State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
Bureau of New Source Review
CN 027
Trenton, N.J. 08625-0027
1-800-441-0065

Anthony J. McMahon
Acting Director

William O'Sullivan, P.E., Assistant Director
Air Quality Engineering and Technology

March 9, 1990

Batch
Mix

MEMORANDUM

TO: Joe DePierro

THROUGH: Edward Choromanski

FROM: Michael Pratt

SUBJECT: Quality Material, Inc.
APC Plant ID No. 15129
NJ Stack No. 007
Permit/Certificate to Operate (P/CT) No. 80971

Emission tests were conducted at the above referenced facility on an asphalt plant controlled by a cyclone and a baghouse.

The purpose of these tests was to determine CO and THC emissions and then compare them to:

1) P/CT No. 80971 allowables and

2) CO and THC emission standards as defined in William O'Sullivan's December 8, 1989 policy letter to the New Jersey Asphalt Pavement Association.

NOTES:

1) June 1989 stack test results showed particulate emission rates within P/CT No. 80971 allowables.

2) At that time, subject equipment was not tested for CO and THC emissions.

3) A change form a temporary to permanent P/CT No. 80971 status was postponed until completion of requested tests for CO and THC.

4) November 1989 stack test was performed for this reason.

5) P/CT No. 80971 CO and THC allowables (adjusted to 7% O_2) are 100 and 50 ppmvd, respectively.

6) CO and THC emissions were greater than these allowables.

7) Asphalt plant with the above described two items (5 and 6) is covered in W. O'Sullivan's December 8, 1989 policy memo under "Permit Alteration for Existing Plants".

Leonard Sobolewski reviewed the submitted test report. His review indicated the following:

1) Production rates were obtained from submitted stack test report. As reported, they were in the 91.4% to 98.9% range of P/CT No. 80971 350 tons per hour.

2) THC emissions.

   a) Expressed in lb/hr.

      Were within P/CT No. 80971 allowable.

   b) Expressed as concentration in ppmvd (corrected to 7% O_2).

      1) Exceeded P/CT No. 80971 50 ppmvd.

      2) Were within W. O'Sullivan's December 8, 1989 policy letter's phase (June 15, 1989) 250 ppmvd.

3) CO emissions.

   a) Expressed in lb/hr.

      Exceeded P/CT No. 80971 allowable.

   b) Expressed as concentration in ppmvd (corrected to 7% O_2)

      1) Exceeded P/Ct No. 80971 100 ppmvd.

      2) Were within W. O'Sullivan's December 8, 1989 policy letter's first phase (June 15, 1989) 1000 ppmvd.

CONCLUSIONS:

1) Compliance with P/CT No. 80971:

THC (expressed in lb/hr).

2) Compliance with W. O'Sullivan's December 8, 1989 policy letter's first phase (June 15, 1989):

THC and CO.

3) Non compliance with P/Ct No. 80971:

a) CO (lb/hr and concentration corrected to 7% O_2).

b) THC (concentration corrected to 7% O_2).

RECOMMENDATIONS:

1) CRO should request from subject company:

a) Implementation of W. O'Sullivan's December 8, 1989 policy letter "Short Term Measures" during 1990 production season.

b) Another stack test for CO and THC (In order to determine effectiveness of "Short Term Measures").

c) This stack test should be considered as demonstrating compliance for first year CO and THC concentration standards for asphalt plants. Another test is required in the following year, to demonstrate compliance with those standards.

2) Do not change status of P/CT No. 80971.

cc: Bill O'Sullivan
Milton Polakovic
Lou Mikolajczyk
Dave Jones
Leonard Sobolewski

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
CN 027
Trenton, N.J. 08625-0027
(609) 984-6721
Fax # (609) 292-1074

William O'Sullivan, P.E., Assistant Director
Air Quality Engineering and Technology

February 26, 1990

MEMORANDUM

TO: Michael Pratt

FROM: Len Sobolewski

SUBJECT: Quality Materials Incorporated
APC Plant No. 15129
NJ Stack No. 007

Emission tests were conducted at the subject company on November 20, 1989 by Ecodynamics Inc. of Little Silver, new Jersey. The purpose of the tests was to determine the amounts of Total Hydrocarbons as equivalent Methane and Carbon Monoxide being discharged from The 101 Stack (NJ Stack No. 007).

The results of the aforementioned emission tests using the field data from Ecodynamics and laboratory analysis supplied by Recon Systems Inc. to the Bureau of Technical Services is as follows:

Total Hydrocarbons (as Methane)
Emission Rates

Run	Date	Allowable		Actual		
		ppm @ 7% O_2	lb/hr	ppm	ppm @ 7% O_2	lb/hr
1	11-20-89	250	5.09	45.1	121.4	3.6
2	11-20-89	250	5.09	42.0	106.9	3.8
3	11-20-89	250	5.09	45.4	119.9	4.0

The above Total Hydrocarbon (as Methane) allowable (lb/hr) emission rate is based upon the standards as stated on Permit/Certificate number 080971 as filed under the New Jersey Administrative Code 7:27-8 "Permits".

Carbon Monoxide
Emission Rates

Run	Date	Allowable		Actual		
		ppm @ 7% O_2	lb/hr	ppm	ppm @ 7% O_2	lb/hr
1	11-20-89	1000	17.82	248	667.7	33.3
2	11-20-89	1000	17.82	252	641.5	40.2
3	11-20-89	1000	17.82	243	641.9	37.9

The above Carbon Monoxide allowable (lb/hr) emission rate is based upon the standards as stated on Permit/Certificate number 080971 as filed under the New Jersey Administrative Code 7:27-8 "Permits".

Production Rates

Run	Date	Type Mix	Total Tons/Hr	Permit Tons/Hr	Production of Permit Rate
1	11-20-89	I5TOP	320	350	91.4%
2	11-20-89	I5TOP	339	350	96.9%
3	11-20-89	I5TOP	346	350	98.9%

The test results indicated that the Total Hydrocarbons (as Methane) and the Carbon Monoxide emissions (ppm) were within the policy stated in a letter sent to Mr. Clifford J. Heath, President, new Jersey Asphalt Pavement Association dated December 8, 1989. The Short Term Measures require to the spring of 1990 start-up season and require the following:

1) Adjust burner systems to ensure optimum fuel atomization and fuel/air mixing. The fuel system should have a maximum fuel rate setting and restriction to prevent fuel rates in excess of that required for the maximum air flow rate for the dryer. Combustion air, including atomizing, primary and secondary air should be adjusted to provide proper fuel atomization and good mixing for maximum combustion efficiency over the operating range of the fuel firing rate.

2) Examine the flights in the dryer to determine whether flame quenching by the aggregate is occurring. If so, replace with appropriate flights for combustion zone.

3) Review the existing procedure of loading the dryer form the aggregate and sand piles:

   a) Provide cover if possible to prevent high water content due to rain or

   b) remove sand and aggregate from piles at sufficient height above the base of the piles to reduce the moisture content in the mix to the dryer.

4) In addition, for drum mix asphalt plants:

   a) Check the location of the asphalt injection to ensure that the asphalt is not being injected near the flame zone or otherwise subjected to high temperatures. High temperatures, in this regard, can be defined as greater then the minimum flash point of the asphalt, which is 450^{o}F for Grade-AC-20.

   b) Check the flight design and arrangement for the purpose of providing a full aggregate curtain in the dryer, prior to the asphalt injection point. This will serve to thus reduce the temperature of the gases around the area of the asphalt injection.

5) Comply with the first interim permit limits for maximum hourly average (for any 60 minute period) concentrations of CO and THC of 1000 ppmvd (parts per million by volume, dry basis) and 250 ppmvd, respectively, adjusted to seven percent Oxygen, effective June 15, 1990. These will be enforceable permit limits.

