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DISCHARGE PLAN FOR EL PASO NATURAL GAS COMPANY'S BLANCO PLANT SAN JUAN COUNTY, NEW MEXICO

El Paso Natural Gas Company

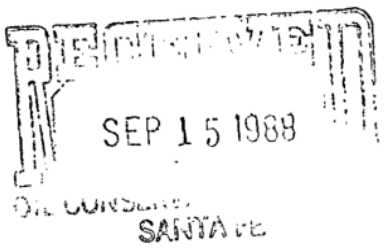
SEPTEMBER 15, 1988

DISCHARGE PLAN APPLICATION FOR EL PASO NATURAL GAS COMPANY'S BLANCO PLANT

SEPTEMBER 1988

Submitted to:

NEW MEXICO OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87501



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AFFIRMATION:

"I hereby certify that I am familiar with the information contained in and submitted with this application and that such information is true, accurate and complete to the best of my knowledge and belief."

Alexander H Carameros
Signature

Sept 13, 1988
Date

Alexander H. Carameros

Vice President

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Appendix

1.0 EXECUTIVE SUMMARY

1.0 EXECUTIVE SUMMARY

El Paso Natural Gas Company (EPNG), P.O. Box 4990, Farmington, New Mexico, 87499 discharges approximately 44,000,000 gallons per year of wastewater. The wastewater is generated at the Blanco Plant which is located in Section 14, T. 29 N., R. 11 W., San Juan County, near Bloomfield, New Mexico. More than 90% of the wastewater is blowdown from the plant's cooling towers, boilers and water treatment facility (non-contact wastewater). Non-contact wastewater has a TDS of less than 2,000 mg/l and contains no toxic hydrocarbon contaminants. Wastewater which comes into contact with hydrocarbons during natural gas processing (contact wastewater) passes through an oil-water separator and then is commingled with non-contact wastewater and discharged to the City of Bloomfield municipal wastewater treatment plant. Separated oil and hydrocarbons are sold. EPNG intends to continue to discharge its Blanco Plant wastewater to the City of Bloomfield municipal wastewater treatment plant.

Groundwater which may be affected by operations at Blanco Plant is at a depth of 14 to 39 feet and is assumed to be a potable water supply. The New Mexico Environmental Division has requested groundwater data at the Blanco Plant. Therefore, a groundwater sampling program will be initiated in mid-September.

EPNG is wholly committed to carrying out sound disposal practices and to this end submits this plan outlining the proposed procedures. Likewise, EPNG is committed to cooperating fully with NMOCD in honoring requests for additional information or providing clarification of existing information related to the Discharge Plan.

2.0 GENERAL INFORMATION

2.0 GENERAL INFORMATION

2.1 NAME OF DISCHARGER/LEGALLY RESPONSIBLE PARTY

All correspondence regarding this discharge plan should be sent to EPNG North Region headquarters at the address below:

Donald N. Bigbie
Vice President
North Region
El Paso Natural Gas Company
P.O. Box 1492
El Paso, Texas 79978
(915) 541-5215

2.2 LOCAL REPRESENTATIVE OR CONTACT

A copy of all correspondence and all questions should be directed to the North Region Manager of Compliance Engineering:

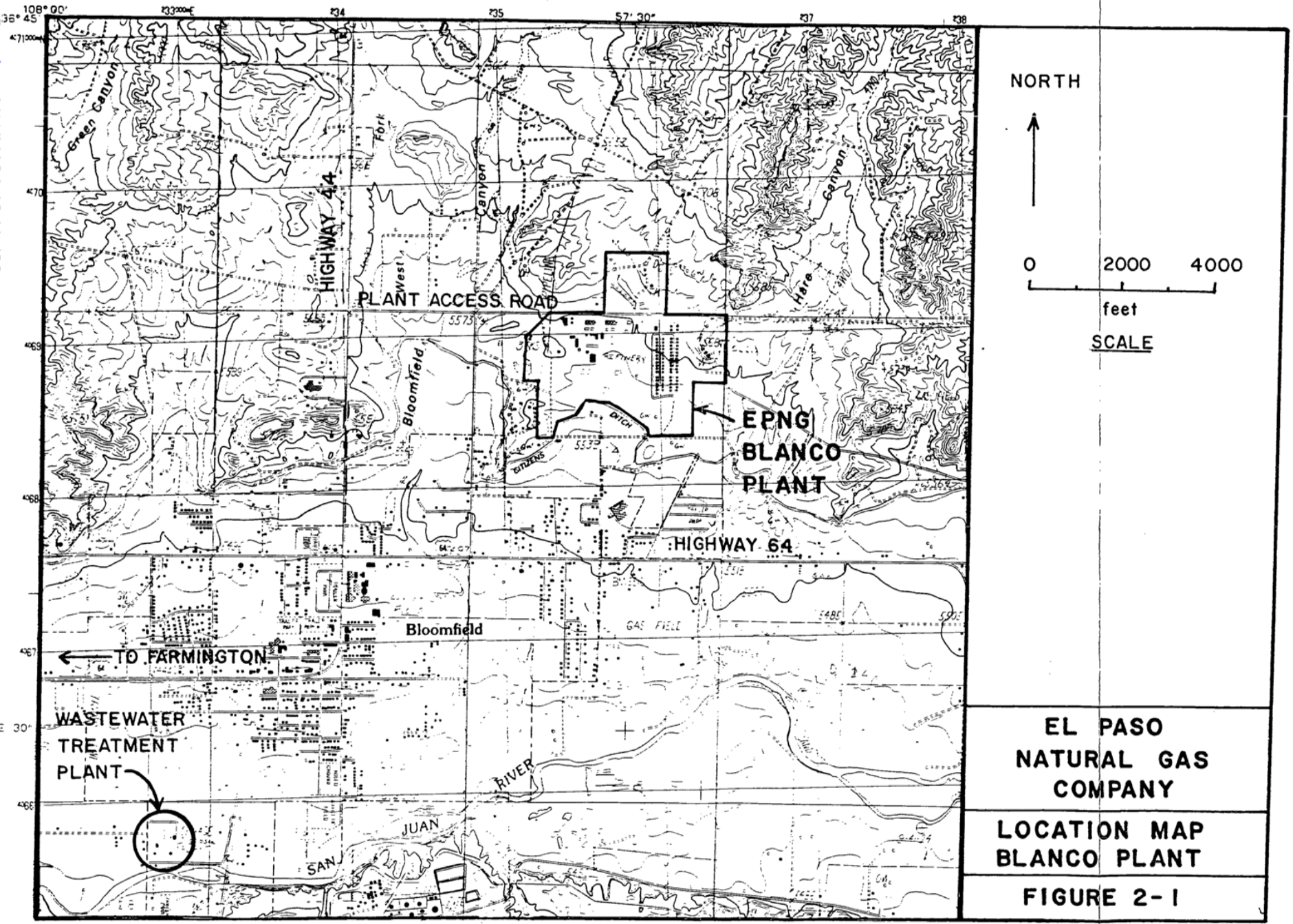
Kenneth E. Beasley
Manager
Compliance Engineering
North Region
El Paso Natural Gas Company
P.O. Box 1492
El Paso, Texas 79978
(915) 541-2600

EPNG requests that copies of correspondence also be sent to:

Environmental & Safety
Affairs Department
P.O. Box 1492
El Paso, Texas 79978
ATTN: Henry Van
(915) 541-2832

2.3 LOCATION OF DISCHARGE

The Blanco Plant is located in Section 14, T. 29 N., R. 11 W., San Juan County, New Mexico, approximately 13 miles east of Farmington, New Mexico and 1-1/2 miles east of Bloomfield, New Mexico (Figure 2-1). An access road from Highway 44 provides access to the plant. An aerial photographic base map of the facility is included as Plate 2-1.



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2.4 LOCAL LAND USE

The City of Bloomfield is located 1-1/2 miles to the west. Ranching, farming and oil and gas production/transmission are practiced in the vicinity of the Blanco Plant. Property to the north is owned by: the U.S. Bureau of Land Management and Franklin E. Garrett Trustee. Property to the east is owned by: Amoco Production Company, Robert S. Mitchell, Mary Ann Gipson, Robert M. Stalcup, Victor H. Mauldin, and Irene Mauldin. Property to the south is owned by: Loren C. Paris, Jimmy A. Boone, Marvin J. Tucker, Charles Hunnicutt and BBG Investments, Lee Carson, John T. Talamonte, Salmon Martinez, Vincent W. Blume, Marion A. Schane, George C. Goebel, Inez Truby, and Rossebelle Saiz. Property to the west is owned by: Bible Baptist Shepherd Inc., Presciliana Armenta Archuleta, Ruth Marie Cooper, Catholic Church Cemetery, and James H. Wade.

2.5 TYPES OF NATURAL GAS OPERATION

The EPNG Blanco Plant is engaged in the compression of natural gas. The Blanco Plant receives 70.0 MMCF/day dry gas for compression from Northwest Pipeline Company's Ignacio Plant and the Gas Company of New Mexico (GCNM). Then, 500.0 MMCF/day field gas is scrubbed and compressed for Conoco. This natural gas is obtained from three formation fields: Dakota, Mesa Verde, and Picture Cliff. Following compression by EPNG and processing by Conoco, the gas then enters EPNG's pipelines for transmission to market.

2.6 REGULATORY INDEX

Table 2-1 presents the regulatory index. This table provides a cross reference between WQCC Regulations and this discharge plan.

TABLE 2-1

REGULATORY INDEX

WQCC Regulation Required in Discharge Plan	Section in Discharge Plan
1-201	1.0, 2.0
1-203	3.3.4
3-106 C.1	3.2
3-106 C.2	2.3, Figure 5.2, 5.0, 5.5, 5.6
3-106 C.3	5.4.2
3-106 C.4	5.4
3-106 C.5	4.2
3-106 C.6	5.1
3-106 C.7	5.1
3-107	6.0
3-108.B	1.0

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3.0 EFFLUENT SOURCES, CHARACTERISTICS AND DISPOSAL

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3.1 PROCESS DESCRIPTION

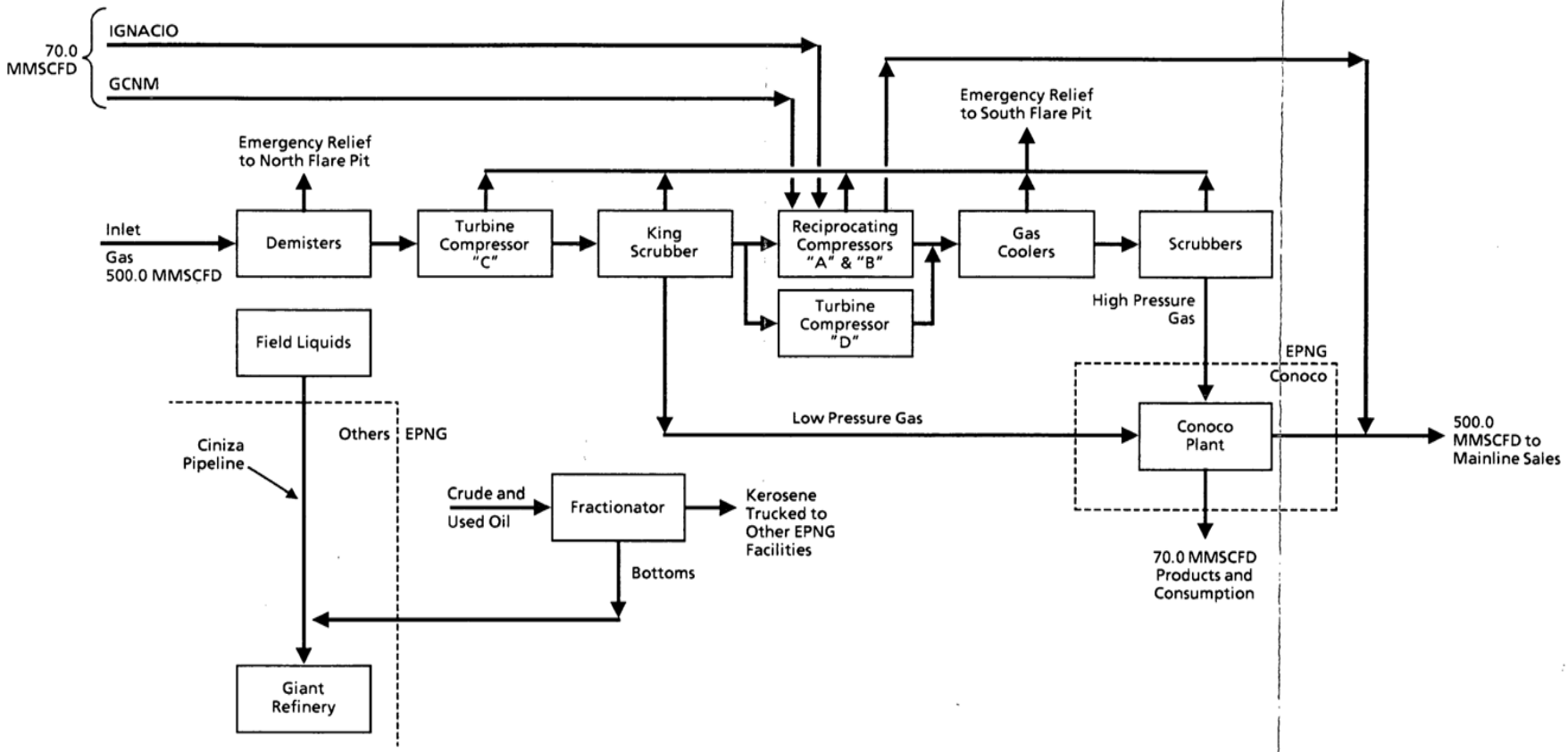
The Blanco Plant receives raw natural gas from the Picture Cliff Formation, Dakota Formation, Mesa Verde Formation Fields. Gas inlet streams are processed to some extent to:

- Remove water
- Add odorant into the natural gas
- Compress the gas for introduction into transmission pipelines

Data from 1987 indicates a total average gas inlet flow of 570.0 MMCF/day of which 70.0 MMCF/day is consumed on-site as fuel, shrinkage, and miscellaneous losses. Figures 3-1 and 3-2 show the process block flow diagram and water balance. Plate 2-1 identifies the location of process and waste-management units. Plates 2-2 through 2-5 show the piping layout at the Blanco Plant.

In the following subsections, unit processes are classified according to wastewater productions. Processes which produce no wastewater are considered "dry" (D).

A plant process which produces wastewater due to contact with hydrocarbons is a "contact" process (C), and those processes which do not contact hydrocarbons are "non-contact" (NC) processes.

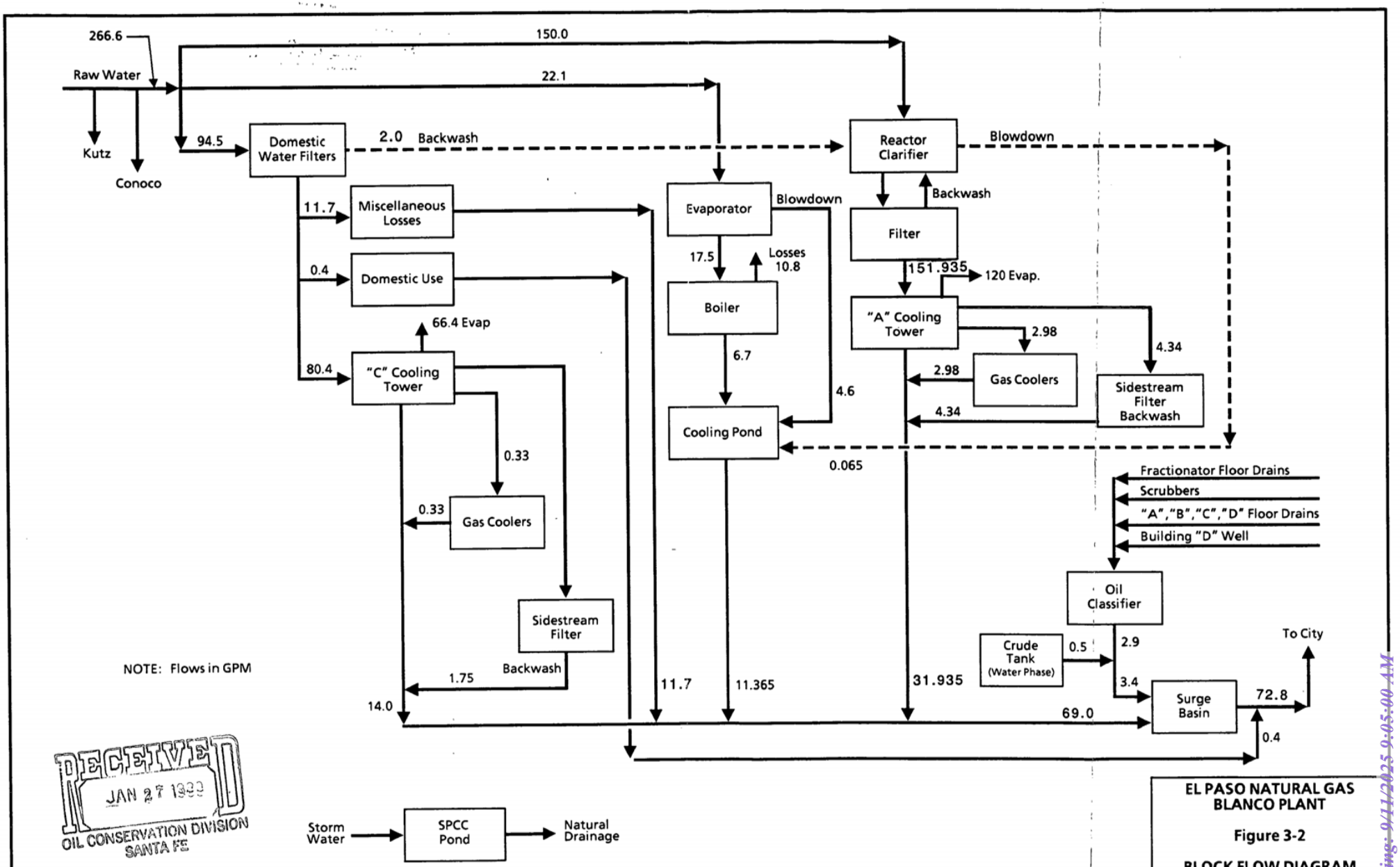


Source: EPNG Production Records

EL PASO NATURAL GAS
BLANCO PLANT

Figure 3-1

BLOCK FLOW DIAGRAM
PROCESS PLANT



EL PASO NATURAL GAS
BLANCO PLANT

Figure 3-2

BLOCK FLOW DIAGRAM
WATER BALANCE

Dry processes include:

PROCESS	SUBSECTION
Compressors (D)	3.1.1
Fractionator (D)	3.1.3

Contact processes are:

PROCESS	SUBSECTION
Scrubber/Separators (C)	3.1.2
Crude Oil Tank (C)	3.1.12

Non-contact wastewater is generated by:

PROCESS	SUBSECTION
Water Treatment (NC)	3.1.4
Boilers (NC)	3.1.5
Cooling Towers (NC)	3.1.6
Domestic Sewage (NC)	3.1.7
Storm Water (NC)	3.1.8

3.1.1 Compressors (D)

Gas is compressed by reciprocating and centrifugal compressors. No wastewater is produced by these units.

3.1.2 Scrubbers/Separators (C)

All inlet gas is passed through one or more scrubber/separator units to remove water produced with the gas. This wastewater may contain some free and dissolved hydrocarbons. Hydrocarbons are removed in an oil classifier and in the surge basin.

3.1.3 Fractionator (D)

The fractionator separates a mixture of hydrocarbons into certain individual components. Crude oil and used oil is fed to the unit for processing. Kerosene is extracted and

distributed to other EPNG facilities by tank truck. The bottoms are sent to Giant Refinery by pipeline.

3.1.4 Water Treatment (NC)

Makeup water from the San Juan River by way of the Citizens Irrigation Ditch is treated (Figure 3-2) by flocculation, filtration and evaporation to produce boiler feedwater and cooling tower makeup. Wastewater is produced by reactor-clarifier blowdown, filter backwash, and evaporator blowdown. Filter blowdown is discharged to the reactor-clarifier. The reactor-clarifier blowdown and evaporator blowdown discharge to the Cooling Pond, to the surge basin, and then to the City of Bloomfield wastewater treatment plant.

3.1.5 Boilers (NC)

The boilers produce an average of 64,000 lbs/hr of steam. The main boiler plant produces steam for onsite power generation and general process heating. In order to maintain proper boiler operation, a certain quantity of boiler water is "blown down" and replaced with purified makeup water. This prevents an increase in the total dissolved solids (TDS) of the boiler water, which could lead to scale formation and/or corrosion. Approximately 9,648 gpd of blowdown water is discharged to the cooling pond. Boiler makeup is 25,200 gpd; subtracting the blowdown leaves 15,552 gpd which are lost through deaeration, stripping process, and other plant losses. Eighty-six percent of the steam is recycled as condensate. Boiler blowdown is discharged to the cooling pond for cooling and then to the surge basin. From the surge basin the boiler

blowdown is routed to the sewer pipe which discharges to the City of Bloomfield wastewater treatment plant.

3.1.6 Cooling Towers (NC)

Evaporative cooling tower waters from "A" and "C" cooling towers are used to cool compressed gases and for other general cooling of process units. Cooling towers recycle much of their water, but some is "blown down" and replaced to prevent TDS buildup. The cooling tower blowdown is discharged to the Surge Basin and then to the City of Bloomfield municipal wastewater treatment plant.

3.1.7 Domestic Sewage (NC)

Domestic sewage is generated by a plant work force of 31 people. Sewage is treated in four septic tanks and the discharge from these is routed to the sewer discharging to the City of Bloomfield wastewater treatment plant.

