WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division

ANNUAL INSPECTION REPORT
and
REVIEW OF GR-2-C #4 CALCINER STACK TEST

NAME OF FIRM: Allied Chemical Company

NAME OF PLANT: Allied Chemical Green River Soda Ash Refinery

RESPONSIBLE OFFICIAL: Bill Stocker, Environmental Control Manager
Otto Schnauber, Environmental Engineer

PLANT LOCATION: Sections 29, 30, 31, 32 and 33 of T19N, R109W and Sections 4, 5 and 6 of T18N, R109W, about 15 miles west of Green River, Wyoming

DATE OF INSPECTION: October 25, 1985

DIVISION REPRESENTATIVE: Mike Crawford, Environmental Engineer

REPORT DATE: February 12, 1986

STAFF REVIEW: 3/3/86

LAST ANNUAL INSPECTION: October 30, 1984

PROCESS DESCRIPTION:

This plant produces soda ash (Na_2CO_3) from trona ore ($Na_2CO_3 \cdot NaHCO_3 \cdot 2H_2O$) by the monohydrate process.

Ore is hoisted from the mine and conveyed to screens where oversize is scalped and conveyed to the ore storage pile. Undersize is further crushed and screened to the appropriate size and conveyed to the calciners. When needed, ore is reclaimed from the ore stockpile to be crushed and sized for process feed.

In the calciners, ore is heated to drive off the H_2O and CO_2 from the bicarbonate ion and the water of hydration in the trona molecule.

From the calciner, the ore is dissolved in dissolving tanks.

From the dissolvers, the soda ash liquor is purified by a series of screw classifiers, clarifiers, and filters. The insoluble mud from the dissolver is washed once to remove any remaining soda ash content before being flushed to the evaporation ponds for storage, along with mud from the clarifiers.

The purified soda ash liquor is then dewatered in triple effect evaporators to produce wet soda ash crystals. These soda ash crystals are further dewatered by centrifuges before being fed to the rotary drying kilns.

Dried soda ash is then conveyed to the scalping screens, where oversize is removed, and to fluidized bed product coolers.

Soda ash from the product coolers is then conveyed to product storage silo. Attached at the end of this report is a composite flow diagram (Fig. 1) and a process flow diagram for the three process trains (Fig. 2).

AIR QUALITY PERMITS:

See Annual Inspection Report, December 10, 1984.

AMBIENT AIR MONITORING:

Allied operates four hi-vol monitoring stations around the plant. All sites are well in compliance with the Wyoming ambient standards.

Site #1 is located about 0.65 miles ENE of the plant. The meterological station is located at this site. The annual geometric mean for 1984 and 1985 was 56.1 and 50.2, respectively. There were three exceedances of the 24 hour standard in 1984, while 1985 had only one.

Site #2 is approximately 1.16 miles ENE of the plant. The annual geometric mean was 36.9 and 35.5 for 1984 and 1985, respectively. Only one exceedance of the 24 hour standard was recorded in 1984 and no exceedances were recorded in 1985.

From 1974 to 1979, sulfur dioxide monitoring was conducted at this site also. Monitoring was discontinued because annual averages were well below the Wyoming standard and only one short term exceedance was ever recorded. A summary of this data can be found in Allied's August 19, 1982 letter.

Site #3 is approximately 1.06 miles SW of the plant. The 1984 and 1985 annual geometric means were 18.3 and 22.4, respectively. There were no exceedances of the 24 hour standard during 1984 and 1985.

Site #4 is north of the plant, approximately 0.79 miles. In 1984 the annual geometric mean was 26.4 and in 1985, the annual geometric mean was 26.7. There were no 24 hour exceedances recorded in either year.

Site #5 was located east of the plant, about 2.20 miles. This site was discontinued at the end of 1979, after data collected indicated that this plant had only a limited effect on recorded particulate levels.

Figure 3 is a map showing the location of these ambient stations. A summary of the hi-vol data obtained from these stations is presented in Table I at the end of this report.

Allied analyzes each of its collected hi-vol samples for the presence of trona and soda ash dust. Sodium compounds accounted for 21-41% of the sample particulates.

Trona and Soda Ash Contribution to Particulate Concentration
1985
(1984)

	Site 1	2	3	4
Arithmetic Mean Concentration (ug/m3)	59.07 (64.88)	40.40 (43.37)	28.96 (24.50)	38.74 (32.48)
NaHCO3 (trona)	20.36% (20.23%)	17.92% (17.85%)	19.62% (17.19%)	24.19% (23.52%)
Na2CO3 (soda ash)	18.55% (20.96%)	8.80% (10.94%)	3.78% (3.36%)	11.32% (8.67%)
Other Particulate	61.09% (58.81%)	73.28% (71.21%)	76.60% (79.45%)	64.49% (67.81%)

CONTINUOUS EMISSION MONITORING (CEM):

Allied currently operates a Lear Siegler RM41 Opacity Monitor and a Lear Siegler SM800 SO2/NOx Stack Gas Monitor on each of the two plant coal fired boilers, designated as "C" and "D". These CEM systems are required by New Source Performance Standards (NSPS) to which the "C" and "D" boilers are subject to.

1985 and (1984) CEM Data

	"C" Boiler		"D" Boiler	
	Compliance Rate	Monitor Reliability	Compliance Rate	Monitor Reliability
Opacity	97% (93%)	94% (96%)	99% (96%)	94% (97%)
Sulfur Dioxide	98% (87%)	91% (94%)	97% (78%)	92% (76%)
Nitrogen Oxides	95% (91%)	91% (94%)	94% (88%)	92% (76%)

As can be soon from this data compliance rates have risen substantially for both boilers. Monitor reliability for SO2 and Nox on the "D" boiler have improved significantly since 1984. The monitor reliability for opacity on both boilers and the gases on the "C" boiler dropped 2-3% since 1984.

Allied adds Na2CO3 in with the boilers' feed coal to lower the ash resistivity; thus, improving the collection efficiency of the precipitators. Sodium conditioning on the "C" and "D" boilers commenced on June 17, 1981 and March 1, 1982, respectively. It has been determined that this sodium conditioning program has improved opacity performance of the boilers' precipitators.

The Division sent Allied a letter (10-11-85) stating that EPA has requested a copy of the Continuous Emission Monitor/Excess Emission Reports. Allied currently reports, for SO2 and NOx, a one hour average which exceeds the allowable emission rate as an excess emission. Mr. Stocker asked if Allied would have to change from the one hour average to a three hour average. I explained to Mr. Stocker that EPA would probably accept the Division's format which Allied currently utilizes. However, because of the changing status of evaluation of CEM data, the Division will need to change this format.

For consistency in the excess emission reports, the Air Quality Division will want Allied to report SO2 and NOx excess emissions as specified in NSPS. That is, an excess emission for SO2 and NOx is defined as any three hour period during which the arithmetic average of three contiguous one hour period exceeds the applicable Wyoming standard as measured by a continuous emission monitor. The Division will work with Allied over the coming year to implement this change.

POINT SOURCE SUMMARY:

The GR-2-C #4 calciner precipitator was severely damaged in 1984. In general the damaged precipitator was replaced with a precipitator identical to the four remaining precipitators. On November 12, 1985, Western Environmental Services and Testing, Inc. conducted an EPA Method 5 emission test on this precipitator for escaping soda ash.

