2R - 34

REPORTS

DATE:

Oct. 20, 1993

Brown & Root Environmental

10200 Bellaire Boulevard (77072-5299)
Post Office Box 4574
Houston, TX 77210-4574

October 20, 1993

Mr. Larry Campbell
Transwestern Pipeline Company
6381 North Main
Roswell, New Mexico 88202-1717

Re: Subsurface Investigation
Atoka 1 Compressor Station
Atoka, New Mexico
Brown & Root Environmental Project Number NG19

Dear Mr. Campbell:

Brown & Root Environmental (B&R Environmental) is please to present to Transwestern Pipeline Company (Transwestern) this final letter report summarizing the results of the preliminary subsurface investigation conducted at the Transwestern Atoka 1 Compressor Station. Field work for the investigation occurred on various dates between June 26, 1993 and July 21, 1993.

INTRODUCTION

B&R Environmental conducted a subsurface investigation (SI) at the Atoka 1 Compressor Station in Eddy County, New Mexico, in order to investigate subsurface conditions and possible impact to the subsurface from activities related to the disposal of pipeline liquid waste into a concrete lined surface impoundment at the site. During this SI, 12 soil borings were drilled, four of which were completed as monitoring wells.

The Atoka 1 Compressor Station is located in Eddy County, New Mexico, approximately 10 miles east of Artesia, New Mexico. A location map is included as Figure 1. The site is an operating compressor station. The concrete-lined surface impoundment is located in the northeast corner of the property along the fenceline. The surface impoundment is approximately 30 feet by 30 feet at ground surface with inwardly sloping sides. At the time of the SI, the impoundment contained fluids.

FIELD ACTIVITIES

Prior to mobilization for field activities, a project-specific Health and Safety Plan (HASP) was prepared. A copy of the HASP is included as Attachment 1.

Drilling

Twelve soil borings were drilled, four of which were completed as monitoring wells, at the Atoka 1 Compressor Station. Prior to initiating drilling activities, utility lines and other subsurface obstructions were located and marked by Transwestern. A site map showing the boring locations is included as Figure 2.

Drilling was accomplished using a combination of hollow stem auger and air rotary drilling techniques. For hollow stem auger drilling, 7.625-inch outer diameter hollow stem augers were employed. Air rotary drilling was accomplished using both a 3-inch and 6-inch diameter tricone drilling bits or a NDX core barrel. Subsurface soil samples were collected from the ground surface to total depth using either a 2-inch by 24-inch long split spoon sampler or a NDX core barrel. Hollow stem augers and split spoon samplers were used to drill and sample down to a depth of 10 to 15 feet below grade. At this depth, a caliche or calichified silt was encountered. This formation was too dense to be sampled using a split spoon and hollow stem auger drilling methods, therefore the drilling method was switched to air rotary. A NDX size core barrel was then used to drill and sample to total depth.

Soil borings were placed around the surface impoundment as shown in Figure 2. Soil borings were drilled and sampled to total depths ranging from 20 to 65 feet below grade. Groundwater was encountered in five of the soil borings. Monitoring wells were installed in four of these borings. Soil boring logs, monitor well construction diagrams, groundwater and soil sample log sheets are provided as Attachment 2.

Samples from the borings were submitted for laboratory analysis. One sample was collected from the bottom of each boring. Another sample was collected from the interval with the highest evidence of impact as determined by field screening. If soil did not appear impacted, the intermediate depth sample was not collected. Field screening for evidence of contamination included scanning the recovered soils samples with a flame ionization detector (FID) and a photo ionization detector (PID).

Soil samples collected were placed in laboratory supplied containers, properly labeled, placed on ice in shipping coolers and delivered to the laboratory by common carrier.

Upon completion of drilling and sampling activities, the borings were grouted to the ground surface using a Portland cement/bentonite slurry. Water for decontamination and grouting was obtained from the water supply at the site.

Monitor Well Installation

Four monitor wells were installed during the course of this SI. The borehole for monitoring well MW-1 was drilled to total depth and installed by the hollow stem auger method. The boreholes for monitoring wells MW-2, -3, and -4 were drilled using air rotary drilling methods using a 6-inch diameter tricone bit. The wells were installed in the open boreholes. The monitoring wells were constructed of 2-inch flush-threaded schedule 40 PVC with 10 feet of 0.010 slotted well screen with a bottom cap. A filter pack consisting of 10/20 grade Espey sand was emplaced in the annular space between the borehole and well screen. The filter pack extended a minimum of two feet above the top of the screen. A minimum of two feet of bentonite pellets were added on top of the filter pack. Five gallons of potable water were added to hydrate the bentonite. The remaining annular space was grouted to surface using a Portland Type I-II/bentonite gel grout. All wells are equipped with flush-mount well covers and locking water tight caps. Monitoring wells were developed by bailing with a disposable polyethylene bailer. A minimum of three well volumes were removed from each well for development purposes.

Groundwater Sampling

Groundwater samples were collected from three of the monitoring wells and from the soil boring that was later converted to a monitoring well.

A water sample was collected from the open borehole of soil boring AT1-2 on June 26, 1993. Water droplets were observed being blown out of the borehole when the drill bit was at 63 feet below grade. Drilling was halted and the boring sat while water accumulated in the open borehole. A water sample was obtained by lowering a disposable polyethylene bailer into the hole. Monitor well MW-1 was later installed at this location.

On July 21, 1993 the monitoring wells at the site were purged and sampled. Prior to purging the wells, groundwater level measurements were collected using a hydrocarbon interface probe. Non-aqueous phase liquids (NAPLs) were detected in monitoring well MW-1 and therefore this well was not purged or sampled. The presence and absence of NAPLs in the monitoring wells was confirmed by lowering a dedicated bailer into each well and obtaining a sample of the liquid for inspection. The other monitoring wells were purged and sampled. Wells were purged until three well volumes were removed or until the well was bailed dry, whichever came first. Monitoring wells MW-3 and -4 were bailed dry. Purging and sampling were accomplished using dedicated disposable polyethylene bailers and bailer rope. Groundwater sample log sheets are located in Attachment 2.

Monitoring well casing elevations were surveyed by P.R. Patton & Associates of Roswell, Mew Mexico. Elevations were surveyed relative to an assumed 100 foot elevation mark. Figure 2 depicts the benchmark selected and relative top of casing (TOC) elevations for the other monitoring wells.

Waste Management

Drill cuttings were placed in plastic drums which were supplied by Transwestern. The drums were sealed and labeled to identify the source of the material.

GEOLOGY

The Atoka 1 Compressor Station is located in the Pecos Valley section of the Southern High Plains physiographic province atop Quaternary sedimentary deposits.

Locally the geology consists of an uppermost interval of a dark brown silt and/or clay mixture which quickly grades to a tan silt containing abundant caliche. The thickness of this interval ranges from being absent to 21 feet, though it generally is approximately 10-15 feet thick. This interval is underlain by a horizon of caliche or calichefied silts. The transition to caliche is gradual. The caliche is composed of white to tan calcium carbonate cemented fine grained clastic sediments. This caliche is generally hard, broken and more friable in the upper portion. With depth the caliche is denser and appears somewhat brecciated. This horizon is up to ten feet thick. Below the caliche is a reddish brown siltstone or silt with

abundant caliche. In two of the soil borings, AT1-2 and AT1-4, a gray fine grained sandstone was encountered below the caliche horizon. In boring AT1-2, this extends to approximately 40 feet below grade. The lithology below 40 feet consists predominantly of dark red gypsum-rich clays and silts with some silts and pebbles layers.

HYDROGEOLOGY

Groundwater was encountered in five of the borings drilled at the site. Groundwater was encountered during the drilling process at depths ranging from 47 to 63 feet below grade.

Groundwater elevations at the site varied considerably, ranging from 36 to 60 feet below grade. The groundwater levels in monitor well MW-1, MW-4 and soil boring AT1-2A remained close to the depths at which water was encountered during drilling operations. The groundwater elevations for monitor wells MW-2 and MW-3 were above the depths the groundwater was encountered during drilling operations the. The groundwater level in monitoring well MW-3 was significantly higher (approximately 20 feet). A possible explanation for these elevations differences is that the groundwater at the site occurs in small, isolated, near surface perched pockets. Another reason may be that groundwater in parts of the site is semi-confined to confined resulting in artisan conditions which raise the elevation of the groundwater.

Groundwater recharge in the wells varied considerably. After bailing, groundwater recharge was very slow in monitoring wells MW-1 and MW-4, (on the order of days). Monitoring well MW-3 recharged in several hours. Recharge of monitor well MW-2 was very good, with the well recharging within an hour. Monitor well MW-2 was the only well which produced water in amounts such that it was not possible to bail it dry.

Water elevations measured in the four wells on July 21, 1993 are shown on Figure 3.

ANALYTICAL RESULTS

Soil and groundwater samples collected during the SI were analyzed for total petroleum hydrocarbons (TPH) using EPA method 418.1, benzene, toluene, ethylbenzene, and xylene (BTEX) using EPA method 8020, volatile organics using EPA method 8240, and semi-volatile using EPA method 8270. Groundwater samples were also analyzed for total dissolved solids (TDS) using EPA method 160.1. PACE Laboratories of Houston, Texas performed the analyses. Table 1 is a matrix of samples and analyses performed. Analytical results for soil samples collected from the soil borings are presented in Table 2. Analytical results for groundwater samples are presented in Table 3. Laboratory analytical reports are contained in Attachment 3.

Soil analytical results indicated that soil borings AT1-2, -4, and -7 were the most impacted. TPH concentrations were detected in five of the soil samples. The highest concentration reported, 4,400 mg/kg, was from sample AT1-2B which was collected from the 32-33 foot depth interval. BTEX was also detected in five soil samples. The highest total BTEX concentration reported was 70,970 ug/kg. This also was from the 32-33 foot depth interval of soil boring AT1-2.

Methylene chloride was detected in soil sample AT1-3A. Acetone and 2-butanone were also detected in soil sample AT1-6A. These compounds are laboratory artifacts and are not considered to be indicative of the environment at the site. All other analyses for these two samples were reported as less than the detection limits. One semi-volatile compound, bis(2-ethylhexyl)phthalate, was detected in one of the samples. Again this is considered a lab or field artifact and is not considered to be indicative of the environment at the site.

Groundwater analytical results indicated that the groundwater in the area of the surface impoundment is impacted. High concentrations of BTEX constituents were detected in the groundwater sample from boring AT1-2 collected prior to installing monitor well MW-1. After sampling and allowing groundwater to equilibrate, NAPLs were found. The groundwater sample collected from MW-2, approximately 15 feet west of the surface impoundment contained a total BTEX concentration of 16,970 ug/L. The benzene concentration in this sample was reported at a concentration of 3,600 ug/L. Monitor wells MW-4 and MW-3 also were impacted by BTEX constituents. Specifically, benzene was detected at concentrations of 61 ug/L and 7 ug/L, respectively.

NAPL

NAPLs were discovered in one soil boring, AT1-2. This boring encountered groundwater while drilling at 63 feet below grade. The hole was allowed to remain open and after two days was inspected for presence of NAPLs. A disposable polyethylene bailer was lowered into the hole and retrieved. Approximately 1/4-inch of NAPL was found floating on top of the groundwater. Monitoring well MW-1 was later installed at this location. After allowing the well to stabilize for three days, 3.16 feet of NAPLs had accumulated in the well. The well was bailed dry and 3.5 gallons of NAPLs recovered. The NAPL recovered was clear, yellow-orange colored.

If you have any questions regarding this information, please contact me at 713-575-4750.

Sincerely,

BROWN & ROOT ENVIRONMENTAL

Larry Basilio

Larry Basilio
Project Geologist

RS/rk

c: GES File NG19

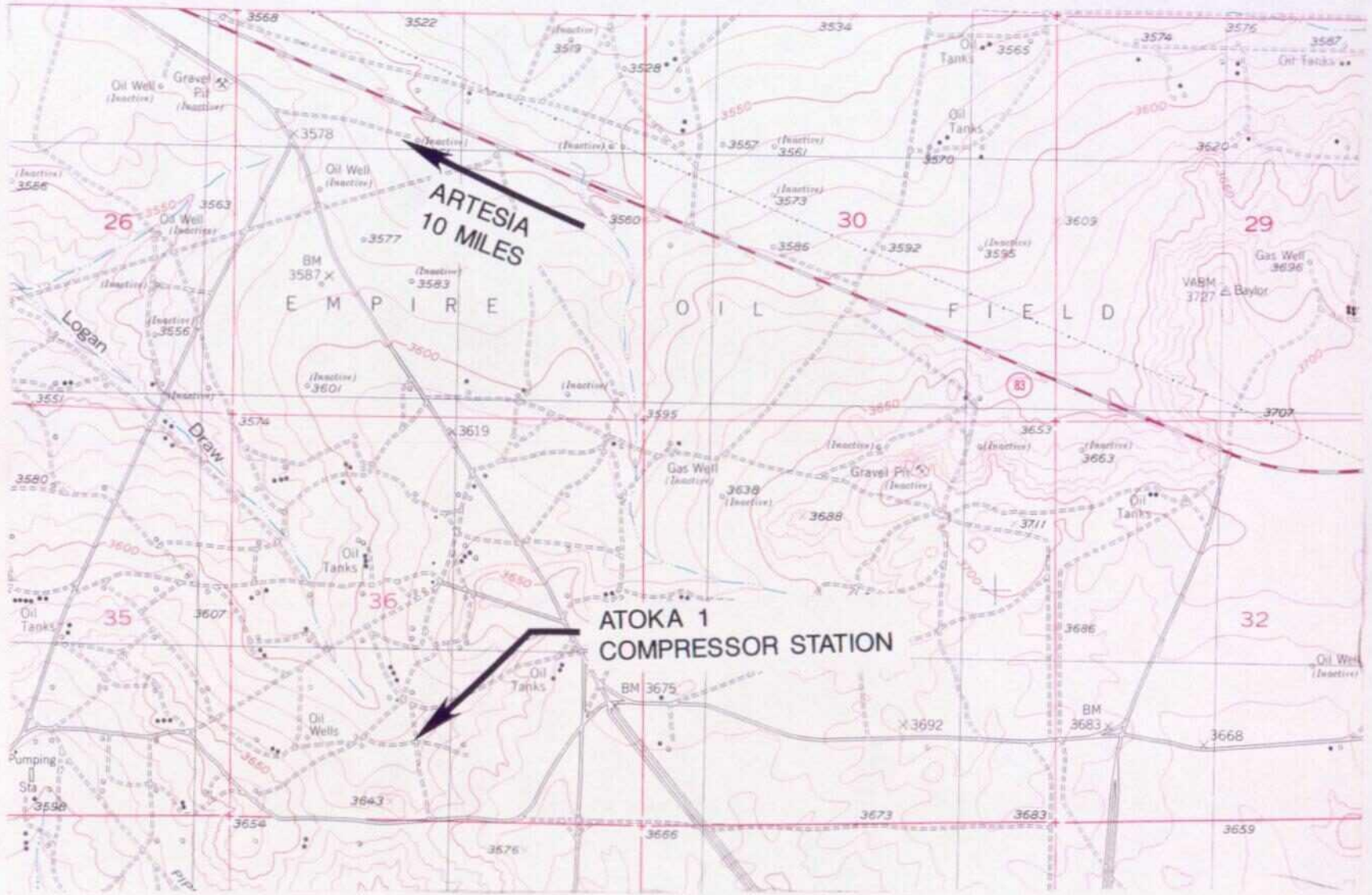


FIGURE 1

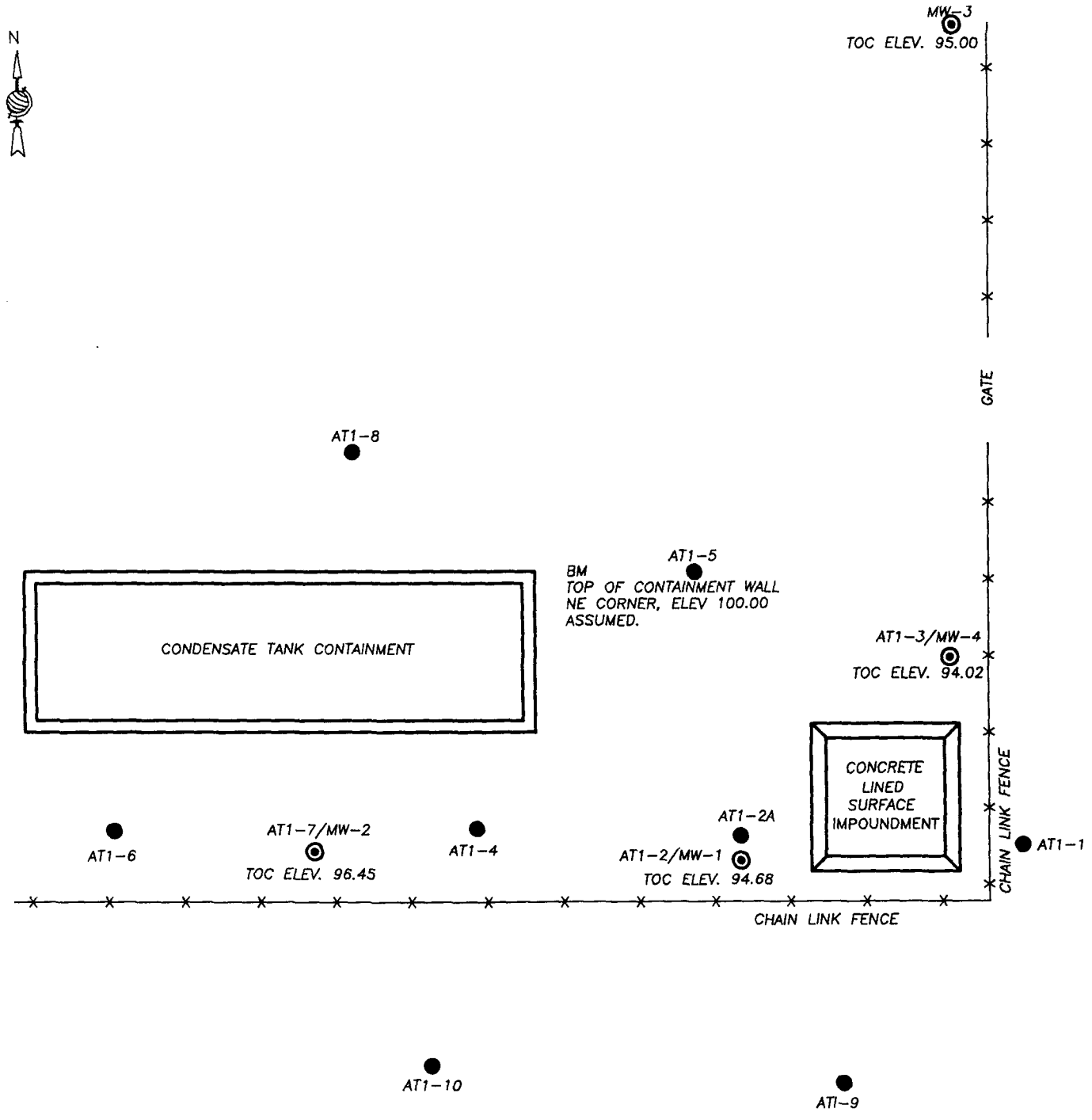
DRAWN BY:	D. GROSSHANDLER
DATE:	07/26/93
ENGINEER:	L. BASILIO
DATE:	07/26/93
CAD DWG. NO:	ATOKA-1.DWG

LOCATION MAP
ATOKA 1 COMPRESSOR STATION
TRANSWESTERN PIPELINE COMPANY
EDDY COUNTY, NEW MEXICO

SCALE:1"=2000' | DWG. NO. NG19-BA | REV. 0

Brown & Root Environmental
A Halliburton Company

SCALE: 1" = 2000'
REFERENCE: USGS MAP
QUADRANGLE 7.5 MINUTE SERIES
RED LAKE, NEW MEXICO QUADRANGLE 1955



NOTE: SOIL BORING LOCATIONS PLOTTED FROM FIELD MEASUREMENTS
MONITOR WELL LOCATIONS BASED ON SURVEY DATA.

LEGEND

MW-1 – MONITOR WELL LOCATIONS

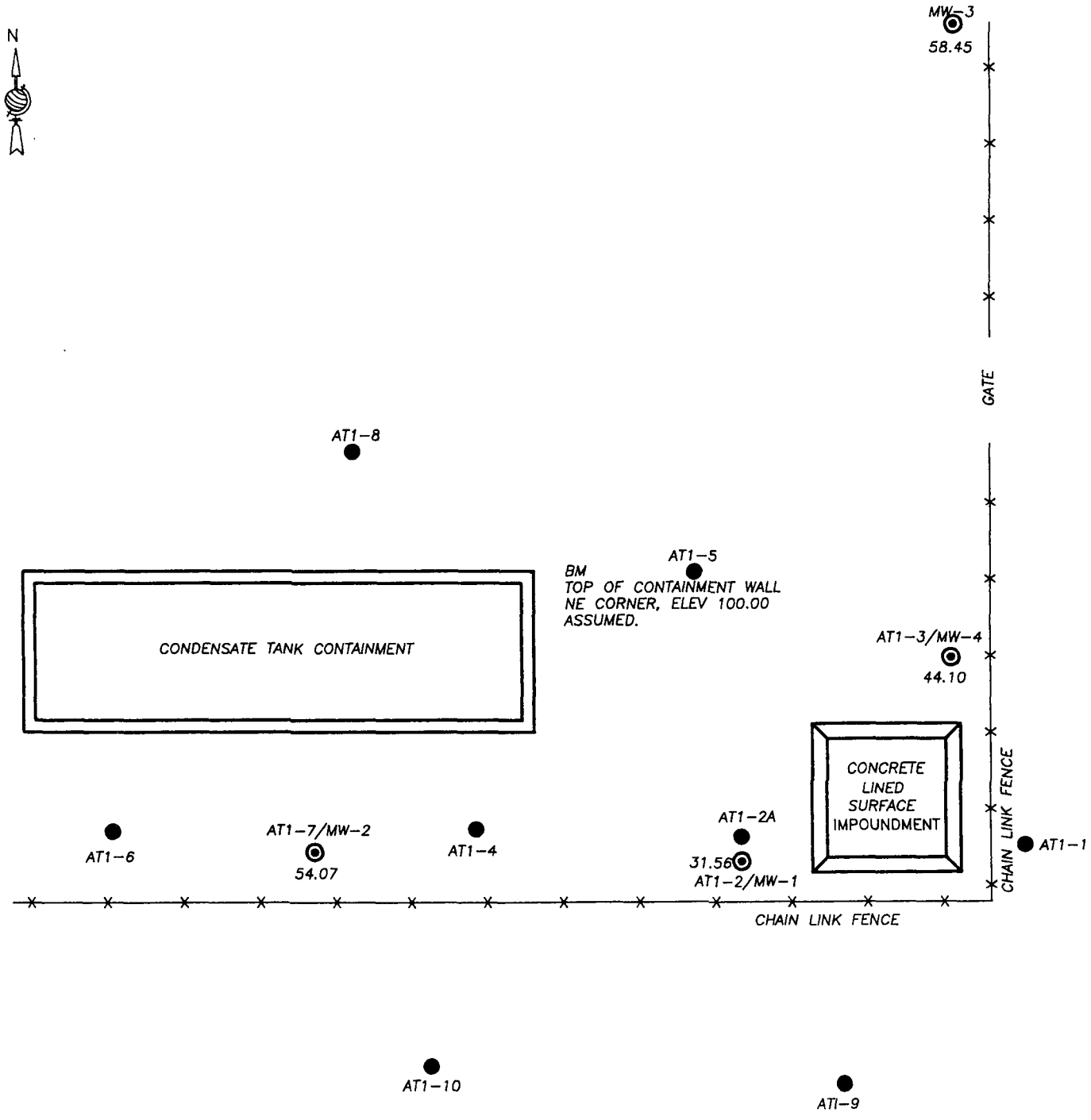
AT1-1 – SOIL BORING LOCATIONS

30 15 0 30

SCALE - FEET

FIGURE 2

DRAWN BY:	D. GROSSHANDLER	BORING/WELL LOCATIONS ATOKA 1 COMPRESSOR STATION ATOKA, NEW MEXICO TRANSWESTERN PIPELINE COMPANY		Brown & Root Environmental A Halliburton Company
DATE:	10/16/93			
ENGINEER:	L. BASILIO			
DATE:	10/16/93			
CAD DWG. NO:	ATOKA-4.DWG	SCALE: 1"=30'	DWG. NO. NG19-BA	REV. 0



NOTE: SOIL BORING LOCATIONS PLOTTED FROM FIELD MEASUREMENTS
MONITOR WELL LOCATIONS BASED ON SURVEY DATA.