3.1.8 Storm Water (NC)

Located in an alluvial region, the Blanco Plant has good natural drainage (Plate 2-1). Storm water from the process area is collected in concrete-lined ditches which drain to natural, unlined channels. These channels then drain to the SPCC pond. This pond is used to capture and monitor the quality of stormwater leaving the processing area. In addition it serves to capture major spills emanating from the process area. The pond is earthen diked (about 3 to 1 slope) on two sides and has two discharge sluice valves. The dike lengths are about 120 feet by about 210 feet and it is capable of

capturing 2 feet of water at the deep end. The water usually evaporates or is discharged to natural drainage channels.

3.1.9 Cooling Pond (NC)

The Cooling Pond is an earthen diked, unlined pond used for cooling of boiler and evaporator blowdowns and receipt of reactor-clarifier blowdown prior to discharge to the Surge Basin. The pond is about 85 feet long by 80 feet wide and 3 feet deep, containing about 152,000 gallons. Dike walls have a slope of about 3 to 1.

3.1.10 Flare Pits (C)

The North and South Flare Pits receive emergency releases of gas, which contain small amounts of liquids, for flaring. The North Flare Pit is about 75 feet wide by 110 feet long by 8 feet deep. This pit is not part of the in-plant operations. The pit is used during pipeline district pigging operations if venting is required for safety reasons. The South Flare Pit is about 100 feet wide by 140 feet long by 8 feet deep. This pit is part of in-plant operations and is used infrequently for safety reasons to prevent overpressuring of process piping and facilities. A small amount of pipeline liquids enter these flare pits. There is no discharge from these pits.

3.1.11 Condensate Pond (C)

There are three ponds but only one is used. The one used Condensate Pond receives a small amount of water drawn from the pipeline Drips Tanks. This water

contains traces of hydrocarbons. The pond normally has a few inches of liquid in it at any time. There is no discharge from this pond. These ponds are about 80 feet wide by 160 feet long by 6 feet deep. The unused ponds are overgrown with vegetation.

3.1.12 Crude Oil Tank

The Crude Oil Tank (5,000 bbl) receives crude and used oil which is later fed to the fractionator for kerosene extraction. The water drain is discharged to a oil/water separator at the truck steam cleaning pad. Effluent from the separator flows to the Surge Basin which is a final oil/water separator.

3.1.13 Produced Water Evaporation Pond

This evaporation pond receives produced water, tank water draws, and miscellaneous pigging liquids. This pond is not part of in-plant operations. It is used for field operations. It is a double-lined pond utilizing synthetic liners. There is no discharge. The pond is about 120 feet wide by 120 feet long by 2 feet deep.

3.1.14 Building "D" Well

During the construction of Compressor "D" building, a shallow water well was installed to extract groundwater recharge away from the foundation. This well operates infrequently on level control and discharges to the sewer system to the Surge Basin.

3.2 WASTE QUANTITY AND FLOW CHARACTERISTICS

The Blanco Plant produces an estimated 104,800 gpd of process wastewater. Process wastewater is discharged to the City of Bloomfield municipal wastewater treatment facility. A material balance of the plant intake water and estimated plant water losses are shown in Figure 3-2. EPNG is currently conducting a flow monitoring program to accurately determine wastewater production at the Blanco Plant; however, the above estimate of discharge is reasonable.

Table 3-1 summarizes plant raw water inlet and wastewater discharge characteristics to the City of Bloomfield wastewater treatment facilities. Wastewater being discharged to the city was collected at the metered manhole over a 24-hour period, a grab sample every 4 hours, from 9 a.m., 8-4-88 through 5 a.m. 8-5-88. Collecting the samples in this manner represents an average 24-hour operation of the Blanco Plant. For inorganic analyses, a 24-hour sample was composited. For volatile organic compounds, individual samples containing no headspace were analyzed. The Cooling Pond grab sample was collected at 4:15 p.m. 8-4-88. The raw water analysis was taken from EPNG historical records, being collected on 7-7-88.

The Blanco Plant's wastewater discharged to the city is generally of good quality, having an organic content lower than most municipal sewages (for comparison), and is not known to have caused an operating problem at the city's treatment plant. The constituents found are typical of boiler and cooling tower additives and trace organics found in pipeline liquids. None of the parameters are believed to be present in high enough concentration to be potentially harmful to a well acclimated and well operated wastewater treatment system. Indeed, the treatability characteristics of the volatile organic compounds found (in microgram per liter quantities) is very good (Engineering-Science, Inc.).

TABLE 3-1

BLANCO PLANT WASTEWATER ANALYSES
(ALL ANALYSES IN MG/L)

Analyses	Raw Water	Cooling Pond Grab Sample	Effluent to City of Bloomfield 24 Hr. Comp. 8-4-88 to 8-5-88
COD	3.0	NA	238
Nitrate-N	0.1	NA	0.3
Oil and Grease	NA	NA	LT 0.1
TOC	2.8	NA	52
O-Phosphate	0.3	NA	0.25
Cyanide	NA	NA	0.6
Phenolics	NA	NA	0.013
Arsenic	NA	NA	LT 0.01
Barium	NA	NA	0.2
Cadmium	NA	NA	LT 0.001
Calcium	38.0	NA	135
Chromium, Total	NA	NA	LT 0.01
Chromium, VI	NA	NA	0.11
Hardness (as $CaCO_3$)	124.9	NA	494
Lead	NA	NA	LT 0.001
Magnesium	7.3	NA	33.1
Mercury	NA	NA	LT 0.0004
Potassium	1.6	NA	16.0
Selenium	NA	NA	LT 0.01
Silver	NA	NA	LT 0.01
Sodium	15.2	NA	84.6
Zinc	NA	NA	0.4
Alkalinity (total) (as $CaCO_3$)	90	NA	27
Alkalinity (Bicarbonate) (as $CaCO_3$)	90	NA	27
Chloride	NA	NA	29
Fluoride	0.16	NA	0.56
TDS	180	292	1010
Sulfate	58	NA	536
Iron	0.07	NA	NA
Iron (dissolved)	0.01	NA	NA
Manganese (dissolved)	0.01	NA	NA
pH	7.43	NA	NA
Specific Conductance (umhos/cm)	293	NA	NA
Total Suspended Solids	9	NA	NA
Nitrogen, Ammonia (as N)	0.1	NA	0.3
Nitrogen, Nitrite (as N)	0.1	NA	0.3
Silica	12.6	NA	NA
Silica (dissolved)	7.4	NA	NA
CO_2 (Free)	18	NA	NA
Oxygen, Dissolved	3.0	NA	NA

NA - Not analyzed
ND - Not detected
LT - Less than

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TABLE 3-1 (Continued)

BLANCO PLANT WASTEWATER ANALYSES
(ALL ANALYSES IN UG/L)

Analyses	Raw Water	Effluent to City of Bloomfield 8-4-88 0900	8-4-88 1300	8-4-88 1700
Carbon Tetrachloride	LT 2.8	LT 0.12	LT 0.12	LT 0.12
PCE (Hexachloroethane)	NA	NA	NA	NA
1,1,2-Trichloroethane	LT 5.0	LT 0.02	LT 0.02	LT 0.02
PCB's	NA	LT 1.0	LT 1.0	LT 1.0
Benzene	LT 4.4	30.7	24.6	44.6
Toluene	LT 6.0	22.4	62.7	46.8
EDC	LT 5.4	LT 0.07	LT 0.07	LT 0.07
DCE (Dichloroethane)	LT 7.5	LT 0.03	LT 0.03	LT 0.03
Ethylbenzene	LT 7.2	2.6	2.6	1.4
Xylenes	NA	28.9	20.8	54.0
Methylene Chloride	LT 2.8	NA	NA	NA
Trichloromethane	LT 1.6	NA	NA	NA
Trichlorofluoromethane	LT 5.0	NA	NA	NA
Bromodichloromethane	LT 2.2	NA	NA	NA
1,1,2,2-Tetrachloroethane	LT 6.9	NA	NA	NA
1,2 Dichloropropane	LT 6.0	NA	NA	NA
Trans-1, 3-dichloropropene	LT 5.0	NA	NA	NA
Trichloroethene	LT 1.9	NA	NA	NA
Dibromochloromethane	LT 3.1	NA	NA	NA
Tetrachloroethene	LT 4.1	NA	NA	NA
Tribromomethane	LT 4.7	NA	NA	NA
Chlorobenzene	LT 6.0	NA	NA	NA
Chloromethane	ND	NA	NA	NA
Bromomethane	ND	NA	NA	NA
Vinyl Chloride	ND	NA	NA	NA
Chloroethane	ND	NA	NA	NA
cis-1,3-Dichloropropene	ND	NA	NA	NA
2-Chloroethylvinylether	ND	NA	NA	NA
1,2-Dichlorobenzene	ND	NA	NA	NA
1,3-Dichlorobenzene	ND	NA	NA	NA
1,4-Dichlorobenzene	ND	NA	NA	NA

NA - Not analyzed
ND - Not detected
LT - Less than

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TABLE 3-1 (Continued)

BLANCO PLANT WASTEWATER ANALYSES
(ALL ANALYSES IN UG/L)

Analyses	Raw Water	Effluent to City of Bloomfield 8-4-88 2100	8-5-88 0100	8-5-88 0500
Carbon Tetrachloride	LT 2.8	LT 0.12	LT 0.12	LT 0.12
PCE (Hexachloroethane)	NA	NA	NA	NA
1,1,2-Trichloroethane	LT 5.0	LT 0.02	LT 0.02	LT 0.02
PCB's	NA	LT 1.0	LT 1.0	LT 1.0
Benzene	LT 4.4	34.3	22.6	31.5
Toluene	LT 6.0	35.9	20.7	28.6
EDC	LT 5.4	LT 0.03	LT 0.07	LT 0.07
DCE (Dichloroethane)	LT 7.5	LT 0.07	LT 0.03	LT 0.03
Ethylbenzene	LT 7.2	3.4	3.0	3.0
Xylenes	NA	38.3	38.7	32.1
Methylene Chloride	LT 2.8	NA	NA	NA
Trichloromethane	LT 1.6	NA	NA	NA
Trichlorofluoromethane	LT 5.0	NA	NA	NA
Bromodichloromethane	LT 2.2	NA	NA	NA
1,1,2,2-Tetrachloroethane	LT 6.9	NA	NA	NA
1,2 Dichloropropane	LT 6.0	NA	NA	NA
Trans-1, 3-dichloropropene	LT 5.0	NA	NA	NA
Trichloroethene	LT 1.9	NA	NA	NA
Dibromochloromethane	LT 3.1	NA	NA	NA
Tetrachloroethene	LT 4.1	NA	NA	NA
Tribromomethane	LT 4.7	NA	NA	NA
Chlorobenzene	LT 6.0	NA	NA	NA
Chloromethane	ND	NA	NA	NA
Bromomethane	ND	NA	NA	NA
Vinyl Chloride	ND	NA	NA	NA
Chloroethane	ND	NA	NA	NA
cis-1,3-Dichloropropene	ND	NA	NA	NA
2-Chloroethylvinylether	ND	NA	NA	NA
1,2-Dichlorobenzene	ND	NA	NA	NA
1,3-Dichlorobenzene	ND	NA	NA	NA
1,4-Dichlorobenzene	ND	NA	NA	NA

NA - Not analyzed
ND - Not detected
LT - Less than

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3.2.1 Boiler Blowdown (NC)

Boiler blowdown produces 9,648 gpd and is discharged to the Cooling Pond and then to the Surge Basin. This blowdown is cooled due to temperature limitations imposed by the City of Bloomfield wastewater treatment plant. The blowdown as discharged to the Cooling Pond typically has a total dissolved solids in the range of approximately 350 to 800 mg/l according to EPNG historical data. A sample collected from the Cooling Pond on August 4, 1988 reflected a total dissolved solids of 292 mg/l.

3.2.2 Cooling Tower Blowdown (NC)

Of the 334,562 gpd of makeup water, 66,146 gpd are "blowdown" to the surge basin and 268,416 gpd are lost to evaporation. The TDS concentration is approximately 2,000 mg/l.

3.2.3 Water Treatment (Reactor-Clarifier, Evaporator Blowdown and Domestic Filter Blowdown) (NC)

Treatment of water for domestic and process use produces 6,718 gpd of wastewater. Domestic filter blowdown is discharged to the reactor-clarifier. Evaporator blowdown and reactor-clarifier blowdown discharge via an underground sewer to the Cooling Pond and then to the surge basin.

3.2.4 Scrubbers (C)

Condensed water from scrubbing of gas typically contains some free hydrocarbons. This stream flows to the surge basin and totals about 3,888 gpd.

3.2.5 Domestic Sewage (NC)

Sanitary sewage of 620 gpd is discharged to the City of Bloomfield based on a population of 31 people.

3.2.6 Cooling Pond (NC)

Boiler blowdown, having a TDS concentration of about 350 to 800 mg/l, and evaporator blowdown, is cooled in this pond and passes to the Surge Basin at an average rate of about 16,272 gpd. In addition, this pond receives reactor-clarifier blowdown at about 93.6 gpd.

3.2.7 Crude Oil Tank (C)

The water draw from this tank is estimated to be 720 gpd, and after oil/water separation contains only a small amount of hydrocarbons.

3.2.8 Chemicals, Additives and Preservatives

The type and known quantities of chemicals and additives used in both contact and non-contact processes at the Blanco Plant are summarized in Table 3-2. Appendix C contains Material Safety Data Sheets for all products and chemicals used.

3.2.9 Possible Variation in Wastewater Chemistry and Quantity

Boiler and cooling tower blowdowns are responsible for a significant portion of the wastewater. Variations in steam production rates (and therefore boiler blowdown) and in cooling tower blowdown produce minor variations in wastewater production due to net cancelling effects of each in winter and summer.

TABLE 3-2

CHEMICALS USED AT BLANCO PLANT (ANNUAL AMOUNTS)

	WATER TREATING		
1.	Chlorine	(Gas - Domestic Use)	1,650 Lbs.
2.	Cat Floc T	(Domestic Filters)	1,350 Lbs.
3.	Copper Sulfate	(Algacide)	50 Lbs.
	COOLING TOWERS		
4.	Unichem Alpha 512		90 Gal.
5.	Unichem Alpha 570		182 Gal.
6.	Unichem Alpha 581	("A" Cooling Tower Shock Treatment Biocide)	20 Gal.
7.	Unichem 1300	(Corrison Inhibitor)	1,200 Lbs.
8.	Unichem 1700	(Dispersant)	110 Gal.
9.	Unichem Biosphere	(Dispersant)	110 Gal.
10.	Unichem De-oiling	(Surfactant)	55 Gal.
11.	HTH	(Biocide)	400 Lbs.
12.	Sulfuric Acid (98%)	(pH control)	3400 Gal.
	BOILER FEED CHEMICALS		
13.	Unichem HIB 530	(Scale Prevention)	165 Gal.
14.	Unichem HIB 430	(Neutralizing Amine)	75 Gal.
15.	Unichem HIB 341	(Oxygen Scavenger)	100 Gal.
16.	Unichem HIB 340	(Oxygen Scavenger)	100 Gal.
17.	Caustic Soda	(pH Adjustment)	400 Lbs.
18.	Unichem HIB 440	(Corrosion Inhibitor)	55 Gal.
19.	Unichem HIB 435	(Neutralizing Amine)	55 Gal.
	CLOSED JACKET AND OIL COOLING WATER SYSTEMS		
20.	Unichem KE-TONE BN	(Sodium Nitrite)	110 Gal.
21.	Unichem	(Phosphate)	100 Gal.
	LUBE OIL		
22.	Mobil 797	(Turbine Oil)	220 Gal.
23.	Shell	(Turbine Oil)	2,545 Gal.
24.	Tribol 890	(Synthetic/Compressor)	890 Gal.
25.	Mobil 490		1,000 Gal.
	LUBE OIL		
26.	Varsol 1	(General Degreaser)	700 Gal.
	DRYING AGENTS		
27.	Activated Alumina Beads	(Air Dryer for Boiler)	500 Lbs.

3.3 SPILL/LEAK PREVENTION AND HOUSEKEEPING PRACTICES

3.3.1 Operating and Maintenance Procedures

The Blanco Plant is operated in a manner to prevent and mitigate any unplanned releases to the environment. Plant process and storage units are regularly observed by a number of personnel during normal operations, and any evidence or sign of spills/leaks are routinely reported to supervisory personnel so that repairs or cleanup can be promptly effected. Routine maintenance procedures conducted at the Blanco Plant also help to assure that equipment remains functional and that the possibility of spills/leaks is minimized.

The majority of process and storage units at the Blanco Plant are bermed or curbed and have underdrains or natural diversions which will direct any unplanned spills or releases to existing waste management areas.

3.3.2 Chemical and Environmental Hazards

A number of process and non-process chemicals or additives (Table 3-2) used at the Blanco Plant could present a threat to the environment only in the event of a major spill or release. The majority of the chemicals are used in small quantities (55 gallons to 2,500 gallons per year) and any spills or leaks would be very small in volume and easily contained in the immediate area.

Major spills could result from the release of lubricating oils. A spill of wastewater could also result from possible dike failure of the cooling pond.

3.3.3 Cleanup Procedures

Cleanup procedures would obviously vary with the nature and extent of any unplanned release. Spills of bases are relatively easy to control and general procedures would include neutralization of the material in-place before a final evaluation is made on its ultimate disposal. Once neutralization is confirmed by sampling, it is quite probable that no further actions will be required to ensure protection of human health and the environment.

Spills or leaks of hydrocarbon could potentially occur from the lube oil storage tanks and the used oil storage tanks. Lube oils are stored in two 8,000 gallon tanks located south of compressor building B and in storage containers at points of usage. Any releases would be collected in a concrete lined storm water ditch, dammed with soil, and transported to the Crude Oil Tank for disposal. Any spills not contained as described above would be captured in the SPCC Pond. Used oils are stored in an on-site storage tank and reclaimed in the fractionator.

If an oil spill occurs, general cleanup procedures would involve minor earthwork to prevent migration, and recovery of as much free liquid as possible. Recovered oil would then be transported off-site for reclamation. Any material which may have soaked in the soil will be left in place and will be disked periodically to enhance biodegradation.

Spills of other organic materials which might occur at the drum storage area will be small in nature and easily contained. If a spill occurs, any free liquids will be contained by earthwork, recovered if possible and held in storage pending a decision on final disposal. Based on existing literature, analysis, and regulatory guidelines, any contaminated soil will either be left in place, transferred to other existing waste-management areas (if no incompatibilities exist), or transported off-site for proper disposal.

Potential releases could result from dike failure of the boiler blowdown cooling pond. Should a potential or actual release occur, several types of earth moving equipment are available to promptly repair damage to any dikes. Any liquids which have been released will be collected, where practical, and reintroduced into the wastewater treatment system as is practical.

3.3.4 Reporting

Should a release of materials occur, EPNG will provide oral notification to NMOCD as soon as possible after discovery as required by WQCC Regulation 1-203.

3.3.5 General Housekeeping Procedures

EPNG strives to reduce the potential for spills and leaks in all non-process areas. Records from 1972 to present indicate that no liquid spills are documented at the Blanco Plant. Interviews with plant personnel have also indicated that no liquid spills occurred between the 1950's and 1972.

Non-process chemicals are used in relatively small quantities at the plant and are managed in a manner to prevent discharges to the environment. Any chemical spills which might occur would be immediately contained and disposed of according to proper guidelines.

Chemicals such as cleaning solvents are collected and recycled. EPNG currently uses a non-halogenated solvent, Varsol, for degreasing operations. The spent solvent which contains various aromatic compounds is combined with other hydrocarbon fractions and is recycled on site.

4.0 EFFLUENT DISPOSAL

4.0 EFFLUENT DISPOSAL

4.1 EXISTING OPERATIONS

Since 1964, EPNG's Blanco Plant has discharged most (greater than 98%) of its processed contact and all non-contact wastewater to the City of Bloomfield's wastewater treatment plant (see Appendix B). The only continuous waste discharge which is held on-site for any time is boiler and evaporator blowdown which flows through the Cooling Pond for temperature reduction, and reactor-clarifier blowdown. This stream has a low TDS, ranging from 350 to 800 mg/1, according to EPNG historical analyses. The two flare pits receive only very intermittent emergency relief venting of gas which contains a small amount of pipeline liquids. The Condensate Pond receives only intermittent and small amounts of water drawn from the drip storage tanks on the western portion of the plant site. The water depth in the pond is only several inches. The Produced Water Evaporation Pond (double-lined) receives small quantities of miscellaneous sources of water containing small amounts of hydrocarbon. Domestic Sewage is treated in four septic tanks with ultimate flow to the City of Bloomfield. Used oil is recovered by treatment in the fractionator.

In order to assess the potential for groundwater contamination by past waste disposal practices EPNG plans to perform a groundwater quality investigation of the Blanco Plant in mid-September. The groundwater quality investigation work plan is attached and is considered an integral part of this discharge plan.

4.2 OFF-SITE DISPOSAL

The City of Bloomfield treats EPNG's Blanco Plant wastewater discharge in a 650,000 gallon per day activated sludge treatment plant. EPNG's discharge is approximately 104,800 gpd. This flow is a reasonable estimate. Flow meters will be calibrated shortly. The flowmeter is a Palmer-Bowlus type with a Badger 7-day recording chart and totalizer. Wastewater is conveyed in a vitrified clay 8-inch line. EPNG intends to continue to discharge its Blanco Plant wastewater to the City of Bloomfield municipal wastewater treatment plant.

4.3 PROPOSED MODIFICATIONS: CLOSURE OF UNLINED PITS AND PONDS

EPNG proposes to close the following unlined pits and ponds which currently or historically contained contact wastewater, namely: North Flare Pit, South Flare Pit, Condensate Ponds, Cooling Pond and the Abandoned Evaporation Pond. The Abandoned Evaporation Pond was used to evaporate the plant effluent, that which now flows to the City of Bloomfield. It has not been used since 1964. This structure is about 100 feet by 200 feet long by 4 feet deep with earthen dike (about 3 to 1 slope). The pond is dry and overgrown with vegetation.