The table below summarizes the Division's evaluation of the tests:

	Test 1	Test 2	Test 3
Process Rate (TPH)	60.0	60.0	60.0
Allowable Emission (PPH)	20.0	20.0	20.0
Measured Emission (PPH)	5.195	4.470	4.139
% Isokinetic	93.37	92.23	92.70

A printout of the Division's evaluation is presented at the end of this report.

A total of 35 points were sampled with a time duration of 2 minutes/point. During the preliminary velocity traversing 7 ports were accessible, but with the sampling train intact port A was inaccessible due to E.S.P. equipment blocking entry to the port. Port B, having a higher flow than Port A, was sampled twice to make up the necessary time required for the 70 minute test. Because the averaged measured emission was 4.60 pph or only 23% of the allowable emission of 20 pph, the author has no objections with the sampling of Port B twice. The author recommends that these tests be accepted as proof of compliance for Section 25 b pertaining to the GR-2-C #4 calciner.

Table II is a complete listing of Allied Chemical's point sources.

The tested emission rates, from the mid-70's tests, reported in Table II represent Allied's values which are in close agreement with the Division's values.

Figure 4 is a location plan of the point sources at this facility.

1984 PLANT EMISSIONS:

From Allied Chemical's 1984 emission inventory, the author calculated a 1984 total particulate emission of 654.32 tons. The 1984 Particulate Emissions table lists each source and the calculated particulate emission during 1984.

SOURCE OBSERVATIONS: (Since last annual inspection)

December 20, 1984	No excess emissions noted.
April 24, 1985	No excess emissions noted.
September 17, 1985	No excess emissions noted.
October 24, 1985	Calciners GR-3-D and GR-3-E marginal compliance.
October 25, 1985	Annual Inspection.

INSPECTION OBSERVATIONS:

I met with Bill Stocker and Otto Schnauber to conduct the annual inspection of this soda ash refinery. Both gentlemen then explained the history and process of the facility.

The Division in the past has noticed that the ore stockpiling operation is a significant fugitive dust emission source. Allied does not use a microfoam dust suppressant system on the stockpiling operation, but Allied does use a wind shroud on the drop point of the stacker. During this inspection there were no fugitive dust emissions from the stockpiling operation or from the approximate 80,000 tons of trona ore that was stockpiled.

I then went through the crusher building, where the inside was covered with dust from the crushing of trona ore. Allied uses vacuum trucks to clean the inside of this building. On this date a vacuum truck was in operation. All stacks associated with the crusher building were well in compliance.

Calciners GR-1-C, GR-1-D and GR-1-E were all operating at approximately 10% opacity. Calciners GR-2-C and GR-2-D were not operating this date.

Inside the boiler control room the continuous emission monitor for the "C" boiler was measuring and recording the following data:

Opacity	10%
SO2	190 ppm
NOx	290 ppm
O2	6%

The "C" boiler was producing approximately 340,000 pph of steam. I visually confirmed the opacity of the "C" boiler.

The "D" boiler and turbine were down on this date, but Allied was trying to bring the units up but to no avail. The opacity from this boiler was exceeding its allowable during the start-up procedures. Both "A" and "B" boilers were operating to help produce the required steam.

From the roof of the powerhouse I was able to observe the remainder of Allied's point sources. Calciners GR-3-D and GR-3-E were operating with opacities in the 15-20% range. All other point sources either were not operating or were operating well within the opacity standard.

Both gentlemen then walked me through the GR-3 process train with a thorough explanation of the equipment and the process used.

Mr. Stocker mentioned that rail cars containing coal with a high sulfur content are now mixed with rail cars containing coal with a low sulfur content. This procedure will not eliminate excess emissions, but will help reduce the time period of excess emissions.

AIR QUALITY CONCERNS:

1. The author feels that the ore stockpiling operation should be watched to assure compliance with opacity and emission standards.

2. Division personnel should pay attention to calciners, GR-3-D and GR-3-E to assure compliance with opacity standards.

3. The Division still has not officially accepted the certification of Allied's CEM systems. The Division's Continuous Monitor Specialist has indicated that the certification is acceptable, but there is no review in the Division's file.

COMPLIANCE STATUS:

This inspection did not reveal any areas where Allied Chemical is deficient with applicable provisions of the Wyoming Air Quality Standards and Regulations, therefore Allied is currently in compliance with these Regulations.

