GW - 21

REPORTS

YEAR(S):

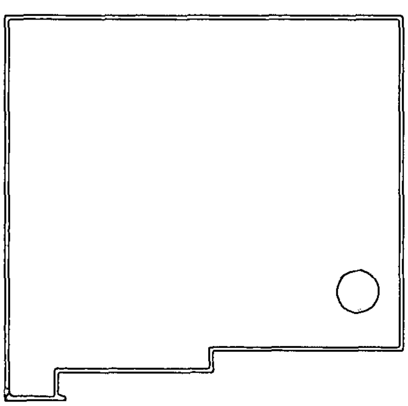
2000

MARATHON

MARATHON OIL COMPANY
MID-CONTINENT REGION

GROUNDWATER DISCHARGE PLAN
GW-21

INDIAN BASIN GAS PLANT



EDDY COUNTY
NEW MEXICO

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, TX 79702-0552
Telephone 915/682-1626

Post-it® Fax Note 7671	Date 7/19/00 # of pages ▶ 4
To WAYNE PRICE	From TROY JOHNSON
Co./Dept. OIL CONSERVATION	Co. MARATHON
Phone #	Phone # 915 687-8302
Fax #	Fax #

July 18, 2000

Mr. Wayne Price
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

RE: Groundwater Discharge Plan GW-21
Indian Basin Gas Plant
Marathon Oil Company

Dear Mr. Price:

As we discussed during our July 17, 2000 conversation, a revised Table 6 has been attached for the above referenced Groundwater Discharge Plan GW-21. Complete changes include dropping lease roads and pad sites as alternatives for soil usage and standardizing the TRPH clean-up standard at 1000 ppm for use of land farm soil in the plant. The benzene level was also dropped to 1 ppm to address safety concerns. Please contact me at (915) 687-8302 if you have any further comments or questions regarding the plan. Thanks again for all of your work regarding this matter.

Sincerely,

Troy Johnson

Troy Johnson
Environmental Engineer

Attachment

Cc: M. C. Schweser w/ attachment

File: 524-03

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JUL 19 2000
Environmental Bureau
Oil Conservation Division

Table 6. Soil Treatment Cleanup Standards

Soil Use (Within Gas Plant)	Cleanup Standards (mg/kg) TRPH (EPA 418.1)	Total BTEX	Benzene
Replacement Soil	1000	50	1
Stormwater Control Dikes	1000	50	1
Secondary Containment Berms	1000	50	1

Mid-Co[illegible]nt Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, TX 79702-0552
Telephone 915/682-1626

March 13, 2000

Mr. Wayne Price
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

RE: Groundwater Discharge Plan GW-21
Indian Basin Gas Plant
Marathon Oil Company

Dear Mr. Price:

As we discussed during your site visit on March 8, 2000, a revised Table 6 has been attached for the above referenced Groundwater Discharge Plan GW-21. The only change in the table is that road spreading of treated soil from the landfarm was removed as an option for usage. Please contact me at (915) 687-8302 if you have any further comments or questions regarding the plan. Thanks again for all of your work regarding this matter.

Sincerely,

Troy Johnson

Troy Johnson
Environmental Engineer

Attachment

Cc: M. C. Schweser w/ attachment

File: 524-03

Table 6. Soil Treatment Cleanup Standards

Use of Treated Soil	Cleanup Standards (mg/kg)		
	TRPH (EPA 418.1)	total BTEX	Benzene
Reburied	100	50	10
Stormwater control dikes	1000	50	10
Secondary containment berms in the gas plant	3000	50	10
Pad dirt on production locations	3000	50	10

MARATHON OIL COMPANY
INDIAN BASIN GAS PLANT
GROUNDWATER DISCHARGE PLAN

Submitted on behalf of the working Interest owners to
State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division

February 25, 2000

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1.0 TYPE OF OPERATION

The major purpose of the facility is natural gas processing. Although the components of the plant have been updated since it first began operations in 1966, the basic function and purpose of the plant have not changed. The plant owners have invested in new technology and replacement of aging equipment as necessary.

2.0 OPERATOR/LEGALLY RESPONSIBLE PARTY & LOCAL REPRESENTATIVE

The name of the operator is Marathon Oil Company. The mailing address for the Mid-Continent Region is P.O. Box 552, Midland, Texas 79702-0552. The telephone number for the Region office in Midland is (915) 682-1626.

The local Marathon Oil Company representative at the Indian Basin Gas Plant is Mike Schweser, Plant Superintendent. The street address of the plant is 429 Marathon Road (Eddy County Road 401). The mailing address is P.O. Box 1324, Artesia, New Mexico 88211. The plant telephone number is (505) 457-2621.

3.0 LOCATION OF FACILITY

The Indian Basin Gas Plant (facility) is located in the Northeast 1/4 of Section 23, T215, R23E, NMPM, Eddy County, New Mexico, approximately 20 miles northwest of Carlsbad and 28 miles southwest of Artesia. Figure 1 is the Martha Creek 7.5-minute topographic quadrangle showing the location of the gas plant.

4.0 LANDOWNER

Marathon Oil Company is the landowner of record of a 160-acre site legally described as the Northeast ¼ of Section 23, T21S, R23E, NMPM, Eddy County, New Mexico. The gas plant facility, which consists of approximately 60 acres, is located on the 160-acre property. Marathon's corporate headquarters address is P. O. Box 3128, Houston, Texas, 77253. Correspondence regarding the site should be directed to the Mike Schweser, Plant Superintendent, at the plant address provided in Section 2.0.

5.0 FACILITY DESCRIPTION

The gas plant facility approximately occupies the Southwest ¼ of the Northeast ¼ of Section 23, T21S, R23E. Figure 1 shows the plant site, the boundary of the 160-acre property, and the adjacent property managed by the BLM. Figure 2 is a facility diagram of the gas plant showing the plant perimeter fence, stormwater berms, primary facility tanks, cooling tower, treatment cell, groundwater remediation system, sulfur pit, closed landfill, locations of chemical and fuel storage facilities, processing facilities, and drum storage areas.

6.0 SOURCES AND QUANTITIES OF EFFLUENTS & WASTE SOLIDS

Wastes that are generated at gas plant consist of commingled effluent (Section 6.1) and solid and liquid wastes (Section 6.2). The commingled effluent is gathered by the drain and sump system and the solid and liquid wastes are generated at the plant but are not part of the commingled effluent.

6.1 Effluents

The commingled effluent consists of produced water and various other plant effluents. The individual waste effluent streams in the commingled effluent are identified in Table 1. The waste effluent streams from the various plant processes are collected and conveyed by the open drain piping system, the closed drain piping system, and several underground pipelines. Effluent volumes at the plant are variable and depend upon plant and field operations. Commingled effluent is normally discharged into two Marathon-operated Class II injection wells located on adjacent Bureau of Land Management (BLM) property. The commingled effluent is also occasionally trucked off-site to commercial disposal facilities during emergencies.

Produced water, cooling tower blowdown, and boiler and condenser blowdowns consist of a combination of wastewater and chemical additives. The name and volume of additives in each effluent are listed on Table 1. These effluents, effluent from steam cleaning operations, and miscellaneous plant process effluents are commingled via the open drain piping system, which drains to the skimmer basin before being pumped to the steel saltwater tank.

The reverse osmosis wastewater and the treated groundwater are commingled and delivered to the Lower Queen infiltration wells IW-1 and IW-2 by underground pipelines. The effluents are primarily discharged into the regional Lower Queen Aquifer via the infiltration system. During an emergency the effluents are commingled with the plant disposal system and are therefore listed on Table 1.

Domestic sewage is not commingled with other plant effluent and therefore is regulated by the New Mexico Environment Department. Sewage is conveyed through an underground pipeline to one of two underground septic tanks, which are designed to drain the sewage leachate. One of the septic systems was installed prior to December, 1972, the other in April of 1997.

6.2 Solid and Liquid Wastes

Solid and liquid wastes are generated at the plant but are not part of the commingled effluent or conveyed by underground piping. The waste classification, treatment/disposal methods, treatment/disposal/recycle locations, and waste storage areas are provided in Table 2.

Waste oil is collected from various plant equipment (Table 2) and stored in a 500-gallon waste oil storage tank located on the west side of the plant (Figure 2). Vehicle motor oil is changed on the concrete containment on the west side of the plant and poured into the waste oil storage tank.

The oil is stored in the tank until enough oil accumulates to warrant transport of the oil to a used oil recycling facility.

There are two Safety-Kleen parts cleaning units located in the pumper shack. One of the cleaning units is an open-top spray basin containing naptha solvent and the other unit is a self-contained cleaning unit that contains an aqueous solvent. Safety-Kleen services both units and recycles the solvent whenever the spent solvent is replaced. The naptha solvent is hazardous and the aqueous solvent is nonhazardous. The Environmental Protection Agency (EPA) small quantity generator number for hazardous waste generated at the Indian Basin Gas Plant is NMO 982 760 183. The EPA hazardous waste site identification is NMO-1406.

Laboratory wastes are a starch and iodine mix, silver nitrate, and water test reagents. These liquids are temporarily stored in a 5-gallon container in the laboratory and later hand carried to a 55-gallon drum in the drum storage area on the west side of the plant. Waste paint is stored in a 55-gallon drum in the drum storage area. Both streams are usually hazardous and are stored until enough waste has accumulated for disposal by Safety-Kleen.

Minor discharges of solid and liquid wastes that occur at the gas plant consist of cooling tower mist that is discharged to the ground at the base of the cooling tower and solid sulfur that is discharged onto the ground on the west side of the plant.

7.0 EFFLUENT AND SOLID WASTE QUALITY CHARACTERISTICS

7.1 Commingled Effluent

On November 8, 1999, a grab sample of the commingled effluent was collected from a valve between the saltwater tank pump and the pipeline to the injection wells. Total dissolved solids (TDS), pH, general chemistry, chlorinated hydrocarbons, aromatic hydrocarbons, and Resource Conservation and Recovery Act (RCRA) metals analysis of the effluent sample was conducted by Severn Trent Laboratories (STL). Laboratory results indicated that all commingled effluent constituents are below the WQCC 3-103 standards for groundwater except for benzene, toluene, ethylbenzene, total xylenes, chloride, sulfate, and TDS. The concentrations of benzene, toluene, ethylbenzene, and total xylenes were 4300, 13000, 700, and 7000 ug/l, respectively. The laboratory results are included in Appendix A.

Testing for polychlorinated biphenols (PCBs) was not necessary because PCB-contaminated transformers were removed from service at the gas plant before 1981. No other sources of PCB contamination have been identified to warrant testing for PCBs in the plant effluent.

Table 1 lists two plant effluents that contain one or more constituents as defined by WQCC Section 1101.TT. These effluents are produced water and groundwater contaminated with condensate. It should be noted that the groundwater contaminated with condensate is transferred through an underground pipeline from the treatment compound to the fiberglass saltwater tank only in emergency situations. The hazardous constituents that are likely contained in these effluents are benzene, toluene, ethylbenzene, M-, P-, and O-xylenes, and naphthalene.

7.2 Groundwater Remediation System Monitoring

Marathon will sample and analyze the commingled reverse osmosis wastewater and the treated groundwater on a monthly basis for benzene, toluene, ethylbenzene and xylenes (BTEX), and on a quarterly basis for major cations/anions and polynuclear aromatic hydrocarbons using EPA approved methods. The concentrations present in the water will not exceed the WQCC limits as listed in WQCC Regulation 3101. The sampling data will be included in the annual groundwater monitoring report for the facility.

7.3 Solid Waste Quality Characteristics

Most solid wastes generated at the plant are not characterized by the definition in WQCC Section 1101.TT. Table 2 classifies each waste as either exempt, nonexempt (nonhazardous or potentially hazardous), or naturally occurring radioactive material (NORM). All nonexempt wastes will be characterized according to 40 CFR 261 to determine the appropriate method of disposal. After the waste stream has been characterized, the data will be kept on file at the gas plant. Solid wastes will be stored and handled in accordance with all applicable federal and state laws.

8.0 TRANSFER AND STORAGE OF PROCESS FLUIDS AND EFFLUENTS

8.1 Onsite Collection and Storage Systems

The open drain and closed drain systems are used to manage most of the effluents at the plant. Table 1 indicates which effluents are conveyed in the open drain system. These include two of the boiler and condenser blowdowns, cleaning operation effluents, and miscellaneous plant process effluents. Figure 3 is a schematic of the plant open drain system and shows the location of the storage tanks where the commingled effluents are collected. The closed drain system is used to collect effluent from pressurized vessels.

Open Drain System

The open drain system collects plant effluent under atmospheric conditions. The underground part of this system includes: four double-walled fiberglass sumps; one single-walled fiberglass sump at the air compressor building; two single-walled steel sumps (main boiler sump and LACT sump); steel collection pots; steel pipelines; and, polyethylene and PVC pipelines (Figure 3). The open drain system includes a total of seven underground sumps. The aboveground part of the system consists of concrete drainage and containment pads that collect and drain effluent into the underground part of the system for collection and disposal. All open drain sump pumps send their effluent to the main boiler sump where they are commingled. Commingled effluent collected in the main boiler sump is pumped to the skimmer basin gunbarrel tank, located on the skimmer basin pad.

Description of Integrity Test of Open Drain System

Seven separate sections of underground piping are tested by filling the piping to volumetric capacity and visually observing any fluctuations in fluid levels at the sump and manway locations. The test is performed at atmospheric conditions for 5 hours. In order to reduce the effects of temperature fluctuations that occur during the heating and cooling part of the day, the test is conducted in the early morning or late evening hours. All sources for active drainage are isolated to prevent accidental introduction of non-test fluids into the system. A successful test has been conducted when the initial fluid levels remain constant throughout the 5-hour test period. The double walled fiberglass sumps are integrity tested by filling the inner chamber to capacity and observing any leaking of fluid from the inner chamber to the outer chamber. A successful test of the double-walled sumps has occurred if fluid does not leak to the outer chamber from the inner chamber during the 5-hour test period. The OCD will be notified at least 72 hours prior to all testing.

Successful integrity tests were conducted on the entire system during a two testing periods. Initial testing was completed November 1999 on the majority of the system. Final integrity tests were completed February 2000. Records of all integrity tests are available at the Indian Basin Gas Plant office.

Closed Drain System

The closed drain was constructed in 1980 and modified in 1984 and 1996 and is mainly aboveground. This system is used to collect effluent from pressurized vessels. The maximum operating pressure is 50 psig. The closed drain system is connected to 14 process vessels: filter separator, expander/compressor, amine contactor, glycol contactor, amine scrubber, glycol scrubber, amine flash tank, amine still, product contactor, new fuel gas scrubber, old fuel gas scrubber, regen scrubber, vertical inlet separator, and horizontal inlet separator. Steel piping leads from these process vessels to the closed drain scrubber, located near the generators. Collected liquids in the tank are sent to the skimmer basin gunbarrel for recovery and then to disposal via the wastewater injection system.

8.2 Inventory of Tanks and Vessels

Tables 3 and 4 are lists of tanks and vessels, respectively, with a potential to discharge. Table 3 lists the 50 tanks at the plant. Most of the tanks located directly on the ground are not constructed with impermeable secondary containment or leak detection. The sulfur tank is the only underground tank at the site. None of the tanks located directly on the ground are constructed on gravel foundations (i.e. tank bottom leaks cannot be detected); therefore, these tanks are cleaned out and visually inspected every five years. Table 3 indicates the scheduled inspection dates for each onground tank. Table 4 lists the separators, boilers, exchangers, condenser, scrubbers, and other vessels that are not constructed in impermeable secondary containment and would cause a discharge directly to the ground if the vessel leaked.

8.3 Measures to Prevent Unintentional and Inadvertent Discharges

Secondary Containment for Tanks

All storage tanks, except those that contain uncontaminated freshwater, are bermed to contain 133% of the volume of the largest tank. If two or more tanks are connected within the same containment, the berm contains 133% of the total volume of the interconnected tanks. New or existing tanks that undergo a major modification, as determined by the Division, will be placed within an impermeable enclosure.

Chemical and Drum Storage Area Containment

Drum storage areas are concrete paved and curbed to prevent a potential discharge to the ground of leaking or spilled drum contents. All tanks, drums, and containers will be clearly labeled to identify their contents and other emergency notification information.

New and Existing Sump Inspection

Construction plans for installing new sumps will be submitted to the Oil Conservation Division (OCD) for approval prior to project commencement. New sumps will incorporate secondary containment and leak-detection into the design prior to installation. All seven existing sumps are cleaned-out and visually inspected every year. The only below-grade tank at the plant is the sulfur underground storage tank.

Aboveground Tank Inspection

The lube oil storage, glycol storage, 1200-barrel freshwater storage, and steel softwater tanks are on a concrete pad. Therefore, these tanks have leak detection. All other on ground tanks are cleaned-out and inspected every five years. Table 3 indicates the clean-out and inspection schedule for the tanks.

Process Areas

All process and maintenance areas which show evidence that leaks and spills are reaching the ground surface will be either paved and curbed or have some type of spill collection device incorporated into the design.

Housekeeping

All systems designed for spill collection/prevention will be inspected weekly and after each storm event to ensure proper operation and to prevent overtopping or system failure. A record of inspections will be retained on site for a period of five years.

8.4 Underground Pipelines

Table 5 lists 54 underground pipelines that convey either process or waste effluents within the plant. The name of the pipeline, where the fluids are transferred from and to, year of construction or modification, piping diameter, fabrication material, average throughput during use, operating pressure, and the date of the last or next scheduled integrity test of each pipeline are indicated on Table 5. All underground process/wastewater pipelines were tested to demonstrate their mechanical integrity and will be tested every 5 years thereafter. The Marathon procedures for mechanical integrity testing are on file at the plant. The procedures are based upon the third edition (dated December 1993) of the American Petroleum Institute document HP 1110 entitled "Pressure Testing of Liquid Petroleum Pipelines."

9.0 EFFLUENT DISPOSAL

9.1 On-Site Operations

On-site Disposal

Surface impoundments or ponds, injection wells, leach fields, drying beds, or other pits do not exist on site. On-site disposal of liquid and solid waste effluents is currently limited to the discharge of cooling tower effluent in the form of a mist onto the ground around the base of the cooling tower and solid sulfur that is discharged onto the ground on the west side of the plant. Marathon no longer uses the solid waste landfill on site to dispose of exempt plant wastes and office trash. The landfill was closed in 1995.

On-Site Treatment

On-site treatment is limited to treatment of exempt and hydrocarbon-contaminated (e.g. oil, glycol, and amine) soil. The treatment methods are landfarming, commercial soil shredding, or commercial incineration. The latter two treatments will be performed by an environmental service company in the landfarm treatment cell. Soil will be treated to below the appropriate standards outlined in Table 6. Vadose zone monitoring will not be performed on the treatment cell if aboveground equipment is used for treatment. The confirmation sampling frequency for the treated soils will be one sample per 50 yards of soil.

All soil is treated in an area on the west side of the plant (Figure 2). The landfarm area is approximately 100 by 300 square feet. The landfarm operates continuously throughout the year. The landfarm was originally constructed in 1989 with a 4-mil plastic liner with approximately 12-inch-high earthen berms on all four sides. Water needed for remediation of soils is trucked in periodically and applied to insure there is no runoff or standing water in the treatment area except during heavy rainfall events.

Soil to be placed in the landfarm will not contain polychlorinated biphenols (PCBs) or heavy metals in hazardous concentrations as defined by the Toxicity Characteristic Leaching Procedure (TCLP). Exempt soil will be directly loaded into the landfarm. Nonexempt soil will be tested for RCRA metals and PCBs before loading into the landfarm unless process knowledge can be used to eliminate the need for testing.

Landfarmed soil is sampled periodically to determine whether cleanup standards have been achieved. Soil cleanup standards for TPH, total BTEX, and benzene are outlined in Table 6 in accordance with intended usage of the soils.

Vadose Zone Monitoring, Sampling, and Notification

In order to ensure that the discharges to groundwater from the vadose zone beneath the landfarm will comply with the standards in WQCC Section 3-103 and Section 1101.TT, a randomly located grab sample will be collected each time treated soil is removed from the landfarm. The sample will be collected from six inches to one foot below grade.

If the soil below the landfarm is found to contain TPH or total BTEX concentrations above 100 mg/kg and 50 mg/kg, respectively, the OCD will be notified according to the notification requirements of WQCC Section 1203. Marathon's seven-day written notification will contain a plan for removal of soil from beneath the landfarm that exceeds these standards. If the soil below the landfarm is not found to contain TPH or total BTEX concentrations above the stated levels, then the landfarm will be reloaded and treatment of soil will continue. Laboratory analysis reports of the vadose zone sampling described above will be submitted to the OCD within 15 days of transmittal date of the laboratory report.

9.2 Off-Site Disposal

Injection Wells

All exempt gas plant waste effluents are collected by the open drain system, closed drain system, or other underground piping, and commingled at either the fiberglass or steel saltwater tanks (Figure 2). The commingled effluent is conveyed by underground pipeline and discharged at two off-site locations. These are the two Marathon-operated Class II injection wells located on adjacent BLM property. The principal injection well is the Marathon Indian Basin Gas Com Well No. 1, located in the Northwest ¼ of Section 23, T21S, R23E. Marathon Federal SWD Well No. 1, located in Unit K in the Southwest ¼ of Section 24, T21S, R23E, is maintained as a backup well. The composition of the commingled effluent is identified on Table 1. Laboratory analysis of the commingled effluent is provided in Appendix A.

Commercial Disposal Facilities

Office refuse and other inert wastes are transported to the local municipal landfill for disposal. All other wastes are handled according to Table 2.

10.0 INSPECTION, MAINTENANCE, AND REPORTING

Marathon is actively involved in maintaining and improving spill and leak prevention procedures and good housekeeping practices. These goals are achieved by encouraging plant employees to be observant, to notify the appropriate persons of their observations, to correct problems quickly, and to prevent future spills and leaks by learning from problematic past practices.

10.1 Routine Inspection Procedures

Table 3 and 4 identify the aboveground storage tanks and process vessels (AST and APV; i.e., those in-air tanks and vessels that allow 360 degree visual inspection) that are routinely inspected. The closed drain system is also routinely inspected. Plant employees routinely inspect plant equipment (i.e. tanks, piping, pumps, fittings, valves, etc.) for leaks and spills during their daily work tasks. Four plant tours are conducted by plant personnel during each of two, twelve hour shifts. A primary objective of these tours is to detect equipment leaks and spills. The current Spill Prevention, Control, and Countermeasure (SPCC) plan dated October 15, 1997 is provided in Appendix B.

10.2 Routine Maintenance Procedures

Employees are encouraged to identify and report potential spill situations. All plant employees have completed an 8-hour hazardous waste operations and emergency response (HAZWOPER) training session. In addition, all employees participate in an annual refresher-training course which includes instruction on spill prevention and control measures as required by the SPCC plan.

10.3 Routine Reporting Procedures

Small leaks or spills are reported and remediated immediately. A Marathon policy requires employees to complete a spill report upon discovery of a spill or leak. Spills or leaks are reported to the OCD according to the requirements of OCD Rule 116 and WQCC Regulations Section 1-203. BLM is notified if a spill or leak occurs on BLM land. The National Response Center is notified in accordance with 40 CFR 110.10. Spill reports are kept on file at the plant office.

10.4 Stormwater Runoff and Flood Protection

The potential for flooding of the plant is very low. Normally, flooding due to significant rainfall events is limited to the braided stream channels of Rocky Arroyo. The stream bed of Rocky Arroyo is approximately 10 feet lower than the elevation at the southern plant perimeter fence. The last time Rocky Arroyo overran its banks was in 1986, but the water did not reach the plant.

Perimeter diversion berms consisting of dirt, piled two to three feet high, are located on the west and north sides of the plant to prevent upgradient stormwater from running onto the plant site. These stormwater berms prevent stormwater from contacting hydrocarbons or flooding the open drain system which is designed to manage normal process flow only.

The Indian Basin Gas Plant Stormwater Pollution Prevention Plan (SWPPP), dated March 12, 1998 is included in Appendix C. This document describes the potential pollutant sources, stormwater measures and controls, stormwater runoff management, inspection and preventative maintenance, spill prevention and response procedures, employee stormwater training, and recordkeeping and internal reporting procedures. Select employees participate in stormwater pollution prevention training on an annual frequency according to the requirements in the SWPPP.

11.0 SPILL/LEAK PREVENTION & REPORTING (CONTINGENCY PLANS)

A contingency plan for potential occurrence of leaks and spills at the Indian Basin Gas Plant is located in the SPCC plan, which is included as Appendix B. The contingency plan describes the steps proposed to contain and remove spilled substances and mitigate the damage caused by the discharge, including protection from future migration to groundwater. The OCD notification threshold levels will be followed for discharges at the plant as defined by WQCC Regulations Section 1203 and significant leaks or spills as defined by OCD Rule 116.

12.0 SITE CHARACTERISTICS

12.1 Geologic Description of Discharge Site

The typical stratigraphic sequence beneath the gas plant is Queen Formation fractured sandstone, limestone, and dolomite bedrock at a depth of approximately 20 feet overlain by approximately 16 feet of silty, pebble to boulder gravel overlain by 4 feet of clayey silt and silt.

12.2 Hydrologic Features

Rocky Arroyo is a watercourse located approximately 600 feet south of the southern boundary of the site (Figure 1) that contains flowing water only during and for a period of time following heavy rainfall events. The main channel of Rocky Arroyo is 840 feet south of a fence at plant. South of the plant site, the stream channel of Rocky Arroyo trends southeast.

The first groundwater encountered below the plant site occurs within alluvium deposits. This shallow zone is perched above locally fractured, Permian sandstone, limestone, and dolomite of the Queen Formation. The presence of perched shallow groundwater is dependent on the amount of local rainfall. The flow direction of the perched shallow groundwater is generally southeast. A commercial supply well permitted by the State Engineer Office and completed in the shallow alluvial deposits is located approximately 2.5 miles east of the site boundary. The well is located where alluvial deposits are thick and downstream of the confluence of three major drainage channels in the southern Seven Rivers embayment. These are Rocky Arroyo, Martha Creek, and Dunnaway Draw.

A rancher well (Lee well) is located approximately 0.7 miles west of the western boundary of the 160-acre property and approximately 100 feet north of County Road 401 (Figure 1). This active well is permitted by the State Engineer Office as a stock supply well and is completed in the Lower Queen regional aquifer which is the next saturated zone below the shallow groundwater zone.

