4-inch diameter Gelman Type A/E glass fiber filter where particulates are removed. The sample gas is then passed through an ice-cooled impinger train and a desiccant-packed column which absorbs remaining moisture. The sample gas then passes through a vacuum pump followed by a dry test gas meter. The gas meter integrates the sample gas flow throughout the course of the test. A calibrated orifice attached to the outlet of the gasmeter provides real time flow rate data.

A representative particulate sample was acquired by sampling for equal periods of time at the centroid of a number of equal area regions in the duct. The sampling rate is adjusted at each test point maintaining isokinetic sampling conditions. Nomographs are used for rapid determination of the sampling rate.

Particulate Loading and Emission Rates

After sampling is complete, the filter is removed and placed in a clean container. The nozzle and inlet side of the filter holder are quantitatively washed with acetone and the washings are stored in a second container. A brush is often used in the cleaning step to help dislodge deposits. The samples are returned to the laboratory where they are logged in and analyzed. The volume of the acetone rinse ("probe wash") is noted and then the rinse is quantitatively transferred to a tared 120 cc porcelain evaporating dish and the acetone evaporated off at 97-105 °F. This temperature is used to prevent condensation of atmospheric moisture due to the cooling effect induced by the evaporation of acetone. The acetone-free sample is then transferred to an oven and dried at 105 °C for 30 minutes, cooled in a desiccator over Drierite, and then weighed to the nearest .01 mg. The filter sample is quantitatively transferred to a 6-inch watch glass and dried in an oven at 105 °C for two hours. The filter and watch glass are then cooled in a desiccator and the filter weighed to the nearest .01 mg. All weighings are performed in a balance room where the relative humidity is hydrostatted to less than 50% relative humidity. Microscopic examination of the samples is performed if any unusual characteristics are observed. The weight of the acetone rinse is corrected for the acetone blank. The Drierite column is weighed on-site and the water collected by Drierite is added to the condensate so that the total amount of absorbed water may be ascertained.

Integrated flue gas samples for Orsat analysis were collected simultaneously with each pollutant sample. The samples were collected in 15-liter gas sampling bags at a constant flow rate throughout each particulate run. The bags were at a constant flow rate throughout each particulate run. The bags were then returned to the laboratory and analyzed by Orsat analysis. Standard commercially prepared solutions were used in the Orsat analyzer (sat. KOH for carbon dioxide and reduced methylene blue for oxygen).

Condensible Organic Compounds Analysis

(State of Minnesota - MPCA Exhibit C)

Method II-8672-MN

Equipment: Separatory funnel - 500 cc with Teflon stopcock

Powder funnel - 75 mm ID with a 17 mm stem

Evaporating dish(es) - 200 cc or 250 cc beaker

Reagents: Diethyl ether - reagent grade

Chloroform - reagent grade

Sodium sulfate - (ACS) granular anhydrous

Toluene - (if 3% hydrogen peroxide is used to collect the samples)

Glass wool (Pyrex microfiber)

PREPARATION

1. Place 1 kg of granular anhydrous sodium sulfate in a shallow tray and heat to 200°C for at least four hours. Store in a tightly sealed glass container.

2. Place a plug of clean glass wool in the stem of the powder funnel. The plug must be of sufficient size so that it is held snugly in place by its own pressure. Add a one-inch layer of dry sodium sulfate.

SAMPLING

An all-glass impinger assembly is used in the back half of the EPA Method 5 sampling train when an organic wet catch is to be collected. The impinger assembly consists of a modified impinger, a Greenburg Smith impinger followed by another modified impinger. The third impinger should have a temperature measuring device at the outlet upstream of a final impinger or desiccant column to monitor the temperature of the outlet gas stream. Prior to the start of the test, each of the first two impingers should be charged with 100 g of Class I water. The Method 5 train should be operated as provided for in EPA Method 5. Ice should be added to the impinger bath to keep the temperature of the gas at the outlet at or less than 68°F. After the post test leak check, the impinger train is removed and impinger contents poured into a tared all-glass sample bottle and closed with a Teflon-lined cap. The sample bottle is then weighed and the total condensate calculated by subtraction of the bottle tare weight and the weight of initial water added to the impingers (200 g). A label is affixed and the sample is returned to the laboratory for analysis. The sample should be stored at 4°C if the analysis is not conducted within 48 hours.

I. ORGANICS

Caution! Work in vented hood!!!

A. Organic Blank Determination

1. Pour 125 ml of ethyl ether and 125 ml of chloroform into a tared beaker.

2. Evaporate solvent in hood at 70°F or less until no solvent remains.

3. Desiccate the sample in dish for two hours.

4. Weigh the sample to nearest 0.1 mg, record and report on Form LSC-03G.

B. Organic Sample Determination

1. Test for peroxide in sample ether using KI strips. (If KI strip shows positive, contact your supervisor before proceeding.)

2. Transfer the sample solution quantitatively to a 500 ml separatory funnel. Use the first of three 25 ml chloroform aliquots to rinse the sample container.