The test results indicated that the Total Hydrocarbons (lbs/hr) emission were within the standards stated on Permit/Certificate Number 080971 as filed under the New Jersey Administrative Code 7:27-8 "Permits" during all test runs.

The test results also indicated that the Carbon Monoxide (lbs/hr) emission exceeded the standards stated on Permit/Certificate Number 080971 as filed under the New Jersey Administrative Code 7:27-8 "permits" during all test runs.

In conclusion the emission rate results reported by Ecodynamics Inc. essentially agreed with those calculated by the Bureau of Technical Services Review using the submitted field and laboratory data.

ECODYNAMICS, INC.
P.O.Box 81
Little Silver, NJ 07739
(201) 842-6506

STACK TEST REPORT

HYDROCARBON & CARBON MONOXIDE EMISSIONS

Plant:

Quality Materials, Inc.
Edison, NJ
APC Plant ID No.15129
NJ Stack No. 007

ECODYNAMICS, INC.
P.O.Box 81
Little Silver, NJ 07739
(201) 842-6506

STACK TEST
Quality Materials, Inc.

OBJECTIVE: Determine the Hydrocarbon and Carbon Monoxide emissions from the above asphalt batch plant.

TEST RESULTS:

Run No.	1	2	3
Date	11/20/89	11/20/89	11/20/89
Plant Air Volume			
ACFM	48,444	54,750	53,023
DSCFM	30,925	36,770	35,938
Production Rate			
TPH	320	339	346
Hydrocarbon Emissions			
Emission Rate			
PPM-Meas.	45.1	42.0	45.4
PPM-@7% Oxygen	121.4	106.9	119.9
Pounds/Hour	3.6	3.8	4.0
Allowable Emission			
Rate - PPM @7% Ox.	250	250	250
Carbon Monoxide Emissions			
Emission Rate			
PPM-Meas.	248	252	243
PPM-@ 7% Ox.	667.7	641.5	641.9
Pounds/Hour	33.3	40.2	37.9
Allowable Emission			
Rate - PPM @ 7% Ox.	1000	1000	1000

PERSONNEL: The test was done by H. T. Wollman and an assistant from Ecodynamics, Inc. with the assistance of plant personnel.

PLANT OPERATING CONDITIONS: The plant was operated routinely during the test.

Plant Production: The average production rate during the test was 335 TPH of I-5 Top Asphalt.

TESTING TECHNIQUE: A preliminary pitot traverse showed there was no cyclonic and little turbulence in the exhaust stack. Hydrocarbon and Carbon Monoxide Emissions were determined using NJ Air Test Method 3 -Modified.
A condensate run to determine moisture content of the exhaust gases was made during each HC & CO Run.The Velocity Pressures and Stack Temperatures were measured at the start and end of each HC & CO Run.

Henry T. Wollman

Description of Process: In an asphalt plant, sand and stone aggregates are dried and heated and mixed with asphaltic liquid to produce road paving materials. The product is commonly called asphalt paving, bituminous concrete or blacktop.

The aggregates are stored in bins ("cold bins") segregated by size. Depending on the product, the aggregates, in various proportions, are fed into a rotary dryer by conveyor or bucket elevator. In the dryer, moisture is evaporated and the aggregate heated to the desired temperature. The aggregates are then transported by bucket elevator ("hot elevator") to the top of the plant, segregated by size by a screening operation and stored in bins ("hot bins"). Up to this point, the operation is continuous; the remainder of the process is done on a batch cycle. As required for production, the screened aggregates from the hot bins, in various sizes and proportions, are dropped into a weigh hopper and then a pug mill. The asphaltic liquid is weighed and added to the pug mill. After an appropriate mixing time, the "blacktop" is dropped into waiting trucks or stored in silos ("hot stores").

The main source of particulate emissions is from the air system used to provide draft for the rotary dryer. "Dust," air entrained in the

dryer, passes through a system composed of a primary collector (knock-out box, cyclone, multiple small diameter cyclones), secondary collector (scrubber, bag-house), blower and ductwork. Stack emissions to the atmosphere are the cause of air pollution. "Dust" from the primary collector is returned to the process; dust from the secondary collector may be returned to the process or wasted.

The other source of potential air pollution is from the handling of the dried aggregate in the plant -- hot elevator, screen deck, hot bins, weigh hopper and pug mill. A fugitive air system that maintains these sections of the plant under a slight negative pressure prevents dust from escaping to the atmosphere. The fugitive air system is vented into the main air system at some point after the dryer.

TABLE OF CONTENTS

ECODYNAMICS, INC.

"Better Ecology Thru Productivity"

Plant Quality Mat'ls. - ID # 15727 TEST DATE 11/24/87

Carbon Monoxide Emissions

Run #	$CO_{conc.}$ PPMV	CO_{conc} @7% O_2	CO_{conc} #/Hr.
1	248	667.7	33.3
2	252	691.5	40.2
3	243	641.9	37.9

ECODYNAMICS, INC.
"Better Ecology Thru Productivity"

Plant Quality Malt. - ID # 15-179 TEST DATE 11/21/89

Total Hydrocarbons as Methane (CH_4)

RUN #	GAS BAG PPMV	IMPINGER CONC. mg/L	Purge Time min	Corrected Impg. Conc. PPM	Total HC as meas. PPM	PPM @ 7%	#/HR
1	35	12	10	10.1	45.1	131.4	3.6
2	36	7.0	10	6.0	42.0	106.9	3.8
3	34	14	14	11.4	45.4	119.9	4.0

$$\text{Impg Conc (Corrected)} = \text{Impg. Conc. (meas.)} \times \frac{60}{60 + \text{purge time}}$$

$$HC_{@7\%O_2} = HC_{(meas)} \times \frac{14}{21 - O_2\,(DRY)}$$

$$VOS_{\#/HR} = \frac{VOS_{conc\,(ppm)} \times SCFM \times MW(HC) \times 60}{380 \times 10^6}$$

ECODYNAMICS, INC.
P.O.BOX 81
LITTLE SILVER, N.J. 07739
(201) 842-6506

11/28/89

TEST: EPA Method # 10--Intergrated sample--CO-- & T.HC.

PLANT: Quality Materials ID # 15129
Edison, N.J.

LEAK CK.
START. - OK
END - OK

SAMPLING LOCATION: _____

RUN NO.	METER TEMP IN/OUT	TIME, DATE	D.G.M.	ROTOMETER READING	T_p	OPERATOR	T_{DARK} INLET
1	IN/OUT	START	052.00				
	50/50	5 MIN	52.46	1½	56		50
	50/51	10	52.79	1½	57		50
	51/51	15	53.11	1½	56		50
	52/51	20	53.62	1½	57		50
	52/52	25	53.78	1½	52		50
	52/52	30	54.01	1½	54		50
	53/53	35	54.29	1½	59		50
	53/53	40	54.55	1½	53		51
	53/53	45	54.78	1½	54		52
	54/54	50	55.04	1½	55		53
	54/54	55	55.46	1½	55		53
	54/54	60	55.61	1½	55		53

ECODYNAMICS, INC.
P.O.BOX 81
LITTLE SILVER, N.J. 07739
(201) 842-6506

TEST: EPA-Method # 10--Intergrated sample--CO--? T.HC. 11/20/84

PLANT: Quality Materials 101-1572 Edison, N.J.