TABLES

Table 1. Effluents and Estimated Volumes

Effluent	Pathway	Waste Effluent Constituents	Volume	(Section 1-101.Z ZZ constituents)
PRODUCED WATER	Inlet separators to skimmer basin to saltwater tanks	condensate, saltwater, Calgon pretest 32- 2 gal./day	2000 Bbls/day	none
COOLING TOWER BLOWDOWN	Aboveground piping to fiberglass saltwater tank	softwater make-up	200 Bbls/day	none
		Calgon conductor XLP-170	2.1 gal/day	none
		Van Waters Rogers sulfuric acid	5 Bbls/mo	none
		Calgon Tower Brom 960 (solid)	100 lbs/mo	none
		Calgon H75	3 gal/wk	none
BOILER AND CONDENSER BLOWDOWNS		Caustic Soda - Unichem	1.5 gal/day	none
SRU Waste Heat Boiler Blowdown	Underground & aboveground steel pipeline to steel saltwater tan	softwater make-up	95 Bbls/day	none
SRU Large Condenser Blowdown	Underground & aboveground steel pipeline to steel saltwater tan	Calgon Ultra Amine 120	3.6 gal/day	none
SRU Small Condenser Blowdown	Glycol sump of open drain to steel saltwater tank	Calgon Burlook 2220	4.5 gal/day	none
Turbine Waste Heat Boliers (3) Blowdown	Open Drain System to skimmer basin	Calgon Conquer 3470	1.8 gal/day	none
Process (main) Steam Bolier Blowdown	Open Drain System to skimmer basin			
CLEANING OPERATIONS	Open Drain to Skimmer Basin to Saltwater Tank to Injection		50 Bbls/day	
steam cleaning				
truck, tank, and drum washing				
PLANT PROCESS EFFLUENTS	Open Drain to Skimmer Basin to Saltwater Tank to Injection		75 Bbls/day	
products sweetening		Huntsman diethanolamine (DE)		none
glycol		triethylene glycol (TEG)		none
SOFTWATER REGEN	Softwater building to saltwater tank via underground piping	saltwater	75 Bbls/d	none
REVERSE OSMOSIS WASTEWATER*	Primary: Water treatment to infiltration system via underground piping		300 Bbls/d	none
	Secondary: Water treatment building to saltwater tank			
GROUNDWATER CONTAMINATED W/CONDENSATE*	Primary: Freshwater gathering to infil. via underground piping	freshwater	2575 Bbls/day	none
	Secondary: Freshwater gathering to saltwater tank	condensate (as TPH; EPA Mod. 8015)	<3,200 ug/L	BTEX

* Denotes effluent is only commingled into disposal system in case of emergency or mechanical failure

Table 2. Waste Sources, Waste Classification, and Waste Treatment/Disposal Methods

Waste	Waste Classification	Treatment/Disposal Method(s)	Disposal/Recycle Location	Plant Storage Location
BATTERIES, SPENT (generator, backup lighting, and vehicle)	nonexempt, potentially hazardous	recycle	The Tire Co.-Carlsbad,NM	drum storage area
CARBON, SPENT (Amine or glycol system)	exempt	1) exempt waste disposal facility 2) nonhaz industrial landfill*	1) Exempt waste disposal facility 2) Lea Land nonhaz landfill*	roll-off bin when needed
COOLING TOWER CLEANING WASTE SOLIDS	nonexempt, potentially hazardous	injection; off site Class II well	I & W Services, Artesia, NM	frac tank until testing complete
DRUMS, SPENT	nonexempt, potentially hazardous	recycle	NA	drum storage area
FILTERS- GLYCOL & AMINE FILTERS & FILTER MEDIA (glycol sock filters, amine charcoal filters, amine bag filters	exempt	1) recycle by incineration 2) exempt waste disposal facility	1) Quell or Procycle 2) Exempt waste disposal facility	south east of plant
FILTERS- INLET AIR FILTERS (turbine, compressor, recompressors, & generators)	nonexempt nonhazardous	landfill	Carlsbad municipal landfill or Lea Land nonhaz landfill	dumpster on west side plant
FILTERS- NATURAL GAS FILTERS	exempt	1) recycle by incineration 2) exempt waste disposal facility	1) Quell or Procycle 2) Exempt waste disposal facility	south east of plant
FILTERS- STABILIZER COMPRESSOR/ AIR COMPRESSOR LUBE OIL FILTERS	nonexempt	recycle by incineration	Quell or Procycle	west side plant
FILTERS- TURBINE LUBE OIL FILTERS	nonexempt	recycle by incineration	Quell or Procycle	south east of plant
GLYCOL CERAMIC SADDLES, SPENT	exempt	1) exempt waste disposal facility 2) nonhaz industrial landfill*	1) Exempt waste disposal facility 2) Lea Land nonhaz landfill*	roll-off bin or drums when needed
HYDROBLASTING & SANDBLASTING MEDIA	nonexempt, potentially hazardous	as dictated by sampling	as dictated by sampling	NA
LABORATORY WASTES (starch and iodine, silver nitrate, water test reagents)	** nonexempt, potentially hazardous	incinerated	Safety-Kleen determines	drum storage area
MOLECULAR SIEVE, SPENT	exempt	1) exempt waste disposal facility 2) nonhaz industrial landfill*	1) Exempt waste disposal facility 2) Lea Land nonhaz landfill*	west side plant
NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM)	NORM waste	unknown pending State Regulation	unknown	NORM storage area
OFFICE AND PLANT TRASH	nonexempt nonhazardous	dumpster	Carlsbad municipal landfill	west side plant
OIL- vehicle motor, crankcase (chemical injection pump, high pressure pumps), regen compressor, instrument air compressor lube oil, stabilizer vapors compressor oil, turbine/expander compressor oil, generator oil, inlet compressor oil	nonexempt	recycle	Procycle	Oil recycle storage area
PAINT, WASTE (non-empty cans, dried paints, waste paint)	nonexempt, potentially hazardous	incinerated; supplemental fuel	Safety-Kleen determines	drum storage area
RAGS, OILY	exempt & nonexempt	recycle by incineration	Quell or Procycle	south east of plant
SAFETY-KLEEN 105 SOLVENT-MS	nonexempt hazardous	recycle	Safety-Kleen determines	pumper shack; 55-gallon drum
SAFETY-KLEEN AQUAWORKS SOLVENT	nonexempt nonhazardous	recycle	Safety-Kleen determines	
SOIL- AMINE CONTAMINATED (Spent)	exempt	landfarming /bioremediation	plant landfarm	landfarm staging area
SOIL- AMINE CONTAMINATED (Virgin)	nonexempt	landfarming /bioremediation	plant landfarm	landfarm staging area
SOIL- GLYCOL CONTAMINATED (Spent)	exempt	landfarming /bioremediation	plant landfarm	landfarm staging area
SOIL- GLYCOL CONTAMINATED (Virgin)	nonexempt	landfarming /bioremediation	plant landfarm	landfarm staging area
SOIL- HYDROCARBON CONTAMINATED (exempt)	exempt	landfarming /bioremediation	plant landfarm	landfarm staging area
SOIL- LUBE OIL CONTAMINATED (nonexempt)	nonexempt	landfarming /bioremediation	plant landfarm	landfarm staging area
SULFUR RECOVERY UNIT SPENT CATALYST & SUPPORT BALLS	exempt	1) exempt waste disposal facility 2) nonhaz industrial landfill*	1) Exempt waste disposal facility 2) Lea Land nonhaz landfill*	roll-off bin when needed
SULFUR, OFF-SPEC	nonexempt nonhazardous	1) land discharge 2) nonhaz industrial landfill	1) West side of SRU, west of fence 2) Lea Land Nonhaz Landfill	
SULFUR-CONTAMINATED SOIL	nonexempt nonhazardous	1) land discharge 2) nonhaz industrial landfill	1) West side of SRU, west of fence 2) Lea Land Nonhaz Landfill	
TIRES, VEHICLE USED	nonexempt nonhazardous	recycle	The Tire Co.-Carlsbad,NM	

Table 3. Inventory of Tanks

Source/*Figure 3" location	Tank Volume	Type	Bottom Lined?	Effluent Contained	Fluids Drained to ?	Scheduled Clean-out
condensate tank (bullet)/SE plant	1700 Bbl	npAST	in air; NA	NA	condensate tank (bullet) SE plant	NA
condensate tank (bullet)/SE plant	1700 Bbl	npAST	in air; NA	NA	LACT unit	NA
tank (bullet)/SE plant (not in service)	1700 Bbl	npAST	in air; NA	NA	NA	NA
tank (bullet)/SE plant tank	1700 Bbl	npAST	in air; NA	NGL	rerun line	NA
tank (bullet)/SE plant tank	1700 Bbl	npAST	in air; NA	NGL	rerun line	NA
tank (bullet)/SE plant tank	1700 Bbl	npAST	in air; NA	NGL	rerun line	NA
lube oil tank/recompressor	210 Bbl	npOST	in air; NA	NA	recompressor & expander surge tanks	not required
lube oil saddle tank/inlet compressor	52 Bbl	npAST	in air; NA	NA	Open Drain main sump	NA
open-top skimmer tank/skimmer pit	437 Bbl	npOST	no	wastewater	middle skimmer tank	
saltwater tank (fiberglass)/SW plant area	500 Bbl	npOST	concrete	to injection	saltwater tanks	
lube oil saddle tank/stablilizer compressor	11.9 Bbl	npAST	in air; NA	NA	containment	NA
diesel tank/north plant area	10 Bbl	npAST	in air; NA	diesel	delivery hose	NA
Meropa tank/SW plant area	100 gal	npAST	in air; NA	Meropa oil	containment	NA
waste oil tank/west plant area	500 gal	npAST	in air; NA	waste & slop oils	concrete containment	NA
Remediation Treatment Compound	210 Bbl	npOST	no	Remediation Water	equalization tank	NA
Remediation Treatment Compound	210 Bbl	npOST	no	Remediation Water	air stripper	NA
condensate tank	19 Bbl	npOST	no	Remediation Condensate	Open Drain main sump	
freshwater steel tank/NE plant area	1200 Bbl	npOST	concrete	freshwater	ground	not required
freshwater fiberglass tank/NE plant area	125 Bbl	npOST	no	freshwater	ground	not required
softwater tank/SW plant area	90 Bbl	npOST	concrete	freshwater	ground	not required
reverse osmosis freshwater tank/SW plant	280	npOST	no	freshwater	ground	not required
glycol steel tank/SW plant area	90 Bbl	npOST	concrete	softwater	concrete containment	NA
sulfur tank/NW plant area	47,000 gal	npUST	no	liquid sulfur	sulfur loading rack	
Large DEA Slop Tank*	200 Bbl	npAST	in air; NA	used DEA; Royal Purple oil	DEA to process; oil to Open Drain	NA
Small DEA Slop Tank*	70 Bbl	npAST	in air; NA	used DEA; Royal Purple oil	DEA to process; oil to Open Drain	NA
Burolock 2220 Storage Tank	1000 Bbl	npAST	in air; NA	Calgon Burolock 2220	boiler water treatment	NA
Ultramine 120 Storage Tank	1000 Bbl	npAST	in air; NA	Calgon Ultramine 120	boiler water treatment	NA
conquor 3470 Storage Tank	1000 Bbl	npAST	in air; NA	Calgon Conquor 3470	boiler water treatment	NA
DEA Storage Tank #8	3000 gal	npAST	in air; NA	new DEA	sweetening process	NA
DEA Storage Tank #9*	4200 gal	npAST	in air; NA	new DEA	sweetening process	NA
TEG Storage Tank	750 g	npAST	in air; NA	TEG	"concrete containment"	NA
TEG Storage Tank	500 gal	npAST	in air; NA	TEG	"concrete containment"	NA
Methanol Storage Tank	500 gal	npAST	in air; NA	Methanol	"concrete containment"	NA
Methanol Storage Tank	650 g	npAST	in air; NA	Methanol	"concrete containment"	NA
Varsol Storage Tank	400 g	npAST	in air; NA	Varsol	"concrete containment"	NA
Gasoline Storage Tank	2500 g	npAST	in air; NA	Gasoline	"concrete containment"	NA
Kerosene Storage Tank	400 g	npAST	in air; NA	Kerosene	"concrete containment"	NA
Antifreeze Storage Tank	500 g	npAST	in air; NA	Ethylene Glycol antifreeze	"concrete containment"	NA
Caustic soda tank	500 gal	npAST	in air; NA	Caustic soda	Boiler water treatment	
Anti-foam tank	250 gal	npAST	in air; NA	Coastal Chem. 1017-F	steel containment	
Gun Barrel/treatment compound	500 bbl	npOST	no	cond. Contaminated water	seperator/condensate tank	
Frac Tank	200 bbl	npAST	no	fresh water	ground	
Frac Tank	200 bbl	npAST	no	fresh water	ground	
Skimmer Oil tank	210 bbl	npOST	concrete	oil/water	condensate process	
Skimmer gun barrel	500 bbl	npOST	concrete	water/oil	skimmer oil tank/salt water tanks	
Saltwater tank (east)	500 bbl	npOST	concrete	produced water/oil	saltwater disposal pump	
Saltwater tank (middle)	500 bbl	npOST	concrete	produced water/oil	saltwater disposal pump	
Saltwater tank (west)	500 bbl	npOST	concrete	produced water/oil	saltwater disposal pump	
Calgon Pre-tect 32	500 gal	npAST	in air; NA	Calgon pretect 32	saltwater disposal	
Gibraltar A-105 Tank (AGC)	500 gal		in air; NA	Oil	acid gas injection	

npAST = nonpressurized aboveground storage tank (I.e. 360 degree inspection possible)

NA = not applicable

npUST = nonpressurized underground storage tank

* connected

Table 4. Inventory of Process Vessels

Source/*Figure 3" location	Volume (Bbls)	Vessel Type	Vessel Bottom Lined?/ Ground Underneath Paved?	Contents	Fluids Drained to ?
water exchanger/gas inlet	28	APV	in air/no	cooling tower water	abandoned OD
inlet gas separator #1/gas inlet	90	APV	in air/no	produced water	CD = Closed Drain
inlet gas separator #2/gas inlet	32	APV	in air/yes, conc.foundation pad	produced water	CD = Closed Drain
air receiver/gas inlet	1	APV	in air/yes, conc. foundation pad	atmospheric water	bucket
inlet separator/inlet compressor	75	APV	in air/no	produced water	OD = Open Drain
suction scrubber/inlet compressor	58	APV	in air/yes, conc. foundation pad	produced water	OD = Open Drain
air receiver/inlet compressor	3	APV	in air/yes, conc. foundation pad	atmospheric water	bucket
amine contactor/amine sweetening	324	APV	in air/yes, conc. foundation pad	produced water, amine	CD = Closed Drain
amine contactor overhead gas scrubber/amine sweetening	8	APV	in air/yes, conc. foundation pad	produced water, amine	CD = Closed Drain
rich amine flash tank/amine sweetening	76	APV	in air/no	produced water, amine	amine bag filter
amine bag filter/amine sweetening	2	APV	in air/yes	produced water, amine	OD & rich-lean amine exchanger
condensate stabilizer overhead condenser/amine sweetening	2	APV	inair/no	produced water	aerial cooler to stabilizer reflux dru
amine still condenser/amine sweetening	2	APV	in air/no	produced water	aerial cooler to reflux accumulator
lean amine-water plate exchanger/amine sweetening	2	APV	in air/yes	produced water, amine	OD
rich-lean amine exchanger/amine sweetening	22	APV	in air/no	amine	amine still
amine still/amine sweetening	300	APV	in air/yes conc. foundation pad	reflux water, amine	CD = Closed Drain
amine reflux accumulator/amine sweetening	8	APV	in air/yes conc. foundation pad	reflux water, amine	CD = Closed Drain
amine still reboiler/amine sweetening	19	APV	in air/no	reflux water, amine	steam condensate surge tank
steam condensate surge tank/amine sweetening	50	APV	in air/no	condensed steam water	CD = Closed Drain
amine charcoal filter/amine sweetening	60	APV	in air/yes, conc. pad	amine	slp amine tank
glycol water exchanger/glycol dehydration	2	APV	in air/no	produced water, glycol	
glycol contactor/glycol dehydration	205	APV	in air/yes, conc. foundation pad	produced water, glycol	CD = Closed Drain
glycol contactor overhead scrubber/glycol dehydration	8	APV	in air/yes, conc. foundation pad	produced water, glycol	CD = Closed Drain
glycol regenerator/glycol dehydration	73	APV	in air/no	produced water, glycol	atmosphere
rich-lean glycol exchanger/glycol dehydration	59	APV	in air/no	glycol	glycol contactor
glycol surge tank/glycol dehydration	16	APV	in air/no	produced water, glycol	OD
water collection drum/glycol dehydration	3	APV	in air/yes	steam, glycol	OD
inlet water separator/inlet condensate	291	APV	in air/no	produced water, cond.	aband. OD
stabilizer feed tank/inlet condensate	291	APV	in air/no	produced water, cond.	OD
regeneration gas scrubber/regeneration gas	10	APV	in air/yes, conc. foundation pad	produced water, cond.	CD
product contactor/product treating	128	APV	in air/yes, conc. foundation pad	amine, KOH	buckets
product solvent separator/product treating	16	APV	in air/yes, conc. foundation pad	amine, KOH	rich amine flash tank
acid gas scrubber #1/SRU	11	APV	in air/no	reflux water	amine reflux accumulator
acid gas scrubber #2/SRU	11	APV	in air/no	reflux water	amine reflux accumulator
small condeser/SRU	20	APV	in air/no	cooling tower water	OD
large condenser/SRU	59	APV	in air/no	cooling tower water	CD
Line 1, 3-phase separator/inlet pit	20	APV	in air/no	produced water, cond.	skimmer basin

Table 4. Inventory of Process Vessels

Source/*Figure 3" location	Volume (Bbls)	Vessel Type	Vessel Bottom Lined?/ Ground Underneath Paved?	Contents	Fluids Drained to ?
Line 3, 3-phase separator/inlet pit	14	APV	in air/no	produced water, cond.	skimmer basin
Line 4, 3-phase separator/inlet pit	36	APV	in air/no	produced water, cond.	skimmer basin
cond.stabilizer feed-bottoms exchanger/cond.stabilization	5	APV	on ground/no	condensate	cond.stabilizer tower or cooler
condensate stabilizer reboiler/cond.stabilization	10	APV	in air/no	cond., steam	OD
condensate stabilizer/cond.stabilization	119	APV	on ground/yes, concrete pad	condensate	OD
stabilizer reflux drum/cond. Stabilization	10	APV	on ground/yes, concrete pad	cond. Reflux water	OD
stabilizer bottoms cooler/cond. Stabilization	1	APV	in air/no	cond	cond.stabilizer tower or cooler
steam waste heat boiler #1/steam system	71.4	APV	in air/no	softwater w/additives	OD
steam waste heat boiler #2/steam system	71.4	APV	in air/no	softwater w/additives	OD
steam waste heat boiler #3/steam system	71.4	APV	in air/no	softwater w/additives	OD
blowdown drum/steam system	11.9	APV		softwater w/additives	OD
main boiler/steam system	35.7	APV	in air/no	softwater w/additives	OD
utility flare drum/plant flare system		APV	in air/no	gas	flare
inlet gas flare drum/plant flare system	61	APV	in air/no	produces water, cond.	condensate
stabilizer compressor suction scrubber	2	APV	in air/concrete pad	condensate	OD
stabilizer compressor suction scrubber		comp	concrete pad with berm	water/lube oil	OD
inlet compressor		comp	concrete pad with berm	water/lube oil	OD
A-2 Amine contactor	55	APV	in air/yes, conc. foundation pad	produced water / Amine	CD
A-2 Amine contactor overhead scrubber	8	APV	in air/yes, conc. foundation pad	produced water / Amine	CD
A-2 Rich Amine Flash tank	35	APV	in air/yes, steel skid	Amine / produced water	Bag filter
A-2 Amine Pre-bag filter	3	APV	in air/yes, steel skid	Amine	Amine charcoal filter
A-2 Amine Charcoal Filter	12	APV	in air/yes, steel skid	Amine	Amine Post- bag filter
A-2 Amine Post-bag filter	3	APV	in air/yes, steel skid	Amine	High pressure pumps
A-2 Rich/Lean Amine Exchanger	10	APV	in air/yes, steel skid	Amine	amine still
A-2 Amine Reboiler/Surge Tank	46	APV	in air/yes, steel skid	Reflux water / Amine	CD
A-2 Lean Amine/water heat exchanger	8	APV	in air/yes, steel skid	produced water / Amine	Pre-bag filter
A-2 Lean Amine cooler	2	APV	in air / no	Amine	Lean Amine/ water exchanger
A-2 Amine condensor fans	2	APV	in air / no	Produced water	aerial cooler to reflux accumulator
A-2 Amine Reflux Accumulator	9	APV	in air/yes, conc. foundation pad	Reflux water/ Amine	CD
A-2 Amine Still	48	APV	in air/yes, conc. foundation pad	Reflux water/ Amine	CD
A-2 Rich Bag Filter	5	APV	in air/yes, steel skid	Amine/ produced water	OD rich/ lean amine exchanger
Field Fuel Gas Scrubber South side	7	APV	in air/yes, conc. foundation pad	fuel gas	closed drain
Inlet Gas Filter Seperator South side	29	APV	in air / no	produces water, cond.	condensate system
Gas/water heat exchanger South side	35	APV	in air / no	water/gas	cooling tower

APV = aboveground process vessel (I.e. 360 degree inspection possible)
comp = compressor
cond. = condensate

OD=Open Drain
CD=Closed Drain

Table 5. Underground Piping

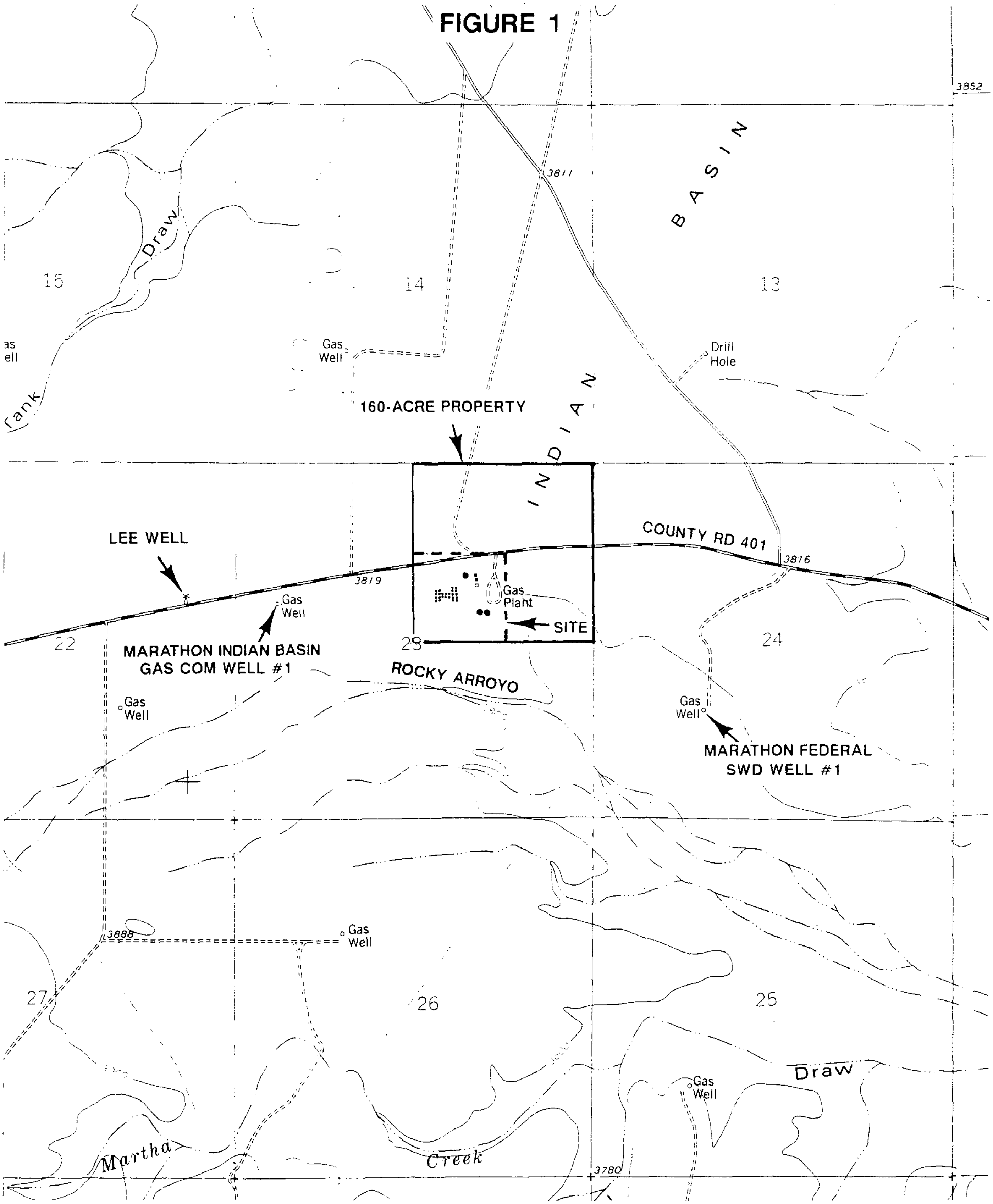
	Piping Name	Pathway	Constructed or Modified	Flow Rate (Bbls/day)	Pressure (psig)	Diameter (Inch)	Piping Type	Integrity Test
1	Open drain system	various plant units to open drain collection sump	1996	15	no	3, 2	IC Steel	Sep-2019
2	Softwater regeneration	water softener in water treatment building to fiberglass SWD tank	before 1990	385	15	2	PVC	Jan-2015
3	Reverse osmosis wastewater piping	RO unit in water treatment building to air stripper outlet to infiltration	1991	200	60	2	poly	Jan-2016
4	Untreated groundwater bypass piping	diversion valve at treatment compound to Skimmer Basin	1991	2676	50	2	poly	Jan-2016
5	Treated groundwater piping	air stripper at treatment compound to skimmer basin SWD tank	1995	125	20	6	ploy	Jan-2020
6	Piping to Marathon Federal SWD Well No.1 (Sec.24)	fiberglass saltwater tank to injection well	1977	minimal	2000	3	steel	Jan-2002
7	Piping To Marathon Indian Basin Gas Com Well No.1(Sec.23)	fiberglass saltwater tank to injection well	1991	3000	2000	3	fiberglass	Jan-2016
8	Waste effluent transfer piping	Open drain collection sump to skimmer basin	1996	80	<10	4	IC steel	Jan-2011
9	Co-production line to skimmer basin gunbarrel	Co-production line outside plant to skimmer basin gunbarrel	1996	2000	<10	6	fiberglass	Jan-2016
10	Condensate Delivery Sales	condensate bullet storage tanks(1) to condensate loading area (LA)	1993	300	70	4	poly	Mar-2018
11	SRU waste heat boiler & large condenser blowdown discharge piping (OOS)	waste heat boiler and large condenser to steel saltwater tank	1985/1992	10		2	steel	Jan-2017
12	Condensate make line	stabilizer to condensate bullet storage tanks	1989	300	<20	2	steel	Jan-2014
13	Condensate rerun line	condensate bullet storage tanks to overhead pipe rack	1989	10;100 max	<35	2	steel/poly	Jan-2014
14	LACT sump pump to main boiler sump	LACT sump pump to main boiler sump	1966/1989	1	<30	2	steel	Jan-2014
15	Inlet condensate line	inlet valve pit to overhead pipe rack	1990	350	40	4	steel	Jan-2015
16	Divert line	inlet valve pit to condensate bullet storage tanks	1993	1	15	2	poly	Jan-2018
17	Produced water line	inlet valve pit to skimmer basin gunbarrel	1996	1500	40	6	poly	Jan-2018
18	Product skimmer recovery line	skimmer basin oil transfer pump to inlet condensate line	1996	20	40	2	steel	Jan-2011
19	Dump line	stabilizer feed tank to skimmer basin	1996	50	30	4	poly	Jan-2017
20	Injection line	fiberglass saltwater tank to pump suction header	1996	3000	10	10	steel	Jan-2013
21	Open top tank to skimmer basin gunbarrel	Open top transfer pump to skimmer basin gunbarrel	1996	50	<10	2	steel	Jan-2021
22	Cooling tower blowdown to skimmer basin	Cooling tower blowdown to skimmer basin SWD tank	1999	200	<5	2	poly	Jan-2024
23	Morrow gas separator dump line	Morrow gas separator to closed drain	1996	0	40	2	steel	Jan-2021
24	Closed drain scrubber dump line	Closed drain scrubber to skimmer basin gunbarrel	1996	5	<10	2	poly	Jan-2021
25	Inlet filter/separator dump line	Inlet filter/separator to inlet condensate line	1998	20	40	2	steel	Jan-2023
26	Inlet filter/separator closed drain connection	Inlet filter/separator to closed drain header	1998	0	40	2	steel	Jan-2023
27	Blow down collection header	Open drain collection sump area to boiler blow down bottle	1996	80	0	2	steel	Jan-2021
28	SRU Steam Condensate Return		1984	10	40	2	steel	Jan-2009
31	Horizontal H.P. Inlet Scrubber Closed Drain		1994	1	100	2	steel	Dec-2019
32	WHB Blowdown	WHB's to open drain collection sump area	1991	65	100	2	steel	Jan-2016
33	Main boiler Blowdown to Sump	main boiler to blow down collection header	1996	15	100	2	steel	Jan-2015
34	Open drain collection sump pump to skimmer basin gunbarrel	Open drain collection sump pump to skimmer basin gunbarrel	1980	80	30	4	IC steel	Jan-2005
35	Stabilizer Compressor Dump		1982	15	270	1	steel	Jan-2007
36	Inlet Condensate Divert Line to the Transfer Tank (OOS)	Inlet Condensate Divert Line to the Transfer Tank	1986	1	40	2	steel	Jan-2011
38	Line 3 & 4 Metering Separator Oil Dump Line to Inlet Condensate Line	Line 3&4 Metering Separator Oil Dump Line to Inlet Cond. Line	1996	200	30	3	steel	Jan-2018
39	Inlet Compressor Suction Scrubber (H&V) Dump Lines to Inlet Metering Separator	Inlet Comprsr.Suctn Scrubber (H&V)Dump Lines to Inlet Metering System	1989	3	150	2	steel	Jan-2014
40	Recompressor & Expander Lube Oil Makeup Line		1980	<1	5	1	steel	Jan-2005
42	Underground Amine Lines Tied to Valve "Octopus" From:							
43	little slop		1988	1	5	2	steel	Jan-2013
44	flash tank		1988	1	80	2	steel	Jan-2013
45	bag filters		1988	<1	80	2	steel	Jan-2013
46	charcoal filters		1988	<1	80	2	steel	Jan-2013
47	reflux pumps		1988	1	20	2	steel	Jan-2013
48	Amine Storage Tank 8		1988	1	5	2	steel	Jan-2013
49	Amine Storage Tank 9		1988	1	5	2	steel	Jan-2013
50	Glycol Storage Tank Discharge	Storage Tank transfer pump to glycol flash tank	1999	1	70	2	poly	Dec-2019
52	Acid Gas Compressor Suction Line	SRU to Acid Gas Compressor	1996	1MMSCF/d	6	10"	steel	Jan-2021
53	Acid Gas Compressor Sweet Purge Gas	pipe rack at Glycol Unit to Acid Gas Compressor	1996		50	2"	steel	Jan-2021
54	Acid Gas Compressor instrument air	pipe rack at Glycol Unit to Acid Gas Compressor	1996		80	2"	steel	Jan-2021