In keeping with sound environmental practices, EPNG proposes to provide engineered waste management units to replace the above named pits and ponds. In addition, the pits and ponds will be closed in accordance with current environmental standards and guidelines. The residues in the ponds and pits will be analyzed for characteristics of hazardous waste in accordance with 40 CFR 261 and will be compared to "listed" wastes as well. If material from the ponds and pits is shown to be hazardous, this material will be disposed of in accordance with EPA guidelines. The excavated material will be replaced with clean soil.

Research has shown that petroleum residues can be degraded in a soil environment (Cresswell, 1977). The process usually involves the mixing of contaminated soil with fresh soil and harrowing to improve aeration, addition of fertilization to facilitate bacterial breakdown of the residue and the establishment of vegetation (Gudin and Syratt, 1975). Cresswell (1977) reports that healthy crops of wheat were grown on test plots in Oklahoma containing four to eight percent of oil in the upper six inches of soil. It was found that the oil, including oily waste from the bottoms of wastewater treatment ponds, was held in the shallow soil zone in which it was originally applied and did not move vertically or horizontally in the soil. Such reclamation steps would improve the closure process and will be utilized where time allows or necessity dictates.

The general approach to pond closure will entail covering the pond with dirt fill and then mounding the fill dirt over the former pond areas to preclude the possibility of producing a hydraulic head by ponding water.

5.0 SITE CHARACTERISTICS

5.0 SITE CHARACTERISTICS

The plant is located within the west-central part of the San Juan Basin (Figure 5-1), a large, asymetric structural depression that contains up to 15,000 feet of Paleozoic and Mesozoic sediments (Fassett and Hinds, 1971). Maximum topographic relief within 1 mile of the site is about 480 feet with elevations ranging from 5460 to 5937 feet above sea level (Plate 5-1). The area is characterized by bedrock hillsides and mesas and Plio-Pleistocene gravel terraces of the San Juan and Animas Rivers. All these features are cut by steep-walled arroyos. Drainage is to the south into the westerly-flowing San Juan River. Average annual precipitation in the area is 8.5 inches per year. Vegetation is typically desert brush that covers approximately 15% of the surface.

EPNG is conducting an investigation of the site hydrogeology. Seven monitoring wells will be constructed on the site. Selected soil samples taken during construction of the wells and water samples taken from the completed wells will be analyzed. Additional soil samples will be taken at three locations that could potentially be sources of ground water contamination. The well and sampling locations are shown on Plate 5-1. The results of this investigation will be presented as an appendix to this report at a later date. The appendix will include, but not be limited to, the following:

- Updated site stratigraphy including cross sections through the site and lithologic logs for each monitoring well
- Site specific ground water characterization including maps of ground water levels and specific conductivity
- Water well survey results with map showing locations of any wells within a radius of one mile of the plant site
- Results and discussion of results of ground water sample analyses

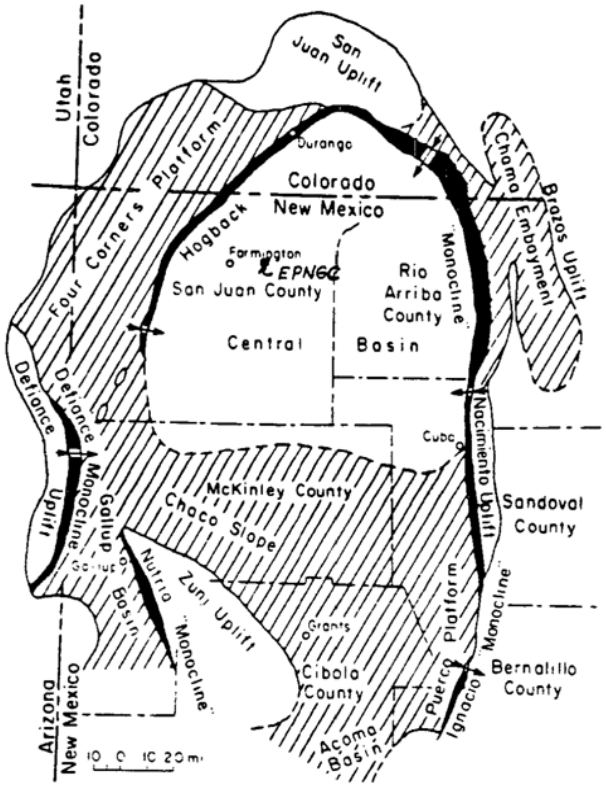


Diagram of the San Juan Basin Showing Structural Components and Location of Blanco Plant (Stone and Others, 1983).

FIGURE 5-1

5.2 GEOMORPHOLOGY AND SOILS

The plant site is located on alluvial valley fill sloping gently to the south. There are no major drainages crossing the site. Three major soil associations are identified on the plant site; Stumble-Fruitland, Gypsiorthids-Bodland-Stumble, and Fruitland sandy loam (C. W. Keetch. 1980). Most of the plant facilities are located on the Stumble-Fruitland association which developed in alluvium derived dominantly from sandstone and shale. Permeability is moderate (2.0-6.0 in/hour) in Fruitland soils to very rapid (6.0-20.0 in/hour) in Stumble soils (C. W. Keetch, 1980). For this association runoff is very slow to slow and water erosion potential is low (C. W. Keetch, 1980).

A few of the old evaporation ponds on the western part of the site were constructed in soils of the Stumble portion of the Gypsiorthids-Badlands-Stumble association. Characteristics of the Stumble are discussed in the previous paragraph.

No plant facilities are constructed on the Fruitland sandy loam. It can be found on the southeast part of the plant site. Permeability is moderate (2.0-6.0 in/hr). runoff is slow, and water erosion potential is low to moderate (C. W. Keetch, 1980).

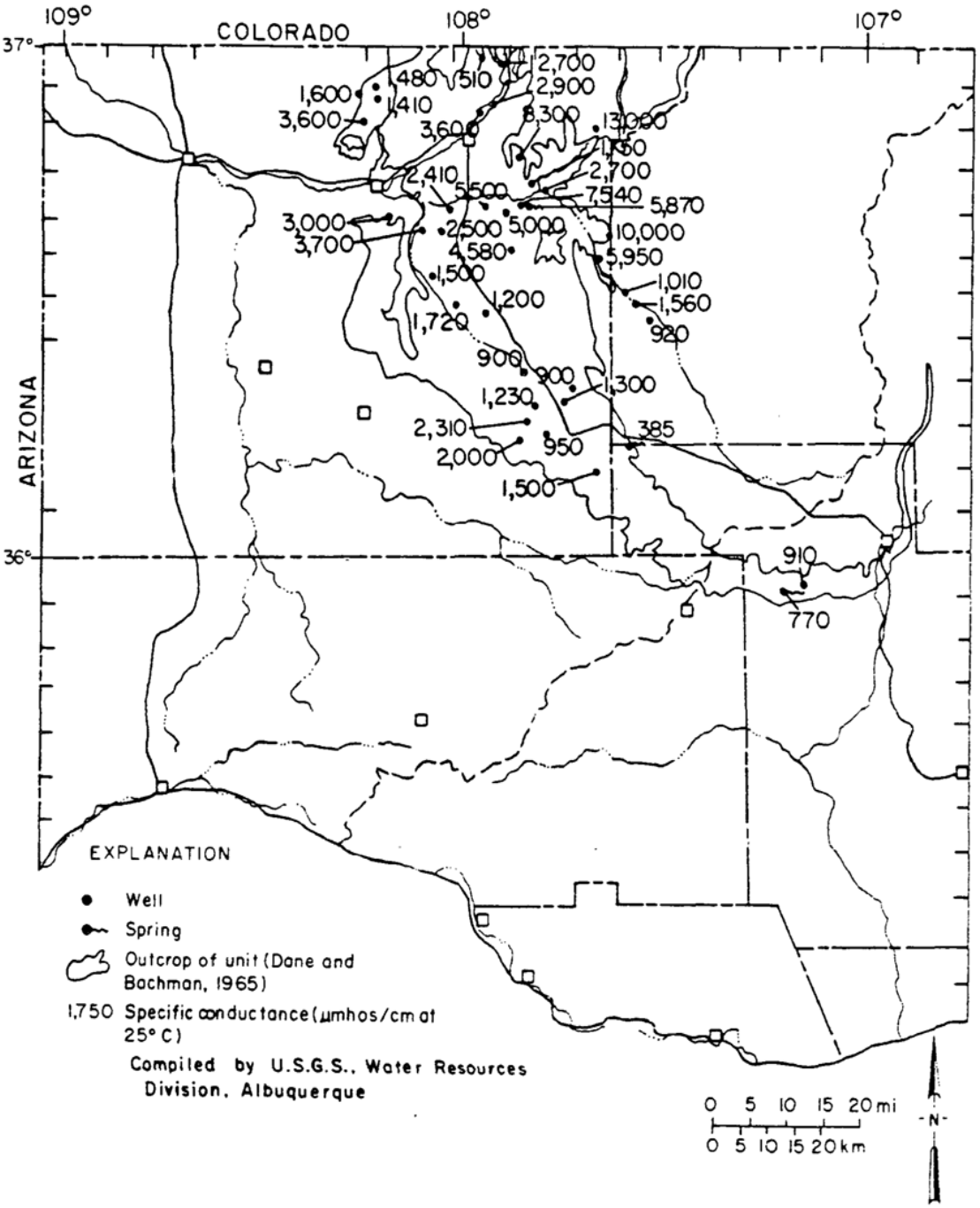
5.3 SITE GEOLOGY

The plant site is located on alluvium, which fills a canyon cut into the Nacimiento Formation. The alluvium consists of fine to coarse sands, clays, and varying combinations of the two. These were deposited by stream and wind action. The soils tend to be weak, compressible, and moderately permeable. At the plant site thickness of the alluvium ranges from less than 3 feet to 75 feet. The alluvium is deposited on the Nacimiento Formation. A generalized geologic cross section of the plant site is shown on Figure 5-3.

The two Tertiary aquifers occurring beneath the site are the Nacimiento Formation and the Ojo Alamo sandstone. Neither are used as a direct source of water near the plant site. Seepage from the Nacimiento is probably a small source of recharge for the overlying alluvium aquifer.

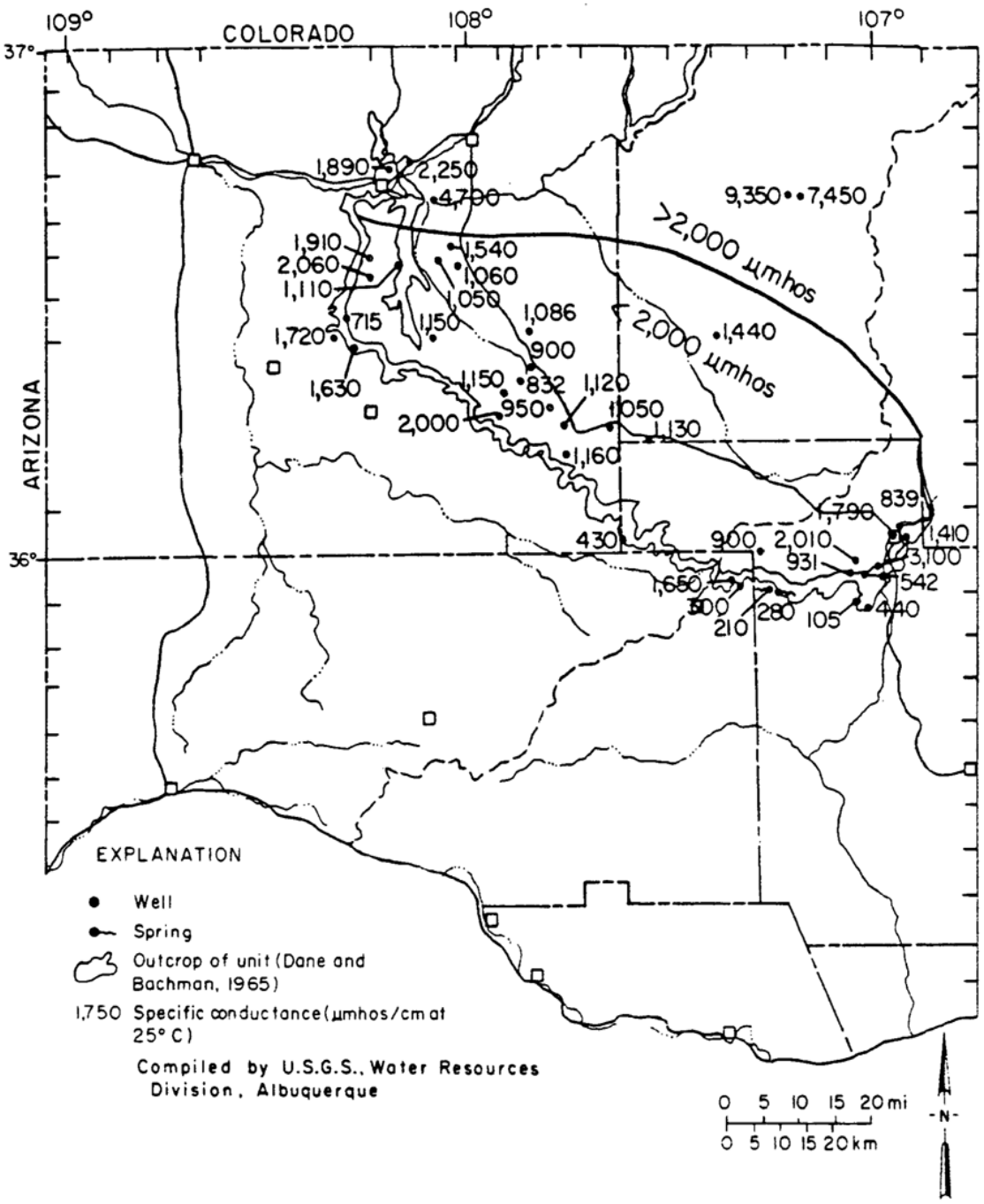
Transmissivities for the Nacimiento Formation are estimated to be as high as 100 ft^2/day for the coarser and more continuous sandstones. Transmissivities for the Ojo Alamo sandstone range from 0.5 ft^2/day to 250 ft^2/day (Stone and others, 1983).

Water quality as indicated by specific conductance is shown on Figure 5-4 for the Nacimiento Formation and on Figure 5-5 for the Ojo Alamo Sandstone. Measurements of specific conductance in micromhos (umhos) is used as an indicator of salinity. A general classification can be used as follows: 700 umhos = fresh; 700-2000 umhos = slightly saline; 2000-7000 umhos = saline: 7000-24,000 umhos = very saline; 24,000 umhos = brine. Specific conductance for the sandstones of the Nacimiento Formation ranges from less than 1,500 umhos to greater than 2000 umhos in the finer grained portions of the unit (Stone and other, 1983). Water in the Nacimiento along the San Juan River often exceeds 4000 umhos (Stone and others, 1983). Specific conductance for the Ojo Alamo Sandstone ranges from less than 1000 umhos to greater than 9000 umhos (Stone and others, 1983).



Specific Conductance from Selected Wells and Springs in Nacimiento/Animas Formations (Stone & Others, 1983)

FIGURE 5-4



Specific Conductance From Selected Wells and Springs in Ojo Alamo Sandstone (Stone & Others, 1983)

FIGURE 5-5

5.4.2 Quaternary Aquifers

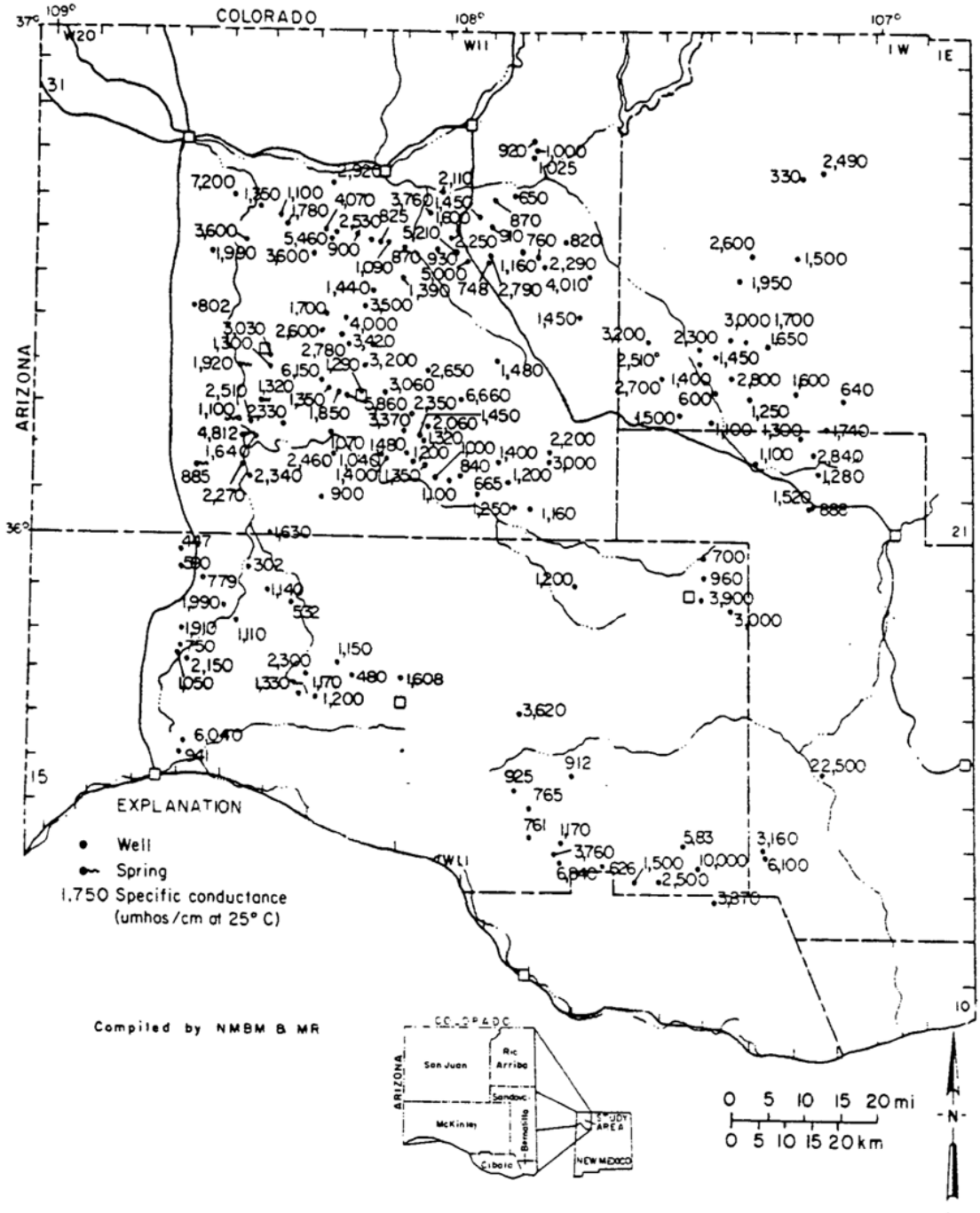
Quaternary-sediment aquifers occur primarily as valley fill in the major river valleys and consist of gravel, sand, silt and clay. Ground-water recharge results from drainage from irrigated lands, infiltration of surface runoff and leakage from bedrock aquifers. Flow directions are concurrent with topographic slope and river-flow directions, and hydraulic conductivity can be extremely high. Transmissivities range from less than 1000 ft^2/day to more than 40,000 ft^2/day (Stone and others, 1983).

As Figure 5-6 shows, the quality of ground water (in terms of specific conductance) in Quaternary River Valley alluvium is highly variable and specific conductance may range from less than 1,500 to 6,000 umhos (Stone and others, 1983). Water from this source is used for stock, irrigation and domestic purposes. In arroyos and tributaries of the major rivers the ground water quality is also highly variable and specific conductance can be significantly higher than 6,000 umhos.

5.5 LOCAL GROUND WATER HYDROLOGY

Two ground-water regimes exist at the Blanco Plant site:

1. Unconfined sandstone aquifer in the Nacimiento Formation.
2. Unconfined aquifer in the canyon-filling alluvium beneath the plant site.



Specific Conductance from Selected Wells and Springs in Valley Fill Deposits (Stone and Others, 1983)

FIGURE 5-6

No wells are completed in the Nacimiento Formation near the plant site. Discussion for this aquifer is limited to that presented in the section on Regional Ground Water Hydrology, Tertiary Sandstone Aquifers.

The Blanco Plant is constructed on the alluvium filling the canyon beneath the plant site. This alluvium is an unconfined aquifer limited laterally by edges of the canyon it fills. Based on the topography, ground water should flow from north-northeast to south-southwest beneath the plant site following the general trend of the canyon. The main source of recharge is by rainfall. The recharge area is limited north of the plant site topography and the edges of the buried canyon. A small amount of recharge may occur from water seeping from the sandstone beds of the Nacimiento Formation. South of the plant site recharge is supplemented by irrigation. Depth to water near the south border of the plant site is between 10 and 15 feet below the ground surface. Under the plant facilities, water depths have been reported over the last 25 years to range between 14.4 feet and 39 feet. Average transmissivity for the alluvium is estimated to be less than 1,000 ft^2/day. Several wells have been completed in this aquifer south of the plant site.

5.6 SURFACE WATER HYDROLOGY AND FLOODING POTENTIAL

The Blanco Plant is situated at the mouth of an unnamed canyon located between Bloomfield and Hare Canyons, northeast of the town of Bloomfield, at an altitude of about 5,600 feet. The major hydrologic feature of this area is the San Juan River which drains in an east-west direction, some 1-1/2 miles due south of the plant. Flooding from the San Juan River would not affect the plant because the plant is located some 160 feet above the river and is outside of the 100-year flood plain.

The local drainage that could have a potential flooding impact on the plant site is the unnamed canyon. Storm runoff from this canyon drains in a northeast to southwest direction, through the plant site area, and continues to the Citizen Ditch which divert the flows to the Bloomfield and Hare Canyons' watershed.