MC/jw

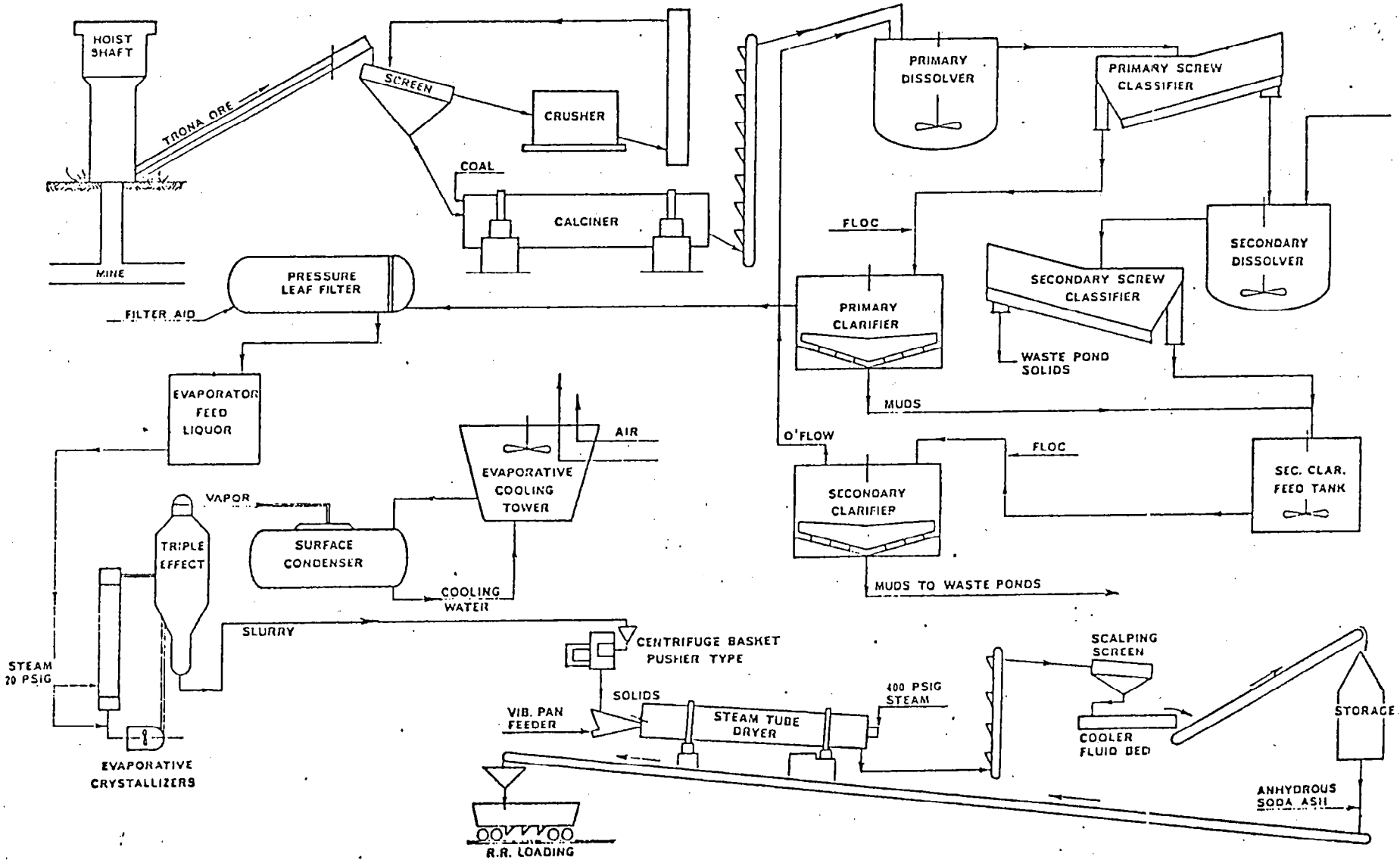
1984 ALLIED CHEMICAL PARTICULATE EMISSIONS

Source Identification	Latest Test or (Estimate)	Emission Rate (PPH)	1984 Operation (Ann. Hrs)	1984 Emission (Tons)
(GR-1-A) Crusher	2/76	2.5	6132	7.67
(GR-1-B1) Loadout	7/75	0.7	"	2.15
(GR-1-B2) "	3/77	0.1	"	0.31
(GR-1-C) #1 Calciner	2/77	7.2	"	22.08
(GR-1-D) #2 "	10/76	21.2	"	65.00
(GR-1-E) #3 "	9/76	11.9	"	36.49
(GR-1-F) #1 Dryer	5/75	1.9	"	5.83
(GR-1-G) #2 "	3/75	1.3	"	3.99
(GR-1-H) #3 "	1/75	0.9	"	2.76
(GR-1-J1) Screening	2/77	0.5	"	1.53
(GR-1-J2) "	2/77	0.3	"	0.92
(GR-2-A) Ore Gallery	4/77	0.5	"	1.53
(GR-2-B) Silos 1,2 & 3	11/76	0.3	"	0.92
(GR-2-C) #4 Calciner	1/75	6.6	"	20.24
(GR-2-D) #5 "	4/83	15.91	"	48.78
(GR-2-E1) Dissolver #1	11/74	1.7	"	5.21
(GR-2-E2) " #2	10/74	1.3	"	3.99
(GR-2-F) #4 Dryer	11/74	0.3	"	0.92
(GR-2-G) #5 "	7/74	0.5	"	1.53
(GR-2-H) #6 "	9/74	2.3	"	7.05
(GR-2-J) Coolers	7/79	0.6	"	1.84
(GR-2-O) Lime Silo	(10/83)	(0.08)	600	0.02
(GR-3-A) Crusher	4/76	1.4	6132	4.29
(GR-3-B) Ore Crusher	8/76	0.3	"	0.92
(GR-3-C) " Gallery	5/75	0.7	"	2.15
(GR-3-D) #1 Calciner	1/78	33.9	"	103.94
(GR-3-E) #2 "	7/76	24.2	"	74.20
(GR-3-F) Dissolver #1	12/75	0.8	"	2.45
(GR-3-G) " #2	(10/83)	(0.8)	"	2.45
(GR-3-H) Filter Aid	(10/83)	(0.11)	25	0.001
(GR-3-K) #1 Dryer	12/75	0.7	6132	2.15
(GR-3-L) #2 "	(10/83)	(0.4)	"	1.23
(GR-3-M) #3 "	(10/83)	(0.4)	"	1.23
(GR-3-N) #4 "	6/75	0.3	"	0.92
(GR-3-P) #5 "	5/76	0.2	"	0.61
(GR-3-R) Dryer Vents	12/75	0.7	"	2.15
(GR-3-S) #1 Cooler	10/76	0.3	"	0.92
(GR-3-T) #2 "	1/76	0.2	"	0.61
(GR-3-U) Prod. Screens	10/76	2.1	"	6.44
(GR-3-V) " "	12/76	1.2	"	3.68
(GR-3-O) Lime Silo	(10/83)	(0.08)	600	0.02
(A-305) Crusher	2/76	0.4	6132	1.23
(A-309) Stckpl Reclaim	2/77	0.1	"	0.31
(CH-1) Coal Handling	3/77	0.9	4800	2.16
(CH-2) " "	4/77	0.2	"	0.48
(RO-1) Ore Reclaim	11/78	1.0	6132	3.07
(FD-612) Silo #4	9/81	0.64	"	1.96

1984 ALLIED CHEMICAL PARTICULATE EMISSIONS

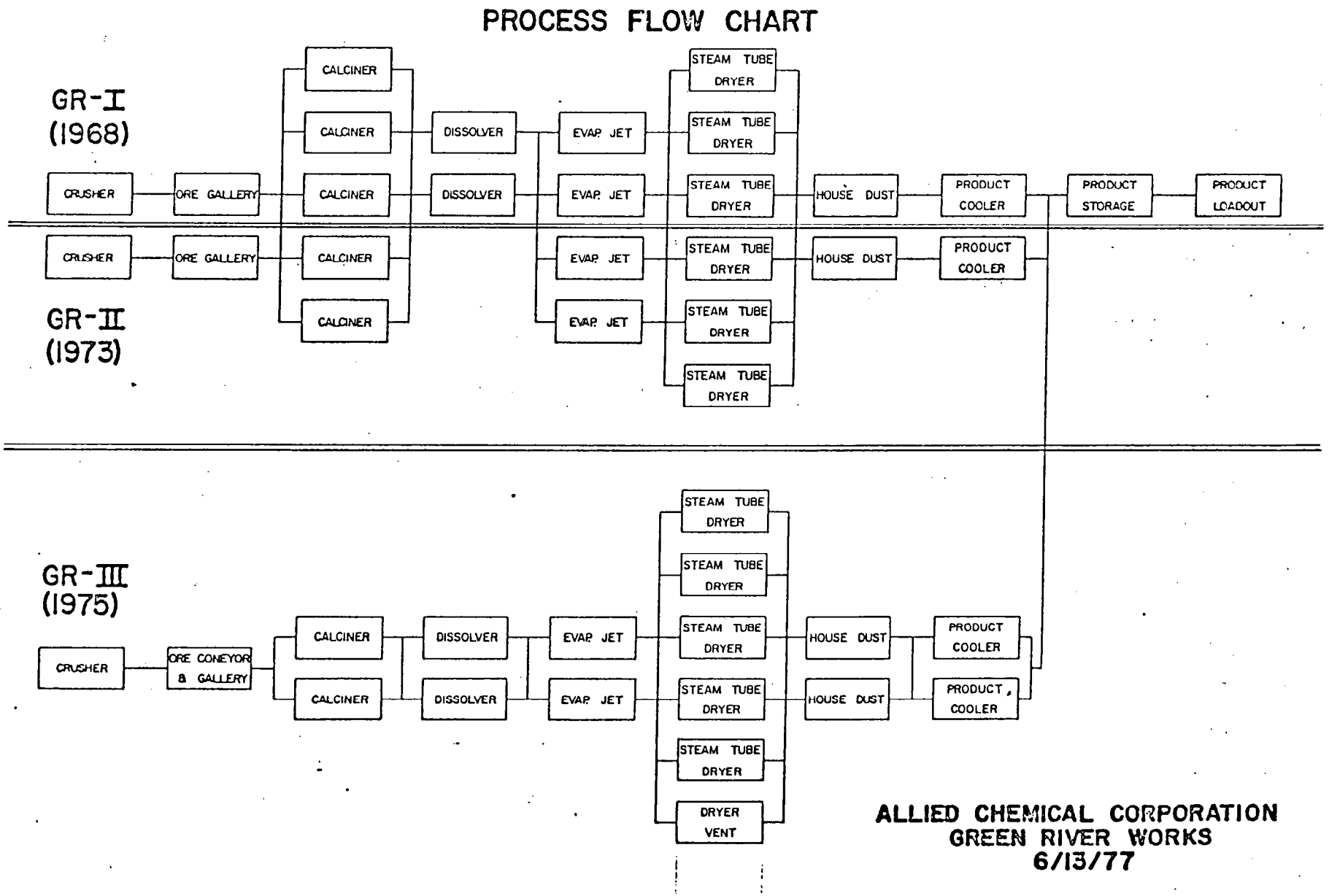
Source Identification		Latest Test or (Estimate)	Emission Rate (PPH)	1984 Operation (Ann. Hrs)	1984 Emission (Tons)
(FD-613)	Silo #5	9/81	0.61	6132	1.87
(FD-614)	" 4 & 5 Rclm	10/81	0.31	"	0.95
(FD-615)	" 4 & 5 "	10/81	0.44	"	1.35
(FD-616)	Loadout	7/81	0.28	"	0.86
(FD-120)	Crusher	9/79	0.2	"	0.61
(GR-1-O)	Boiler A	(10/83)	(4.94)	1044	2.58
(GR-1-P)	" B	(10/83)	(4.94)	1038	2.56
(GR-2-L)	" C	11/76	28.2	7018	98.95
(GR-2-W)	" D	6/76	20.6	8181	84.26
				TOTAL 1984 EMISSIONS	= 654.32