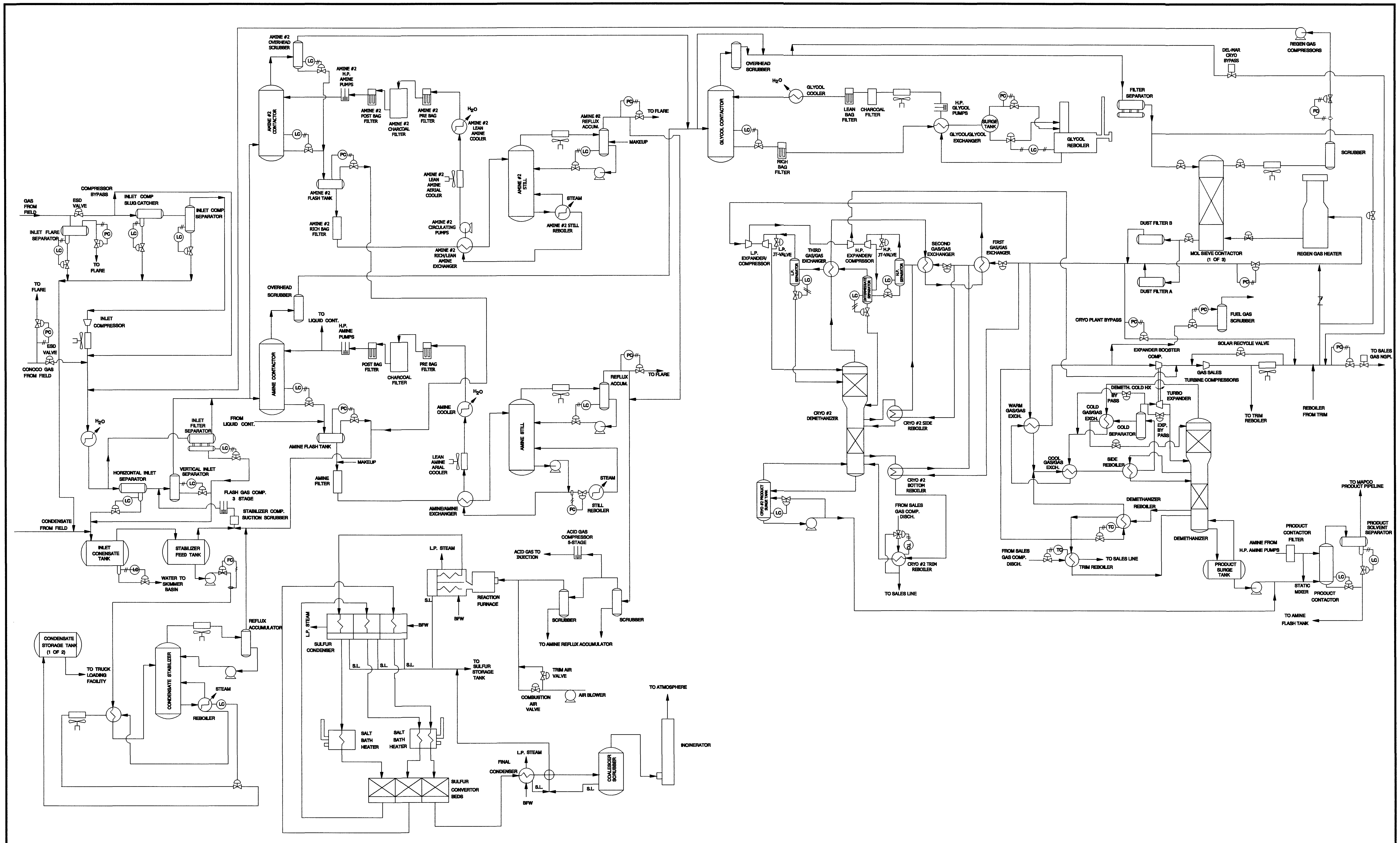
Table 6. Soil Treatment Cleanup Standards

Use of Treated Soil	Cleanup Standards (mg/kg)		
	TRPH (EPA 418.1)	total BTEX	Benzene
Reburied	100	50	10
Stormwater control dikes	1000	50	10
Secondary containment berms in the gas plant	3000	50	10
Roadspread or patching lease roads	3000	50	10
Pad dirt on production locations	3000	50	10

FIGURES

FIGURE 1


3852
3811
BASIN
INDIAN
15
14
13
Draw
Gas Well
Drill Hole
160-ACRE PROPERTY
LEE WELL
COUNTY RD 401
3816
3819
Gas Well
Gas Plant
SITE
22
23
24
MARATHON INDIAN BASIN GAS COM WELL #1
ROCKY ARROYO
Gas Well
Gas Well
MARATHON FEDERAL SWD WELL #1
3888
Gas Well
27
26
25
Draw
Gas Well
Martha
Creek
3780



DRAWING NUMBER	DESCRIPTION

REFERENCE DRAWINGS

NO.	DESCRIPTION	DATE	BY

REVISIONS

Marathon Oil Company

MID-CONTINENT REGION

FACILITY DESCRIPTION: INDIAN BASIN GAS PLANT

MOC FILENAME: P-F DIAGRAM

INDIAN BASIN GAS PLANT
PROCESS FLOW DIAGRAM

SCALE			AFE/PROJ. NO.	FIELD/FACILITY	SYSTEM	PROJECT AREA	DRAWING NO.	SHT NO	REV
NONE	DWN:	DATE		IB	000	00	0001	1/1	0
	CHKD:	DATE							
	APP:	DATE							

DRAWING NUMBER	DESCRIPTION

REFERENCE DRAWINGS

NO.	DESCRIPTION	DATE	BY
8	DRAIN SYSTEM UPDATE	2/21/00	
7	ADD PROPOSED AMINE&NGL EXTRACTION PLT	5/28/99	TLB
6	ADD RECOMPRESSOR 4 AND GENERATOR 3	2/19/99	TLB
5	ADD INLET FILTER AND DUST FILTER B	9/19/97	MET
4	ADD FIRE EXTINGUISHER LOCATION PLAN	8/4/94	CMS
3	DRAIN SYSTEM UPGRADE	8/1/94	BLO

REVISIONS

MARATHON

Marathon Oil Company

MID-CONTINENT REGION

FACILITY DESCRIPTION: INDIAN BASIN GAS PLANT

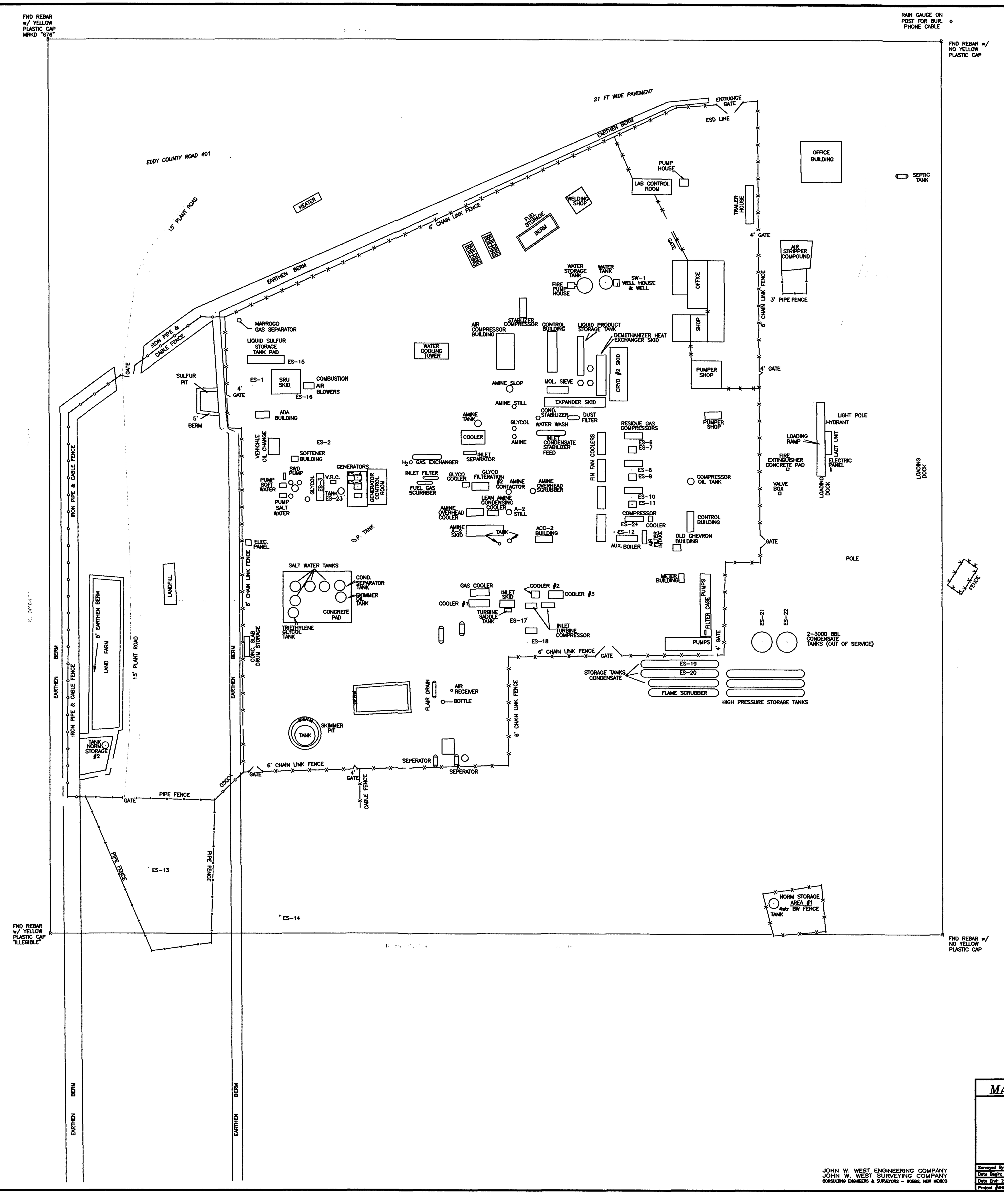
CONTRACTOR FILENAME

MOC FILENAME IBGP-4

INDAIN BASIN GAS PLANT
OPEN DRAIN SYSTEM

SCALE	DWN: DKM	DATE 3/14/92	AFE/PROJ. NO.	FIELD/FACILITY	SYSTEM	PROJECT AREA	DRAWING NO.	SHT NO	REV
AS NOTED	CHKD:	DATE		IBGP	000		IBGP-4	1	8
	APP:	DATE							

EMISSION POINT	DESCRIPTION	LATITUDE	LONGITUDE	GROUND ELEV.	HEIGHT OF STACK	UTM COORDINATES (IN METERS) NORTH	EAST
ES-1	SULFUR TAIL GAS	32°27'57.5"	104°34'18.1"	3810.7	122 FT	3,591,978.6	540,250.8
ES-2	REGENERATION GAS HEATER	32°27'57.6"	104°34'17.1"	3808.9	77 FT	3,591,951.0	540,277.1
ES-3	GLYCOL REGENERATOR	32°27'55.8"	104°34'17.1"	3808.9	30 FT	3,591,926.3	240,277.1
ES-4	GENERATOR STACK	32°27'56.9"	104°34'16.4"	3808.9	18 FT	3,591,960.6	540,295.4
ES-5	GENERATOR STACK	32°27'56.8"	104°34'16.4"	3808.9	18 FT	3,591,957.6	540,295.4
ES-6	COMPRESSOR STACK	32°27'56.6"	104°34'11.5"	3806.7	28 FT	3,591,951.6	540,423.2
ES-7	COMPRESSOR STACK	32°27'56.5"	104°34'11.5"	3806.7	28 FT	3,591,948.5	540,423.2
ES-8	COMPRESSOR STACK	32°27'56.2"	104°34'11.5"	3806.7	28 FT	3,591,939.2	540,423.3
ES-9	COMPRESSOR STACK	32°27'56.1"	104°34'11.5"	3806.7	28 FT	3,591,936.2	540,423.3
ES-10	COMPRESSOR STACK	32°27'55.9"	104°34'11.5"	3806.7	28 FT	3,591,930.0	540,423.3
ES-11	COMPRESSOR STACK	32°27'55.8"	104°34'11.5"	3806.7	28 FT	3,591,926.9	540,423.3
ES-12	AUXILIARY BOILER	32°27'55.3"	104°34'11.7"	3806.4	19 FT	3,591,911.5	540,418.2
ES-13	FLARE No. 2	32°27'50.9"	104°34'20.2"	3812.2	167 FT	3,591,775.1	540,196.8
ES-14	FLARE No. 1	32°27'50.2"	104°34'17.9"	3810.8	67 FT	3,591,753.8	540,257.0
ES-15	NORTH SRU SALT BATH HEATER STACK	32°27'57.5"	104°34'17.6"	3809.7	34 FT	3,591,978.6	540,263.9
ES-16	SOUTH SRU SALT BATH HEATER STACK	32°27'57.3"	104°34'17.6"	3809.7	34 FT	3,591,972.5	540,263.9
ES-17	INLET COMPRESSOR STACK	32°27'52.3"	104°34'13.5"	3807.0	20 FT	3,591,818.9	540,371.6
ES-18	PROPOSED INLET COMPRESSOR STACK	32°27'52.1"	104°34'13.5"	36807.0	20 FT	3,591,812.8	540,371.6
ES-19	CONDENSATE STORAGE	32°27'53.6"	104°34'10.3"	3806.0	27 FT	3,591,859.3	540,454.9
ES-20	CONDENSATE STORAGE	32°27'53.5"	104°34'10.3"	3806.0	27 FT	3,591,856.2	540,454.9
ES-21	CONDENSATE STORAGE	32°27'53.9"	104°34'09.4"	3805.3	30 FT	3,591,868.6	540,478.9
ES-22	CONDENSATE STORAGE	32°27'53.9"	104°34'09.0"	3805.3	30 FT	3,591,868.7	540,488.8
ES-23	EXHAUST STACK						
ES-24	EXHAUST STACK						



75 0 75 150 FEET
Scale: 1"=75'

JOHN W. WEST ENGINEERING COMPANY
JOHN W. WEST SURVEYING COMPANY
CONSULTING ENGINEERS & SURVEYORS – HOBBS, NEW MEXICO

MARATHON OIL COMPANY

PLOT PLAN OF THE INDIAN BASIN GAS PLANT

Surveyed By: DB	Drawn By: D.COLLINS	Last Rev.: 11/22/99	Drawing Number
Date Begin: 8/24/94	Date: 2/24/98	Disk: MARATHON	
Date End: 2/4/97	Approved By:	Sheet 1 of 1	
Project #:98-11-0103	Filename: MARA0962	Scale: 1"=50'	

APPENDIX A

LABORATORY RESULTS OF COMMINGLED DISCHARGE FLUID

Committed To *Your* Success

ANALYTICAL REPORT

JOB NUMBER: 912816

Prepared For:

Marathon Oil Company
125 West Missouri Street
P.O. Box 552
Midland, TX 79702-0552

Attention: Mr. Paul Peacock

Date: 11/16/99

Les Arnold
Signature

11/16/99
Date

Name: Les Arnold

Title: Laboratory Manager

Severn Trent Laboratories
2400 Cumberland Drive
Valparaiso, IN 46383

PHONE: 219-464-2389
FAX..: 219-462-2953

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S A M P L E   I N F O R M A T I O N
Date: 11/16/99

Job Number.: 912816
Customer...: Marathon Oil Company
Attn.......: Mr. Paul Peacock

Project Number.........: 96000651
Customer Project ID....: INDIAN BASIN GAS PLT
Project Description....: Marathon Oil Co., Midland, Tx

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
912816-1	COMINGLED GAS PLT WASTE EFFLUENT	Aqueous	11/08/1999	10:00	11/09/1999	15:25

a part of
Severn Trent Services Inc.

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LABORATORY TEST RESULTS

Job Number: 912816

Date: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: INDIAN BASIN GAS PLT ATTN: Mr. Paul Peacock

Customer Sample ID: COMINGLED GAS PLT WASTE EFFLUENT
Date Sampled......: 11/08/1999
Time Sampled......: 10:00
Sample Matrix.....: Aqueous

Laboratory Sample ID: 912816-1
Date Received.......: 11/09/1999
Time Received.......: 15:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
EPA 160.1	Solids, Total Dissolved (TDS)	21000	10	mg/L	11/10/99	lam
EPA 300.0	Chloride	6600	1000	mg/L	11/10/99	kso
EPA 300.0	Fluoride (F)	<50	50	mg/L	11/10/99	kso
EPA 300.0	Nitrogen, Nitrate as N (NO3-N)	<1.0	1.0	mg/L	11/10/99	kso
EPA 300.0	Sulfate (SO4)	1460	100	mg/L	11/10/99	kso
EPA 420.2	Phenol, Total Recoverable	0.18	0.05	mg/L	11/11/99	dmw
SM 4500 CN	Cyanide, Total	0.08	0.05	mg/L	11/15/99	jdb
EPA 3010	Acid Digestion, Metals (ICP)	Complete			11/10/99	amw
EPA 7470	Mercury (Hg)	<0.001	0.001	mg/L	11/11/99	pal
EPA 3510	Separatory Funnel Liq/Liq Extraction	Complete			11/12/99	bjl
EPA 6010B	Metals Analysis (ICAP)					
	Aluminum (Al)	<0.1	0.1	mg/L	11/11/99	pal
	Arsenic (As)	<0.02	0.02	mg/L	11/10/99	amw
	Barium (Ba)	0.06	0.01	mg/L	11/10/99	chh
	Boron (B)	1.67	0.05	mg/L	11/11/99	pal
	Cadmium (Cd)	<0.005	0.005	mg/L	11/10/99	chh
	Chromium (Cr)	0.01	0.01	mg/L	11/10/99	chh
	Cobalt (Co)	<0.03	0.03	mg/L	11/10/99	chh
	Copper (Cu)	0.02	0.01	mg/L	11/10/99	chh
	Iron (Fe)	6.83	0.05	mg/L	11/10/99	chh
	Lead (Pb)	<0.05	0.05	mg/L	11/10/99	chh
	Manganese (Mn)	0.23	0.01	mg/L	11/10/99	chh
	Molybdenum (Mo)	<0.05	0.05	mg/L	11/10/99	chh
	Nickel (Ni)	0.03	0.01	mg/L	11/10/99	chh
	Selenium (Se)	<0.02	0.02	mg/L	11/10/99	amw
	Silver (Ag)	<0.01	0.01	mg/L	11/10/99	amw
	Zinc (Zn)	0.21	0.01	mg/L	11/10/99	chh
EPA 8310	Polynuclear Aromatic Hydrocarbons-HPLC					
	Acenaphthene	ND	5.0	ug/L	11/16/99	rm
	Acenaphthylene	ND	5.0	ug/L	11/16/99	rm
	Anthracene	ND	1.0	ug/L	11/16/99	rm
	Benzo(b)fluoranthene	ND	0.10	ug/L	11/16/99	rm
	Benzo(k)fluoranthene	ND	0.10	ug/L	11/16/99	rm
	Benzo(a)anthracene	ND	0.10	ug/L	11/16/99	rm
	Benzo(a)pyrene	ND	0.10	ug/L	11/16/99	rm
	Benzo(ghi)perylene	ND	0.10	ug/L	11/16/99	rm
	Chrysene	ND	1.0	ug/L	11/16/99	rm

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LABORATORY TEST RESULTS

Job Number: 912816 Date: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: INDIAN BASIN GAS PLT ATTN: Mr. Paul Peacock

Customer Sample ID: COMINGLED GAS PLT WASTE EFFLUENT
Date Sampled......: 11/08/1999
Time Sampled......: 10:00
Sample Matrix.....: Aqueous

Laboratory Sample ID: 912816-1
Date Received.......: 11/09/1999
Time Received.......: 15:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
	Dibenzo(a,h)anthracene	ND	0.10	ug/L	11/16/99	rm
	Fluoranthene	ND	1.0	ug/L	11/16/99	rm
	Fluorene	ND	1.0	ug/L	11/16/99	rm
	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L	11/16/99	rm
	Naphthalene	<5.0	5.0	ug/L	11/16/99	rm
	Phenanthrene	ND	1.0	ug/L	11/16/99	rm
	Pyrene	ND	1.0	ug/L	11/16/99	rm
EPA 8260B	Volatile Organic Compounds					
	Vinyl chloride	ND	500	ug/L	11/15/99	weh
	1,1-Dichloroethene	ND	200	ug/L	11/15/99	weh
	Methylene chloride	ND	200	ug/L	11/15/99	weh
	Benzene	4300	200	ug/L	11/15/99	weh
	Carbon tetrachloride	ND	200	ug/L	11/15/99	weh
	Chloroform	ND	200	ug/L	11/15/99	weh
	1,2-Dibromoethane (EDB)	ND	200	ug/L	11/15/99	weh
	1,1-Dichloroethane	ND	200	ug/L	11/15/99	weh
	1,2-Dichloroethane	ND	200	ug/L	11/15/99	weh
	Ethylbenzene	700	200	ug/L	11/15/99	weh
	1,1,2,2-Tetrachloroethane	ND	200	ug/L	11/15/99	weh
	Tetrachloroethene	ND	200	ug/L	11/15/99	weh
	Toluene	13000	200	ug/L	11/15/99	weh
	1,1,1-Trichloroethane	ND	200	ug/L	11/15/99	weh
	1,1,2-Trichloroethane	ND	200	ug/L	11/15/99	weh
	Trichloroethene	ND	200	ug/L	11/15/99	weh
	Xylenes (total)	7000	500	ug/L	11/15/99	weh

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QUALITY CONTROL RESULTS

Job Number.: 912816

Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: Marathon Oil Co., Midland, Tx ATTN: Mr. Paul Peacock

Test Method........: EPA 300.0
Method Description.: Ion Chromatography Analysis
Parameter..........: Chloride
Batch.............: 49213
Units.............: mg/L
Analyst...: kso
Test Code.: CHL

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
ICV		V199269C	9.197		10		92.0	%	85-115	11/10/1999	1149
ICB			0.274							11/10/1999	1202
CCV		V199269C	9.602		10		96.0	%	85-115	11/10/1999	1253
CCB			0.277							11/10/1999	1306
CCV		V199269C	9.760		10		97.6	%	85-115	11/10/1999	1358
CCB			0.317							11/10/1999	1411
MD	912816-1		6.777.269			6.645604	2.0	R	20	11/10/1999	1436
MS	912816-1	V199269B	17.954		10.000000	6.645604	113.1	%	75-125	11/10/1999	1449
CCV		V199269C	9.837		10		98.4	%	85-115	11/10/1999	1502
CCB			0.320							11/10/1999	1515

Test Method........: SM 4500 CN
Method Description.: Cyanide
Parameter..........: Cyanide, Total
Batch.............: 49471
Units.............: mg/L
Analyst...: jdb
Test Code.: CNT

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
[illegible]			0.000461							11/15/1999	1857
ICV		V199237D	0.100252		0.1		100.3	%	85-115	11/15/1999	1857
MB			-0.000704							11/15/1999	1858
LCS		V199237C	0.081533		0.080000		101.9	%	80-120	11/15/1999	1859
MD	912698-4		0.006644			0.001112	0.005532	A	0.005000	11/15/1999	1901
MS	912698-4	V199237C	0.217930		0.200000	0.001112	108.4	%	75-125	11/15/1999	1901
CCV		V199237D	0.103436		0.1		103.4	%	85-115	11/15/1999	1906
CCB			0.000040							11/15/1999	1907
CCV		V199237D	0.098843		0.1		98.8	%	85-115	11/15/1999	1916
CCB			0.001002							11/15/1999	1917
CCV		V199237D	0.096158		0.1		96.2	%	85-115	11/15/1999	1927
CCB			0.001337							11/15/1999	1929
CCV		V199237D	0.098777		0.1		98.8	%	85-115	11/15/1999	1931
CCB			0.001160							11/15/1999	1932

Test Method........: EPA 300.0
Method Description.: Ion Chromatography Analysis
Parameter..........: Fluoride (F)
Batch.............: 49213
Units.............: mg/L
Analyst...: kso
Test Code.: FL

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
ICV		V199269C	1.063		1		106.3	%	85-115	11/10/1999	1149
ICB			0.0000							11/10/1999	1202
CCV		V199269C	1.071		1		107.1	%	85-115	11/10/1999	1253
CCB			0.000							11/10/1999	1306
MD	912816-1		0.00			0.00	0.00	A	0.50	11/10/1999	1332
MS	912816-1	V199269B	0.952		1.000000	0.00	95.2	%	75-125	11/10/1999	1345
CCV		V199269C	0.965		1		96.5	%	85-115	11/10/1999	1358
CCB			0.000							11/10/1999	1411
CCV		V199269C	0.973		1		97.3	%	85-115	11/10/1999	1502
CCB			0.000							11/10/1999	1515

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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Q U A L I T Y   C O N T R O L   R E S U L T S

Job Number.: 912816

Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company

PROJECT: Marathon Oil Co., Midland, Tx

ATTN: Mr. Paul Peacock

Test Method........: EPA 300.0
Method Description.: Ion Chromatography Analysis
Parameter..........: Nitrogen, Nitrate as N (NO3-N)
Batch.............: 49213
Units.............: mg/L
Analyst...: kso
Test Code.: NO3

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
ICV		V199269C	0.944		1		94.4	%	85-115	11/10/1999	1149
ICB			0.010							11/10/1999	1202
MD	912816-1		0.0158			0.000	0.0158	A	0.1000	11/10/1999	1228
MS	912816-1	V199269B	0.890		1.000000	0.000	89.0	%	75-125	11/10/1999	1241
CCV		V199269C	0.986		1		98.6	%	85-115	11/10/1999	1253
CCB			0.010							11/10/1999	1306
CCV		V199269C	1.007		1		100.7	%	85-115	11/10/1999	1358
CCV		V199269C	0.999		1		99.9	%	85-115	11/10/1999	1502
CCB			0.011							11/10/1999	1515

Test Method........: EPA 420.2
Method Description.: Phenolics, Total Recoverable (Auto.)
Parameter..........: Phenol, Total Recoverable
Batch.............: 49279
Units.............: mg/L
Analyst...: dmw
Test Code.: PHENTR

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
[illegible]		V199270G	0.198905		0.2000		99.5	%	85-115	11/11/1999	1451
[illegible]			-0.002587							11/11/1999	1452
LCS		V199268C	0.089323		0.100000		89.3	%	80-120	11/11/1999	1453
MB			-0.003807							11/11/1999	1453
MS	912777-2	V199268C	0.095418		0.100000	-0.005935	101.4	%	75-125	11/11/1999	1455
MD	912777-2		-0.004557			-0.005935	0.001378	A	0.005000	11/11/1999	1455
CCV		V199270G	0.198366		0.2000		99.2	%	85-115	11/11/1999	1502
CCB			-0.002379							11/11/1999	1503
CCV		V199270G	0.200532		0.2000		100.3	%	85-115	11/11/1999	1510
CCB			-0.003195							11/11/1999	1511
CCV		V199270G	0.199045		0.2000		99.5	%	85-115	11/11/1999	1514
CCB			-0.003235							11/11/1999	1514

