3R - 150

REPORTS

DATE:

March 2000

ANNUAL REPORT
BISTI FLARES PIT #1
SAN JUAN COUNTY, NEW MEXICO

Prepared for

El Paso Field Services Company

HCI-1739

March 2000

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1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

At the request of El Paso Field Services Company (EPFS), Hydrologic Consultants, Inc. of Colorado (HCI) has prepared the following annual report and recommendations for soil and ground-water remediation at the Bisti Flare Pit #1 Meter Code LD-267 site. A site assessment was performed under the unlined surface impoundment guidelines. The hazard ranking score was assessed at the site, and a value of 20 points was calculated for the site. A copy of the field assessment form can be found in Appendix A. This is the first report issued for the site and thus, it will present a description and analysis of the data that have been collected at the site. Field investigations were initiated by EPFS in 1996.

1.2 HISTORY OF SITE

The Bisti Flare Pit site is located in Township 26 North, Range 12 West, Section 21, Unit C (Figure 1). The pit is approximately 90 feet long, 60 feet wide, and 9 feet deep on the east side and 4 to 5 feet deep on the west. There are no records on when the pit was first established, but EPFS is of the opinion that it was sometime in the mid-1950s. The pit was excavated to receive condensate fluids from the Bisti Gathering System and adjacent compressor and processing facility. The fluids were discharged to the pit and periodically burned.

2.0 SITE INVESTIGATION AND INITIAL REMEDIATION

In 1996, thirty-one soil borings were made to a maximum depth of 22.5 feet. In most of the borings, two-inch diameter PVC pipes were inserted with the bottom five feet slotted. The annular space around the slotted section of pipe was sand-packed and the remainder of the borehole was grouted with a bentonite slurry. The locations of the wells are indicated on Figure 2. These wells were installed by hand augering, and the depths of the wells were determined by auger refusal. During the auguring of the boreholes, soil samples were collected and described by a representative of EPFS or Alpha Biosciences, a contractor to EPFS. Geologic logs for the soil borings are contained in Appendix B. Based upon the augering program and laboratory analysis of soil samples for total petroleum hydrocarbons (TPH, USEPA method 8015), the area of visible hydrocarbon impacts was estimated to be approximately 225 feet by 250 feet. Examination of soil and ground-water samples indicated that visible staining extended from a depth of 12 feet to 22 feet.

In 1997, seven boreholes were abandoned by plugging them with bentonite chips. Twenty-one monitoring wells (designated as PZ wells) were developed by bailing them until the water within the wells had cleared. Table 1 summarizes which boreholes and wells were plugged and abandoned. Ground-water samples were collected on a schedule that varied from monthly to approximately every six months. Samples were initially collected in September 1996 and the last sampling occurred in October 1999. The dates of water collection and analyses are indicated on Table 2. The water samples were analyzed for benzene (B), toluene (T), ethylbenzene (E) and total xylenes (X) in EPFS' laboratory utilizing EPA Method 8020. Many of the samples were analyzed for dissolved oxygen, electrical conductivity, and microbial population counts. General water chemistry parameters were also measured in water samples from the wells (Table 3). Water levels in the wells were taken prior to the collection of samples so that ground-water flow directions could be estimated (Table 4).

A determination was made by EPFS to pursue an in situ bioremediation program for the remediation of soil within the former pit and ground water. In May and June of 1997, 155 one-inch diameter PVC treatment wells were installed on-site by hand augering. These wells were placed on spacings of approximately 20 feet (Figure 3). The wells varied in depth between 15 to about 22 feet deep with screen lengths that varied from 5 feet to 7.5 feet. A biocatalyst solution consisting of Alpha Biosciences' Biocatalyst (a propriety solution), water, micronutrients, ammonium sulfate, liquid iron and a surfactant were injected into each well. The injections also included the additions of microbes that had been raised in a fermentor and EnviroFirst granules (a proprietary compound that consists of a calcium peroxygen based oxygen release compound). The analyses of the injection solutions are contained in Appendix C.