LEGEND

MW-1 – MONITOR WELL LOCATIONS

AT1-1 – SOIL BORING LOCATIONS

58.45 – GROUNDWATER ELEVATION

30 15 0 30

SCALE - FEET

FIGURE 3

DRAWN BY:	D. GROSSHANDLER	WATER ELEVATIONS JULY 21, 1993 ATOKA 1 COMPRESSOR STATION ATOKA, NEW MEXICO TRANSWESTERN PIPELINE COMPANY		Brown & Root Environmental A Halliburton Company
DATE:	10/16/93			
ENGINEER:	L. BASILIO			
DATE:	10/16/93			
CAD DWG. NO:	ATOKA-4.DWG	SCALE: 1"=30'	DWG. NO. NG19-BA	REV. 0

TABLE 1

SUMMARY OF ANALYSES
Atoka 1 Compressor Station
Atoka, New Mexico

	Analyses Performed				
Sample ID	TPH	BTEX	Volatile Organics	Semi-volatile Organics	TDS
SOIL					
AT1-1A	X		X	X	
AT1-1B	X		X	X	
AT1-2A	X		X	X	
AT1-2B	X		X	X	
AT1-3A	X		X	X	
AT1-4A	X		X	X	
AT1-5A	X		X	X	
AT1-6A	X		X	X	
AT1-7A	X	X			
AT1-8A	X	X			
AT1-9A	X	X			
AT1-10A	X	X			
AT1-10B	X	X			
AT1-10C	X	X			
GROUNDWATER					
AT1-2W	X		X	X	X
MW-2	X	X			X
MW-3	X	X			X
MW-4	X	X			X

TABLE 2

ANALYTICAL RESULTS FOR SOIL SAMPLES
Atoka 1 Compressor Station
Atoka, New Mexico

PARAMETER	Units	Sample Depth	AT1-1A 16-17	AT1-2A 12-14	AT1-2B 32-33	AT1-3A 20-22	AT1-4A 18-20	AT1-6A 10.5-20.5	AT1-7A 47-48.5	AT1-10A 5-7	AT1-10B 13-15
Petroleum Hydrocarbons	mg/kg		40	70	4,400	<20	410	<20	150	<20	<20
VOLATILES											
2-Butanone	ug/kg		<10	<10	<2,400	<10	<2,400	14	NA	NA	NA
Acetone	ug/kg		<10	<10	<2,400	<10	<2,400	20	NA	NA	NA
Benzene	ug/kg		<5	<5	<1,200	<5	<1,200	<5	2,000	<5	<5
Ethylbenzene	ug/kg		<5	<5	970	<5	6,200	<5	1,700	<5	<5
Methylene chloride	ug/kg		<5	<5	<1,200	30	<1,200	<5	NA	NA	NA
Toluene	ug/kg		<5	<5	30,000	<5	1,900	<5	6,700	<5	<5
Xylene (total)	ug/kg		<5	<5	40,000	<5	40,000	<5	12,300	7	6
SEMI-VOLATILES											
bis(2-Ethylhexyl)phthalate	ug/kg		<330	<330	<330	<330	1,500	<330	NA	NA	NA

NOTE: Only samples with concentrations of analytes reported as greater than detection limits are shown.
Soil samples collected borings AT1-5, AT1-8, and AT1-9 contained no analytes whose concentration was greater than detection limits.

TABLE 3

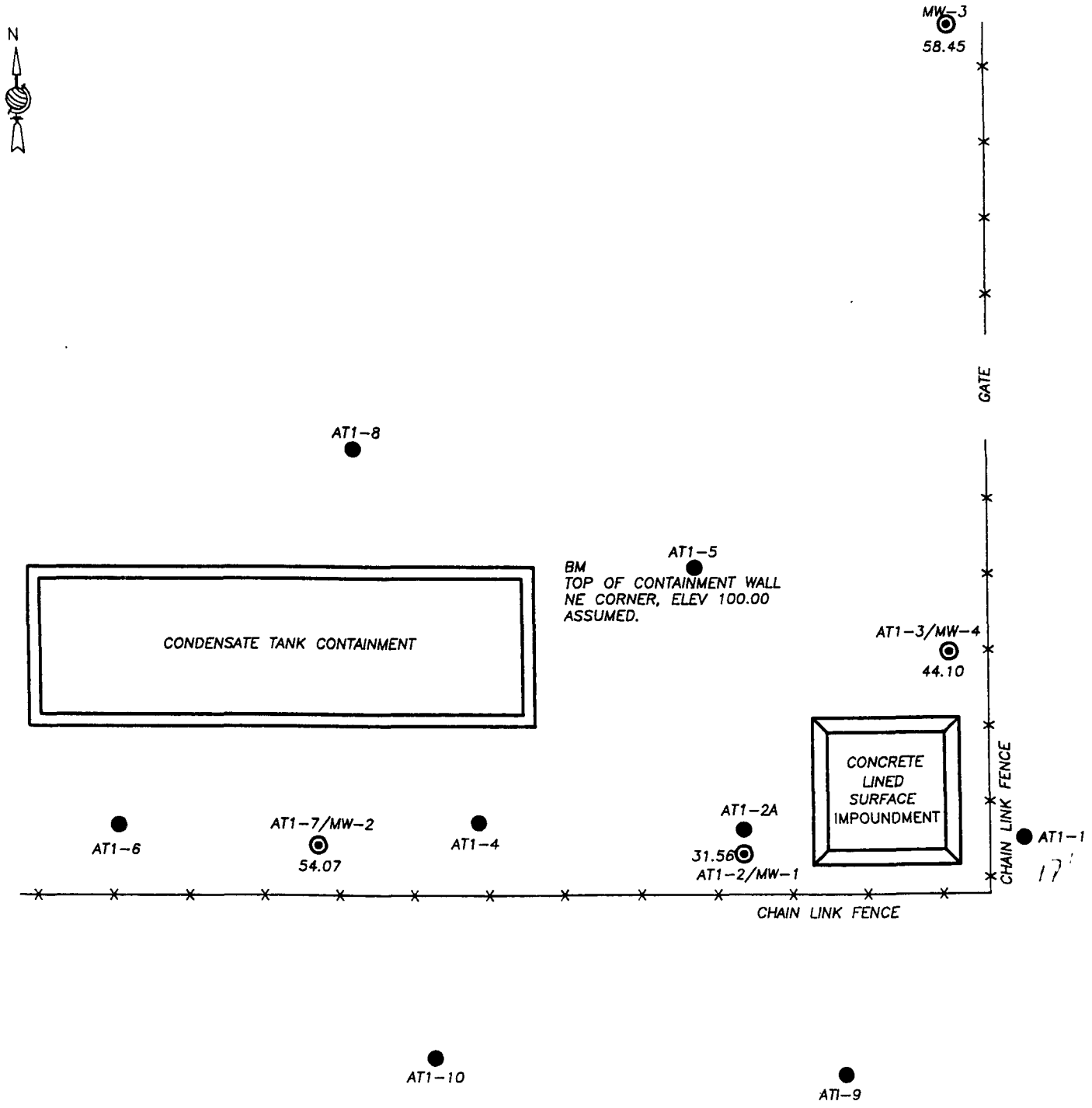
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES

Atoka 1 Compressor Station

Atoka, New Mexico

PARAMETER	Units	Sample ID	AT1-2W	MW-2	MW-3	MW-4
Petroleum Hydrocarbons	mg/l		180	12	1.1	0.6
VOLATILES						
Benzene	ug/l		32,000	3,600	7	61
Ethylbenzene	ug/l		53,000	400	< 2	4
Toluene	ug/l		15,000	9,800	6	20
Xylene (total)	ug/l		260,000	3,170	< 2	68
Total Dissolved Solids	mg/l		7,700	5,800	5,800	4,600

Note: Only samples with concentrations of analytes reported as greater than detection limits are shown



NOTE: SOIL BORING LOCATIONS PLOTTED FROM FIELD MEASUREMENTS
MONITOR WELL LOCATIONS BASED ON SURVEY DATA.

LEGEND

MW-1 – MONITOR WELL LOCATIONS

AT1-1 – SOIL BORING LOCATIONS

58.45 – GROUNDWATER ELEVATION

30 15 0 30

SCALE - FEET

FIGURE 3

DRAWN BY:	D. GROSSHANDLER	WATER ELEVATIONS JULY 21, 1993 ATOKA 1 COMPRESSOR STATION ATOKA, NEW MEXICO TRANSWESTERN PIPELINE COMPANY			Brown & Root Environmental A Halliburton Company
DATE:	10/16/93				
ENGINEER:	L. BASILIO				
DATE:	10/16/93				
CAD DWG. NO:	ATOKA-4.DWG	SCALE: 1" = 30'	DWG. NO. NG19-BA	REV. 0	

TABLE 1

SUMMARY OF ANALYSES
Atoka 1 Compressor Station
Atoka, New Mexico

	Analyses Performed				
Sample ID	TPH	BTEX	Volatile Organics	Semi-volatile Organics	TDS
SOIL					
AT1-1A	X		X	X	16-17'
AT1-1B	X		X	X	19-20'
AT1-2A	X		X	X	12-13'
AT1-2B	X		X	X	32-33'
AT1-3A	X		X	X	20-22'
AT1-4A	X		X	X	18-20'
AT1-5A	X		X	X	20-21'
AT1-6A	X		X	X	10.5-20.5
AT1-7A	X	X			47-48.5
AT1-8A	X	X			12-20'
AT1-9A	X	X			18-20'
AT1-10A	X	X			5-7'
AT1-10B	X	X			13-15'
AT1-10C	X	X			20-21
GROUNDWATER					
AT1-2W	X		X	X	X
AT1-7 MW-2	X	X			X
MW-3	X	X			X
AT1-3 MW-4	X	X			X

TD = 20.5'
TD = 63'
TD = 22'
TD = 22'
TD = 21'
TD = 20.5'
TD = 49'
TD = 20'
TD = 20'
TD = 21'

screen 54-63'
Screen 39-49'
screen 45-55'
screen 45-55'

ATTACHMENT 1

HEALTH AND SAFETY PLAN

SITE-SPECIFIC

HEALTH AND SAFETY PLAN

PREPARED FOR

TRANSWESTERN GAS PIPELINE COMPANY

ATOKA 1, ATOKA 2, BLACK RIVER

COMPRESSOR STATIONS

CARLSBAD, NEW MEXICO

PREPARED BY

BROWN & ROOT ENVIRONMENTAL

JUNE 1993

BROWN & ROOT PROJECT NUMBER NG 19, NG 21, NG 20

Brown & Root Environmental

A Division of Halliburton NUS Corporation

Project Name: Atoka 1, Atoka 2, Black River Compressor Stations Project No.: NG19, NG21, NG20

Scope of Work and Purpose of Visit:

- Establish if hydrocarbon impact to soils has occurred from surface impoundments at each location.
- Drill and sample those soil borings to 20 feet at each pit.

Site Visit Personnel:	Responsibility:
Larry Basilio	Geologist & SSO

Other Contacts:	Phone Nos.:
S. Richard - Brown & Root Env. Project Manager	(713) 575-4762
Larry Campbell - Transwestern Env. Affairs Manager	(505) 625-8022
Earl Chandly - Transwestern NM Operation Man	(505) 625-8031
Alan Balderas - Layne Drilling Manager	(210) 629-3330

Emergency Information — Atoka 1, Atoka 2, Black River Compressor Stations; Carlsbad, New Mexico

Type	Name	Phone Nos.
Sheriff		911
Ambulance		911
Hospital	Guadalupe Medical Center	(505) 887-4100
Rescue Service		911
Poison Control Center	N.M. Poison Control	1-800-432-6866
Site Manager	Susanne Richard	(713) 575-4762
PHMH	Tom Samson	(713) 575-4562

Hospital Route:

Guadalupe Medical Center
2430 W. Pierce
Carlsbad, New Mexico

Directions from the Site:

To west on 62-180. Turn north (right on Canal St. (in Carlsbad). Canal St. becomes Pierce. Hospital on right-hand side (east) just before you get out of town.

Inclement Weather Procedures:

No working during electrical storm, extremely high ambient heat loads, or other extreme weather conditions as determined by the SSO.

Site Background/Overall Information

Sites are compressor stations. Pits at each location used for disposal of pipeline liquids waste.

Hazard Assessment:

Hazards expected to be present include:

1. Fire and explosion from flammable/combustible materials
2. Moving machinery
3. Animal hazards -i.e., snakes, and ticks
4. Manual lifting and slip/trip hazards
5. Heat stress
6. Underground utilities, underground gas pipelines

Standard Operating Procedures: (i.e., basic hygiene, buddy system, no hand-to-mouth activities when working on site, etc.)

Other: SOO will perform air monitoring during drilling and sampling activities.

PPE Requirements: Level D

Minimum - Steel toe/shank shoes or boots, sandard field clothes. (If hard hats and safety glasses not worn, indicate why).

Other: Hard hat and safety glass to be worn in vicinity of driling operations. Rubber gloves to be worn during sampling activities.
Modified Level CPPE will be available on site and used if so determined by the SSO.

PPE Selection Criteria:

Upgrade to modified Level CPPE if HNU reading in the breathing zone is greater than 60 ppm.

PPE Decon/Disposal (if applicable):

Inspection - Generated waste will be placed in plastic bags and disposed of properly.

Monitoring Equipment and Calibration Information:

HNU - Calibrate daily with known calibration gas.
OVA - Factor calibrated. Check for positive response with a marking pen.

Monitoring Equipment Selection Criteria:

HNU - 10.2 eV prove to scan for organic and inorganic vapor concentrations.

OVA - Used to monitor organic vapor concentrations.

Action Levels for Upgrading of PPE and/or Site Withdrawal:

Begin work in Level D and upgrade PPE as site conditions warrant.

Level D - <60 ppm reading on HNU in breathing zone.

Modified Level C->60 ppm reading on HNU/OVA in breathing zone or if workers are affected by vapors.

Note:

Incident report, Site Safety Follow-up Report, and Site Map must be attached.

ATTACHMENT 2

SOIL BORING LOGS

MONITORING WELL CONSTRUCTION LOGS

SOIL SAMPLE LOG SHEETS

GROUNDWATER SAMPLE LOG SHEETS

HALLIBURTON NUS
Environmental Corporation

BORING **AT1-1** SHEET **1** OF **1**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **6/26/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	REMARKS
	GROUND SURFACE								
	CLAY (CL) - dark brown, hard, rootlets, abundant caliche nodules			SPT		24/15		0/0	
	SILT (ML) - tan, dry, soft, crumbly, abundant caliche nodules >1/4"			SPT		24/20		0/0	
	CALICHE - tan to off-white, broken, dry, weathered, silty, interbedded with silt		5	SPT		24/12		0/0	
				SPT		24/12		0/0	
				SPT		11/5	50+	0/0	
			10	SPT		8/8	50+	0/0	
				SPT		7/6	50+	0/0	
				SPT		6/1	50+	0/0	
			15						
	CALICHE - tan, hard, broken, dry				AT1-1A				Switch to air rotary coring
	SILTSTONE - red tan brown, hard, broken, dry, caliche nodules, black inclusions			CORE	AT1-1B	54/48		0/0	
			20						
	Total depth = 20.5 feet BLS								

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **HSA & NDX Core**

DRILLING EQUIPMENT: **Failing F-6**

COMMENTS: **Boring located approximately 11 feet north from the northeast corner of the pit.**

HALLIBURTON NUS
Environmental Corporation

BORING/WELL NUMBER **AT1-2** SHEET **1** OF **2**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **6/26/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	WELL CONSTRUCTION DETAIL & REMARKS
	GROUND SURFACE								T.O.C. Elev.
	CLAYEY SILT (ML) - dark brown, lighter brown with depth, dry, clayey, soft, abundant caliche nodules			SPT		24/20		0/0	Monitor Well 1
				SPT		24/20		0/0	
	SILT (ML) - red brown, dry, slightly clayey, firm, occasional to abundant caliche nodules <1/4"		5	SPT		24/24		0/0	
	SILT (ML) - light reddish brown, slightly clayey, firm to soft, occasional caliche nodules			SPT		24/24		0/0	
	SILT (ML) - A/A, harder			SPT		24/24		0/0	
	SILT (ML) - A/A, softer		10	SPT		24/24		0/0	
	CALICHE - tan, dry, broken, silty			SPT	AT1-2A	24/12		67/60	
	CALICHE - light tan to off-white, hard, broken, silty, dry		15					18/12	Switch to air rotary coring
				CORE		72/48			
	SILTSTONE - tan to red to brown, hard, poorly indurated, micaceous, dry							22/20	
	SANDSTONE - gray to tan to off-white, fine grained, broken to massive, very friable, silty		20						
				CORE		96/60		176/500	
	SANDSTONE - A/A		25					660/1000+	
	SILTSTONE - red to tan, damp, moderately hard, broken, slightly micaceous							540/1000+	
			30						
				CORE	AT1-2B	12060		1059/1000+	

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **HSA & NDX Core**

DRILLING EQUIPMENT: **Failing F-6**

DIAMETER, TYPE & INTERVAL OF CASING: **2-inch Schedule 40 PVC**

WELL SCREEN/INTERVAL: **#10 slotted / 53.5-63.5 feet BLS**

FILTER PACK-INTERVAL/QUANTITY: **10/20 Espey Sand/ 51.5-63.9 feet BLS/ 4 bags**

WELL SEAL-INTERVAL/QUANTITY: **1/2-inch bentonite/ 49.2-51.5 feet BLS/ 1 bucket**

HALLIBURTON NUS
Environmental Corporation

BORING/WELL NUMBER **AT1-2** SHEET **2** OF **2**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **6/26/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	WELL CONSTRUCTION DETAIL & REMARKS
	CONTINUED FROM PREVIOUS PAGE								
	CLAY (CL) - brick red, hard, fractured, slickensides, black ash-like inclusions, abundant calcite and gypsum inclusions and crystals, dark peach orange microcrystalline limestone at base		40	CORE		12/60		665/1000+	
			45					356/700	Portland Type I-II & bentonite grout
	CLAY (CL) - brick red, stiff, indurated in parts, broken, abundant black ash inclusions							900/1000+	
	LIMESTONE - red and peach, hard, massive, crystalline		50					12/20	Bentonite seal
				CORE		12/60			10/20 Espey sand pack
			55						2 x 5 foot #10 slot screens
	CLAY (CL) - brick red, hard, silty, abundant gypsum and calcareous nodules, laminae, and crystals, slickensides Driller reports water droplets being blow out of the hole.		60	CORE		60/60		672/1000+	
								748/1000+	Bottom cap
	Total depth = 63 feet BLS								

HALLIBURTON NUS
Environmental Corporation

BORING **AT1-2A** SHEET **1** OF **2**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **7/19/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION						REMARKS
			Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/ FID (ppm)	
	GROUND SURFACE Begin sampling at 40 feet BLS								

5

10

15

20

25

30

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **Air Rotary**

DRILLING EQUIPMENT: **Failing F-6**

COMMENTS: **Boring located 5 feet west of Boring AT1-2.**

HALLIBURTON NUS *Environmental Corporation*

BORING **AT1-2A** SHEET **2** OF **2**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **7/19/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	REMARKS
	CONTINUED FROM PREVIOUS PAGE								
	SILT (ML) - light red, dry, unconsolidated, abundant white caliche nodules, occasional gray sandstone		40	SPT		24/12		1855/1000+	
			45						
	CLAY (CL) - red brown, dry, broken, abundant caliche nodules, pebbles and crystals, dark green laminae around crystals			SPT		24/8		694/1000+	
			50						
	Gravel and Clay		55	SPT		1 / 1	50+/1"		SPT refusal
	SILTY CLAY (CL) - red brown, dry, silty, white and clear crystals and laminae		60						Water blown out of hole at 60 feet BLS
	SILTY CLAY (CL) - A/A, abundant white crystals, broken			SPT		24/24		2073/1000+	
	CLAY (CL) - red brown and black, firm to soft, damp, black ash-like laminae and inclusions, gray and white crystals								
	Total depth = 65 feet BLS		65			0	50+/0"		SPT refusal

HALLIBURTON NUS
Environmental Corporation

BORING **AT1-3** SHEET **1** OF **1**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **6/26/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	REMARKS
	GROUND SURFACE								
	SILT (ML) - dark brown, dry			SPT		24/6		3/3	
	CLAYEY SILT (ML) - red brown, firm, clayey, occasional white caliche nodules			SPT		24/12		0/0	
			5	SPT		24/22		0/0	
	SILT (ML) - tan to light brown, slightly clayey, firm, dry, occasional white caliche nodules			SPT		24/24		0/0	
	SILT (ML) - A/A, less clayey			SPT		24/24		0/0	
	SILT (ML) - A/A, abundant weathered caliche		10	SPT		12/12		0/0	Switch to air rotary coring
				CORE		60/48		0/0	
			15						
	SILTSTONE - tan to off-white, grades to brown with depth, broken, abundant black nodules at base							0/0	
				CORE		72/60			
			20		AT1-3A			0/0	
	Total depth = 22 feet BLS								

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **HSA & NDX Core**

DRILLING EQUIPMENT: **Failing F-6**

COMMENTS: **Boring located approximately 13 feet west from the northwest corner of the pit.**

HALLIBURTON NUS
Environmental Corporation

BORING **AT1-4** SHEET **1** OF **1**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio**

DATE DRILLED **6/28/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	REMARKS
	GROUND SURFACE								
	SILT (ML) - brown, firm, dry, abundant caliche			SPT		24/6		22/28	
	SILT (ML) - tan and black, black staining, dry, crumbly, caliche nodules		5	SPT		24/24		1617/1000+	
	SILT (ML) - A/A		10	SPT		24/23		1988/1000+	
	SILT (ML) - tan, dry, weathered caliche		15	SPT		24/24		1893/1000+	
	SANDSTONE - gray, black staining, fine grained, indurated, dry, abundant caliche nodules							2193/1000+	Switch to air rotary coring
				CORE	AT1-4A	72/48			
			20					2451/1000+	
	Total depth = 22 feet BLS								

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **HSA & NDX Core**

DRILLING EQUIPMENT: **Failing F-6**

COMMENTS: **Boring located approximately 67 feet south of the pit and 15 feet west of the east fenceline.**

HALLIBURTON NUS
Environmental Corporation

BORING **AT1-5** SHEET **1** OF **1**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **6/28/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	REMARKS
	GROUND SURFACE								
	SILT (ML) - dark brown, dry, broken, abundant caliche			SPT		24/12		9/0	
	SILT (ML) - red brown, soft, slightly clayey, occasional very small caliche nodules		5	SPT		24/24		2/0	
	CLAYEY SILT (ML) - light red brown, dry, very clayey to clayey, firm, occasional large (>1/4") caliche nodules, scattered smaller weathered caliche nodules		10	SPT		24/24		0/0	
	SILT (ML) - light tan to occasional brown, dry, soft, crumbly, occasional caliche nodules		15	SPT		24/24		0/0	
	SILT (ML) - tan, dry, abundant caliche		20	SPT	AT1-5A	12/12		0/0	
	Total depth = 21 feet BLS								

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **HSA & NDX Core**

DRILLING EQUIPMENT: **Failing F-6**

COMMENTS: **Boring located approximately 41 feet southwest from the southwest corner of the pit.**