Test Method........: EPA 160.1
Method Description.: Solids, Total Dissolved (TDS)
Parameter..........: Solids, Total Dissolved (TDS)
Batch.............: 49210
Units.............: mg/L
Analyst...: lam
Test Code.: TDS

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
MB			0.0							11/10/1999	1410
LCS		V199269D	9503.0		10000		95.0	%	80-120	11/10/1999	1420
MD	912804-1		1782.0			1774.0	0.4	R	20	11/10/1999	1450
MS	912804-1	V199269D	2326.0		500.000000	1774.0	110.4	%	75-125	11/10/1999	1500

Test Method........: EPA 300.0
Method Description.: Ion Chromatography Analysis
Parameter..........: Sulfate (SO4)
Batch.............: 49213
Units.............: mg/L
Analyst...: kso
Test Code.: SO4

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
ICV		V199269C	20.217		20		101.1	%	85-115	11/10/1999	1149
ICB			0.506							11/10/1999	1202
[illegible]		V199269C	20.660		20		103.3	%	85-115	11/10/1999	1253
			0.506							11/10/1999	1306

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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Q U A L I T Y   C O N T R O L   R E S U L T S

Job Number.: 912816   Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company   PROJECT: Marathon Oil Co., Midland, Tx   ATTN: Mr. Paul Peacock

Test Method........: EPA 300.0   Batch.............: 49213   Analyst...: kso
Method Description.: Ion Chromatography Analysis   Units.............: mg/L   Test Code.: SO4
Parameter..........: Sulfate (SO4)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
MD	912816-1		14.51647			14.61164	0.7	R	20	11/10/1999	1332
MS	912816-1	V199269B	35.568		20.000000	14.61164	104.8	%	75-125	11/10/1999	1345
CCV		V199269C	21.063		20		105.3	%	85-115	11/10/1999	1358
CCB			0.485							11/10/1999	1411
CCV		V199269C	21.054		20		105.3	%	85-115	11/10/1999	1502
CCB			0.503							11/10/1999	1515

Test Method........: EPA 6010B   Batch.............: 49281   Analyst...: pal
Method Description.: Metals Analysis (ICAP)   Units.............: mg/L   Test Code.: AL
Parameter..........: Aluminum (Al)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	0.00630		0.00					11/11/1999	1003
CAL		ICPCALSTD	2.17210		10.0					11/11/1999	1008
ICV		V211204A	2.03914		2.00		102.0	%	90-110	11/11/1999	1026
[illegible]			-0.01382							11/11/1999	1030
[illegible]		V211206A	488.59609		500.0		97.7	%	80-120	11/11/1999	1035
PB	1110-2		0.01572							11/11/1999	1046
LCS	1110-2	ICPSPK99B	1.02274		1.000		102.3	%	80-120	11/11/1999	1051
MD	912804-1		0.01623			0.04165	0.02542	A	0.10000	11/11/1999	1100
MS	912804-1	ICPSPK99B	1.16268		1.000	0.04165	112.1	%	75-125	11/11/1999	1104
ISB		V211206A	473.41082		500.0		94.7	%	80-120	11/11/1999	1132
CCV		V211204A	1.97128		2.00		98.6	%	90-110	11/11/1999	1143
CCB			-0.01565							11/11/1999	1148

Test Method........: EPA 6010B   Batch.............: 49229   Analyst...: amw
Method Description.: Metals Analysis (ICAP)   Units.............: mg/L   Test Code.: AS
Parameter..........: Arsenic (As)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
ICV		V211205B	4.11327		4.00		102.8	%	90-110	11/10/1999	2109
ICB			0.00220							11/10/1999	2115
PB	1103-3		0.00598							11/10/1999	2144
LCS	1103-3	ICPSPK99B	0.53014		0.5000		106.0	%	80-120	11/10/1999	2150
MD	912510-1		0.02004			0.03000	0.00996	A	0.02000	11/10/1999	2202
MS	912510-1	ICPSPK99B	0.58903		0.5000	0.03000	111.8	%	75-125	11/10/1999	2207
PB	1110-2		0.00174							11/10/1999	2228
LCS	1110-2	ICPSPK99B	0.51947		0.5000		103.9	%	80-120	11/10/1999	2234
CCV		V211205B	4.09142		4.00		102.3	%	90-110	11/10/1999	2240
CCB			0.00120							11/10/1999	2246
MD	912804-1		0.02857			0.03230	0.00373	A	0.02000	11/10/1999	2257
MS	912804-1	ICPSPK99B	0.51995		0.5000	0.03230	97.5	%	75-125	11/10/1999	2303
PB	1108-1		0.00689							11/10/1999	2315
LCS	1108-1	V16008711	0.50299		0.516906		97.3	%	80-120	11/10/1999	2323
MS	912685-1	V16008208	1.72295		2.000000	0.00515	85.9	%	75-125	11/10/1999	2336
MSD	912685-1	V16008208	1.78756	1.72295	2.000000	0.00515	89.1	%	75-125	11/10/1999	2342
							3.7	R	20		
[illegible]		V211205B	3.61105		4.00		90.3	%	90-110	11/11/1999	0006
[illegible]			-0.00010							11/11/1999	0012

    * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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QUALITY CONTROL RESULTS

Job Number.: 912816

Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: Marathon Oil Co., Midland, Tx ATTN: Mr. Paul Peacock

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Barium (Ba)
Batch.............: 49224
Units.............: mg/L
Analyst...: chh
Test Code.: BA

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	-0.00120		0.00					11/10/1999	1432
CAL		ICPCALSTD	0.99510		1.00					11/10/1999	1439
ICV		V211204A	2.07557		2.00		103.8	%	95-105	11/10/1999	1501
ICB			0.00050							11/10/1999	1506
ISB		V211204E	0.50175		0.50		100.3	%	80-120	11/10/1999	1510
CCV		V211204A	2.02930		2.00		101.5	%	95-105	11/10/1999	1602
CCB			0.00100							11/10/1999	1607
PB	1110-2		0.00100							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.50697		0.5000		101.4	%	80-120	11/10/1999	1634
MD	912804-1		0.45277			0.45106	0.4	R	20	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.97761		0.5000	0.45106	105.3	%	75-125	11/10/1999	1646
CCV		V211204A	2.09976		2.00		105.0	%	95-105	11/10/1999	1713
CCB			0.00130							11/10/1999	1717
PB	1108-5		0.00010							11/10/1999	1750
LCS	1108-5	ICPSPK99B	0.52072		0.5000		104.1	%	80-120	11/10/1999	1755
CCV		V211204A	2.07467		2.00		103.7	%	95-105	11/10/1999	1803
CCB			0.00010							11/10/1999	1807
[illegible]		V211204A	1.97571		2.00		98.8	%	95-105	11/10/1999	1947
[illegible]			0.00115							11/10/1999	1953
ISB		V211204E	0.48981		0.50		98.0	%	80-120	11/10/1999	1956
MD	912691-2		0.06832			0.06634	2.9	R	20	11/10/1999	2005
MS	912691-2	ICPSPK99B	0.54399		0.5000	0.06634	95.5	%	75-125	11/10/1999	2009
ISB		V211204E	0.48180		0.50		96.4	%	80-120	11/10/1999	2022
CCV		V211204A	1.96174		2.00		98.1	%	95-105	11/10/1999	2032
CCB			0.00097							11/10/1999	2036

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Boron (B)
Batch.............: 49281
Units.............: mg/L
Analyst...: pal
Test Code.: B

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	0.01799							11/11/1999	1003
CAL		ICPCALSTD	1.17519		2.00					11/11/1999	1020
ICV		V211204A	1.90770		2.00		95.4	%	90-110	11/11/1999	1026
ICB			0.00034							11/11/1999	1030
PB	1110-2		0.00674							11/11/1999	1046
LCS	1110-2	ICPSPK99B	0.48306		0.5000		96.6	%	80-120	11/11/1999	1051
MD	912804-1		0.34013			0.31991	6.1	R	20	11/11/1999	1100
MS	912804-1	ICPSPK99B	0.88627		0.5000	0.31991	113.3	%	75-125	11/11/1999	1104
CCV		V211204A	1.82682		2.00		91.3	%	90-110	11/11/1999	1143
CCB			-0.00276							11/11/1999	1148

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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QUALITY CONTROL RESULTS

Job Number.: 912816

Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: Marathon Oil Co., Midland, Tx ATTN: Mr. Paul Peacock

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Cadmium (Cd)

Batch.............: 49224
Units.............: mg/L

Analyst...: chh
Test Code.: CD

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	0.00179		0.00					11/10/1999	1432
CAL		ICPCALSTD	3.98740		3.00					11/10/1999	1443
ICV		V211204A	2.04204		2.00		102.1	%	95-105	11/10/1999	1501
ICB			-0.00090							11/10/1999	1506
ISB		V211204E	0.89071		1.00		89.1	%	80-120	11/10/1999	1510
CCV		V211204A	1.99431		2.00		99.7	%	95-105	11/10/1999	1602
CCB			0.00067							11/10/1999	1607
PB	1110-2		-0.00173							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.04821		0.05000		96.4	%	80-120	11/10/1999	1634
MD	912804-1		0.00075			-0.00233	0.00308	A	0.00500	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.04670		0.05000	-0.00233	98.1	%	75-125	11/10/1999	1646
CCV		V211204A	2.02239		2.00		101.1	%	95-105	11/10/1999	1713
CCB			0.00037							11/10/1999	1717
PB	1108-5		-0.00331							11/10/1999	1750
LCS	1108-5	ICPSPK99B	0.05024		0.05000		100.5	%	80-120	11/10/1999	1755
CCV		V211204A	2.00440		2.00		100.2	%	95-105	11/10/1999	1803
CCB			-0.00007							11/10/1999	1807
[illegible]		V211204A	2.02085		2.00		101.0	%	95-105	11/10/1999	1947
[illegible]			0.00349							11/10/1999	1953
ISB		V211204E	0.90071		1.00		90.1	%	80-120	11/10/1999	1956
MD	912691-2		-0.00065			-0.00092	0.00027	A	0.00500	11/10/1999	2005
MS	912691-2	ICPSPK99B	0.05126		0.05000	-0.00092	104.4	%	75-125	11/10/1999	2009
ISB		V211204E	0.91419		1.00		91.4	%	80-120	11/10/1999	2022
CCV		V211204A	2.07255		2.00		103.6	%	95-105	11/10/1999	2032
CCB			0.00026							11/10/1999	2036

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Chromium (Cr)

Batch.............: 49224
Units.............: mg/L

Analyst...: chh
Test Code.: CR

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	0.00069		0.00					11/10/1999	1432
CAL		ICPCALSTD	0.48109		1.0					11/10/1999	1436
ICV		V211204A	1.98753		2.00		99.4	%	95-105	11/10/1999	1501
ICB			0.00228							11/10/1999	1506
ISB		V211204E	0.44476		0.50		89.0	%	80-120	11/10/1999	1510
CCV		V211204A	1.94411		2.00		97.2	%	95-105	11/10/1999	1602
CCB			0.00061							11/10/1999	1607
PB	1110-2		-0.00291							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.19136		0.2000		95.7	%	80-120	11/10/1999	1634
MD	912804-1		-0.00145			-0.00104	0.00041	A	0.01000	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.18719		0.2000	-0.00104	94.1	%	75-125	11/10/1999	1646
CCV		V211204A	1.97649		2.00		98.8	%	95-105	11/10/1999	1713
CCB			0.00353							11/10/1999	1717
PB	1108-5		-0.00187							11/10/1999	1750
LCS	1108-5	ICPSPK99B	0.19530		0.2000		97.7	%	80-120	11/10/1999	1755
CCV		V211204A	1.94762		2.00		97.4	%	95-105	11/10/1999	1803
CCB			0.00291							11/10/1999	1807
CCV		V211204A	1.97503		2.00		98.8	%	95-105	11/10/1999	1947
[illegible]			0.00570							11/10/1999	1953
[illegible]		V211204E	0.45111		0.50		90.2	%	80-120	11/10/1999	1956

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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QUALITY CONTROL RESULTS

Job Number.: 912816 Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: Marathon Oil Co., Midland, Tx ATTN: Mr. Paul Peacock

Test Method........: EPA 6010B Batch.............: 49224 Analyst...: chh
Method Description.: Metals Analysis (ICAP) Units.............: mg/L Test Code.: CR
Parameter..........: Chromium (Cr)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
MD	912691-2		0.09901			0.09012	9.4	R	20	11/10/1999	2005
MS	912691-2	ICPSPK99B	0.28722		0.2000	0.09012	98.5	%	75-125	11/10/1999	2009
ISB		V211204E	0.44951		0.50		89.9	%	80-120	11/10/1999	2022
CCV		V211204A	1.99441		2.00		99.7	%	95-105	11/10/1999	2032
CCB			0.00889							11/10/1999	2036

Test Method........: EPA 6010B Batch.............: 49224 Analyst...: chh
Method Description.: Metals Analysis (ICAP) Units.............: mg/L Test Code.: CO
Parameter..........: Cobalt (Co)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	0.00009		0.00					11/10/1999	1432
CAL		ICPCALSTD	0.66299		1.00					11/10/1999	1439
ICV		V211204A	2.07074		2.00		103.5	%	95-105	11/10/1999	1501
ICB			-0.00150							11/10/1999	1506
[illegible]		V211204E	0.43837		0.50		87.7	%	80-120	11/10/1999	1510
[illegible]		V211204A	2.02262		2.00		101.1	%	95-105	11/10/1999	1602
CCB			0.00015							11/10/1999	1607
PB	1110-2		-0.00030							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.50339		0.5000		100.7	%	80-120	11/10/1999	1634
MD	912804-1		-0.00090			0.00045	0.00135	A	0.02000	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.49766		0.5000	0.00045	99.4	%	75-125	11/10/1999	1646
CCV		V211204A	2.05672		2.00		102.8	%	95-105	11/10/1999	1713
CCB			0.00075							11/10/1999	1717
PB	1108-5		-0.00316							11/10/1999	1750
LCS	1108-5	ICPSPK99B	0.51802		0.5000		103.6	%	80-120	11/10/1999	1755
CCV		V211204A	2.03333		2.00		101.7	%	95-105	11/10/1999	1803
CCB			-0.00075							11/10/1999	1807
CCV		V211204A	1.97970		2.00		99.0	%	95-105	11/10/1999	1947
CCB			-0.00080							11/10/1999	1953
ISB		V211204E	0.43766		0.50		87.5	%	80-120	11/10/1999	1956
MD	912691-2		0.00531			0.00211	0.00320	A	0.02000	11/10/1999	2005
MS	912691-2	ICPSPK99B	0.50418		0.5000	0.00211	100.4	%	75-125	11/10/1999	2009
ISB		V211204E	0.43685		0.50		87.4	%	80-120	11/10/1999	2022
CCV		V211204A	2.01401		2.00		100.7	%	95-105	11/10/1999	2032
CCB			-0.00241							11/10/1999	2036

Test Method........: EPA 6010B Batch.............: 49224 Analyst...: chh
Method Description.: Metals Analysis (ICAP) Units.............: mg/L Test Code.: CU
Parameter..........: Copper (Cu)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	-0.00010		0.00					11/10/1999	1432
CAL		ICPCALSTD	0.23160		1.00					11/10/1999	1439
ICV		V211204A	2.05607		2.00		102.8	%	95-105	11/10/1999	1501
ICB			0.00646							11/10/1999	1506
ISB		V211204E	0.44436		0.50		88.9	%	80-120	11/10/1999	1510
[illegible]	912648-4		0.01120			0.00861	0.00259	A	0.01000	11/10/1999	1554
[illegible]	912648-4	V16008208	0.27411		0.250000	0.00861	106.2	%	75-125	11/10/1999	1558

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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QUALITY CONTROL RESULTS

Job Number.: 912816

Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: Marathon Oil Co., Midland, Tx ATTN: Mr. Paul Peacock

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Copper (Cu)
Batch.............: 49224
Units.............: mg/L
Analyst...: chh
Test Code.: CU

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CCV		V211204A	2.01206		2.00		100.6	%	95-105	11/10/1999	1602
CCB			0.00388							11/10/1999	1607
PB	1110-2		0.00129							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.24774		0.2500		99.1	%	80-120	11/10/1999	1634
MD	912804-1		0.00086			0.00129	0.00043	A	0.01000	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.24558		0.2500	0.00129	97.7	%	75-125	11/10/1999	1646
CCV		V211204A	2.05779		2.00		102.9	%	95-105	11/10/1999	1713
CCB			0.00474							11/10/1999	1717
PB	1108-5		-0.00172							11/10/1999	1750
LCS	1108-5	ICPSPK99B	0.25292		0.2500		101.2	%	80-120	11/10/1999	1755
CCV		V211204A	2.03578		2.00		101.8	%	95-105	11/10/1999	1803
CCB			-0.00000							11/10/1999	1807
CCV		V211204A	1.98334		2.00		99.2	%	95-105	11/10/1999	1947
CCB			0.00040							11/10/1999	1953
ISB		V211204E	0.45043		0.50		90.1	%	80-120	11/10/1999	1956
MD	912691-2		0.06876			0.05000	0.01876	A	0.01000	11/10/1999	2005
MS	912691-2	ICPSPK99B	0.29549		0.2500	0.05000	98.2	%	75-125	11/10/1999	2009
[illegible]		V211204E	0.44395		0.50		88.8	%	80-120	11/10/1999	2022
[illegible]		V211204A	1.97769		2.00		98.9	%	95-105	11/10/1999	2032
CCB			-0.00000							11/10/1999	2036

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Iron (Fe)
Batch.............: 49224
Units.............: mg/L
Analyst...: chh
Test Code.: FE

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	0.00960		0.00					11/10/1999	1432
CAL		ICPCALSTD	83.38069		100.00					11/10/1999	1439
ICV		V211204A	2.06757		2.00		103.4	%	95-105	11/10/1999	1501
ICB			-0.00263							11/10/1999	1506
ISB		V211204E	184.46746		200.0		92.2	%	80-120	11/10/1999	1510
CCV		V211204A	2.03659		2.00		101.8	%	95-105	11/10/1999	1602
CCB			0.00647							11/10/1999	1607
PB	1110-2		0.01391							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.50448		0.5000		100.9	%	80-120	11/10/1999	1634
MD	912804-1		0.03982			0.01907	0.02075	A	0.05000	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.52440		0.5000	0.01907	101.1	%	75-125	11/10/1999	1646
CCV		V211204A	2.07416		2.00		103.7	%	95-105	11/10/1999	1713
CCB			0.00035							11/10/1999	1717
PB	1108-5		0.00000							11/10/1999	1750
LCS	1108-5	ICPSPK99B	0.53003		0.5000		106.0	%	80-120	11/10/1999	1755
CCV		V211204A	2.05836		2.00		102.9	%	95-105	11/10/1999	1803
CCB			-0.00120							11/10/1999	1807
CCV		V211204A	1.98853		2.00		99.4	%	95-105	11/10/1999	1947
CCB			0.01584							11/10/1999	1953
ISB		V211204E	180.25849		200.0		90.1	%	80-120	11/10/1999	1956
MD	912691-2		0.41103			0.35765	13.9	R	20	11/10/1999	2005
MS	912691-2	ICPSPK99B	0.85928		0.5000	0.35765	100.3	%	75-125	11/10/1999	2009
ISB		V211204E	179.55508		200.0		89.8	%	80-120	11/10/1999	2022
[illegible]		V211204A	2.01156		2.00		100.6	%	95-105	11/10/1999	2032
[illegible]			0.01956							11/10/1999	2036

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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QUALITY CONTROL RESULTS

Job Number.: 912816

Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company   PROJECT: Marathon Oil Co., Midland, Tx   ATTN: Mr. Paul Peacock

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Lead (Pb)
Batch.............: 49224
Units.............: mg/L
Analyst...: chh
Test Code.: PB

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	-0.02160		0.00					11/10/1999	1432
CAL		ICPCALSTD	5.03679		10.0					11/10/1999	1443
ICV		V211204A	2.08801		2.00		104.4	%	95-105	11/10/1999	1501
ICB			0.04962							11/10/1999	1506
ISB		V211204E	1.06901		1.00		106.9	%	80-120	11/10/1999	1510
CCV		V211204A	2.01665		2.00		100.8	%	95-105	11/10/1999	1602
CCB			0.02570							11/10/1999	1607
PB	1110-2		0.04796							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.51828		0.5000		103.7	%	80-120	11/10/1999	1634
MD	912804-1		0.02968			0.00260	0.02708	A	0.05000	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.49773		0.5000	0.00260	99.0	%	75-125	11/10/1999	1646
CCV		V211204A	1.98915		2.00		99.5	%	95-105	11/10/1999	1713
CCB			0.05239							11/10/1999	1717
PB	1108-5		0.03366							11/10/1999	1750
LCS	1108-5	ICPSPK99B	0.53097		0.5000		106.2	%	80-120	11/10/1999	1755
CCV		V211204A	2.01825		2.00		100.9	%	95-105	11/10/1999	1803
CCB			0.06504							11/10/1999	1807
[illegible]		V211204A	2.02497		2.00		101.2	%	95-105	11/10/1999	1947
[illegible]			0.01537							11/10/1999	1953
ISB		V211204E	0.95396		1.00		95.4	%	80-120	11/10/1999	1956
MD	912691-2		-0.00452			0.04172	0.04624	A	0.05000	11/10/1999	2005
MS	912691-2	ICPSPK99B	0.50937		0.5000	0.04172	93.5	%	75-125	11/10/1999	2009
ISB		V211204E	0.94240		1.00		94.2	%	80-120	11/10/1999	2022
CCV		V211204A	2.03451		2.00		101.7	%	95-105	11/10/1999	2032
CCB			-0.01311							11/10/1999	2036

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Manganese (Mn)
Batch.............: 49224
Units.............: mg/L
Analyst...: chh
Test Code.: MN

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	0.01740		0.00					11/10/1999	1432
CAL		ICPCALSTD	0.92269		2.00					11/10/1999	1443
ICV		V211204A	2.03519		2.00		101.8	%	95-105	11/10/1999	1501
ICB			-0.00132							11/10/1999	1506
ISB		V211204E	0.44561		0.50		89.1	%	80-120	11/10/1999	1510
CCV		V211204A	1.99253		2.00		99.6	%	95-105	11/10/1999	1602
CCB			0.00044							11/10/1999	1607
PB	1110-2		-0.00088							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.48168		0.5000		96.3	%	80-120	11/10/1999	1634
MD	912804-1		-0.00131			-0.00153	0.00022	A	0.01000	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.47856		0.5000	-0.00153	96.0	%	75-125	11/10/1999	1646
CCV		V211204A	2.04535		2.00		102.3	%	95-105	11/10/1999	1713
CCB			-0.00220							11/10/1999	1717
PB	1108-5		-0.00287							11/10/1999	1750
LCS	1108-5	ICPSPK99B	0.49507		0.5000		99.0	%	80-120	11/10/1999	1755
CCV		V211204A	2.03253		2.00		101.6	%	95-105	11/10/1999	1803
CCB			-0.00309							11/10/1999	1807
CCV		V211204A	2.01995		2.00		101.0	%	95-105	11/10/1999	1947
[illegible]			0.00137							11/10/1999	1953
[illegible]		V211204E	0.45609		0.50		91.2	%	80-120	11/10/1999	1956

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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Job Number.: 912816 | Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company | PROJECT: Marathon Oil Co., Midland, Tx | ATTN: Mr. Paul Peacock

Test Method........: EPA 6010B | Batch.............: 49224 | Analyst...: chh
Method Description.: Metals Analysis (ICAP) | Units.............: mg/L | Test Code.: MN
Parameter..........: Manganese (Mn)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
MD	912691-2		0.00869			0.00598	0.00271	A	0.01000	11/10/1999	2005
MS	912691-2	ICPSPK99B	0.50038		0.5000	0.00598	98.9	%	75-125	11/10/1999	2009
ISB		V211204E	0.45571		0.50		91.1	%	80-120	11/10/1999	2022
CCV		V211204A	2.04127		2.00		102.1	%	95-105	11/10/1999	2032
CCB			0.00206							11/10/1999	2036

Test Method........: EPA 7470 | Batch.............: 49327 | Analyst...: pal
Method Description.: Mercury, Total | Units.............: mg/L | Test Code.: HG
Parameter..........: Mercury (Hg)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		HGCALBLK	26277		0.000					11/11/1999	1520
CAL		V211205C	33050		0.000050					11/11/1999	1523
CAL		V211205C	48244		0.000200					11/11/1999	1526
CAL		V211205C	131319		0.001000					11/11/1999	1529
[illegible]		V211205C	602098		0.005000					11/11/1999	1532
[illegible]		V211205C	1094966		0.010000					11/11/1999	1535
ICV		V211205D	0.00547		0.005000		109.4	%	90-110	11/11/1999	1538
ICB			-0.000003							11/11/1999	1541
PB			-0.000131							11/11/1999	1544
LCS		V211205D	0.00543		0.005000		108.6	%	80-120	11/11/1999	1547
MD	912809-2		-0.000142			-0.000167	0.000025	A	0.001000	11/11/1999	1552
MS	912809-2	V211205D	0.00501		0.005000	-0.000167	103.5	%	75-125	11/11/1999	1555
CCV		V211205C	0.00471		0.005000		94.2	%	90-110	11/11/1999	1613
CCB			-0.000008							11/11/1999	1616
CCV		V211205C	0.00490		0.005000		98.0	%	90-110	11/11/1999	1649
CCB			-0.000013							11/11/1999	1652
CCV		V211205C	0.00467		0.005000		93.4	%	90-110	11/11/1999	1724
CCB			-0.000032							11/11/1999	1727

Test Method........: EPA 6010B | Batch.............: 49224 | Analyst...: chh
Method Description.: Metals Analysis (ICAP) | Units.............: mg/L | Test Code.: MO
Parameter..........: Molybdenum (Mo)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	0.00130							11/10/1999	1432
CAL		ICPCALSTD	0.20409		2.00					11/10/1999	1453
ICV		V211204A	2.10563		2.00		105.3	%	95-105	11/10/1999	1501
ICB			0.04635							11/10/1999	1506
CCV		V211204A	1.96660		2.00		98.3	%	95-105	11/10/1999	1602
CCB			0.07593							11/10/1999	1607
PB	1110-2		0.00098							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.48404		0.5000		96.8	%	80-120	11/10/1999	1634
MD	912804-1		0.02957			0.05818	0.02861	A	0.10000	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.53729		0.5000	0.05818	95.8	%	75-125	11/10/1999	1646
CCV		V211204A	2.01293		2.00		100.6	%	95-105	11/10/1999	1713
CCB			0.06804							11/10/1999	1717
[illegible]		V211204A	2.02379		2.00		101.2	%	95-105	11/10/1999	1803
[illegible]			0.04832							11/10/1999	1807

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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QUALITY CONTROL RESULTS

Job Number.: 912816 Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: Marathon Oil Co., Midland, Tx ATTN: Mr. Paul Peacock

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Nickel (Ni)
Batch.............: 49224
Units.............: mg/L
Analyst...: chh
Test Code.: NI

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	-0.00160		0.00					11/10/1999	1432
CAL		ICPCALSTD	0.64550		1.0					11/10/1999	1436
ICV		V211204A	2.03516		2.00		101.8	%	95-105	11/10/1999	1501
ICB			-0.00030							11/10/1999	1506
ISB		V211204E	0.83814		1.00		83.8	%	80-120	11/10/1999	1510
CCV		V211204A	1.97738		2.00		98.9	%	95-105	11/10/1999	1602
CCB			0.00139							11/10/1999	1607
PB	1110-2		-0.00448							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.47202		0.500		94.4	%	80-120	11/10/1999	1634
MD	912804-1		-0.00139			-0.00680	0.00541	A	0.01000	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.45625		0.500	-0.00680	92.6	%	75-125	11/10/1999	1646
CCV		V211204A	2.01105		2.00		100.6	%	95-105	11/10/1999	1713
CCB			0.00324							11/10/1999	1717
PB	1108-5		-0.00231							11/10/1999	1750
LCS	1108-5	ICPSPK99B	0.47619		0.500		95.2	%	80-120	11/10/1999	1755
CCV		V211204A	1.99174		2.00		99.6	%	95-105	11/10/1999	1803
CCB			0.00834							11/10/1999	1807
[illegible]		V211204A	1.98981		2.00		99.5	%	95-105	11/10/1999	1947
[illegible]			0.00189							11/10/1999	1953
ISB		V211204E	0.86134		1.00		86.1	%	80-120	11/10/1999	1956
MD	912691-2		0.05968			0.05142	14.9	R	20	11/10/1999	2005
MS	912691-2	ICPSPK99B	0.53017		0.500	0.05142	95.8	%	75-125	11/10/1999	2009
ISB		V211204E	0.86280		1.00		86.3	%	80-120	11/10/1999	2022
CCV		V211204A	2.02778		2.00		101.4	%	95-105	11/10/1999	2032
CCB			0.00206							11/10/1999	2036