3. Extract with three 25 ml portions of chloroform. (Shake and vent to release pressure about 4 to 5 times each.) Allow the phases to separate. (Bottom layer is chloroform.) Draw off the bottom layer, transferring the solvent with a funnel containing a plug of sodium sulfate into a tared beaker. (Do not draw off any of the aqueous layer.)

4. After the three chloroform extractions, use two 25 ml portions of chloroform to rinse the sodium sulfate, collecting the rinses in the same tared beaker as the extracts.

5. Next extract the sample three times with 25 ml aliquots of ethyl ether. (Shake and vent to release pressure about 4 to 5 times each.) Allow the phases to separate. (Top layer is ethyl ether.) Draw off the bottom layer (aqueous) into another separatory funnel taking less than 1 ml of the ethyl ether layer with. Decant the ethyl ether, passing it through sodium sulfate and collecting the ethyl ether in the same tared dish as the chloroform.

6. After the three ethyl ether extractions, take two 25 ml portions of ethyl ether and rinse the sodium sulfate collecting the rinses in the same tared beaker as the extracts.

7. Evaporate the solvents (chloroform and ethyl ether) in the tared beaker in the hood at 70°F or less until no solvent remains. (Use no heat and have no sources of ignition in the hood when doing this procedure.) Do not evaporate so quickly as to allow evaporative cooling to lower the temperature of the container below the dew point of water, otherwise, water will be condensed out in the container.

8. Desiccate to constant weight (two hours). Record and report the final weight to the nearest 0.1 mg on Form LSC-03G.

II. INORGANICS

If inorganic residue information is required, the following procedure should be conducted:

A. Inorganic Blank Determination

1. Vent the remaining aqueous phase from the organic extraction in the hood to remove residual organic solvents (usually overnight).

2. Decant the impinger catch into a tared evaporating dish.

3. Evaporate all of the water in the sample in an oven at 100°C. Take care not to boil to prevent bumping and loss of sample.

4. Cool the dried sample in the desiccator and desiccate until a constant weight is obtained.

5. Report the results to the nearest 0.1 mg on Form LSC-03G.

B. Inorganic Sample Determination

Follow steps 1-5 in Section A above.

NOTES

1. For the organics determination, in the rare event that the impinger catch resulted from a Modified Method 6 determination (SO_2), whereby the solution contains dilute hydrogen peroxide ($\geq$ 3%), do not use ether as an extraction solvent. Substitute toluene for ethyl ether in Section I. (Ether in the presence of peroxide forms explosive hydroperoxide.)

2. In the organics determination, more than three extractions may be required to extract all of the organics. Additional extractions should be performed if the aqueous phase is still cloudy.

3. Special state requirements:
   Michigan - Total sample evaporated in tared evaporating dish on steam bath.
   Iowa - Organics and inorganics separately, as required.
   Wisconsin - Use Method II-8672-WI.
   Rest of states - Organics only.