FIGURE 1



COMPOSITE FLOW DIAGRAM - GREEN RIVER WORKS

FIGURE 2


PROCESS FLOW CHART
GR-I
(1968)
GR-II
(1973)
GR-III
(1975)
CRUSHER
ORE GALLERY
CRUSHER
ORE GALLERY
CRUSHER
ORE CONEYOR & GALLERY
CALCINER
CALCINER
CALCINER
CALCINER
CALCINER
CALCINER
DISSOLVER
DISSOLVER
DISSOLVER
DISSOLVER
EVAP. JET
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STEAM TUBE DRYER
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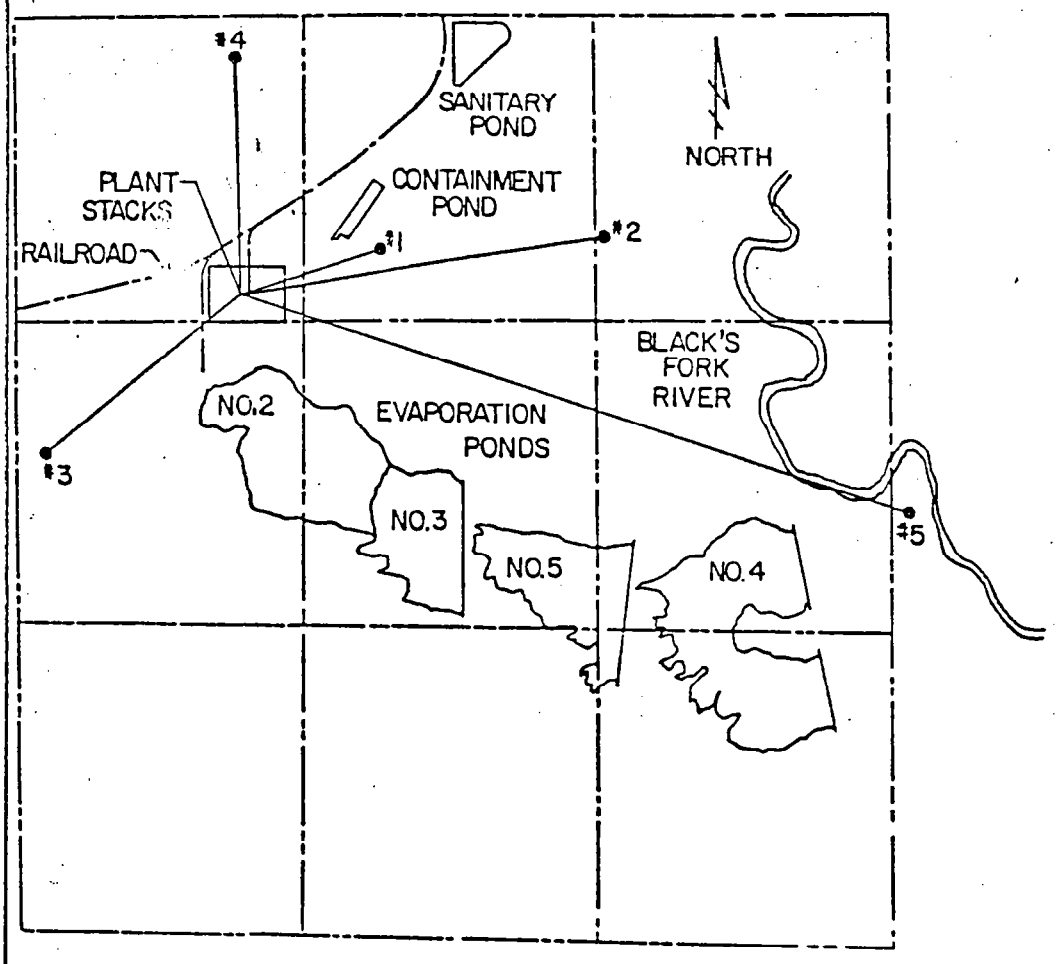
STEAM TUBE DRYER
STEAM TUBE DRYER
DRYER VENT
HOUSE DUST
HOUSE DUST
HOUSE DUST
HOUSE DUST
PRODUCT COOLER
PRODUCT COOLER
PRODUCT COOLER
PRODUCT COOLER
PRODUCT STORAGE
PRODUCT LOADOUT
ALLIED CHEMICAL CORPORATION
GREEN RIVER WORKS
6/13/77

AMBIENT AIR MONITORING NETWORK

FIGURE 3



SENSOR KEY

POSITION OF SENSOR	SENSORS	ELEV.	BEARING	DISTANCE
1	H.W	6334'	72°	0.65 MI 1.07 KM
2	H.S*	6194'	80°	1.16 MI 1.87 KM
3	H	6333'	240°	1.06 MI 1.71 KM
4	H.S	6395'	349°	0.79 MI 1.27 KM
5**	H	6155'	108°	2.20 MI 3.54 KM

* 1974-1979 only

** Discontinued 12/79

H=HiVol W=Weather Station S= SO_2 Monitor

ALLIED CHEMICAL CORPORATION

GREEN RIVER WORKS

TABLE I - HI VOL DATA

Allied Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-HR Standar
#1	SW¼, Sec.29 T19N, R109W	Oct. 1974	1974 (3 Months) (data)	69%	11	83.5	218 (151)	10/2, 10/14
			1975	62%	37	101.3	468 (420)	3/19, 4/25, 5/ 7/17, 10/15, 1 10/27, 11/14, 11/26, 12/2, 1 12/14, 12/30 (1
			1976	89%	54	51.9	170 (127)	3/7
			1977	97%	59	43.7	284 (157)	9/28, 10/4
			1978	92%	56	46.3	248 (161)	10/29, 12/4
			1979	85%	52	48.0	155 (108)	6/14
			1980	100%	61	52.6	211 (194)	6/14, 6/26
			1981	87%	53	51.2	142 (130)	None
			1982	98%	60	46.3	138 (118)	None
			1983	82%	49	42.9	189 (170)	1/6, 10/21