At the plant site area, this unnamed canyon drains an area of about 0.9 square miles. It is ephemeral with little vegetation cover. The length of this canyon is about 1-1/2 miles with an average slope of about 3%. The time of concentration for this canyon was estimated to be 0.6 hours. The soils in the canyon according to the soil survey published by the U.S. Soil Conservation Service (C.W. Keetch, 1980) is silty sand and belongs to the Hydrologic Soil Group B.

The rainfall frequency data were obtained from NOAA Atlas 2 Precipitation - Frequency Atlas of the Western United States Volume IV, New Mexico. The 10-year, 25-year, 50-year and 100-year, 24-hour rainfall amounts were estimated to be 1.7, 2.0, 2.4 and 2.6 inches, respectively. Flood peak discharges from these storms were also derived using the U.S. Army Corps of Engineers dimensionless computer program, HEC-1 Flood Hydrograph Package. The dimensionless unit hydrograph suggested by the U.S. Soil Conservation Service was used and a curve number of 80 was assumed for an antecedent moisture condition II. The flood peak discharges and flood volumes for a 24-hour storm for the various recurrence intervals are given in Table 5-1.

At present, storm runoff from this canyon is intercepted just to the north of the plant and is channelled into two drainage ditches in the east and west side of the plant site, respectively, with the east ditch carrying the majority of the storm runoff. Both of these drainage ditches have very limited capacities and would not be able to accommodate runoff from a severe storm event. Some local flooding in the vicinity of the ditches would be expected. The flood waters could also enter the low depression area south of the Cooling Pond as well as the Old Abandoned Evaporation Pond.

TABLE 5-1
FLOOD DATA - UNNAMED CANYON
BLANCO PLANT

Recurrence Interval	10-Year	25-Year	50-Year	100-Year
24-Hour Rainfall (inches)	1.7	2.0	2.4	2.6
Flood Peak Discharges (cfs)	240	320	490	610
Flood Volume (AF)	22	30	43	50

7525L:0285L

6.0 MONITORING AND REPORTING

6.0 MONITORING AND REPORTING

Samples of wastewater discharged to the City of Bloomfield will be obtained annually and analyzed for all WQCC 3-103 parameters except radioactive species. Any records related to waste characterization will be retained by El Paso for at least five years.

Any changes, anticipated or otherwise, to the disposal system will be reported to NMOCD. The NMOCD is hereby notified of EPNG's intent to close various pits and ponds (Section 4.3).

7.0 BASIS FOR APPROVAL

7.0 BASIS FOR APPROVAL

The existing site conditions at the Blanco Plant ensure that there should be no present or future danger to ground water having foreseeable future use as the result of current discharge practices. No present or foreseeable future users of ground water in the Blanco Plant area are expected to be affected for the following reasons:

- 98% of contact wastewaters undergo hydrocarbon separation prior to complete treatment by the City of Bloomfield (Section 3.1.2)
- 96% of all wastewaters are derived from non-contact processes and are of relatively good quality (Section 3.2)
- EPNG proposes to close 5 unlined pits and ponds to further improve environmental quality (Section 4.3)
- There is no significant potential for wastewater release due to flooding by a 100-year storm (Section 5.6)
- EPNG is wholly committed to carrying out sound disposal practices and to this end submits the plan outlining the proposed procedures. Likewise, EPNG is committed to cooperating fully with NMOCD in honoring requests for additional information or clarification of existing information related to the Discharge Plan.

8.0 SUMMARY OF DISCHARGE PLAN REQUIREMENTS

8.0 SUMMARY OF DISCHARGE PLAN REQUIREMENTS

1) Annual analysis of samples taken from the discharge to the City of Bloomfield.

2) Reporting of all significant leaks or spills to NMOCD within 10 days, and notification within 30 days of any corrective action taken.

3) Maintain records of wastewater characterization for at least five years.

9.0 REFERENCES CITED

9.0 REFERENCES CITED

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APPENDIX A

CHEMICAL ANALYSES OF WATER AND WASTEWATER

P.O. BOX 5351 • Santa Fe, New Mexico 87502

OUT OF STATE 800/545-2188

REPORT OF ANALYSIS

LAB # 88-07-137

SAMPLE IDENTIFICATION	DATE COLLECTED
Chaco P. Total Plant Inlet	07/07/88

(The water source for Blanco, Kutz and Chaco is the same)

TYPE OF ANALYSIS	mg/liter	
Calcium	38	
Iron	0.07	
Potassium	1.6	
Magnesium	7.3	
Manganese	0.03	
Sodium	~~152~~ 15.2	
Iron (dissolved)	0.01	
Manganese (dissolved)	<0.01	
Chloride	2	
Carbonate (as CaCO3)	0	
Fluoride	0.16	
Bicarbonate (as CaCO3)	90	
pH	7.43	(units)
Phosphate	<0.3	
Sulfate	58	
Specific Conductance	293	(umhos/cm)
Solids, Total Dissolved	180	
Total Suspended Solids	9	
Nitrogen, Ammonia (as N)	<0.1	
Nitrogen, Nitrite (as N)	<0.1	
Nitrogen, Nitrate (as N)	<0.1	
Silica	7.4	
Silica (dissolved)	12.6	
CO2 (Free)	18	
Total Organic Carbon	2.8	
Volatile Organics		()
Chemical Oxygen Demand	3	
Oxygen, Dissolved	3.0	
Base Neutrals	*	(ug/liter)

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OUT OF STATE

LAB # 88-07-137

PAGE 3

CEP, Inc. REPORT

RECEIVED: 07/08/88

Results by Sample

SAMPLE ID Chaco P. Total Plant Inlet FRACTION 01H TEST CODE VOA NAME Volatile Organics EPA-624

Date & Time Collected 07/07/88 Category WATER

(The water source for Blanco, Kutz and Chaco is the same)

CAS #	Compound name	Result
74-87-3	Chloromethane	ND
74-83-9	Bromomethane	ND
75-01-4	Vinyl Chloride	ND
75-00-3	Chloroethane	ND
75-09-2	Methylene Chloride	<2.8
75-35-4	1,1-Dichloroethene	<2.8
75-34-3	1,1-Dichlorethane	<4.7
156-60-5	Trans-1,2-Dichloroethene	<1.6
67-66-3	Chloroform	<1.6
107-06-2	1,2-Dichloroethane	<2.8
75-69-4	Trichlorofluoromethane	<5.0
71-55-6	1,1,1-Trichloroethane	<3.8
56-23-5	Carbon Tetrachloride	<2.8
75-27-4	Bromodichloromethane	<2.2
79-34-5	1,1,2,2-Tetrachloroethane	<6.9
78-87-5	1,2-Dichloropropane	<6.0
10061-02-6	Trans-1,3-dichloropropene	<5.0
79-01-6	Trichloroethene	<1.9
124-48-1	Dibromochloromethane	<3.1
75-00-5	1,1,2-Trichloroethane	<5.0
127-18-4	Tetrachloroethene	<4.1
10061-01-5	cis-1,3-Dichloropropene	ND
110-75-8	2-Chloroethylvinylether	ND
75-25-2	Bromoform	<4.7
71-43-2	Benzene	<4.4
95-50-1	1,2-Dichlorobenzene	ND
108-90-7	Chlorobenzene	<6.0
541-73-1	1,3-Dichlorobenzene	ND
106-46-7	1,4-Dichlorobenzene	ND
108-88-3	Toluene	<6.0
100-41-4	Ethylbenzene	<7.2

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OUT OF STATE 800/545-2188

PAGE 4 CEP, Inc. REPORT LAB # 88-07-137

RECEIVED: 07/08/88 Results by Sample Continued From Above

SAMPLE ID Chaco P. Total Plant Inlet FRACTION 01H TEST CODE VOA NAME Volatile Organics EPA-624

Date & Time Collected 07/07/88 Category WATER

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/liter unless otherwise specified.

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502

IN STATE 505/982-9841
OUT OF STATE 800/545-2188

PAGE 1

CEP, Inc. REPORT

LAB # 88-08-123

RECEIVED: 08/08/88

08/22/88 16:09:36

REPORT TO: El Paso Natural Gas Company
P.O. Box 4990
Farmington, NM 87401

ATTEN: Don Vacker

CLIENT: EL PASO NM SAMPLES 7
COMPANY: El Paso Natural Gas Company
FACILITY: Blanco PLT Metered Manhole

WORK ID: Water Quality
TAKEN: 08/04 to 08/05/88
TRANS: Federal Express
TYPE: Water
P.O. #:
INVOICE: under separate cover

PREPARED BY: Controls for Environmental Pollution, Inc.
1925 Rosina Street
Santa Fe, NM 87502

ATTEN:
PHONE: (505) 982-9841

CERTIFIED BY

CONTACT GAIL 001235

Remainder of sample(s) for routine analysis will be disposed of three weeks from final report date. Sample(s) for bacteria analysis only, will be disposed of one day after final report. This is not applicable if other arrangements have been made.

* Samples were composited.

SAMPLE IDENTIFICATION

01	Blanco PLT Metered Manhole
02	Blanco PLT Metered Manhole
03	Blanco PLT Metered Manhole
04	Blanco PLT Metered Manhole
05	Blanco PLT Metered Manhole
06	Blanco PLT Metered Manhole
07	Blanco PLT Metered Manhole

CEP, Inc. TEST CODES and NAMES used on this report

AG 1	Silver
ALK T1	Alkalinity, Total(as CaCO3)
AS 1	Arsenic
BA 1	Barium
CA 1	Calcium
CD 1	Cadmium
CL 1	Chloride
CN TOT	Cyanide, Total
COD 1	Chemical Oxygen Demand
CR 6 1	Chromium, Hexavalent (6+)
CR T 1	Chromium (total)
F 1	Fluoride
HARD 1	Hardness (as CaCO3)
HCO3 W	Bicarbonate (as CaCO3)
HG 1	Mercury
K 1	Potassium
MG 1	Magnesium
NA 1	Sodium
NO3 1	Nitrate, Nitrogen (as N)
O G 1	Oil and Grease
O PO4W	Phosphate, Ortho (as P)
PB 1	Lead
PHEN W	Phenol
SE 1	Selenium
SO4 W	Sulfate
TDS 1	Total Dissolved Solids
ZN 1	Zinc

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502
IN STATE 505/982-9841
OUT OF STATE 800/545-2188

REPORT OF ANALYSIS

LAB # 88-08-123

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	mg/liter	
Blanco PLT Metered Manhole	08/04/88 09:00	Silver	<0.01	
		Arsenic	<0.01	
		Barium	0.2	
		Calcium	136	
		Cadmium	<0.001	
		Chromium (total)	<0.01	
		Mercury	<0.0004	
		Potassium	16.0	
		Magnesium	33.1	
		Sodium	84.6	
		Lead	<0.001	
		Selenium	<0.01	
		Zinc	0.4	
		Nitrogen, Nitrate (as N)	0.3	
		Phosphate, Ortho (as P)	0.25	
		Alkalinity, Total(as CaCO3)	27	
		Chloride	29	
		Chromium, Hexavalent	0.11	
		Fluoride	0.56	
		Hardness	494	
		Bicarbonate (as CaCO3)	27	
		Phenol	13	(ug/liter)
		Sulfate	536	
		Solids, Total Dissolved	1010	
		Cyanide, Total	0.6	
		Oil and Grease	<0.1	
		Chemical Oxygen Demand	238	

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502
IN STATE 505/982-9841
OUT OF STATE 800/545-2188

REPORT OF ANALYSIS

LAB # 88-08-123

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	mg/liter
Blanco PLT Metered Manhole	08/04/88 13:00	Silver	*
		Arsenic	*
		Barium	*
		Calcium	*
		Cadmium	*
		Chromium (total)	*
		Mercury	*
		Potassium	*
		Magnesium	*
		Sodium	*
		Lead	*
		Selenium	*
		Zinc	*
		Nitrogen, Nitrate (as N)	*
		Phosphate, Ortho (as P)	*
		Alkalinity, Total(as CaCO3)	*
		Chloride	*
		Chromium, Hexavalent	*
		Fluoride	*
		Hardness	*
		Bicarbonate (as CaCO3)	*
		Phenol	* (ug/liter)
		Sulfate	*
		Solids, Total Dissolved	*
		Cyanide, Total	*
		Oil and Grease	*
		Chemical Oxygen Demand	*

Controls for Environmental Pollution, Inc.
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IN STATE 505/982-9841
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REPORT OF ANALYSIS

LAB # 88-08-123

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	mg/liter
Blanco PLT Metered Manhole	08/04/88 17:00	Silver	*
		Arsenic	*
		Barium	*
		Calcium	*
		Cadmium	*
		Chromium (total)	*
		Mercury	*
		Potassium	*
		Magnesium	*
		Sodium	*
		Lead	*
		Selenium	*
		Zinc	*
		Nitrogen, Nitrate (as N)	*
		Phosphate, Ortho (as P)	*
		Alkalinity, Total(as CaCO3)	*
		Chloride	*
		Chromium, Hexavalent	*
		Fluoride	*
		Hardness	*
		Bicarborate (as CaCO3)	*
		Phenol	* (ug/liter)
		Sulfate	*
		Solids, Total Dissolved	*
		Cyanide, Total	*
		Oil and Grease	*
		Chemical Oxygen Demand	*

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502
IN STATE 505/982-9841
OUT OF STATE 800/545-2188

REPORT OF ANALYSIS

LAB # 88-08-123

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	mg/liter
Blanco PLT Metered Manhole	08/04/88 21:00	Silver	*
		Arsenic	*
		Barium	*
		Calcium	*
		Cadmium	*
		Chromium (total)	*
		Mercury	*
		Potassium	*
		Magnesium	*
		Sodium	*
		Lead	*
		Selenium	*
		Zinc	*
		Nitrogen, Nitrate (as N)	*
		Phosphate, Ortho (as P)	*
		Alkalinity, Total(as CaCO3)	*
		Chloride	*
		Chromium, Hexavalent	*
		Fluoride	*
		Hardness	*
		Bicarbonate (as CaCO3)	*
		Phenol	* (ug/liter)
		Sulfate	*
		Solids, Total Dissolved	*
		Cyanide, Total	*
		Oil and Grease	*
		Chemical Oxygen Demand	*

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502
IN STATE 505/982-9841
OUT OF STATE 800/545-2188

REPORT OF ANALYSIS

LAB # 88-08-123

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	mg/liter
Blanco PLT Metered Manhole	08/05/88 05:00	Silver	*
		Arsenic	*
		Barium	*
		Calcium	*
		Cadmium	*
		Chromium (total)	*
		Mercury	*
		Potassium	*
		Magnesium	*
		Sodium	*
		Lead	*
		Selenium	*
		Zinc	*
		Nitrogen, Nitrate (as N)	*
		Phosphate, Ortho (as P)	*
		Alkalinity, Total(as CaCO3)	*
		Chloride	*
		Chromium, Hexavalent	*
		Fluoride	*
		Hardness	*
		Bicarbonate (as CaCO3)	*
		Phenol	* (ug/liter)
		Sulfate	*
		Solids, Total Dissolved	*
		Cyanide, Total	*
		Oil and Grease	*
		Chemical Oxygen Demand	*

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502
IN STATE 505/982-9841
OUT OF STATE 800/545-2188

REPORT OF ANALYSIS

LAB # 88-08-123

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	mg/liter
Blanco PLT Metered Manhole	08/05/88 13:00	Silver	*
		Arsenic	*
		Barium	*
		Calcium	*
		Cadmium	*
		Chromium (total)	*
		Mercury	*
		Potassium	*
		Magnesium	*
		Sodium	*
		Lead	*
		Selenium	*
		Zinc	*
		Nitrogen, Nitrate (as N)	*
		Phosphate, Ortho (as P)	*
		Alkalinity, Total(as CaCO3)	*
		Chloride	*
		Chromium, Hexavalent	*
		Fluoride	*
		Hardness	*
		Bicarbonate (as CaCO3)	*
		Phenol	* (ug/liter)
		Sulfate	*
		Solids, Total Dissolved	*
		Cyanide, Total	*
		Oil and Grease	*
		Chemical Oxygen Demand	*

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502
IN STATE 505/982-9841
OUT OF STATE 800/545-2188

REPORT OF ANALYSIS

LAB # 88-08-123

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	mg/liter
Blanco PLT Metered Manhole	08/04/88 16:15	Solids, Total Dissolved	292

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502
IN STATE 505/982-9841
OUT OF STATE 800/545-2188

PAGE 1 CEP, Inc. REPORT LAB # 88-08-124

RECEIVED: 08/08/88 08/22/88 16:01:11

REPORT TO: El Paso Natural Gas Company
P.O. Box 4990
Farmington, NM 87401

ATTEN: Don Vacker

CLIENT: EL PASO NM SAMPLES: 6
COMPANY: El Paso Natural Gas Company
FACILITY: Blanco PLT Metered Manhole

WORK ID: Organics
TAKEN: 08/04 to 08/05/88
TRANS: Federal Express
TYPE: Water
P.O. #:
INV. #: 429257

PREPARED BY: Controls for Environmental Pollution, Inc.
1925 Rosina Street
Santa Fe, NM 87502

ATTEN:
PHONE: (505) 982-9841

CERTIFIED BY

CONTACT GAIL 001235

Remainder of sample(s) for routine analysis will be disposed of three weeks from final report date. Sample(s) for bacteria analysis only, will be disposed of one day after final report. This is not applicable if other arrangements have been made.

Duplicate of report of 08/19/88.

SAMPLE IDENTIFICATION

01	Blanco PLT Metered Manhole
02	Blanco PLT Metered Manhole
03	Blanco PLT Metered Manhole
04	Blanco PLT Metered Manhole
05	Blanco PLT Metered Manhole
06	Blanco PLT Metered Manhole

CEP, Inc. TEST CODES and NAMES used on this report

112TCE	1,1,2-Trichloroethane
1 1 D1	1,1-Dichloroethene
1 2 D1	1,2-Dichloroethane
BENZ 1	Benzene
CTET 1	Carbon Tetrachloride
ETBENZ	Ethyl benzene
HCLBEN	Hexaclorobenzene
PCB 1	Polychlorinated Biphenyls
TOC 1	Total Organic Carbon
TOL 1	Toluene
XYLENE	Xylenes

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502
IN STATE 505/982-9841
OUT OF STATE 800/545-2188

REPORT OF ANALYSIS

LAB # 88-08-124

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	mg/liter	
Blanco PLT Metered Manhole	08/04/88 09:00	Total Organic Carbon	52.0	
Blanco PLT Metered Manhole	08/04/88 09:00	1,1,2-Trichloroethane	<0.02	(ug/liter)
		1,1-Dichloroethene	<0.07	(ug/liter)
		1,2-Dichloroethane	<0.03	(ug/liter)
		Benzene	30.7	(ug/liter)
		Carbon Tetrachloride	<0.12	(ug/liter)
		Ethyl benzene	2.6	(ug/liter)
		Hexaclorobenzene	<0.05	(ug/liter)
		Polychlorinated Biphenyls	<1.0	
		Toluene	22.4	(ug/liter)
		Xylenes	28.9	(ug/liter)
Blanco PLT Metered Manhole	08/04/88 13:00	Total Organic Carbon	90.0	
Blanco PLT Metered Manhole	08/04/88 13:00	1,1,2-Trichloroethane	<0.02	(ug/liter)
		1,1-Dichloroethene	<0.07	(ug/liter)
		1,2-Dichloroethane	<0.03	(ug/liter)
		Benzene	24.6	(ug/liter)
		Carbon Tetrachloride	<0.12	(ug/liter)
		Ethyl benzene	2.3	(ug/liter)
		Hexaclorobenzene	<0.05	(ug/liter)
		Polychlorinated Biphenyls	<1.0	
		Toluene	62.7	(ug/liter)
		Xylenes	20.8	(ug/liter)
Blanco PLT Metered Manhole	08/04/88 17:00	Total Organic Carbon	65.0	
Blanco PLT Metered Manhole	08/04/88 17:00	1,1,2-Trichloroethane	<0.02	(ug/liter)
		1,1-Dichloroethene	<0.07	(ug/liter)
		1,2-Dichloroethane	<0.03	(ug/liter)
		Benzene	44.6	(ug/liter)
		Carbon Tetrachloride	<0.12	(ug/liter)
		Ethyl benzene	1.4	(ug/liter)
		Hexaclorobenzene	<0.05	(ug/liter)
		Polychlorinated Biphenyls	<1.0	
		Toluene	46.8	(ug/liter)
		Xylenes	54.0	(ug/liter)
Blanco PLT Metered Manhole	08/04/88 21:00	Total Organic Carbon	53.5	
Blanco PLT Metered Manhole	08/04/98 21:00	1,1,2-Trichloroethane	<0.02	(ug/liter)
		1,1-Dichloroethene	<0.03	(ug/liter)

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502
IN STATE 505/982-9841
OUT OF STATE 800/545-2188

REPORT OF ANALYSIS

LAB # 88-08-124

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	ug/liter	
Blanco PLT Metered Manhole	(Con't)	1,2-Dichloroethane	<0.07	
		Benzene	34.3	
		Carbon Tetrachloride	<0.12	
		Ethyl benzene	3.4	
		Hexaclorobenzene	<0.05	
		Polychlorinated Biphenyls	<1.0	(mg/liter)
		Toluene	35.9	
		Xylenes	38.3	
Blanco PLT Metered Manhole	08/05/88 05:00	Total Organic Carbon	51.0	(mg/liter)
Blanco PLT Metered Manhole	08/05/88 05:00	1,1,2-Trichloroethane	<0.02	
		1,1-Dichloroethene	<0.07	
		1,2-Dichloroethane	<0.03	
		Benzene	31.5	
		Carbon Tetrachloride	<0.12	
		Ethyl benzene	3.0	
		Hexaclorobenzene	<0.05	
		Polychlorinated Biphenyls	<1.0	
		Toluene	28.6	
		Xylenes	32.1	
Blanco PLT Metered Manhole	08/05/88 13:00	Total Organic Carbon	50.5	(mg/liter)
Blanco PLT Metered Manhole	08/05/88 13:00	1,1,2-Trichloroethane	<0.02	
		1,1-Dichloroethene	<0.07	
		1,2-Dichloroethane	<0.03	
		Benzene	22.6	
		Carbon Tetrachloride	<0.12	
		Ethyl benzene	3.0	
		Hexaclorobenzene	<0.05	
		Polychlorinated Biphenyls	<1.0	(mg/liter)
		Toluene	20.7	
		Xylenes	38.7	

APPENDIX B

CITY OF BLOOMFIELD WASTEWATER TREATMENT AGREEMENT

El Paso
Natural Gas Company

P. O. BOX 1492
EL PASO, TEXAS 79978
PHONE: 915-543-2600

June 27, 1983

City of Bloomfield
104 South Second Street
Bloomfield, New Mexico 87413

Re: Contract No. 1048, dated May 22, 1964, and Thereafter Amended, Between El Paso Natural Gas Company and The Village of Bloomfield

Gentlemen:

This letter, when accepted by you, shall indicate our agreement that, effective as of May 1, 1983, the above-described Contract shall be amended as follows:

1. The name "City of Bloomfield" shall be substituted for "Village of Bloomfield" where it appears in the referenced Contract.