HALLIBURTON NUS
Environmental Corporation

BORING **AT1-6** SHEET **1** OF **1**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **6/28/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	REMARKS
	GROUND SURFACE								
	CALICHE - black and white, hard, dry			SPT		6 / 6	50+/6"	0/0	
	SILT (ML) - tan to off-white, dry, weathered caliche		5	SPT		24/24		0/0	
	SILT (ML) - tan, dry, weathered			SPT		6 / 6	50+/6"	0/0	
	SILT and CALICHE interbedded - tan to off-white, dry, broken, poor recovery due to softness of material		10		AT1-6A				Switch to air rotary coring
			15	CORE		12/36		0/0	
			20						
	Total depth = 20.5 feet BLS								

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **HSA & NDX Core**

DRILLING EQUIPMENT: **Failing F-6**

COMMENTS: **Boring located approximately 139 feet south of the pit and 15 feet west of the east fenceline.**

HALLIBURTON NUS
Environmental Corporation

BORING/WELL NUMBER **AT1-7** SHEET **1** OF **2**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **6/28/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	WELL CONSTRUCTION DETAIL & REMARKS
	GROUND SURFACE								T.O.C. Elev.
	SILT and CALICHE - dark brown, dry			SPT		6 / 6	50+/6"	0/0	
	SILT (ML) - light tan, dry, moderately soft to crumbly, occasional caliche nodules		5	SPT		24/24		0/0	Monitor Well 2
	SILT (ML) - tan, dry, broken, caliche		10	SPT		6 / 6	50+/6"	0/0	
									Switch to air rotary coring
			15	CORE		12/48		0/0	
			20						
	SILTSTONE - red brown, dry, hard, massive to broken							0/0	
			25					0/0	Portland Type I-II & bentonite grout
	SILTSTONE - A/A, light red brown, caliche nodules			CORE		12/60			
			30						
	No recovery in the 31.5 to 41.5 foot interval due to core barrel failure					/			

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **HSA & NDX Core**

DRILLING EQUIPMENT: **Failing F-6**

DIAMETER, TYPE & INTERVAL OF CASING: **2-inch Schedule 40 PVC**

WELL SCREEN/INTERVAL: **#10 slotted / 39 to 49 feet BLS**

FILTER PACK-INTERVAL/QUANTITY: **10/20 Espey Sand/37-49.6 feet BLS/2.25 bags**

WELL SEAL-INTERVAL/QUANTITY: **1/2-inch bentonite/30-37 feet BLS/ 1 bucket**

HALLIBURTON NUS
Environmental Corporation

BORING/WELL NUMBER **AT1-7** SHEET **2** OF **2**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **6/28/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	WELL CONSTRUCTION DETAIL & REMARKS
	CONTINUED FROM PREVIOUS PAGE								
				CORE		120 / 0			Bentonite seal
			40						10/20 Espey sand pack
			45						2 x 5 foot # 10 slot screens
	CLAY (CL) - brick red , hard, dry, abundant white and clear crystals and laminae, gravel at top Bit plugged up at 47 feet BLS. Pull bit out of hole and drop E-line into hole. Water in bottom of hole. Drill to 49.5 feet and set well. Total depth = 49.6 feet BLS			SPT	AT1-7A	18 / 18		1259/ 1000+	Bottom cap

HALLIBURTON NUS
Environmental Corporation

BORING **AT1-8** SHEET **1** OF **1**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **6/29/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	REMARKS
	GROUND SURFACE								
	SILT (ML) - dark brown, dry, broken caliche			SPT		24/12		5/0	
	SILT (ML) - tan, dry, crumbly, occasional caliche nodules		5	SPT		24/24		5/2	
	CALICHE - tan to off-white, dry broken, silty		10	SPT		4 / 3		0/1	
	CALICHE - tan, dry, silty, broken, slightly friable to friable, silty sandy laminae, occasional orange colored spots		15	CORE	AT1-8A	96/36		0/0	Switch to air rotary coring
	Total depth = 20 feet BLS		20						

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **HSA & NDX Core**

DRILLING EQUIPMENT: **Failing F-6**

COMMENTS: **Boring located approximately 107 feet southwest from the southwest corner of the pit.**

HALLIBURTON NUS
Environmental Corporation

BORING **AT1-9** SHEET **1** OF **1**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **7/1/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	REMARKS
	GROUND SURFACE								
	SILT (ML) - dark brown, dry, loose, abundant pebbles			SPT		24/6		0/0	
	SILT (ML) - light tan to off-white, dry, broken, powdery, abundant weathered caliche		5	SPT		24/24		0/0	
	CALICHE - tan to light red brown, weathered, hard, broken, silty, slightly friable, dry, occasional black inclusions and white gypsum crystals		10	CORE		60/60		0/0	Switch to air rotary coring
	SILTSTONE - light red brown, hard, broken, friable in spots, dry, black staining and white fibrous inclusions		15	CORE	AT1-9A	60/60		0/0	
	Total depth = 20 feet BLS		20						

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **HSA & NDX Core**

DRILLING EQUIPMENT: **Failing F-6**

COMMENTS: **Boring located approximately 40 feet east and 30 feet south from the northeast fence corner.**

HALLIBURTON NUS
Environmental Corporation

BORING **AT1-10** SHEET **1** OF **1**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **7/1/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	REMARKS
	GROUND SURFACE								
	SILT (ML) - dark brown dry, caliche at base			SPT		18/6		0/0	
	SILT (ML) - light tan, dry broken, soft, powdery		5	SPT	AT1-10A	24/22		0/4	
	CALICHE - tan to off-white to light brown, hard, broken, dry, silty		10	CORE	AT1-10B	60/60		0/0	
	CALICHE - tan to white, firm, broken, very silty		15						Rig engine inoperative, cease drilling on 7/1/93. Resume drilling on 7/15/93.
	SILT (ML) - red brown, indurated, broken, dry			CORE	AT1-10C	60/60		0/0	
	Total depth = 21 feet BLS		20						

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **HSA & NDX Core**

DRILLING EQUIPMENT: **Failing F-6**

COMMENTS: **Boring located 108 feet south of the northeast fence corner and 37 feet east from the fence line.**

HALLIBURTON NUS
Environmental Corporation

BORING/WELL NUMBER **MW-3** SHEET **1** OF **2**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **7/18/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	WELL CONSTRUCTION DETAIL & REMARKS
	GROUND SURFACE Begin sampling at 40 feet BLS		5 10 15 20 25 30						T.O.C. Elev.

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **Air Rotary**

DRILLING EQUIPMENT: **Failing F-6**

DIAMETER, TYPE & INTERVAL OF CASING: **2-inch Schedule 40 PVC**

WELL SCREEN/INTERVAL: **#10 slotted / 45 to 55 feet BLS**

FILTER PACK-INTERVAL/QUANTITY: **10/20 Espey Sand/42.5-55 feet BLS/ 2 bags**

WELL SEAL-INTERVAL/QUANTITY: **1/2-inch bentonite/ 40.5-42.5 feet BLS/ 1/2 bucket**

HALLIBURTON NUS *Environmental Corporation*

BORING/WELL NUMBER **MW-3** SHEET **2** OF **2**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **7/18/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	WELL CONSTRUCTION DETAIL & REMARKS
	CONTINUED FROM PREVIOUS PAGE								
									Portland Type I-II & bentonite grout
	SILTY CLAY (CL) - dark red, soft to hard, dry, abundant white gypsum laminae and crystals in bottom 1 foot, laminae are >1-inch thick, crystals are clear to opaque and can be scratched with fingernail		40	SPT		24/24		0/0	Bentonite seal
	SILTY CLAY (CL) - red brown, firm to hard, dry, hackly fracture, slickensides, white laminae and crysyatls in bottom part, laminae are 1/4-inch thick		45	SPT		24/24		0/9	10/20 Espey sand pack
	CLAY (CL) - dark red brown, firm to soft, damp to moist, clear gypsum crystals CLAY (CL) - A/A. hard, abundant white crystals and laminae (1-inch thick)		50	SPT		24/18		0/0	2 x 5 foot # 10 slot screens
	Split spoon refusal. End of SPT breaks. Water blown of of hole after re-entering hole after sampling attempt. Let hole sit overnight. Fluids level measured the next day indicates approximately 6 feet of fluids in hole.		55			0	50+		Bottom cap

HALLIBURTON NUS *Environmental Corporation*

BORING/WELL NUMBER **MW-4** SHEET **1** OF **2**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **7/20/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	WELL CONSTRUCTION DETAIL & REMARKS
	GROUND SURFACE Begin sampling at 40 feet BLS		5 10 15 20 25 30						T.O.C. Elev.

DRILLING CONTRACTOR: **Layne Environmental**

DRILLER: **W. Cowser**

DRILLING METHOD: **Air Rotary**

DRILLING EQUIPMENT: **Failing F-6**

DIAMETER, TYPE & INTERVAL OF CASING: **2-inch Schedule 40 PVC**

WELL SCREEN/INTERVAL: **#10 slotted / 45 to 55 feet BLS**

FILTER PACK-INTERVAL/QUANTITY: **10/20 Espey Sand/ 43-55 feet BLS/ 2.5 bags**

WELL SEAL-INTERVAL/QUANTITY: **1/2-inch bentonite/ 41-43 feet BLS/ 1/2 bucket**

HALLIBURTON NUS
Environmental Corporation

BORING/WELL NUMBER **MW-4** SHEET **2** OF **2**

PROJECT **Transwestern Pipeline Company**

LOCATION **Atoka 1 Compressor Station**

COORDINATES

PROJECT NUMBER **NG19**

SURFACE ELEVATION DATUM **Grade**

LOGGED BY **L. Basilio** DATE DRILLED **7/20/93**

ELEVATION FEET	SOIL DESCRIPTION	STRATA	SAMPLE INFORMATION: Depth Feet	Sample Type	Sample ID	Inches Adv. / Inches Rec.	Penetrometer Blow Counts	PID/FID (ppm)	WELL CONSTRUCTION DETAIL & REMARKS
	CONTINUED FROM PREVIOUS PAGE								Portland Type I-II & bentonite grout
	CLAY (CL) - dark red brown, soft to firm, slightly silty, damp, occasional to abundant slickensides with depth, white crystals and laminae		40	SPT		24/18		23/30	Bentonite seal
	SILT (ML) - light red brown, dry, broken, slightly clayey, abundant white crystals								
	Split spoon sampler refusal. Check boring with mirror and E-line, no sign of fluids		45	SPT		24/0	50+/0"		10/20 Espey sand pack
	Water blown out of hole at 50 feet BLS		50	SPT		12/6	50+	0/0	2 x 5 foot # 10 slot screens
	CLAY (CL) - red brown, hard, dry to damp, slightly silty, slickensides, white and pink limestone gravel at base								
	CLAY (CL) - red brown, soft to firm, moist, abundant limestone gravel		55	SPT		18/12		0/5	Bottom cap
	Total depth = 57 feet BLS								

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG 19

HNUS SAMPLE NO. ATI-1A SOURCE Atoka 1

SAMPLE METHOD: Split Spoon

DEPTH SAMPLED: 16-17

SAMPLE DATE & TIME: 6/26/93 939

SAMPLED BY: BASILIO

SIGNATURE(S): Basil

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

418.1
8240
8270
8020

FID - 0 ppm

PID - 0 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Caliche - tan hard, broken, dry

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG 19

HNUS SAMPLE NO. ATI-1B SOURCE Atoka 1

SAMPLE METHOD: NDX Core

DEPTH SAMPLED: 18.5 - 20.5

SAMPLE DATE & TIME: 6/26/93 940

SAMPLED BY: BASILIO

SIGNATURE(S):

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

418.1
8240
8020
8270

FID - 0 ppm

PID - 0 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Siltstone - red - tan-brown, hard, broken,
	dry, caliche nodules, black
	inclusions

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG 19

HNUS SAMPLE NO. AT1-2A SOURCE Atoka 1

SAMPLE METHOD: Split Spoon

DEPTH SAMPLED: 12-14

SAMPLE DATE & TIME: 6/26/93 1102

SAMPLED BY: BASCO

SIGNATURE(S): J Bail

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

418.1
8240
8270
8020

PID - 60 ppm

PID - 67 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Caliche - tan, dry, broken, silty

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG 19

HNUS SAMPLE NO. AT1-2B SOURCE Atoka 1

SAMPLE METHOD: NOX Core

DEPTH SAMPLED: 32-33

SAMPLE DATE & TIME: 6/26/93 1413

SAMPLED BY: BASILIO

SIGNATURE(S): [signature]

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

- 418.1
- 8240
- 8270
- 8020

FID - 1000+

PID - 1059

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Siltstone - red to tan, damp,
	moderately hard, broken, sl micaceous
	Slight petroleum odor

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG 19

HNUS SAMPLE NO. ATI-3A SOURCE Atoka 1

SAMPLE METHOD: NOX Core

DEPTH SAMPLED: 20-22

SAMPLE DATE & TIME: 6/26/93 1859

SAMPLED BY: BASILIO

SIGNATURE(S):

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:
- 418.1
- 8240
- 8270
- 8020

F10 - 0 ppm

P10 - 0 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Siltstone - tan to off white, darker
	w/depth (brown), broken, abundant
	black nodules at base

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG 19

HNUS SAMPLE NO. AT1-4A SOURCE Atoka 1

SAMPLE METHOD: NOX Core

DEPTH SAMPLED: 18-20

SAMPLE DATE & TIME: 6/28/93 1117

SAMPLED BY: BASILIO

SIGNATURE(S): T Bailey

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:
- 418.1
- 5240
- 8270
- 8020
- F1D - 1000 + ppm
- P1D - 2451 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Sand - gray, fine grained, indurated
	very silty, dry, black staining,
	caliche nodules, strong odor

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG 19

HNUS SAMPLE NO. AT1-5A SOURCE Atoka 1

SAMPLE METHOD: Split Spoon

DEPTH SAMPLED: 19 - 19.5

SAMPLE DATE & TIME: 6/28/93 1225

SAMPLED BY: BASILIO

SIGNATURE(S): J Basile

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

416.1
8240
8270
8010

F1D - 2 ppm
P1D - 0 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Silts - tan, dry, caliche nodules.

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG 19

HNUS SAMPLE NO. ATI-6A SOURCE Atoka 1

SAMPLE METHOD: NDX Core

DEPTH SAMPLED: 10.5 - 20.5

SAMPLE DATE & TIME: 6/28/93 1350

SAMPLED BY: BASILIO

SIGNATURE(S): E Basilio.

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

418.1
8270
8240
8020

FID - 0 ppm
PID - 0 ppm

COMPOSITE SAMPLE DATA		
SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA	
COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Silt + caliche - tan, dry, broken

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG 19

HNUS SAMPLE NO. ATI-7A SOURCE Atoka 1

SAMPLE METHOD: Split Spoon

DEPTH SAMPLED: 47 - 48.5

SAMPLE DATE & TIME: 7/18/93 1025

SAMPLED BY: BASICO

SIGNATURE(S):

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

418.1

8020

FID - 1000 + ppm

PID - 1259 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Clay - brick red, hard, silty, dry.
	Abndnt white + clear crystals + laminae
	gravel at top

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline PROJECT NUMBER NG19

HNUS SAMPLE NO. AT1-8A SOURCE Atoka 1

SAMPLE METHOD: ASDX Core barrel

DEPTH SAMPLED: 12-20'

SAMPLE DATE & TIME: 7/1/93 830

SAMPLED BY: BASILO

SIGNATURE(S): Z. Bail

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

418.1
8020

F ID - 0 ppm

P ID - 0 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Caliche - tan, silty, dry, broken, sl
	friable to friable, silt + sand lam,
	occ orange spots

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline PROJECT NUMBER NG-19

HNUS SAMPLE NO. ATI-9A SOURCE Atoka 1

SAMPLE METHOD: NDX Core barrel

DEPTH SAMPLED: 18-20

SAMPLE DATE & TIME: 7/1/93 949

SAMPLED BY: BASILIO

SIGNATURE(S): Z Basilio

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

418.1

8020

FID - 0 ppm

PID - 0 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Siltstone - light to red brown, hard, brittle, friable in parts, dry, black staining and white fibrous inclusions

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline PROJECT NUMBER NG19

HNUS SAMPLE NO. ATI-10A SOURCE Atoka 1

SAMPLE METHOD: Split Spoon

DEPTH SAMPLED: 5-7

SAMPLE DATE & TIME: 7/1/93 1014

SAMPLED BY: BASILIO

SIGNATURE(S): T Basilio

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

4/8.1
8020

FID - 4 ppm

PID - 0 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Silt - light tan, dry, broken, soft,
	powdery,

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline PROJECT NUMBER NG-19

HNUS SAMPLE NO. AT1-10B SOURCE Atoka 1

SAMPLE METHOD: NOX Core barrel

DEPTH SAMPLED: 13-15

SAMPLE DATE & TIME: 7/1/93 1435

SAMPLED BY: BASILIO

SIGNATURE(S): [signature]

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:

418.1
8020

FID - 0 ppm

PID - 0 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Caliche - tan to off-white, to light
	brown, hard, broken, dry, silty

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

SOIL/SEDIMENT SAMPLE LOG SHEET

- ☐ SURFACE SOIL
- ☒ SUBSURFACE SOIL
- ☐ SEDIMENT
- ☐ POND/LAGOON
- ☐ OTHER

PROJECT NAME Transwestern Pipeline PROJECT NUMBER NG-19

HNUS SAMPLE NO. ATI-10C SOURCE Atoka 1

SAMPLE METHOD: NOX core barrel

DEPTH SAMPLED: 20-21

SAMPLE DATE & TIME: 7/15/93 1015

SAMPLED BY: BASILIO

SIGNATURE(S): [signature]

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:
- 418.1
- 8020

FID - 0 ppm

PID - 0 ppm

COMPOSITE SAMPLE DATA

SAMPLE	TIME	COLOR/DESCRIPTION

SAMPLE DATA

COLOR	DESCRIPTION: (SAND, CLAY, DRY, MOIST, WET, ETC.)
	Silt - red brown, indurated, broken, dry

OBSERVATIONS/NOTES:

HALLIBURTON NUS
Environmental Corporation

GROUND WATER SAMPLE LOG SHEET

☒ MONITORING WELL DATA
☐ DOMESTIC WELL DATA
☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG-19

NUS SAMPLE NO. MW-2 SOURCE Atoka 1

TOTAL WELL DEPTH:	PURGE DATA					
WELL CASING SIZE & DEPTH: 2" PVC 49.5	VOLUME	PH	S.C.	TEMP.(°C)	TDS	COLOR & TURBIDITY
	1					red brown
STATIC WATER LEVEL: 42.38						sl turbid
ONE CASING VOLUME: 1.14	2					red brown
START PURGE (HRS.): 737						v turbid
END PURGE (HRS.): 749	3					light red brown
TOTAL PURGE TIME (MIN.): 12						turbid
TOTAL AMOUNT PURGED (GAL.): 4	4					clear
MONITOR READING:						v sl turbid
PURGE METHOD: PVC bailer						
SAMPLE METHOD: PVC bailer						
DEPTH METHOD: E-line						

SAMPLE DATE & TIME: 7/21/93 1215	SAMPLE DATA				
	PH	S.C.	TEMP.(°C)	TDS	COLOR & TURBIDITY
SAMPLED BY: BASILIO					clear not turbid

SIGNATURE(S):

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☑ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:	PRESERVATIVE
418.1	
8020	

OBSERVATIONS/NOTES:

- Water level at sampling - 42.37

HALLIBURTON NUS Environmental Corporation

GROUND WATER SAMPLE LOG SHEET

☒ MONITORING WELL DATA
☐ DOMESTIC WELL DATA
☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER N619

NUS SAMPLE NO. MW-3 SOURCE Afton 1

TOTAL WELL DEPTH:	PURGE DATA					
WELL CASING SIZE & DEPTH:	VOLUME	PH	S.C.	TEMP.(°C)	TDS	COLOR & TURBIDITY
2" PVC 54.90	1					light red brown
STATIC WATER LEVEL: 36.55						slight turbid
ONE CASING VOLUME: 2.9 gal						
START PURGE (HRS.): 803	2					light red brown
END PURGE (HRS.): 837						slight turbid
TOTAL PURGE TIME (MIN.): 34						
TOTAL AMOUNT PURGED (GAL.): 7	Dry					red brown
MONITOR READING:						very turbid
PURGE METHOD: PVC Bailer						
SAMPLE METHOD: PVC Bailer						
DEPTH METHOD: E-line						

SAMPLE DATE & TIME:	SAMPLE DATA				
	PH	S.C.	TEMP.(°C)	TDS	COLOR & TURBIDITY
7/21/93 1235					clear
SAMPLED BY: BASILIO					V sl turbid

SIGNATURE(S): L Basilio

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:	PRESERVATIVE
418.1	
8020	

OBSERVATIONS/NOTES:

- Well purged dry
- Water level at sampling - 46.35

HALLIBURTON NUS
Environmental Corporation

GROUND WATER SAMPLE LOG SHEET

☒ MONITORING WELL DATA
☐ DOMESTIC WELL DATA
☐ OTHER

PROJECT NAME Transwestern Pipeline Company PROJECT NUMBER NG-19

NUS SAMPLE NO. MW-4 SOURCE Atoka 1

TOTAL WELL DEPTH:	PURGE DATA					
WELL CASING SIZE & DEPTH:	VOLUME	PH	S.C.	TEMP.(°C)	TDS	COLOR & TURBIDITY
2" PVC 54.9	1					red brown
STATIC WATER LEVEL: 49.92						turbid
ONE CASING VOLUME: 0.79						
START PURGE (HRS.): 710	2					red brown
END PURGE (HRS.): 727						very turbid
TOTAL PURGE TIME (MIN.): 17						
TOTAL AMOUNT PURGED (GAL.): 2.5						
MONITOR READING:						
PURGE METHOD: PVC Bailer						
SAMPLE METHOD: PVC Bailer						
DEPTH METHOD: E-line						

SAMPLE DATE & TIME:	SAMPLE DATA				
7/21/93 1300	PH	S.C.	TEMP.(°C)	TDS	COLOR & TURBIDITY
SAMPLED BY: BASILIO					VOA - clear, slightly turbid

SIGNATURE(S): L Basilio

TYPE OF SAMPLE
- ☐ LOW CONCENTRATION
- ☐ HIGH CONCENTRATION
- ☒ GRAB
- ☐ COMPOSITE
- ☐ GRAB - COMPOSITE

ANALYSIS:	PRESERVATIVE
418.1	
8020	

OBSERVATIONS/NOTES: TPH - red brown turbid

- Well purged dry
- water level at sampling - 53.20

ATTACHMENT 3

LABORATORY ANALYTICAL DATA

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

July 20, 1993
Report No.: 00025837
Section A Page 1

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-2B (32-33)
LSG SAMPLE NO: H0242333
P.O. NO.: VERBAL

DATE SAMPLED: 26-JUN-93
DATE RECEIVED: 29-JUN-93
APPROVED BY: L Beyer

SITE: ATOKA-1

LN	TEST CODE	DETERMINATION	RESULT	UNIT
3	1685S	Petroleum Hydrocarbons	4,400	mg/kg
4	OVTCS	TCL - Volatiles in Soil		
		1,1,1-Trichloroethane	< 1,200 *	ug/kg
		1,1,2,2,-Tetrachloroethane	< 1,200	ug/kg
		1,1,2-Trichloroethane	< 1,200	ug/kg
		1,1-Dichloroethane	< 1,200	ug/kg
		1,1-Dichloroethene	< 1,200	ug/kg
		1,2-Dichloroethane	< 1,200	ug/kg
		1,2-Dichloroethene (total)	< 1,200	ug/kg
		1,2-Dichloropropane	< 1,200	ug/kg
		2-Butanone	< 2,400	ug/kg
		2-Hexanone	< 2,400	ug/kg
		4-Methyl-2-pentanone	< 2,400	ug/kg
		Acetone	< 2,400	ug/kg
		Benzene	< 1,200	ug/kg
		Bromodichloromethane	< 1,200	ug/kg
		Bromoform	< 1,200	ug/kg
		Bromomethane	< 2,400	ug/kg
		Carbon disulfide	< 1,200	ug/kg
		Carbon tetrachloride	< 1,200	ug/kg
		Chlorobenzene	< 1,200	ug/kg
		Chloroethane	< 2,400	ug/kg
		Chloroform	< 1,200	ug/kg
		Chloromethane	< 2,400	ug/kg
		Dibromochloromethane	< 1,200	ug/kg
		Ethylbenzene	970	ug/kg
		Methylene chloride	< 1,200	ug/kg
		Styrene	< 1,200	ug/kg
		Tetrachloroethene	< 1,200	ug/kg
		Toluene	30,000	ug/kg