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Selenium (Se)
Batch.............: 49229
Units.............: mg/L
Analyst...: amw
Test Code.: SE

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
ICV		V211205B	4.13607		4.00		103.4	%	90-110	11/10/1999	2109
ICB			0.00716							11/10/1999	2115
PB	1103-3		-0.00774							11/10/1999	2144
LCS	1103-3	ICPSPK99B	0.52583		0.5000		105.2	%	80-120	11/10/1999	2150
MD	912510-1		0.04239			0.05221	0.00982	A	0.02000	11/10/1999	2202
MS	912510-1	ICPSPK99B	0.60952		0.5000	0.05221	111.5	%	75-125	11/10/1999	2207
PB	1110-2		0.00754							11/10/1999	2228
LCS	1110-2	ICPSPK99B	0.51176		0.5000		102.4	%	80-120	11/10/1999	2234
CCV		V211205B	4.11920		4.00		103.0	%	90-110	11/10/1999	2240
CCB			-0.00049							11/10/1999	2246
MD	912804-1		0.06091			0.06711	0.00620	A	0.02000	11/10/1999	2257
MS	912804-1	ICPSPK99B	0.53834		0.5000	0.06711	94.2	%	75-125	11/10/1999	2303
PB	1108-1		-0.00048							11/10/1999	2315
LCS	1108-1	V16008711	1.26703		1.389429		91.2	%	80-120	11/10/1999	2323
MS	912685-1	V16008208	1.66516		2.000000	-0.00141	83.3	%	75-125	11/10/1999	2336
MSD	912685-1	V16008208	1.73536	1.66516	2.000000	-0.00141	86.8	%	75-125	11/10/1999	2342
							4.1	R	20		
CCV		V211205B	3.61532		4.00		90.4	%	90-110	11/11/1999	0006
[illegible]			0.00502							11/11/1999	0012

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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Job Number.: 912816

Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: Marathon Oil Co., Midland, Tx ATTN: Mr. Paul Peacock

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Silver (Ag)
Batch.............: 49229
Units.............: mg/L
Analyst...: amw
Test Code.: AG

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
ISB		V21122A	1.01911		1.00		101.9	%	80-120	11/10/1999	2059
ICV		V211205B	0.82532		0.80		103.2	%	90-110	11/10/1999	2109
ICB			0.00639							11/10/1999	2115
PB	1103-3		0.00602							11/10/1999	2144
LCS	1103-3	ICPSPK99B	0.21922		0.2000		109.6	%	80-120	11/10/1999	2150
MD	912510-1		-0.00134			0.00301	0.00435	A	0.01000	11/10/1999	2202
MS	912510-1	ICPSPK99B	0.23286		0.2000	0.00301	114.9	%	75-125	11/10/1999	2207
PB	1110-2		0.00387							11/10/1999	2228
LCS	1110-2	ICPSPK99B	0.20008		0.2000		100.0	%	80-120	11/10/1999	2234
CCV		V211205B	0.81442		0.80		101.8	%	90-110	11/10/1999	2240
CCB			0.00538							11/10/1999	2246
MD	912804-1		-0.00299			0.00267	0.00566	A	0.01000	11/10/1999	2257
MS	912804-1	ICPSPK99B	0.18444		0.2000	0.00267	90.9	%	75-125	11/10/1999	2303
PB	1108-1		0.00394							11/10/1999	2315
LCS	1108-1	V16008711	0.98418		1.039642		94.7	%	80-120	11/10/1999	2323
MS	912685-1	V16008208	0.42520		0.400000	0.09302	83.0	%	75-125	11/10/1999	2336
MSD	912685-1	V16008208	0.44731	0.42520	0.400000	0.09302	88.6	%	75-125	11/10/1999	2342
							5.1	R	20		
[illegible]		V21122A	0.92430		1.00		92.4	%	80-120	11/10/1999	2356
CCV		V211205B	0.72690		0.80		90.9	%	90-110	11/11/1999	0006
CCB			0.00329							11/11/1999	0012

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Zinc (Zn)
Batch.............: 49224
Units.............: mg/L
Analyst...: chh
Test Code.: ZN

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CAL		ICPCALBLK	0.00100		0.00					11/10/1999	1432
CAL		ICPCALSTD	0.74320		3.00					11/10/1999	1443
ICV		V211204A	2.05861		2.00		102.9	%	95-105	11/10/1999	1501
ICB			0.00000							11/10/1999	1506
ISB		V211204E	0.94520		1.00		94.5	%	80-120	11/10/1999	1510
CCV		V211204A	2.01376		2.00		100.7	%	95-105	11/10/1999	1602
CCB			-0.00241							11/10/1999	1607
PB	1110-2		-0.00399							11/10/1999	1629
LCS	1110-2	ICPSPK99B	0.49158		0.5000		98.3	%	80-120	11/10/1999	1634
MD	912804-1		0.02308			0.01626	0.00682	A	0.01000	11/10/1999	1642
MS	912804-1	ICPSPK99B	0.51147		0.5000	0.01626	99.0	%	75-125	11/10/1999	1646
CCV		V211204A	2.06765		2.00		103.4	%	95-105	11/10/1999	1713
CCB			-0.00283							11/10/1999	1717
PB	1108-5		-0.00442							11/10/1999	1750
LCS	1108-5	ICPSPK99B	0.49473		0.5000		98.9	%	80-120	11/10/1999	1755
CCV		V211204A	2.04205		2.00		102.1	%	95-105	11/10/1999	1803
CCB			-0.00407							11/10/1999	1807
CCV		V211204A	2.04812		2.00		102.4	%	95-105	11/10/1999	1947
CCB			-0.00179							11/10/1999	1953
ISB		V211204E	0.95902		1.00		95.9	%	80-120	11/10/1999	1956
MD	912691-2		0.42511			0.40387	5.1	R	20	11/10/1999	2005
MS	912691-2	ICPSPK99B	0.92205		0.5000	0.40387	103.6	%	75-125	11/10/1999	2009
[illegible]		V211204E	0.96117		1.00		96.1	%	80-120	11/10/1999	2022
[illegible]		V211204A	2.06797		2.00		103.4	%	95-105	11/10/1999	2032

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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Job Number.: 912816

Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: Marathon Oil Co., Midland, Tx ATTN: Mr. Paul Peacock

Test Method........: EPA 6010B
Method Description.: Metals Analysis (ICAP)
Parameter..........: Zinc (Zn)

Batch.............: 49224
Units.............: mg/L

Analyst...: chh
Test Code.: ZN

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
CCB			-0.00401							11/10/1999	2036

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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QUALITY CONTROL RESULTS

Job Number.: 912816 Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: Marathon Oil Co., Midland, Tx ATTN: Mr. Paul Peacock

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method........: EPA 8310
Method Description.: Polynuclear Aromatic Hydrocarbons-HPLC
Batch.............: 49504
Units.............: ug/L
Analyst...: rm

MB	Method Blank				11/16/1999	0111

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Acenaphthene	ND						
Acenaphthylene	ND						
Anthracene	ND						
Benzo(b)fluoranthene	ND						
Benzo(k)fluoranthene	ND						
Benzo(a)anthracene	ND						
Benzo(a)pyrene	ND						
Benzo(ghi)perylene	ND						
Chrysene	ND						
Dibenzo(a,h)anthracene	ND						
Fluoranthene	ND						
Fluorene	ND						
Indeno(1,2,3-cd)pyrene	ND						
Naphthalene	ND						
Phenanthrene	ND						
Pyrene	ND						

LCS	Laboratory Control Sample	V173725B			11/16/1999	0154

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Acenaphthene	651.7		1000.000000		65.2	%	10-92
Acenaphthylene	735.6		1000.000000		73.6	%	11-127
Anthracene	632.7		1002.000000		63.1	%	13-110
Benzo(b)fluoranthene	348.2		500.000000		69.6	%	57-102
Benzo(k)fluoranthene	360.5		500.000000		72.1	%	59-107
Benzo(a)anthracene	346.8		500.000000		69.4	%	61-109
Benzo(a)pyrene	328.3		500.000000		65.7	%	42-131
Benzo(ghi)perylene	427.2		500.000000		85.4	%	55-119
Chrysene	364.7		500.000000		72.9	%	59-103
Dibenzo(a,h)anthracene	323.0		500.000000		64.6	%	63-108
Fluoranthene	350.5		500.000000		70.1	%	40-122
Fluorene	735.3		1000.000000		73.5	%	20-95
Indeno(1,2,3-cd)pyrene	358.8		500.000000		71.8	%	57-104
Naphthalene	483.3		1000.000000		48.3	%	10-82
Phenanthrene	380.7		502.500000		75.8	%	37-102
Pyrene	382.8		500.000000		76.6	%	59-111

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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Q U A L I T Y   C O N T R O L   R E S U L T S

Job Number.: 912816

Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company	PROJECT: Marathon Oil Co., Midland, Tx	ATTN: Mr. Paul Peacock

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date Time

Test Method........: EPA 8260B
Method Description.: Volatile Organic Compounds
Batch.............: 49489
Units.............: ug/L
Analyst...: weh

MB	Method Blank				11/15/1999 1439

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
Vinyl chloride	ND						
1,1-Dichloroethene	ND						
Methylene chloride	ND						
Benzene	ND						
Carbon tetrachloride	ND						
Chloroform	ND						
1,2-Dibromoethane (EDB)	ND						
1,1-Dichloroethane	ND						
1,2-Dichloroethane	ND						
Ethylbenzene	ND						
1,1,2,2-Tetrachloroethane	ND						
Tetrachloroethene	ND						
Toluene	ND						
1,1,1-Trichloroethane	ND						
1,1,2-Trichloroethane	ND						
Trichloroethene	ND						
Xylenes (total)	ND						

LCS	Laboratory Control Sample	CLPVOAMS2			11/15/1999 1510

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
1,1-Dichloroethene	50.90		50		101.8	%	51-141
Benzene	50.28		50		100.6	%	67-130
Toluene	50.26		50		100.5	%	75-114
Trichloroethene	49.80		50		99.6	%	72-114

MS	Matrix Spike	CLPVOAMS2	913032-1		11/15/1999 1611

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
1,1-Dichloroethene	50.80		50	ND	101.6	%	51-141
Benzene	50.91		50	1.12	99.6	%	67-130
Toluene	50.52		50	ND	101.0	%	75-114
Trichloroethene	49.66		50	ND	99.3	%	72-114

MSD	Matrix Spike Duplicate	CLPVOAMS2	913032-1		11/15/1999 1642

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits
1,1-Dichloroethene	51.40	50.80	50	ND	102.8	%	51-141
					1.2	R	30
Benzene	50.41	50.91	50	1.12	98.6	%	67-130
					1.0	R	30
Toluene	50.59	50.52	50	ND	101.2	%	75-114
					0.1	R	30
Trichloroethene	48.32	49.66	50	ND	96.6	%	72-114
					2.7	R	30

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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SURROGATE RECOVERIES REPORT

Job Number.: 912816 — Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company — PROJECT: Marathon Oil Co., Midland, Tx — ATTN: Mr. Paul Peacock

Method...........: Volatile Organic Compounds
Method Code.......: 826TCL
Batch.............: 49489
Analyst...........: weh

Surrogate	Units
1,2-Dichloroethane-d4 (surrogate)	ug/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
		MB		51.26	50.00	102.5	76-120		11/15/1999	1439
		LCS		50.76	50.00	101.5	76-120		11/15/1999	1510
913032-1				51.66	50.00	103.3	76-120		11/15/1999	1540
913032-1		MS		50.97	50.00	101.9	76-120		11/15/1999	1611
913032-1		MSD		50.92	50.00	101.8	76-120		11/15/1999	1642
913032-3				50.89	50.00	101.8	76-120		11/15/1999	1712
913032-2				51.00	50.00	102.0	76-120		11/15/1999	1743
912816-1			50	47.02	50.00	94.0	76-120		11/15/1999	2036
912767-15				52.17	50.00	104.3	76-120		11/15/1999	2107
912767-16				51.00	50.00	102.0	76-120		11/15/1999	2137

[illegible]rogate	Units
BFB (Surrogate)	ug/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
		MB		51.80	50.00	103.6	85-115		11/15/1999	1439
		LCS		51.23	50.00	102.5	85-115		11/15/1999	1510
913032-1				52.45	50.00	104.9	85-115		11/15/1999	1540
913032-1		MS		53.36	50.00	106.7	85-115		11/15/1999	1611
913032-1		MSD		52.32	50.00	104.6	85-115		11/15/1999	1642
913032-3				52.36	50.00	104.7	85-115		11/15/1999	1712
913032-2				52.46	50.00	104.9	85-115		11/15/1999	1743
912816-1			50	48.12	50.00	96.2	85-115		11/15/1999	2036
912767-15				50.96	50.00	101.9	85-115		11/15/1999	2107
912767-16				50.19	50.00	100.4	85-115		11/15/1999	2137

Surrogate	Units
Toluene-d8	ug/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
		MB		50.11	50.00	100.2	85-112		11/15/1999	1439
		LCS		49.94	50.00	99.9	85-112		11/15/1999	1510
913032-1				49.91	50.00	99.8	85-112		11/15/1999	1540
913032-1		MS		50.52	50.00	101.0	85-112		11/15/1999	1611
913032-1		MSD		51.24	50.00	102.5	85-112		11/15/1999	1642
913032-3				51.57	50.00	103.1	85-112		11/15/1999	1712
913032-2				50.89	50.00	101.8	85-112		11/15/1999	1743
912816-1			50	50.44	50.00	100.9	85-112		11/15/1999	2036
[illegible]767-15				51.31	50.00	102.6	85-112		11/15/1999	2107
[illegible]767-16				54.32	50.00	108.6	85-112		11/15/1999	2137

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SURROGATE RECOVERIES REPORT

Job Number.: 912816

Report Date.: 11/16/99

CUSTOMER: Marathon Oil Company PROJECT: Marathon Oil Co., Midland, Tx ATTN: Mr. Paul Peacock

Method............: Polynuclear Aromatic Hydrocarbons-HPLC
Method Code.......: 8310

Batch.............: 49504
Analyst...........: rm

Surrogate	Units
1-Fluoronaphthalene	ug/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
		MB		371.7	1000	37.2	10-74		11/16/1999	0111
		LCS		555.3	1000	55.5	10-74		11/16/1999	0154
912816-1				720.4	1000	72.0	10-74		11/16/1999	0236

Surrogate	Units
Terphenyl-d14	ug/L

Lab ID	Matrix	QC Type	Dilution	Result	True Value	Percent Recovery	Limits	Flag	Date	Time
		MB		749.9	1000	75.0	56-122		11/16/1999	0111
		LCS		936.4	1000	93.6	56-122		11/16/1999	0154
912816-1				776.2	1000	77.6	56-122		11/16/1999	0236

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QUALITY ASSURANCE FOOTER

METHOD REFERENCES

1. EPA SW-846, Test Methods for Evaluating Solid Waste Update I, IIA, IIB, III
2. Standard Methods for the Examination of Water and Wastewater, 18th Edition
3. EPA 600/4-79-020, Methods of Chemical Analysis for Waters and Wastes, March 1983
4. Federal Register, Friday, October 26, 1984 (40 CFR Part 136)
5. American Society for Testing and Materials, Volumes 5.01, 5.02, 5.03, 11.01,11.02,11.03,11.04
6. EPA Methods for Environmental Samples

COMMENTS

All methods of chemical analysis have a statistical uncertainty associated with the results. Unless otherwise indicated, the data in this report are within the limits of uncertainty as specified in the referenced method. Quality Control acceptance criteria are based either on actual laboratory performance or on limits specified in the referenced method. The date and time of analysis indicated on the QA report may not reflect the actual time of analysis for QC samples. All data are reported on an "as received" basis unless otherwise indicated. Data reported in the QA report may be lower than sample data due to dilution of samples into the calibration range of the analysis. Sample concentration for solid samples are calculated on an as received (wet) basis. Unless otherwise indicated, volatiles by gas chromatography (GC) are reported from a single column. Volatile analysis by GC on low level soil extractions are conducted at room temperature.

FLAGS, FOOTNOTES AND ABBREVIATIONS (as needed)

NA	=	Not Analyzed	ND	=	Not detected at a value greater than the reporting limit
N/A	=	Not applicable	NC	=	Not calculable due to values lower than the reporting limit
ug/L	=	Micrograms per liter	mg/L	=	Milligrams per liter
ug/Kg	=	Micrograms per kilogram	mg/kg	=	Milligrams per kilogram
U	=	Undetected			
J	=	Indicates value is > MDL, but < Reporting Limit			
B	=	Analyte was detected in the method blank analyzed with this sample.			
D	=	Surrogate recoveries are not calculated due to sample dilution.			
X	=	Surrogate recovery is outside quality control limits.			
Y	=	*Spike or spike duplicate recovery is outside quality control limits.*			
Z	=	Relative percent difference for a spike and spike duplicate is outside quality control limits. The precision of the method was impacted by matrix.			
^	=	Indicates value is above QC acceptance criteria.			

QC SAMPLE IDENTIFICATIONS

MB	=	Method Blank	SB	=	Storage Blank
RB	=	Reagent Blank	EB	=	Extraction Blank
PB	=	Preparation Blank	CALB	=	Calibration Blank
MD	=	Method Duplicate	RS	=	Reference Standard
LCS	=	Laboratory Control Sample	LCSD	=	Laboratory Control Sample Duplicate
MS	=	Matrix Spike	MSD	=	Matrix Spike Duplicate
ICB	=	Initial Calibration Blank	CCB	=	Continuing Calibration Blank
ICV	=	Initial Calibration Verification	ICB	=	Initial Calibration Blank
PDS	=	Post Digestion Spike	SS	=	Surrogate Spike
ISA	=	Interference Check standard "A"	ISB	=	Interference Check Standard "B"
ISCAB	=	Interference Check Sample AB	MSA	=	Method of Standard Additions
CAL	=	Calibration standard	SD	=	Serial Dilution
MST	=	TCLP Matrix Spike	MSQ	=	TCLP Matrix Spike Duplicate
PST	=	TCLP Post Digestion Spike	LCT	=	TCLP Laboratory Control Sample

kl Job Sample Receipt Checklist Report V2
11/09/99

Job Number.....: 912816 Location.: 57211 Customer Job ID.....: Job Check List Date.: 11/09/99
Project Number.: 96000746 Project Description.: INDIAN BASIN REMEDIATION STRIPPER Project Manager.....: lpa
Customer.......: Marathon Oil Company Contact.: Mr. Paul Peacock

Questions ?	(Y/N)	Comments
Chain-of-Custody Present?.........................	Y	
Custody seal on shipping container?...............	Y	
...If "yes", custody seal intact?.................	Y	
Custody seals on sample containers?...............		
...If "yes", custody seal intact?.................		
Samples chilled?..................................	Y	
Temperature of cooler acceptable? (4 deg C +/- 2).		RECEIVED ON ICE
Samples received intact (good condition)?.........	Y	
Volatile samples acceptable? (no headspace).......	Y	
Correct containers used?..........................	Y	
Adequate sample volume provided?..................	Y	
Samples preserved correctly?......................	Y	
Samples received within holding-time?.............	Y	
Agreement between COC and sample labels?..........	Y	
Additional..		
Comments..		
Sample Custodian Signature........................		

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Severn Trent Laboratories

CHAIN OF CUSTODY RECORD

No. 57211-10411

Customer Information	
PO	
WO	
COMPANY	Marathon Oil Company
SEND REPORT TO	Mr. Paul Peacock
ADDRESS	Midland, Tx
	Bottles to: Mr. Jack Brown
CITY/STATE/ZIP	Lakewood, New Mexico
PHONE	
FAX	

Project Information			
PROJECT NAME	INDIAN BASIN GAS PLT		
LAB NUMBER	912816	BOTTLE ORDER	96000813
BILL TO	Marathon Oil Company		
INVOICE ATTN	Mr. Paul Peacock		
ADDRESS	125 West Missouri Street		
	P.O. Box 552		
CITY/STATE/ZIP	Midland, TX 79702-0552		
PHONE	915-687-8312		
FAX	915-687-8305		

	Analysis/Method
A	6010
B	4500CN
C	7470
D	420.2
E	300.0
F	160.1
G	8310
H	8260V1
I	
J	
K	
L	
M	
N	
O	
P	
Q	
R	
S	

20 NMAC 6.2 TABLE 3103
STL PROJECT ID 96000651-group 4

SAMP NO.	SAMPLE DESCRIPTION	PRESERV.	F	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	#CONTAINR	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	COMINGLED GAS PLT WASTE EFF	HNO_3	N	AQ	11/8/99	1000 2	1-1l Plas.	X		X																
		NaOH				2	1-1l Plas		X																	
		H_2SO_4				2	1-1l Glass				X															
		NONE				2	1-1l Plas					X	X													
		NONE				6	3-1l Glass							X												
		HCl				8	4-40ml VOA								X											

Sampler:	Shipment Method:	Airbill No.:	Required TurnAround:

1. Relinquished By: J Brown	Date 11/8/99	2. Relinquished By:	Date	3. Relinquished By:	Date
Company Name: MARATHON	Time 11:30	Company Name:	Time	Company Name:	Time
1. Received By: B	Date 11/9/99	2. Received By:	Date	3. Received By:	Date
Company Name: STL	Time 1000	Company Name:	Time	Company Name:	Time

SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN

For

MARATHON OIL COMPANY
INDIAN BASIN GAS PLANT

October 15, 1997

Updated by Mike Schweser

INDIAN BASIN GAS PLANT
SPILL PREVENTION CONTROL AND COUNTERMEASURE
CONTENTS AND ATTACHMENTS

SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN

PART I
GENERAL INFORMATION

1. Name of Facility: Indian Basin Gas Plant
2. Type of Facility: Onshore Production Facility
3. Location of Facility: Eddy County, New Mexico, circa 20 miles WNW of Carlsbad, New Mexico
4. Name and address of owner or operator:
   - Name: Marathon Oil company
   - Address: P.O. Box 552, Midland, Texas 79702
5. Designated person accountable for oil spill prevention at facility:
   - Name and Title: Mike Schweser, Gas Plant Superintendent
6. Facility experienced a reportable oil spill event during the twelve months prior to Jan 10, 1974 (effective date of 40 CFR Part 112). (If YES, complete Attachment #1) No

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature

Name: K. A. Thoma

Title: Mid-Continent Region Production Manager

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY A. DEINES
No. 1496
Exp. 9/30/01
PETROLEUM
STATE OF CALIFORNIA

Timothy A. Deines
Printed Name of Registered Professional Engineer

Signature of Registered Professional Engineer

Date: November 5, 1997

Registration No. P 1496

PART I
GENERAL INFORMATION

7. Potential Spills -- Prediction and Control

SOURCE	MAJOR TYPE OF FAILURE	TOTAL QUANTITY	DIRECTION OF FLOW	SECONDARY CONTAINMENT
Generator Turbine Oil	Leaks, Tank Rupture	6 bbl	SE	Yes
Transfer Tank	Leaks, Tank Rupture	350 bbl	SE	Yes
Inlet Compressor Lube Oil	Leaks, Tank Rupture	20 bbl	SE	Yes
Field Storage Area	Leaks, Tank Rupture	104 bbl	SE	Yes
Stabilizer Compressor Lube Oil	Leaks, Tank Rupture	6 bbl	SE	Yes
Bulk Tank Storage	Leaks, Tank Rupture	504 bbl	SE	Yes
IBLEAP Stripper Tank Area	Leaks, Tank Rupture	920 bbl	SE	Yes
New Skimmer Basin	Leaks, Tank Rupture	2210 bbl	SE	Yes
~~Old Skimmer Basin**~~	~~Leaks, Tank Rupture~~	~~300 bbl~~	~~SE~~	~~Yes~~
Recompressor Lube Oil	Leaks, Tank Rupture	210 bbl	SE	Yes
SWD Pump Lube Oil	Leaks, Tank Rupture	6 bbl	SE	Yes
Salt Water	Leaks, Tank Rupture	500 bbl	SE	No*
~~Salt Water**~~	~~Leaks, Tank Rupture~~	~~1000 bbl~~	~~SE~~	~~No~~
Glycol Storage	Leaks, Tank Rupture	150 bbl	SE	No*
2 Storage Bullets	Leaks, Tank Rupture	3200 bbl	SE	Yes
2 Sour Product Storage Bullets	Leaks, Tank Rupture	3200 bbl	SE	Yes
Diesel Storage Tank	Leaks, Tank Rupture	12 bbl	SE	Yes
LACT Unit Loading Rack	Leaks, Truck Rupture, Premature Departure	180 bbl	S	Yes

* These tanks are currently in use. Installation of containment dikes scheduled for the fourth quarter of 1997.

** This tank is out of service.

Name of facility Indian Basin Gas Plant
Operator Marathon Oil Company

PART I
GENERAL INFORMATION

(Response to statements should be: Yes, No, or NA)

8. Containment or diversionary structures or equipment to prevent oil from reaching navigable waters are practicable. (If No, complete Attachment #2) No

9. Inspections and Records
   A. The required inspections follow written procedures. Yes
   B. The written procedures and a record of inspections, signed by the appropriate supervisor or inspector, are attached. Yes

   Discussion: Daily visual inspections are made and readings taken and recorded by operational personnel during normal rounds on both twelve hour shifts. During these rounds, operating personnel search for atypical situations. If these situations are encountered, they are documented and promptly reported to supervisory personnel via the plant work order system which is reviewed and signed by the appropriate supervisor. Spills are reported as soon as practical to the supervisor via the Mid-Continent Spill Reporting Program. Semi-Annual inspections are conducted by plant supervision. Records of these inspections are on file at the Indian Basin Gas Plant.

10. Personnel Training and Spill Prevention Procedures
    A. Personnel are properly instructed in the following:
       1. Operation and Maintenance of equipment to prevent oil discharge Yes
       2. Applicable pollution control laws, rules, and regulations. Yes

    Describe procedures employed for instruction: All employees have received 8 hours of HAZWOPER training, and many are 24 hour HAZWOPER trained. Other instructions are narrative. Environmental Control and Site Security are discussed at safety meetings, which are held on a monthly basis. Potential spill situations are reported to the superintendent via the plant work order system and also reported by the safety committee on a monthly basis. Such situations are corrected.

    B. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. Yes

    Describe Briefing program: Operation Management frequently reviews environmental standards at safety meetings. Such reviews assure an adequate understanding of SPCC. Operating superintendents are periodically requested to update Contingency Plans. Superintendents thereby assess and revise procedures when necessary.

Name of facility: Indian Basin Gas Plant
Operator: Marathon Oil Company

PART II, ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

(Prior to completing Part II Alternate A, Refer to regulations and instructions, pages 6-7)

A. Facility Drainage

1. Drainage from diked storage areas is controlled as follows (include operating description of valves, pumps, ejectors, etc. *(Note: Flapper type valves should not be used)*:
None of the earthen diked areas have installed drains. Any spill that might occur would be removed with a vacuum truck, or transferred, via a portable pump, to the plant open drain system. Concrete pollution catchments are connected directly to the plant open drain system which processes the fluid for removal of free hydrocarbon. The waste is then commingled and injected with Indian Basin Field produced water. Rain water captured in containments is also removed in this manner.

2. Drainage from undiked areas is controlled as follows (include description of ponds, lagoons, or catchment basins and methods of retaining and returning oil to facility):
The plant operates under a Storm Water Pollution Prevention Plan dated 10/31/94* and a Groundwater Discharge Plan approved on 5/9/95 and amended 6/3/96 by the New Mexico Oil Conservation Division. The plant is in compliance with all phases of these plans. The Groundwater Discharge Plan and the Storm Water Pollution Prevention Plan is available for review on site at the Indian Basin Gas Plant office and in the Mid-Continent Region office, Midland, Texas.