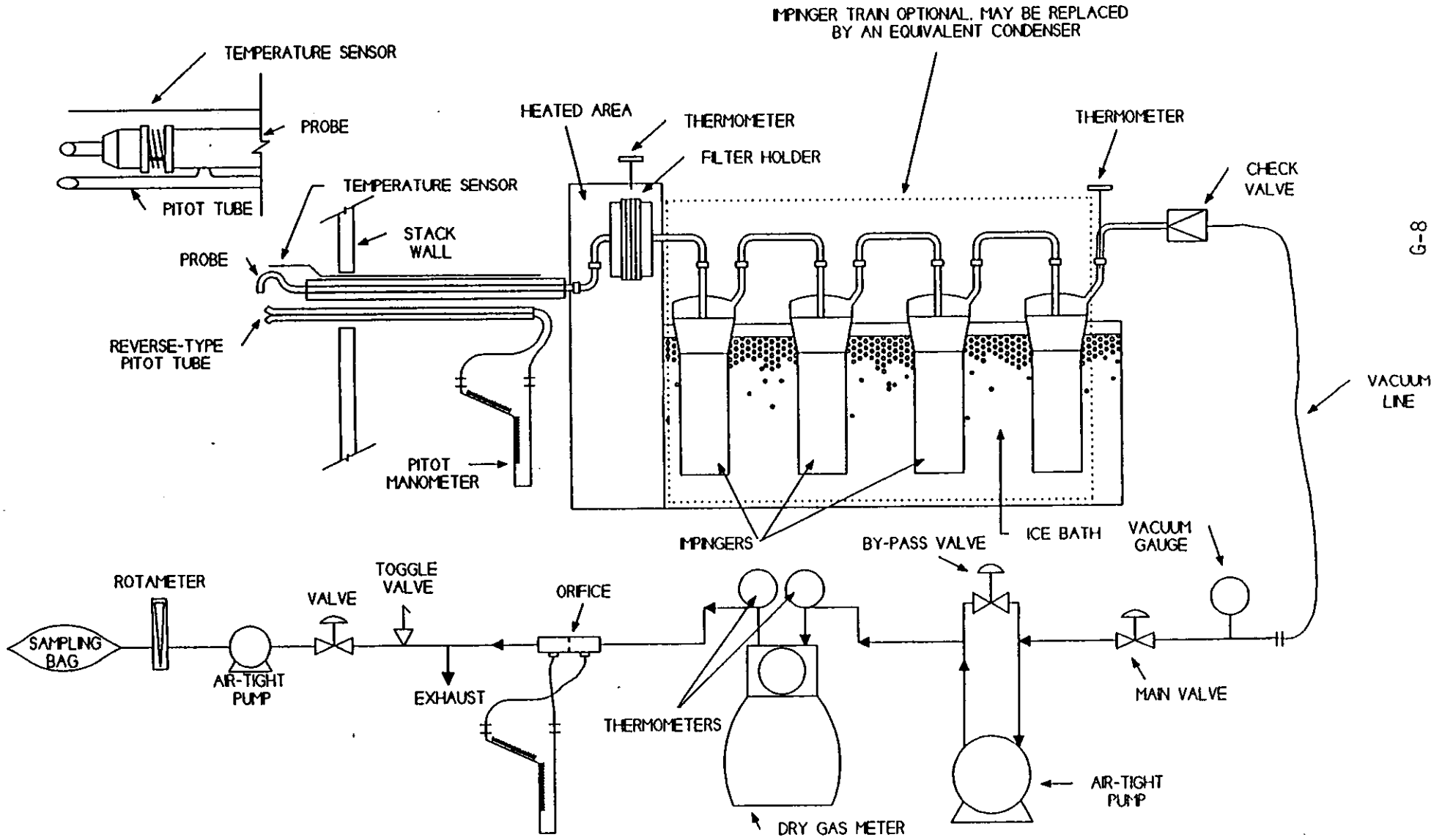
REFERENCES

Proposed standards of Performance for New Stationary Sources, Federal Register 36(159) Part II, August 1, 1979.

Minnesota Pollution Control Agency, Exhibit C.

Interpoll Laboratories
(612) 786-6020

PARTICULATE SAMPLING TRAIN



APPENDIX H

CALCULATION EQUATIONS

METHOD 2
CALCULATION EQUATIONS

$$\overline{V_s} = 85.49\ C_p\ (\sqrt{\Delta p})_{avg}\ \sqrt{\frac{T_{s(avg)}}{P_s\ M_s}}$$

$$Q_{s,\,d} = 60\ (1\ -B_{ws})\ \overline{V_s}\ A\ (\frac{528}{T_{s\ (avg)}})\ (\frac{P_s}{29.92})$$

$$Q_a = 60\ \overline{V_s}\ A$$

$$\dot{m}_g = \frac{4.995\ Q_{s,\,d}\ G_d}{1\ -\ B_{ws}}$$

$$RH^* = 100\ (vp_{rwb}\ -\ 0.0003641\ P_s\ (T_{db}\ -\ T_{wb}))/vp_{tdb}$$

$$B^*_{ws} = RH(vp_{tdb})/P_s$$

$$\rho = \frac{4.585\ x\ 10^{-2}\ P_s M_s}{T_s\ (avg)}$$

*Alternate equations for calculating moisture content from wet bulb and dry bulb data.

SYMBOLS

A	=	Cross Sectional area of stack, SQ. FT.
A_n	=	Cross sectional area of nozzle, SQ. FT.
B_{ws}	=	Water vapor in gas stream, proportion by volume
C_p	=	Pitot tube coefficient, dimensionless
C_a	=	Concentration of particulate matter in stack gas, wet basis, GR/ACF
C_s	=	Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, GR/DSCF
EA	=	Excess air, percent by volume
γ	=	Dry test meter correction factor, dimensionless
G_d	=	Specific gravity (relative to air), dimensionless
I	=	Isokinetic variation, percent by volume
M_d	=	Molecular weight of stack gas, dry basis, g/g - mole.
$\dot{m}_g$	=	Mass flow of wet flue gas, LB/HR
$\dot{m}_p$	=	Particulate mass flow, LB/HR
M_s	=	Molecular weight of stack gas, wet basis, g/g mole.
M_p	=	Total amount of particulate matter collected, g
P_{bar}	=	Atmospheric pressure, IN. HG. (uncompensated)
P_g	=	Stack static gas pressure, IN. WC.
P_s	=	Absolute pressure of stack gas, IN. HG.
P_{std}	=	Standard absolute pressure, 29.92 IN. HG.
A_a	=	Actual volumetric stack gas flow rate, ACFM
$Q_{s,d}$	=	Dry volumetric stack gas flow rate corrected to standard conditions, DSCFM
RH	=	Relative humidity, %