900 Gemini Avenue
Houston, TX 77058
TEL: 713-488-1810
FAX: 713-488-4661

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-2B (32-33)
LSG SAMPLE NO: H0242333

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Trichloroethene	< 1,200	ug/kg
		Vinyl acetate	< 2,400	ug/kg
		Vinyl chloride	< 2,400	ug/kg
		Xylene(total)	40,000	ug/kg
		cis-1,3-Dichloropropene	< 1,200	ug/kg
		trans-1,3-Dichloropropene	< 1,200	ug/kg
6	OSVTCS	TCL - Semi-volatile Extractables in Soil		
		1,2,4-Trichlorobenzene	< 330	ug/kg
		1,2-Dichlorobenzene	< 330	ug/kg
		1,3-Dichlorobenzene	< 330	ug/kg
		1,4-Dichlorobenzene	< 330	ug/kg
		2,4,5-Trichlorophenol	< 1,600	ug/kg
		2,4,6-Trichlorophenol	< 330	ug/kg
		2,4-Dichlorophenol	< 330	ug/kg
		2,4-Dimethylphenol	< 1,600	ug/kg
		2,4-Dinitrophenol	< 330	ug/kg
		2,4-Dinitrotoluene	< 330	ug/kg
		2,6-Dinitrotoluene	< 330	ug/kg
		2-Chloronaphthalene	< 330	ug/kg
		2-Chlorophenol	< 330	ug/kg
		2-Methylnaphthalene	< 330	ug/kg
		2-Methylphenol	< 330	ug/kg
		2-Nitroaniline	< 1,600	ug/kg
		2-Nitrophenol	< 330	ug/kg
		3,3'-Dichlorobenzidine	< 660	ug/kg
		3-Nitroaniline	< 1,600	ug/kg
		4,6-Dinitro-o-cresol	< 1,600	ug/kg
		4-Bromophenylphenylether	< 330	ug/kg
		4-Chloro-3-methylphenol	< 1,600	ug/kg
		4-Chloroaniline	< 330	ug/kg
		4-Chlorophenylphenylether	< 330	ug/kg
		4-Methylphenol	< 330	ug/kg
		4-Nitronaniline	< 1,600	ug/kg
		4-Nitrophenol	< 1,600	ug/kg
		Acenaphthene	< 330	ug/kg
		Acenaphthylene	< 330	ug/kg
		Anthracene	< 330	ug/kg
		Benzo(a)anthracene	< 330	ug/kg
		Benzo(a)pyrene	< 330	ug/kg

900 Gemini Avenue
Houston, TX 77058
TEL: 713-488-1810
FAX: 713-488-4661

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-2B (32-33)
LSG SAMPLE NO: H0242333

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Benzo(b)fluoranthene	< 330	ug/kg
		Benzo(g,h,i)perylene	< 330	ug/kg
		Benzo(k)fluoranthene	< 330	ug/kg
		Benzoic acid	< 1,600	ug/kg
		Benzyl alcohol	< 330	ug/kg
		Butylbenzylphthalate	< 330	ug/kg
		Chrysene	< 330	ug/kg
		Di-n-butylphthalate	< 330	ug/kg
		Di-n-octylphthalate	< 330	ug/kg
		Dibenzo(a,h)anthracene	< 330	ug/kg
		Dibenzofuran	< 330	ug/kg
		Diethylphthalate	< 330	ug/kg
		Dimethylphthalate	< 330	ug/kg
		Fluoranthene	< 330	ug/kg
		Fluorene	< 330	ug/kg
		Hexachlorobenzene	< 330	ug/kg
		Hexachlorobutadiene	< 330	ug/kg
		Hexachlorocyclopentadiene	< 330	ug/kg
		Hexachloroethane	< 330	ug/kg
		Indeno(1,2,3-cd)pyrene	< 330	ug/kg
		Isophorone	< 330	ug/kg
		N-Nitrosodi-n-propylamine	< 330	ug/kg
		N-Nitrosodiphenylamine	< 330	ug/kg
		Naphthalene	< 330	ug/kg
		Nitrobenzene	< 330	ug/kg
		Pentachlorophenol	< 1,600	ug/kg
		Phenanthrene	< 330	ug/kg
		Phenol	< 330	ug/kg
		Pyrene	< 330	ug/kg
		bis(2-Chloroethoxy)methane	< 330	ug/kg
		bis(2-Chloroethyl)ether	< 330	ug/kg
		bis(2-Chloroisopropyl)ether	< 330	ug/kg
		bis(2-Ethylhexyl)phthalate	< 330	ug/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.
* The detection limits were elevated due to the dilution required because of the high concentration of target and non-target analytes.

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pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

July 20, 1993
Report No.: 00025837

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-2B (32-33)
LSG SAMPLE NO: H0242333

COMMENTS:

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TEL: 713-488-1810
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REPORT OF LABORATORY ANALYSIS

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-2W
LSG SAMPLE NO: H0242335
P.O. NO.: VERBAL

DATE SAMPLED: 26-JUN-93
DATE RECEIVED: 29-JUN-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
3	I685	Petroleum Hydrocarbons	180	mg/L
8	I590	Solids, Dissolved at 180C	7,700	mg/L
11	OSVTCW	TCL - Semi-volatile Extractables in Water		
		1,2,4-Trichlorobenzene	< 1,000	ug/L
		1,2-Dichlorobenzene	< 1,000	ug/L
		1,3-Dichlorobenzene	< 1,000	ug/L
		1,4-Dichlorobenzene	< 1,000	ug/L
		2,4,5-Trichlorophenol	< 5,000	ug/L
		2,4,6-Trichlorophenol	< 1,000	ug/L
		2,4-Dichlorophenol	< 1,000	ug/L
		2,4-Dimethylphenol	< 1,000	ug/L
		2,4-Dinitrophenol	< 5,000	ug/L
		2,4-Dinitrotoluene	< 1,000	ug/L
		2,6-Dinitrotoluene	< 1,000	ug/L
		2-Chloronaphthalene	< 1,000	ug/L
		2-Chlorophenol	< 1,000	ug/L
		2-Methylnaphthalene	< 1,000	ug/L
		2-Methylphenol	< 1,000	ug/L
		2-Nitroaniline	< 1,000	ug/L
		2-Nitrophenol	< 1,000	ug/L
		3,3'-Dichlorobenzidine	< 2,000	ug/L
		3-Nitroaniline	< 1,000	ug/L
		4,6-Dinitro-o-cresol	< 5,000	ug/L
		4-Bromophenylphenylether	< 1,000	ug/L
		4-Chloro-3-methylphenol	< 5,000	ug/L
		4-Chloroaniline	< 1,000	ug/L
		4-Chlorophenylphenylether	< 1,000	ug/L
		4-Methylphenol	< 1,000	ug/L
		4-Nitroaniline	< 5,000	ug/L
		4-Nitrophenol	< 5,000	ug/L
		Acenaphthene	< 1,000	ug/L
		Acenaphthylene	< 1,000	ug/L
		Anthracene	< 1,000	ug/L

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-2W
LSG SAMPLE NO: H0242335

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Benzo(a)anthracene	< 1,000	ug/L
		Benzo(a)pyrene	< 1,000	ug/L
		Benzo(b)fluoranthene	< 1,000	ug/L
		Benzo(g,h,i)perylene	< 1,000	ug/L
		Benzo(k)fluoranthene	< 1,000	ug/L
		Benzoic acid	< 5,000	ug/L
		Benzyl alcohol	< 1,000	ug/L
		Butylbenzylphthalate	< 1,000	ug/L
		Chrysene	< 1,000	ug/L
		Di-n-butylphthalate	< 1,000	ug/L
		Di-n-octylphthalate	< 1,000	ug/L
		Dibenzo(a,h)anthracene	< 1,000	ug/L
		Dibenzofuran	< 1,000	ug/L
		Diethylphthalate	< 1,000	ug/L
		Dimethylphthalate	< 1,000	ug/L
		Fluoranthene	< 1,000	ug/L
		Fluorene	< 1,000	ug/L
		Hexachlorobenzene	< 1,000	ug/L
		Hexachlorobutadiene	< 1,000	ug/L
		Hexachlorocyclopentadiene	< 1,000	ug/L
		Hexachloroethane	< 1,000	ug/L
		Indeno(1,2,3-cd)pyrene	< 1,000	ug/L
		Isophorone	< 1,000	ug/L
		N-Nitroso-di-n-propylamine	< 1,000	ug/L
		N-Nitrosodiphenylamine	< 1,000	ug/L
		Naphthalene	< 1,000	ug/L
		Nitrobenzene	< 1,000	ug/L
		Pentachlorophenol	< 5,000	ug/L
		Phenanthrene	< 1,000	ug/L
		Phenol	< 1,000	ug/L
		Pyrene	< 1,000	ug/L
		bis(2-Chloroethoxy)methane	< 1,000	ug/L
		bis(2-Chloroethyl)ether	< 1,000	ug/L
		bis(2-Chloroisopropyl)ether	< 1,000	ug/L
		bis(2-Ethylhexyl)phthalate	< 1,000	ug/L
13	OVTCW	TCL - Volatiles in Water		
		1,1,1-Trichloroethane	< 3,000 *	ug/L
		1,1,2,2-Tetrachloroethane	< 3,000	ug/L
		1,1,2-Trichloroethane	< 3,000	ug/L

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-2W
LSG SAMPLE NO: H0242335

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		1,1-Dichloroethane	< 3,000	ug/L
		1,1-Dichloroethene	< 3,000	ug/L
		1,2-Dichloroethane	< 3,000	ug/L
		1,2-Dichloroethene (total)	< 3,000	ug/L
		1,2-Dichloropropane	< 3,000	ug/L
		2-Butanone	< 6,000	ug/L
		2-Hexanone	< 6,000	ug/L
		4-Methyl-2-pentanone	< 6,000	ug/L
		Acetone	< 6,000	ug/L
		Benzene	32,000	ug/L
		Bromodichloromethane	< 3,000	ug/L
		Bromoform	< 3,000	ug/L
		Bromomethane	< 6,000	ug/L
		Carbon disulfide	< 3,000	ug/L
		Carbon tetrachloride	< 3,000	ug/L
		Chlorobenzene	< 3,000	ug/L
		Chloroethane	< 6,000	ug/L
		Chloroform	< 3,000	ug/L
		Chloromethane	< 6,000	ug/L
		Dibromochloromethane	< 3,000	ug/L
		Ethylbenzene	53,000	ug/L
		Methylene chloride	< 3,000	ug/L
		Styrene	< 3,000	ug/L
		Tetrachloroethene	< 3,000	ug/L
		Toluene	150,000	ug/L
		Trichloroethene	< 3,000	ug/L
		Vinyl acetate	< 6,000	ug/L
		Vinyl chloride	< 6,000	ug/L
		Xylene(total)	260,000	ug/L
		cis-1,3-Dichloropropene	< 3,000	ug/L
		trans-1,3-Dichloropropene	< 3,000	ug/L

COMMENTS: * The detection limits were elevated due to the dilution required because of the high concentration of target and non-target analytes.

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LABORATORY ANALYSIS REPORT

CLIENT NAME:	TRANSWESTERN PIPELINE COMPANY	LSG CLIENT NO:	0734 0015
ADDRESS:	P.O. BOX 1717	PACE PROJECT:	H07340015
	ROSWELL, NM 88202-1717	PACE CLIENT:	620562
ATTENTION:	LARRY CAMPBELL		
SAMPLE ID:	AT1-3A (20-22)	DATE SAMPLED:	26-JUN-93
LSG SAMPLE NO:	H0242336	DATE RECEIVED:	29-JUN-93
P.O. NO.:	VERBAL	APPROVED BY:	L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
3	I685S	Petroleum Hydrocarbons	< 20	mg/kg
4	OVTCS	TCL - Volatiles in Soil		
		1,1,1-Trichloroethane	< 5	ug/kg
		1,1,2,2,-Tetrachloroethane	< 5	ug/kg
		1,1,2-Trichloroethane	< 5	ug/kg
		1,1-Dichloroethane	< 5	ug/kg
		1,1-Dichloroethene	< 5	ug/kg
		1,2-Dichloroethane	< 5	ug/kg
		1,2-Dichloroethene (total)	< 5	ug/kg
		1,2-Dichloropropane	< 5	ug/kg
		2-Butanone	< 10	ug/kg
		2-Hexanone	< 10	ug/kg
		4-Methyl-2-pentanone	< 10	ug/kg
		Acetone	< 10	ug/kg
		Benzene	< 5	ug/kg
		Bromodichloromethane	< 5	ug/kg
		Bromoform	< 5	ug/kg
		Bromomethane	< 10	ug/kg
		Carbon disulfide	< 5	ug/kg
		Carbon tetrachloride	< 5	ug/kg
		Chlorobenzene	< 5	ug/kg
		Chloroethane	< 10	ug/kg
		Chloroform	< 5	ug/kg
		Chloromethane	< 10	ug/kg
		Dibromochloromethane	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Methylene chloride	30	ug/kg
		Styrene	< 5	ug/kg
		Tetrachloroethene	< 5	ug/kg
		Toluene	< 5	ug/kg
		Trichloroethene	< 5	ug/kg
		Vinyl acetate	< 10	ug/kg
		Vinyl chloride	< 10	ug/kg

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-3A (20-22)
LSG SAMPLE NO: H0242336

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Xylene(total)	< 5	ug/kg
		cis-1,3-Dichloropropene	< 5	ug/kg
		trans-1,3-Dichloropropene	< 5	ug/kg
6	OSVTCS	TCL - Semi-volatile Extractables in Soil		
		1,2,4-Trichlorobenzene	< 330	ug/kg
		1,2-Dichlorobenzene	< 330	ug/kg
		1,3-Dichlorobenzene	< 330	ug/kg
		1,4-Dichlorobenzene	< 330	ug/kg
		2,4,5-Trichlorophenol	< 1,600	ug/kg
		2,4,6-Trichlorophenol	< 330	ug/kg
		2,4-Dichlorophenol	< 330	ug/kg
		2,4-Dimethylphenol	< 1,600	ug/kg
		2,4-Dinitrophenol	< 330	ug/kg
		2,4-Dinitrotoluene	< 330	ug/kg
		2,6-Dinitrotoluene	< 330	ug/kg
		2-Chloronaphthalene	< 330	ug/kg
		2-Chlorophenol	< 330	ug/kg
		2-Methylnaphthalene	< 330	ug/kg
		2-Methylphenol	< 330	ug/kg
		2-Nitroaniline	< 1,600	ug/kg
		2-Nitrophenol	< 330	ug/kg
		3,3'-Dichlorobenzidine	< 660	ug/kg
		3-Nitroaniline	< 1,600	ug/kg
		4,6-Dinitro-o-cresol	< 1,600	ug/kg
		4-Bromophenylphenylether	< 330	ug/kg
		4-Chloro-3-methylphenol	< 1,600	ug/kg
		4-Chloroaniline	< 330	ug/kg
		4-Chlorophenylphenylether	< 330	ug/kg
		4-Methylphenol	< 330	ug/kg
		4-Nitronaniline	< 1,600	ug/kg
		4-Nitrophenol	< 1,600	ug/kg
		Acenaphthene	< 330	ug/kg
		Acenaphthylene	< 330	ug/kg
		Anthracene	< 330	ug/kg
		Benzo(a)anthracene	< 330	ug/kg
		Benzo(a)pyrene	< 330	ug/kg
		Benzo(b)fluoranthene	< 330	ug/kg
		Benzo(g,h,i)perylene	< 330	ug/kg
		Benzo(k)fluoranthene	< 330	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-3A (20-22)
LSG SAMPLE NO: H0242336

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Benzoic acid	< 1,600	ug/kg
		Benzyl alcohol	< 330	ug/kg
		Butylbenzylphthalate	< 330	ug/kg
		Chrysene	< 330	ug/kg
		Di-n-butylphthalate	< 330	ug/kg
		Di-n-octylphthalate	< 330	ug/kg
		Dibenzo(a,h)anthracene	< 330	ug/kg
		Dibenzofuran	< 330	ug/kg
		Diethylphthalate	< 330	ug/kg
		Dimethylphthalate	< 330	ug/kg
		Fluoranthene	< 330	ug/kg
		Fluorene	< 330	ug/kg
		Hexachlorobenzene	< 330	ug/kg
		Hexachlorobutadiene	< 330	ug/kg
		Hexachlorocyclopentadiene	< 330	ug/kg
		Hexachloroethane	< 330	ug/kg
		Indeno(1,2,3-cd)pyrene	< 330	ug/kg
		Isophorone	< 330	ug/kg
		N-Nitrosodi-n-propylamine	< 330	ug/kg
		N-Nitrosodiphenylamine	< 330	ug/kg
		Naphthalene	< 330	ug/kg
		Nitrobenzene	< 330	ug/kg
		Pentachlorophenol	< 1,600	ug/kg
		Phenanthrene	< 330	ug/kg
		Phenol	< 330	ug/kg
		Pyrene	< 330	ug/kg
		bis(2-Chloroethoxy)methane	< 330	ug/kg
		bis(2-Chloroethyl)ether	< 330	ug/kg
		bis(2-Chloroisopropyl)ether	< 330	ug/kg
		bis(2-Ethylhexyl)phthalate	< 330	ug/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

July 20, 1993
Report No.: 00025837

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-1A (16-17)
LSG SAMPLE NO: H0242337
P.O. NO.: VERBAL

DATE SAMPLED: 26-JUN-93
DATE RECEIVED: 29-JUN-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
3	I685S	Petroleum Hydrocarbons	40	mg/kg
4	OVTCS	TCL - Volatiles in Soil		
		1,1,1-Trichloroethane	< 5	ug/kg
		1,1,2,2,-Tetrachloroethane	< 5	ug/kg
		1,1,2-Trichloroethane	< 5	ug/kg
		1,1-Dichloroethane	< 5	ug/kg
		1,1-Dichloroethene	< 5	ug/kg
		1,2-Dichloroethane	< 5	ug/kg
		1,2-Dichloroethene (total)	< 5	ug/kg
		1,2-Dichloropropane	< 5	ug/kg
		2-Butanone	< 10	ug/kg
		2-Hexanone	< 10	ug/kg
		4-Methyl-2-pentanone	< 10	ug/kg
		Acetone	< 10	ug/kg
		Benzene	< 5	ug/kg
		Bromodichloromethane	< 5	ug/kg
		Bromoform	< 5	ug/kg
		Bromomethane	< 10	ug/kg
		Carbon disulfide	< 5	ug/kg
		Carbon tetrachloride	< 5	ug/kg
		Chlorobenzene	< 5	ug/kg
		Chloroethane	< 10	ug/kg
		Chloroform	< 5	ug/kg
		Chloromethane	< 10	ug/kg
		Dibromochloromethane	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Methylene chloride	< 5	ug/kg
		Styrene	< 5	ug/kg
		Tetrachloroethene	< 5	ug/kg
		Toluene	< 5	ug/kg
		Trichloroethene	< 5	ug/kg
		Vinyl acetate	< 10	ug/kg
		Vinyl chloride	< 10	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-1A (16-17)
LSG SAMPLE NO: H0242337

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Xylene(total)	< 5	ug/kg
		cis-1,3-Dichloropropene	< 5	ug/kg
		trans-1,3-Dichloropropene	< 5	ug/kg
6	OSVTCS	TCL - Semi-volatile Extractables in Soil		
		1,2,4-Trichlorobenzene	< 330	ug/kg
		1,2-Dichlorobenzene	< 330	ug/kg
		1,3-Dichlorobenzene	< 330	ug/kg
		1,4-Dichlorobenzene	< 330	ug/kg
		2,4,5-Trichlorophenol	< 1,600	ug/kg
		2,4,6-Trichlorophenol	< 330	ug/kg
		2,4-Dichlorophenol	< 330	ug/kg
		2,4-Dimethylphenol	< 330	ug/kg
		2,4-Dinitrophenol	< 1,600	ug/kg
		2,4-Dinitrotoluene	< 330	ug/kg
		2,6-Dinitrotoluene	< 330	ug/kg
		2-Chloronaphthalene	< 330	ug/kg
		2-Chlorophenol	< 330	ug/kg
		2-Methylnaphthalene	< 330	ug/kg
		2-Methylphenol	< 330	ug/kg
		2-Nitroaniline	< 1,600	ug/kg
		2-Nitrophenol	< 330	ug/kg
		3,3'-Dichlorobenzidine	< 660	ug/kg
		3-Nitroaniline	< 1,600	ug/kg
		4,6-Dinitro-o-cresol	< 1,600	ug/kg
		4-Bromophenylphenylether	< 330	ug/kg
		4-Chloro-3-methylphenol	< 1,600	ug/kg
		4-Chloroaniline	< 330	ug/kg
		4-Chlorophenylphenylether	< 330	ug/kg
		4-Methylphenol	< 330	ug/kg
		4-Nitronaniline	< 1,600	ug/kg
		4-Nitrophenol	< 1,600	ug/kg
		Acenaphthene	< 330	ug/kg
		Acenaphthylene	< 330	ug/kg
		Anthracene	< 330	ug/kg
		Benzo(a)anthracene	< 330	ug/kg
		Benzo(a)pyrene	< 330	ug/kg
		Benzo(b)fluoranthene	< 330	ug/kg
		Benzo(g,h,i)perylene	< 330	ug/kg
		Benzo(k)fluoranthene	< 330	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-1A (16-17)
LSG SAMPLE NO: H0242337

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Benzoic acid	< 1,600	ug/kg
		Benzyl alcohol	< 330	ug/kg
		Butylbenzylphthalate	< 330	ug/kg
		Chrysene	< 330	ug/kg
		Di-n-butylphthalate	< 330	ug/kg
		Di-n-octylphthalate	< 330	ug/kg
		Dibenzo(a,h)anthracene	< 330	ug/kg
		Dibenzofuran	< 330	ug/kg
		Diethylphthalate	< 330	ug/kg
		Dimethylphthalate	< 330	ug/kg
		Fluoranthene	< 330	ug/kg
		Fluorene	< 330	ug/kg
		Hexachlorobenzene	< 330	ug/kg
		Hexachlorobutadiene	< 330	ug/kg
		Hexachlorocyclopentadiene	< 330	ug/kg
		Hexachloroethane	< 330	ug/kg
		Indeno(1,2,3-cd)pyrene	< 330	ug/kg
		Isophorone	< 330	ug/kg
		N-Nitrosodi-n-propylamine	< 330	ug/kg
		N-Nitrosodiphenylamine	< 330	ug/kg
		Naphthalene	< 330	ug/kg
		Nitrobenzene	< 330	ug/kg
		Pentachlorophenol	< 1,600	ug/kg
		Phenanthrene	< 330	ug/kg
		Phenol	< 330	ug/kg
		Pyrene	< 330	ug/kg
		bis(2-Chloroethoxy)methane	< 330	ug/kg
		bis(2-Chloroethyl)ether	< 330	ug/kg
		bis(2-Chloroisopropyl)ether	< 330	ug/kg
		bis(2-Ethylhexyl)phthalate	< 330	ug/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

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REPORT OF LABORATORY ANALYSIS

July 20, 1993
Report No.: 00025837
Section A Page 17

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-1B (18.5-20.5)
LSG SAMPLE NO: H0242338
P.O. NO.: VERBAL