TABLE I - HI VOL DATA

Allied Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-HR Standard
#1	SW$\frac{1}{2}$, Sec. 29 T19N,R109W	10-74	1984	85.2	52	56.1	187.6 (184.6)	5/30,9/9,10/9
			1985	100	61	50.2	156.9 (134.9)	2/24

TABLE I - HI VOL DATA

Allied Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance 24-HR Stand
#2	SW¼. Sec. 28 T19N, R109W	Oct. 1974	1974 (3 Months) (Data)	69%	11	91.1	351 (347)	10/2, 10/8, 10/20, 11/25
			1975	60%	36	48.7	262 (173)	5/19, 10/21
			1976	89%	54	38.2	95 (82)	None
			1977	97%	59	34.6	197 (83)	11/15
			1978	93%	57	33.6	162 (90)	10/29
			1979	87%	53	35.0	108 (69)	None
			1980	98%	60	36.0	149 (143)	None
			1981	90%	55	39.2	113 (106)	None
			1982	97%	59	33.3	87 (84)	None
			1983	70%	42	30.4	104 (99)	None

TABLE I - HI VOL DATA

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Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-HR Standard
#2	SW¼, Sec. 28 T19N,R109W	10-74	1984	62.3	38	36.9	179.6 (93.0)	5/30
			1985	100	61	35.5	96.0 (87.0)	None

TABLE I - HI VOL DATA

Allied Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-HR Stand
#3	NW¼, Sec. 31 T19N, R109W	Oct. 1974	1974 (3 Months) (Data)	63%	10	41.8	137 (130)	None
			1975	22%	13	24.7	1004 (104)	2/11
			1976	66%	40	36.3	93 (85)	None
			1977	83%	57	26.4	106 (82)	None
			1978	97%	59	23.7	102 (88)	None
			1979	95%	58	23.5	60 (60)	None
			1980	97%	59	23.2	85 (64)	None
			1981	98%	60	28.3	102 (96)	None
			1982	98%	60	20.7	89 (75)	None
			1983	92%	55	18.2	84 (72)	None

TABLE I - HI VOL DATA

Allied Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-HR Standard
#3	$NW\frac{1}{4}$, Sec. 31 T19N,R109W	10-74	1984	98.4	60	18.3	86.5 (65.8)	None
			1985	100	61	22.4	101.6 (90.1)	NOne

TABLE I - HI VOL DATA

Allied Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-HR Stand
#4	NE¼, Sec. 30 T19N, R109W	Oct. 1974	1974 (3 Months) (Data)	63%	10	49.4	166 (108)	10/2
			1975	37%	22	30.6	142 (139)	None
			1976	90%	55	36.6	345 (153)	2/21, 4/12
			1977	100%	61	28.8	171 (114)	11/15
			1978	98%	60	31.6	224 (95)	9/5
			1979	97%	59	33.6	140 (96)	None
			1980	97%	59	36.5	147 (116)	None
			1981	98%	60	32.7	120 (106)	None
			1982	95%	58	34.7	115 (103)	None
			1983	97%	58	25.0	129 (90)	None

TABLE I - HI VOL DATA

Allied Chemical Green River works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-HR Standard
#4	NE¼, Sec. 30 T19N, R109W	10-74	1984	86.9	53	26.4	97.2 (94.3)	None
			1985	96.7	59	~~26.5~~ 31.8	91.8 (87.8)	None

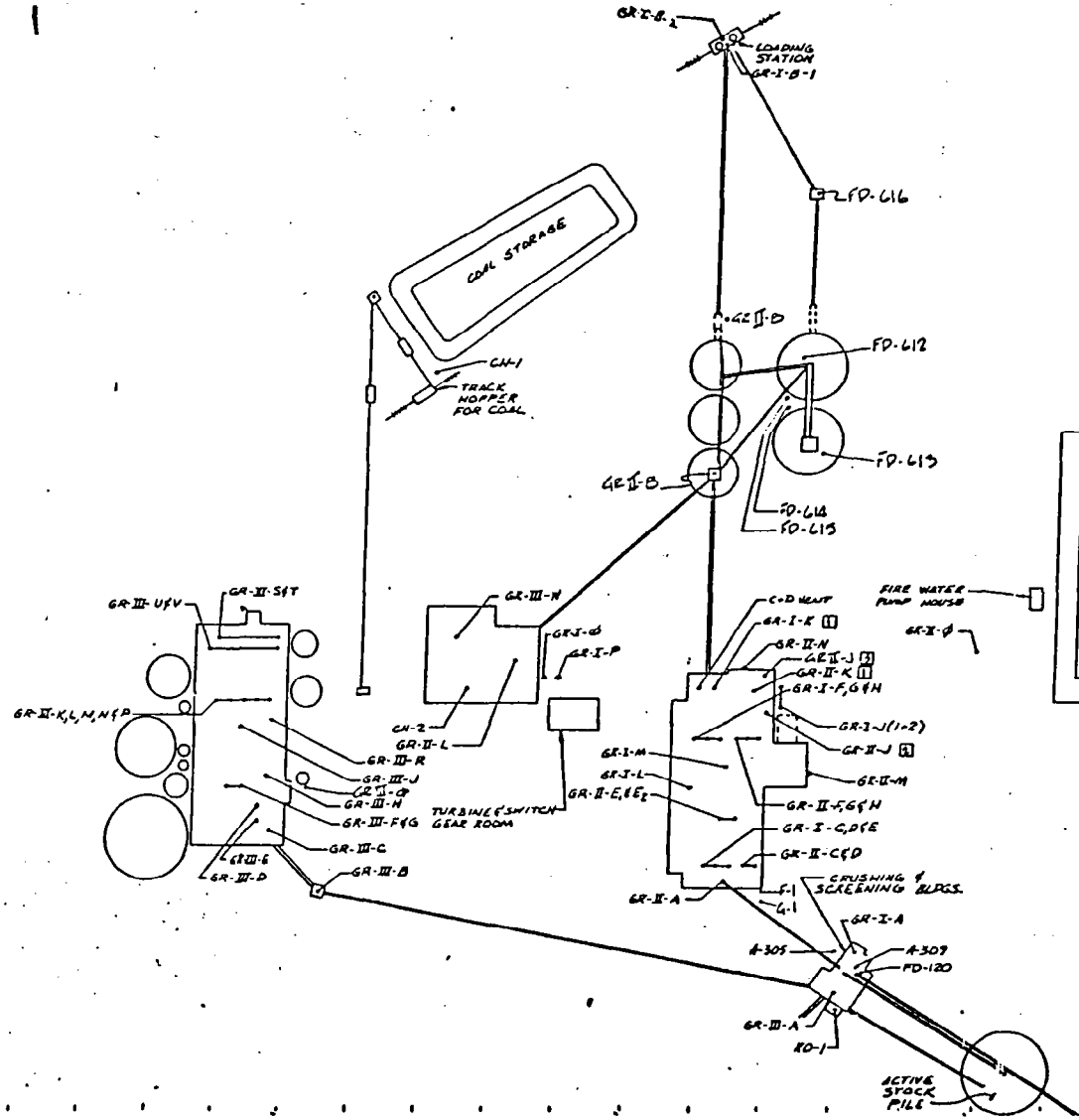
TABLE I - HI VOL DATA

Allied Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-HR Standa
#5	SW¼, Sec. 34 T19N, R109W	Nov. 1975	1975 (2 Months) (Data)	15%	9	46.2	253 (101)	11/14
			1976	72%	44	36.3	86 (83)	None
			1977	98%	60	32.9	102 (91)	None
			1978	92%	56	27.6	126 (92)	None
			1979 (Sampling) (Terminated) (12/79)	100%	61	29.3	91	None