T_{db}	=	Dry bulb temperature of stack gas, °F
T_{wb}	=	Wet bulb temperature of stack gas, °F
$T_{m(avg)}$	=	Absolute average dry gas meter temperature, °R
$T_{s(avg)}$	=	Absolute average stack temperature, °R
T_{std}	=	Standard absolute temperature, 528 °R (68 °F)
θ	=	Total sampling time, min.
V_{lc}	=	Total volume of liquid collected in impingers and silica gel, ml
V_m	=	Volume of gas sample as measured by dry gas meter, CF
$V_{m(std)}$	=	Volume of gas sample measured by the dry gas meter corrected to standard conditions, DSCF
$V_{w(std)}$	=	Volume of water vapor in the gas sample corrected to standard conditions, SCF
$\bar{V}_s$	=	Average actual stack gas velocity, FT/SEC
vp_{tdb}	=	Vapor pressure at T_{db}, IN. HG.
vp_{twb}	=	Vapor pressure at T_{wb}, IN. HG.
$\overline{\Delta H}$	=	Average pressure differential across the orifice meter, IN. WC.
ΔP	=	Velocity pressure of stack gas, IN. WC.
γ	=	Dry test meter correction coefficient, dimensionless
ρ	=	Actual gas density, LB/ACF

METHOD 3
CALCULATION EQUATIONS

$$\%EA = \frac{100(\%O_2 - 0.5\%\ CO)}{0.264\%\ N_2 - \%O_2 + 0.5\%\ CO}$$

$$M_d = 0.44(\%CO_2) + 0.32\ (\%O_2) + 0.28\ (\%N_2 + \%CO)$$

$$M_s = M_d\ (I - B_{ws}) + 0.18\ B_{ws}$$

$$B_{ws} = \frac{V_{w(std)}}{V_{w(std)} + V_{m(std)}}$$

METHOD 5
CALCULATION EQUATIONS

$$V_{m(std)} = 17.65\ V_m\ \gamma\ \left(\frac{P_{bar} + \overline{\Delta H}/13.6}{T_{m(avg)}}\right)$$

$$V_{w(std)} = 0.0472\ V_{lc}$$

$$B_{ws} = \frac{V_{w(std)}}{V_{w(std)} + V_{m(std)}}$$

$$I = 0.0944\ \left(\frac{T_{s(avg)}\ V_{m(std)}}{P_s\ V_s\ A_n\ \theta\ (I - B_{ws})}\right)$$

$$C_s = \frac{15.43\ M_p}{V_{m(std)}}$$

$$C_a = \frac{272.3\ M_p\ P_s}{T_{s(avg)}\ (V_{w(std)} + V_{m(std)})}$$

$$(\dot{m}_p)_1 = 8.5714\ x\ 10^{-3}\ C_s\ Q_{s,\,d}$$

$$(\dot{m}_p)_2 = \frac{1.3228 \times 10^{-1} M_p A}{\theta A_n}$$

$$\dot{m}_p = \frac{(\dot{m}_p)_1 + (\dot{m}_p)_2}{2}$$

APPENDIX I

SAMPLING TRAIN CALIBRATION DATA

INTERPOLL LABORATORIES
EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job River City Asphalt Date 9-29-94

Operator EJ Module No. 3

Instructions: Operate the control module at a flow rate equal to ^H@ for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.02 in. Hg. τ = 1.0023 ^H@ 1.76 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
[redacted]	(870.90)	[redacted]	
2.5	872.82	78	75
5.0	874.75	80	76
7.5	876.66	82	76
10	878.61	84	76
[redacted]	V_m= 7.71	Avg(t_m)= 78	°F

Calculate Y_{cn} as follows:

$$Y_{cn} = \frac{1.786}{\tau\, V_m}\left[\frac{(t_m + 460)}{P_b}\right]^{0.5}$$

15.54

$$Y_{cn} = \frac{1.786}{(1.0023)(7.71)}\left[\frac{(78) + 460}{(29.02)}\right]^{0.5}$$

41.305

Y_{cn} = .995 ✓

If Y_{cn} is not within the range of 0.97 to 1.03, "the volume metering system should be investigated before beginning."

CFR Title 40, Part 60, Appendix A, Method 5, Section 4.4.1

S-432

Interpoll Laboratories, Inc.
(612) 786-6020

Meter Box Calibration and Usage Status

Date of Report: September 30, 1994

Meter Box No. : 3 (Rockwell Dry Test Meter Serial No. 949231)

Date of Last Calibration: September 22, 1994
Calibration Technician: S. Bainville
Wet Test Meter No.: American Meter AL-20

Date of Use	Report No.	Initial Meter Reading	Final Meter Reading	Volume/Job (cu. ft.)	Total Volume* (cu. ft.)
September 27, 1994	4-3975	405.60	867.13	461.53	461.53
September 30, 1994	4-4038	878.73	1033.38	154.65	616.18

* Total volume through meter since last calibration.