3. The procedure for supervising the drainage of rain water from secondary containment in to a storm drain or an open watercourse is as follows (include description of (a) inspection for pollutants, and (b) method valving security). (A record of inspection and drainage events is to be maintained on a form similar to Attachment #3):
None of the earthen diked areas have installed drains. The plant open drain system processes the fluid for removal of free hydrocarbon and the waste is commingled and injected with Indian Basin Field produced water. When necessary, excess rain water removal is accomplished by transferring the fluid to the plant open drain system via vacuum truck or via a portable transfer pump. Records of inspection of storm water run off are kept on file at the Indian Basin Gas Plant, in accordance with the current Storm Water Pollution Prevention Plan, dated October 31, 1994*.

* Storm Water Pollution Prevention Plan is scheduled to be updated to reflect revised regulatory requirements in the fourth quarter of 1997.

Name of facility Indian Basin Gas Plant
Operator Marathon Oil Company

PART II, ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

(Response to statements should be: Yes, No, or NA)

B. Bulk Storage Tanks

1. Describe tank design, materials of construction, fail-safe engineering features, and if needed, corrosion protection: The condensate storage tanks are above ground storage bullets operating at atmospheric conditions. All other tanks are above ground, atmospheric, bulk storage tanks. All tanks are API design/carbon steel. All tanks have some type of fail safe system to prevent fluid escape. All tanks involved in plant process service have fluid level gauges and high level alarms which are displayed in the plant control room. Many vessels have high level shut off switches installed.

2. Describe secondary containment design, construction materials, and volume: Secondary containments are earthen dikes or concrete pads with sidewalls. All secondary containments are capable of holding at least 1⅓ the volume of the largest tank within. (See "Pollution Control Containment Volumes and Characteristics" attachment.)

3. Describe tank inspection methods, procedures, and record keeping. Tanks are observed in operation daily, at least once per shift, by operating personnel for signs of leakage or other deterioration. Such signs are reported and corrected via the plant work order system. Where deemed appropriate, more rigorous inspection methods, such as ultra-sonic thickness testing, are conducted on a periodic basis. Records of such inspections are located in the "Vessels" file at the Indian Basin Gas Plant. Semi annual inspections of tanks and their containments are also conducted and documented in the SPCC file at the Indian Basin Gas Plant.

4. Internal heating coil leakage is controlled by one or more of the following control factors:

(a) Monitoring the steam return or exhaust lines for oil. NA
Describe monitoring procedure: ____________________

(b) Passing the steam return or exhaust lines through a settling tank, skimmer, or other separation system. NA

(c) Installing external heating systems. NA

Name of facility: Indian Basin Gas Plant
Operator: Marathon Oil Company

PART II, ALTERNATE A
Continued

5. Disposal facilities for plant effluents discharged into navigable waters are observed frequently for indication of possible upsets which may cause an oil spill event.

Describe method and frequency of observations: All plant wastes collected in the plant sump systems are commingled with the Indian Basin Field produced water and treated for the removal of free hydrocarbon. The waste water from this operation is mixed with other non-hydrocarbon bearing plant wastes (such as cooling tower and boiler blowdown) prior to being injected into an injection well (Indian Basin Gas Com. SWD No. 1 or Marathon Federal SWD No.1)

Name of facility Indian Basin Gas Plant
Operator Marathon Oil Company

PART II, ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

(Response to statements should be: Yes, No, or NA)

C. Facility Transfer Operations, Pumping, and In-plant Process.

1. Corrosion protection for buried pipelines:

(a) Pipelines are wrapped and coated to reduce corrosion _Yes_

(b) Cathodic protection is provided for pipelines if determined necessary by electrolytic testing. _Yes_

(c) When a pipeline section is exposed, it is examined and corrective action taken as necessary. _Yes_

2. Pipeline terminal connections are capped or blank-flanged and marked if the pipeline is not in service or on standby service for extended periods. _NA_
Describe criteria for determining when to cap or blank-flange: The plant is in continuous operation. Procedures for abandonment of pipelines will be developed when necessary.

3. Pipe supports are designed to minimize abrasion and corrosion and allow for expansion and contraction. _Yes_
Describe pipe support design: Pipe supports are steel stanchion with wear plated protection at points of wear and contact. Where large temperature swings are anticipated, expansion loops are installed.

4. Describe procedures for regularly examining all above-ground valves and pipelines (including flange joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces): All equipment is observed in operation daily by plant operating personnel for signs of leakage or other deterioration. Such signs are reported and corrected via the plant work order system. Where deemed appropriate, more rigorous inspection methods, such as ultra-sonic thickness testing or X-ray inspection, are conducted. (Records of these tests are on file at the Indian Basin Gas Plant.)

5. Describe procedures for warning vehicles entering the facility to avoid damaging above ground piping: Signs and traffic barrier guards are installed where needed.

Name of facility ___ Indian Basin Gas Plant ___
Operator ___ Marathon Oil Company ___

PART II, ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

(Response to statements should be: Yes, No, or NA)

D. Facility Tank Car & Tank Truck Loading/Unloading Rack Tank car and tank truck loading/unloading occurs at the facility.
(If yes complete 1 through 5 below). Yes*

1. Loading/unloading procedures meet the minimum requirements and regulations of the Department of Transportation. Yes

2. The unloading area has a quick drainage system. No

3. The containment system will hold the maximum capacity of any single compartment of a tank truck loaded/unloaded in the plant. Yes

Describe containment system design, construction materials, and volume: ______
* Only truck loading is encountered at the plant's condensate loading rack facility. There is no storage at or near the loading rack. The truck loading facility is enclosed by an earthen dike designed to contain one and one-half times the volume of one transport truck.

4. An interlocked warning light, a physical barrier system, or warning signs are provided in loading/unloading areas to prevent vehicular departure before disconnect of transfer lines. No

Describe methods, procedures, and/or equipment used to prevent premature vehicular departure: A ground wire system is in use, which will not allow the transfer pump to operate unless the truck is attached to both the ground wire and to the loading rack via the transfer line. If this circuit is broken, the transfer pump will shut down. In addition, the loading rack is equipped with an automatic shutoff, which activates when a pre-set volume passes through the LACT meter. This will limit the volume of condensate that could be leaked if premature truck departure would occur.

5. Drains and outlets on tank trucks and tank cars are checked for leakage before loading/unloading or departure. Yes

Name of facility Indian Basin Gas Plant
Operator Marathon Oil Company

PART II, ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

(Response to statements should be: Yes, No, or NA)

E. Security

1. Plants handling, processing or storing oil are fenced. No*

2. Entrance gates are locked and/or guarded when the plant is unattended or not in production. NA

3. Any valves which permit direct outward flow of a tanks contents are locked closed when in non-operating or standby status. Yes

4. Starter controls on all oil pumps in non-operating or standby status are:
   (a) Locked in the off position, No**
   (b) located at sites accessible only to authorized personnel. Yes

5. Discussion of items 1 through 4 as appropriate:
* The gas plant is attended 24 hours per day, each day of the year. The gas plant is fenced, the condensate storage tanks are outside the fenced area.
** The LACT unit addressed in Item D. 4, has a key lock security system which requires an assigned key to allow loading trucks.

6. Discussion of lighting around the facility: Flood lighting and localized area lighting provided by Marathon Oil Company.

Name of facility Indian Basin Gas Plant
Operator Marathon Oil Company

SPCC PLAN, ATTACHMENT #2
OIL SPILL CONTINGENCY PLANS AND
WRITTEN COMMITMENT OF MANPOWER, EQUIPMENT, AND MATERIALS

Secondary containment or diversionary structures are not practical for this facility for the following reasons (attach additional pages if necessary):

Secondary containment is not provided around the bases of selected storage tanks and process vessels since trapped volatile liquid will vaporize at atmospheric conditions and/or trapped hydrocarbons would create an extreme fire hazard in the plant area. All secondary containments in existence are capable of containing at least 1⅓ the volume of the largest tank within.

A strong oil spill contingency plan is attached. Yes

A written commitment of manpower, equipment, and materials is attached. Yes

Name of facility Indian Basin Gas Plant
Operator Marathon Oil Company

SPCC PLAN
COMMITMENT OF MANPOWER, EQUIPMENT AND MATERIALS

To: OPERATIONS SUPERVISORS

This is your authority to expeditiously commit manpower, equipment and materials necessary to arrest and contain and initiate cleanup of any harmful quantity of oil or hazardous material discharged from this facility. This authority may be delegated by yourselves to the person in charge of the facility to ensure that necessary activities are implemented as quickly as possible after a spill is noted.

K. A. Thoma
Region Manger
Mid-Continent Region

OIL SPILL CONTINGENCY PLAN

In the case of an oil spill from a producing well, a testing vessel, a tank, flowline or any other related oil field equipment, the following action will be implemented to protect human life and regain control of the spill as rapidly as possible. All steps should be carefully considered to ensure control of the spill is effectively and efficiently regained.

1. Shut off the source contributing to the spill. Analyze the type of spill and determine the most appropriate immediate type of spill and determine the most appropriate immediate action to be taken to contain the spill.

2. If the spill contains hydrocarbons, caution personnel against all ignition sources..

3. Obtain labor and equipment to construct a containment barrier as rapidly as possible. (See the attached directory.)

4. As required, have vacuum truck(s) pick up pooled or contained liquids.

5. As necessary, the use of absorbent material (straw, dirt, lost circulation material, commercial sorbents, etc.) should be utilized to remove standing volume which cannot be efficiently removed by a vacuum truck.

6. Restrict access to the affected area to only those persons involved in control, containment, and clean-up operations.

7. Notify the company representative in charge of the facility of the spill and action being taken, who will in turn notify his respective supervisor.

8. As required, the Plant Superintendent will notify the regulatory agency of the spill.

9. Keep livestock from affected area and as appropriate, notify the landowner and other surface users of the situation.

10. The person in charge of the spill response activities shall keep a daily log of response activities. The log book shall be bound, not loose leaf. Entries shall be dated, timed and signed.

11. The duty officer at the National Response Center (1-800-424-8802) must be notified immediately when a spill reaches "Waters of the U.S.", or it appears likely that the spill will reach "Waters of the U.S."

For additional information, refer to the Mid-Continent Region Contingency/Response Plan.

SPCC PLAN INSPECTION PROCEDURES

Eddy County, New Mexico

1. As part of his normal routine, the plant operator(s) will visually inspect the plants production facilities for accumulations, leaks of oil or other hazardous substances. The operator must perform the inspection at least once per shift.

2 The production facilities to be inspected will include but are not limited to lines, vessels, valves, pumps, sumps, ditches, containments, and miscellaneous fittings.

3. In the event that an accumulation or leak is discovered, the operator shall initiate the actions detailed in the current SPCC Plan.

4. The operator shall record his daily inspection on the plant daily reading sheets.

5. The plant superintendent shall record his inspection on an annual inspection report.

T.A. Deines
Indian Basin Operations Superintendent

L.J. Oswald
Mid Continent Region Operations Superintendent

MCR

DEC 4 1997

Environmental & Safety

RECORD OF SPCC
PLANT SEMI-ANNUAL
INSPECTION REPORTS

Date	Inspector	Signature
10-12-93	Mike Schweser	
4-22-94	Mike Schweser	
10-17-94	Mike Schweser	
6-6-95	Mike Schweser	
6-16-96	Matthew Goff	
12-3-97	Mike Schweser	

spcclog.wpd

INDIAN BASIN GAS PLANT
SPCC INSPECTION REPORT
ANNUAL
August 21, 1996

Inspection Instructions:
Visually inspect the condition of items listed below. List any deficiencies found under "Comments" column.

SOURCE	TANK(s)	DIKE	COMMENTS
Generator Turbine Oil			
Transfer Tank			
Inlet Compressor Lube Oil			
Field Storage Area			
Stabilizer Compressor Lube Oil			
Bulk Tank Storage			
IBLEAP Stripper Tank Area			
New Skimmer Basin			
Old Skimmer Basin			
Recompressor Lube Oil			
SWD Pump Lube Oil			
Diesel Storage Tank			
~~Salt Water 1000 bbl (out of service)~~	------------	-------------	
Salt Water 280 bbl		-------------	
Soft Water (steel)		-------------	
Glycol Storage		-------------	
Soft Water (fiberglass)		-------------	
2 Fresh Water		-------------	
Condensate Storage and Sour Product Bullets			
General Area Piping and Equipment	---------	-----------	
LACT: Grounding and Auto-shutoff	---------		

In the space provided, note any additional equipment or tanks not listed above, that have been installed in the plant, and any comments regarding their inspection.

Inspectors Name Inspectors Signature Date

COMPANY PERSONNEL NOTIFICATION LIST

Indian Basin Gas Plant

(505) 457-2621 / (505) 457-2212

Employee	Title	Home Telephone
Deines, Tim A.	Operations Supt.	(505) 887-8655
Schweser, C. Mike	Plant Superintendent	(505) 885-0716
Schmidt, Greg J.	Process Engineer	(505) 887-8388
Connaway, John	Production Foreman	(505) 887-7590
Kramer, Ted E.	Production Engineer	(505) 887-2851
Treesh, Mark E.	Process Engineer	(505) 887-8116
Ballard, Winston	Pumper	(505) 885-5325
Barnett, Jimmy B.	Operator	(505) 746-2818
Bowen, Patrick N.	Operator	(505) 748-2885
Brasfield, Gerald	Operator	(505) 748-2348
Davis, Larry D.	Operator	(505) 748-3844
Garrett, Kenny R.	Instrument Repairman	(505) 748-2932
Hamill, Bob B.	Electrician	(505) 887-7940
Harrison, Jerry J.	Field Gangpusher	(505) 746-6754
Ivy, Jack L.	Pumper	(505) 748-2763
Klein, Timothy P.	Plant Gangpusher	(505) 484-3675
Kirkes, Clint W.	Mechanic, Relief Operator	(505) 885-2883
Manthei, Don W.	Pumper	(505) 457-2213
Moreno, Manuel S.	Roustabout, Relief Operator	(505) 748-2175
Morgan, Steven D.	Pumper	(505) 745-3327
Rauch, Jack P.	Operator	(505) 748-3375
Rouse, David B.	Operator	(505) 746-2619
Trevino, Joe	Mechanic	(505) 887-6225
Troublefield, Shaun	Operator	(505) 748-1326
Velasquez, Dario	Operator	(505) 369-7311
Waldrip, Bruce W.	Mechanic, Relief Operator	(505) 457-2252
Wilson, James E.	Tester	(505) 746-6481
Winters, Timothy L.	Field Gangpusher	(505) 746-4662

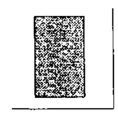
Spill Report

Indian Basin Gas Plant Plot Plan

Pollution Control Containment
Volumes and Characteristics
12-12-96

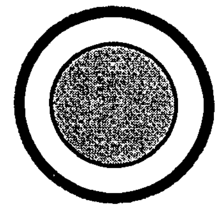
Generator Turbine Oil

Total Tank Volume:	6 bbl
Largest Tank Volume	6 bbl
Containment Dimensions:	6' x 6' x 1.5'
Containment Volume:	9.5 bbl
Containment Type:	Metal Rectangular



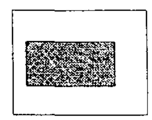
Transfer Tank

Total Tank Volume:	350 bbl
Largest Tank Volume	350 bbl
Containment Dimensions:	23'r x 3.25'
Containment Volume:	801 bbl
Containment Type:	Earthen Circular



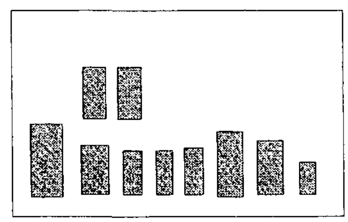
Inlet Compressor Lube Oil

Total Tank Volume:	20 bbl
Largest Tank Volume	20 bbl
Containment Dimensions:	13' x 15' x 1'
Containment Volume:	34.7 bbl
Containment Type:	Concrete Rectangular



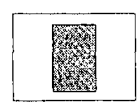
Field Storage Area

Total Tank Volume:	104 bbl
Largest Tank Volume	60 bbl
Containment Dimensions:	22.6' x 57' x .5'
Containment Volume:	114 bbl
Containment Type:	Concrete Rectangular



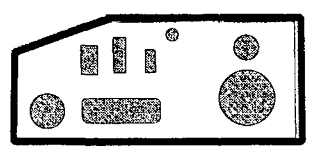
Stabilizer Compressor Lube Oil

Total Tank Volume:	6 bbl
Largest Tank Volume	6 bbl
Containment Dimensions:	6' x 5' x 1.5'
Containment Volume:	8 bbl
Containment Type:	Fiberglass Rectangular



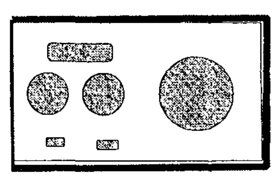
Bulk Tank Storage

Total Tank Volume:	504 bbl
Largest Tank Volume	430 bbl
Containment Dimensions:	
Containment Volume:	546 bbl
Containment Type:	Earthen Irregular



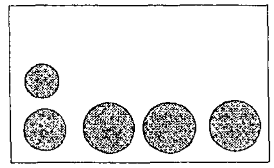
Stripper Tank Area

Total Tank Volume:	955 bbl
Largest Tank Volume	920 bbl
Containment Dimensions:	80' x 36' x 1.25'
Containment Volume:	641 bbl
Containment Type:	Earthen Rectangular



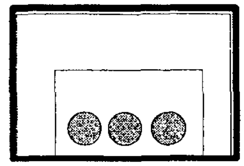
New Skimmer Basin

Total Tank Volume:	2210 bbl
Largest Tank Volume	2210 bbl
Containment Dimensions:	75' x 100' x .75'
Containment Volume:	1002 bbl
Containment Type:	Concrete Rectangular



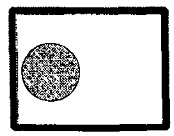
Old Skimmer Basin

Total Tank Volume:	300 bbl
Largest Tank Volume	300 bbl
Containment Dimensions:	30' x 75' x 2'
Containment Volume:	683 bbl
Containment Type:	Earthen Rectangular



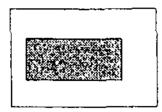
Recompressor Lube Oil

Total Tank Volume:	210 bbl
Largest Tank Volume	210 bbl
Containment Dimensions:	26' x 25' x 1.4'
Containment Volume:	162 bbl
Containment Type:	Earthen Rectangular



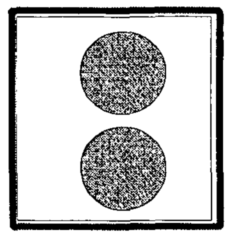
SWD Pump Lube Oil

Total Tank Volume:	6 bbl
Largest Tank Volume	6 bbl
Containment Dimensions:	6' x 5' x 1.5'
Containment Volume:	8 bbl
Containment Type:	Fiberglass Rectangular



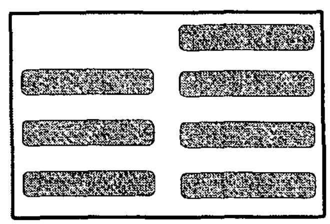
Old Condensate Storage Tanks

Total Tank Volume:	6000 bbl
Largest Tank Volume	3000 bbl
Containment Dimensions:	111' x 114' x 2.6'
Containment Volume:	5860 bbl
Containment Type:	Earthen Rectangular



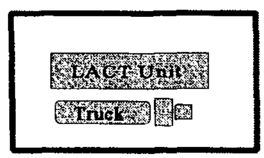
Steel Storage Bullets

Total Tank Volume :	2000 bbl
Largest Tank Volume (connected):	2000 bbl
Containment Dimensions:	57' x 216' x 2.5'
Containment Volume:	5480 bbl
Containment Type:	Earthen Rectangular



lact Unit Loading Rack

Total Tank Volume :	180 bbl
Largest Tank Volume (connected):	180 bbl
Containment Dimensions:	39' x 59' x 1.5'
Containment Volume:	615 bbl
Containment Type:	Earthen Rectangular



Other Tanks

I	215 bbl	FG Salt Water*		No secondary
I	1000 bbl	Steel Salt Water	Not in service	No Secondary
I	90 bbl	Steel Soft Water*		No Secondary
I	150 bbl	Steel Glycol Storage*		No Secondary
I	280 bbl	FG Soft Water*		No Secondary
I	1000 bbl	Steel Fresh Water		No Secondary
I	125 bbl	FG Fresh Water		No Secondary

NOTE: * Denotes tanks scheduled to receive secondary containments during the fourth quarter of 1997.

FLUOR DANIEL GTI

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
INDIAN BASIN GAS PLANT

March 12, 1998
Revised June 1, 1998

MARATHON OIL COMPANY
P.O. BOX 1324
ARTESIA, NEW MEXICO 88211

Prepared by:
Fluor Daniel GTI, Inc.
2501 Yale Boulevard, SE, Suite 204
Albuquerque, New Mexico 87106

Contents

List of Tables

1.0 INTRODUCTION AND REGULATORY INFORMATION

This Storm Water Pollution Prevention Plan (SWPPP) has been prepared to transfer the Indian Basin Gas Plant from prior coverage under EPA's Baseline General Permit to the modified Multi-Sector General Permit. This action was taken pursuant to EPA's Proposed Modification of National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit (MSGP) for Industrial Activities (Notice; Federal Register, Vol. 62, No. 133, Friday, July 11, 1997). The Indian Basin Gas Plant (SIC code 1311) had previously completed, a SWPPP prepared pursuant to EPA's Baseline General Permit for the Storm Water NPDES program. This prior SWPPP was prepared following the submittal of a Notice of Intent (NOI) to EPA prior to October 1, 1992. The facility has been assigned Permit No. NMR05A228.

This new SWPPP is based on the implementation experiences and information for the prior SWPPP that was prepared pursuant to the Baseline General Permit. A new Notice of Intent has been completed pursuant to the permit coverage transfer instruction in the EPA July 11, 1997 Federal Register Notice. A copy of this new NOI is attached to this plan (Attachment 1). The information contained in this SWPPP satisfies the content requirements of the 1995 MSGP, as described in Section I of the MSGP Notice (Federal Register Vol. 60, No. 189, Friday, September 29, 1995).

The primary objectives of this SWPPP are to:

1. Evaluate plant operating procedures as they relate to storm water pollution;
2. Identify potential sources of storm water pollution;
3. Suggest specific techniques for minimizing pollution of storm water,
4. Provide instructions, procedures, guidance, and sample forms for SWPPP implementation;
5. Serve as a focal point and training tool for plant personnel; and,
6. Establish an overall framework for the continuing effort of storm water pollution prevention at the plant.

2.0 FACILITY DESCRIPTION AND GENERAL COMPLIANCE INFORMATION

2.1 Facility Description

The Indian Basin Gas Plant is approximately 26 acres in area. It processes gas gathered from a much larger producing gas field. The plant produces natural gas, demethanized hydrocarbon mix, stabilized condensate, and sulfur on a continuous 24 hour per day schedule. The location of the Indian Basin Gas Plant is indicated in Figure 1 (Attachment 2). Approximately one percent of the plant is paved. The gas plant is located on Eddy County Road 401. There is a truck loading area on the east side of the plant. Offices, a warehouse, and parking areas are located near the eastern part of the plant (Figure 2, Attachment 2).

The plant is located in a relatively flat area surrounded by mountainous terrain. The soil is rock and sand with scrub brush and grassy vegetation. The mean annual total precipitation is approximately 14 inches. Average annual Class A pan evaporation is approximately 100 inches, and average annual lake evaporation is approximately 65 inches in this area.

2.2 Summary of Mapping Requirements

The following site-specific information is included in Figure 2:

- Storm water drainage patterns/outfalls (on-site);
- Surface water bodies to which site drainage is directed;
- Footprints of buildings, structures, paved areas, parking lots;
- Storm water pollution source areas (See Table A in Attachment 3); and
- Existing and currently planned storm water structural controls.

2.3 Summary of Spills and Leaks

Spills or leaks of a reportable quantity since 1994 are identified in Table 2-1. Table 2-1 indicates the nature of the release, the amount released and recovered, date, and cause of the release (where possible).

This facility implements a SPCC plan pursuant to EPA regulations and guidelines. Provisions have been developed and are implemented through the SPCC program, to address future spills and releases at this facility. The SPCC plan for this facility is referenced in this SWPPP as being a part of this facility's storm water pollution prevention program as well. This facility also has a Groundwater Discharge Plan (GDP) that defines policies and procedures that affect spill/release planning and response. A current list of spills and/or leaks is maintained in the SPCC/SWPPP file.

2.4 Non-Storm Water Discharges and Certification

Storm water outfalls at this facility were inspected to determine the presence or absence of non-storm water discharges. The procedure used is described below:

> Visual Inspection - involves inspection of the storm water discharge points on several different dry-weather occasions in order to visually look for any flow in the storm drain. In the absence of precipitation, no water flow should be observed. If there is water flowing through the outfalls during dry weather, tests should be conducted to determine the source of the flow. An inspection should take place concurrently with an activity that is likely to cause such discharges.

No discharge of water was found on the days that this inspection was conducted. The following table includes this facility's certification regarding non-storm water discharges. Because of the nature of this facility's drainage system this visual inspection for non-storm water discharges can be conducted on a recurring basis.

Table 2-2. Non-Storm Water Discharge Certification

I certify that storm drain systems at the Indian Basin Gas Plant have been tested for non-storm discharges, and that the non-storm water testing described above was conducted and the results presented above are true and accurate.		
Storm Water Coordinator	Signature	Date

2.5 Description of Existing Storm Water Measures

Since October 30, 1989, Indian Basin Gas Plant has been operated under the conditions of a Groundwater Discharge Plan (GDP). That GDP was approved by the State of New Mexico and includes the following aspects that affect storm water runoff:

1. A large uphill diversion berm has been constructed around the north and west sides of the plant. It diverts surface runoff away from the plant and reduces the volume of water that can potentially contact polluting materials at the plant.

2. Containment devices have been constructed around most of the chemical storage areas. In most cases, the containment device is an earth berm. In other cases (such as the sulfuric acid tank at the water treatment unit), a steel pan with manual valve is used for secondary containment. Marathon Oil Company is attempting to reduce the use of drums at the Indian Basin Gas Plant and rely more on bulk chemical storage.

3. Product effluent from most plant equipment is drained through a closed system. In addition, an open collection system has been constructed around much of the plant process equipment. The system consists of concrete pads with curbs, concrete troughs covered with steel grates, drainage collection pipes, sumps, and sump pumps. The purpose of this system is to capture material that originates from a leak or spill, convey it to the sump, and pump it into the skimmer basin. Material collected in this manner is ultimately reprocessed, or disposed in the injection well. (Refer to the "Plant Processes" section of the GDP, pages 5 and 6, for descriptions of an integrity test on the open collection system and closed drain system disposal procedures.)

4. Material handling practices include employee education as to proper procedures and spill/leak response, storing chemical containers in containment berms, and routine inspections.

5. Domestic sewage is treated with a septic system on the plant site. It does not contribute any flow to storm water runoff. There are three septic treatment systems, and a warning to avoid non-domestic sewage is posted on each one.

6. Plant equipment is periodically cleaned with detergents, solvents, or steam. Consistent with the GDP, cleaning effluent is captured by the open drain collection system and disposed of in the injection well (see part 3 above).

7. The SPCC for the Indian Basin Gas Plant has recently been revised (October 15, 1997) and plant spill response capabilities have been improved.

8. Underground storage tanks are not used at the Indian Basin Gas Plant.

9. Spent process catalyst is not exposed to storm water.

In addition to the measures listed above, storm water from approximately four acres of site drains to the southeast corner and passes through a vegetated strip. Storm water from the remainder of the site drains as sheet flow to the southeast where it passes through approximately 800 feet of vegetation before it reaches Rocky Arroyo.

2.6 Coordination with Existing Environmental Management Plans

Marathon has a number of existing regulatory compliance programs and/or plans in effect at the Indian Basin Gas Plant. These plans and/or programs were evaluated during the preparation of this SWPPP and appropriate information for these existing environmental management plans was used as necessary. In addition, existing Marathon standard operating procedures have been incorporated into the development of this SWPPP. The Indian Basin Gas Plant has the following spill prevention and response procedures that relate to, and/or are considered a part of this SWPPP:

- Daily Inspection Checklist
- SPCC Plan
- Hazardous Waste Contingency Plan
- Emergency Response Plan
- Groundwater Discharge Plan

2.7 Existing Sampling Data

There are no storm water quality data available for the Indian Basin Gas Plant.

2.8 EPCRA Section 313 Requirements

Based on current information, the Indian Basin Gas Plant is not a plant subject to EPCRA Section 313 water priority chemical regulations.