2. In accordance with the provisions of Paragraph 5. of the referenced Contract, the annual service charge for sewer service rendered by the City of Bloomfield shall be changed from $1,500.00 to $5,685.00. It is further agreed that, since the Commodity Index is no longer published, the Nelson Cost Index appearing monthly in The Oil & Gas Journal shall be substituted as the basis for determining changes in the purchasing power of the dollar and the amount of future adjustments, if any, to the annual service charge.

In this regard, a ratio between the 1982 and 1965 Nelson Refinery (Inflation) Index figures has been computed on the following basis:

$$\frac{990.7 \text{ (1982 Index estimate)*}}{261.4 \text{ (1965 Index)}} = \frac{3.79}{1}$$

*Actual 1982 Index has subsequently been determined to be 976.9.

This ratio of 3.79 has been multiplied by the original service charge of $1,500.00 to yield the currently adjusted charge of $5,685.00. Future adjustments, if any, shall continue to be made at five-year intervals, from the effective date of this letter agreement, in accordance with the terms of the referenced Contract and using the Nelson Cost Index (1965 as base year) in the manner described above.

As hereinabove modified, the referenced Contract, as previously amended, shall continue in full force and effect.

If the foregoing correctly states your understanding of our agreement, please indicate your acceptance by having an authorized representative of the City of Bloomfield sign the duplicate originals of this letter agreement in the space provided below, and return one fully executed original to El Paso for our files.

Very truly yours,

EL PASO NATURAL GAS COMPANY

By _____
Vice President

FORM APPROVED
OGC

AGREED TO and ACCEPTED
as of the date hereof:

CITY OF BLOOMFIELD

By Erma Lynch

Title Mayor

APPENDIX C

MATERIALS SAFETY DATA SHEETS

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT
SCHENECTADY, N. Y. 12305
Phone: (518) 385-4085 DIAL COMM. 8*235-4085

MATERIALS INFORMATION SERVICES

No. 53

CHLORINE

Date July 1979

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: CHLORINE
OTHER DESIGNATIONS: Cl_2, CAS # 007 782 505
DESCRIPTION: A gas shipped in steel cylinders as a liquid under its own vapor pressure.
MANUFACTURER: Available from many suppliers.

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Chlorine *Current OSHA ceiling limit. ACGIH TLV (1978) is 1 ppm with a STEL of 3 ppm for up to 15 minutes exposure. NIOSH (1976) proposed a ceiling limit of 0.5 ppm (15 minute sampling time). (Controversy going on whether OSHA standard should include ceiling limit or not.)	> 99	8-hr TWA 1 ppm (C) or 3 mg/m^3 *

SECTION III. PHYSICAL DATA

Boiling point at 1 atm, deg C	-34	Density at 0°C: Gas at 1 atm, g/liter	3.214
Vapor pressure at 20 C, mm Hg	4800	Liquid at 3.65 atm, g/cc	1.47
Vapor density (Air=1)	2.49	Molecular weight	70.91
Water solubility at 20 C, 1 atm, g/l	7.3		

Appearance & Odor: A greenish-yellow gas or clear, amber-colored liquid with a suffocating, pungent, irritating odor. The odor recognition threshold (100% of test panel, unfatigued) is reported at 0.314 ppm. The odor is easily noticed at 1.9-3.5 ppm and has been reported as intolerable at 2.6-41 ppm, depending on the observer.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
Non-flammable				

Use extinguishing media that is appropriate for the surrounding fire. Use water spray to cool intact, fire-exposed containers (one ton tanks and cylinders will release chlorine when a fusible metal safety plug melts at 158-165F.) If possible, have specially trained personnel remove intact cylinders from fire area.

Chlorine will support the burning of most combustible materials, just as oxygen does. Flammable gases and vapors can form explosive mixtures with chlorine.

Firefighters must use self-contained breathing equipment, eye protection, and full protective clothing when fighting fires in which chlorine is involved.

SECTION V. REACTIVITY DATA

Chlorine is stable in steel containers at room temperature when dry. [Intense local heat (above 215°C) on steel walls can cause steel to ignite in chlorine.]

It is a powerful oxidizing agent which reacts violently with reducing agents and combustible materials. Materials such as acetylene, turpentine, other hydrocarbons, ammonia, hydrogen, ether, powdered metals, etc. must be kept away from chlorine.

It reacts with H_2S and H_2O forming HCl; it combines with CO and SO_2 to form phosgene and sulfuryl chloride (toxic and corrosive materials).

Wet chlorine (150 ppm water) corrosively attacks most common metals. Handling chlorine requires special materials technology.

GENERAL ELECTRIC

NO. 53

SECTION VI. HEALTH HAZARD INFORMATION

TLV 1 ppm or 3 mg/m^3 (C)

Chlorine believed to damage the body by local corrosive effects only; no systemic effects. 5-8 ppm in air will be severely irritating to eyes, nose, and respiratory tract of most individuals in a few minutes (10 ppm intolerable for avg. person). Higher level exposures produce coughing, dyspnea, burns of the skin, conjunctivitis, pulmonary edema (may be delayed) and death, depending on concentration and time of exposure (35-51 ppm, lethal in an hour; a few deep breaths fatal at 1000 ppm). Reduced respiratory capacity (especially among smokers) and dental erosion can result from chronic low level exposure. Any contact with liquid chlorine causes burns, blistering and tissue destruction.

FIRST AID: Call physician IMMEDIATELY for any person overexposed to chlorine!

Eye Contact: Flush eyes with water for at least 15 minutes, holding eyelids open. If medical help is not readily available, continue flushing with water.

Skin Contact: (Treat for inhalation exposure first!) Remove contaminated clothing under a safety shower. Wash exposed skin areas thoroughly with water.

Inhalation: Remove to fresh air. Restore breathing when required. Have trained person administer oxygen until victim breathes easily on his own. Keep warm and at rest! In mild cases, give milk to relieve throat irritation.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Establish written emergency plans and special training of personnel where chlorine is used.

Notify safety personnel. Provide ventilation. Exclude from area all except specially trained, assigned personnel with approved self-contained breathing equipment and appropriate protective clothing. Find and stop leak. (Large uncontrollable leaks require environmental consideration and possible evacuation of surrounding area.)

Move leaking container to isolated area. Position to release gas not liquid.

When possible draw off chlorine to process or to disposal system.

DISPOSAL: Bubble through a large volume of 15% aqueous NaOH or other alkali. Suitably dispose of resulting solution. Follow Federal, State and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide general and local exhaust ventilation to meet TLV requirements. Provide suitable venting for low lying areas. Use enclosed, isolated processing and handling whenever possible. Full face-piece respirators must be available for non-routine and emergency use: canister gas mask below 5000 ppm in air and self-contained breathing equipment for other conditions.

Workers should be provided with chemical safety goggles and impervious gloves. Full protective clothing must be used when needed to prevent exposure to chlorine, liquid or gas. Daily change of work clothes and showering after work shift are recommended.

Eyewash stations and chemical safety showers must be available in areas of handling and storage of chlorine.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store chlorine containers in well-ventilated areas of low fire potential, away from incompatible materials (see Sec. V) and away from sources of heat and ignition. Protect containers from weather and physical damage; follow standard safety procedures for containers of compressed, corrosive gases. Provide special training to workers handling chlorine. Regularly inspect (and test) piping and containment used for chlorine service. Liquid levels should be less than 85% of tank or cylinder capacity.

Use preplacement and periodic medical exams; preclude from workplace exposure to chlorine those with cardiac, pulmonary or chronic respiratory problems.

Special Ref: "Chlorine and Hydrogen Chloride", Chapter 5, National Academy of Science, Washington, DC (1976).

DATA SOURCE(S) CODE: 2-12, 17, 19, 24, 26

APPROVALS: MIS, CRD

Industrial Hygiene and Safety

MEDICAL REVIEW: 12/79

GENERAL ELECTRIC

6293-86-81

Page 1 of 2

PRODUCT NAME CAT FLOC T

CALGON CORPORATION
SUBSIDIARY OF MERCK & CO., INC.

SECTION I

MANUFACTURER'S NAME	Calgon Corporation	EMERGENCY TELEPHONE NO.	(412) 777-8000
ADDRESS	P.O. Box 1346, Pittsburgh, PA 15230		
CHEMICAL NAME AND SYNONYMS	Cationic homopolymer	FORMULA	Multi-component Liquid

SECTION II HAZARDOUS INGREDIENTS

PRINCIPAL HAZARDOUS COMPONENT (S)	%	ORAL LD_{50}	DERMAL LD_{50}	TLV (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F)	>212	SPECIFIC GRAVITY (H_2O=1)	1.033
VAPOR PRESSURE (mmHg.)	Similar to Water	PERCENT VOLATILE BY VOLUME (%)	80
VAPOR DENSITY (AIR=1)	Similar to Water	pH	3.0 - 4.0
SOLUBILITY IN WATER	100%		

APPEARANCE AND ODOR: Viscous clear, colorless to pale- yellow liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	Not flammable	FLAMMABLE LIMITS	Lel	Uel

EXTINGUISHING MEDIA: Product is not flammable.

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

Mallinckrodt®

CUPRIC SULFATE

Material Safety Data Sheet

Mallinckrodt Inc.
Science Products Division
P.O. Box M
Paris, Kentucky 40361

Emergency Telephone Number
314-982-5000

Effective Date: 08-05-85

PRODUCT IDENTIFICATION:

Synonyms: Copper (II) Sulfate Pentahydrate (1:1:5); blue vitriol; Sulfuric acid copper (2+) salt (1:1), Pentahydrate

Formula CAS No.: 7758-99-8 (Hydrated)
TSCA CAS No.: 7758-98-7 (Anhydrous)

Molecular Weight: 249.68

Hazardous Ingredients:
Not applicable.

Chemical Formula: $CuSO_4$ $5H_2O$

PRECAUTIONARY MEASURES

WARNING! HARMFUL IF SWALLOWED. CAUSES IRRITATION.

Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.

EMERGENCY/FIRST AID

If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes.
In all cases call a physician.

SEE SECTION 5.

DOT Hazard Class: ORM-E

Physical Data SECTION 1

Appearance: Transparent blue triclinic crystals or crystalline granules or power.

Odor: Odorless.

Solubility: 24.3g/100g H20 @ 30°C (86°F)

Boiling Point: > 400°C (752°F) decomposes

Vapor Density (Air=1): No information found.

Melting Point: Loses water @ 110°C (230°F)

Vapor Pressure (mm Hg): No information found.

Specific Gravity: 2.28

Evaporation Rate: (water=1): slowly efforescent.

Fire and Explosion Information SECTION 2

Fire: Not considered to be a fire hazard.

Explosion: Not considered to be an explosion hazard. Sealed container may rupture during fire condition from pressure water vapor release.

Fire Extinguishing Media: Use any means suitable for extinguishing surroundi fire. Water spray may be used to keep fire expose containers cool.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathi apparatus with full facepiece operated in the pressure demand or other positive pressure mode. When heated above 110°C (230°F) material will melt Avoid using a direct water stream on molten materi as it may causes splattering.

Reactivity Data SECTION 3

Stability: Stable under ordinary conditions of use and storag

Hazardous Decomposition Products: When heated to decomposition cupric oxide and sulf oxide may form.

Hazardous Polymerization: Will not occur.

Incompatibilities: At temperatures greater than 250°C (482°F) the anhydrous salt will ignite hydroxylamine. Solutions are acidic and can react with magnesium evolve flammable hydrogen gas.

Leak/Spill Disposal Information SECTION 4

Ventilate area of leak or spill. Clean-up personnal require protective clothing and respiratory protection from dust.

Spills: Pick up and place in a suitable container for reclamation or disposal in a method that does not generate dust.

Disposal: Whatever cannot be saved for reclamation may be disposed in an RCRA approved hazardous waste facility.

Reportable Quantity (RQ) (CWA/CERCLA) : 10 lbs. Anhydrous

Ensure compliance with local, state and federal regulations.

Health Hazard Information — SECTION 5

A. Exposure/Health Effects

Inhalation: May cause irritation to the upper respiratory tract; symptoms may include coughing, sore throat, and shortness of breath. May also cause symptoms similar to the common cold; including chills and stuffiness of the head.

Ingestion: Toxic! May cause burning pain in the mouth, esophagus, and stomach. Hemorrhagic gastritis, nausea, vomiting, abdominal pain, metallic taste, and diarrhea may occur. If vomiting does not occur immediately systemic copper poisoning may occur. Symptoms may include capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous excitation followed by depression, jaundice, convulsions, paralysis and coma. Death may occur from shock or renal failure.

Skin Contact: May cause irritation and itching.

Eye Contact: Dust may cause irritation. Contact may cause conjunctivitis, ulceration, or clouding of the cornea.

Chronic Exposure: Prolonged or repeated skin exposure may cause dermatitis. Prolonged or repeated exposure to dusts of copper salts may cause discoloration of the skin or hair, ulceration and perforation of the nasal septum, runny nose, metallic taste, and atrophic changes and irritation of the mucous membranes.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders or impaired liver, kidney, or pulmonary function or pre-existing Wilson's disease may be more susceptible to the effects of this material.

B. FIRST AID

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, induce vomiting immediately by giving two glasses of water, or milk if available and sticking finger down throat. Call a physician immediately. Never give anything by mouth to an unconscious person.

Skin Exposure: Remove any contaminated clothing. Wash skin with plenty of water for at least 15 minutes. If irritation develops, get medical attention.

Eye Exposure: Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

C. TOXICITY DATA (RTECS, 1982)

Oral rat LD50: 300 mg/kg. Mutation references cited.

Occupational Control Measures — SECTION 6

Airborne Exposure Limits: OSHA Permissible Exposure Limit (PEL):
1mg(Cu)/m^3 ppm (TWA)
ACGIH Threshold Limit Value (TLV):
1mg(Cu)/m^3 (TWA)
2mg(Cu)/m^3 (STEL).

Ventilation System: A system of local exhaust is recommended to keep employee exposures below the Airborne Exposure Lim Local exhaust ventilation is generally preferred because it can control the emissions of the dust o vapor at its source, preventing dispersion of it i the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Pesonal Respirators: (NIOSH Approved) If the TLV is exceeded, a dust/mist respirator wit chemical goggles may be worn, in general, up to te times the TLV. Consult respirator supplier for limitations. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn.

Skin Protection: Wear protective gloves and clean body-covering clothing.

Eye Protection: Use chemical safety goggles. Contact lenses shou not be worn when working with this material.

Maintain eye wash fountain and quick-drench facili in work area.

Storage and Special Information — SECTION 7

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Solutions are corrosive to mild steel.

MATERIAL SAFETY DATA SHEET

UNICHEM INTERNATIONAL

Date Prepared 05/15/87

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name ALPHA 512

Chemical Description Proprietary Microbiocide Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Potassium Dimethyldithiocarbamate CAS# 128-03-0	None Established
Methanol CAS# 000-067-561	200 ppm (Skin) 8 Hour TWA or 260 mg/m^3

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	150°F (Initial)	Freezing Point	-35°F
Specific Gravity (H_2O=1)	1.0 g/ml	Solubility in Water	Complete

Appearance and Odor Brown Clear Liquid; Alcoholic - Sulfur Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 69°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray, or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards Methanol is a moderate explosion hazard and a dangerous fire hazard when exposed to heat, sparks, or flames and can react vigorously with oxidizing agents.

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name ALPHA 570

Chemical Description
Proprietary Biocide Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Alkyl Dimethyl Benzylammonium Chloride	Not Established
Alkyl Dimethyl Ethylammonium Bromide	Not Established
Tributyltin Neodecanoate	Not Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	208°F	Freezing Point	32°F
Specific Gravity (H_2O=1)	0.998 g/ml	Solubility in Water	Complete

Appearance and Odor Light Straw Color, Slight Musty Odor; Liquid

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 6-8-88

Supersedes Previous Sheet Dated None

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name ALPHA 581

Chemical Description Proprietary Microbiocide Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
2-(Thiocyanomethylthio)benzothiazole CAS#21564-17-0	not established
Methylene bis(thiocyanate) CAS#6317-18-6	not established
Aromatic Solvent	100 ppm

ALPHA 581 is toxic by inhalation and ingestion. ALPHA 581 is corrosive to eyes and skin and is a sensitizer. Neither this product or it's ingredients are listed in any of OSHA Standard Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	>212°F	Freezing Point	10°F
Specific Gravity (H_2O=1)	0.96 g/ml	Solubility in Water	dispersible

Appearance and Odor Amber clear liquid; slight aromatic odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 158°F (TCC)

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards NONE

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated 10/31/85

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name UNICHEM 1300

Chemical Description Proprietary Scale and Corrosion Inhibitor Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Potassium Hydroxide CAS# 1310-58-3	2 mg/m³
Proprietary Corrosion Inhibitor	10 mg/m³
Proprietary Corrosion/Scale Inhibitors	Not Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	0°F
Specific Gravity (H_2O=1)	1.3 g/ml	Solubility in Water	Complete

Appearance and Odor Amber, Clear Liquid; Slight Sweet Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated 02/26/85

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 882

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name UNICHEM 1700

Chemical Description Proprietary Scale Inhibitor and Dispersant

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Scale/Corrosion Inhibitor (Acid, Corrosive)	None Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	-10°F
Specific Gravity (H_2O=1)	1.1 g/ml	Solubility in Water	Complete

Appearance and Odor Water White Clear; Slight Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated 03/03/81

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BIOSPERSE 1000

Chemical Description Properitary Dispersant

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Isopropyl Alcohol	400 ppm

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	180°F (IPA)	Freezing Point	-20°F
Specific Gravity (H_2O=1)	0.852	Solubility in Water	Soluble

Appearance and Odor Tan to Brown Liquid; Slight Ammonia Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 60°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or oxidizing agents.

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name DE-OILING SURFACTANT (DOS)

Chemical Description Proprietary Surfactant in an Aqueous Solution

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Isopropanol CAS# 67-63-0	400 ppm

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	180°F (Initial)	Freezing Point	17°F
Specific Gravity (H_2O=1)	0.97 g/ml	Solubility in Water	Complete

Appearance and Odor Light Yellow Clear Liquid; Slight Alcoholic Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 94°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards None

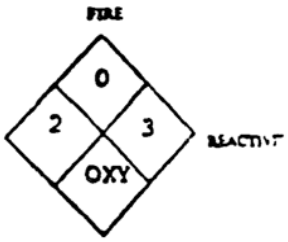
Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

Continental Products of Texas

100 Industrial • P.O. Box 3627 • Odessa, Texas 79760
Telephone No. (915) 337-4681

.HTH TABLETS
QUICK IDENTIFIER

NFPA Designation 704



HAZARD RATING
4 = EXTREME
3 = HIGH
2 = MODERATE
1 = SLIGHT
0 = INSIGNIFICANT

Class 3 Oxidizer (OSHA)

MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms) HTH Tablets

Chemical Name: Calcium Hypochlorite Formula: $Ca(OCl)_2$

Chemical Family: Hypochlorite

Cas No.

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
Calcium hypochlorite	70	

SECTION 3 - PHYSICIAL & CHEMICAL CHARACTERISTICS (Fire & Explosive Data)

Boiling Point: NA
Specific Gravity (H_2O = 1): NA
Vapor Pressure (mm Hg): NA
Percent Volatile by Volume (%): NA
Vapor Density (Air = 1): NA
Evaporation Rate (_____ = 1): NA
Solubility in Water: Appreciable
Reactivity in Water:
Appearance and Odor: White tablets, slight chlorinous odor
Flash Point: NA
Flammable Limits in Air % by Volume: NA
Lower
Upper
Extinguisher Media: Water preferable spray
Auto-Ignition Temperature:
Special Fire Fighting Procedures: Drench with water and cool the surrounding drums and area with water.
Unusual Fire and Explosion Hazards: Not a combustible material. Mixing with any foreign material may result in fire and the fire can have great intensity.If drum is closed lid may be blown off or dum may rupture.

SECTION 4 - PHYSICAL HAZARDS

Stability
STABLE [X] UNSTABLE [ ]
CONDITIONS TO AVOID: When heated above 350°F it decomposes rapidly with the evolution of oxygen and heat.

INCOMPATABILITY (MATERIALS TO AVOID): HTH is strong oxydizing agent. It is incompatible with household soap, paint products, solvents, acids, pool chemicals, vinegar, beverages etc.