INTERPOLL LABORATORIES, INC.
(612) 786-6020

Meter Calibration Sheet EPA/Method 5

Date 9-22-94
Bar. Press. 28.89 IN.HG
Wet Test Meter No. AL-20

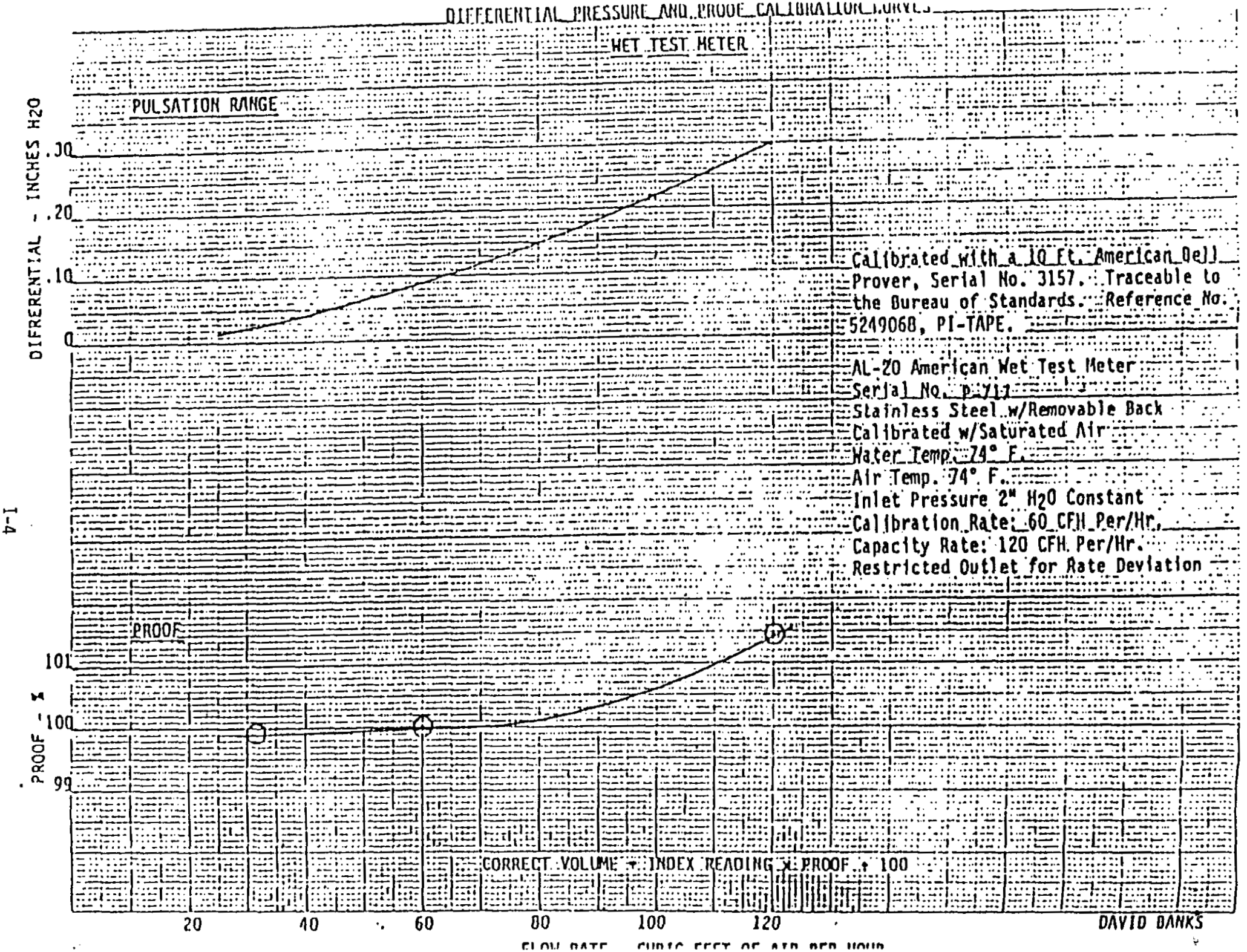
Control Module No. 3
Serial No. DTM 949231
Technician SB

ΔH (IN.WC)		Gas Volume Wet Test Meter	* Cal. Index	* Diff. Wet Test Meter	Gas Volume Dry Test Meter (ft³)		Gas Temperatures			Time θ	Meter Coeff.	Orifice Const.	C_f
							Wet Test	Dry Test					
Nominal	Actual	(ft³)	(%)	ΔP_w (IN.WC.)	V_{di}	V_{df}	t_w (°F)	t_{di} (°F)	t_{do} (°F)	(Min/ Sec)	Y	ΔH@	
0.5	0.5	2	99.85	0.01	388.500	390.525	69.5	83	74	4/55	1.0016	1.73	
1.2	1.2	3	99.91	0.025	391.000	394.032	69.5	85	74	4/44	1.0041	1.71	
2.0	2.0	3	99.93	0.055	369.000	372.011	69.5	91	70	3/42	1.0017	1.75	
3.3	3.3	5	100.00	0.09	373.600	378.523	69.5	86	72	4/50	1.0046	1.76	
4.7	4.7	5	100.02	0.12	383.000	388.050	69.5	88	74	4/10	.9995	1.86	
2	3	4	5	6	7	8	9	10		11/13 Avg	1.0023	1.74	

Positive leak check performed by
Meter was in tolerance
Approved by

Meter was not in tolerance ☐: readjusted linkage
Meter was not in tolerance ☐: changed dry test meter
Date 9/26/94

*Based on AL-20 wet test meter calibration in Nov. 1991 against Bell Prover (NBS Traceable) - Carl Poe Co.