DATE SAMPLED: 26-JUN-93
DATE RECEIVED: 29-JUN-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
3	I685S	Petroleum Hydrocarbons	< 20	mg/kg
4	OVTCS	TCL - Volatiles in Soil		
		1,1,1-Trichloroethane	< 5	ug/kg
		1,1,2,2,-Tetrachloroethane	< 5	ug/kg
		1,1,2-Trichloroethane	< 5	ug/kg
		1,1-Dichloroethane	< 5	ug/kg
		1,1-Dichloroethene	< 5	ug/kg
		1,2-Dichloroethane	< 5	ug/kg
		1,2-Dichloroethene (total)	< 5	ug/kg
		1,2-Dichloropropane	< 5	ug/kg
		2-Butanone	< 10	ug/kg
		2-Hexanone	< 10	ug/kg
		4-Methyl-2-pentanone	< 10	ug/kg
		Acetone	< 10	ug/kg
		Benzene	< 5	ug/kg
		Bromodichloromethane	< 5	ug/kg
		Bromoform	< 5	ug/kg
		Bromomethane	< 10	ug/kg
		Carbon disulfide	< 5	ug/kg
		Carbon tetrachloride	< 5	ug/kg
		Chlorobenzene	< 5	ug/kg
		Chloroethane	< 10	ug/kg
		Chloroform	< 5	ug/kg
		Chloromethane	< 10	ug/kg
		Dibromochloromethane	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Methylene chloride	< 5	ug/kg
		Styrene	< 5	ug/kg
		Tetrachloroethene	< 5	ug/kg
		Toluene	< 5	ug/kg
		Trichloroethene	< 5	ug/kg
		Vinyl acetate	< 10	ug/kg
		Vinyl chloride	< 10	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-1B (18.5-20.5)
LSG SAMPLE NO: H0242338

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Xylene(total)	< 5	ug/kg
		cis-1,3-Dichloropropene	< 5	ug/kg
		trans-1,3-Dichloropropene	< 5	ug/kg
6	OSVTCS	TCL - Semi-volatile Extractables in Soil		
		1,2,4-Trichlorobenzene	< 330	ug/kg
		1,2-Dichlorobenzene	< 330	ug/kg
		1,3-Dichlorobenzene	< 330	ug/kg
		1,4-Dichlorobenzene	< 330	ug/kg
		2,4,5-Trichlorophenol	< 1,600	ug/kg
		2,4,6-Trichlorophenol	< 330	ug/kg
		2,4-Dichlorophenol	< 330	ug/kg
		2,4-Dimethylphenol	< 1,600	ug/kg
		2,4-Dinitrophenol	< 330	ug/kg
		2,4-Dinitrotoluene	< 330	ug/kg
		2,6-Dinitrotoluene	< 330	ug/kg
		2-Chloronaphthalene	< 330	ug/kg
		2-Chlorophenol	< 330	ug/kg
		2-Methylnaphthalene	< 330	ug/kg
		2-Methylphenol	< 330	ug/kg
		2-Nitroaniline	< 1,600	ug/kg
		2-Nitrophenol	< 330	ug/kg
		3,3'-Dichlorobenzidine	< 660	ug/kg
		3-Nitroaniline	< 1,600	ug/kg
		4,6-Dinitro-o-cresol	< 1,600	ug/kg
		4-Bromophenylphenylether	< 330	ug/kg
		4-Chloro-3-methylphenol	< 1,600	ug/kg
		4-Chloroaniline	< 330	ug/kg
		4-Chlorophenylphenylether	< 330	ug/kg
		4-Methylphenol	< 330	ug/kg
		4-Nitronaniline	< 1,600	ug/kg
		4-Nitrophenol	< 1,600	ug/kg
		Acenaphthene	< 330	ug/kg
		Acenaphthylene	< 330	ug/kg
		Anthracene	< 330	ug/kg
		Benzo(a)anthracene	< 330	ug/kg
		Benzo(a)pyrene	< 330	ug/kg
		Benzo(b)fluoranthene	< 330	ug/kg
		Benzo(g,h,i)perylene	< 330	ug/kg
		Benzo(k)fluoranthene	< 330	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-1B (18.5-20.5)
LSG SAMPLE NO: H0242338

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Benzoic acid	< 1,600	ug/kg
		Benzyl alcohol	< 330	ug/kg
		Butylbenzylphthalate	< 330	ug/kg
		Chrysene	< 330	ug/kg
		Di-n-butylphthalate	< 330	ug/kg
		Di-n-octylphthalate	< 330	ug/kg
		Dibenzo(a,h)anthracene	< 330	ug/kg
		Dibenzofuran	< 330	ug/kg
		Diethylphthalate	< 330	ug/kg
		Dimethylphthalate	< 330	ug/kg
		Fluoranthene	< 330	ug/kg
		Fluorene	< 330	ug/kg
		Hexachlorobenzene	< 330	ug/kg
		Hexachlorobutadiene	< 330	ug/kg
		Hexachlorocyclopentadiene	< 330	ug/kg
		Hexachloroethane	< 330	ug/kg
		Indeno(1,2,3-cd)pyrene	< 330	ug/kg
		Isophorone	< 330	ug/kg
		N-Nitrosodi-n-propylamine	< 330	ug/kg
		N-Nitrosodiphenylamine	< 330	ug/kg
		Naphthalene	< 330	ug/kg
		Nitrobenzene	< 330	ug/kg
		Pentachlorophenol	< 1,600	ug/kg
		Phenanthrene	< 330	ug/kg
		Phenol	< 330	ug/kg
		Pyrene	< 330	ug/kg
		bis(2-Chloroethoxy)methane	< 330	ug/kg
		bis(2-Chloroethyl)ether	< 330	ug/kg
		bis(2-Chloroisopropyl)ether	< 330	ug/kg
		bis(2-Ethylhexyl)phthalate	< 330	ug/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

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REPORT OF LABORATORY ANALYSIS

LABORATORY ANALYSIS REPORT

CLIENT NAME:	TRANSWESTERN PIPELINE COMPANY	LSG CLIENT NO:	0734 0015
ADDRESS:	P.O. BOX 1717	PACE PROJECT:	H07340015
	ROSWELL, NM 88202-1717	PACE CLIENT:	620562
ATTENTION:	LARRY CAMPBELL		
SAMPLE ID:	AT1-2A (12-14)	DATE SAMPLED:	26-JUN-93
LSG SAMPLE NO:	H0242339	DATE RECEIVED:	29-JUN-93
P.O. NO.:	VERBAL	APPROVED BY:	L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
3	I685S	Petroleum Hydrocarbons	70	mg/kg
4	OVTCS	TCL - Volatiles in Soil		
		1,1,1-Trichloroethane	< 5	ug/kg
		1,1,2,2,-Tetrachloroethane	< 5	ug/kg
		1,1,2-Trichloroethane	< 5	ug/kg
		1,1-Dichloroethane	< 5	ug/kg
		1,1-Dichloroethene	< 5	ug/kg
		1,2-Dichloroethane	< 5	ug/kg
		1,2-Dichloroethene (total)	< 5	ug/kg
		1,2-Dichloropropane	< 5	ug/kg
		2-Butanone	< 10	ug/kg
		2-Hexanone	< 10	ug/kg
		4-Methyl-2-pentanone	< 10	ug/kg
		Acetone	< 10	ug/kg
		Benzene	< 5	ug/kg
		Bromodichloromethane	< 5	ug/kg
		Bromoform	< 5	ug/kg
		Bromomethane	< 10	ug/kg
		Carbon disulfide	< 5	ug/kg
		Carbon tetrachloride	< 5	ug/kg
		Chlorobenzene	< 5	ug/kg
		Chloroethane	< 10	ug/kg
		Chloroform	< 5	ug/kg
		Chloromethane	< 10	ug/kg
		Dibromochloromethane	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Methylene chloride	< 5	ug/kg
		Styrene	< 5	ug/kg
		Tetrachloroethene	< 5	ug/kg
		Toluene	< 5	ug/kg
		Trichloroethene	< 5	ug/kg
		Vinyl acetate	< 10	ug/kg
		Vinyl chloride	< 10	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-2A (12-14)
LSG SAMPLE NO: H0242339

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Xylene(total)	< 5	ug/kg
		cis-1,3-Dichloropropene	< 5	ug/kg
		trans-1,3-Dichloropropene	< 5	ug/kg
6	OSVTCS	TCL - Semi-volatile Extractables in Soil		
		1,2,4-Trichlorobenzene	< 330	ug/kg
		1,2-Dichlorobenzene	< 330	ug/kg
		1,3-Dichlorobenzene	< 330	ug/kg
		1,4-Dichlorobenzene	< 330	ug/kg
		2,4,5-Trichlorophenol	< 1,600	ug/kg
		2,4,6-Trichlorophenol	< 330	ug/kg
		2,4-Dichlorophenol	< 330	ug/kg
		2,4-Dimethylphenol	< 1,600	ug/kg
		2,4-Dinitrophenol	< 330	ug/kg
		2,4-Dinitrotoluene	< 330	ug/kg
		2,6-Dinitrotoluene	< 330	ug/kg
		2-Chloronaphthalene	< 330	ug/kg
		2-Chlorophenol	< 330	ug/kg
		2-Methylnaphthalene	< 330	ug/kg
		2-Methylphenol	< 330	ug/kg
		2-Nitroaniline	< 1,600	ug/kg
		2-Nitrophenol	< 330	ug/kg
		3,3'-Dichlorobenzidine	< 660	ug/kg
		3-Nitroaniline	< 1,600	ug/kg
		4,6-Dinitro-o-cresol	< 1,600	ug/kg
		4-Bromophenylphenylether	< 330	ug/kg
		4-Chloro-3-methylphenol	< 1,600	ug/kg
		4-Chloroaniline	< 330	ug/kg
		4-Chlorophenylphenylether	< 330	ug/kg
		4-Methylphenol	< 330	ug/kg
		4-Nitronaniline	< 1,600	ug/kg
		4-Nitrophenol	< 1,600	ug/kg
		Acenaphthene	< 330	ug/kg
		Acenaphthylene	< 330	ug/kg
		Anthracene	< 330	ug/kg
		Benzo(a)anthracene	< 330	ug/kg
		Benzo(a)pyrene	< 330	ug/kg
		Benzo(b)fluoranthene	< 330	ug/kg
		Benzo(g,h,i)perylene	< 330	ug/kg
		Benzo(k)fluoranthene	< 330	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-2A (12-14)
LSG SAMPLE NO: H0242339

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Benzoic acid	< 1,600	ug/kg
		Benzyl alcohol	< 330	ug/kg
		Butylbenzylphthalate	< 330	ug/kg
		Chrysene	< 330	ug/kg
		Di-n-butylphthalate	< 330	ug/kg
		Di-n-octylphthalate	< 330	ug/kg
		Dibenzo(a,h)anthracene	< 330	ug/kg
		Dibenzofuran	< 330	ug/kg
		Diethylphthalate	< 330	ug/kg
		Dimethylphthalate	< 330	ug/kg
		Fluoranthene	< 330	ug/kg
		Fluorene	< 330	ug/kg
		Hexachlorobenzene	< 330	ug/kg
		Hexachlorobutadiene	< 330	ug/kg
		Hexachlorocyclopentadiene	< 330	ug/kg
		Hexachloroethane	< 330	ug/kg
		Indeno(1,2,3-cd)pyrene	< 330	ug/kg
		Isophorone	< 330	ug/kg
		N-Nitrosodi-n-propylamine	< 330	ug/kg
		N-Nitrosodiphenylamine	< 330	ug/kg
		Naphthalene	< 330	ug/kg
		Nitrobenzene	< 330	ug/kg
		Pentachlorophenol	< 1,600	ug/kg
		Phenanthrene	< 330	ug/kg
		Phenol	< 330	ug/kg
		Pyrene	< 330	ug/kg
		bis(2-Chloroethoxy)methane	< 330	ug/kg
		bis(2-Chloroethyl)ether	< 330	ug/kg
		bis(2-Chloroisopropyl)ether	< 330	ug/kg
		bis(2-Ethylhexyl)phthalate	< 330	ug/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

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REPORT OF LABORATORY ANALYSIS

July 20, 1993
Report No.: 00025838
Section A Page 1

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-6A 10.5 - 20.5
LSG SAMPLE NO: H0242499
P.O. NO.: VERBAL
SITE: ATOKA-1

DATE SAMPLED: 28-JUN-93
DATE RECEIVED: 01-JUL-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNIT
3	I685S	Petroleum Hydrocarbons	< 20	mg/kg
4	OVTCS	TCL - Volatiles in Soil		
		1,1,1-Trichloroethane	< 5	ug/kg
		1,1,2,2,-Tetrachloroethane	< 5	ug/kg
		1,1,2-Trichloroethane	< 5	ug/kg
		1,1-Dichloroethane	< 5	ug/kg
		1,1-Dichloroethene	< 5	ug/kg
		1,2-Dichloroethane	< 5	ug/kg
		1,2-Dichloroethene (total)	< 5	ug/kg
		1,2-Dichloropropane	< 5	ug/kg
		2-Butanone	14	ug/kg
		2-Hexanone	< 10	ug/kg
		4-Methyl-2-pentanone	< 10	ug/kg
		Acetone	20	ug/kg
		Benzene	< 5	ug/kg
		Bromodichloromethane	< 5	ug/kg
		Bromoform	< 5	ug/kg
		Bromomethane	< 10	ug/kg
		Carbon disulfide	< 5	ug/kg
		Carbon tetrachloride	< 5	ug/kg
		Chlorobenzene	< 5	ug/kg
		Chloroethane	< 10	ug/kg
		Chloroform	< 5	ug/kg
		Chloromethane	< 10	ug/kg
		Dibromochloromethane	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Methylene chloride	< 5	ug/kg
		Styrene	< 5	ug/kg
		Tetrachloroethene	< 5	ug/kg
		Toluene	< 5	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-6A
LSG SAMPLE NO: H0242499

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Trichloroethene	< 5	ug/kg
		Vinyl acetate	< 10	ug/kg
		Vinyl chloride	< 10	ug/kg
		Xylene(total)	< 5	ug/kg
		cis-1,3-Dichloropropene	< 5	ug/kg
		trans-1,3-Dichloropropene	< 5	ug/kg
6	OSVTCS	TCL - Semi-volatile Extractables in Soil		
		1,2,4-Trichlorobenzene	< 330	ug/kg
		1,2-Dichlorobenzene	< 330	ug/kg
		1,3-Dichlorobenzene	< 330	ug/kg
		1,4-Dichlorobenzene	< 330	ug/kg
		2,4,5-Trichlorophenol	< 1,600	ug/kg
		2,4,6-Trichlorophenol	< 330	ug/kg
		2,4-Dichlorophenol	< 330	ug/kg
		2,4-Dimethylphenol	< 330	ug/kg
		2,4-Dinitrophenol	< 1,600	ug/kg
		2,4-Dinitrotoluene	< 330	ug/kg
		2,6-Dinitrotoluene	< 330	ug/kg
		2-Chloronaphthalene	< 330	ug/kg
		2-Chlorophenol	< 330	ug/kg
		2-Methylnaphthalene	< 330	ug/kg
		2-Methylphenol	< 330	ug/kg
		2-Nitroaniline	< 1,600	ug/kg
		2-Nitrophenol	< 330	ug/kg
		3,3'-Dichlorobenzidine	< 660	ug/kg
		3-Nitroaniline	< 1,600	ug/kg
		4,6-Dinitro-o-cresol	< 1,600	ug/kg
		4-Bromophenylphenylether	< 330	ug/kg
		4-Chloro-3-methylphenol	< 1,600	ug/kg
		4-Chloroaniline	< 330	ug/kg
		4-Chlorophenylphenylether	< 330	ug/kg
		4-Methylphenol	< 330	ug/kg
		4-Nitronaniline	< 1,600	ug/kg
		4-Nitrophenol	< 1,600	ug/kg
		Acenaphthene	< 330	ug/kg
		Acenaphthylene	< 330	ug/kg
		Anthracene	< 330	ug/kg
		Benzo(a)anthracene	< 330	ug/kg
		Benzo(a)pyrene	< 330	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-6A
LSG SAMPLE NO: H0242499

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Benzo(b)fluoranthene	< 330	ug/kg
		Benzo(g,h,i)perylene	< 330	ug/kg
		Benzo(k)fluoranthene	< 330	ug/kg
		Benzoic acid	< 1,600	ug/kg
		Benzyl alcohol	< 330	ug/kg
		Butylbenzylphthalate	< 330	ug/kg
		Chrysene	< 330	ug/kg
		Di-n-butylphthalate	< 330	ug/kg
		Di-n-octylphthalate	< 330	ug/kg
		Dibenzo(a,h)anthracene	< 330	ug/kg
		Dibenzofuran	< 330	ug/kg
		Diethylphthalate	< 330	ug/kg
		Dimethylphthalate	< 330	ug/kg
		Fluoranthene	< 330	ug/kg
		Fluorene	< 330	ug/kg
		Hexachlorobenzene	< 330	ug/kg
		Hexachlorobutadiene	< 330	ug/kg
		Hexachlorocyclopentadiene	< 330	ug/kg
		Hexachloroethane	< 330	ug/kg
		Indeno(1,2,3-cd)pyrene	< 330	ug/kg
		Isophorone	< 330	ug/kg
		N-Nitrosodi-n-propylamine	< 330	ug/kg
		N-Nitrosodiphenylamine	< 330	ug/kg
		Naphthalene	< 330	ug/kg
		Nitrobenzene	< 330	ug/kg
		Pentachlorophenol	< 1,600	ug/kg
		Phenanthrene	< 330	ug/kg
		Phenol	< 330	ug/kg
		Pyrene	< 330	ug/kg
		bis(2-Chloroethoxy)methane	< 330	ug/kg
		bis(2-Chloroethyl)ether	< 330	ug/kg
		bis(2-Chloroisopropyl)ether	< 330	ug/kg
		bis(2-Ethylhexyl)phthalate	< 330	ug/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

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REPORT OF LABORATORY ANALYSIS

July 20, 1993
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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-5A 19-19.5
LSG SAMPLE NO: H0242500
P.O. NO.: VERBAL

DATE SAMPLED: 28-JUN-93
DATE RECEIVED: 01-JUL-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
3	I685S	Petroleum Hydrocarbons	< 20	mg/kg
4	OVTCS	TCL - Volatiles in Soil		
		1,1,1-Trichloroethane	< 5	ug/kg
		1,1,2,2,-Tetrachloroethane	< 5	ug/kg
		1,1,2-Trichloroethane	< 5	ug/kg
		1,1-Dichloroethane	< 5	ug/kg
		1,1-Dichloroethene	< 5	ug/kg
		1,2-Dichloroethane	< 5	ug/kg
		1,2-Dichloroethene (total)	< 5	ug/kg
		1,2-Dichloropropane	< 5	ug/kg
		2-Butanone	< 10	ug/kg
		2-Hexanone	< 10	ug/kg
		4-Methyl-2-pentanone	< 10	ug/kg
		Acetone	< 10	ug/kg
		Benzene	< 5	ug/kg
		Bromodichloromethane	< 5	ug/kg
		Bromoform	< 5	ug/kg
		Bromomethane	< 10	ug/kg
		Carbon disulfide	< 5	ug/kg
		Carbon tetrachloride	< 5	ug/kg
		Chlorobenzene	< 5	ug/kg
		Chloroethane	< 10	ug/kg
		Chloroform	< 5	ug/kg
		Chloromethane	< 10	ug/kg
		Dibromochloromethane	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Methylene chloride	< 5	ug/kg
		Styrene	< 5	ug/kg
		Tetrachloroethene	< 5	ug/kg
		Toluene	< 5	ug/kg
		Trichloroethene	< 5	ug/kg
		Vinyl acetate	< 10	ug/kg
		Vinyl chloride	< 10	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-5A
LSG SAMPLE NO: H0242500

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Xylene(total)	< 5	ug/kg
		cis-1,3-Dichloropropene	< 5	ug/kg
		trans-1,3-Dichloropropene	< 5	ug/kg
6	OSVTCS	TCL - Semi-volatile Extractables in Soil		
		1,2,4-Trichlorobenzene	< 330	ug/kg
		1,2-Dichlorobenzene	< 330	ug/kg
		1,3-Dichlorobenzene	< 330	ug/kg
		1,4-Dichlorobenzene	< 330	ug/kg
		2,4,5-Trichlorophenol	< 1,600	ug/kg
		2,4,6-Trichlorophenol	< 330	ug/kg
		2,4-Dichlorophenol	< 330	ug/kg
		2,4-Dimethylphenol	< 330	ug/kg
		2,4-Dinitrophenol	< 1,600	ug/kg
		2,4-Dinitrotoluene	< 330	ug/kg
		2,6-Dinitrotoluene	< 330	ug/kg
		2-Chloronaphthalene	< 330	ug/kg
		2-Chlorophenol	< 330	ug/kg
		2-Methylnaphthalene	< 330	ug/kg
		2-Methylphenol	< 330	ug/kg
		2-Nitroaniline	< 1,600	ug/kg
		2-Nitrophenol	< 330	ug/kg
		3,3'-Dichlorobenzidine	< 660	ug/kg
		3-Nitroaniline	< 1,600	ug/kg
		4,6-Dinitro-o-cresol	< 1,600	ug/kg
		4-Bromophenylphenylether	< 330	ug/kg
		4-Chloro-3-methylphenol	< 1,600	ug/kg
		4-Chloroaniline	< 330	ug/kg
		4-Chlorophenylphenylether	< 330	ug/kg
		4-Methylphenol	< 330	ug/kg
		4-Nitronaniline	< 1,600	ug/kg
		4-Nitrophenol	< 1,600	ug/kg
		Acenaphthene	< 330	ug/kg
		Acenaphthylene	< 330	ug/kg
		Anthracene	< 330	ug/kg
		Benzo(a)anthracene	< 330	ug/kg
		Benzo(a)pyrene	< 330	ug/kg
		Benzo(b)fluoranthene	< 330	ug/kg
		Benzo(g,h,i)perylene	< 330	ug/kg
		Benzo(k)fluoranthene	< 330	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-5A
LSG SAMPLE NO: H0242500

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Benzoic acid	< 1,600	ug/kg
		Benzyl alcohol	< 330	ug/kg
		Butylbenzylphthalate	< 330	ug/kg
		Chrysene	< 330	ug/kg
		Di-n-butylphthalate	< 330	ug/kg
		Di-n-octylphthalate	< 330	ug/kg
		Dibenzo(a,h)anthracene	< 330	ug/kg
		Dibenzofuran	< 330	ug/kg
		Diethylphthalate	< 330	ug/kg
		Dimethylphthalate	< 330	ug/kg
		Fluoranthene	< 330	ug/kg
		Fluorene	< 330	ug/kg
		Hexachlorobenzene	< 330	ug/kg
		Hexachlorobutadiene	< 330	ug/kg
		Hexachlorocyclopentadiene	< 330	ug/kg
		Hexachloroethane	< 330	ug/kg
		Indeno(1,2,3-cd)pyrene	< 330	ug/kg
		Isophorone	< 330	ug/kg
		N-Nitrosodi-n-propylamine	< 330	ug/kg
		N-Nitrosodiphenylamine	< 330	ug/kg
		Naphthalene	< 330	ug/kg
		Nitrobenzene	< 330	ug/kg
		Pentachlorophenol	< 1,600	ug/kg
		Phenanthrene	< 330	ug/kg
		Phenol	< 330	ug/kg
		Pyrene	< 330	ug/kg
		bis(2-Chloroethoxy)methane	< 330	ug/kg
		bis(2-Chloroethyl)ether	< 330	ug/kg
		bis(2-Chloroisopropyl)ether	< 330	ug/kg
		bis(2-Ethylhexyl)phthalate	< 330	ug/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

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REPORT OF LABORATORY ANALYSIS

July 20, 1993
Report No.: 00025838

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

SAMPLE ID: AT1-4A 18-20
LSG SAMPLE NO: H0242501
P.O. NO.: VERBAL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