Figure 4

POINT SOURCE EMISSION LOCATION PLAN



CODE NO.	SOURCE
GR-1-A	CRUSHER BUILDING
GR-1-B-(1)	PRODUCT LOADING
GR-1-B-(2)	PRODUCT LOADING
GR-1-C	CALCINER
GR-1-D	CALCINER
GR-1-E	CALCINER
GR-1-F	STEAM TUBE DRYERS
GR-1-G	STEAM TUBE DRYERS
GR-1-H	STEAM TUBE DRYERS
GR-1-J-(1)	HOUSE DUST VENT SYSTEM
GR-1-J-(2)	HOUSE DUST VENT SYSTEM
GR-1-K	PRODUCT COOLER DISMANTLED
GR-1-L	EVAP. STEAM JET-1
GR-1-M	EVAP. STEAM JET-2
GR-1-P	"A" BOILER
GR-1-P	"B" BOILER
GR-11-A	ORE GALLERY INCLUDING GR-1
GR-11-B	PRODUCT STORAGE BINS INCLUDING GR-1
GR-11-C	CALCINER NO.4
GR-11-D	CALCINER NO.5
GR-11-E	DISSOLVER NO. 1
GR-11-E	DISSOLVER NO. 2
GR-11-F	STEAM TUBE DRYER NO. 4
GR-11-G	STEAM TUBE DRYER NO. 5
GR-11-H	STEAM TUBE DRYER NO. 6
GR-11-J	HOUSE DUST VENT SYSTEM
GR-11-K	PRODUCT COOLER DISMANTLED
GR-11-L	GR-11-BOILER
GR-11-M	EVAP. STEAM JET-3
GR-11-N	D/A STEAM EJECTOR
GR-111-A	CRUSHING & SCREEKING

CODE NO.	SOURCE
GR-111-B	ORE TRANSFER
GR-111-C	ORE BIN GALLERY
GR-111-D	CALCINER
GR-111-E	CALCINER
GR-111-F	DISSOLVER VENT
GR-111-G	DISSOLVER VENT
GR-111-H	FILTER-AID
GR-111-J	M.L. FLASH DRY
GR-111-K	STEAM TUBE DRYER
GR-111-L	STEAM TUBE DRYER
GR-111-M	STEAM TUBE DRYER
GR-111-N	STEAM TUBE DRYER
GR-111-P	STEAM TUBE DRYER
GR-111-R	DRYER VENT
GR-111-S	PRODUCT COOLER
GR-111-T	PRODUCT COOLER
GR-111-U	HOUSEKEEPING
GR-111-V	HOUSEKEEPING
GR-111-W	BOILER
A-305	CRUSHER BUILDING
A-309	RECLAIM ORE HANDLING
CH-1&2	COAL HANDLING
RO-1	RECLAIM ORE SYSTEM
GR-11-B	LIME STORAGE BIN
C+D	VENT DISMANTLED
FD-120	CRUSHER BLDG BASEMENT

GR III & GR II-B LIME STORAGE BIN
FD-612 PRODUCT STORAGE
FD-613 PROD. STORAGE
FD-614 PROD. CONVEYOR
FD-615 PROD. CONVEYOR
FD-616 PROD. TRANSFER