DIFFERENTIAL PRESSURE AND PROOF CALIBRATION CURVES
WET TEST METER
PULSATION RANGE
DIFRENTIAL - INCHES H2O
.30
.20
.10
0
PROOF
101
100
99
PROOF - %
Calibrated with a 10 Ft. American Dell Prover, Serial No. 3157. Traceable to the Bureau of Standards. Reference No. 5249068, PI-TAPE.
AL-20 American Wet Test Meter
Serial No. P 711
Stainless Steel w/Removable Back
Calibrated w/Saturated Air
Water Temp. 74° F.
Air Temp. 74° F.
Inlet Pressure 2" H2O Constant
Calibration Rate: 60 CFH Per/Hr.
Capacity Rate: 120 CFH Per/Hr.
Restricted Outlet for Rate Deviation
CORRECT VOLUME = INDEX READING x PROOF ÷ 100
20
40
60
80
100
120
DAVID BANKS
FLOW RATE - CUBIC FEET OF AIR PER HOUR

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 09-30-94 Nozzle Number 7-5
Technician: Ed Juers

The nozzle is rotated in 60 degree increments and the diameter at each point is measured to the nearest 0.001 inch. The observed readings and average are shown below.

Position	Diameter (inches)
1	.307
2	.309
3	.310
Average:	.308

Interboll Laboratories, Inc.

Temperature Measurement Device Calibration Sheet

Unit under test: #12

Vendor Fluke

Model 51 K/J thermometer — Serial Number 5030375

Range −329°F – 2495°F °F — Thermocouple Type K

Date of Calibration 9-19-94 — Technician EJ

Method of Calibration:

☐ Comparison against ASTM mercury in glass thermometer using a thermostatted and insulated aluminum block designed to provide uniform temperature. The temperature is adjusted by adjusting the voltage on the block heater cartridge.

☒ Omega Model CL-300 Type K Thermocouple Simulator which provides 22 precise temperature equivalent millivolt signals. The CL-300 is cold junction compensated. Calibration accuracy is ± 0.1% of span (2100 °F) ± 1 degree (for negative temperatures add ± 2 degrees. The CL-300 simulates exactly the millivoltage of a Type K thermocouple at the indicated temperature.

Desired Temp (°F) Nominal	Temperature of Standard or Simulated Temp (°F)	Response of Unit Under Test (°F)	Deviation Δt (°F)	Deviation (%)
0	0	1.0	1.0	.21
100	100	100.6	0.6	.10
200	200	202.8	2.8	.42
300	300	301.4	1.4	.18
400	400	399.8	0.2	.02
500	500	500.6	0.6	.06
600	600	602.2	2.2	.20
700	700	700.2	0.2	.02
800	800	802.0	2.0	.16
900	900	900.2	0.2	.01
1000	1000	1001.6	1.6	.10
1100	1100	1101.0	1.0	.06
1200	1200	1203.2	3.2	.19
1300	1300	1300.2	0.2	.01
1400	1400	1403.2	3.2	.17
1500	1500	1500.8	0.8	.04
1600	1600	1601.8	1.8	.09
1700	1700	1700.2	0.2	.01
1800	1800	1801.8	1.8	.08
1900	1900	1899.4	0.6	.03
2000	2000	2001.4	1.4	.06
2100	2100	2098.6	1.4	.06
		Averages:		

OF = off scale response by unit under test (°F)

% dev = 100 Δt / (460 + t)

☐ Unit in tolerance

☐ Unit was not in tolerance: recalibrated – See new calibration sheet.

S-433

Interpoll Laboratories, Inc.
(612) 786-6020

S-Type Pitot Tube Inspection Sheet

Pitot Tube No. 23-4

Pitot tube dimensions:

1. External tubing diameter (D_t) .316 IN.
2. Base to Side A opening plane (P_A) .460 IN.
3. Base to Side B opening plane (P_B) .460 IN.

Alignment:

4. α_1 < 10° 0
5. α_2 < 10° 0

6. B_1 < 5° 0
7. B_2 < 5° 0

8. Z <.125" .0
9. W <.0625" .02

Distance from Pitot to Probe Components:

10. Pitot to 0.500 IN. nozzle .758 IN.
11. Pitot to probe sheath 3.0 IN.
12. Pitot to thermocouple (parallel to probe) 3.0 IN.
13. Pitot to thermocouple (perpendicular to probe) .760 IN.

☒ Meets all EPA design criteria thus C_p = 0.84
☐ Does not meet EPA design criteria - thus calibrate in wind tunnel.
C_p = _____

Date of Inspection:

4-8-94

Inspected by:

CFR Title 40 Part 60 Appenidix A Method 2

S-348

INTERPOLL LABORATORIES
(612)786-6020

Stack Sampling Department - QA
Aneroid Barometer Calibration Sheet

Date 7/25/94

Technician D. VanHoever

Mercury Column Barometer No. 1

Aneroid Barometer No. DV4

Actual Mercury Barometer Read	Ambient Temp.	Temperature Correction Factor	Adjsted Mercury Barometer Read	Initial Aneriod Barometer Read	Difference (P_{ba}-P_{bm})
29.06	70	.109	28.95	28.99	.04

Has this barometer shown any consistent problems with calibration? Yes/No. If yes, explain. NO

Has problem been alleviated? Yes/No. How?