The bottom of the flare pit was also treated in 1997. The bottom of the pit was turned using a track hoe three times during the year. The turnings occurred during the following months: January 1997, June 1997, October 1997, and finally June 1998. When the soils were turned, alfalfa hay, EnviroFirst granules, and nutrients were added to the soil. The soil was then sprayed with a biocatalyst. The treatment solution and air were injected under pressure, utilizing Alpha's Wand-Probe, into the pit soil five times between turnings of the soil.

Beginning on February 12, 1998, the treatment solution (described above) was injected into the treatment wells twice per week. The nutrients in the treatment solution were also doubled at this time. The treatment solutions were added twice per week until the end of July 1998. Due to concerns by EPFS on the efficacy of the injection program, the injection of the treatment solution was halted in July 1998.

Ground-water samples were collected from each of the monitoring wells in April 1999. In October 1999, water samples were collected from monitoring wells (all wells designated as PZ) 08, 09, 16, 21, 22, 23, 26, 29, and 31. The emphasis of the sampling that occurred in October 1999 was to assess the concentrations of BTEX on the south side of the facility, and to determine whether migration was occurring to the south and southeast.

In June 1998, "slug tests" were performed in 17 of the monitoring wells so that estimates of hydraulic conductivity could be made. The slug tests were performed by EPFS with assistance by HCI. Both EPFS and HCI analyzed the data by applying the Bouwer and Rice method to compute hydraulic conductivity values from each test (Bouwer and Rice, 1976). A summary of the values is provided in Table 5.

3.0 RESULTS OF FIELD INVESTIGATIONS

3.1 GEOLOGY OF SITE

Figure 2 shows the locations of the monitoring wells and the geologic cross-section lines. Figures 4 through 8 are the cross-sections through the site. As indicated on these figures, the surficial materials that could be augered through consist primarily of gravelly silt, clay, and fine sand. The geologic materials beneath the loose surficial materials consist of clay that is either organic or of mineral origin. The geologic data presented on the cross-sections indicate that the site is underlain with low permeability materials that would minimize the downward migration of water.

During the augering of the boreholes, the field crew noted that to the west of the flare pit, the geologic materials were generally dry. This observation suggests that the pit may be a major source of water to the subsurface due to enhanced infiltration, and that the surficial water-bearing materials may be perched above the regional aquifer.

3.2 HYDROGEOLOGY OF SITE

Figures 9, 10 and 11 are potentiometric surface maps for water levels measured in the monitoring wells for two times in 1997 and one time in 1998. The measurements for 1997 were collected from time periods that represent the beginning of summer and then in December. As noted on Figures 9 and 10, the pit is a ground-water recharge area and water generally flows in a radial pattern from the pit; however, the general ground-water flow direction is to the southeast. The depth to ground water is generally 15 to 18 feet below land surface.

Figure 11 is a potentiometric map for March 23, 1999. Injection of treatment fluids has not occurred for over nine months, and thus, the potentiometric surface map represents "natural conditions". The pit appears to exert only a slight influence on recharge due to enhanced infiltration. The predominant ground-water flow direction is to the south, southeast.

To the south of the site the Navajo Agricultural Products, Inc. (NAPI) irrigates agricultural fields by center pivot and canal systems. The source of the irrigation water is surface water. The irrigation application rates are not known; however, the irrigation does not appear to influence the direction of ground-water flow on the site as evidenced on Figures 9 through 11. It was expected that the irrigation would cause a ground-water recharge mound that would direct a component of ground-water flow to the north (towards the site). Based upon a review of Figures 9 through 11, this is not the case. As such, it is reasonable to assume that at this time there is little to no hydraulic connection between the site and the areas that are irrigated.

The results of the slug testing are summarized in Table 5 for the 17 wells that were tested. The geometric mean value of hydraulic conductivity based on the test results was 2.6×10^{-4} feet per minute (0.4 feet/day). This is a low hydraulic conductivity that is indicative of fine-grained geologic materials that are relatively non-transmissive (Bear, 1979).

Using the hydraulic conductivity estimate from the slug test analyses, HCI applied Darcy's Law to estimate how much ground water flows laterally across the site within the shallow water-bearing unit under "natural conditions" when injection through treatment wells is not occurring. This value of through-flow was then compared to the rate of injection during the period of time between mid-February and late May 1998.