[1] DISMANTLED
[2] REPLACED WITH WET SCRUBBER
[3] NEW LOCATION GR-11-J

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim Emissi (lb/h
GR-1-A	Crusher Building GR-1&2 Crusher & Screens (1968)	22,600 (24,450)	Buell-Norfelt Model 28-CE-224 Baghouse (1973)	262.5 TPH (163) (TPH)	Particulate	3.0	25 b.	2.5	2/76	n/a
GR-1-B(1)	Bulk Rail Product Loadout Bin Vents & Transfer Points (1968)	16,075 (16,850)	Buell-Norfelt Model 25E-188-192 Baghouse (1974)	550 TPH (400) (TPH)	Particulate	3.0	25 b.	0.7	7/75	n/a
GR-1-B(2)	Bulk Rail Product Loadout Building Loading Spouts & Transfer Points (1968)	8,700 (7,250)	Micropul Model 144S-10-20TRH Baghouse (1977)	550 TPH (250) (TPH)	Particulate	3.0	25 b.	0.1	3/77	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estima Emissi (lb/h
GR-1-C	#1 Calciner (1968)	80,000 (65,750)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1973)	52.5 TPH (48.4) (TPH)	Particulate	20.0	25 b.	7.2 (front) (half) (only)	2/77	n/a
GR-1-D	#2 Calciner (1968)	80,000 (76,420)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1973)	52.5 TPH (51.3) (TPH)	Particulate	25.0	25 b.	21.2	10/76	n/a
GR-1-E	#3 Calciner (1968)	80,000 (74,550)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner	52.5 TPH (53.8) (TPH)	Particulate	20.0	25 b.	11.9	9/76	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estima Emissi (lb/h
GR-1-F	#1 Steam Tube Dryer (1968)	17,600 (16,890)	Ducon Model UW4-II/78 Wet Scrubber (1968)	33.5 TPH (20.6) (TPH)	Particulate	4.0	25 b.	1.9	5/75	n/a
GR-1-G	#2 Steam Tube Dryer (1968)	17,600 (17,590)	Ducon Model UW4-II/78 Wet Scrubber (1968)	33.5 TPH (23.9) (TPH)	Particulate	4.0	25 b.	1.3	3/75	n/a
GR-1-H	#3 Steam Tube Dryer (1968)	17,600 (15,410)	Ducon Model UW4-II/78 Wet Scrubber (1968)	33.5 TPH (28.6) (TPH)	Particulate	4.0	25 b.	0.9	1/75	n/a
GR-1-J(1)	Product Screening & Transfer Points (1977)	23,640 (23,110)	Ducon Model VVO 41/84 Wet Scrubber (1977)	79 TPH (55.6) (TPH)	Particulate	2.0	25 b.	0.5	2/77	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim Emiss (lb/h
GR-1-J(2)	Product Screening & Transfer Points (1977)	17,180 (17,590)	Ducon Model VVO 35/72 Wet Scrubber (1977)	79 TPH (56.7) (TPH)	Particulate	2.0	25 b.	0.3	2/77	n/a
GR-2-A	GR-1&2 Ore Gallery Transfer Points (1977)	20.700 (23,350)	Buell-Norfelt Model 32-CE-256 Baghouse (1977)	237.5 TPH (262.5) (TPH)	Particulate	3.0	25 b.	0.5	4/77	n/a
GR-2-B	Product Storage Silos #1,2,&3 Vents & Transfer Points (1976)	37,500 (40,160)	Micropul Model 100S-10TRHA Baghouse (1976)	700 TPH (205) (TPH)	Particulate	4.0	25 b.	0.3	11/76	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim Emissi (lb/h
GR-2-C	#4 Calciner (1973)	80,000 (64,056)	Research-Cottrell Electro-static Precipi-tator (1985) w/Buell Cyclone Precleaner (1973)	39.5 TPH (51.5) (TPH)	Particulate	20.0	25 b.	4.6	11-85	n/a
GR-2-D	#5 Calciner (1973)	80,000 (52,889)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1973)	39.5 TPH (Not) (Avail-) (able)	Particulate	20.0	25 b.	15.91 (Avg.) (Five) (Tests)	4/83	n/a
GR-2-E(1)	Dissolver #1 Vent (1968)	7,930 (7,340)	Ducon Model VVO 23/54 Wet Scrubber (1968)	95 TPH	Particulate	3.0	25 b.	1.7	11/74	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim Emiss (lb/
GR-2-E(2)	Dissolver #2 Vent (1968)	7,930 (8,870)	Ducon Model VVO 23/54 Wet Scrubber (1968)	95 TPH (?)	Particulate	3.0	25 b.	1.3	10/74	n/a
GR-2-F	#4 Steam Tube Dryer (1973)	19,600 (11,925)	Ducon Model VVO 35/72 Wet Scrubber (1973)	33.5 TPH (?)	Particulate	4.0	25 b.	0.3	11/74	n/a
GR-2-G	#5 Steam Tube Dryer (1973)	19,600 (14,620)	Ducon Model VVO 35/72 Wet Scrubber (1973)	33.5 TPH (23.9) (TPH)	Particulate	4.0	25 b.	0.5	7/74	n/a
GR-2-H	#6 Steam Tube Dryer (1973)	19,600 (11,520)	Ducon Model VVO 35/72 Wet Scrubber (1973)	33.5 TPH (24.1) (TPH)	Particulate	4.0	25 b.	2.3	9/74	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim Emissi (lb/h
GR-2-J	GR-1&2 Product Coolers & Screening Vents (1979)	38,600 (37,280)	Ducon Model VVO 45/102 Wet Scrubber (1979)	158 TPH (62.1) (TPH)	Particulate	6.0	CT-222 Permit Condition	0.6	7/79	n/a
GR-2-Ø	Lime Storage Bin Vent (1978)	440	Fuller #2FM Unifilter Model B Baghouse (1978)	20 TPH	Particulate	0.08	CT-130 Permit Condition	None	n/a	0.08
GR-3-A	Crusher Building GR-3 Crusher & Screens (1975)	36,690 (26,430)	Buell-Norfelt Model 40-CE-320 Baghouse (1975)	262.5 TPH (205) (TPH)	Particulate	3.0	25 b.	1.4	4/76	n/a
GR-3-B	GR-3 Conveyor Transfer Building (1975)	5,600 (1,840)	Micropul Model 645-10-20TR4 Baghouse (1975)	262.5 TPH (250) (TPH)	Particulate	1.0	25 b.	0.3	8/76	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim Emiss (lb/h
GR-3-C	GR-3 Ore Gallery Transfer Points (1975)	6,000 (7,610)	Buell-Norfelt Model 8-AE-64 Baghouse (1975)	262.5 TPH (225.5) (TPH)	Particulate	1.0	25 b.	0.7	5/75	n/a
GR-3-D	GR-3 #1 Calciner (1975)	168,000 (143,730)	Research-Cottrall Electro-static Precipi-tator w/Buell Cyclone Precleaner (1975)	131 TPH (135) (TPH)	Particulate	37.9	25 b.	33.9	1/78	n/a
GR-3-E	GR-3 #2 Calciner (1975)	168,000 (136,960)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1975)	131 TPH (135) (TPH)	Particulate	37.9	25 b.	24.2	7/76	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim Emiss (lb/h
GR-3-F	GR-3 Dissolver #1 Vent (1975)	7,750 (7,430)	Ducon Model VVO 23/54 Wet Scrubber (1975)	95 TPH (86.2) (TPH)	Particulate	2.0	25 b.	0.8	12/75	n/a
GR-3-G	GR-3 Dissolver #2 Vent (1975)	7,750 (8,840)	Ducon Model VVO 23/54 Wet Scrubber (1975)	95 TPH	Particulate	2.0	25 b.	None	n/a	0.8
GR-3-H	Filter Aid Bin Vent (1975)	660	Fuller #2FM Unifilter Model B Baghouse (1975)	10 TPH	Particulate	Nil	25 b.	None	n/a	0.11
GR-3-K	GR-3 #1 Steam Tube Dryer (1975)	18,700 (16,570)	Ducon Model VVO 35/72 Wet Scrubber (1975)	40 TPH (31.75) (TPH)	Particulate	1.5	25 b.	0.7	12/75	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim Emiss (lb/h
GR-3-L	GR-3 #2 Steam Tube Dryer (1975)	18,700	Ducon Model VVO 35/72 Wet Scrubber (1975)	40 TPH	Particulate	1.5	25 b.	None	n/a	0.4
GR-3-M	GR-3 #3 Steam Tube Dryer (1975)	18,700	Ducon Model VVO 35/72 Wet Scrubber (1975)	40 TPH	Particulate	1.5	25 b.	None	n/a	0.4*
GR-3-N	GR-3 #4 Steam Tube Dryer (1975)	18,700 (12,880)	Ducon Model VVO 35/72 Wet Scrubber (1975)	40 TPH (31.75) (TPH)	Particulate	1.5	25 b.	0.3	6/75	n/a
GR-3-P	GR-3 #5 Steam Tube Dryer (1975)	18,700 (17,470)	Ducon Model VVO 35/72 Wet Scrubber (1975)	40 TPH (?)	Particulate	1.5	25 b.	0.2	5/76	n/a
GR-3-R	Dryer Vents & Tanks (1975)	17,020 (12,200)	Ducon Model VVO 29/66 Wet Scrubber (1975)	200 TPH (77.5) (TPH)	Particulate	2.0	25 b.	0.7	12/75	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim Emiss (lb/
GR-3-S	GR-3 #1 Product Cooler (1975)	5,200 (7,250)	Fuller Plenum Pulse Baghouse (1975)	79 TPH (62.2) (TPH)	Particulate	1.0	25 b.	0.3	10/76	n/a
GR-3-T	GR-3 #2 Product Cooler (1975)	5,200 (5,630)	Fuller Plenum Pulse Baghouse (1975)	79 TPH (84.5) (TPH)	Particulate	1.0	25 b.	0.2	1/76	n/a
GR-3-U	GR-3 Product Screening & Transfer Points (1975)	25,000 (23,630)	Buell-Norfelt Model 32-CE-256 Baghouse (1975)	79 TPH (82.25) (TPH)	Particulate	3.0	25 b.	2.1	10/76	n/a
GR-3-V	GR-3 Product Screening & Transfer Points (1975)	25,000 (24,230)	Buell-Norfelt Model 32-CE-256 Baghouse (1975)	79 TPH (62.5) (TPH)	Particulate	3.0	25 b.	1.2	12/75	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim. Emiss. (lb/h
CR-3-Ø	Lime Storage Bin Vent (1980)	440	Fuller #2 FM Unifilter Model B Baghouse (1980)	20 TPH	Particulate	0.08	CT-291 Permit Condition	None	n/a	0.0
RO-1	Stockpile Ore Reclaim Screening & Transfer Points (1978)	20,520 (23,490)	Mikropul Model 320-10-20TRH Baghouse (1978)	800 TPH (347.3) (TPH)	Particulate	1.4	25 b.	1.0	11/78	n/a
FD-612	Product Silo #4 Vent & Feed Transfer Points (1981)	16,700 (16,070)	Mikropul Model 3025-8-TRH Baghouse (1981)	700 TPH (125) (TPH)	Particulate	1.5	CT-222 Permit Condition	0.64	9/81	n/a
FD-613	Product Silo #5 Vent & Feed Transfer Points (1981)	8,750 (7,990)	Mikropul Model 1805-8-TRH Baghouse (1981)	700 TPH (150) (TPH)	Particulate	1.5	CT-222 Permit Condition	0.61	9/81	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim Emiss (lb/
FD-614	Silo #5 Reclaim Transfer Points (1981)	9,450 (9,810)	Mikropul Model 2215-8-TRH Baghouse (1981)	700 TPH (250) (TPH)	Particulate	2.0 (Total) (Allowable) (for FD-614) (and FD-615)	CT-222 Permit Condition	0.31	10/81	n/a
FD-615	Silo #4 Reclaim Transfer Points (1981)	9,450 (9,850)	Mikropul Model 2215-8-TRH Baghouse (1981)	700 TPH (250) (TPH)	Particulate	2.0 (Total) (Allowable) (for FD-614) (and FD-615)	CT-222 Permit Condition	0.44	10/81	n/a
FD-616	Product Loadout Conveyor Transfer House	6,800 (6,412)	Mikropul Model 1205-8-TRH Baghouse (1981)	700 TPH (250) (TPH)	Particulate	1.0	CT-222 Permit Condition	0.28	7/81	n/a
A-305	Crusher Building GR-3 Ore Screens & Transfer Points (1976)	10,000 (10,180)	Buell-Norfelt Model 32-CE-256 Baghouse (1976)	262.5 TPH (170) (TPH)	Particulate	2.0	25 b.	0.4	2/76	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estim. Emiss: (lb/h
A-309	Stockpile Ore Reclaim Screening & Transfer Points (1976)	11,200 (9,200)	Micropul Model 1215-10-20TRH Baghouse (1976)	300 TPH (356) (TPH)	Particulate	2.0	25 b.	0.1	2/77	n/a
CH-1	Rail Unloading Building Coal Unloading & Conveyor Transfer Points (1977)	11,840 (11,970)	Carter-Day Model 72-RJ-120 Baghouse (1977)	100 TPH (190) (TPH)	Particulate	1.7	25 b.	0.9	3/77	n/a
CH-2	Boiler House Coal Receiving & Conveyor Transfer Points (1977)	12,870 (10,570)	Carter-Day Model 72-RJ-120 Baghouse (1977)	100 TPH (190) (TPH)	Particulate	1.0	25 b.	0.2	4/77	n/a