SAMPLING LOCATION:

LEAK CK.
START OK
END OK

RUN NO.	METER TEMP	TIME, DATE	DG.M.	ROTOMETER READING	Tp	OPERATOR VAC	FINAL INHG
9	IN/OUT	START.	56.00			1 13/51 PRI	
	60/60	5 min	56.46	1½	62	0	60
	60/60	10	56.72	1½	62	0	60
	60/60	15	56.99	1½	62	0	63
	60/60	20	57.20	1½	64	0	61
	60/60	25	57.38	1½	64	0	60
	60/60	30	57.54	1½	65	0	60
	60/60	35	57.70	1½	67	0	60
	60/60	40	57.86	1½	67	0	60
	60/60	45	58.06	1½	68	0	62
	60/60	50	58.23	1½	68	0	62
	60/60	55	58.47	1½	69	0	62
	60/60	60	58.75	1½	68	0	63
						2.5	DRY

ECODYNAMICS, INC.
P.O.BOX 81
LITTLE SILVER, N.J. 07739
(201) 842-6506

TEST: EPA Method # 10--Intergrated sample--CO-$\frac{1}{4}$ T. HC 11/4/89

PLANT: Quality Materials ID#/5129
Edison, N.J.

SAMPLING LOCATION:

LEAK CK
START OK
LEAK OK

RUN NO.	METER TEMP	TIME, DATE	D.G.M.	ROTOMETER READING		T_p	OPERATOR	$T_{TRAIN\ INLET}$
3	IN/OUT	START	59.03	VAC			START 3:33	
	5 min	60/60	59.23	0	1½	60		55
	10	60/60	59.36	0	1½	62		55
	15	64/60	59.48	0	1½	63		55
	20	60/60	59.61	0	1½	63		55
	25	60/60	59.74	0	1½	63		55
	30	64/60	59.87	0	1½	64		55
	35	60/60	60.05	0	1½	64		55
	40	64/60	60.20	0	1½	64		55
	45	64/60	60.33	0	1½	64		55
	50	60/60	60.45	0	1½	64		55
	55	64/60	60.56	0	1½	64		55
	60	64/60	60.68	0	1½	64	4:33 DONE	55

RECON SYSTEMS INC.

ROUTE 202N, P.O. BOX 460, THREE BRIDGES, N.J. 08887-0460
201-782-5900 FAX 201-782-0072
NEW ENGLAND 508-752-4217 PENNSYLVANIA 215-433-5511 CONNECTICUT 203-293-1212

ANALYSIS REPORT

cember 19, 1989

TO: Ecodynamics Inc.
P.O. Box 81
Little Silver, NJ 07739

ATTN: Hank Wollman
RECON Project No. 0816

Sample: Impinger Water, sampled 11/20/89

RECON Sample No.	18624	18625	18626	18627	Detection
Sample ID	Run-1	Run-2	Run-3	Blank	Limit
Parameter	(mg/L)				
Total Hydrocarbons as Methane	12	7.0	14	ND	2.5
	(mls)				
Final Sample Volume	31	32	33	33	-

ND = None Detected
mg/l = milligrams per liter
mls = milliliters

Samples for this project will be retained for sixty (60) days from the date of this report unless otherwise directed.

Submitted By

Patrick J. Mulrooney, B.S.
Laboratory Director

per John R. Geissler, B.S.
Manager, Organic Laboratory

JRG/lej (ST-S)
0816

Notebook: FID-1, pg. 49

New Jersey State Certified Water Laboratory
Certification No. 10196

RECON SYSTEMS INC.

ROUTE 202N, P.O. BOX 460, THREE BRIDGES, N.J. 08887-0460
201-782-5900 FAX 201-782-0072
NEW ENGLAND 508-752-4217 PENNSYLVANIA 215-433-5511 CONNECTICUT 203-293-1212

ANALYSIS REPORT

December 19, 1989

TO: Ecodynamics Inc.
P.O. Box 81
Little Silver, NJ 07739

ATTN: Hank Wollman
RECON Project No. 0816

Sample: Gas, sampled 11/20/89

RECON Sample No.	18621	18622	18623
Sample ID	Run-1	Run-2	Run-3
Parameter	(ppmv)		
Total Hydrocarbons as Methane	35	36	34
Carbon Monoxide	248	252	243

ppmv = parts per million by volume

Samples for this project will be retained for sixty (60) days from the date of this report unless otherwise directed.

Submitted By

Patrick J. Mulrooney, B.S.
Laboratory Director

per John R. Geissler, B.S.
Manager, Organic Laboratory

JRG/lej (ST-S)
0816

New Jersey State Certified Water Laboratory
Certification No. 10196

RECON SYSTEMS, INC.
ROUTE 202N, BOX 460, THREE BRIDGES, NJ 08887
201-782-5900

CHAIN-OF-CUSTODY/REQUEST FOR ANALYSIS/DOT SHIPPING PAPER

(Use one for ~~each~~ sample) PROJECT MANAGER ~~GW~~ AMcN

SAMPLE NO. B 18621 ANALYTICAL RESULTS TO BE REPORTED TO: ~~ALICE~~ PAT

SAMPLE LOCATION Run 1 RECON JOB NO. 0816

SAMPLE DESCRIP. gas bag SAMPLING DATE/TIME 11/20/89 BY:

Relinquished By Person/Organ. (Signature)	Received By Person/Organ./ Date/Time (Signature)	Container Description and Preservative	Analysis Requested	Analysis Performed By Person/Lab	Date/Time Analysis Performed	Results
FWS	EMH | R 11-21-89 3:25	80 L tedlar gas bag	THC as CH_4	Alcmc/R	1708 11/21/89	35
			CO	Alcmc/R		~~250~~ 248

MAKE ADDITIONAL COMMENTS/NOTES

RUSH YES ☐ NO ☒

EMERGENCY YES ☐ NO ☒

COMPLIANCE OR TIER II YES ☒

IF SAMPLES HAVE BEEN DETERMINED HAZARDOUS, PLEASE INCLUDE SHIPPING NAME, HAZARD CLASS, AND IDENTIFICATION NUMBER.

COPIES OF THIS FORM MUST BE ATTACHED TO EACH LABORATORY REPORT.

L-37A (CP8)(July 11, 1988)

2 of 7

RECON SYSTEMS, INC.
ROUTE 202N, BOX 460, THREE BRIDGES, NJ 08887
201-782-5900

CHAIN-OF-CUSTODY/REQUEST FOR ANALYSIS/DOT SHIPPING PAPER

(Use one for B 18622 sample) PROJECT MANAGER ~~GW~~ AMcN

SAMPLE NO. _____ ANALYTICAL RESULTS TO BE REPORTED TO: PAT

SAMPLE LOCATION Run #2 RECON JOB NO. 0816

SAMPLE DESCRIP. gas bag SAMPLING DATE/TIME 11/20/89 BY: _____

Relinquished By Person/Organ. (Signature)	Received By Person/Organ./ Date/Time (Signature)	Container Description and Preservative	Analysis Requested	Analysis Performed By Person/Lab	Date/Time Analysis Performed	Results
FWS	EMH/R 11-21-89 3:25	80 L tedlar gas bag	THC as CH_4	AWMC/R	1711	136
			CO	AWMC/R	11/21/89	258

MAKE ADDITIONAL COMMENTS/NOTES _____

RUSH YES ☐ NO ☒

EMERGENCY YES ☐ NO ☒

COMPLIANCE OR TIER II YES ☒

IF SAMPLES HAVE BEEN DETERMINED HAZARDOUS, PLEASE INCLUDE SHIPPING NAME, HAZARD CLASS, AND IDENTIFICATION NUMBER.

COPIES OF THIS FORM MUST BE ATTACHED TO EACH LABORATORY REPORT.