Table 2-1. Reportable Spill Summary

Record #	Date	Spill Type	Spill Quantity	Quantity Recovered	Cause
1706	02-07-94	Condensate	0.48	0	Oil dump failed. Spilled out of vent of BP valve.
1714	02-15-94	30 percent DEA sol'n.	59	1.5	Amine pump plunger broke. Solution leaked around the seal.
1741	03-09-94	Condensate	1	1	Tank overflowed (High level switch failed).
1792	05-09-94	Condensate	5.5	5	Skimmer basin overflowed.
1794	05-12-94	Lube Oil	0.25	0.2	Heavy rain run-off caused sump to overflow.
1797	05-23-94	Lube Oil	0.4	0.3	Open drain sump did not start automatically.
1828	06-22-94	Lube Oil	0	0	Pin hole leak in piping.
1841	07-13-94	Condensate	125	1	Pinhole leak on dresser coupling (line 1)
1842	07-16-94	Condensate	3	2.5	SWD Tank ran over.
1858	08-01-94	Amine	1.2	0	Two-inch opened by mistake.

Table 2-1. Reportable Spill Summary

Record #	Date	Spill Type	Spill Quantity	Quantity Recovered	Cause
1878	08-27-94	Condensate	2	0	Leak in line due to corrosion.
1880	09-13-94	Condensate	0.1	0	Unplugging sample line.
1936	12-29-94	Condensate	0.2	0	Tank 3A overfilled.
1963	01-23-95	Condensate	1	0.5	Spillover weir set to high.
1948	03-01-95	Lube oil	0.12	0.08	Pulled plug during maintenance.
2000	03-13-95	Triethylene glycol	0.11	0.04	Unit 25 tank overfilled.
2036	05-15-95	Condensate	2	0	West skimmer tank discharge pump line leaked.
2021	06-01-95	Condensate	10	5	LACT failed to shut down.
2043	06-19-95	Condensate	0.5	0	Separator overflow.
2118	09-14-95	Amine	1.5	1	Pump failure.
2107	10-09-95	Condensate	2.3	0	Separator overfilled.

Table 2-1. Reportable Spill Summary

Record #	Date	Spill Type	Spill Quantity	Quantity Recovered	Cause
2200	02-01-96	Basic sediment	0.75	0	Tank overfill
2201	02-05-96	Basic sediment	3.5	2.5	Tank overfill. Bypass was not shut on SWD pump.
2151	02-07-96	Condensate	2	2	Tank overfill. Electrical or instrument failure.
2135	03-01-96	Gasoline	0.24	0	Valve came off of hose. Loose clamp.
2191	03-09-96	Condensate	8	5	Tank overfill out top of tank. Freezing.
2214	04-27-96	Condensate	4	2	6-inch PVC gathering line west of valve pit leaked.
2239	05-30-96	Condensate	2	2	Separator relief valve not completely opened.
2238	05-30-96	Condensate	5	0	Loading condensate into truck. Driver let overfill, spill.
2279	08-01-96	Condensate	8	7	Top of tank at hatch. Overfill exceeded process capacity.
2343	11-14-96	Condensate	3	2	Tank overflow at vent on tank. Human error.
2395	12-29-96	Condensate	3	0	Tank. Plugged drain. Bottom. Human error.

Table 2-1. Reportable Spill Summary

Record #	Date	Spill Type	Spill Quantity	Quantity Recovered	Cause

3.0 STORM WATER POLLUTION SOURCE INFORMATION

3.1 Drainage Patterns

The property is quite flat, but generally drains to the southeast. The only distinct outfall is from a small channel which begins near the west side of the old office, flows south past the residue gas compressors, turns east, and continues between the loading docks and the out-of-service condensate tanks. This channel mainly conveys storm water from the office and workshop areas. Runoff from the remainder of the plant drains to the southeast as sheet flow. All of the runoff eventually drains to the receiving watercourse, Rocky Arroyo. The arroyo is an intermittent stream that contains flowing water only after a significant rainfall.

3.2 Inventory of Exposed Materials

This section contains a description of the Indian Basin Gas Plant's potential storm water pollution sources. Pursuant to EPA guidelines for preparing SWPPPs, this section identifies potential sources which could reasonably be expected to add "significant" amounts of pollutants to storm water discharges. The source areas were also limited to those identified in EPA regulations and guidance as source areas associated with industrial activity that needs to be addressed in an SWPPP.

In addition to identifying and mapping the source areas, this section also describes an inventory of the materials (e.g., chemicals) that are associated with each source area. A narrative description is provided (see Table A, Attachment 3) that lists the materials that are handled at the indicated source area which could be exposed to precipitation. Table A in Attachment 3 presents the necessary SWPPP source area information in a way that:

- is easily understood (i.e., each regulatory source area is listed in Table A and shown on the facility map (Figure 2, Attachment 2).
- meets multiple SWPPP needs in a single table.

3.3 SWPPP Risk Identification

Determining potential storm water runoff pollution "risks" associated with "industrial activity" involves the following steps:

1. Define the chemical use characteristics of the source area(s), by facility activity, using site inspection and an available data review. Evaluate the nature of each source area to determine:
   a. The level, or extent, of chemical use or storage in each area.
   b. The potential for the discharge of this chemical as storm water pollution from the area.

2. Review and evaluate the existing water quality standards for the receiving water bodies.

3. Based on a review of the factors in items 1 and 2 above, specify a relative "risk" ranking for each storm water pollution source area, identifying the potential for storm water runoff to cause a water quality impact.

The simple three-step approach described above results in the identification of not only the potential storm water runoff pollution "risk" from the identified source area(s), but also helps in prioritizing the sources area(s) by their relative "risk." This process then leads to the development of a responsive set of best management practice plans (BMPs) that are related to the priority of pollution risk for the source area, which helps in developing a prioritized schedule for their implementation. In order to implement the three-step risk identification approach described above for the Indian Basin Gas Plant source areas, the following specific procedure was used:

1. Evaluate each facility source area for the materials stored or used in the area and the nature of any existing storm water pollution management measures, or systems, currently in place for that activity.

2. Evaluate the nature of the existing storm water management systems, that do (or could) control storm water pollution from the source area and rank them as "adequate" versus "inadequate" using a common sense judgement approach. This ranking is based on the ability of the existing management system to protect the potential storm water pollution source area during rainfall events.

3. Evaluate readily available water quality information for the receiving water(s) for storm water discharges from the facility, including any existing water quality standards. In addition, identify any specific chemical compounds, or categories of compounds that are of concern to appropriate regulatory agencies for the receiving water(s) to which storm water discharge from this facility is directed.

4. Based on the types of chemicals used or stored in/at the source area, the existing level of runoff management for the source area, and the sensitivity of the receiving water(s) to those chemicals, identify a relative "risk" (i.e., high, medium, low) for potential storm water pollution to the receiving water(s).

The following list shows how the four factors outlined above determine the relative risk factors for storm water pollution source areas at the Indian Basin Gas Plant:

Chemical Use and Control Characteristics	No Specific Standards
Heavy Chemical Use, Adequate Controls	MEDIUM
Heavy Chemical Use, Inadequate Controls	HIGH
Moderate Chemical Use, Adequate Controls	LOW
Moderate Chemical Use, Inadequate Controls	MEDIUM
Light Chemical Use, Adequate Controls	LOW
Light Chemical Use, Inadequate Controls	MEDIUM

The High, Medium, and Low designations in the above listing are defined as follows:

1. HIGH - source area has likely impact on receiving water quality, due to significant chemical use, or currently inadequate management controls, or because of identified receiving water sensitivities to a particular chemical being used at the source area. Management controls for this area should be given a high priority for implementation.

2. MEDIUM - source area may have an impact on receiving waters, but specific water quality limits for the chemical(s) being used at the source area may not exist. In addition, a MEDIUM storm water pollution risk would exist for areas with current management controls that are deemed to be "adequate," but the extent of chemical use is high, such that management attention should continue to be focused on maintaining these management controls. Storm water pollution problems are difficult to reliably quantify for this risk category. Therefore, more information may be necessary concerning storm water pollution amounts, and receiving water conditions, before a more extensive (and/or costly) management control can or should be selected.

3. LOW - source area is currently fully contained and controlled, or chemical use is low. Impacts on receiving water quality is not likely. Areas should be included in other management control programs, if applicable, but no prioritized storm water pollution management control is necessary for this source area.

Table A, in Attachment 3, contains the results of a risk evaluation for the Indian Basin Gas Plant storm water pollution source areas, conducted using the procedure outlined above.

4.0 BEST MANAGEMENT PRACTICES (BMP)

This section provides general descriptive information for the BMPs that have been identified (see Table B, Attachment 3) for the storm water pollution source areas at this facility (see Table A, Attachment 3). Table B lists the specific type of BMP, from those described in this section, that can be used to control storm water pollution from each of the specifically identified source areas listed in Table A. This section (4.0) provides background and descriptive information for how the particular BMP can be implemented for a source area.

BMP is a term which refers to measures for preventing or controlling storm water pollution from regulated "industrial activities". BMP's can include processes, procedures, schedules of activities, prohibitions on practices and other management practices to prevent or reduce storm water pollution. Despite the broad nature of BMP's, they can be characterized into two types: structural and non-structural. These two types of BMP's are described in greater detail below.

4.1 Non-Structural BMP's

Non-structural BMP's are primarily (simple and inexpensive) management program(s) that are applicable to a wide variety of regulated "industrial activities". The following six non-structural BMP's are identified in this SWPPP.

- Good Housekeeping
- Preventive Maintenance
- Visual Inspections
- Spill Prevention and Response
- Employee Training
- Recordkeeping and Reporting

<u>Good Housekeeping</u>

Good housekeeping involves developing and maintaining a clean and orderly work environment. Good housekeeping is already practiced at the Indian Basin Gas Plant as part of existing environmental management plans. A slight tailoring of existing good housekeeping practices will help prevent storm water pollution as a part of this SWPPP.

Examples of good housekeeping actions to be conducted pursuant to this SWPPP include:

- Implementing a routine clean-up program using hand shovels, hand brooms, vacuum machines, sweeping machines or other types of cleaning machines.
- Storing containers away from direct traffic paths and stack containers in accordance with manufacturer's instructions to avoid damage and spills.
- Labeling all containers showing contents.

- Covering receptacles and drums when possible or protecting them from storm water exposure (e.g., using indoor storage).
- Prevent potential overflow of harmful chemicals by ensuring regular pick up and disposal of waste material.
- Using temporary covers and pallets for outside parts storage (e.g., tarps) whenever practical or store indoors.

Maintaining employee interest in good housekeeping is an important part of the overall storm water pollution control program at Marathon. Methods for maintaining good housekeeping goals include regular housekeeping inspections by supervisors, discussions of housekeeping at meetings and publicity through posters, suggestion boxes, bulletin boards, and employee publications are other tools that will be used to implement good housekeeping activities.

Preventive Maintenance

An effective Preventive Maintenance Program is a key to a successful pollution management effort. This includes a regular visual inspections of systems, equipment, or devices such as valves, dikes and oil/water separator.

The following are the basic elements of Marathon's SWPPP preventive maintenance program:

- Inventory and identify systems, equipment and areas that should be inspected/maintained.
- Conduct routine inspections and/or tests of the systems, equipment and areas.
- Assure that timely repair, adjustment, replacement, cleaning or other needed maintenance is performed. Use equipment manufacturers' recommended procedures as a guide.
- Maintain documentation on inspections, repairs, maintenance, and corrective actions taken.

Many aspects of this SWPPP preventive maintenance program are currently being implemented at the Indian Basin Gas Plant through existing operating procedures and environmental management plans.

Visual Inspections

A routine visual inspection program is a key element in preventing storm water pollution and is an intricate part of the compliance evaluation component of this SWPPP (see Section 5.0). The Indian Basin Gas Plant Storm Water Coordinator is responsible for performing, or specifically delegating, the necessary visual inspections. The inspections will be integrated with the existing Marathon Inspection Check List. The Compliance Evaluation Inspection Form (Table 5-1) will be used to document the annual compliance evaluations.

Spill Prevention and Response

Spill prevention and control, as well as spill response, is an extremely important component of existing Marathon environmental management plans. Vacuum trucks are called to the site, when needed, to remove free liquid resulting from a spill. Other equipment required for spill response (e.g., shovels) is readily available at the facility.

Employee Training

Employee training programs serve to instill in personnel, at all levels of responsibility, an understanding of the storm water regulatory requirements, potential storm water pollution source areas and this SWPPP's BMP program. In addition, training may be used to instruct employees on proper practices for preventing storm water pollution and establishing proper procedures for responding to a release or spill. To the extent possible, SWPPP training will be coordinated with other existing environmental management plan training programs, as well as other Marathon training programs.

Open communications shall be used for matters relating to storm water pollution. The following principles are guidelines for communications, but may be modified when direct action is needed to reduce storm water pollution:

1. Each employee is empowered to take immediate action to prevent or reduce storm water pollution. Such actions shall be reported at the first available opportunity to the Storm Water Coordinator.

2. Any employee may ask questions, discuss ideas, make suggestions regarding storm water.

Record Keeping and Internal Reporting

Relevant documents are maintained at the Indian Basin Gas Plant as part of Marathon's overall regulatory compliance program. These documents include:

- SWPPP(s);
- Inspection and Spill Records;
- Training Records; and
- Certifications;
- SPCC Plan;
- Groundwater Discharge Plan (GDP)

4.2 Structural BMPs

Structural BMP's serve three basic functions:

1. Reduce or eliminate the volume and pollution from storm water runoff or run-on;
2. Divert or direct storm water runoff/run-on; and
3. Reduce the velocity of the storm water runoff/run-on.

The objective in diverting storm water runoff (or run-on) falls into one of two categories:

1. Divert storm water away from, or around (instead of across or through) regulated "industrial activities".
2. Direct storm water runoff that may have come in contact with chemicals from regulated "industrial activities" to a storm water BMP.

Structural BMP's are considered an "advanced" approach for the reduction or elimination of storm water pollution. Several structural BMPs are in place at the Indian Basin Gas Plant. These structural BMPs are described in Parts 1, 2, and 3 of Section 2.5 of this SWPPP. Storm water runoff from regulated “industrial activities” that is not controlled through the existing and proposed structural BMPs for the facility will be controlled using non-structural BMPs presented in Section 4.1. The following is a general list of structural BMPs that may be applied to a facility.

- Sediment and Erosion Control
- Ballast Ground Cover
- Grassed Swales
- Curbs/Berms
- Grading and Paving
- Storm water Conveyances
- Roofing
- Dikes

Each of these structural BMP's is described in greater detail below with details applying to the Indian Basin Gas Plant added as appropriate.

Sediment and Erosion Control

Erosion prevention may be achieved by using one or more or the following techniques:

- Maintaining beneficial vegetation;
- Reducing runoff velocity;
- Minimizing the exposure of bare soil;
- Immediately stabilizing disturbed soil areas;
- Providing appropriate drainage path ways for runoff;

- Preventing runoff from flowing across exposed (bare earth) areas; or
- Filtering, settling, or removing sediment from runoff.

Preserving as much ground cover as possible will decrease the impact rainfall has on ground surfaces, which in turn prevents erosion. For example, a buffer zone is a naturally vegetated strip that is adjacent to a stream, ditch, or steep, unstable slope. The buffer zone decreases the velocity of storm water runoff and helps prevent erosion. The outfall from approximately four acres of the Indian Basin Gas Plant passes through a vegetated strip. Storm water from the remainder of the facility drains as sheet flow to the southeast where it passes through about 800 feet of vegetation before reaching Rocky Arroyo.

The following structural practices can be used to implement the techniques listed above:

- Straw Bale Dikes, Silt Fences, Earth Dikes
- Subsurface Drain, Pipe Slope Drain
- Storm Drain Inlet Protection, Rock Outlet Protection
- Sediment Traps, Temporary Sediment Basins
- Retention/Detention Basins

<u>Ballast Ground Cover</u>

Infiltration is a structural BMP that causes storm water to enter the ground surface into subsurface soils rather than runoff into surface water bodies. Ballast cover used for storm water infiltration should be installed with a depth and gradation that will promote infiltration and prevent erosion. Soil type and ground slope should also be considered. Potential ground water impacts must also be considered for this (and in fact any) infiltration type of BMP. When storm runoff from areas with known storm water pollution risk is directed to infiltration type systems an evaluation of groundwater pollution impacts must be performed.

Ballast sometimes requires cleaning and/or replacement due to sediment build up that can prevent proper drainage. Cleaning procedures should be conducted in a manner that avoids or minimizes the potential for storm water contamination.

<u>Grassed Swales</u>

Grassed swales are gentle sloping vegetated depressions constructed to promote infiltration, control runoff pollution by filtering sediments, and to channel runoff to a desirable location.

Curbs/Berms

Diversionary structures prevent the flow of storm water onto regulated "industrial activities". Often a diversion structure and a storm water conveyance are used together to achieve this goal. Conveyances carry the water away and prevent it from pooling at the curb or berm. For example, an employee parking lot is not a regulated area. If a parking lot drains across a regulated "industrial activity", curbing the perimeter of the lot may be an appropriate BMP. Such action would reduce the amount of storm water that would flow across the "industrial activity", and therefore reduce the potential for generating storm water pollution. Curbing, berms, and associated conveyances need regular inspection, repair, and cleaning to keep them functioning properly.

A large uphill diversion berm has been constructed around the north and west sides of the Indian Basin Gas Plant. It diverts surface runoff away from the plant and reduces the volume of water than can potentially contact polluting materials at the plant.

Grading and Paving

Finished grades at the Indian Basin Gas Plant are designed to facilitate the prevention of run on onto regulated "industrial activities". Therefore, this surface grading is a BMP, and is a part of this SWPPP that can reduce the exposure of storm water to potential pollutants. However, due to the constraints imposed by normal operations grading and paving may have to be combined with other BMP's (such as curbs or conveyances) to be effective.

Storm Water Conveyances

Storm water conveyances are channels, gutters, drains, and sewers which are used to collect storm water and direct its flow. They are part of a site's storm water collection system. A primary purpose of a storm water conveyance is to prevent storm water from being exposed to a storm water pollution source area.

Gutter systems, down spouts and storm sewers can be retrofitted to discharge runoff away from regulated "industrial activities". This will help minimize the volume of potentially polluted storm water generated at the site. Subsurface conveyance systems are already in place at the Indian Basin Gas Plant. Product effluent from most plant equipment is drained through a closed system. In addition, an open collection system has been constructed around much of the plant process equipment. The system consists of concrete pads with curbs, concrete troughs covered with steel grates, drainage collection pipes, sumps, sump pumps. The purpose of this system is to capture material that originates from a leak or spill, convey it to the sump, and pump it into the skimmer basin. Material collected in this manner is ultimately reprocessed or disposed in the injection well.

Roofing

The construction of a roof over a potential storm water pollution source area (e.g., drum storage) will eliminate the direct exposure of chemicals in that area to rainfall. However, simply covering potential storm water pollution source areas may not be sufficient to prevent contact with "run-on" and "run-through". Simply stated, these terms refer to storm water that does not fall onto potential source materials, but rather flows through a potential source area. Therefore, for roofing to be effective, combination with curbs/berms may be required.

Dikes

Earthen and concrete dikes are used around storage and break-out tankage as a means of collecting storm water and any potential spills. The storm water can than be inspected prior to being discharged into the surface water body. Earthen and concrete dikes are used extensively at the Indian Basin Gas Plant as part of the SPCC. A summary of the storage tanks and the volumes of the dikes are presented in the SPCC.

5.0 COMPLIANCE EVALUATION AND MONITORING

5.1 Compliance Evaluation

The EPA MSGP requirements for the Oil and Gas Extraction category (Category I) specify that qualified personnel must conduct site compliance evaluations at a minimum of once per year. Inspections required to prepare these annual compliance evaluations will be performed by the Indian Basin Gas Plant Storm Water Permit Coordinator or other member of the Storm Water Pollution Prevention Team. The following items will be addressed during the site compliance evaluation inspection:

1. Inspect storm water drainage areas for evidence of storm water pollutants entering the drainage system;
2. Observe non-structural and structural BMP's to ensure proper operation;
3. Evaluate the effectiveness of the selected (and implemented) measures (i.e., BMPs) to reduce storm water pollution and determine whether additional measures are necessary;
4. Inspect equipment needed to implement the SWPPP (e.g., emergency response equipment for spills);
5. Revise the plan as needed; and,
6. Implement necessary and appropriate changes.

A compliance evaluation inspection form (Table 5-1) has been developed to assist with both the actual inspection process, as well as the documentation of that process.

5.2 Storm Water Monitoring

The EPA MSGP requirements for the Oil and Gas Extraction category (Category I) specify that qualified personnel must conduct quarterly visual examinations of storm water quality. The examination must be made at least once in each designated period during daylight hours unless there is insufficient rain or snow melt to produce a runoff event. Examinations shall be conducted in each of the following periods: January through March; April through June; July through September; and October through December.

All storm water samples required must be collected from storm events greater than 0.1 inches in magnitude, and each such event must be at least 72 hours following the previous measurable (greater than 0.1 inch) storm event. The MSGP requires that samples must be collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed one hour) of when the runoff or snowmelt begins discharging.

The examination shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a well lit area. Where practicable, the same individual will carry out the collection and examination of discharges for the life of the permit.

Visual examination reports will be maintained on site in the SPCC/SWPPP file. The report will include the examination date and time, personnel conducting the examination, the nature of the discharge, visual quality of the discharge, and probable sources of any observed storm water pollution.

When samples cannot be collected due to adverse climactic conditions (e.g., drought), a record will be kept documenting the reason for not performing the visual examination. A visual monitoring form (Table 5-2) has been developed to assist with both the actual visual monitoring, as well as the documentation of the monitoring.

In addition, the State of New Mexico requires that the following analytical monitoring be conducted:

- pH;
- Oil and grease;
- Total phosphorus; and,
- Total suspended solids.

Analytical monitoring will be conducted on a grab sample obtained within the first 30 minutes of the discharge, unless impractical, in which case the sampling will be conducted within the first hour of the discharge.

Monitoring for the above parameters is to be conducted at least quarterly in the second and fourth year of the permit. In this case, analytical monitoring will begin in the fourth year of the permit, October 1, 1998 through September 30, 1999. Results of each year of monitoring (four quarters) shall be reported to the New Mexico State Program Manager no later than the following March 31. A copy of the data shall be kept with this SWPPP.

Table 5-1
Indian Basin Gas Plant
Storm Water Pollution Prevention Plan
Compliance Evaluation Inspection Form

Date of Inspection:____________________

Source Area	Map Designation	(1) Visual Inspection		BMP Evaluation	Actions Taken (2)
		Acceptable	Unacceptable		

Signature attests to accuracy of the above information: ______________________________

(1) Source areas must be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. If an unacceptable *rating is given*, the BMPs *shall* be evaluated to determine whether they are adequate and properly implemented.

(2) If the recommended action is to establish a new BMP for a particular source area, the SWPPP must be amended within two weeks and the BMP must be implemented within 12 weeks.

Table 5-2
Indian Basin Gas Plant
Storm Water Pollution Prevention Plan
Visual Monitoring Form

Date:________________________ Monitoring Period (Quarter)________________________

Outfall Map Designation	Visual Inspection								Comments
	Color	Odor	Clarity	Floating Solids	Suspended or Settled Solids	Foam	Oil Sheen	Other	

Signature attests to accuracy of the above information: ________________________

6.0 SWPPP IMPLEMENTATION

6.1 Pollution Prevention Team

This facility's Storm Water Pollution Prevention Team is responsible for the development and implementation of this SWPPP. The primary responsibility for implementing the facility's BMPs (Table B), as well as for the annual SWPPP inspection and updating of the plan is the Storm Water Pollution Prevention Coordinator. The Storm Water Pollution Prevention Team consists of a site Storm Water Pollution Prevention Coordinator and selected facility personnel. The personnel designated to serve on the Storm Water Pollution Prevention Team are presented in Attachment 4.

6.2 Implementation Activities, Priorities, and Schedule

Table A (Attachment 3) identifies and describes the storm water pollution source areas, as well as the storm water pollution "risks" for these source areas. Table B (Attachment 3) identifies the specific management actions that will be taken to address the Industrial Activities storm water pollution source areas. Table B also establishes an implementation schedule and identifies the responsible Indian Basin Gas Plant personnel who will implement the various storm water BMP's.

6.3 Employee Training

Employees shall be trained to prevent storm water pollution. The Storm Water Coordinator has responsiblity for employee training. Employees will receive training regarding storm water pollution prevention at the plant on an annual basis. New employees will receive SWPPP training at the start of their employment and then, annually thereafter. Additional storm water pollution control training will be received at SPCC training sessions. Training dates are documented in Attachment 4. Employees will be informed of:

1. The need for storm water pollution prevention;
2. Goals of plant storm water pollution prevention efforts;
3. Categories of materials that represent significant potential for storm water pollution and approved handling procedures;
4. Operational practices that could minimize storm water pollution (e.g., Good Housekeeping);
5. Techniques for avoiding storm water pollution;
6. Spill response procedures;
7. Team structure and communication channels regarding storm water pollution prevention; and
8. Existence of fines and civil penalties for storm water pollution.

The Storm Water Coordinator will further encourage employees to present ideas that could improve plant storm water pollution prevention.

6.4 Erosion and Sediment Control for Well Drilling

The EPA MSGP requires that specific erosion and sediment control measures be used for well drilling areas, unless they are covered by a Storm Water GP for Construction Activity. Well drilling is not currently planned for the Indian Basin Gas Plant, with the possible exception of monitor wells or wells associated with subsurface remediation activities at the facility. In the event that drilling is conducted at the facility, the well drilling areas will need to be characterized for storm water pollution potential in much the same way as this plan provides for the gas plant. The SWPPP will be amended to include specific plans for storm water pollution prevention associated with such drilling activities. Considerations for the planned prevention of storm water pollution associated with drilling activities include:

1. A description of the nature of the activity;
2. Estimates of the total area of the site and the area of the site that is expected to be disturbed due to the activity;
3. An estimate of the runoff coefficient of the site;
4. A site map indicating drainage patterns and approximate slopes, the location of major control structures identified in the plan, and surface waters; and
5. The name of the receiving water(s) and the ultimate receiving water(s) of the runoff.

Controls to be used at well drilling sites should be similar to those at the gas plant. An erosion and sediment control plan for a well drilling site should describe the controls to be used including:

1. A description of vegetative practices designed to preserve existing vegetation where attainable and revegetate open areas as soon as practicable after grade drilling. Such practices may include: temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffer strips, protection of trees, or other equivalent measures
2. A description of structural practices that divert flows or otherwise limit runoff from exposed areas of the site. Such practice may include straw bale dikes, silt fences, earth dikes, brush barriers, drainage swales, check-dams, subsurface drain, pipe slope drain, level spreaders, storm drain inlet protection, rock outlet protection, sediment traps, temporary sediment basins, or other equivalent measures. Off-site tracking of sediment by construction or drilling equipment is to be minimized.

Procedures in such an amended plan shall provide that erosion controls on the well drilling site are inspected at least once every seven calendar days.

6.5 SWPPP Certification

The SWPPP preparation certification is included as Table 6-1. The implementation and inspection certification included in Attachment 4 will be completed within 18 months of the effective date of permit (30 June 1997) and annually thereafter. The inspection forms discussed in section 5.0 will be completed and included with each certification submitted to the EPA.

Table 6-1. Storm Water Pollution Prevention Plan Certification

"I certify that under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

[signature]	1-27-98
Signature	Date
Steven B. Hinchman	
Name	
Production Manager	
Title	

7.0 SWPPP RECORDKEEPING AND AMENDMENTS

7.1 SWPPP Recordkeeping

The Storm Water Coordinator shall inspect the entire plant site on a regular schedule and after each rainfall event that produces significant surface runoff. A Storm Water Inspection Report shall be completed for inspections that result in changes to this SWPPP. Spills and leaks shall be corrected according to requirements of the Groundwater Discharge Plan and the SPCC plan.

The Storm Water Coordinator shall keep the following records at the plant site:

1. This original SWPPP and any revised versions;
2. Minutes of employee training sessions;
3. Copies of relevant inspection, spill response, and visual monitoring reports;
4. Copies of information and/or exhibits used for storm water pollution planning and control; and,
5. Copies of communications with the State of New Mexico, U.S. EPA, and other parties concerning storm water pollution matters.