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Esti Emis (lb/
FD-120	Crusher Building Conveyor Transfer Points (1979)	12,800 (18,930)	Mikropul Model 432-K6-TRH Baghouse (1979)	262.5 TPH (243.3) (TPH)	Particulate	2.0	CT-222 Permit Condition	0.2	9/79	n/
GR-1-O	"A" Boiler Gas Fired (1968)	130,000	None	267 MM Btu/Hr (0.33MM) (CF/Hr) (@ 810) (Btu/CF)	Particulate	No Reg	14 h.	None	n/a	4.9
					Sulfur Dioxide	No Reg	4	None	n/a	0.2
					Nitrogen Oxide	61.41 (0.23) (lb/MM Btu)	10 b.(2)	None	n/a	230
GR-1-P	"B" Boiler Gas Fired (1968)	130.000	None	267 MM Btu/Hr (0.33 MM) (CF/Hr) (@ 810) (Btu/CF)	Particulate	No Reg	14 h.	None	n/a	4.9
					Sulfur Dioxide	No Reg	4	None	n/a	0.2
					Nitrogen Oxide	61.41 (0.23) (lb/MM Btu)	10 b.(2)	None	n/a	230.

TABLE II

Allied Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Estimated Emissions (lb/hr)
GR-2-L	"C" Boiler Coal Fired (1974)	248,000 (247,000)	UOP Model DES-30(996) Electro-static Precipi-tator (1974)	534 MM Btu/Hr (26.7) (TPH) (@ 10^4) (Btu/Lb) ——— 380,000 pph Steam Rated	Particulate	50.00	25 b.	28.2	11/76	n/a
					Sulfur Dioxide	640.80 (1.20 lb) (per MM Btu)	4 f.	166 (0.26 lb) (per MM Btu)	12/75	n/a
					Nitrogen Oxides	375.90 (0.70 lb) (per MM Btu)	10 b.(7)	290 (0.46 lb) (per MM Btu)	12/75	n/a
GR-3-W	"D" Boiler Coal Fired (1975)	377,000 (388,300)	UOP Model DES-30(999) Electro-static Precipi-tator (1975)	880 MM Btu/Hr (44.0) (TPH) (@ 10^4) (Btu/lb) ——— 660,000 pph Steam Rated	Particulate	80.00	25 b.	20.6	6/76	n/a
					Sulfur Dioxide	1056.00 (1.20 lb) (per MM Btu)	4 f.	611 (0.80 lb) (per MM Btu)	5/77	n/a
					Nitrogen Oxides	616.00 (0.70 lb) (per MM Btu)	10 b.(7)	506 (0.57 lb) (per MM Btu)	6/76	n/a

* Estimate arrived at using 0.02 gr/ft^3 estimated emission rate @ design exhaust volume

** Estimate arrived at using measured emissions from similar plant sources

*** Estimate arrived at using Table 1.4-1 of AP-42 "Compilation of Air Pollutant Emission Factors" for natural gas combustion

STACK TEST CALCULATIONS

ALLIED CHEMICAL SODA ASH REFINERY, 15 MILES WEST OF GREEN RIVER

TESTED BY RUSS MASON MARCELLO VINCENT TODD TWEDT
W.E.S.T.

DATE TESTED 11/12/85

OBSERVED BY NOBODY

EVALUATED BY MIKE CRAWFORD

STACK TEST DATA

TEST	1.000	2.000	3.000
AMBIENT PRESSURE (in Hg)	23.200	23.200	23.170
ABS. STACK GAS PRESSURE (in Hg)	23.210	23.210	23.180
ABS. AVE. STACK GAS TEMP (*R)	795.400	814.700	819.000
ABS. AVE. DGM TEMP (*R)	500.900	506.300	507.600
TOT. VOL. H20 COLLECTED (ml)	398.300	303.700	298.600
VOL. THRU DGM (ft3)	55.830	51.630	50.430
AVE. DEL P ACROSS ORIFICE (in H20)	1.620	1.310	1.240
PITOT TUBE COEFFICIENT	0.818	0.818	0.818
AVE. VEL. HEAD OF STACK GAS (in H20)	0.403	0.362	0.352
STD VOL. SAMPLED (scf)	45.849	41.906	40.766
H20 VAPOR IN GAS @STP (ft3)	18.748	14.295	14.055
MOL. WT. WET (lb/lb mole)	26.554	26.960	26.891
MOL. WT. DRY (lb/lb mole)	30.052	30.016	29.956
VEL. STACK GAS (fps)	32.012	28.882	28.213
FLOW RATE, DRY @ STP (scfm)	25272.210	23386.460	22633.360
CONCENTRATION (gr/scf)	0.024	0.022	0.021
EMISSION RATE (lb/hr)	5.195	4.470	4.139
% ISOKINETIC	93.374	92.225	92.700