HAZARDOUS DECOMPOSITION PRODUCTS: Decomposes rapidly with chemical fuming during the evolution of oxygen and heat

Hazardous Polymerization
CONDITIONS TO AVOID

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERHIB 530

Chemical Description Proprietary Boiler Water Scale and Corrosion Inhibitor

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Chelant	5 mg/m³
Potassium Hydroxide CAS# 1310-58-3 (Corrosive)	2 mg/m³

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	10°F
Specific Gravity (H_2O=1)	1.3 g/ml	Solubility in Water	Complete

Appearance and Odor Light Brown Liquid; No Significant Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERHIB 430

Chemical Description Proprietary Neutralizing Amine

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Neutralizing Amine	10 ppm

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	16°F
Specific Gravity (H_2O=1)	0.948	Solubility in Water	Soluble

Appearance and Odor Water White Clear Liquid; Amine Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 140°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

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UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERHIB 341

Chemical Description Proprietary Boiler Water Oxygen Scavenger

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Oxygen Scavenger	1 ppm (ACGIH)

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	13°F
Specific Gravity (H_2O=1)	1.2 g/ml	Solubility in Water	Complete

Appearance and Odor Water White Clear Liquid; Slight Musty Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERHIB 340

Chemical Description Proprietary Boiler Water Oxygen Scavenger

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Oxygen Scavenger	1 ppm (ACGIH)

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	13°F
Specific Gravity (H_2O=1)	1.2 g/ml	Solubility in Water	Complete

Appearance and Odor Water White Clear Liquid; Slight Musty Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y.

MATERIALS INFORMATION SERVICES

NO. 3

SODIUM HYDROXIDE

Revision A

Date September 1977

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: SODIUM HYDROXIDE
OTHER DESIGNATIONS: Caustic Soda, Soda Lye, NaOH, GE Material D4B4, ASTM D456,
DESCRIPTION: This material is an anhydrous solid (flake, pellet, etc.) CAS# 001 310 732
MANUFACTURER: Available from many suppliers.

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Typical content:		
Sodium Hydroxide ($NaOH$)	96	Ceiling Limit 2 mg/m^3
Impurities:		
Sodium Carbonate (Na_2CO_3)	0.5-2.5	
Sodium Chloride ($NaCl$)	0.01-2.1	
Sodium Sulfate (Na_2SO_4)	0.02-0.1	
Potassium, Calcium and Magnesium	0.1	
Silicon Dioxide (SiO_2)	0.03	
Other metals (total)	0.01	

SECTION III. PHYSICAL DATA

Boiling point, 1 atm, deg C --- 1388
Specific gravity (20/4 C) ----- 2.13
Volatiles ---------- non-volatile at room temperature
Melting point, deg C ---------- 318

Vapor pressure, mm Hg @ 1000 C ---- 42
@ 1200 C ---- 232
Viscosity at 350 C, cps ---------- 4.0
Water solubility, %, @ 0 C ------ 29.6
@ 100 C ------ 77.5

Appearance & odor: White or off-white, hygroscopic solid; no odor.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
None - not combustible	N/A	N/A	N/A	N/A

Although it is not combustible, it can be hazardous if present in a fire area. The following should be known for fire fighting: (1) It can melt and flow when heated (m.p. 318 C). (2) Hot or molten material can react violently with water (splattering). (3) Can react with certain metals, such as aluminum, to generate flammable hydrogen gas. (See also Reactivity Data, Section V)

SECTION V. REACTIVITY DATA

It is a stable material under normal conditions of storage. No self-polymerization. No hazardous decomposition products. Slowly it can pick up moisture from the air and react with carbon dioxide from the air to form sodium carbonate.

Sodium hydroxide can react violently with strong acids and with many organic chemicals, expecially with nitrocarbons and chlorocarbons. (Will react with trichloroethylene to form spontaneously flammable dichloroacetylene.) It generates much heat when it dissolves in water.

Avoid contact with leather and wool and with aluminum, tin, zinc, and alloys which contain these metals.

GENERAL ELECTRIC

NO. 3

SECTION VI. HEALTH HAZARD INFORMATION

TLV (Ceiling Value) 2 mg/m^3

Sodium hydroxide is a strong alkali and is dangerous when improperly handled. It can be destructive to all human tissue it contacts, producing severe burns. Eye contact can produce severe or permanent injury. Dust or mist inhalation can injure the entire respiratory tract.

FIRST AID

Eye contact - Wash eyes immediately with plenty of running water for no less than 15 minutes, including under the eyelids and all surfaces. Speed in rinsing out the eyes with water after contact is extremely important if permanent injury is to be avoided. Contact physician as soon as possible.

Ingestion - Immediately dilute chemical by drinking large amounts of water or milk, then neutralize with dilute vinegar or fruit juice. Vomiting may occur spontaneously, but do not induce it. Contact a physician promptly.

Inhalation - Remove from exposure to mist or dust and get prompt medical help.

Skin contact - Wash contact area promptly with large quantities of water. (Dilute acetic acid, vinegar, can be used to neutralize.) Remove contaminated clothing under the shower. Prolong washing in serious cases until medical help arrives - even for an hour or longer. Physician should see all cases other than minor exposures to small areas of skin.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

When solid sodium hydroxide is spilled in a dry condition, it can be promptly shoveled up for recovery or disposal. (CAUTION! Avoid dusting. Avoid contact with the skin.) Control the disposal of the waste solid. (Delay in clean up may allow absorption of moisture from the atmosphere and may increase the difficulties of clean up.) Flush contaminated surfaces with water and neutralize with dilute acid, preferably acetic acid, to remove final traces. (Sodium bicarbonate may also be used to partially neutralize.) Finally, rinse with water.

Disposal of waste is greatly dependent on local conditions and requirements. Pre-emergency plans should be made to meet legal and technical requirements. Waste caustic should never be deliberately discharged directly into sewers or surface waters. (First, convert to neutral salts and dilute well with water.)

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide adequate ventilation to meet TLV requirements, especially where dusting or misting conditions can exist. Use filter-type respirator for mist and dust protection where needed.

Use chemical safety goggles! A plastic face shield can also be used.

Use rubber gloves, rubber apron or protective clothing, rubber boots where needed to prevent contact with sodium hydroxide, especially when solutions are prepared.

Eye wash fountains and safety showers must be immediately available!

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Workers should not be permitted to handle this material without proper training or to work with it without protective equipment.

Store in well-sealed containers. Avoid handling conditions that may lead to spills and leaks, or to formation of mist or dust.

Wherever this material is stored, unloaded, handled or used abundant water (preferably running water) should be available for emergency use.

Drains for storage or use areas for this material should have retention basins for pH adjustment and dilution of spills and flushings before discharge.

This material is classified as a CORROSIVE by the Department of Transportation.

The pellet form is probably the safest solid form for handling and dispensing.

APPROVALS: MIS, CRD J. M. Nelson

Industrial Hygiene and Safety

MEDICAL REVIEW:

GENERAL ELECTRIC

AUG 08 '88 15:53 UNICHEM INTL HOBBS NM P01

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05-22-86

Supersedes Previous Sheet Dated 11-12-85

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name UNICHEM 3310 Formerly known as HIB 440

Chemical Description Proprietary Corrosion Inhibitor

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Isopropanol (CAS#67-63-0)	400 ppm
Neither this product nor its ingredients are listed in any sources as carcinogenic.	of OSHA Standard, Section 1910.1200

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F initial	Freezing Point	9°F
Specific Gravity (H_2O=1)	0.95 g/ml	Solubility in Water	Soluble

Appearance and Odor Amber to Brown liquid; No Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 81°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighters should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards Vapors may flow along surfaces to distant ignition sources and flashback. Dangerous fire hazard when exposed to heat, sparks, flames, or oxidizing agents.

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

AUG 08 '88 15:53 UNICHEM INTL HOBBS NM P02

Product UNICHEM 3310

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure prolonged skin contact will cause dryness and irritation. Ingestion may cause cathersis. Inhalation of mist may cause respiratory irritation. Eye contact will cause irritation.

Emergency and First Aid Procedures EYES: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. SKIN: Flush area with water. Wash with soap and remove contaminated clothing. INHALATION: Remove to fresh air. Apply artifical respiration if necessary. INGESTION: Call a physician. Do not induce vomiting. Dilute wit water or milk.

VI. REACTIVITY DATA

Stability		Conditions to Avoid
	Stable X	None
	Unstable	

Incompatibility (Materials to Avoid) Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization		Conditions to Avoid
	May Occur	None
	Will Not Occur X	

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation			
	Local Exhaust As needed to prevent accumulation of	Special	None
	Mechanical (General) vapors above TLV	Other	None

Protective Gloves Rubber **Eye Protection** Safety glasses, goggles, and/or face shield

Other Protective Equipment Overalls, rubber boots, eyewash stations, safety showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

AUG 08 '88 15:54 UNICHEM INTL HOBBS NM P03

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 5-22-86

Supersedes Previous Sheet Dated Undated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name BOILERHIB 435

Chemical Description Proprietary Neutralizing Amine

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Neutralizing Amine	10 ppm

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	-38°F
Specific Gravity (H_2O=1)	0.960	Solubility in Water	Soluble

Appearance and Odor Brown Liquid, Ammonia Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) >200°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing. Firefighters should be made aware of the corrosive nature of this chemical.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

AUG 08 '88 15:54 UNICHEM INTL HOBBS NM P04

Product BOILERMIB 435

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures **Eyes:** Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. **Skin:** Flush area with water. Wash with soap and remove contaminated clothing. **Inhalation:** Remove to fresh air. Apply artifical respiration if necessary. **Ingestion:** Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability	**Stable** X	**Conditions to Avoid**	None
	Unstable		

Incompatibility (Materials to Avoid) Strongly acidic materials, oxidizers.

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization	**May Occur**	**Conditions to Avoid**	
	Will Not Occur X	None	

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation	**Local Exhaust**	As needed to prevent accumulation of	**Special**	None
	Mechanical (General)	vapors above TLV	**Other**	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name KETONE BN

Chemical Description

Proprietary Corrosion Inhibitor Blend

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Sodium Nitrite (Oxidizer)	None Established

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	212°F	Freezing Point	22°F
Specific Gravity (H_2O=1)	1.16 g/ml	Solubility in Water	Complete

Appearance and Odor Light Yellow to Water White Clear Liquid; Slight Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) None

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

Mobil DTE 797

600114 PAGE 1

MOBIL MATERIAL SAFETY DATA BULLETIN

MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPT.

150 EAST 42ND STREET
NEW YORK, N.Y. 10017 (USA)

********** PRODUCT IDENTIFICATION **********

MOBIL DTE 797 OIL

SUPPLIER:
MOBIL OIL CORP.
CHEMICAL NAMES AND SYNONYMS:
PET. HYDROCARBONS AND ADDITIVES
USE OR DESCRIPTION:
STEAM TURBINE OIL

HEALTH EMERGENCY TELEPHONE:
(212)883-4411
TRANSPORT EMERGENCY TELEPHONE:
(800)424-9300(CHEMTREC)
OTHER DESIGNATION:
(TRN 600114)

********** TYPICAL CHEMICAL AND PHYSICAL PROPERTIES **********

APPEARANCE: ASTM 0.5 LIQUID	VISCOSITY: AT 100 F, SUS 160.0	AT 40 C, CS 30.0
ODOR: MILD	VISCOSITY: AT 210 F, SUS 44.0	AT 100 C, CS 5.3
RELATIVE DENSITY: 15/4 C 0.859	SOLUBILITY IN WATER: NEGLIGIBLE	PH: NA
MELTING POINT: F(C) NA	POUR POINT: F(C) 20(-7)	
BOILING POINT: F(C) >600(316)	FLASH POINT: F(C) (METHOD) 410(210) (ASTM D-92)	
VAPOR PRESSURE:MM HG 20C < .1		

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

********** INGREDIENTS **********

	WT PCT (APPROX)	TLV(TWA):	MG/M3	PPM
HAZARDOUS INGREDIENTS: NONE				
NON-HAZARDOUS INGREDIENTS:				
REFINED MINERAL OILS	> 95			
ADDITIVES AND/OR OTHER INGREDS.	< 5			

NOTE: TLVS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OF SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

Mobil

********** FIRE AND EXPLOSION HAZARD DATA **********

FLASH POINT: F(C) (METHOD) FLAMMABLE LIMITS: LEL UEL
410(210) (ASTM D-92) .6 7.0
EXTINGUISHING MEDIA:
CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.
SPECIAL FIRE FIGHTING PROCEDURES:
FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
NONE

********** HEALTH HAZARD DATA **********
THRESHOLD LIMIT VALUE: (IF ESTABLISHED)

EFFECTS OF OVEREXPOSURE:
SLIGHT SKIN IRRITATION.

********** EMERGENCY AND FIRST AID PROCEDURES **********
EYE CONTACT:
FLUSH WITH WATER.

SKIN CONTACT:
WASH CONTACT AREAS WITH SOAP AND WATER.

INHALATION:
NOT EXPECTED TO BE A PROBLEM.

INGESTION:
NOT EXPECTED TO BE A PROBLEM WHEN INGESTED. IF UNCOMFORTABLE SEEK MEDICAL ASSISTANCE.

********** REACTIVITY DATA **********
STABILITY: (THERMAL, LIGHT, ETC.) CONDITIONS TO AVOID:
STABLE EXTREME HEAT

INCOMPATIBILITY: (MATERIALS TO AVOID)
STRONG OXIDIZERS
HAZARDOUS DECOMPOSITION PRODUCTS:
CARBON MONOXIDE.
HAZARDOUS POLYMERIZATION: CONDITIONS TO AVOID:
WILL NOT OCCUR

********** SPILL OR LEAK PROCEDURE **********

ENVIRONMENTAL IMPACT:
REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:
ADSORB ON FIRE RETARDANT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

WASTE MANAGEMENT:
DISPOSE OF WASTE BY SUPERVISED INCINERATION IN COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS.

********** SPECIAL PROTECTION INFORMATION **********

EYE PROTECTION:
NO SPECIAL EQUIPMENT REQUIRED.

SKIN PROTECTION:
NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.

RESPIRATORY PROTECTION:
NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

VENTILATION:
NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

OTHER:

********** SPECIAL PRECAUTIONS **********

HANDLING: NO SPECIAL PRECAUTIONS REQUIRED.

Mobil

********** TOXICOLOGICAL DATA **********

ACUTE

ORAL TOXICITY: (RATS)
NONTOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY: (RABBITS)
NONTOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY: (RATS)
NOT APPLICABLE ---HARMFUL CONCENTRATIONS OF MISTS AND/OR VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY CUSTOMARY OR REASONABLY FORESEEABLE HANDLING, USE, OR MISUSE OF THIS PRODUCT.
EYE IRRITATION: (RABBITS)
EXPECTED TO BE NON-IRRITATING. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION: (RABBITS)
MAY CAUSE SLIGHT IRRITATION ON PROLONGED OR REPEATED CONTACT. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SUBACUTE AND MUTAGENICITY (SUMMARY)

CHRONIC OR SPECIALIZED (SUMMARY)

OTHER DATA

FILE CODES:
(FILL NO: MTL253001) MHC: C* O* NA O* 1* PPEC: U584-071 APPROVE
6574
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPT. REVISED:
MANAGER OF PRODUCT SAFETY INFORMATION, PHONE: 609-737-5596 4/17/84

SHELL TURBO® Oils

Premium-quality turbine and general-purpose rust- and oxidation-inhibited circulating oils.

SHELL TURBO* Oils provide excellent lubrication of precision turbines in industrial and marine service. These oils are also suitable for general plant lubrication and in circulating, hydraulic and gear systems requiring rust- and oxidation-inhibited oils without extreme pressure or anti-wear properties.

SHELL TURBO Oils have achieved a long record of reliable performance because of these features:

- **Good water separation and low foaming properties**—Particularly important to minimize rusting and prevent cavitation in critical areas such as sleeve bearings.
- **Noncorrosive. Protect equipment against rust**—SHELL TURBO Oils inhibit corrosion of bearing housings and governor mechanisms, help increase machine life. These oils help prevent rust, even when salt water is present.
- **Resist oxidation over a long service life**—SHELL TURBO Oils resist thickening and sludging, minimize deposits that could cause malfunction of governor mechanisms and reduce efficiency of oil coolers.

Where to buy SHELL TURBO Oils

Your Shell Jobber is the person to see for supplies of SHELL TURBO Oils. He's listed in the Yellow Pages under "Oils—Lubricating." Call him today. He'll be glad to give you information about other premium-quality Shell lubricants, too.

Shell Oil Company
Manager, Commercial Communications
One Shell Plaza
Houston, Texas 77002

*SHELL TURBO is a trademark and is used as such in this writing.

Typical properties of SHELL TURBO Oils:

	ASTM Test Method	SHELL TURBO Oil Grades								
		32	46	68	78[1]	100	150	220	320	460
Gravity, °API	D 1298	31	30	29	30	29	27	28	27	26
Color	D 1500	1.0	1.0	1.0	0.5	1.0	2.0	4.0	5.0	6.0
Pour point, °F	D 97	15	0	0	10	0	0	10	10	10
Flash point, C.O.C., °F	D 92	400	425	460	460	480	475	480	520	530
Viscosity, cSt at 40°C	D 445	30.1	44.0	63.0	75.0	97.0	147	210	305	420
Viscosity, cSt at 100°C	D 445	5.05	6.5	8.2	9.2	10.7	14	18	23	28
Viscosity index	D 2270	92	95	95	95	94	93	93	93	93
Neutralization No., TAN-C	D 974	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Cu corrosion, 3 hr. at 212°F	D 130	1	1	1	1	1	1	1	1	1
Rust test	D 665B	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Interfacial tension, 77°F, dynes/cm	D 971	20	20	20	—	23	25	—	—	—
Emulsion test, minutes	D 1401	6	9	10	17	10	15	17	17	30
Turbine oil stability test, hours	D 943	2,000+	2,000+	2,000+	—	2,000+	—	—	—	—
Turbine oil stability test, MIL TOST, sludge, mg		14	15	18	20	20	—	—	—	—

[1]Approved under MIL-L-17331G and Amendment 1.

SOC: 311-83

Shell

MATERIAL SAFETY DATA SHEET

MAR 22 1988

SAN JUAN SAFETY

97002 REV 1-83

MSDS NUMBER ▶ 65,000-2

SECTION I	NAME
PRODUCT ▶	Shell 6122 Gas Engine Oil 40
CHEMICAL/ SYNONYMS ▶	Lubricating Oil
CHEMICAL FAMILY ▶	Hydrocarbon
SHELL CODE ▶ 67209	C.A.S. NUMBER ▶ Mixture

24 HOUR EMERGENCY ASSISTANCE

SHELL 713-473-9461
CHEMTREC 800-424-9300

HAZARD RATING

LEAST 0 ▶ SLIGHT 1 ▶ MODERATE 2 ▶ HIGH 3 ▶ EXTREME 4

HEALTH
FIRE
REACTIVITY

SECTION II — INGREDIENTS

COMPOSITION	%	TOXICITY DATA
Shell 6122 Gas Engine Oil 40	100	Not Determined
Petroleum Hydrocarbons	96	Oral LD_{50}, rat >5g/kg* Dermal LD_{50}, rabbit >2g/kg*
Polyalkenyl Succinimide	2	
Detergent Inhibitor containing Ba, S, Ca	2	
Organic Zinc Dithiophosphate	<0.5	

*Values are estimates based upon tests using similar oils.

SECTION III — HEALTH INFORMATION

Lubricating oils are generally considered to be of a low order of acute toxicity to humans and experimental animals.

Exposure to vapors or mist of this product may cause pulmonary irritation, dizziness and nausea. Prolonged or repeated contact may cause various skin disorders such as dermatitis, folliculitis or oil acne.

The petroleum hydrocarbons in this product are a complex mixture of paraffinic, naphthenic and aromatic hydrocarbons. As in other petroleum oils, the aromatics contain polycyclic compounds of various concentrations and structures. Some of these polycyclics may be those which have been shown to induce cancer in animals under laboratory conditions. Epidemiologic studies on other petroleum products containing polycyclic aromatics suggested the possibility of skin cancer induction in man after prolonged and repeated contact. Inhalation of mists arising from oils containing these materials may also present a cancer hazard.

This specific product has not been tested in long-term, chronic exposure tests. Therefore, the presence of polycyclic aromatic hydrocarbons requires that handling procedures and safety precautions in this MSDS be followed to minimize employees' exposure.

SECTION IV — OCCUPATIONAL EXPOSURE LIMITS

Oil Mist, Mineral:
ACGIH-TLV/TWA = 5 mg/m³; ACGIH-TLV/STEL = 10 mg/m³
OSHA-PEL/TWA = 5 mg/m³ (see NIOSH/OSHA Occupational Health Guide)

MATERIAL SAFETY DATA SHEET

Shell 97003 (1-87)

MSDS NUMBER ▶ 65,000-2

SECTION V — EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Flush with water for 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT: Remove contaminated clothing and wipe excess off. Wash with soap and water or a waterless hand cleaner followed by soap and water. Do not reuse clothing until thoroughly cleaned. If irritation persists, get medical attention.

INHALATION: Remove victim to fresh air and provide oxygen if breathing is difficult. Get medical attention.

INGESTION: Do not induce vomiting. In general, no treatment is necessary unless large quantities of product are ingested. However, get medical advice.

NOTE TO THE PHYSICIAN: In general, emesis induction is unnecessary in high viscosity, low volatility products, i.e. most oils and greases.

SECTION VI — PHYSICAL DATA

BOILING POINT (°F) ▶ N. A.	MELTING POINT (°F) ▶ N. A.	VAPOR PRESSURE (mmHg) ▶ N. A.
SPECIFIC GRAVITY (H_2O=1) ▶ 0.90	% VOLATILE BY VOLUME ▶ N. A.	VAPOR DENSITY (AIR=1) ▶ N. A.
SOLUBILITY IN WATER ▶ Insoluble	EVAPORATION RATE (BUTYL ACETATE=1) ▶ N. A.	N.A. = Not Available

APPEARANCE AND ODOR

Light brown oil. Slight odor.

SECTION VII — FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD USED	FLAMMABLE LIMITS % VOLUME IN AIR	LOWER	UPPER
445°F PMCC		N. A.	N.A.

EXTINGUISHING MEDIA

Use water fog, foam, dry chemical or CO_2. Do not use a direct stream of water. Product will float and can be reignited on surface of water.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Do not enter confined fire space without proper protective equipment including a NIOSH approved self-contained breathing apparatus. Cool fire-exposed containers with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS

None Unusual

Shell

MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶ 65,000-2
PAGE 3 OF

SECTION VIII REACTIVITY

STABILITY ▶ ☐ UNSTABLE ☒ STABLE

HAZARDOUS POLYMERIZATION ▶ ☐ MAY OCCUR ☒ WILL NOT OCCUR

CONDITIONS AND MATERIALS TO AVOID

Avoid heat, open flames, oxidizing materials and mist formation.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, sulfur oxides, phosphorus oxides and unidentified organic materials may be formed during combustion.