DATE SAMPLED: 28-JUN-93
DATE RECEIVED: 01-JUL-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
3	1685S	Petroleum Hydrocarbons	410	mg/kg
4	OVTCS	TCL - Volatiles in Soil		
		1,1,1-Trichloroethane	< 1,200 *	ug/kg
		1,1,2,2,-Tetrachloroethane	< 1,200	ug/kg
		1,1,2-Trichloroethane	< 1,200	ug/kg
		1,1-Dichloroethane	< 1,200	ug/kg
		1,1-Dichloroethene	< 1,200	ug/kg
		1,2-Dichloroethane	< 1,200	ug/kg
		1,2-Dichloroethene (total)	< 1,200	ug/kg
		1,2-Dichloropropane	< 1,200	ug/kg
		2-Butanone	< 2,400	ug/kg
		2-Hexanone	< 2,400	ug/kg
		4-Methyl-2-pentanone	< 2,400	ug/kg
		Acetone	< 2,400	ug/kg
		Benzene	< 1,200	ug/kg
		Bromodichloromethane	< 1,200	ug/kg
		Bromoform	< 1,200	ug/kg
		Bromomethane	< 2,400	ug/kg
		Carbon disulfide	< 1,200	ug/kg
		Carbon tetrachloride	< 1,200	ug/kg
		Chlorobenzene	< 1,200	ug/kg
		Chloroethane	< 2,400	ug/kg
		Chloroform	< 1,200	ug/kg
		Chloromethane	< 2,400	ug/kg
		Dibromochloromethane	< 1,200	ug/kg
		Ethylbenzene	6,200	ug/kg
		Methylene chloride	< 1,200	ug/kg
		Styrene	< 1,200	ug/kg
		Tetrachloroethene	< 1,200	ug/kg
		Toluene	1,900	ug/kg
		Trichloroethene	< 1,200	ug/kg
		Vinyl acetate	< 2,400	ug/kg
		Vinyl chloride	< 2,400	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-4A
LSG SAMPLE NO: H0242501

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Xylene(total)	40,000	ug/kg
		cis-1,3-Dichloropropene	< 1,200	ug/kg
		trans-1,3-Dichloropropene	< 1,200	ug/kg
6	OSVTCS	TCL - Semi-volatile Extractables in Soil		
		1,2,4-Trichlorobenzene	< 330	ug/kg
		1,2-Dichlorobenzene	< 330	ug/kg
		1,3-Dichlorobenzene	< 330	ug/kg
		1,4-Dichlorobenzene	< 330	ug/kg
		2,4,5-Trichlorophenol	< 1,600	ug/kg
		2,4,6-Trichlorophenol	< 330	ug/kg
		2,4-Dichlorophenol	< 330	ug/kg
		2,4-Dimethylphenol	< 330	ug/kg
		2,4-Dinitrophenol	< 1,600	ug/kg
		2,4-Dinitrotoluene	< 330	ug/kg
		2,6-Dinitrotoluene	< 330	ug/kg
		2-Chloronaphthalene	< 330	ug/kg
		2-Chlorophenol	< 330	ug/kg
		2-Methylnaphthalene	< 330	ug/kg
		2-Methylphenol	< 330	ug/kg
		2-Nitroaniline	< 1,600	ug/kg
		2-Nitrophenol	< 330	ug/kg
		3,3'-Dichlorobenzidine	< 660	ug/kg
		3-Nitroaniline	< 1,600	ug/kg
		4,6-Dinitro-o-cresol	< 1,600	ug/kg
		4-Bromophenylphenylether	< 330	ug/kg
		4-Chloro-3-methylphenol	< 1,600	ug/kg
		4-Chloroaniline	< 330	ug/kg
		4-Chlorophenylphenylether	< 330	ug/kg
		4-Methylphenol	< 330	ug/kg
		4-Nitronaniline	< 1,600	ug/kg
		4-Nitrophenol	< 1,600	ug/kg
		Acenaphthene	< 330	ug/kg
		Acenaphthylene	< 330	ug/kg
		Anthracene	< 330	ug/kg
		Benzo(a)anthracene	< 330	ug/kg
		Benzo(a)pyrene	< 330	ug/kg
		Benzo(b)fluoranthene	< 330	ug/kg
		Benzo(g,h,i)perylene	< 330	ug/kg
		Benzo(k)fluoranthene	< 330	ug/kg

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
SAMPLE ID: AT1-4A
LSG SAMPLE NO: H0242501

LN	TEST CODE	DETERMINATION	RESULT	UNITS
		Benzoic acid	< 1,600	ug/kg
		Benzyl alcohol	< 330	ug/kg
		Butylbenzylphthalate	< 330	ug/kg
		Chrysene	< 330	ug/kg
		Di-n-butylphthalate	< 330	ug/kg
		Di-n-octylphthalate	< 330	ug/kg
		Dibenzo(a,h)anthracene	< 330	ug/kg
		Dibenzofuran	< 330	ug/kg
		Diethylphthalate	< 330	ug/kg
		Dimethylphthalate	< 330	ug/kg
		Fluoranthene	< 330	ug/kg
		Fluorene	< 330	ug/kg
		Hexachlorobenzene	< 330	ug/kg
		Hexachlorobutadiene	< 330	ug/kg
		Hexachlorocyclopentadiene	< 330	ug/kg
		Hexachloroethane	< 330	ug/kg
		Indeno(1,2,3-cd)pyrene	< 330	ug/kg
		Isophorone	< 330	ug/kg
		N-Nitrosodi-n-propylamine	< 330	ug/kg
		N-Nitrosodiphenylamine	< 330	ug/kg
		Naphthalene	< 330	ug/kg
		Nitrobenzene	< 330	ug/kg
		Pentachlorophenol	< 1,600	ug/kg
		Phenanthrene	< 330	ug/kg
		Phenol	< 330	ug/kg
		Pyrene	< 330	ug/kg
		bis(2-Chloroethoxy)methane	< 330	ug/kg
		bis(2-Chloroethyl)ether	< 330	ug/kg
		bis(2-Chloroisopropyl)ether	< 330	ug/kg
		bis(2-Ethylhexyl)phthalate	1,500	ug/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.
* The detection limits for Volatiles were elevated due to the dilution required because of the high concentrations of target and non-target analytes.

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REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL REPORT
SUPPLEMENTAL INFORMATION

			SAMPLE PREPARATION			SAMPLE ANALYSIS				
LN	TEST CODE	BATCH	LR-METHOD	DATE/TIME	ANALYST	LR-METHOD	DATE/TIME	ANALYST	ANLS BATCH	INSTRUMENT
SAMPLE ID: AT1-6A							LSG SAMPLE NO: H0242499			
3	I685S	32224	19-3550			02-418.1	02-JUL-93 100	Lin	0	302WAT
4	OVTCS	32300	NA			19-8240	07-JUL-93 1807	E M	32201	GCMSQ
6	OSVTCS	32204	19-3550	02-JUL-93 0530	MLN	19-8270	08-JUL-93 2031	G W	32204	GCMSP
SAMPLE ID: AT1-5A							LSG SAMPLE NO: H0242500			
3	I685S	32224	19-3550			02-418.1	02-JUL-93 100	Lin	0	302WAT
4	OVTCS	32300	NA			19-8240	07-JUL-93 1837	E M	32201	GCMSQ
6	OSVTCS	32204	19-3550	02-JUL-93 0530	MLN	19-8270	08-JUL-93 2111	G W	32204	GCMSP
SAMPLE ID: AT1-4A							LSG SAMPLE NO: H0242501			
3	I685S	32224	19-3550			02-418.1	02-JUL-93 100	Lin	0	302WAT
4	OVTCS	32335	NA			19-8240	08-JUL-93 2141	E M	32201	GCMSQ
6	OSVTCS	32204	19-3550	02-JUL-93 0530	MLN	19-8270	08-JUL-93 2310	G W	32204	GCMSP

LR Method Literature Reference
02 EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
19 EPA-Test Methods for Evaluating Solid Waste, 3rd ed, Nov. 1986

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REPORT OF LABORATORY ANALYSIS

July 20, 1993
Report No.: 00025838

QUALITY CONTROL REPORT
SURROGATE STANDARD RECOVERY

LN	TEST CODE	SURROGATE COMPOUND	PERCENT RECOVERY	ACCEPTANCE LIMITS	REF LN
SAMPLE ID:	AT1-6A		LSG SAMPLE NO:	H0242499	
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	99	-	
		4-Bromofluorobenzene	102	-	
		Toluene-d8	105	-	
7	$BNAS	GC/MS BNA Surrogates			6
		2,4,6-Tribromophenol	75	-	
		2-Fluorobiphenyl	66	-	
		2-Fluorophenol	69	-	
		Nitrobenzene-d5	66	-	
		Phenol-d5	71	-	
		p-Terphenyl-d14	90	-	
SAMPLE ID:	AT1-5A		LSG SAMPLE NO:	H0242500	
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	99	-	
		4-Bromofluorobenzene	99	-	
		Toluene-d8	110	-	
7	$BNAS	GC/MS BNA Surrogates			6
		2,4,6-Tribromophenol	58	-	
		2-Fluorobiphenyl	59	-	
		2-Fluorophenol	62	-	
		Nitrobenzene-d5	61	-	
		Phenol-d5	62	-	
		p-Terphenyl-d14	59	-	
SAMPLE ID:	AT1-4A		LSG SAMPLE NO:	H0242501	
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	73	-	
		4-Bromofluorobenzene	80	-	
		Toluene-d8	62 *	-	
* The surrogate was out of range due to the dilution required because of matrix interferences.					
7	$BNAS	GC/MS BNA Surrogates			6
		2,4,6-Tribromophenol	90	-	
		2-Fluorobiphenyl	87	-	
		2-Fluorophenol	99	-	
		Nitrobenzene-d5	91	-	
		Phenol-d5	91	-	
		p-Terphenyl-d14	94	-	

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REPORT OF LABORATORY ANALYSIS

July 19, 1993
Report No.: 00025800
Section A Page 1

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-10A 5-7
LSG SAMPLE NO: H0242646
P.O. NO.: VERBAL
SITE: AT OKA-1

DATE SAMPLED: 01-JUL-93
DATE RECEIVED: 03-JUL-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	G107S	BTEX Package		
		Benzene	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Toluene	< 5	ug/kg
		m-Xylene	< 5	ug/kg
		o-Xylene	7	ug/kg
		p-Xylene	< 5	ug/kg
3	I685S	Petroleum Hydrocarbons	< 20	mg/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

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REPORT OF LABORATORY ANALYSIS

July 19, 1993
Report No.: 00025800
Section A Page 2

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-10B 13-15
LSG SAMPLE NO: H0242647
P.O. NO.: VERBAL

DATE SAMPLED: 01-JUL-93
DATE RECEIVED: 03-JUL-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	G107S	BTEX Package		
		Benzene	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Toluene	< 5	ug/kg
		m-Xylene	< 5	ug/kg
		o-Xylene	6	ug/kg
		p-Xylene	< 5	ug/kg
3	I685S	Petroleum Hydrocarbons	< 20	mg/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

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REPORT OF LABORATORY ANALYSIS

July 19, 1993
Report No.: 00025800
Section A Page 3

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-8A 12-20'
LSG SAMPLE NO: H0242648
P.O. NO.: VERBAL

DATE SAMPLED: 01-JUL-93
DATE RECEIVED: 03-JUL-93
APPROVED BY: D Meyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	G107S	BTEX Package		
		Benzene	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Toluene	< 5	ug/kg
		m-Xylene	< 5	ug/kg
		o-Xylene	< 5	ug/kg
		p-Xylene	< 5	ug/kg
3	I685S	Petroleum Hydrocarbons	< 20	mg/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

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REPORT OF LABORATORY ANALYSIS

July 19, 1993
Report No.: 00025800

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-9A 18-20
LSG SAMPLE NO: H0242649
P.O. NO.: VERBAL

DATE SAMPLED: 01-JUL-93
DATE RECEIVED: 03-JUL-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	G107S	BTEX Package		
		Benzene	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Toluene	< 5	ug/kg
		m-Xylene	< 5	ug/kg
		o-Xylene	< 5	ug/kg
		p-Xylene	< 5	ug/kg
3	I685S	Petroleum Hydrocarbons	< 20	mg/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

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REPORT OF LABORATORY ANALYSIS

July 19, 1993
Report No.: 00025800

QUALITY CONTROL REPORT
SUPPLEMENTAL INFORMATION

			SAMPLE PREPARATION			SAMPLE ANALYSIS				
LN	TEST CODE	BATCH	LR-METHOD	DATE/TIME	ANALYST	LR-METHOD	DATE/TIME	ANALYST	ANLS BATCH	INSTRUMENT
SAMPLE ID: AT1-10A 5-7							LSG SAMPLE NO: H0242646			
1	G107S	32304	NA			19-8020	08-JUL-93 109	Dan	32192	3678GC
3	I685S	32296	19-3550			02-418.1	07-JUL-93 430	Lin	0	302WAT
SAMPLE ID: AT1-10B 13-15							LSG SAMPLE NO: H0242647			
1	G107S	32304	NA			19-8020	08-JUL-93 144	Dan	32192	3678GC
3	I685S	32296	19-3550			02-418.1	07-JUL-93 430	Lin	0	302WAT
SAMPLE ID: AT1-8A							LSG SAMPLE NO: H0242648			
1	G107S	32451	NA			19-8020	15-JUL-93 319	Dan	32104	7287GC
3	I685S	32296	19-3550			02-418.1	07-JUL-93 430	Lin	0	302WAT
SAMPLE ID: AT1-9A 18-20							LSG SAMPLE NO: H0242649			
1	G107S	32331	NA			19-8020	09-JUL-93 1	Dan	32104	3678GC
3	I685S	32296	19-3550			02-418.1	07-JUL-93 430	Lin	0	302WAT

LR	Method Literature Reference
02	EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
19	EPA-Test Methods for Evaluating Solid Waste, 3rd ed, Nov. 1986

LR Method Literature Reference

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QUALITY CONTROL REPORT
SUPPLEMENTAL INFORMATION

			SAMPLE PREPARATION			SAMPLE ANALYSIS				
LN	TEST CODE	BATCH	LR-METHOD	DATE/TIME	ANALYST	LR-METHOD	DATE/TIME	ANALYST	ANLS BATCH	INSTRUMENT

LR Method Literature Reference

02 EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
19 EPA-Test Methods for Evaluating Solid Waste, 3rd ed, Nov. 1986

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REPORT OF LABORATORY ANALYSIS

July 19, 1993
Report No.: 00025800
Section C Page 1

QUALITY CONTROL REPORT
SURROGATE STANDARD RECOVERY

LN	TEST CODE	SURROGATE COMPOUND	PERCENT RECOVERY	ACCEPTANCE LIMITS	REF LN
SAMPLE ID: AT1-10A 5-7			LSG SAMPLE NO: H0242646		
2	$VARS	GC Volatile Aromatics Surrogate alpha,alpha,alpha-Trifluorotoluene	78	-	1
SAMPLE ID: AT1-10B 13-15			LSG SAMPLE NO: H0242647		
2	$VARS	GC Volatile Aromatics Surrogate alpha,alpha,alpha-Trifluorotoluene	84	-	1
SAMPLE ID: AT1-8A			LSG SAMPLE NO: H0242648		
2	$VARS	GC Volatile Aromatics Surrogate alpha,alpha,alpha-Trifluorotoluene	92	-	1
SAMPLE ID: AT1-9A 18-20			LSG SAMPLE NO: H0242649		
2	$VARS	GC Volatile Aromatics Surrogate alpha,alpha,alpha-Trifluorotoluene	82	-	1

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REPORT OF LABORATORY ANALYSIS

July 19, 1993
Report No.: 00025800

QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLE RECOVERY

TEST CODE	DETERMINATION	PERCENT RECOVERY	ACCEPTANCE LIMITS
BATCH: 32296	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0243501
I685S	Petroleum Hydrocarbons	99.0	-
BATCH: 32304	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0243515
G107S	BTEX Package		
	Benzene	98	-
	Ethylbenzene	91	-
	Toluene	117	-
	m-Xylene	95	-
	o-Xylene	96	-
	p-Xylene	91	-
BATCH: 32331	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0244556
G107S	BTEX Package		
	Benzene	115	-
	Ethylbenzene	112	-
	Toluene	116	-
	m-Xylene	111	-
	o-Xylene	112	-
	p-Xylene	104	-
BATCH: 32451	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0244723
G107S	BTEX Package		
	Benzene	116	-
	Ethylbenzene	114	-
	Toluene	124	-
	m-Xylene	116 *	-
	o-Xylene	113	-
	p-Xylene	*	-

* The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

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REPORT OF LABORATORY ANALYSIS

July 19, 1993
Report No.: 00025800
Section E Page 1

QUALITY CONTROL REPORT
METHOD BLANK DATA

	TEST CODE	Determination	RESULT	UNITS
BATCH: 32296	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0243502	
	I685S	Petroleum Hydrocarbons	< 20	mg/kg
BATCH: 32304	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0243516	
	G107S	BTEX Package		
		Benzene	< 1	ug/kg
		Ethylbenzene	< 1	ug/kg
		Toluene	< 1	ug/kg
		m-Xylene	< 1	ug/kg
		o-Xylene	< 1	ug/kg
		p-Xylene	< 1	ug/kg
BATCH: 32331	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0244557	
	G107S	BTEX Package		
		Benzene	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Toluene	< 5	ug/kg
		m-Xylene	< 5	ug/kg
		o-Xylene	< 5	ug/kg
		p-Xylene	< 5	ug/kg
BATCH: 32451	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0244724	
	G107S	BTEX Package		
		Benzene	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Toluene	< 5	ug/kg
		m-Xylene	< 5	ug/kg
		o-Xylene	< 5	ug/kg
		p-Xylene	< 5	ug/kg

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REPORT OF LABORATORY ANALYSIS

July 19, 1993
Report No.: 00025800

QUALITY CONTROL REPORT
DUPLICATE AND MATRIX SPIKE DATA

PREP BATCH: 32296

LSG SAMPLE NO: H0242565

TEST	DETERMINATION	ORIGINAL RESULT	DUPLICATE RESULT	UNITS	RANGE / RPD	UNITS	MS RESULT	MS % RCVRY
I685S	Petroleum Hydrocarbons	30	20	mg/kg	10.0	mg/kg	340	102.0

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QUALITY CONTROL REPORT
MATRIX SPIKE AND MATRIX SPIKE DUPLICATE DATA

ANLS BATCH: 32104 LSG SAMPLE NO: H0241017

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY
G107S	Benzene	11.7	14.1	ug/kg	18.6	58.5	70
G107S	Ethylbenzene	4.19	4.88	ug/kg	15.2	58.5	24
G107S	Toluene	12.2	13.8	ug/kg	12.3	58.5	69
G107S	m-Xylene	8.40	8.37	ug/kg	0.33	58.5	42
G107S	o-Xylene	9.79	10.3	ug/kg	5.13	58.5	52
G107S	p-Xylene	9.08	11.3	ug/kg	21.8	58.5	56

ANLS BATCH: 32192 LSG SAMPLE NO: H0242345

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY
G107S	Benzene	10.3	10.4	ug/kg	1.8	52	52
G107S	Ethylbenzene	4.51	4.73	ug/kg	4.7	23	24
G107S	Methyltertiarybutylether	6.03	7.36	ug/kg	19.9	30	37
G107S	Toluene	5.09	5.61	ug/kg	9.7	26	28
G107S	m-Xylene	5.04	5.61	ug/kg	10.7	25	28
G107S	o-Xylene	4.33	4.77	ug/kg	9.7	22	24
G107S	p-Xylene	*	*	ug/kg			

* The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

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REPORT OF LABORATORY ANALYSIS

July 30, 1993
Report No.: 00026105
Section A Page 1

LABORATORY ANALYSIS REPORT

CLIENT NAME:	TRANSWESTERN PIPELINE COMPANY	LSG CLIENT NO:	0734 0015
ADDRESS:	P.O. BOX 1717	PACE PROJECT:	H07340015
	ROSWELL, NM 88202-1717	PACE CLIENT:	620562
ATTENTION:	LARRY CAMPBELL		
SAMPLE ID:	AT1-10C	DATE SAMPLED:	15-JUL-93
LSG SAMPLE NO:	H0244067	DATE RECEIVED:	20-JUL-93
P.O. NO.:	VERBAL	APPROVED BY:	L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	G107S	BTEX Package		
		Benzene	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Toluene	< 5	ug/kg
		m-Xylene	< 5	ug/kg
		o-Xylene	< 5	ug/kg
		p-Xylene	< 5	ug/kg
3	I685S	Petroleum Hydrocarbons	< 20	mg/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.

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REPORT OF LABORATORY ANALYSIS

July 30, 1993
Report No.: 00026105
Section A Page 2

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: AT1-7A
LSG SAMPLE NO: H0244068
P.O. NO.: VERBAL

DATE SAMPLED: 18-JUL-93
DATE RECEIVED: 20-JUL-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	G107S	BTEX Package		
		Benzene	2,000	ug/kg
		Ethylbenzene	1,700	ug/kg
		Toluene	6,700	ug/kg
		m-Xylene	4,300 *	ug/kg
		o-Xylene	1,300	ug/kg
		p-Xylene	*	ug/kg
3	I685S	Petroleum Hydrocarbons	150	mg/kg

COMMENTS: Results are reported on an "as received" basis without correction for percent moisture unless previously specified.
* The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

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QUALITY CONTROL REPORT
SUPPLEMENTAL INFORMATION

			SAMPLE PREPARATION			SAMPLE ANALYSIS				
LN	TEST CODE	BATCH	LR-METHOD	DATE/TIME	ANALYST	LR-METHOD	DATE/TIME	ANALYST	ANLS BATCH	INSTRUMENT
SAMPLE ID: AT1-10C							LSG SAMPLE NO: H0244067			
1	G107S	32575	NA			19-8020	22-JUL-93 156	Dan	32575	7287GC
3	I685S	32704	19-3550			02-418.1	26-JUL-93 1000	J J	0	302WAT
SAMPLE ID: AT1-7A							LSG SAMPLE NO: H0244068			
1	G107S	32601	NA			19-8020	22-JUL-93 1847	Dan	32575	7287GC
3	I685S	32704	19-3550			02-418.1	26-JUL-93 1000	J J	0	302WAT

LR	Method Literature Reference
02	EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
19	EPA-Test Methods for Evaluating Solid Waste, 3rd ed, Nov. 1986

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QUALITY CONTROL REPORT
SURROGATE STANDARD RECOVERY

LN	TEST CODE	SURROGATE COMPOUND	PERCENT RECOVERY	ACCEPTANCE LIMITS	REF LN
SAMPLE ID: AT1-10C			LSG SAMPLE NO: H0244067		
2	$VARS	GC Volatile Aromatics Surrogate alpha,alpha,alpha-Trifluorotoluene	93	-	1
SAMPLE ID: AT1-7A			LSG SAMPLE NO: H0244068		
2	$VARS	GC Volatile Aromatics Surrogate alpha,alpha,alpha-Trifluorotoluene	432 *	-	1

* The surrogate was out of range due to matrix interferences which was confirmed by re-analysis.