Additional copies of the documents listed above may be kept at other locations. The originals, however, shall be kept at the plant.

7.2 SWPPP Revisions

SWPPP revisions are required whenever there is a change at the Indian Basin Gas Plant (e.g., in design, construction, operation, or maintenance) which has the potential to affect the storm water pollution discharges from that facility. Conditions that may require SWPPP revision include the following:

- Addition or Elimination of Industrial Activities-An addition or elimination of an Industrial Activity at a site would require the appropriate site-specific changes be made to the Source Identification Table (Table A, Attachment 3), Storm water Control Measures Table (Table B, Attachment 3), and the Site Drainage and Source Area Plan (Figure 2, Attachment 2), including revision dates.
- Addition or Elimination of Source Areas under an Industrial Activity-Addition or Elimination of Source Area under an Industrial Activity at a site would require the appropriate site-specific changes be made to the Source Identification Table (Table A, Attachment 3), Storm water Control Measures Table (Table B, Attachment 3), and the Site Drainage and Source Area Plan (Figure 2, Attachment 2), including revision dates.

- Change of Personnel-When individuals specifically named in the SWPPP are no longer assigned to duties under the Storm Water Pollution Prevention Team, appropriate changes will need to be made to this SWPPP.

- Adoption of "New" BMP's-Any changes to BMP's being applied at an industrial activity would require the appropriate changes to the Storm Water Control Measures Table (Table B).

Revisions will be made directly to the appropriate figures and tables addressed above, and a "master" copy of this SWPPP will be kept at the Indian Basin Gas Plant.

ATTACHMENT 1

- Notice of Intent

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
STORM WATER MULTI-SECTOR GENERAL PERMIT COVERAGE NOTICE

November 17, 1997

Dear Operator:

Your Notice of Intent (NOI) for the facility noted below has been processed by the U.S. Environmental Protection Agency. This facility is authorized to discharge storm water associated with industrial activity under the terms and conditions imposed by EPA's NPDES storm water multi-sector general permit issued for use in the state of New Mexico. Your facility's NPDES multi-sector storm water general permit number is NMR05A228.

EPA's storm water multi-sector general permit requires certain storm water pollution prevention and control measures, possible monitoring and reporting, and annual inspections. Among the conditions and requirements of this permit, you must prepare and implement a pollution prevention plan (PPP) that is tailored to your industrial site. Enclosed is a summary guidance document designed to assist you in the development and implementation of your PPP. The summary is organized according to the phases of the pollution prevention planning process. As a facility authorized to discharge under this storm water multi-sector general permit, all terms and conditions must be complied with to maintain coverage and avoid possible penalties.

MCR
DEC 1 1997
Environmental & Safety

FACILITY:
Marathon Indian Basin Gas Plan
329 Marathon Rd
Lakewood, NM 88254-
322756, 1043414,
NE, 23, T21S R23E

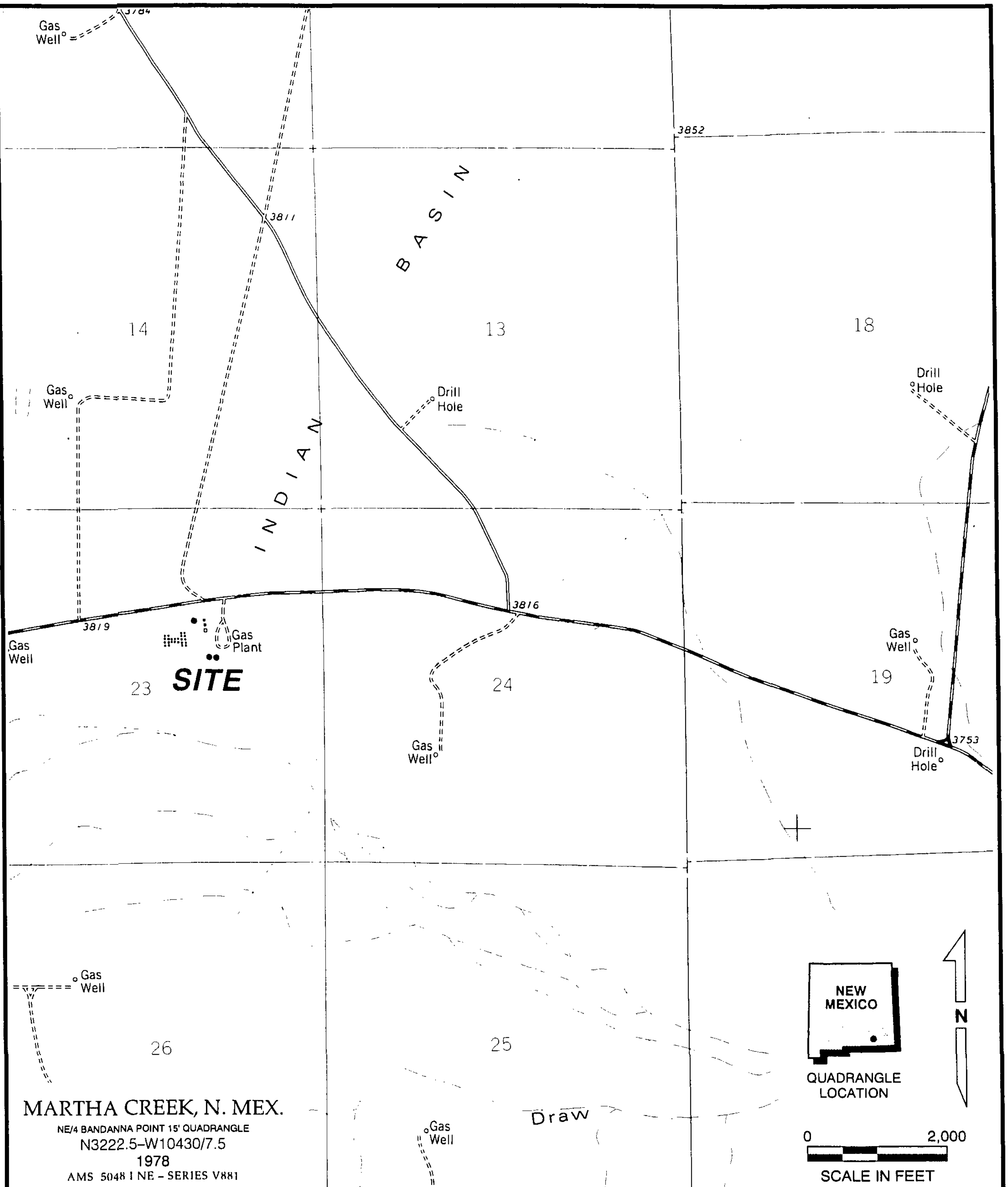
OPERATOR:
Marathon Oil Co
Po Box 552
Midland
TX 79702-0552

To obtain a copy of the multi-sector general permit terms and conditions to which you are now held accountable, please call the EPA Office of Water Resource Center at (202)260-7786. If you have general questions concerning the storm water program, please call the EPA Region 06 contact: StormwaterHotline, (800)245-6510.

ATTACHMENT 2

- Figure 1
- Figure 2

DRAWN BY	FOLDER	FILE	CHECKED	APPROVED BY
JU 2/23/98	MARATHON	Topo 2/98	CL 2/23/98	CL 2/23/98



INDIAN BASIN GAS PLANT

SITE LOCATION/TOPOGRAPHIC MAP

MARATHON OIL COMPANY

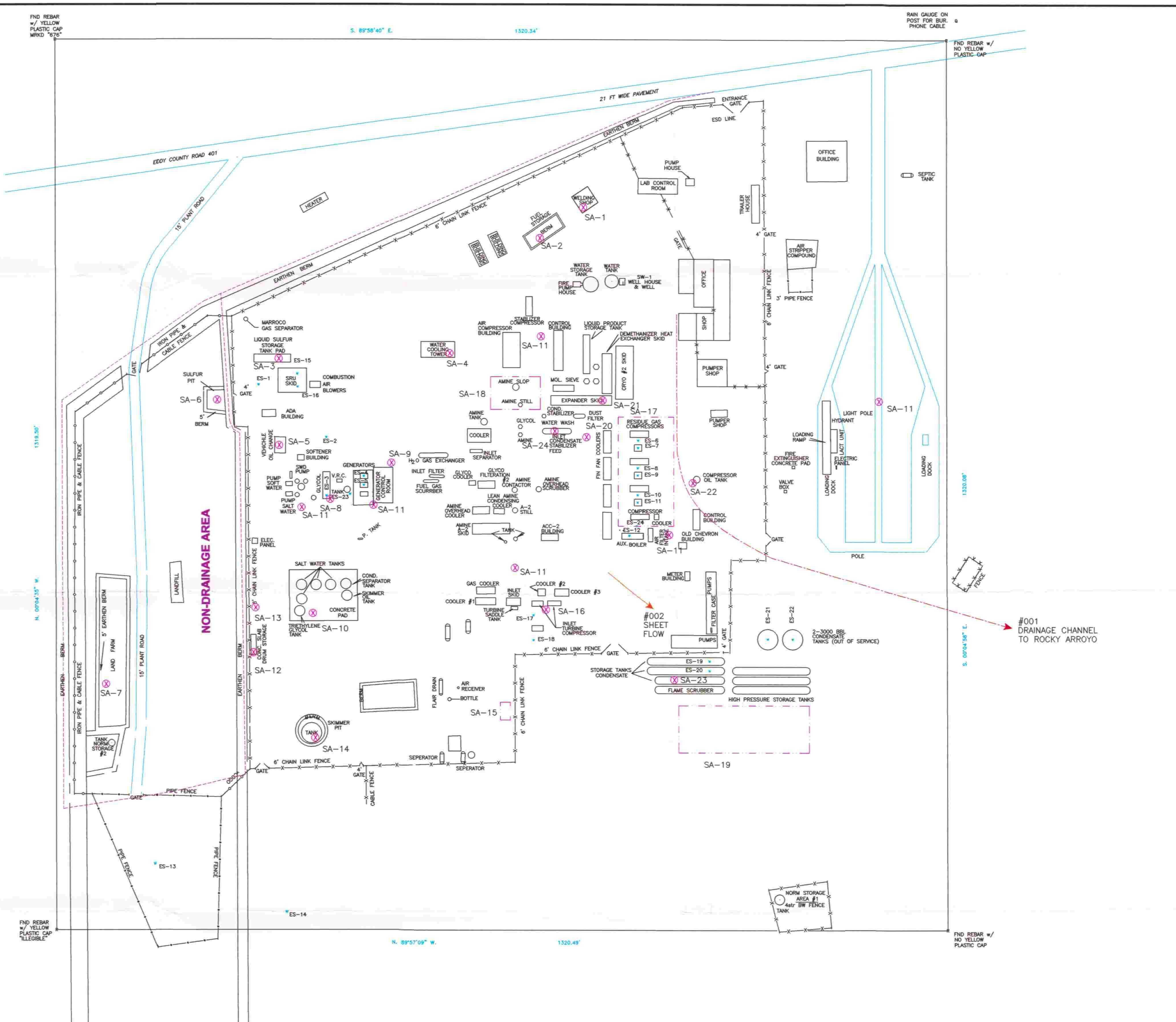
FIGURE 1

LOCATION: 18 MILES NW OF CARLSBAD, NM

PROJECT NO.: 101275

FLUOR DANIEL GTI

EMISSION POINT	DESCRIPTION	LATITUDE	LONGITUDE	GROUND ELEV.	HEIGHT OF STACK	UTM COORDINATES (IN METERS) NORTH	EAST
ES-1	SULFUR TAIL GAS	32°27'57.5"	104°34'18.1"	3810.7	122 FT	3,591,978.6	540,250.8
ES-2	REGENERATION GAS HEATER	32°27'57.6"	104°34'17.1"	3808.9	77 FT	3,591,951.0	540,277.1
ES-3	GLYCOL REGENERATOR	32°27'55.8"	104°34'17.1"	3808.9	30 FT	3,591,926.3	240,277.1
ES-4	GENERATOR STACK	32°27'56.9"	104°34'16.4"	3808.9	18 FT	3,591,960.6	540,295.4
ES-5	GENERATOR STACK	32°27'56.8"	104°34'16.4"	3808.9	18 FT	3,591,957.6	540,295.4
ES-6	COMPRESSOR STACK	32°27'56.6"	104°34'11.5"	3806.7	28 FT	3,591,951.6	540,423.2
ES-7	COMPRESSOR STACK	32°27'56.5"	104°34'11.5"	3806.7	28 FT	3,591,948.5	540,423.2
ES-8	COMPRESSOR STACK	32°27'56.2"	104°34'11.5"	3806.7	28 FT	3,591,939.2	540,423.3
ES-9	COMPRESSOR STACK	32°27'56.1"	104°34'11.5"	3806.7	28 FT	3,591,936.2	540,423.3
ES-10	COMPRESSOR STACK	32°27'55.9"	104°34'11.5"	3806.7	28 FT	3,591,930.0	540,423.3
ES-11	COMPRESSOR STACK	32°27'55.8"	104°34'11.5"	3806.7	28 FT	3,591,926.9	540,423.3
ES-12	AUXILIARY BOILER	32°27'55.3"	104°34'11.7"	3806.4	19 FT	3,591,911.5	540,418.2
ES-13	FLARE No. 2	32°27'50.9"	104°34'20.2"	3812.2	167 FT	3,591,775.1	540,196.8
ES-14	FLARE No. 1	32°27'50.2"	104°34'17.9"	3810.8	67 FT	3,591,753.8	540,257.0
ES-15	NORTH SRU SALT BATH HEATER STACK	32°27'57.5"	104°34'17.6"	3809.7	34 FT	3,591,978.6	540,263.9
ES-16	SOUTH SRU SALT BATH HEATER STACK	32°27'57.3"	104°34'17.6"	3809.7	34 FT	3,591,972.5	540,263.9
ES-17	INLET COMPRESSOR STACK	32°27'52.3"	104°34'13.5"	3807.0	20 FT	3,591,818.9	540,371.6
ES-18	PROPOSED INLET COMPRESSOR STACK	32°27'52.1"	104°34'13.5"	36807.0	20 FT	3,591,812.8	540,371.6
ES-19	CONDENSATE STORAGE	32°27'53.6"	104°34'10.3"	3806.0	27 FT	3,591,859.3	540,454.9
ES-20	CONDENSATE STORAGE	32°27'53.5"	104°34'10.3"	3806.0	27 FT	3,591,856.2	540,454.9
ES-21	CONDENSATE STORAGE	32°27'53.9"	104°34'09.4"	3805.3	30 FT	3,591,868.6	540,478.9
ES-22	CONDENSATE STORAGE	32°27'53.9"	104°34'09.0"	3805.3	30 FT	3,591,868.7	540,488.8
ES-23	EXHAUST STACK						
ES-24	EXHAUST STACK						



EXPLANATION

SA-X OR [ ] SA-X	SOURCE AREA LOCATION AND NUMBER CORRESPONDING TO TABLES A AND B
#001	FLOW OUTFALL AND NUMBER
— — →	DIRECTION OF OUTFALL FLOW
— —	DRAIN AREA BOUNDARY
→	DIRECTION OF SHEET FLOW

75 0 75 150 FEET
Scale: 1"=75'

JOHN W. WEST ENGINEERING COMPANY
JOHN W. WEST SURVEYING COMPANY
CONSULTING ENGINEERS & SURVEYORS – HOBBS, NEW MEXICO

MARATHON OIL COMPANY

PLOT PLAN OF THE INDIAN BASIN GAS PLANT

Surveyed By: DB	Drawn By: D.COLLINS	Last Rev.: 11/22/99	Drawing Number
Date Begin: 8/24/94	Date: 2/24/98	Disk: MARATHON	
Date End: 2/4/97	Approved By:	Sheet 1 of 1	
Project #:98-11-0103	Filename: MARA0962	Scale: 1"=50'	

ATTACHMENT 3

- Table A
- Table B

TABLE A

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT
POTENTIAL SOURCE IDENTIFICATION AND RISK ASSESSMENT

STORM WATER POLLUTION SOURCE AREA INFORMATION

Potential Source Area Inventory and Risk Assessment of Exposed Material

Potential Source Area Identification	Map Designation	Drainage Area**	Source Area Description	Material/ Chemical	Pollution Risk
Welding Shop	SA-1	001	Outside storage of materials, on gravel area, little runoff.	metals	LOW
Fuel Storage	SA-2	001	Outside storage of oils and fuels, in tanks with concrete berms	lube oil, diesel, gasoline glycol, methanol, petroleum solvent	LOW
Sulfur Area	SA-3	002	Sulfur transfer area, to trucks, spills can occur and do occur at the transfer point	sulfur (solid)	MEDIUM
Cooling Tower	SA-4	002	Cooling tower area, pollution source is the associated water treatment chemicals, each individually contained	non-hazardous water treatment chemicals, sulfuric acid	LOW
Vehicle Oil Change Area	SA-5	002	Vehicle oil change and drum storage area, concrete pad with drain to the waste water sump system	lube oil, used oil, 12% sodium hypochlorite (bleach)	LOW
Sulfur Disposal Area	SA-6	no discharge	Discontinued sulfur disposal area (land disposal), located in a bermed area (berm was breached and must be maintained)	sulfur	HIGH
Land Farm Area	SA-7	no discharge	Area where petroleum contaminated soil and spent activated carbon is staged prior to disposal, area is to be bermed, berm must be maintained.	petroleum	HIGH

** Drainage from all areas passes through a vegetated strip prior to entering Rocky Arroyo.

TABLE A (cont.)

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT
POTENTIAL SOURCE IDENTIFICATION AND RISK ASSESSMENT

STORM WATER POLLUTION SOURCE AREA INFORMATION Potential Source Area Inventory and Risk Assessment of Exposed Material					
Potential Source Area Identification	**Map Designation**	**Drainage Area****	**Source Area Description**	**Material/ Chemical**	**Pollution Risk**
Glycol Regenerator Area	SA-8	002	Pump equipment area, leaks can occur but area is concrete bermed, care must be taken to clean spills/splashes outside of bermed area.	lube oil, glycol	LOW
Generator Building	SA-9	002	Generator equipment, in a concrete bermed area	lube oil	LOW
Skimmer Basin	SA-10	002	Oil skimming facility within a concrete berm, for internal waste liquids collection system	lube oil, condensate	LOW
Collection Sump (typical)	SA-11	002	Collection point for the internal drain system to the skimmer basin.	lube oil, condensate, DEA, glycol	LOW
Drum Storage Area	SA-12	002	Waste materials in drums, in a concrete bermed area. Care must be taken in storage and movement of drums.	characterized lab waste, characterized paint waste, used batteries, hydrochloric acid	MEDIUM
Equipment Storage Area	SA-13	002	Storage of facility equipment, and parts, filter drying rack.	metals, DEA, glycol	LOW
Skimmer Pit	SA-14	002	Open top tank with oily waste material within earthen berm, loaded by truck, potential source area at loading point.	condensate, produced water	MEDIUM

** Drainage from all areas passes through a vegetated strip prior to entering Rocky Arroyo.

TABLE A (cont.)

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT
POTENTIAL SOURCE IDENTIFICATION AND RISK ASSESSMENT

STORM WATER POLLUTION SOURCE AREA INFORMATION

Potential Source Area Inventory and Risk Assessment of Exposed Material

Potential Source Area Identification	Map Designation	Drainage Area**	Source Area Description	Material/ Chemical	Pollution Risk
Inlet Metering Separators	SA-15	002	Production vessels	condensate, produced water	LOW
Inlet Compressor Area	SA-16	002	Gas compressor equipment on a concrete pad with an outside channel drain. Channel drain can overflow onto ground. Channel drain needs to be kept clean so that it does not overflow and from a storm water pollution source.	lube oil	MEDIUM
Residue Gas Compressor Area	SA-17	001, 002	Compressor equipment area, all in concrete containment areas	lube oil	LOW
Chemical Storage Area	SA-18	002	Earthen bermed chemical storage area, inside of gas compressor equipment area.	boiler treatment chemicals, makeup DEA	LOW
Equipment Storage/ Laydown Area	SA-19	002	Equipment storage and staging (prior to resale) area.	metals, residual oil	LOW
Drum Storage Area	SA-20	002	Storage of compressor equipment chemicals, within metal containment.	lube oil, anti-foam chemicals	LOW

** Drainage from all areas passes through a vegetated strip prior to entering Rocky Arroyo.

TABLE A (cont.)

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT
POTENTIAL SOURCE IDENTIFICATION AND RISK ASSESSMENT

STORM WATER POLLUTION SOURCE AREA INFORMATION

Potential Source Area Inventory and Risk Assessment of Exposed Material

Potential Source Area Identification	Map Designation	Drainage Area**	Source Area Description	Material/ Chemical	Pollution Risk
Dehydration/ Expander Skid	SA-21	001	Dehydration equipment, concrete sump to trap spills on equipment.	lube oil	LOW
Compressor Oil Tank	SA-22	001	Earthen bermed area for a lube oil tank for compressor equipment	lube oil	LOW
Condensate Tanks	SA-23	002	Steel condensate storage tanks, earthen rectangular berm	condensate	MEDIUM
Condensate Stabilization Area	SA-24	002	Inlet condensate tanks are not bermed	condensate	MEDIUM

** Drainage from all areas passes through a vegetated strip prior to entering Rocky Arroyo.

TABLE B

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT
STORM WATER CONTROL MEASURES

BEST MANAGMENT PRACTICES (BMP) INFORMATION
Source Area Specific Control Measures
(Non-Structural and Structural)

Potential Source Area Identification	Map Designation	BMP Identification	Description	Frequency (if applicable)	Existing/New (Implementation Date)
Welding Shop	SA-1	Good Housekeeping	Clean and maintain area, moving any chemicals to a covered area.	As necessary	
Fuel Storage	SA-2	Inspect/ Maintain	Ensure integrity of berms.	Regular	
Sulfur Area	SA-3	Inspect/ Good Housekeeping	Clean area after spills occur during transfer operations.	As necessary	
Cooling Tower	SA-4	Inspect/ Good Housekeeping	Maintain a clean work area.	As necessary	
Vehicle Oil Change Area	SA-5	Inspect/ Good Housekeeping	Maintain a clean work area.	As necessary	
Sulfur Disposal Area	SA-6	Inspect/ Maintain	Regularly inspect containment berm, maintain containment berm all around disposal area to eliminate surface discharge.	Regular	

Inspections occur eight times per day during regularly scheduled rounds. Inspection results are documented on operator log sheets.

TABLE B (cont.)

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT
STORM WATER CONTROL MEASURES

BEST MANAGMENT PRACTICES (BMP) INFORMATION
Source Area Specific Control Measures
(Non-Structural and Structural)

Potential Source Area Identification	Map Designation	BMP Identification	Description	Frequency (if applicable)	Existing/New (Implementation Date)
Land Farm Area	SA-7	Inspect/ Maintain	Repair earthen containment berm on south boundary. Regularly inspect containment berm, maintain containment berm all around disposal area to eliminate surface discharge.	Regular	Repair by 6/98
Glycol Regenerator Area	SA-8	Good Housekeeping	Clean up pump/equipment leaks.	As necessary	
Generator Building	SA-9	Good Housekeeping	Clean up equipment leaks.	As necessary	
Skimmer Basin	SA-10	Inspect/ Maintain	Maintain the integrity of skimming equipment, and basin structure.	Regular	
Collection Sump	SA-11	Inspect/ Maintain Good Housekeeping	Inspect sump areas for any surface spills, maintain equipment and perform necessary cleanups.	Regular	
Drum Storage Area	SA-12	Good Housekeeping	Maintain a clean storage area, remove any spills. Ensure safe movement of drums.	Regular	

Inspections occur eight times per day during regularly scheduled rounds. Inspection results are documented on operator log sheets.

TABLE B (cont.)

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT
STORM WATER CONTROL MEASURES

BEST MANAGMENT PRACTICES (BMP) INFORMATION
Source Area Specific Control Measures
(Non-Structural and Structural)

Potential Source Area Identification	Map Designation	BMP Identification	Description	Frequency (if applicable)	Existing/New (Implementation Date)
Equipment Storage Area	SA-13	Good Housekeeping	Maintain a clean storage area, remove any spills.	As necessary	
Skimmer Pit	SA-14	Good Housekeeping	Clean up any spills resulting from material transfer from pit.	Regular, as necessary	
Inlet Metering Separators	SA-15	Good Housekeeping	Clean any spills from the tank(s), ensure safe movement of tanks.	As necessary	
Inlet Compressor Area	SA-16	Good Housekeeping	Clean up spills in the area, in general. Begin regular cleaning of drain channel to avoid spills to surface soils.	Regular, as necessary	
Residue Gas Compressor Area	SA-17	Inspection, Maintenance, and Good Housekeeping	Develop a regular program to inspect the area for spills/leaks that could enter surface runoff streams. Clean areas that could become part of surface drainage.	Regular	
Chemical Storage Area	SA-18	Inspection, Maintenance, and Good Housekeeping	Regular inspection of chemical storage area(s) for leaks/spills that could enter surface drainage. Clean upon finding.	Regular	

Inspections occur eight times per day during regularly scheduled rounds. Inspection results are documented on operator log sheets.

TABLE B (cont.)

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT
STORM WATER CONTROL MEASURES

BEST MANAGMENT PRACTICES (BMP) INFORMATION Source Area Specific Control Measures (Non-Structural and Structural)					
Potential Source Area Identification	**Map Designation**	**BMP Identification**	**Description**	**Frequency** (if applicable)	**Existing/New** (Implementation Date)
Equipment Storage Laydown	SA-19	Good Housekeeping	Remove any large residues related to storage of metal equipment.	As necessary	
Drum Storage Area	SA-20	Good Housekeeping/ Good Practice	Ensure good practice in the storage, inspection, and management of drums. Clean area as necessary.	Regular	
Dehydration/ Expander Skid	SA-21	Good Housekeeping	Clean sumps regularly, and as oil builds up.	Regular	
Compressor Oil Tank	SA-22	Good Housekeeping, Maintenance	Maintain the containment berm on a regular basis. Clean spills.	Regular	
Condensate Tanks	SA-23	Inspect/ Maintain	Regularly inspect containment berm, maintain earthen containment berm	Regular	
Condensate Stabilization Area	SA-24	Inspect/ Maintain	Regularly inspect tanks and piping	Regular	

Inspections occur eight times per day during regularly scheduled rounds. Inspection results are documented on operator log sheets.

ATTACHMENT 4

- Storm Water Pollution Prevention Team
- Training Dates/Minutes of Employee Training Sessions

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT

POLLUTION PREVENTION TEAM

SWPPP Coordinator: Mike Schweser

SWPPP Team Member: ____________________

SWPPP Team Member: ____________________

SWPPP Team Member: ____________________

SWPPP Team Member: ____________________

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT

DATES OF EMPLOYEE TRAINING SESSIONS

Date ____________________ Trainer ____________________

Date ____________________ Trainer ____________________

Date ____________________ Trainer ____________________

Date ____________________ Trainer ____________________

Date ____________________ Trainer ____________________

Date ____________________ Trainer ____________________

MARATHON OIL COMPANY
STORM WATER POLLUTION PREVENTION PLAN
INDIAN BASIN GAS PLANT

MINUTES OF EMPLOYEE TRAINING SESSIONS

ATTACHMENT 5

- Blank Forms

Marathon Oil Company
Indian Basin Gas Plant
Storm Water Pollution Prevention Plan Certification

"I certify that under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature ______________________ Date ______________

Name ______________________

Title ______________________

Indian Basin Gas Plant
Storm Water Pollution Prevention Plan
Compliance Evaluation Inspection Form

Date of Inspection:______________________

Source Area	Map Designation	(1) Visual Inspection		BMP Evaluation	Actions Taken (2)
		Acceptable	Unacceptable		

Signature attests to accuracy of the above information: ____

(1) Source areas must be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. If an unacceptable rating is given, the BMPs shall be evaluated to determine whether they are adequate and properly implemented.

(2) If the recommended action is to establish a new BMP for a particular source area, the SWPPP must be amended within two weeks and the BMP must be implemented within 12 weeks.

Indian Basin Gas Plant
Storm Water Pollution Prevention Plan
Visual Monitoring Form

Date:______________________ Monitoring Period (Quarter)______________________

Outfall Map Designation	Visual Inspection								Comments
	Color	Odor	Clarity	Floating Solids	Suspended or Settled Solids	Foam	Oil Sheen	Other	

Signature attests to accuracy of the above information: ______________________