SECTION IX EMPLOYEE PROTECTION

RESPIRATORY PROTECTION

If exposure may or does exceed occupational exposure limits (Sec.IV.) use a NIOSH-approved respirator to prevent overexposure. In accord with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors and particulates.

PROTECTIVE CLOTHING

Wear gloves and other protective clothing as required to minimize skin contact. Wear safety glasses or goggles to avoid eye contact.

ADDITIONAL PROTECTIVE MEASURES

--

SECTION X ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES

May burn although not readily ignitable. Use cautious judgment when cleaning up large spills.

Large spills: Wear respirator and protective clothing as appropriate. Shut off source of leak if safe to do so. Dike and contain. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand or other suitable material; dispose of properly.
Small spills: take up with an absorbent material and dispose of properly.

WASTE DISPOSAL

Place in an appropriate disposal facility in compliance with local regulations.

ENVIRONMENTAL HAZARDS

This product is an "oil" under the Clean Water Act. KEEP OUT OF

MATERIAL SAFETY DATA SHEET

Shell 97005 (REV. 11-84)

MSDS NUMBER ▶ ES,000-2
PAGE 4 OF 4

SECTION XI SPECIAL PRECAUTIONS

Minimize skin contact. Wash with soap and water before eating, drinking, smoking or using toilet facilities. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles, including shoes, that cannot be decontaminated.

SECTION XII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION

☐ FLAMMABLE LIQUID	☐ COMBUSTIBLE LIQUID	☐ OXIDIZING MATERIAL	☐ NON-FLAMMABLE GAS
☐ FLAMMABLE SOLID	☐ POISON,CLASS A	☐ CORROSIVE MATERIAL	☒ NOT HAZARDOUS BY D.O.T. REGULATIONS
☐ FLAMMABLE GAS	☐ POISON,CLASS B	☐ IRRITATING MATERIAL	☐ OTHER-Specify below

D.O.T. PROPER SHIPPING NAME

None

IATA REQUIREMENTS

Bill of Lading Commodity Description: Petroleum Lubricating Oil

SECTION XIII SUPPLEMENTARY HEALTH/REGULATORY INFORMATION

RQ - Clean Water Act (CWA)
This product is classified as an oil under Section 311 of the Clean Water Act. Spills entering (a) surface waters or (b) any watercourses or sewers entering/leading to surface waters that cause a sheen MUST be reported to the National Response Center, 800-424-8802.

RQ - Resource Conservation and Recovery Act (RCRA)
As produced, this material is a product and not a waste. If discarded or intended to be discarded as is, it exhibits the characteristic of EP toxicity as defined in RCRA (40 CFR 261.24) based upon its barium content. The EPA hazardous waste number is D005.

The information contained herein is based on data considered accurate. However no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore vendor assumes the risk in the use of the material.

BE SAFE
READ OUR PRODUCT SAFETY INFORMATION AND PASS IT ON
PRODUCT LIABILITY LAW REQUIRES IT!

John P Lepori
Manager

SHELL OIL COMPANY
PRODUCT SAFETY AND COMPLIANCE
P.O. BOX 4320
HOUSTON, TEXAS 77210
(713) 241-4819

DATE PREPARED

Imperial Oil & Grease Company

MATERIAL SAFETY DATA SHEET

PART ONE

SECTION I

PRODUCT NAME OR NUMBER (as it appears on label) TRIBOL 890 (LIGHT, MEDIUM, HEAVY)	EMERGENCY TELEPHONE NO. (213)-679-0271
ADDRESS (Number, Street, City, State and Zip Code) 4801 West 147th St., Hawthorne, California, 90250	MANUFACTURER'S D-U-N-S NO. 07-964-5248

HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARD CLASS, HAZARD ID NO. (49 CFR 172.101)
None - does not apply

ADDITIONAL HAZARD CLASSES (as applicable)

CHEMICAL FAMILY Mixture	FORMULA Mixture

SECTION II — INGREDIENTS

CAS REGISTRY NO.	%W	%V	CHEMICAL NAME(S)	Listed as a Carcinogen in NTP, IARC or OSHA 1910.1200 (specify)
			TO THE BEST OF OUR KNOWLEDGE, THIS PRODUCT CONTAINS NO HAZARDOUS INGREDIENTS, AS DEFINED BY 29 CFR 1910.1200.	
			(REFER TO SECTION V ON REVERSE SIDE)	

SECTION III — PHYSICAL DATA

BOILING POINT >600 °F	SPECIFIC GRAVITY (H2O = 1) @ 60°F Typical 0.977
APPEARANCE AND ODOR yellow to dark amber, mild odor	IS MATERIAL: GAS LIQUID PASTE SOLID POWDER

SECTION IV — FIRE AND EXPLOSION HAZARD DATA

FLASH POINT >460 °F method used ASTM D92	FLAMMABLE LIMITS not explosive LEL UEL

EXTINGUISHING MEDIA CO_2, foam, or dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES None; fight as petroleum fire

UNUSUAL FIRE AND EXPLOSION HAZARDS None

Mobil

605881 PAGE 1 OF 4

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED: 10/26/82

********** I. PRODUCT IDENTIFICATION **********

MOBIL PEGASUS 490

SUPPLIER:
MOBIL OIL CORP.
CHEMICAL NAMES AND SYNONYMS:
PET. HYDROCARBONS AND ADDITIVES
USE OR DESCRIPTION:
GAS ENGINE OIL

HEALTH EMERGENCY TELEPHONE:
(212) 883-4411
TRANSPORT EMERGENCY TELEPHONE:
(800) 424-9300 (CHEMTREC)

********** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES **********

APPEARANCE: ASTM 4.0 LIQUID ODOR: MILD PH: NA
VISCOSITY AT 100 F, SUS: 670.0 AT 40 C, CS: 128.0
VISCOSITY AT 210 F, SUS: 72.0 AT 100 C, CS: 13.6
FLASH POINT F(C): >480(249) (ASTM D-92)
MELTING POINT F(C): NA POUR POINT F(C): 10(-12)
BOILING POINT F(C): > 600(316)
RELATIVE DENSITY, 15/4 C: 0.879 SOLUBILITY IN WATER: NEGLIGIBLE
VAPOR PRESSURE-MM HG 20C: < .1
NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES
FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

********** III. INGREDIENTS **********

	WT PCT (APPROX)	EXPOSURE LIMITS MG/M3	EXPOSURE LIMITS PPM	SOURCES (AND NOTES)
HAZARDOUS INGREDIENTS:				
NONE				
OTHER INGREDIENTS:				
REFINED MINERAL OILS	>95			
ADDITIVES AND/OR OTHER INGREDS.	< 5			

KEY TO SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, O=OSHA
NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

********** IV. HEALTH HAZARD DATA **********

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---
EFFECTS OF OVEREXPOSURE: NOT EXPECTED TO BE A PROBLEM.

********** V. EMERGENCY AND FIRST AID PROCEDURES **********

--- FOR PRIMARY ROUTES OF ENTRY ---
EYE CONTACT: FLUSH WITH WATER.
SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER.
INHALATION: NOT EXPECTED TO BE A PROBLEM.
INGESTION: NOT EXPECTED TO BE A PROBLEM. HOWEVER, IF GREATER THAN 1/2 LITER(PINT) INGESTED, IMMEDIATELY GIVE 1 TO 2 GLASSES OF WATER AND CALL A PHYSICIAN, HOSPITAL EMERGENCY ROOM OR POISON CONTROL CENTER FOR ASSISTANCE. DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

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********** VI. FIRE AND EXPLOSION HAZARD DATA **********
FLASH POINT F(C): > 480(249) (ASTM D-92)
FLAMMABLE LIMITS. LEL: .6 UEL: 7.0
EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.
SPECIAL FIRE FIGHTING PROCEDURES: FOR FIRES IN ENCLOSED AREAS, FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE
NFPA HAZARD ID: HEALTH: 0, FLAMMABILITY: 1, REACTIVITY: 0

********** VII. REACTIVITY DATA **********
STABILITY (THERMAL, LIGHT, ETC.): STABLE
CONDITIONS TO AVOID: EXTREME HEAT
INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS
HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

********** VIII. SPILL OR LEAK PROCEDURE **********
ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.
WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED, CONTROLLED BURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION. SUCH BURNING MAY BE LIMITED PURSUANT TO THE RESOURCE CONSERVATION AND RECOVERY ACT. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

********** IX. SPECIAL PROTECTION INFORMATION **********
EYE PROTECTION: NO SPECIAL EQUIPMENT REQUIRED.
SKIN PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.
RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.
VENTILATION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

********** X. SPECIAL PRECAUTIONS **********
NO SPECIAL PRECAUTIONS REQUIRED.

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********** XI. TOXICOLOGICAL DATA **********

---ACUTE---

ORAL TOXICITY (RATS): LD50: > 5 G/KG 0/10 RATS DIED AT THIS DOSAGE LEVEL. SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG 0/10 RABBITS DIED AT THIS DOSAGE LEVEL. SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY (RATS): NOT APPLICABLE ---HARMFUL CONCENTRATIONS OF MISTS AND/OR VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY CUSTOMARY OR REASONABLY FORESEEABLE HANDLING, USE, OR MISUSE OF THIS PRODUCT.

EYE IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. EYE IRRITATION SCORES: 0 AT 24 HOURS, 0 AT 48 HOURS, 0 AT 72 HOURS--- BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. PRIMARY IRRITATION SCORE: 0/8---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

---CHRONIC OR SPECIALIZED (SUMMARY)---

THE BASE OILS IN THIS PRODUCT ARE SEVERELY SOLVENT REFINED AND/OR SEVERELY HYDROTREATED. TWO YEAR MOUSE SKIN PAINTING STUDIES OF SIMILAR OILS SHOWED NO EVIDENCE OF CARCINOGENIC EFFECTS. SEVERELY SOLVENT REFINED AND SEVERELY HYDROTREATED MINERAL BASE OILS HAVE BEEN TESTED AT MOBIL ENVIRONMENTAL AND HEALTH SCIENCES LABORATORY BY DERMAL APPLICATION TO RATS 5 DAYS/WEEK FOR 90 DAYS AT DOSES SIGNIFICANTLY HIGHER THAN THOSE EXPECTED DURING NORMAL INDUSTRIAL EXPOSURE. EXTENSIVE EVALUATIONS INCLUDING MICROSCOPIC EXAMINATION OF INTERNAL ORGANS AND CLINICAL CHEMISTRY OF BODY FLUIDS, SHOWED NO ADVERSE EFFECTS.

********** XII. REGULATORY INFORMATION **********

TSCA INVENTORY STATUS: ALL COMPONENTS REGISTERED.

D.O.T. SHIPPING NAME: NOT APPLICABLE

D.O.T. HAZARD CLASS: NOT APPLICABLE

US OSHA HAZARD COMMUNICATION STANDARD: PRODUCT ASSESSED IN ACCORDANCE WITH OSHA CFR 1910.1200 AND DETERMINED NOT TO BE HAZARDOUS.

RCRA INFORMATION: THE UNUSED PRODUCT, IN OUR OPINION, IS NOT SPECIFICALLY LISTED BY THE EPA AS A HAZARDOUS WASTE (40 CFR, PART 261D); DOES NOT EXHIBIT THE HAZARDOUS CHARACTERISTICS OF IGNITABILITY, CORROSIVITY, OR REACTIVITY, AND IS NOT FORMULATED WITH THE METALS CITED IN THE EP TOXICITY TEST. HOWEVER, USED PRODUCT MAY BE REGULATED.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
ZINC (ELEMENTAL ANALYSIS) (0.018 PCT)	7440-66-6	15

--- KEY TO LIST CITATIONS ---

1 = OSHA Z, 2 = ACGIH, 3 = IARC, 4 = NTP, 5 = NCI,
6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325M, 9 = DOT HMT, 10 = CA RTK,
11 = IL RTK, 12 = MA RTK, 13 = MN RTK, 14 = NJ RTK, 15 = MI 293,
16 = FL RTK, 17 = PA RTK.

--- NTP, IARC, AND OSHA INCLUDE CARCINOGENIC LISTINGS ---

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****

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

****

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

********** APPENDIX **********

FOR MOBIL USE ONLY: (FILL NO: RN612DA201) MHC: 1* 1* NA 0* 0* PPEC: US82-090 APPROVE REVISED: 10/26/82

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

MATERIALS · INFORMATION · SERVICES

NO. 1257

VARSOL 1

Date May 1982

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: VARSOL 1
DESCRIPTION: Petroleum solvent or mineral spirits.
OTHER DESIGNATIONS: GE Material D5B8, ASTM D235, ASTM D484, Type 1
MANUFACTURER: Exxon Co.
P.O. Box 2180
Houston, Texas Tel: (713) 656-3424

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Mixture of petroleum hydrocarbons Typical Composition: Vol % Aromatics (C_8 and higher) 18 Olefins 1 Saturates 81 Sulfur content 1 ppm *ACGIH(1982) TLV for Stoddard Solvent. Animal studies by Exxon Corp. medical research has shown that male rats exposed to similar vapors at 100 ppm had kidney damage. Additional studies are being conducted to validate these findings and to determine if a revised TLV should be recommended.	100	8-hr TWA 100 ppm* Rat, Oral LD_{50} >5 g/kg Rabbit, Dermal LD_{50} >2 g/kg

SECTION III. PHYSICAL DATA

Boiling range, 1 atm, deg C	155-205	Specific gravity, 15.6/15.6C	ca 0.79
Vapor pressure, 25C, mmHg	<10	Evaporation rate (nBuAc=1)	<0.1
Vapor density (Air=1)	ca 4.8	Volatiles, %	100
Solubility in water	Negligible	Molecular weight (avg)	ca 140

Appearance & odor: Water-white liquid; mineral spirits odor (no long-lasting odor after evaporation).

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air % by Volume @ 25C	LOWER	UPPER
ca 42C (108F) TCC	254C (ASTM D2155)		0.9	6.0

Extinguishing Media: Dry chemical, carbon dioxide, foam, water spray or fog. Water spray can be used to keep fire-exposed containers cool to avoid pressure rupture.
This material is an OSHA Class II Combustible Liquid. It is a dangerous fire hazard if heated or sprayed in air.
Firefighters should wear self-contained breathing apparatus for fighting fires in enclosed areas.

SECTION V. REACTIVITY DATA

This is a stable material in closed containers at room temperature under normal storage and handling conditions. It does not polymerize.
Incompatible with strong oxidizing agents such as chlorine, conc. oxygen, calcium hypochlorite, nitric acid, etc.
Thermal-oxidative degradation may produce carbon monoxide and partially oxidized hydrocarbons.

GENERAL ELECTRIC

No. 1257

SECTION VI. HEALTH HAZARD INFORMATION

TLV 100 ppm (See Sect II)

Varsol, like all petroleum distillates, is a central nervous system depressent. Symptoms of overexposure to high vapor conc. range from headache and dizziness to possible convulsions and unconsciousness.

Eye contact with the liquid may cause conjunctivitis. Prolonged or repeated skin contact causes a defatting effect, resulting in irritation, drying, cracking and dermatitis.

FIRST AID:

Eye Contact: Flush thoroughly with running water for 15 min. including under eyelids. Get medical help if irritation persists.

Skin Contact: Remove contaminated clothing. Wash affected area with soap and water. Get medical help if large area contacted or if irritation persists.

Inhalation: Remove to fresh air. Restore and/or support breathing as required. (Administer oxygen if breathing difficult). Contact physician for further treatment, observation and support.

Ingestion: Do not induce vomiting. Contact physician immediately. Aspiration hazard. Give a few ounces of USP mineral oil to drink.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel of leaks or spills. Remove sources of heat or ignition. Provide explosion-proof ventilation. Clean-up personnel need protection against inhalation and skin contact. Contain spill and recover free liquid if possible. Use absorbent (sand, earth, sawdust, etc) to clean up residue. Do not discharge into sewers or surface waters. (Notify authorities if product enters, or may enter, sewer or waterway.)

DISPOSAL: Waste material may be burned in an approved incinerator. Follow Federal, State, and Local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide adequate general and local exhaust ventilation to meet TLV requirements. Local exhaust hoods should have at least 60 fpm face velocity. Use explosion-proof electrical equipment and services. Have air-supplied or self-contained respiratory apparatus available for nonroutine or emergency use or when working in a confined or enclosed area. (Canister respirator may be suitable for short time usage.)

Wear impermeable gloves and additional protective clothing to prevent prolonged or repeated skin contact. Use safety goggles and/or faceshield for eye protection where splashing is possible. An eyewash station is desirable where splashing is probable. A safety shower may be desirable where large amounts are used.

Launder contaminated clothing before reuse. thoroughly dry contaminated shoes before reuse.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in closed containers in a cool, well-ventilated area away from sources of heat, flame, ignition and strong oxidizing agents. Protect containers from physical damage. Keep containers closed when not in use. Use safety cans for small amounts.

Handling and storage conditions must be suitable for OSHA Class II Combustible liquid.

Bond and ground containers for transfers to avoid static sparks.

Avoid inhalation of vapors. Avoid prolonged or repeated contact with skin. Prevent eye contact with liquid. Prohibit smoking or flame in use areas. Ventilate area where used. Electrical services to meet code.

DOT Classification: COMBUSTIBLE LIQUID

DATA SOURCE(S) CODE: 1,2, MSDS #334

APPROVALS: MIS J. M. Nielsen

Industrial Hygiene and Safety 5-13-82

MEDICAL REVIEW: 19 May 1982

GENERAL ELECTRIC

DISCOVERY CHEMICALS, INC.

MATERIAL SAFETY DATA SHEET

Emergency Phone 504 389-9945

PRODUCT IDENTIFICATION:

TRADE NAME:	Activated Alumina
CHEMICAL FAMILY:	Aluminum Oxide
CHEMICAL FORMULA:	Al_2O_3
CAS NO.:	1344-28-1

SUMMARY OF HAZARDS:

Mild irritant to the eyes and respiratory system.

CHEMICAL AND PHYSICAL PROPERTIES:

APPEARANCE/ODOR:	White crystalline/no odor.
MELTING POINT:	>3000°F
SOLUBILITY IN WATER:	Insoluble.

FIRE AND EXPLOSION HAZARDS:

FLASH POINT (METHOD):	Nonflammable.
EXTINGUISHING MEDIA:	None required.

HAZARDOUS THERMAL DECOMPOSITION PRODUCTS:
None

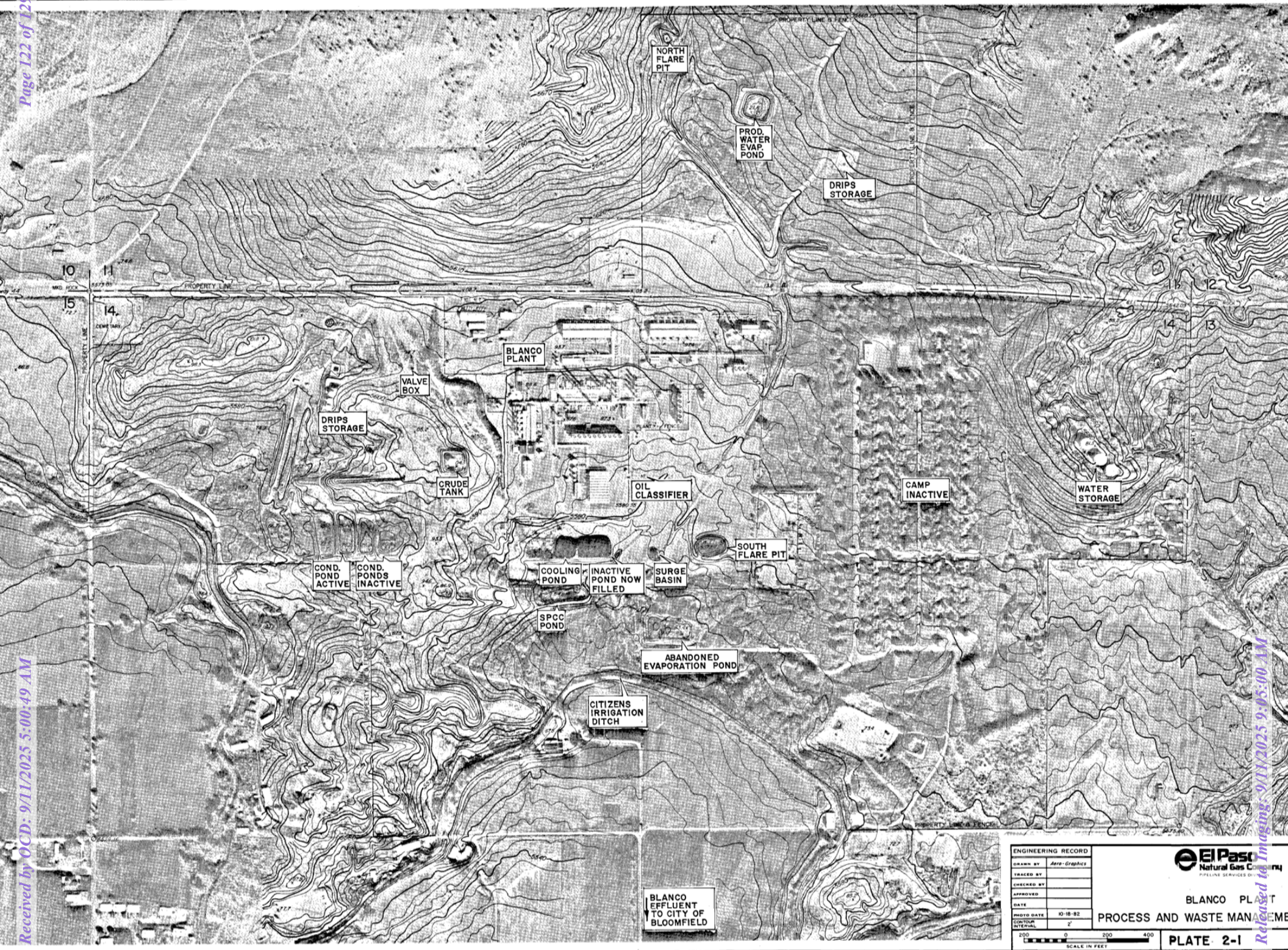
SPECIAL FIRE FIGHTING PROCEDURES:
None

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None

REACTIVITY DATA:

STABILITY:	Stable.
CONDITIONS TO AVOID:	None
MATERIALS TO AVOID:	None
HAZARDOUS POLYMERIZATION:	Will not occur.