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QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLE RECOVERY

TEST CODE	DETERMINATION	PERCENT RECOVERY	ACCEPTANCE LIMITS
BATCH: 32575	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0244920
G107S	BTEX Package		
	Benzene	101	-
	Ethylbenzene	98	-
	Toluene	100	-
	m-Xylene	99 *	-
	o-Xylene	98	-
	p-Xylene	*	-

* The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

TEST CODE	DETERMINATION	PERCENT RECOVERY	ACCEPTANCE LIMITS
BATCH: 32601	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0244952
G107S	BTEX Package		
	Benzene	105	-
	Ethylbenzene	101	-
	Toluene	103	-
	m-Xylene	102 *	-
	o-Xylene	100	-
	p-Xylene	*	-

* The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

TEST CODE	DETERMINATION	PERCENT RECOVERY	ACCEPTANCE LIMITS
BATCH: 32704	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0245132
I685S	Petroleum Hydrocarbons	101.0	-

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REPORT OF LABORATORY ANALYSIS

July 30, 1993
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QUALITY CONTROL REPORT
METHOD BLANK DATA

TEST CODE	Determination	RESULT	UNITS
BATCH: 32575	SAMPLE ID: Method Blank	LSG SAMPLE NO:	H0244921
G107S	BTEX Package		
	Benzene	< 5	ug/kg
	Ethylbenzene	< 5	ug/kg
	Toluene	< 5	ug/kg
	m-Xylene	< 5	ug/kg
	o-Xylene	< 5	ug/kg
	p-Xylene	< 5	ug/kg
BATCH: 32601	SAMPLE ID: Method Blank	LSG SAMPLE NO:	H0244953
G107S	BTEX Package		
	Benzene	< 5	ug/kg
	Ethylbenzene	< 5	ug/kg
	Toluene	< 5	ug/kg
	m-Xylene	< 5	ug/kg
	o-Xylene	< 5	ug/kg
	p-Xylene	< 5	ug/kg
BATCH: 32704	SAMPLE ID: Method Blank	LSG SAMPLE NO:	H0245133
I685S	Petroleum Hydrocarbons	< 20	mg/kg

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REPORT OF LABORATORY ANALYSIS

July 30, 1993
Report No.: 00026105

QUALITY CONTROL REPORT
DUPLICATE AND MATRIX SPIKE DATA

PREP BATCH: 32704 LSG SAMPLE NO: H0243952

TEST	DETERMINATION	ORIGINAL RESULT	DUPLICATE RESULT	UNITS	RANGE / RPD	UNITS	MS RESULT	MS % RCVRY
I685S	Petroleum Hydrocarbons	< 20	< 20	mg/kg	---	mg/kg	280	94.0

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REPORT OF LABORATORY ANALYSIS

July 30, 1993
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QUALITY CONTROL REPORT
MATRIX SPIKE AND MATRIX SPIKE DUPLICATE DATA

ANLS BATCH: 32575 LSG SAMPLE NO: H0244069

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY
G107S	Benzene	14.6	14.1	ug/kg	3.48	73	70
G107S	Ethylbenzene	9.62	8.07	ug/kg	17.5	48 *	40 *
G107S	Toluene	13.5	12.0	ug/kg	11.8	68	60 *
G107S	m-Xylene	23.0 **	16.5 **	ug/kg	32.9	58 *	41 *
G107S	o-Xylene	12.4	9.54	ug/kg	26.1	62 *	48 *
G107S	p-Xylene	**	**	ug/kg	32.9	58 *	41 *

* Recovery of the spike indicates the presence of a matrix interference. This should be considered in evaluating the data.

** The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

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REPORT OF LABORATORY ANALYSIS

July 20, 1993
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Section B Page 1

QUALITY CONTROL REPORT
SUPPLEMENTAL INFORMATION

			SAMPLE PREPARATION			SAMPLE ANALYSIS				
LN	TEST CODE	PREP BATCH	LR-METHOD	DATE/TIME	ANALYST	LR-METHOD	DATE/TIME	ANALYST	ANLS BATCH	INSTRUMENT
SAMPLE ID: AT1-2B (32-33)							LSG SAMPLE NO: H0242333			
3	I685S	32126	19-3550			02-418.1	29-JUN-93 1100	JLJ	0	302WAT
4	OVTCS	32153	NA			19-8240	29-JUN-93 1805	EHM	32091	GCMSQ
6	OSVTCS	32130	19-3550	29-JUN-93 1400	MLN	19-8270	29-JUN-93 2233	GMW	32106	GCMSP
SAMPLE ID: AT2-1B (28-30)							LSG SAMPLE NO: H0242334			
3	I685S	32126	19-3550			02-418.1	29-JUN-93 1100	JLJ	0	302WAT
4	OVTCS	32153	NA			19-8240	29-JUN-93 1831	EHM	32091	GCMSQ
6	OSVTCS	32130	19-3550	29-JUN-93 1400	MLN	19-8270	29-JUN-93 1854	ASP	32106	GCMSS
SAMPLE ID: AT1-2W							LSG SAMPLE NO: H0242335			
3	I685	32124	02-418.1			02-418.1	29-JUN-93 600	JLJ	0	302WAT
8	I590	32178	NA			02-160.1	29-JUN-93 2359	DPP	0	005WAT
11	OSVTCW	32138	19-3520	29-JUN-93 1530	MLN	19-8270	29-JUN-93 1806	ASP	32107	GCMSS
11	OSVTCW	32138	19-3520	29-JUN-93 1530	MLN	19-8270	29-JUN-93 1806	ASP	32107	GCMSS
13	OVTCW	32154	NA			05-624	29-JUN-93 1648	JBP	32144	GCMSR

LR Method Literature Reference
02 EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
19 EPA-Test Methods for Evaluating Solid Waste, 3rd ed, Nov. 1986

LR Method Literature Reference
02 EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
19 EPA-Test Methods for Evaluating Solid Waste, 3rd ed, Nov. 1986

LR Method Literature Reference
02 EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
05 EPA-40 CFR 136, October 26, 1984.
19 EPA-Test Methods for Evaluating Solid Waste, 3rd ed, Nov. 1986

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QUALITY CONTROL REPORT
SUPPLEMENTAL INFORMATION

			SAMPLE PREPARATION			SAMPLE ANALYSIS				
LN	TEST CODE	BATCH	LR-METHOD	DATE/TIME	ANALYST	LR-METHOD	DATE/TIME	ANALYST	ANLS BATCH	INSTRUMENT
SAMPLE ID: AT1-3A (20-22)							LSG SAMPLE NO: H0242336			
3	I685S	32215	19-3550			02-418.1	01-JUL-93 600	Lin	0	302WAT
4	OVTCS	32201	NA			19-8240	30-JUN-93 1320	E M	32201	GCMSQ
6	OSVTCS	32130	19-3550	29-JUN-93 1400	MLN	19-8270	07-JUL-93 2215	G W	32106	GCMSP
SAMPLE ID: AT1-1A (16-17)							LSG SAMPLE NO: H0242337			
3	I685S	32215	19-3550			02-418.1	01-JUL-93 600	Lin	0	302WAT
4	OVTCS	32201	NA			19-8240	30-JUN-93 1320	E M	32201	GCMSQ
6	OSVTCS	32130	19-3550	29-JUN-93 1400	MLN	19-8270	08-JUL-93 1242	G W	32106	GCMSP
SAMPLE ID: AT1-1B (18.5-20.5)							LSG SAMPLE NO: H0242338			
3	I685S	32215	19-3550			02-418.1	01-JUL-93 600	Lin	0	302WAT
4	OVTCS	32201	NA			19-8240	30-JUN-93 1353	E M	32201	GCMSQ
6	OSVTCS	32130	19-3550	29-JUN-93 1400	MLN	19-8270	07-JUL-93 2028	C H	32106	GCMST

LR	Method Literature Reference
02	EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
19	EPA-Test Methods for Evaluating Solid Waste, 3rd ed, Nov. 1986

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QUALITY CONTROL REPORT
SUPPLEMENTAL INFORMATION

			SAMPLE PREPARATION			SAMPLE ANALYSIS				
LN	TEST CODE	BATCH	LR-METHOD	DATE/TIME	ANALYST	LR-METHOD	DATE/TIME	ANALYST	ANLS BATCH	INSTRUMENT
SAMPLE ID: AT1-2A (12-14)							LSG SAMPLE NO: H0242339			
3	I685S	32215	19-3550			02-418.1	01-JUL-93 600	Lin	0	302WAT
4	OVTCS	32201	NA			19-8240	30-JUN-93 1426	E M	32201	GCMSQ
6	OSVTCS	32130	19-3550	29-JUN-93 1400	MLN	19-8270	07-JUL-93 2115	C H	32130	GCMST
SAMPLE ID: AT2-1A (12-14)							LSG SAMPLE NO: H0242341			
3	I685S	32215	19-3550			02-418.1	01-JUL-93 600	Lin	0	302WAT
4	OVTCS	32201	NA			19-8240	30-JUN-93 1531	E M	32201	GCMSQ
6	OSVTCS	32130	19-3550	29-JUN-93 1400	MLN	19-8270	07-JUL-93 2202	C H	32130	GCMST
SAMPLE ID: AT2-1C (60-62)							LSG SAMPLE NO: H0242342			
3	I685S	32215	19-3550			02-418.1	01-JUL-93 600	Lin	0	302WAT
4	OVTCS	32201	NA			19-8240	30-JUN-93 1615	E M	32201	GCMSQ
6	OSVTCS	32130	19-3550	29-JUN-93 1400	MLN	19-8270	08-JUL-93 1107	C H	32130	GCMST

LR	Method Literature Reference
02	EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
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REPORT OF LABORATORY ANALYSIS

July 20, 1993
Report No.: 00025837
Section C Page 1

QUALITY CONTROL REPORT
SURROGATE STANDARD RECOVERY

LN	TEST CODE	SURROGATE COMPOUND	PERCENT RECOVERY	ACCEPTANCE LIMITS	REF LN
SAMPLE ID: AT1-2B (32-33)			LSG SAMPLE NO: H0242333		
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	86	-	
		4-Bromofluorobenzene	98	-	
		Toluene-d8	80	-	
7	$BNAS	GC/MS BNA Surrogates			6
		2,4,6-Tribromophenol	132	-	
		2-Fluorobiphenyl	862	-	
		2-Fluorophenol	982	-	
		Nitrobenzene-d5	882	-	
		Phenol-d5	109	-	
		p-Terphenyl-d14	118	-	
SAMPLE ID: AT2-1B (28-30)			LSG SAMPLE NO: H0242334		
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	80	-	
		4-Bromofluorobenzene	100	-	
		Toluene-d8	80	-	
7	$BNAS	GC/MS BNA Surrogates			6
		2,4,6-Tribromophenol	*	-	
		2-Fluorobiphenyl	*	-	
		2-Fluorophenol	*	-	
		Nitrobenzene-d5	*	-	
		Phenol-d5	*	-	
		p-Terphenyl-d14	*	-	
* The surrogates were not recovered due to the dilution required because of of matrix interferences or high analyte concentration.					
SAMPLE ID: AT1-2W			LSG SAMPLE NO: H0242335		
12	$BNAW	GC/MS BNA Surrogates			11
		2,4,6-Tribromophenol	*	-	
		2-Fluorobiphenyl	*	-	
		2-Fluorophenol	*	-	
		Nitrobenzene-d5		-	
		Phenol-d5		-	
		p-Terphenyl-d14		-	
* The surrogates were not recovered due to the dilution required because of of matrix interferences or high analyte concentration.					
14	$VOAW	GC/MS Volatiles Surrogates			13
		1,2-Dichloroethane-d4	101	-	
		4-Bromofluorobenzene	96	-	

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QUALITY CONTROL REPORT
SURROGATE STANDARD RECOVERY

LN	TEST CODE	SURROGATE COMPOUND	PERCENT RECOVERY	ACCEPTANCE LIMITS	REF LN
		Toluene-d8	93	-	
SAMPLE ID:	AT1-3A (20-22)		LSG SAMPLE NO:	H0242336	
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	100	-	
		4-Bromofluorobenzene	101	-	
		Toluene-d8	105	-	
7	$BNAS	GC/MS BNA Surrogates			6
		2,4,6-Tribromophenol	140	-	
		2-Fluorobiphenyl	92	-	
		2-Fluorophenol	94	-	
		Nitrobenzene-d5	83	-	
		Phenol-d5	105	-	
		p-Terphenyl-d14	84	-	
SAMPLE ID:	AT1-1A (16-17)		LSG SAMPLE NO:	H0242337	
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	100	-	
		4-Bromofluorobenzene	101	-	
		Toluene-d8	105	-	
7	$BNAS	GC/MS BNA Surrogates			6
		2,4,6-Tribromophenol	89	-	
		2-Fluorobiphenyl	87	-	
		2-Fluorophenol	84	-	
		Nitrobenzene-d5	82	-	
		Phenol-d5	101	-	
		p-Terphenyl-d14	88	-	
SAMPLE ID:	AT1-1B (18.5-20.5)		LSG SAMPLE NO:	H0242338	
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	101	-	
		4-Bromofluorobenzene	100	-	
		Toluene-d8	107	-	
7	$BNAS	GC/MS BNA Surrogates			6
		2,4,6-Tribromophenol	118	-	
		2-Fluorobiphenyl	85	-	
		2-Fluorophenol	92	-	
		Nitrobenzene-d5	79	-	
		Phenol-d5	102	-	
		p-Terphenyl-d14	108	-	

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QUALITY CONTROL REPORT
SURROGATE STANDARD RECOVERY

LN	TEST CODE	SURROGATE COMPOUND	PERCENT RECOVERY	ACCEPTANCE LIMITS	REF LN
SAMPLE ID:	AT1-2A (12-14)		LSG SAMPLE NO:	H0242339	
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	95	-	
		4-Bromofluorobenzene	95	-	
		Toluene-d8	103	-	
7	$BNAS	GC/MS BNA Surrogates			6
		2,4,6-Tribromophenol	115	-	
		2-Fluorobiphenyl	82	-	
		2-Fluorophenol	83	-	
		Nitrobenzene-d5	75	-	
		Phenol-d5	94	-	
		p-Terphenyl-d14	101	-	
SAMPLE ID:	AT2-1A (12-14)		LSG SAMPLE NO:	H0242341	
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	98	-	
		4-Bromofluorobenzene	91	-	
		Toluene-d8	99	-	
7	$BNAS	GC/MS BNA Surrogates			6
		2,4,6-Tribromophenol	112	-	
		2-Fluorobiphenyl	74	-	
		2-Fluorophenol	47	-	
		Nitrobenzene-d5	91	-	
		Phenol-d5	53	-	
		p-Terphenyl-d14	89	-	
SAMPLE ID:	AT2-1C (60-62)		LSG SAMPLE NO:	H0242342	
5	$VOAS	GC/MS Volatiles Surrogates			4
		1,2-Dichloroethane-d4	109	-	
		4-Bromofluorobenzene	112	-	
		Toluene-d8	96	-	
7	$BNAS	GC/MS BNA Surrogates			6
		Phenol-d5	88	-	
		p-Terphenyl-d14	79	-	
		2,4,6-Tribromophenol	70	-	
		2-Fluorobiphenyl	86	-	
		2-Fluorophenol	78	-	
		Nitrobenzene-d5	120	-	

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REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLE RECOVERY

TEST CODE	DETERMINATION	PERCENT RECOVERY	ACCEPTANCE LIMITS
BATCH: 32124	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0243221
I685	Petroleum Hydrocarbons	92.0	-
BATCH: 32126	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0243225
I685S	Petroleum Hydrocarbons	108.0	-
BATCH: 32130	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0243233
OSVTC	TCL - Semi-volatile Extractables in Soil		
	1,2,4-Trichlorobenzene	74	-
	1,4-Dichlorobenzene	78	-
	2,4-Dinitrotoluene	84	-
	2-Chlorophenol	68	-
	4-Chloro-3-methylphenol	75	-
	4-Nitrophenol	116	-
	Acenaphthene	75	-
	N-Nitrosodi-n-propylamine	72	-
	Pentachlorophenol	108	-
	Phenol	68	-
	Pyrene	86	-
BATCH: 32153	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0243269
OVTCS	TCL - Volatiles in Soil		
	1,1-Dichloroethene	88	-
	Benzene	99	-
	Chlorobenzene	89	-
	Toluene	95	-
	Trichloroethene	91	-
BATCH: 32154	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0243271
OVTCW	TCL - Volatiles in Water		
	1,1-Dichloroethene	95	-
	Benzene	109	-
	Chlorobenzene	105	-
	Toluene	108	-
	Trichloroethene	99	-

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REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLE RECOVERY

TEST CODE	DETERMINATION	PERCENT RECOVERY	ACCEPTANCE LIMITS
BATCH: 32201	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0243344
OVTCS	TCL - Volatiles in Soil		
	1,1-Dichloroethene	99	-
	Benzene	108	-
	Chlorobenzene	94	-
	Toluene	104	-
	Trichloroethene	95	-
BATCH: 32215	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0243361
I685S	Petroleum Hydrocarbons	102	-

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QUALITY CONTROL REPORT
METHOD BLANK DATA

	TEST CODE	Determination	RESULT	UNITS
BATCH: 32124	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0243222	
	I685	Petroleum Hydrocarbons	< 0.2	mg/L
BATCH: 32126	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0243226	
	I685S	Petroleum Hydrocarbons	< 20	mg/kg
BATCH: 32130	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0243234	
	OSVTCS	TCL - Semi-volatile Extractables in Soil		
		1,2,4-Trichlorobenzene	< 330	ug/kg
		1,2-Dichlorobenzene	< 330	ug/kg
		1,3-Dichlorobenzene	< 330	ug/kg
		1,4-Dichlorobenzene	< 330	ug/kg
		2,4,5-Trichlorophenol	< 1,600	ug/kg
		2,4,6-Trichlorophenol	< 330	ug/kg
		2,4-Dichlorophenol	< 330	ug/kg
		2,4-Dimethylphenol	< 1,600	ug/kg
		2,4-Dinitrophenol	< 330	ug/kg
		2,4-Dinitrotoluene	< 330	ug/kg
		2,6-Dinitrotoluene	< 330	ug/kg
		2-Chloronaphthalene	< 330	ug/kg
		2-Chlorophenol	< 330	ug/kg
		2-Methylnaphthalene	< 330	ug/kg
		2-Methylphenol	< 330	ug/kg
		2-Nitroaniline	< 1,600	ug/kg
		2-Nitrophenol	< 330	ug/kg
		3,3'-Dichlorobenzidine	< 660	ug/kg
		3-Nitroaniline	< 1,600	ug/kg
		4,6-Dinitro-o-cresol	< 1,600	ug/kg
		4-Bromophenylphenylether	< 330	ug/kg
		4-Chloro-3-methylphenol	< 1,600	ug/kg
		4-Chloroaniline	< 330	ug/kg
		4-Chlorophenylphenylether	< 330	ug/kg
		4-Methylphenol	< 330	ug/kg
		4-Nitronaniline	< 1,600	ug/kg
		4-Nitrophenol	< 1,600	ug/kg
		Acenaphthene	< 330	ug/kg
		Acenaphthylene	< 330	ug/kg
		Anthracene	< 330	ug/kg
		Benzo(a)anthracene	< 330	ug/kg

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QUALITY CONTROL REPORT
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TEST CODE	Determination	RESULT	UNITS
	Benzo(a)pyrene	< 330	ug/kg
	Benzo(b)fluoranthene	< 330	ug/kg
	Benzo(g,h,i)perylene	< 330	ug/kg
	Benzo(k)fluoranthene	< 330	ug/kg
	Benzoic acid	< 1,600	ug/kg
	Benzyl alcohol	< 330	ug/kg
	Butylbenzylphthalate	< 330	ug/kg
	Chrysene	< 330	ug/kg
	Di-n-butylphthalate	< 330	ug/kg
	Di-n-octylphthalate	< 330	ug/kg
	Dibenzo(a,h)anthracene	< 330	ug/kg
	Dibenzofuran	< 330	ug/kg
	Diethylphthalate	< 330	ug/kg
	Dimethylphthalate	< 330	ug/kg
	Fluoranthene	< 330	ug/kg
	Fluorene	< 330	ug/kg
	Hexachlorobenzene	< 330	ug/kg
	Hexachlorobutadiene	< 330	ug/kg
	Hexachlorocyclopentadiene	< 330	ug/kg
	Hexachloroethane	< 330	ug/kg
	Indeno(1,2,3-cd)pyrene	< 330	ug/kg
	Isophorone	< 330	ug/kg
	N-Nitrosodi-n-propylamine	< 330	ug/kg
	N-Nitrosodiphenylamine	< 330	ug/kg
	Naphthalene	< 330	ug/kg
	Nitrobenzene	< 330	ug/kg
	Pentachlorophenol	< 1,600	ug/kg
	Phenanthrene	< 330	ug/kg
	Phenol	< 330	ug/kg
	Pyrene	< 330	ug/kg
	bis(2-Chloroethoxy)methane	< 330	ug/kg
	bis(2-Chloroethyl)ether	< 330	ug/kg
	bis(2-Chloroisopropyl)ether	< 330	ug/kg
	bis(2-Ethylhexyl)phthalate	< 330	ug/kg

BATCH: 32138 SAMPLE ID: Method Blank LSG SAMPLE NO: H0243246

OSVTCW	TCL - Semi-volatile Extractables in Water		
	1,2,4-Trichlorobenzene	< 10	ug/L
	1,2-Dichlorobenzene	< 10	ug/L
	1,3-Dichlorobenzene	< 10	ug/L
	1,4-Dichlorobenzene	< 10	ug/L
	2,4,5-Trichlorophenol	< 50	ug/L
	2,4,6-Trichlorophenol	< 10	ug/L

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QUALITY CONTROL REPORT
METHOD BLANK DATA

TEST CODE	Determination	RESULT	UNITS
	2,4-Dichlorophenol	< 10	ug/L
	2,4-Dimethylphenol	< 50	ug/L
	2,4-Dinitrophenol	< 10	ug/L
	2,4-Dinitrotoluene	< 10	ug/L
	2,6-Dinitrotoluene	< 10	ug/L
	2-Chloronaphthalene	< 10	ug/L
	2-Chlorophenol	< 10	ug/L
	2-Methylnaphthalene	< 10	ug/L
	2-Methylphenol	< 10	ug/L
	2-Nitroaniline	< 50	ug/L
	2-Nitrophenol	< 10	ug/L
	3,3'-Dichlorobenzidine	< 20	ug/L
	3-Nitroaniline	< 50	ug/L
	4,6-Dinitro-o-cresol	< 50	ug/L
	4-Bromophenylphenylether	< 10	ug/L
	4-Chloro-3-methylphenol	< 50	ug/L
	4-Chloroaniline	< 10	ug/L
	4-Chlorophenylphenylether	< 10	ug/L
	4-Methylphenol	< 10	ug/L
	4-Nitroaniline	< 50	ug/L
	4-Nitrophenol	< 50	ug/L
	Acenaphthene	< 10	ug/L
	Acenaphthylene	< 10	ug/L
	Anthracene	< 10	ug/L
	Benzo(a)anthracene	< 10	ug/L
	Benzo(a)pyrene	< 10	ug/L
	Benzo(b)fluoranthene	< 10	ug/L
	Benzo(g,h,i)perylene	< 10	ug/L
	Benzo(k)fluoranthene	< 10	ug/L
	Benzoic acid	< 50	ug/L
	Benzyl alcohol	< 10	ug/L
	Butylbenzylphthalate	< 10	ug/L
	Chrysene	< 10	ug/L
	Di-n-butylphthalate	< 10	ug/L
	Di-n-octylphthalate	< 10	ug/L
	Dibenzo(a,h)anthracene	< 10	ug/L
	Dibenzofuran	< 10	ug/L
	Diethylphthalate	< 10	ug/L
	Dimethylphthalate	< 10	ug/L
	Fluoranthene	< 10	ug/L
	Fluorene	< 10	ug/L
	Hexachlorobenzene	< 10	ug/L
	Hexachlorobutadiene	< 10	ug/L
	Hexachlorocyclopentadiene	< 10	ug/L

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QUALITY CONTROL REPORT
METHOD BLANK DATA

TEST CODE	Determination	RESULT	UNITS
	Hexachloroethane	< 10	ug/L
	Indeno(1,2,3-cd)pyrene	< 10	ug/L
	Isophorone	< 10	ug/L
	N-Nitroso-di-n-propylamine	< 10	ug/L
	N-Nitrosodiphenylamine	< 10	ug/L
	Naphthalene	< 10	ug/L
	Nitrobenzene	< 10	ug/L
	Pentachlorophenol	< 50	ug/L
	Phenanthrene	< 10	ug/L
	Phenol	< 10	ug/L
	Pyrene	< 10	ug/L
	bis(2-Chloroethoxy)methane	< 10	ug/L
	bis(2-Chloroethyl)ether	< 10	ug/L
	bis(2-Chloroisopropyl)ether	< 10	ug/L
	bis(2-Ethylhexyl)phthalate	< 10	ug/L
BATCH: 32153 SAMPLE ID: Method Blank		LSG SAMPLE NO: H0243270	
OVTCS	TCL - Volatiles in Soil		
	1,1,1-Trichloroethane	< 5	ug/kg
	1,1,2,2,-Tetrachloroethane	< 5	ug/kg
	1,1,2-Trichloroethane	< 5	ug/kg
	1,1-Dichloroethane	< 5	ug/kg
	1,1-Dichloroethene	< 5	ug/kg
	1,2-Dichloroethane	< 5	ug/kg
	1,2-Dichloroethene (total)	< 5	ug/kg
	1,2-Dichloropropane	< 5	ug/kg
	2-Butanone	< 10	ug/kg
	2-Hexanone	< 10	ug/kg
	4-Methyl-2-pentanone	< 10	ug/kg
	Acetone	< 10	ug/kg
	Benzene	< 5	ug/kg
	Bromodichloromethane	< 5	ug/kg
	Bromoform	< 5	ug/kg
	Bromomethane	< 10	ug/kg
	Carbon disulfide	< 5	ug/kg
	Carbon tetrachloride	< 5	ug/kg
	Chlorobenzene	< 5	ug/kg
	Chloroethane	< 10	ug/kg
	Chloroform	< 5	ug/kg
	Chloromethane	< 10	ug/kg
	Dibromochloromethane	< 5	ug/kg
	Ethylbenzene	< 5	ug/kg
	Methylene chloride	< 5	ug/kg