*Note

Aneroid barometers will be calibrated periodically against a mercury column barometer. The aneroid barometer to be calibrated should be placed in close proximity to the mercury barometer and left to equilibrate for 20-30 minutes before calibrating. Aneriod barometer will be calibrated to the adjusted mercury barometer readings.

S-312

APPENDIX J

TEST PLAN

Minnesota Pollution Control Agency

August 17, 1994

RECEIVED
AUG 18 1994
RIVER CITY ASPHALT

Mr. Richard Carron, President
River City Asphalt, Incorporated
P.O. Box 183
Savage, Minnesota 55378

RE: July 21, 1994, Test Plan Submittal for the rescheduled August 16, 1994, Performance Test on the Hot Mix Asphalt Facility

Dear Mr. Carron:

This letter, which grants the request for a shortened notification period, and its enclosures conclude the pretest requirements for the River City Asphalt, Incorporated (Company) facility located in Hugo, Minnesota, as discussed during our telephone conversation of August 12, 1994.

The Air Quality Division (AQD) staff of the Minnesota Pollution Control Agency (MPCA) has reviewed the submittal, and has approved the test plan with the following provisions:

1. Company plans to use approximately 30 percent Recycle material during production. As discussed, once performance test has been completed company can not operate using RAP in production until written notification has been received from the MPCA.

2. Three fuel samples, one during each of the particulate runs, must be taken as close to burner as possible as discussed in pretest meeting.

3. Company will fire No. 6 fuel oil during performance test. As indicated in telephone conversation, upon completion of performance test, company is limited to only firing Natural Gas until written notification has been received from the MPCA.

4. Company must operate facility at highest production rate during performance test. Company will be limited to tested production rated once compliance has been determined. Company plans to operate at approximately 400 - 450 tons per hour. Once the performance test has been completed, company cannot operate at a higher production rate than 390 tons per hour as indicated from previous compliance performance test from August 28, 1992.

5. Company will record all applicable operational data during the test on the "Asphalt Plant Operating Conditions During Stack Testing" form at 15 minute intervals.

6. Company will collect three composite aggregate and recycle samples for moisture analysis as defined in the test plan.

520 Lafayette Rd. N.; St. Paul, MN 55155-4194; (612) 296-6300 (voice); (612) 282-5332 (TTY)
Regional Offices: Duluth • Brainerd • Detroit Lakes • Marshall • Rochester

7. One hour of opacity observations will be recorded concurrently during one of the one-hour particulate matter runs unless weather conditions will prevent it.

8. If either portion of the performance testing, particulate matter or opacity, is delayed, verbal and written notification shall be made indicating what part of the testing could not be continued and when next scheduled test date will be.

These provisions are modifications to the test plan, and are to be incorporated into the proposed test.

Copies of the Asphalt Plant Operating Conditions During Stack Testing, Certifications Required For Performance Test Reports, and Microfiche Submittal forms are enclosed. These forms will help you to comply with the submittal requirements of Minn. Rules pt. 7017.2035 and 7017.2040. A copy of the test plan, including this letter, must be included as part of the performance test report.

Remember, it is not the Testing Consultant's responsibility to submit the Company report or microfiche or to certify that the microfiche submitted is an exact copy of the original test report by the deadlines specified in the applicable compliance document (i.e., Permit, Stipulation Agreement, Administrative Penalty Order, etc.). The responsibility for these submittals lies solely with the Company.

If you have any questions or comments on the content of this letter, please contact me at (612)297-8301.

Sincerely,

Craig D. Averman
Performance Test Coordinator
Compliance Determination Unit
Compliance and Enforcement Section
Air Quality Division

CDA:lao

Enclosures

cc: Jerry Liefert, Air Quality Division
Robert Servian, Air Quality Division
AQD File No. 2366

TEST PLAN FOR ASPHALT PLANT PERFORMANCE TEST

PART 1. GENERAL INFORMATION

Name and address of permittee: RIVER CITY ASPHALT, INC.
P.O. Box 183
Savage, Minnesota 55378

Permittee contact person: Rich Carron
(612)445-8615
FAX (612)445-0355

Permit File No.: 2366-90-OT-1

Reason for Testing: Use of R.A.P. which was not used before.

Sketches of stack source point to be tested showing test port location, stack diameter, and other pertinent information are included with this plan.