PLATES



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DRAWN BY	Aero-Graphics
TRACED BY	
CHECKED BY	
APPROVED	
DATE	
PHOTO DATE	10-18-82
CONTOUR INTERVAL	2'

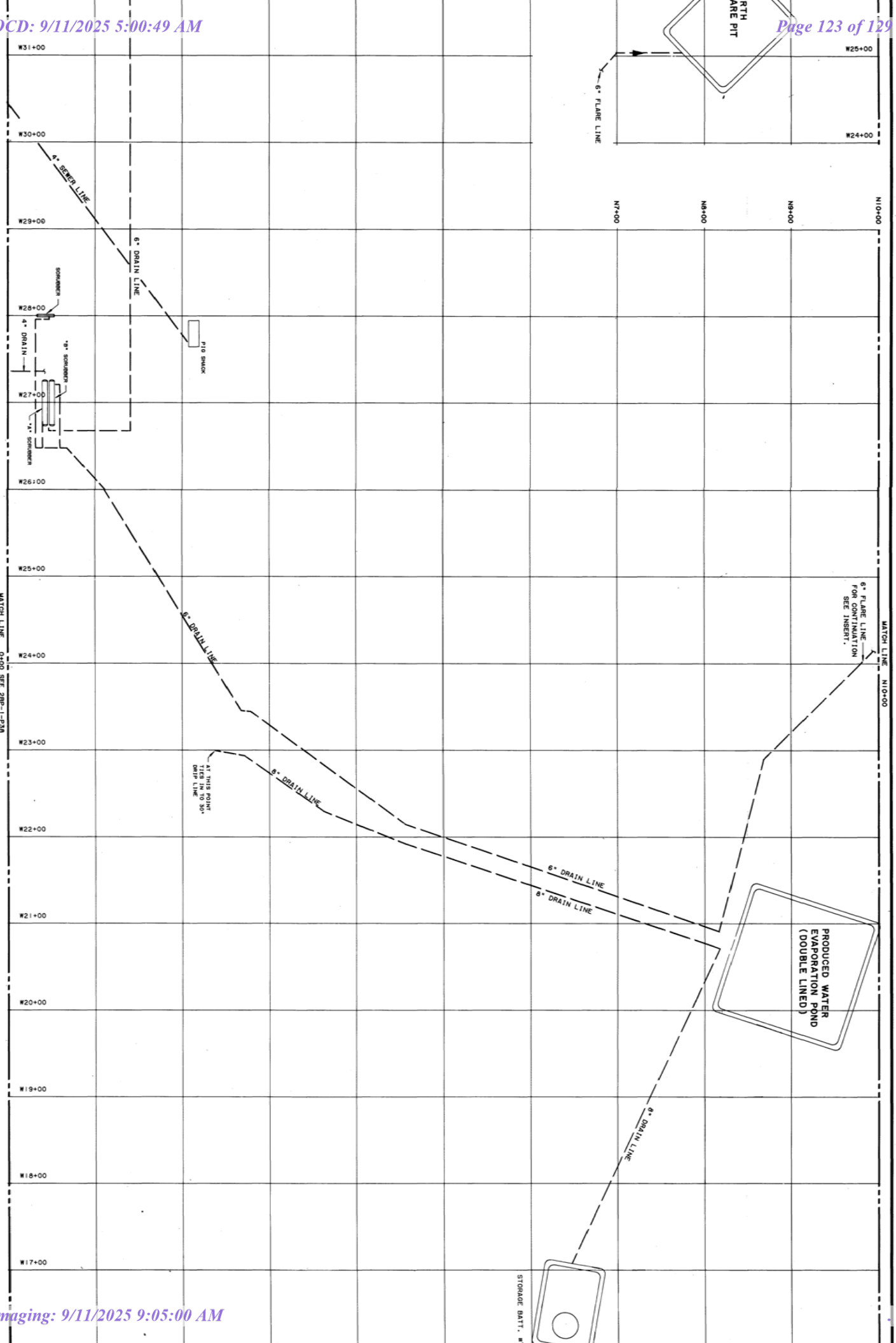
El Paso Natural Gas Company
PIPELINE SERVICES DIVISION

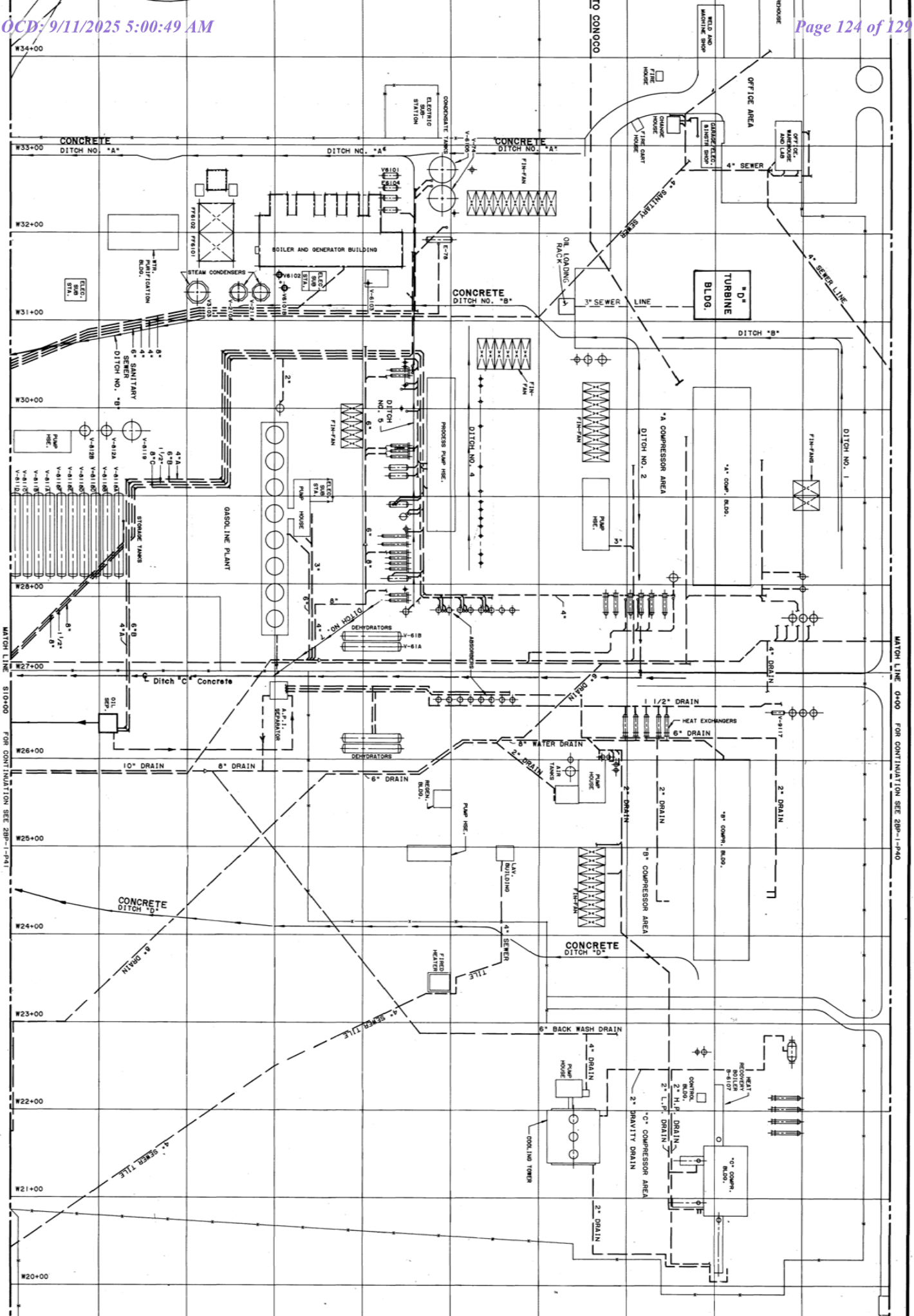
BLANCO PLANT
PROCESS AND WASTE MANAGEMENT

200 0 200 400
SCALE IN FEET

PLATE 2-1

Adjusted To Match Rectified Photo Base





LEGEND

DWG. NO. | TITLE | REFERENCE DRAWINGS

NO. | DATE | BY | DESCRIPTION REVISIONS | W.O. | APP. | PRINT REP. DATE | TO

W.O. | PRINT REP. DATE | TO

ENG. RECORD DATE

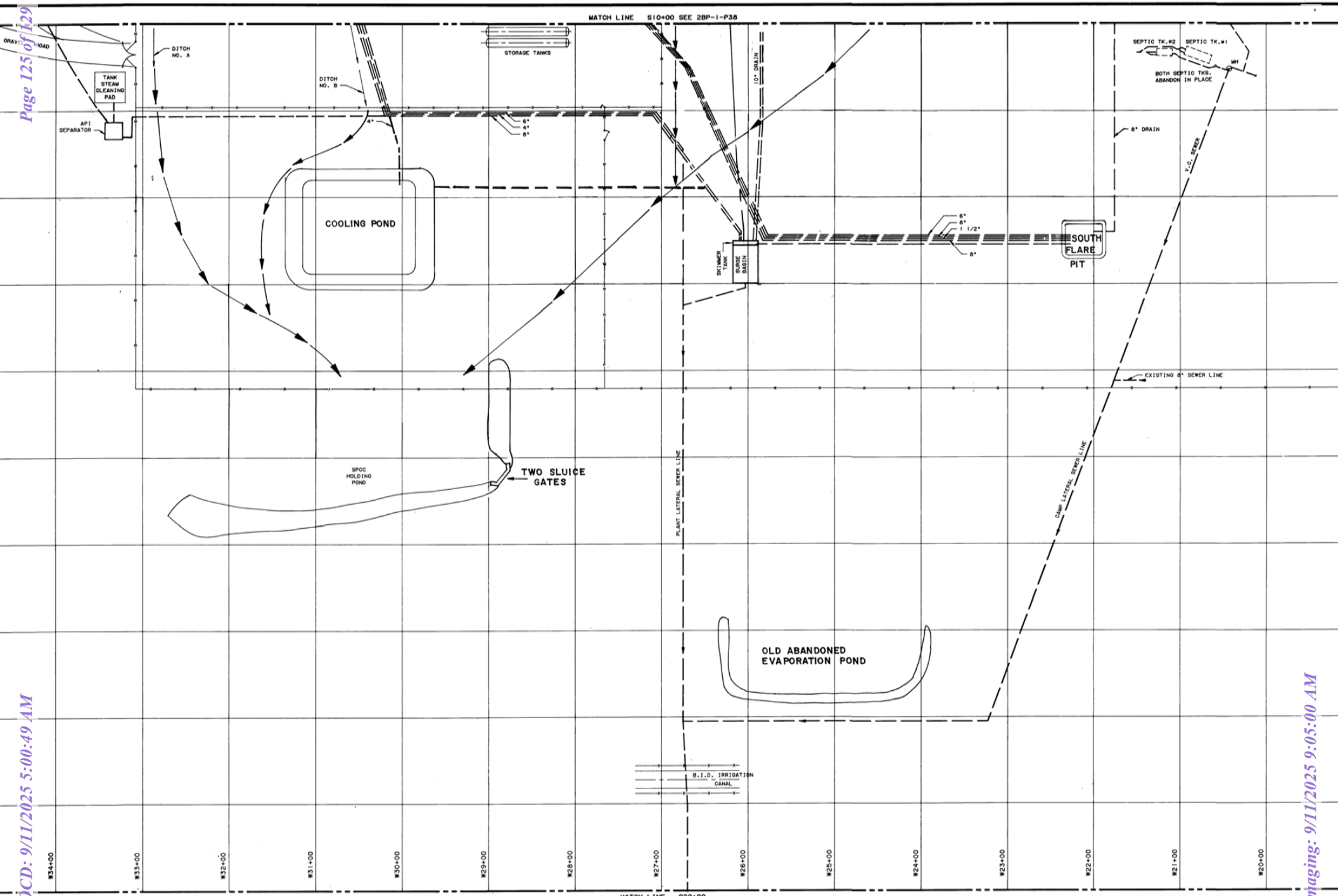
DRAFTING DESIGN	JC	9/1/85
COMPUTER GRAPHICS	FR RS	9/6/85
CHECKED		
PROJECT APPROVAL		
DESIGN APPROVAL		
COMPUTER SAVE NAME	BLA133	

SCALE: 1"=50'
W.O.

El Paso Natural Gas Company

BLANCO COMPRESSOR STATION
WASTE WATER DISPOSAL

PLATE 2 - 3



LEGEND

REFERENCE DRAWINGS

dwg. no.	TITLE

REVISIONS

NO.	DATE	BY	DESCRIPTION	W. O.	APP.

PRINT RECORD

PRT. SEP. DATE	TO	W. O.	PRT. SEP. DATE	TO	W. O.

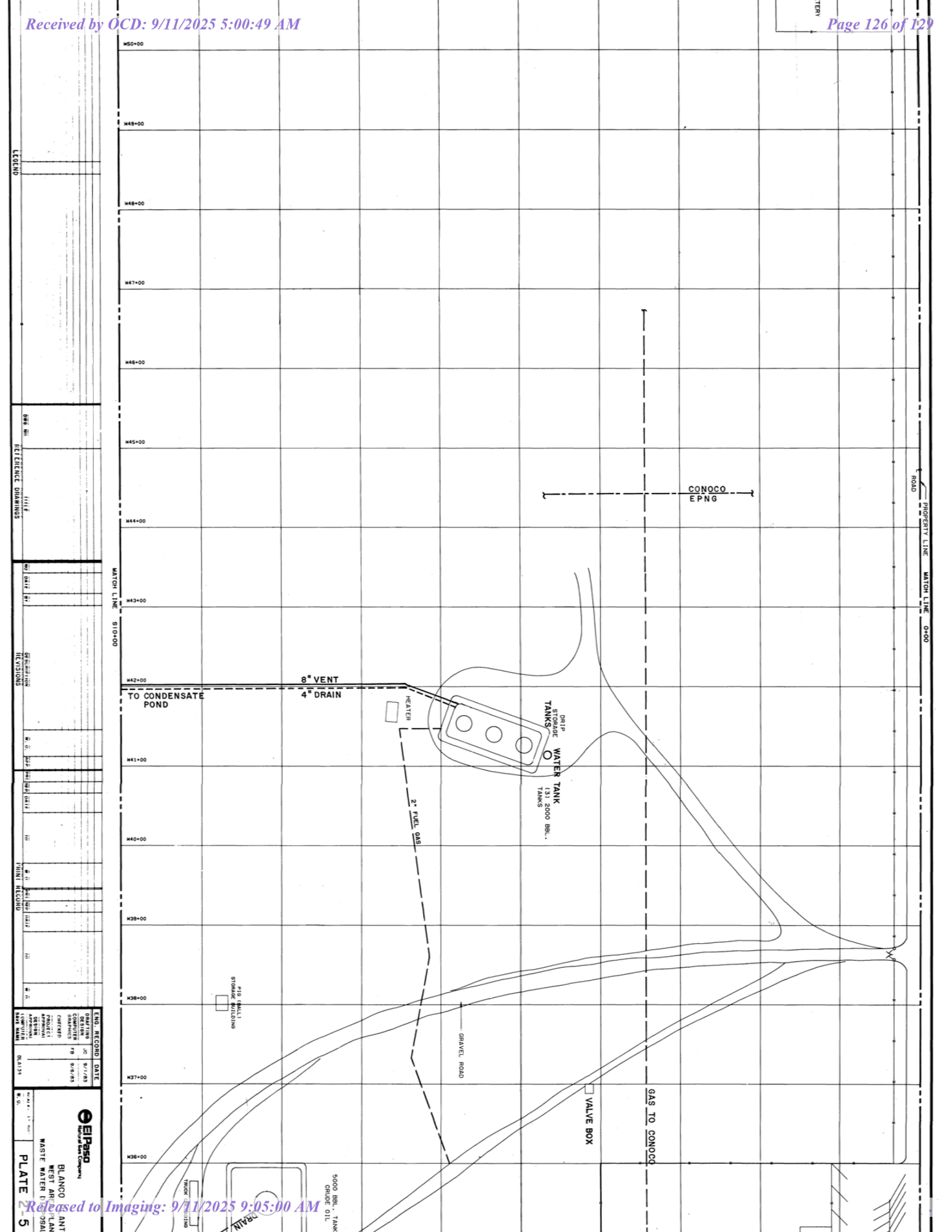
ENG. RECORD		DATE
DRAFTING DESIGN	JC	9/1/83
COMPUTER GRAPHICS	FB	9/6/83
CHECKED		
PROJECT APPROVAL		
DESIGN APPROVAL		
COMPUTER SAVE NAME	BLA136	

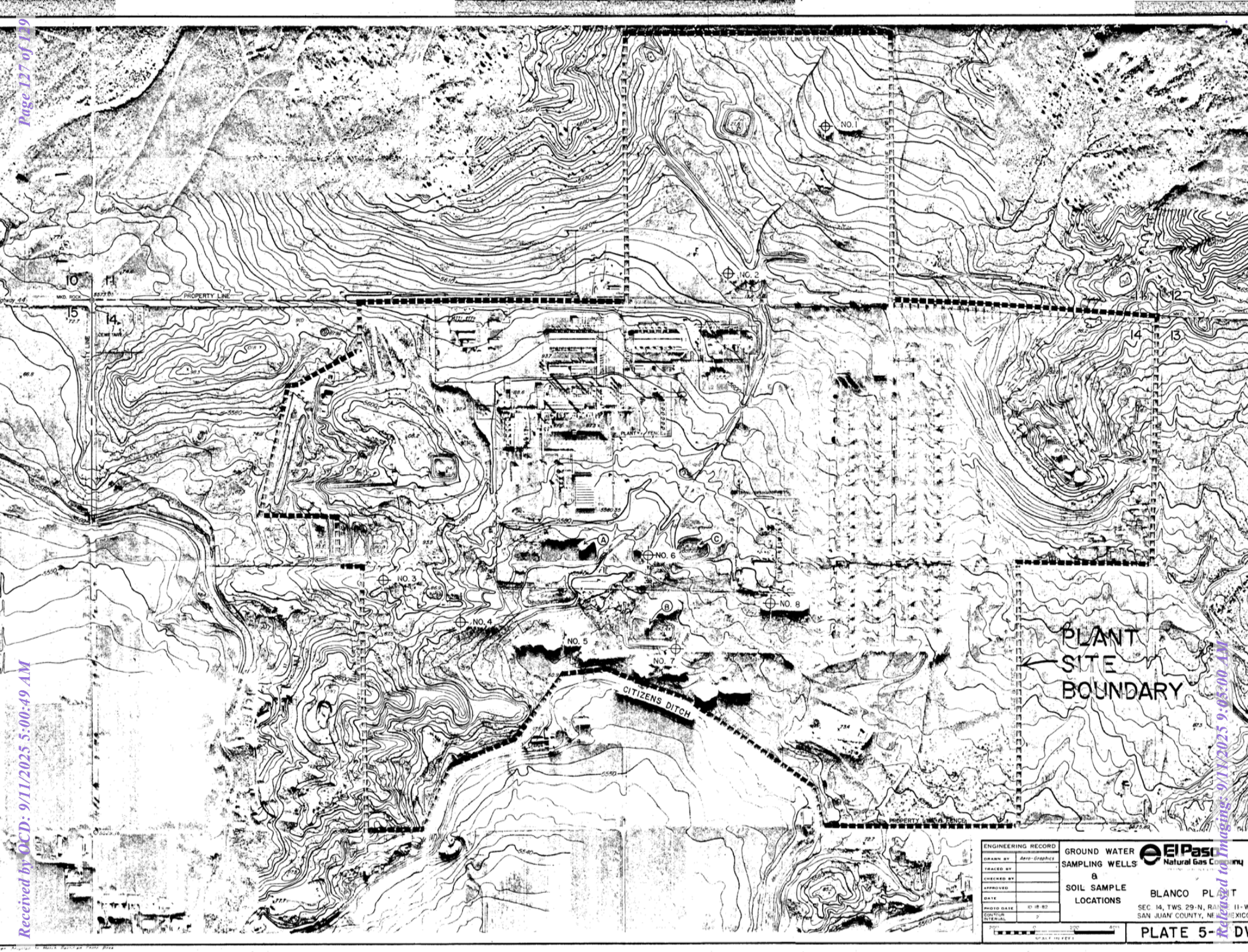
El Paso Natural Gas Company

BLANCO PLAN
SOUTH A PLA
WASTE WATER POSA

SCALE: 1"=50'
W. O.

PLATE 4





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APPROVED	
DATE	
PHOTO DATE	10-18-82
CONTOUR INTERVAL	2'

GROUND WATER SAMPLING WELLS & SOIL SAMPLE LOCATIONS

El Paso Natural Gas Company

BLANCO PLANT

SEC. 14, TWS. 29-N, RA[illegible] 11-W
SAN JUAN COUNTY, NEW MEXICO

PLATE 5-[illegible]

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: El Paso Natural Gas Company, L.L.C 1001 Louisiana Street Houston, TX 77002	OGRID: 7046
	Action Number: 505109
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
amaxwell	Discharge plan uploaded for record.	9/11/2025