L-37A (CP8)(July 11, 1988)

3 of 7

RECON SYSTEMS, INC.
ROUTE 202N, BOX 460, THREE BRIDGES, NJ 08887
201-782-5900

CHAIN-OF-CUSTODY/REQUEST FOR ANALYSIS/DOT SHIPPING PAPER

(Use one for sample) PROJECT MANAGER ~~GW~~ AMcN

SAMPLE NO. B 18623 ANALYTICAL RESULTS TO BE REPORTED TO: PAT

SAMPLE LOCATION Run 3 RECON JOB NO. 0816

SAMPLE DESCRIP. gas bag SAMPLING DATE/TIME 11/20/89 BY:

Relinquished By Person/Organ. (Signature)	Received By Person/Organ./ Date/Time (Signature)	Container Description and Preservative	Analysis Requested	Analysis Performed By Person/Lab	Date/Time Analysis Performed	Results
FWS	EMH/R 11-21-89 3:25	80 L tedlar gas bag	THC as CH4	Acuma/R	1715 11/21/89	34
			CO	ACUMA/R		243

MAKE ADDITIONAL COMMENTS/NOTES

RUSH YES ☐ NO ☒

EMERGENCY YES ☐ NO ☒

COMPLIANCE OR TIER II YES ☒

IF SAMPLES HAVE BEEN DETERMINED HAZARDOUS, PLEASE INCLUDE SHIPPING NAME, HAZARD CLASS, AND IDENTIFICATION NUMBER.

COPIES OF THIS FORM MUST BE ATTACHED TO EACH LABORATORY REPORT.

L-37A (CP8)(July 11, 1988)

RECON SYSTEMS, INC.
ROUTE 202N, BOX 460, THREE BRIDGES, NJ 08887
201-782-5900

CHAIN-OF-CUSTODY/REQUEST FOR ANALYSIS/DOT SHIPPING PAPER

(Use one for each sample) PROJECT MANAGER GWA McN

SAMPLE NO. B 18624 ANALYTICAL RESULTS TO BE REPORTED TO: JRG

SAMPLE LOCATION Run #1 RECON JOB NO. 0816

SAMPLE DESCRIP. impinger Solution SAMPLING DATE/TIME 11/20/89 BY:

Relinquished By Person/Organ. (Signature)	Received By Person/Organ./ Date/Time (Signature)	Container Description and Preservative	Analysis Requested	Analysis Performed By Person/Lab	Date/Time Analysis Performed	Results
FWS	EMH/R 11-21-89 3:25	1-40 ml vial	THC as CH_4	PR	12/12	

MAKE ADDITIONAL COMMENTS/NOTES

RUSH YES ☐ NO ☒

EMERGENCY YES ☐ NO ☒

COMPLIANCE OR TIER II YES ☒

IF SAMPLES HAVE BEEN DETERMINED HAZARDOUS, PLEASE INCLUDE SHIPPING NAME, HAZARD CLASS, AND IDENTIFICATION NUMBER.

COPIES OF THIS FORM MUST BE ATTACHED TO EACH LABORATORY REPORT.

L-37A (CP8)(July 11, 1988)

5 of 7

RECON SYSTEMS, INC.
ROUTE 202N, BOX 460, THREE BRIDGES, NJ 08887
201-782-5900

CHAIN-OF-CUSTODY/REQUEST FOR ANALYSIS/DOT SHIPPING PAPER

(Use one form per sample) B 18625 PROJECT MANAGER GW AMcN

SAMPLE NO. _____ ANALYTICAL RESULTS TO BE REPORTED TO: JRG

SAMPLE LOCATION Run #2 RECON JOB NO. 0816

SAMPLE DESCRIP. impinger sol. SAMPLING DATE/TIME 11/20/89 BY: _____

Relinquished By Person/Organ. (Signature)	Received By Person/Organ./ Date/Time (Signature)	Container Description and Preservative	Analysis Requested	Analysis Performed By Person/Lab	Date/Time Analysis Performed	Results
FWS	EMH/R 11-21-89 3:25	1-40 ml vial	THC as CH_4	CP/R	12/12	

MAKE ADDITIONAL COMMENTS/NOTES _____

RUSH YES ☐ NO ☒

EMERGENCY YES ☐ NO ☒

COMPLIANCE OR TIER II YES ☒

IF SAMPLES HAVE BEEN DETERMINED HAZARDOUS, PLEASE INCLUDE SHIPPING NAME, HAZARD CLASS, AND IDENTIFICATION NUMBER.

COPIES OF THIS FORM MUST BE ATTACHED TO EACH LABORATORY REPORT.

L-37A (CP8)(July 11, 1988)

RECON SYSTEMS, INC.
ROUTE 202N, BOX 460, THREE BRIDGES, NJ 08887
201-782-5900

CHAIN-OF-CUSTODY/REQUEST FOR ANALYSIS/DOT SHIPPING PAPER

(Use one for sample) B 18628 PROJECT MANAGER GW AMcN

SAMPLE NO. _____ ANALYTICAL RESULTS TO BE REPORTED TO: JRG

SAMPLE LOCATION Run #3 RECON JOB NO. 0816

SAMPLE DESCRIP. impinger Solution SAMPLING DATE/TIME 11/20/89 BY: _____

Relinquished By Person/Organ. (Signature)	Received By Person/Organ./ Date/Time (Signature)	Container Description and Preservative	Analysis Requested	Analysis Performed By Person/Lab	Date/Time Analysis Performed	Results
FwS	EMH/R 11-29-89 3:25	1-40ml Vial	THC as CH_4	@/R	12/12	

MAKE ADDITIONAL COMMENTS/NOTES _____

RUSH YES ☐ NO ☒

EMERGENCY YES ☐ NO ☒

COMPLIANCE OR TIER II YES ☒

IF SAMPLES HAVE BEEN DETERMINED HAZARDOUS, PLEASE INCLUDE SHIPPING NAME, HAZARD CLASS, AND IDENTIFICATION NUMBER.

COPIES OF THIS FORM MUST BE ATTACHED TO EACH LABORATORY REPORT.

RECON SYSTEMS, INC.
ROUTE 202N, BOX 460, THREE BRIDGES, NJ 08887
201-782-5900

CHAIN-OF-CUSTODY/REQUEST FOR ANALYSIS/DOT SHIPPING PAPER

(Use one for each sample) PROJECT MANAGER GW AMcN

SAMPLE NO. B 18627 ANALYTICAL RESULTS TO BE REPORTED TO: JRG

SAMPLE LOCATION Blank RECON JOB NO. 0816

SAMPLE DESCRIP. Impinger Solution SAMPLING DATE/TIME 11/15/89 BY:

Relinquished By Person/Organ. (Signature)	Received By Person/Organ./ Date/Time (Signature)	Container Description and Preservative	Analysis Requested	Analysis Performed By Person/Lab	Date/Time Analysis Performed	Results
FWS	EMH/R 11-21-89 3:25	1-40 ml vial	THC as CH_4	GC/R	12/12	

MAKE ADDITIONAL COMMENTS/NOTES

RUSH YES ☐ NO ☒

EMERGENCY YES ☐ NO ☒

COMPLIANCE OR TIER II YES ☒

IF SAMPLES HAVE BEEN DETERMINED HAZARDOUS, PLEASE INCLUDE SHIPPING NAME, HAZARD CLASS, AND IDENTIFICATION NUMBER.

COPIES OF THIS FORM MUST BE ATTACHED TO EACH LABORATORY REPORT.