Physical location of the emission unit to be tested: Carron/Hanson Pit, Hugo, MN

Independent Testing Company: Interpoll Laboratories, Inc.
Contact: Kathy Eickstadt (612)786-6020

Test Plan Date: July 21, 1994
Test Date: August 11, 1994

PART II. TESTING REQUIREMENTS

EP#	Pollutant	Emission Limit	Applicable Rule	Method	Run Length
1	PM	0.04 GR/DSCF	MN Rules Pt 7005.2020 Subp.B 40 CFR 60, Subp.I	5	60 min
1	Opacity	20%	Same as above	9	60 min

Fuel Sampling and Analysis (as per Exhibit D): One tap sample per particulate test run will be taken as close as possible to the burner (somewhere in the feeding line) to be representative of the fuel burned at the time of the test. The samples will be taken in pint-size clean containers and according to the procedures listed in Exhibit D. The three samples will be composited and analyzed for:

Gross heating value, BTU/gal	ASTM Method 240
Sulfur, % by weight	ASTM D-1552
Ash, % by weight	ASTM D-482
Density	ASTM D-1481 or D 1290

Moisture Content in the Virgin and Recycle Aggregate:
Two samples of each (virgin and recycle aggregate) per test run of particulates. Samples must be taken as close as possible to the feeding conveyor and during the corresponding run. Mix samples of virgin aggregate with the samples of recycle material in the same proportion as they enter the dryer, this will give one composite recycle/virgin sample per test run.

One analysis of moisture content in each composite recycle/virgin aggregate sample as per ASTM or other recognized methodologies. A total of three analyses will be performed, one per test run for particulates.

PART III. OPERATING CONDITIONS

Rational for Worst Case: This year we are operating on natural gas at the Hugo site. However, depending on MNDOT requests for projects to be performed throughout the state, one possibility is that in a remote area where natural gas is not available, No. 6 fuel would be used. Production levels are the same with both kinds of fuel.

Normal Range of Process or Operating Rate: Between 380 - 450 TON/HR depending on the moisture content of material being dried.

Description of Process Equipment: Natural gravel and recycled bituminous are fed into 5 calibrated hoppers then transferred via an incline conveyor which feeds the mixture into a rotating drum which vails the natural gravel in front of a flame to remove moisture. The recycled bituminous is then mixed near the discharge end. Dust from the drying process is filtered through a Baghouse which collects the dust and it is then augered into the drum where it is mixed with Asphaltic Cement. The mix is then conveyed into a storage silo until it is dispersed into hauling units.

Description of How Process Equipment will be Monitored During Testing: River City Asphalt, Inc. will make available to the testing company all pertinent requirements

Description of Air Pollution Control Equipment:

Type:	Fabric Filter Baghouse
Mfr:	Stan Steel
Model:	2F50
Filter Cloth Area:	9072 Sq. Ft.
Cloth Material:	Nomex
Cloth Weight:	14 oz. per sq. yd.
Rated Air Volume:	55,000 acfm @ 300 °F
Air to Cloth Ratio:	6:1
Mfrs recommended Pressure Differential:	6 IN.W.C.
Cleaning System:	Jet Pulse
Dust Disposal:	Return to drum dryer

Description of How Air Pollution Control Equipment will be Monitored During Testing: See enclosed printout.

PART IV. TEST METHODS

A. EPA Method 1 for location of sampling ports and points.

B. EPA Method 2 for velocity and volumetric flow rate. Three determinations: one measurement concurrently with each test run for every pollutant.

C. EPA Method 3 for gas analysis. One test run on an integrated sample taken concurrently with each test run for every pollutant.

D. EPA Method 4 for the determination of moisture in the flue gases. One test run concurrently with each test run for every pollutant.

E. EPA Method 5 as amended by Minn. Rules pt. 7005.2060 and 7011.0725 for the concentration of particulate matter including organic condensibles. The sampling time for each run must be at least 60 minutes, and the sampling rate must be at least 32 dscf (0.9 dscm). Three runs must be conducted. Results are to be reported both as total particulate matter containing condensibles where the limit includes organic condensibles and total particulate matter excluding condensibles where the limit does not include condensibles.

F. EPA Method 9 as amended by Minnesota Rules part 7017.2060 for visual determination of opacity. One hour of observations, concurrently with a test run for particulates.

PART V. CEMS RELATIVE ACCURACY

N/A

PART VI OTHER

1. Results to be presented in GR/DSCF and LB/HR for PM; percent for opacity.

2. Description and date of last maintenance work done before the test: Since the last test in 1990 we have performed the following: See enclosed printout

3. One hard copy of the test report shall be submitted within 45 days after the date of the test.

4. A copy of the microfiche report shall be submitted within 105 days after the date of the test.

5. All submittals shall be addressed to:
Supervisor, Compliance Determination Unit
Compliance and Enforcement Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155-4194

6. **MPCA Warning:** Given the seriousness of exceeding an emission limit, the Company is hereby provided notice that enforcement action will be taken for a first performance test failure. This enforcement action will not be initiated until the results of the retest have been reviewed by MPCA staff and will require the Company to pay a civil penalty.

Please be advised that upon receiving written notice of a second performance test failure, the Company will be required to either shut down the tested process unit(s) or to submit a compliance plan, subject to MPCA approval, which indicates specific measures to be taken which are expected to all the unit(s) to operate in compliance with the applicable emission limitations. the plan must also include specific measures the facility will take to minimize emissions until compliance is demonstrated. However, if the unit(s) continue to operate, they will be considered to be operating in violation of the applicable limits from the date of the performance test until a retest has been conducted that demonstrates compliance.

Please note that results of a performance test are not final until MPCA staff provides a written compliance determination.