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QUALITY CONTROL REPORT
METHOD BLANK DATA

TEST CODE	Determination	RESULT	UNITS
	Styrene	< 5	ug/kg
	Tetrachloroethene	< 5	ug/kg
	Toluene	< 5	ug/kg
	Trichloroethene	< 5	ug/kg
	Vinyl acetate	< 10	ug/kg
	Vinyl chloride	< 10	ug/kg
	Xylene(total)	< 5	ug/kg
	cis-1,3-Dichloropropene	< 5	ug/kg
	trans-1,3-Dichloropropene	< 5	ug/kg
BATCH: 32154	SAMPLE ID: Method Blank	LSG SAMPLE NO:	H0243272
OVTCW	TCL - Volatiles in Water		
	Xylene(total)	< 5	ug/L
	1,1,1-Trichloroethane	< 5	ug/L
	1,1,2,2-Tetrachloroethane	< 5	ug/L
	1,1,2-Trichloroethane	< 5	ug/L
	1,1-Dichloroethane	< 5	ug/L
	1,1-Dichloroethene	< 5	ug/L
	1,2-Dichloroethane	< 5	ug/L
	1,2-Dichloroethene (total)	< 5	ug/L
	1,2-Dichloropropane	< 5	ug/L
	2-Butanone	< 10	ug/L
	2-Hexanone	< 10	ug/L
	4-Methyl-2-pentanone	< 10	ug/L
	Acetone	< 10	ug/L
	Benzene	< 5	ug/L
	Bromodichloromethane	< 5	ug/L
	Bromoform	< 5	ug/L
	Bromomethane	< 10	ug/L
	Carbon disulfide	< 5	ug/L
	Carbon tetrachloride	< 5	ug/L
	Chlorobenzene	< 5	ug/L
	Chloroethane	< 10	ug/L
	Chloroform	< 5	ug/L
	Chloromethane	< 10	ug/L
	Dibromochloromethane	< 5	ug/L
	Ethylbenzene	< 5	ug/L
	Methylene chloride	< 5	ug/L
	Styrene	< 5	ug/L
	Tetrachloroethene	< 5	ug/L
	Toluene	< 5	ug/L
	Trichloroethene	< 5	ug/L
	Vinyl acetate	< 10	ug/L

QUALITY CONTROL REPORT
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	TEST CODE	Determination	RESULT	UNITS
		Vinyl chloride	< 10	ug/L
		cis-1,3-Dichloropropene	< 5	ug/L
		trans-1,3-Dichloropropene	< 5	ug/L
BATCH: 32178	SAMPLE ID: Method Blank		LSG SAMPLE NO:	H0243314
	I590	Solids, Dissolved at 180C	< 10	mg/L
BATCH: 32201	SAMPLE ID: Method Blank		LSG SAMPLE NO:	H0243345
	OVTCS	TCL - Volatiles in Soil		
		Bromodichloromethane	< 5	ug/kg
		Bromoform	< 5	ug/kg
		Bromomethane	< 10	ug/kg
		Carbon disulfide	< 5	ug/kg
		Carbon tetrachloride	< 5	ug/kg
		Chlorobenzene	< 5	ug/kg
		Chloroethane	< 10	ug/kg
		Chloroform	< 5	ug/kg
		Chloromethane	< 10	ug/kg
		Dibromochloromethane	< 5	ug/kg
		Ethylbenzene	< 5	ug/kg
		Methylene chloride	< 5	ug/kg
		Styrene	< 5	ug/kg
		Tetrachloroethene	< 5	ug/kg
		Toluene	< 5	ug/kg
		Trichloroethene	< 5	ug/kg
		Vinyl acetate	< 10	ug/kg
		Vinyl chloride	< 10	ug/kg
		Xylene(total)	< 5	ug/kg
		cis-1,3-Dichloropropene	< 5	ug/kg
		1,1,1-Trichloroethane	< 5	ug/kg
		1,1,2,2,-Tetrachloroethane	< 5	ug/kg
		1,1,2-Trichloroethane	< 5	ug/kg
		1,1-Dichloroethane	< 5	ug/kg
		1,1-Dichloroethene	< 5	ug/kg
		1,2-Dichloroethane	< 5	ug/kg
		1,2-Dichloroethene (total)	< 5	ug/kg
		1,2-Dichloropropane	< 5	ug/kg
		2-Butanone	< 10	ug/kg
		2-Hexanone	< 10	ug/kg
		4-Methyl-2-pentanone	< 10	ug/kg
		Acetone	< 10	ug/kg
		Benzene	< 5	ug/kg

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QUALITY CONTROL REPORT
METHOD BLANK DATA

TEST CODE	Determination	RESULT	UNITS
	trans-1,3-Dichloropropene	< 5	ug/kg
BATCH: 32215	SAMPLE ID: Method Blank	LSG SAMPLE NO:	H0243362
I685S	Petroleum Hydrocarbons	< 20	mg/kg

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QUALITY CONTROL REPORT
DUPLICATE AND MATRIX SPIKE DATA

PREP BATCH: 32126 LSG SAMPLE NO: H0242334

TEST	DETERMINATION	ORIGINAL RESULT	DUPLICATE RESULT	UNITS	RANGE / RPD	UNITS	MS RESULT	MS % RCVRY
I685S	Petroleum Hydrocarbons	6,800	6,800	mg/kg	0.0	mg/kg	7,800	*

* The concentration of the analyte prevented accurate determination of the matrix spike recovery.

PREP BATCH: 32178 LSG SAMPLE NO: H0242335

TEST	DETERMINATION	ORIGINAL RESULT	DUPLICATE RESULT	UNITS	RANGE / RPD	UNITS	MS RESULT	MS % RCVRY
I590	Solids, Dissolved at 180C	7,700	7,700	mg/L	0.0	mg/L		

PREP BATCH: 32215 LSG SAMPLE NO: H0242341

TEST	DETERMINATION	ORIGINAL RESULT	DUPLICATE RESULT	UNITS	RANGE / RPD	UNITS	MS RESULT	MS % RCVRY
I685S	Petroleum Hydrocarbons	2,900	2,800	mg/kg	4	mg/kg	3,000 *	*

* The concentration of the analyte prevented accurate determination of the matrix spike recovery.

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QUALITY CONTROL REPORT
MATRIX SPIKE AND MATRIX SPIKE DUPLICATE DATA

PREP BATCH: 32201 LSG SAMPLE NO: H0242336

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY
OVTCS	1,1-Dichloroethene	54.4	48.7	ug/kg	11.0	109	97
OVTCS	Benzene	52.9	52.9	ug/kg	0.055	106	106
OVTCS	Chlorobenzene	53.2	51.7	ug/kg	2.93	106	103
OVTCS	Toluene	52.0	50.6	ug/kg	2.66	104	101
OVTCS	Trichloroethene	52.1	49.9	ug/kg	4.38	104	100

PREP BATCH: 32130 LSG SAMPLE NO: H0242341

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY
OSVTCS	1,2,4-Trichlorobenzene	3,530	4,030	ug/kg	13.2	106	121
OSVTCS	1,4-Dichlorobenzene	1,430	1,400	ug/kg	2.12	43	42
OSVTCS	2,4-Dinitrotoluene	3,720	3,630	ug/kg	2.45	111	109
OSVTCS	2-Chlorophenol	2,870	2,770	ug/kg	3.55	43	42
OSVTCS	4-Nitrophenol	5,730	5,370	ug/kg	6.49	86	80
OSVTCS	Acenaphthene	2,430	2,370	ug/kg	2.50	73	71
OSVTCS	N-Nitrosodi-n-propylamine	1,890	1,810	ug/kg	4.32	57	54
OSVTCS	Pentachlorophenol	7,060	7,160	ug/kg	1.41	106	107
OSVTCS	Phenol	2,620	2,510	ug/kg	4.29	39	38
OSVTCS	Pyrene	3,120	2,830	ug/kg	9.75	94	85
OSVTCS	p-Chloro-m-cresol	6,660	6,550	ug/kg	1.66	100	98

ANLS BATCH: 32091 LSG SAMPLE NO: H0242034

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY

ANLS BATCH: 32106 LSG SAMPLE NO: H0242130

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY
OSVTCS	1,2,4-Trichlorobenzene	3,000	2,760	ug/kg	8.33	91	84
OSVTCS	1,4-Dichlorobenzene	2,610	2,370	ug/kg	9.64	79	72
OSVTCS	2,4-Dinitrotoluene	2,770	2,830	ug/kg	2.14	84	86

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QUALITY CONTROL REPORT
MATRIX SPIKE AND MATRIX SPIKE DUPLICATE DATA

ANLS BATCH: 32106 LSG SAMPLE NO: H0242130

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY
OSVTCS	2-Chlorophenol	5,500	4,940	ug/kg	10.7	83	75
OSVTCS	4-Chloro-3-methylphenol	5,350	5,000	ug/kg	6.76	81	76
OSVTCS	4-Nitrophenol	5,170	5,380	ug/kg	3.98	78	82
OSVTCS	Acenaphthene	2,510	2,440	ug/kg	2.83	76	74
OSVTCS	N-Nitrosodi-n-propylamine	2,770	2,600	ug/kg	6.33	84	79
OSVTCS	Pentachlorophenol	8,040	7,790	ug/kg	3.16	122	118
OSVTCS	Phenol	5,440	4,820	ug/kg	12.1	82	73
OSVTCS	Pyrene	2,770	2,800	ug/kg	1.08	84	84

ANLS BATCH: 32107 LSG SAMPLE NO: H0242108

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY
OSVTCW	1,2,4-Trichlorobenzene	65	61	ug/L	4.81	65	61
OSVTCW	1,4-Dichlorobenzene	63	61	ug/L	3.42	63	61
OSVTCW	2,4-Dinitrotoluene	104	100	ug/L	3.86	104	100
OSVTCW	2-Chlorophenol	152	156	ug/L	1.18	76	78
OSVTCW	4-Nitrophenol	98	102	ug/L	5.45	49	51
OSVTCW	Acenaphthene	82	81	ug/L	0.37	82	81
OSVTCW	N-Nitrosodi-n-propylamine	78	78	ug/L	0.78	78	78
OSVTCW	Pentachlorophenol	212	220	ug/L	4.06	106	110
OSVTCW	Phenol	79	82	ug/L	4.51	39	82
OSVTCW	Pyrene	102	100	ug/L	2.71	102	100
OSVTCW	p-Chloro-m-cresol	198	196	ug/L	1.39	99	98

ANLS BATCH: 32144 LSG SAMPLE NO: H0242107

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY
OVTCW	1,1-Dichloroethene	47.0	56.0	ug/L	17.3	94	112
OVTCW	Benzene	47.0	52.7	ug/L	9.40	96	105
OVTCW	Chlorobenzene	49.9	59.5	ug/L	17.5	100	119
OVTCW	Toluene	45.2	56.7	ug/L	17.2	90	107
OVTCW	Trichloroethene	49.8	58.4	ug/L	15.9	100	117

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TEL: 713-488-1810
FAX: 713-488-4661

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

August 06, 1993
Report No.: 00026257
Section A Page 1

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: ATOKA 1- MW-2
LSG SAMPLE NO: H0244190
P.O. NO.: VERBAL

DATE SAMPLED: 21-JUL-93
DATE RECEIVED: 22-JUL-93
APPROVED BY: L Beyer

SITE: ATOKA-1

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	I685	Petroleum Hydrocarbons	12	mg/L
2	I590	Solids, Dissolved at 180C	5,800	mg/L
3	G107W	BTEX Package		
		Benzene	3,600	ug/L
		Ethylbenzene	400	ug/L
		Toluene	9,800	ug/L
		m-Xylene	2,600 *	ug/L
		o-Xylene	570	ug/L
		p-Xylene	*	ug/L

COMMENTS: * The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

RECEIVED
AUG 1
HOUSTON OFFICE
SOUTHWEST REGION
BROWN & ROOT ENVIRONMENTAL

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REPORT OF LABORATORY ANALYSIS

August 06, 1993
Report No.: 00026257

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: ATOKA 1 MW-3
LSG SAMPLE NO: H0244191
P.O. NO.: VERBAL

DATE SAMPLED: 21-JUL-93
DATE RECEIVED: 22-JUL-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	I685	Petroleum Hydrocarbons	1.1	mg/L
2	I590	Solids, Dissolved at 180C	5,800	mg/L
3	G107W	BTEX Package		
		Benzene	7	ug/L
		Ethylbenzene	< 2	ug/L
		Toluene	6	ug/L
		m-Xylene	< 2	ug/L
		o-Xylene	< 2	ug/L
		p-Xylene	< 2	ug/L

COMMENTS:

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

August 06, 1993
Report No.: 00026257
Section A Page 3

LABORATORY ANALYSIS REPORT

CLIENT NAME: TRANSWESTERN PIPELINE COMPANY
ADDRESS: P.O. BOX 1717
ROSWELL, NM 88202-1717
ATTENTION: LARRY CAMPBELL

LSG CLIENT NO: 0734 0015
PACE PROJECT: H07340015
PACE CLIENT: 620562

SAMPLE ID: ATOKA 1 MW-4
LSG SAMPLE NO: H0244192
P.O. NO.: VERBAL

DATE SAMPLED: 21-JUL-93
DATE RECEIVED: 22-JUL-93
APPROVED BY: L Beyer

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	I685	Petroleum Hydrocarbons	0.6	mg/L
2	I590	Solids, Dissolved at 180C	4,600	mg/L
3	G107W	BTEX Package		
		Benzene	61	ug/L
		Ethylbenzene	4	ug/L
		Toluene	20	ug/L
		m-Xylene	61 *	ug/L
		o-Xylene	7	ug/L
		p-Xylene	*	ug/L

COMMENTS: * The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

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QUALITY CONTROL REPORT
SUPPLEMENTAL INFORMATION

LN	TEST CODE	BATCH	SAMPLE PREPARATION LR-METHOD	SAMPLE PREPARATION DATE/TIME	SAMPLE PREPARATION ANALYST	SAMPLE ANALYSIS LR-METHOD	SAMPLE ANALYSIS DATE/TIME	SAMPLE ANALYSIS ANALYST	ANLS BATCH	INSTRUMENT
SAMPLE ID: ATOKA 1- MW-2							LSG SAMPLE NO: H0244190			
1	I685	32610	02-418.1			02-418.1	23-JUL-93 1100	J J	0	302WAT
2	I590	32622	NA			02-160.1	22-JUL-93 2359	D P	0	005WAT
3	G107W	32872	NA			19-8020	04-AUG-93 1905	Dan	32859	7287GC
SAMPLE ID: ATOKA 1 MW-3							LSG SAMPLE NO: H0244191			
1	I685	32610	02-418.1			02-418.1	23-JUL-93 1100	J J	0	302WAT
2	I590	32622	NA			02-160.1	22-JUL-93 2359	D P	0	005WAT
3	G107W	32859	NA			19-8020	03-AUG-93 2112	Dan	32859	7287GC
SAMPLE ID: ATOKA 1 MW-4							LSG SAMPLE NO: H0244192			
1	I685	32610	02-418.1			02-418.1	23-JUL-93 1100	J J	0	302WAT
2	I590	32622	NA			02-160.1	22-JUL-93 2359	D P	0	005WAT
3	G107W	32859	NA			19-8020	03-AUG-93 2148	Dan	32859	7287GC

LR Method Literature Reference
02 EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
19 EPA-Test Methods for Evaluating Solid Waste, 3rd ed, Nov. 1986

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QUALITY CONTROL REPORT
SURROGATE STANDARD RECOVERY

LN	TEST CODE	SURROGATE COMPOUND	PERCENT RECOVERY	ACCEPTANCE LIMITS	REF LN
SAMPLE ID: ATOKA 1- MW-2			LSG SAMPLE NO: H0244190		
4	$VARW	GC Volatile Aromatics Surrogate alpha,alpha,alpha-Trifluorotoluene	116	-	3
SAMPLE ID: ATOKA 1 MW-3			LSG SAMPLE NO: H0244191		
4	$VARW	GC Volatile Aromatics Surrogate alpha,alpha,alpha-Trifluorotoluene	432 *	-	3
* The surrogate was out of range due to matrix interferences which was confirmed by re-analysis.					
SAMPLE ID: ATOKA 1 MW-4			LSG SAMPLE NO: H0244192		
4	$VARW	GC Volatile Aromatics Surrogate alpha,alpha,alpha-Trifluorotoluene	351 *	-	3
* The surrogate was out of range due to matrix interferences which was confirmed by re-analysis.					

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QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLE RECOVERY

TEST CODE	DETERMINATION	PERCENT RECOVERY	ACCEPTANCE LIMITS
BATCH: 32610	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0244968
I685	Petroleum Hydrocarbons	105.0	-
BATCH: 32859	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0246370
G107W	BTEX Package		
	Benzene	105	-
	Ethylbenzene	96	-
	Toluene	106	-
	m-Xylene	96 *	-
	o-Xylene	98	-
	p-Xylene	*	-

* The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

BATCH: 32872	SAMPLE ID: Lab Control Sample		LSG SAMPLE NO: H0246391
G107W	BTEX Package		
	Benzene	106	-
	Ethylbenzene	100	-
	Toluene	103	-
	m-Xylene	98 *	-
	o-Xylene	100	-
	p-Xylene	*	-

* The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

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REPORT OF LABORATORY ANALYSIS

August 06, 1993
Report No.: 00026257
Section E Page 1

QUALITY CONTROL REPORT
METHOD BLANK DATA

	TEST CODE	Determination	RESULT	UNITS
BATCH: 32610	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0244969	
	I685	Petroleum Hydrocarbons	< 0.2	mg/L
BATCH: 32622	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0244992	
	I590	Solids, Dissolved at 180C	< 10	mg/L
BATCH: 32859	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0246371	
	G107W	BTEX Package		
		Benzene	< 1	ug/L
		Ethylbenzene	< 1	ug/L
		Toluene	< 1	ug/L
		m-Xylene	< 1	ug/L
		o-Xylene	< 1	ug/L
		p-Xylene	< 1	ug/L
BATCH: 32872	SAMPLE ID: Method Blank		LSG SAMPLE NO: H0246392	
	G107W	BTEX Package		
		Benzene	< 1	ug/L
		Ethylbenzene	< 1	ug/L
		Toluene	< 1	ug/L
		m-Xylene	< 1	ug/L
		o-Xylene	< 1	ug/L
		p-Xylene	< 1	ug/L

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REPORT OF LABORATORY ANALYSIS

August 06, 1993
Report No.: 00026257
Section F Page 1

QUALITY CONTROL REPORT
DUPLICATE AND MATRIX SPIKE DATA

PREP BATCH: 32622 LSG SAMPLE NO: H0244163

TEST	DETERMINATION	ORIGINAL RESULT	DUPLICATE RESULT	UNITS	RANGE / RPD	UNITS	MS RESULT	MS % RCVRY
I590	Solids, Dissolved at 180C	11,000	11,000	mg/L	0.0	mg/L		

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REPORT OF LABORATORY ANALYSIS

August 06, 1993
Report No.: 00026257

QUALITY CONTROL REPORT
MATRIX SPIKE AND MATRIX SPIKE DUPLICATE DATA

PREP BATCH: 32859 LSG SAMPLE NO: H0244191

TEST	DETERMINATION	MS RESULT	MSD RESULT	UNITS	RPD	MS PCT RECOVERY	MSD PCT RECOVERY
G107W	Benzene	12.3	12.2	ug/L	0.80	62 *	61 *
G107W	Ethylbenzene	8.47	7.87	ug/L	7.3	42 *	39 *
G107W	Toluene	9.67	8.89	ug/L	8.4	48 *	44 *
G107W	m-Xylene	15.3 **	14.1 **	ug/L	8.2	38 *	35 *
G107W	o-Xylene	8.82	8.20	ug/L	7.2	44 *	41 *
G107W	p-Xylene	**	**	ug/L	8.2	38 *	35 *

* Recovery of the spike indicates the presence of a matrix interference. This should be considered in evaluating the data.

** The compounds m-Xylene and p-Xylene co-elute. The reported result is the sum of the two.

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128565

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client

Address

Phone

Report To:

Bill To:

P.O. # / Billing Reference

Project Name / No.

Pace Client No.

Pace Project Manager

Pace Project No.

*Requested Due Date:

Sampled By (PRINT):

Sampler Signature

Date Sampled

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA	ANALYSES REQUEST	REMARKS
1	ATI-3A		S		2						
2	ATI-1A	939	S		2						
3	ATI-1B	940	S		2						
4	ATI-2A	1112	S		2						
5	ATI-2B	913	S		2						
6	ATI-2W	[illegible]	W		4					X	
7											
8											

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT / DATE	SHIPMENT METHOD RETURNED / DATE

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
		FedEx		

Additional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

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128247

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client

Address

Phone

Report To:

Bill To:

P.O. # / Billing Reference

Project Name / No.

Pace Client No.

Pace Project Manager

Pace Project No.

*Requested Due Date:

Sampled By (PRINT):

Sampler Signature

Date Sampled

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA			ANALYSES REQUEST	REMARKS
1													
2													
3													
4													
5													
6													
7													
8													

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	SHIPMENT METHOD RETURNED DATE

Additional Comments

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Fed Ex			
	743287432			

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THE ASSURANCE OF QUALITY

128557

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client

Address

Phone

Report To:

Bill To:

P.O. # / Billing Reference

Project Name / No.

Pace Client No.

Pace Project Manager

Pace Project No.

*Requested Due Date:

Sampled By (PRINT):

Sampler Signature

Date Sampled

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA	ANALYSES REQUEST	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT / DATE	SHIPMENT METHOD RETURNED / DATE

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME

Additional Comments

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128253

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client

Address

Phone

Report To:

Bill To:

P.O. # / Billing Reference

Project Name / No.

Pace Client No.

Pace Project Manager

Pace Project No.

*Requested Due Date:

Sampled By (PRINT):

Sampler Signature

Date Sampled

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA			ANALYSES REQUEST	REMARKS
1												XX	
2													
3													
4													
5													
6													
7													
8													

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	SHIPMENT METHOD RETURNED DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
						FedEx	7/9/03	

Additional Comments

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128250

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client [illegible] | Report To: | Pace Client No.
Address | Bill To: | Pace Project Manager
 | P.O. # / Billing Reference | Pace Project No.
Phone | Project Name / No. | *Requested Due Date:

Sampled By (PRINT): [illegible]

Sampler Signature [illegible] | Date Sampled 7/13/93

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA			ANALYSES REQUEST [illegible]	[illegible]	REMARKS
1	ATI-7A	[illegible]	S		2							X	X	
2														
3														
4														
5														
6														
.7														
8														

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT / DATE	RETURNED / DATE

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	[illegible]	Fed Ex 742875454	7/13/93	

Additional Comments

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128248

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client Transwestern - Hobbs

Address

Phone

Report To:

Bill To:

P.O. # / Billing Reference

Project Name / No.

Pace Client No.

Pace Project Manager

Pace Project No.

*Requested Due Date:

Sampled By (PRINT):

Sampler Signature

Date Sampled 7/21/93

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA			ANALYSES REQUEST	REMARKS
1	MW-2	1:45	W		4							X X	
2	MW-3	13:35	W		4							X X	
3	MW-4	13:10	W		4							X X	
4													
5													
6													
7													
8													

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT / DATE	SHIPMENT METHOD RETURNED / DATE

Additional Comments

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
		Fed Ex # 740287 4480	7/21/93	

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