L-37A (CP8)(July 11, 1988)

ECODYNAMICS, INC.
"Better Ecology Thru Productivity"
P.O. BOX 81, LITTLE SILVER, NEW JERSEY 07739
201-842-6506 – 201-741-5063

Quality Mtls. ID# 15729

11/20/89
CO & HC EMISSIONS

SUMMARY

Run No.		1	2	3
V_m(act)	CF	74.16	74.89	74.73
V_w(act)	ML	361	261	264
Δ P	"H_2O	0.756/.684	0.819/.743	0.694/.784
P_b	"Hg	30.01	30.01	30.01
H	"H_2O	4.0	4.0	4.0
T_m	°F	54.0	56.5	59.8
T_s	°F	220.8	221.0	212.5
Θ	Min.	60	60	60
V_s	Ft./sec.	50.78	57.39	55.56
P_s	"Hg	30.01	30.01	30.07
A_n	$Ft.^2$	—	—	—
Vol. act	ACFM	48,494	54,750	53,023
Sample Wt.	gms	—	—	—
A stack	ft^2	15.9	15.9	15.9
V_m std	CF	77.89	77.82	77.16
V_w	CF	17.11	12.37	12.51
B_{wo}	%	18.0	13.7	14.0
C's	Grains/SCF Dry	—	—	—
C	#/SCF Dry	—	—	—
Vol. std	SCFM	30,925	36,770	35,938
E	#/hr.	—	—	—
I	%	—	—	—

ECODYNAMICS, INC.
"Better Ecology Thru Productivity"
P.O. BOX 81, LITTLE SILVER, NEW JERSEY 07739
201-842-6506 – [redacted]

11/20/89

SAMPLE CALCULATIONS

Quality Meth. 10 # 15 12-9

Test Moisture Content

Run No. 1

I. Samples wt.

Filter + Catch	gms.	
Filter + (tare)	gms.	
Washing	gms.	
Total wt. for cal.	gms.	

II. Condensate & Moisture in Drierite

Condensate	ml	549 − 200 = 349	
Moisture	ml	+ 1.2 = 361	361
V_{1_c} Total Moisture			

III. $V_m\,(STD) = 17.71\, V_{m(act)} \left[\frac{P_b + \frac{H}{13.6}}{T_m} \right]$

$= 17.71 (74.16) \left[\frac{30.01 + \frac{4.0}{13.6}}{571} \right]$

77.89

IV. $V\,(STD) = 0.0474 \times V_{1_c}$

$= 0.0474 \times 361$

17.11

V. $B_{wo} = \frac{V_w\,(STD)}{V_m\,(STD) + V_w\,(STD)}$

$= \frac{17.11}{77.89 + 17.11} \times 100$

18.0%

SAMPLE CALCULATIONS

VI. Stack Gas Velocity

Stack Gas Density

~~Vel = 2.90 (k) (pts)$^{1/2}$ (P_b/P_s)$^{1/2}$ (1/G)$^{1/2}$~~

$$V_s = 85.49 (K_p)(\Delta p)^{1/2} \left(T_s/(P_b \times m) \right)^{1/2}$$

START $= 85.49 (.84)(0.756)^{1/2} \left(683.9/(30.01 \times 27.22) \right)^{1/2}$

(END) $= 85.49 (.84)(0684)^{1/2} \left(677.6/(30.01 \times 27.22) \right)^{1/2}$

52.28 START.

49.28 END.

50.78 Avg.

VII. $C's = 0.0154 \times \frac{W_t}{V_m\ STD}$

VIII. $C = 2.205 \times 10^{-6} \times \frac{W_t}{V_m\ STD}$

IX. Vol. Stack (acfm) = Vel x area $= 50.78 \times 60 \times 15.9$ = 48,444

~~X. Vscfm dry = Vacfm $\frac{(530)}{(T_s)} \times \frac{(1-B_{ws})}{(1)}$~~

$$Q = 60(1-B_{w_0})(V_s)(A)\left(\frac{T_{STD}}{T_s}\right)\left(\frac{P_s}{P_s}\right)$$

$= 60(1-.18)(50.78)(15.9)\left(\frac{530}{680.8}\right)\left(\frac{30.01}{30.01}\right)$ = 30,925

XI. Emission = 60 x (C) x (Vscfm dry)

XII. $$I = \frac{1.667\ (T_s) \times \left[(.00267\ V_{lc}) + \frac{V_m}{T_m}\left(P_b + \frac{H}{1.36}\right) \right]}{\Theta\ V_s\ P_s\ A_n}$$

ECODYNAMICS, INC. 201-842-6506

P.O. BOX 81 (201)
LITTLE SILVER, NEW JERSEY 07739

PLANT Quality Material - ID#15729 DATE 11/30/89
Edison, N.J. RUN No. 1

SAMPLING LOCATION

Moisture Determination - CO2/HC TEST

Nozzle Diam.		inches	Dry Gas Meter-Finish	738.50	CF
Temp. Dry Bulb		°F	Start	664.34	CF
Temp. Wet Bulb		°F	Dry Gas Volume	74.16	CF
Moisture Content		%	Stack Diam.	48 ϕ	inches
Test Period		minutes	Condensate		cc
C.F.			Impingers #1&2	100 ml H2O EACH	
Filter No.			3	Dry	
Filter Tare Wt.		gms.	4	Silica Gel	

Distance From Port to Sampling Point – Inches

1	2	3	4	5	6	7	8	9	10	11	12

Port & Point	Time (min.)	P "H2O	H "H2O	Stack Temp. °F	Meter Temp. °F In	Meter Temp. °F Out	Meter Reading	(P%)	Pb VAC	
A 1	0-5		4.0	226	50	50	671.01		0	10"/MIN
2	10		4.0	227	51	51	677.09		0	
3	15		4.0	227	51	50	683.35		0	
4	20		4.0	226	51	51	689.40		0	
5	25		4.0	220	51	50	695.70		0	
6	30		4.0	216	52	50	701.71		0	
7	35		4.0	219	53	50	708.83		0	
8	40		4.0	220	52	50	714.13		0	
9	45		4.0	225	53	50	720.48		0	
10	50		4.0	229	53	51	726.75		0	
11	55		4.0	228	53	51	732.64		0	11"/MIN
12	60		4.0	229	53	51	738.50		0	
B 1										
2			4.0	2645	622	603				
3				12						
4					1225					
5				11	24					
6				228.6						39
7					51.0					41.54
8										
9										54
10										7
11										30
12										
Total										
Avg.										

ECODYNAMICS, INC.
P. O. Box 81
LITTLE SILVER, NEW JERSEY 07739
(201) 842-6506

JOB
SHEET NO. OF
CALCULATED BY DATE
CHECKED BY DATE 11/20/87
SCALE

Quality Material, ID # 15129 Run 1
CO + HC TEST.
Velocity Pres. / Exhaust Stack - 5" ϕ

Port/ Point #	START ΔP.	START Ts.	(ΔP - .03) $\sqrt{\Delta P}$	END ΔP	END Ts.	Zero = "0.03" H₂O (ΔP ★ 0.03) $\sqrt{\Delta P}$
A-1	.69	219	.817	.70	216	.819
2	.81	220	.883	.79	219	.872
3	.84	220	.900	.83	219	.894
4	.86	220	.911	.80	220	.877
5	.85	221	.906	.79	220	.872
6	.82	221	.889	.65	214	.787
7	.76	221	.854	.63	217	.775
8	.75	221	.849	.61	218	.768
9	.81	222	.883	.66	216	.755
10	.81	222	.883	.61	216	.767
11	.76	222	.854	.59	216	.748
12	.77	222	.860	.55	216	.721
B-1	.71	225	.825	.71	215	.825
2	.85	226	.906	.68	216	.922
3	.91	227	.938	.92	217	.943
4	.86	227	.933	.84	217	.927
5	.87	227	.917	.83	217	.894
6	.83	227	.894	.78	217	.866
7	.77	227	.860	.74	218	.843
8	.75	227	.849	.71	218	.825
9	.73	227	.837	.69	219	.812
10	.72	227	.831	.66	219	.787
11	.69	228	.812	.67	219	.801
12	.67	228	.787	.62	218	.768
	5.374		20.873		5.223	19.856
	24		24		24	24
	ΔP = " 0.0756	223.9	0.8697	ΔP = 0.684	217.6	0.8273

ECODYNAMICS, INC.
"Better Ecology Thru Productivity"
P.O. BOX 81, LITTLE SILVER, NEW JERSEY 07739
201-842-6506 – [redacted]

11/21/85

SAMPLE CALCULATIONS

Quality Meth. #D # 1512§

Test Moisture Content

Run No. 2.

I. Samples wt.

Filter + Catch	gms.	
Filter + (tare)	gms.	
Washing	gms.	
Total wt. for cal.	gms.	

II. Condensate & Moisture in Drierite

Condensate	ml	957 − 700 = 251
Moisture	ml	10
V_{1_c} Total Moisture		261

III. $V_m\,(STD) = 17.71\,V_{m(act)}\left[\frac{\frac{H}{P_b + 13.6}}{T_m}\right]$

$= 17.71\,(74.89)\left[\frac{30.01 + \frac{4}{13.6}}{576.5}\right]$ = 77.82

IV. $V\,(STD) = 0.0474 \times V_{1_c}$

$= 0.0474 \times 261$ = 12.37

V. $B_{wo} = \frac{V_w\,(STD)}{V_m\,(STD) + V_w\,(STD)}$

$= \frac{12.37}{(77.82 + 12.37)} \times 100$ = 13.7%

SAMPLE CALCULATIONS

VI. Stack Gas Velocity

Stack Gas Density

~~Vel = 2.90 (k) (pts)$^{1/2}$ (P_b/P_s)$^{1/2}$ (1/G)$^{1/2}$~~

$$V_s = 85.49 (K_p)(\Delta p)^{1/2} \left(T_s/(P_b \times m) \right)^{1/2}$$

START $= 85.49 (.84)(0.819)^{1/2} \left(673.4/(30.01 \times 27.72) \right)^{1/2}$

END $= 85.49 (.84)(.743)^{1/2} \left(688.4/(30.01 \times 27.72) \right)^{1/2}$

58.48 START

56.30 END

57.39 AVG

VII. $C's = 0.0154 \times \frac{W_t}{V_m \text{ STD}}$

VIII. $C = 2.205 \times 10^{-6} \times \frac{W_t}{V_m \text{ STD}}$

IX. Vol. Stack (acfm) = Vel x area $57.39 \times 60 \times 15.9$ = 54,750

~~X. Vscfm dry = Vacfm $\frac{(530)}{(T_s)} \times \frac{(1-B_{wo})}{(1)}$~~

$$Q = 60(1-B_{w_0})(V_s)(A)\left(\frac{T_{std}}{T_s}\right)\left(\frac{P_s}{P_b}\right)$$

$$= 60(1-.137)(57.39)(15.9)\left(\frac{530}{681.0}\right)\left(\frac{30.01}{30.01}\right)$$

= 36,770

XI. Emission = 60 x (C) x (Vscfm dry)

XII. $I = \frac{1.667 (T_s) \times \left[(.00267 V_{lc}) + \frac{V_m}{T_m} (P_b + \frac{H}{1.36}) \right]}{\Theta \; V_s \; P_s \; A_n}$

ECODYNAMICS, INC. 201-842-6506

P.O. BOX 81 (201)
LITTLE SILVER, NEW JERSEY 07739

PLANT Quality Material ID#15129 Edison, N.J. DATE 11/21/84

RUN No. 2

SAMPLING LOCATION Moisture Determination - CO/HC

Nozzle Diam.		inches	
Temp. Dry Bulb		°F	
Temp. Wet Bulb		°F	
Moisture Content		%	
Test Period		minutes	
C.F.			
Filter No.			
Filter Tare Wt.		gms.	

Dry Gas Meter-Finish	813.44	CF
Start	738.55	CF
Dry Gas Volume	74.89	CF
Stack Diam.	52 ϕ	inches
Condensate		cc
Impingers #1 & 2	100 ml H_2O_2	each
3	Dry	
4	Silica Gel	

Distance From Port to Sampling Point — Inches

1	2	3	4	5	6	7	8	9	10	11	12

P_b -

Port & Point	Time (min.)	P "H_2O	H "H_2O	Stack Temp. °F	Meter Temp. °F In	Meter Temp. °F Out	Meter Reading	(P%)	Vac	11:14 START 3.5 VOLUME
1	5		4.0	215	57	57	745.31		0	
2	10		4.0	201	57	56	751.34		0	
3	15		4.0	198	57	56	757.71		0	
4	20		4.0	196	57	56	764.35		0	
5	25		4.0	195	56	56	770.91		0	
6	30		4.0	206	58	56	776.61		0	
7	35		4.0	215	58	57	782.65		0	
8	40		4.0	216	58	57	788.76		0	
9	45		4.0	214	58	56	794.94		0	
10	50		4.0	220	58	56	801.22		0	
11	55		4.0	224	58	56	807.47		0	
12	60		4.0	205	56	56	813.99		0	
1										
2			4.0	210 / 1	672	663				
3										
4										
5				208.6	1355					
6										
7					0					
8					56.5					
9										
10										
11										
12										
Total										
Avg.										

ECODYNAMICS, INC.
P. O. Box 81
LITTLE SILVER, NEW JERSEY 07739
(201) 842-6506

JOB
SHEET NO. OF
CALCULATED BY DATE
CHECKED BY DATE 11/20/84
SCALE

Quality Materials ID# 15129 Run #2
CO & HC Emission Test
Velocity Pressure / Exhaust Stack ø 4"

Pnt/ Point	START V.P.	START Ts	END V.P.	END Ts	START ΔP½	END ΔP½	10% B.M. Start
A-1	.71	219	.68	226	.843	.825	
2	.80	219	.85	226	.854	.922	
3	.91	219	.87	226	.945	.933	
4	.90	218	.85	226	.949	.922	
5	.83	218	.86	226	.911	.927	
6	.76	218	.79	226	.872	.889	
7	.75	218	.70	226	.866	.837	
8	.77	218	.67	227	.877	.819	
9	.80	218	.73	227	.894	.854	
10	.80	218	.72	227	.894	.872	
11	.81	216	.74	227	.900	.860	
12	.76	215	.71	227	.869	.843	
B-1	.62	214	.71	228	.787	.843	
2	.65	212	.80	230	.806	.933	
3	.71	210	.84	230	.843	.938	
4	.68	207	.85	231	.938	.922	
5	1.00	205	.76	230	1.00	.872	
6	1.00	204	.70	230	1.00	.837	
7	.95	206	.65	230	.975	.806	
8	.94	209	.61	230	.970	.781	
9	.78	211	.67	231	.883	.819	
10	.85	210	.66	231	.922	.812	
11	.83	212	.67	231	.911	.819	
12	.91	213	.64	231	.945	.800	
		5127		5481	21.714	20.685	
	Δp =	n = 24	ΔPs	n = 24	n = 24	n = 24	
	0.819	213.6	0.743	228.4	0.905	0.8619	

ECODYNAMICS, INC.
"Better Ecology Thru Productivity"
P.O. BOX 81, LITTLE SILVER, NEW JERSEY 07739
201-842-6506 – [redacted]

11/20/84

SAMPLE CALCULATIONS

Quality Matl. ID# 15129

Test Moisture Content

Run No. 3

I. Samples wt.

Filter + Catch	gms.	
Filter + (tare)	gms.	
Washing	gms.	
Total wt. for cal.	gms.	

II. Condensate & Moisture in Drierite

Condensate	ml	452 − 200 = 252 / 12
Moisture	ml	264
V_{1_c} Total Moisture		

III. $V_m\,(STD) = 17.71\,V_{m(act)} \left[\frac{P_b + \frac{H}{13.6}}{T_m} \right]$ = 77.16

$= 17.71(74.73)\left[\frac{30.01 + \frac{4}{13.6}}{519.8}\right]$

IV. $V\,(STD) = 0.0474 \times V_{1_c}$ = 12.51

$= 0.0474 \times 264$

V. $B_{w_o} = \frac{V_w\,(STD)}{V_m\,(STD) + V_w\,(STD)}$ = 14.0%

$\frac{12.51}{77.16 + 12.51} \times 100$

(3)

SAMPLE CALCULATIONS

VI. Stack Gas Velocity

Stack Gas Density

~~Vel = 2.90 (k) (pts)$^{1/2}$ (P_b/P_s)$^{1/2}$ (1/G)$^{1/2}$~~

$V_s = 85.49 (K_p)(\Delta p)^{1/2} \left(T_s/(P_s \times m) \right)^{1/2}$

START $= 85.49 (.84)(.694)^{1/2} \left(656.5/(30.01 \times 27.68) \right)^{1/2}$

END $= 85.49 (.84)(.784)^{1/2} \left(654.9/(30.01 \times 27.68) \right)^{1/2}$

53.26 - START

57.50 - END

55.38 AVG

VII. $C's = 0.0154 \times \frac{W_t}{V_m\ STD}$

VIII. $C = 2.205 \times 10^{-6} \times \frac{W_t}{V_m\ STD}$

IX. Vol. Stack (acfm) = Vel x area $55.38 \times 60 \times 15.9$

53023

35,938

~~X. Vscfm dry = Vacfm $\frac{(530)}{(T_s)} \times \frac{(1-B_{ws})}{(1)}$~~

$Q = 60(1-B_{wo})(V_s)(A)\left(\frac{T_{std}}{T_s}\right)\left(\frac{P_s}{P_s}\right)$

$60(1-.14)(55.38)(15.9)\left(\frac{530}{672.5}\right)\left(\frac{30.01}{30.01}\right)$

XI. Emission = 60 x (C) x (Vscfm dry)

XII. $I = \frac{1.667\ (T_s) \times \left[(.00267\ V_{lc}) + \frac{V_m}{T_m} \left(P_b + \frac{H}{1.36}\right) \right]}{\Theta\ V_s\ P_s\ A_n}$

ECODYNAMICS, INC.
842-6506
P.O. BOX 81 (201)
LITTLE SILVER, NEW JERSEY 07739

T Quality Materials ID #1529 DATE 1/20/87
Edison, N.J. RUN No. 3
AMPLING LOCATION Moisture Determination - HC & CO

Nozzle Diam.	____ inches	Dry Gas Meter-Finish	858.30 CF
Temp. Dry Bulb	____ °F	Start	413.47 CF
Temp. Wet Bulb	____ °F	Dry Gas Volume	74.73 CF
Moisture Content	____ %	Stack Diam.	5-4-4 inches
Test Period	____ minutes	Condensate	____ cc
C.F.	____	Impingers #1 & 2	100 ml H_2O (Used)
Filter No.	____	3	Dry
Filter Tare Wt.	____ gms.	4	Silica Gel

Distance From Port to Sampling Point – Inches

1	2	3	4	5	6	7	8	9	10	11	12

P_b

Point & Port	Time (min.)	P "H_2O	H "H_2O	Stack Temp. °F	Meter Temp. °F In	Meter Temp. °F Out	Meter Reading	(P%)	VAC		
1	5		4.0	196	60	60	819.38		0		
2	10		4.0	216	61	59	825.61		0		
3	15		4.0	234	60	59	832.31		0		
4	20		4.0	234	60	59	838.34		0		
5	25		4.0	243	60	59	844.61		0		
6	31		4.0	245	60	59	850.75		0		
7	35		4.0	211	60	59	857.02		0		
8	40		4.0	245	61	59	863.46		0		
9	45		4.0	246	61	59	869.59		0		
10	50		4.0	246	61	59	875.66		0		
11	55		4.0	246	61	59	882.14		0		
12	60		4.0	246	61	59	888.20		0		
1											
2			4.0	2843 / 12	725	709					
3											
4						1434 / 24					
5				4							
6				2369							
7						59.8					
8											
10											
11											
12											
Total											
Avg.											

ECODYNAMICS, INC.
P. O. Box 81
LITTLE SILVER, NEW JERSEY 07739
(201) 842-6506

JOB
SHEET NO. OF
CALCULATED BY DATE
CHECKED BY DATE 11/21/89
SCALE

Quality Materials ID # 15129 Run #3
CO & HC Emission Test
Velocity Pressure / Exhaust Stack - 54" ϕ

Port/ Point	START V.P.	START T_s	END V.P.	END T_s	START VP^½	END VP^½
A-1	.72	196	.69	232	.849	.831
2	.81	196	.81	232	.900	.900
3	.83	196	.88	235	.911	.938
4	.79	196	.86	234	.889	.927
5	.75	196	.83	230	.866	.911
6	.69	196	.78	230	.831	.883
7	.64	196	.75	231	.800	.866
8	.60	196	.75	230	.775	.866
9	.60	196	.77	229	.775	.877
10	.59	196	.76	228	.768	.872
11	.58	196	.75	229	.762	.866
12	.56	196	.74	229	.748	.860
B-1	.67	197	.72	228	.819	.849
2	.78	197	.85	228	.883	.922
3	.87	197	.87	228	.933	.933
4	.96	197	.98	228	.949	.538
5	.86	197	.83	227	.927	.911
6	.82	197	.80	227	.906	.894
7	.62	197	.78	227	.787	.883
8	.55	197	.77	227	.742	.877
9	.54	197	.75	226	.739	.866
10	.60	197	.75	226	.775	.866
11	.65	197	.74	227	.806	.860
12	.70	197	.73	225	.837	.854
					19.991	21.250
					24	24
ΔVP = 0.694	4716		ΔVP = 0.784	5493	0.8330	0.8854
	24			24		
	196.5			228.9		

ECODYNAMICS, INC.
"Better Ecology Thru Productivity"

ORSAT ANALYSIS & MOLECULAR WEIGHT

Plant Quality Mats Date 11/20/89

Run No. 1

% CO_2 3.8, % O_2 15.8, % CO —

% N_2 80.4 (by difference), % H_2O 18.0

CO_2	.038	.82	x 44 =	1.37
O_2	.158	.82	x 32 =	4.15
CO	—	—	x 28 =	—
N_2	.804	.82	x 28 =	18.46
H_2O		.18	x 18 =	3.24
				27.22

Avg. M.W. Wet Basis

Run No. 2

% CO_2 4.0, % O_2 15.5, % CO —

% N_2 80.5 (by difference), % H_2O 13.7

CO_2	0.040	.863	x 44 =	1.52
O_2	.155	.863	x 32 =	4.28
CO	—	—	x 28 =	—
N_2	.805	.863	x 28 =	19.45
H_2O		.137	x 18 =	2.47
				27.72

Avg. M.W. Wet Basis

Run No. 3

% CO_2 3.9, % O_2 15.7, % CO —

% N_2 80.4 (by difference), % H_2O 14.0

CO_2	0.039	.860	x 44 =	1.48
O_2	.157	.860	x 32 =	4.32
CO	—	—	x 28 =	—
N_2	.804	.860	x 28 =	19.36
H_2O		.140	x 18 =	2.52
				27.68

Avg. M.W. Wet Basis

ECODYNAMICS, INC.
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Plant Quality Metals 10th 15/23

Production during test:

Run #1 331 Tons × $\frac{60}{62}$ = 320 TPH

#2 328 × $\frac{60}{58}$ = 339 TPH

#3 346 × $\frac{60}{60}$ = 346 TPH

335 TPH

Plant Quality Mills 10th 15/23

Production during test:

Run #1 331 Tons × 60/62 = 320 TPH

#2 328 × 60/58 = 339 TPH

#3 346 × 60/60 = 346 TPH

335 TPH

Plant Quality Metals 10th 15/24

Production during test:

Run #1 331 Tons × 60/62 = 320 TPH

#2 328 × 60/58 = 339 TPH

#3 346 × 60/60 = 346 TPH

335 TPH

ECODYNAMICS, INC.
"Better Ecology Thru Productivity"

Quality Materials
Edison

Date

BATCH

CUSTOMER	TRUCK NO.	TONS	TYPE	TICKET NO.	TIME
		22	I5 Top		10:10
		24			10:13
		23			10:16
		25			10:20
		22			10:22
1st Run		23			10:26
		23			10:32
		16			10:35
331 Tons		20			10:40
		20			10:45
		16			10:49
		15			10:55
		24			11:00
		19			11:04
		22			11:07
		23			11:12

ECODYNAMICS, INC.
"Better Ecology Thru Productivity"

Quality Material — Date

BATCH

CUSTOMER	TRUCK NO.	TONS	TYPE	TICKET NO.	TIME
		23	I5 Top		1:16
		3			1:17
		5			1:18
		23			1:21
		12			1:24
2nd Run		21			1:26
		16			1:30
		23			1:33
328 Tons.		23			1:37
		23			1:40
		8			1:43
		10			1:45
		23			1:48
		11			1:50
		23			1:54
		25			1:58
		23			2:02
		23			2:06
		8			2:09
		2			2:14

ECODYNAMICS, INC.
"Better Ecology Thru Productivity"

Quality Materials
Edison

Date

BATCH

CUSTOMER	TRUCK NO.	TONS	TYPE	TICKET NO.	TIME
		20	I5 Top		3:32
		23	"		3:34
		10	"		3:40
		8	"		3:42
3rd Run		9	"		3:44
		23	" Dry		3:48
346 TCM		23	"		3:52
		23	"		3:56
		23	"		4:00
		23	"		4:04
		23	"		4:08
		23	"		4:12
		23	"		4:16
		23	"		4:20
		23	"		4:24
		23	"		4:28
		23	"		4:32

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
CN 027
Trenton, N.J. 08625-0027
(609) 984-6721
Fax # (609) 292-1074

William O'Sullivan, P.E., Assistant Director
Air Quality Engineering and Technology

October 2, 1989

Mr. Henry T. Wollman
Ecodynamics, Inc.
P.O. Box 81
Little Silver, NJ 07739

Re: Quality Materials
APC Plant ID No. 15129

Dear Mr. Wollman:

Our review of the additional information to be incorporated into the protocol for the above referenced facility indicates that the protocol now contains sufficient information to warrant our approval.

A mutually acceptable test date may now scheduled by contacting our office at (609)-530-4041.

Sincerely,

Frederick G. Ballay

Frederick G. Ballay
Senior Environ. Specialist
Bureau of Technical Services

11/21
(11/21/89 fax other)
609-924-0300

cc: J. DePierro

ECODYNAMICS,INC.
P.O.BOX 81
LITTLE SILVER,NJ 07735
(201) 842-6506

SEP'T 26,1989

Mr. Edward M. Choromanski
Chief, Bureau of Technical Services
N.J.D.E.P.
CN 027
Trenton, NJ 08625-0027

Re: 1.- Trap Rock Industries
APC Plant ID No. 35021
NJ Stack No. 008
Permit No. 86083

2.- Quality Materials, Inc.
APC Plant ID No. 15129
NJ Stack No. 007
Permit No. 80971

Dear Mr. Choromanski:

I received your letters dated Sep't. 11,1989 regarding the total hydrocarbon and carbon monoxide emission tests for the above plants.

The following items are addressed as noted in your letter for approval of the protocol:

1.- Temperature and velocity of the stack gases will be determined prior to and after each test run. USEPA Test Methods Nos. 1 and 2 will be used.

2.- Orsat analyses of the stack gases for each run will be done using one of the procedures in USEPA Test Method No. 3.

3.- Moisture determination will be done for each test run using USEPA Test Method No. 4.

4.- The CO and THC sample rate will be one liter per minute. A flow meter in the line will be used to regulate the sample flow rate. A test dry gas meter will be used to

determine the sample flow volume.

5.- Pressure and temperature of the meter will be recorded during the test.

6.- Leak checks of the sample train and of the sample bags,will be done using USEPA Test Method 10.

7.- The CO and THC tests will be one hour long while the plant is operating.

8.- The production rate of the plant, including product type, during the test will be recorded and included in the final report.

9.- Calibration data for the sampling equipment will be available at the test site.

I hope the above answers satisfy your requirements for this test. If you have any questions, please contact me.

Sincerely,

Henry T. Wollman

cc: Mr. Gil Gerard, Trap Rock Industries.

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
CN 027
Trenton, N.J. 08625-0027
(609) 984-6721
Fax # (609) 292-1074

William O'Sullivan, P.E., Assistant Director
Air Quality Engineering and Technology

September 11, 1989

Mr. Henry T. Wollman
Ecodynamics, Inc.
P.O. Box 81
Little Silver, New Jersey 07739

Re: Quality Materials, Inc.
APC Plant ID No. 15129
NJ Stack No. 007

Dear Mr. Wollman:

I have received you letter dated August 26, 1989 regarding the total hydrocarbon and carbon monoxide emission tests for the above-referenced facility. The emission tests are required as a condition of approval of Permit No. P-80971.

Our review of the proposed procedures indicates several items which must be clarified prior to our approval of the protocol. These items are as follows.

1) Temperature and velocity of the stack gas must be determined prior to and after each test run following the procedures outlined in EPA Methods One and Two.

2) Orsat analysis of the stack gas for each test run must be conducted following the three procedures outlined in EPA Method Three.

3) Moisture determination must be made for each test run following the procedure outlined in EPA Method Four.

4) The CO and THC (as Methane) sample rate must be one liter per minute. Information on how you will regulate the sample flow rate must be submitted.

5) Pressure and temperature of the flow rate meter (required in item No. 4) must be recorded during the test.

6) You are required to conduct leak checks of the sample train and the sample bags (separately) as per EPA Method Ten.

7) CO and THC test duration must be a minimum of 60 minutes, while the source is operating.

8) The company is required to monitor and record the amount of material processed for each test run. This information must be included in the final test report.

9) Calibration data for all pertinent sampling equipment must be submitted to the on-site observer from this office on the first day of testing.

You are required to address each item listed above, in writing, to this office. Until we have received, reviewed and approved your response, the test protocol can not be accepted.

If you have any questions, please feel free to call me at (609)-530-4041.

Sincerely

Edward M. Choromanski
Chief
Bureau of Technical Services

cc: J. DePierro - CRO

ECODYNAMICS, INC.
P.O.BOX 81
LITTLE SILVER, N.J. 07739
(201)842-6506

Aug. 26,1989

Mr. Edward M. Choromanski
Chief, Bureau of Technical Services
N.J.D.E.P.
CN 027
Trenton, N.J. 08625-0027

Re: Trap Rock Industries
Plant No. 1
APC Plant ID No. 35021
NJ Stack No. 008
Permit No. 086083
Plant No. 2
APC Plant ID No. 15129
NJ Stack No. 007
Permit No. 080971

Dear Mr. Choromanski:

I have been hired to determine the carbon monoxide and hydrocarbon emissions from the above two plants. I understand that the particulate emisaions were determined by others but they were unable to do the hydrocarbon test because of the time limitations on the start of sample analysees. Trap Rock Industries is required to submit stack test results by Oct. 5,1989; therefore, I request you expedite review of this pre-test protocol.

Carbon monoxide emissions will be determined following the procedures outlined in EPA Test Method 10, see attached. A condensation train using midget impingers will be used in place of an air cooled condenser.

The hydrocarbon sample will be taken from the same bag sample as the carbon monoxide. Total hydrocarbon samples will be analyzed as methane and analyses started within 24 hours of collection.

Recon Systems Inc., Three Bridges, N.J. (201-782-5900) will be doing the gas sample analyses - see attached for laboratory procedures.

Please call me if you have any questions or comments. The test will be scheduled after the protocol is approved.

Sincerely,

Henry T. Wollman

cc: Mr. Gil Gerard, Trap Rock Industries