To estimate ground-water through-flow under natural conditions, HCI reviewed water-level data from June 1997 and calculated a horizontal hydraulic gradient across the site. For the purpose of these calculations, HCI assumed the upgradient edge of the site to be a straight line between PZ-16 and PZ-26 and used water-level data from PZ-21 and PZ-23 for the downgradient boundary. Finally, an estimate of the cross sectional area of the shallow water-bearing unit was made by taking the product of the average saturated thickness (Table 6, 3 feet) and the width of the site from PZ-16 to PZ-26 (220 ft). Darcy' Law is

$$Q = K\,i\,A$$

where,

Q = ground-water through-flow under steady state condition (L^3/T),
K = hydraulic conductivity (L/T),
i = horizontal hydraulic gradient (L/L), and
A = cross-sectional area of the aquifer (L^2).

Based on Darcy's Law, HCI estimated the rate of ground-water through-flow under natural conditions to be approximately 5 ft^3/day.

The injection rate through treatment wells during the period from mid-February to late May 1998 was calculated based on an injection rate of 8 gallons/week in 146 wells and 2 gallons/week in an additional 9 wells. The total injection rate based on these values is approximately 22 ft^3/day. In summary, the rate at which treatment water was being injected into the shallow water-bearing unit from mid-February to late May 1998 was four times greater than the natural flow capacity of the shallow water-bearing unit. For this reason, EPFS suspended the in situ treatment program as there was concern that the injection was "pushing" hydrocarbons off-site.

Based upon the average hydraulic conductivity and hydraulic gradient, a calculation of the average ground-water flow velocity was made. For this calculation, HCI assumed that the effective porosity is 0.25, the average hydraulic conductivity is 2.6×10^{-4} ft/min, and the average hydraulic gradient is 0.05. The calculated ground-water flow velocity is approximately 0.07 ft/day or about 27 feet per year. The hydraulic gradient is relatively high; however, the estimated ground-water velocity is low. This low velocity is indicative of low hydraulic conductivities of the geologic materials.

3.3 ANALYSIS OF HYDROCARBON TRENDS WITHIN THE FLARE PIT

As discussed in a previous section, soil samples were collected ten times from the bottom the pit. The samples were collected from the center of the pit at a depth of two feet below the bottom of the pit. These samples were analyzed for TPH and BTEX. Table 7 lists the analytical results and Figure 12 contains plots of TPH and total BTEX over time. BTEX was not analyzed in October 1999. TPH concentrations are in the range of 9,000 mg/Kg. In September 1996 and June 1998 soil samples were collected from the bottom of the pit at various depths. These samples were analyzed for total BTEX and TPH. In addition the TPH was divided into the various carbon ranges (Table 7). As noted in Table 7, the predominant hydrocarbon ranges are from C6 to C10 and from C10 to C22 for the samples collected in September 1996. Significant degradation of all hydrocarbon ranges has occurred in the surface sample collected in June 1998. Additional reductions in hydrocarbon concentrations are noted for the other depths. The longer-chained hydrocarbons (C22-C36) that occur at depths of four and six feet do not appear to have degraded. This is expected as these hydrocarbons are not easily degraded, but they are also not mobile in soil or ground water. The BTEX analyses show that xylenes are the predominant aromatic hydrocarbons. As shown on Figure 12, both TPH and BTEX have declined significantly from the concentrations measured in the summer of 1997. The elevated concentrations measured in 1997, when the initial remediation work commenced probably reflect the fact that the soils were turned thus exposing higher concentrations of hydrocarbons. The analytical data for 1998 and 1999 do indicate that the remediation efforts have resulted in significant declines in TPH (about a factor of four reduction) and BTEX concentrations (about a factor of five reduction).

The amount of TPH remaining in the soil beneath the pit was estimated to be approximately 32,000 pounds of hydrocarbons. This calculation assumes that the average TPH concentration is 9,000 mg/Kg (based upon the October 1999 analysis that was 8,700 mg/Kg), and that the thickness of the impacted soil beneath the pit is 6 feet.

3.4 ANALYSIS OF HYDROCARBON TRENDS IN GROUND WATER

Figures 13 through 23 are plots of concentrations for the individual BTEX constituents as well as for total BTEX for water samples collected from the monitoring wells. A visual assessment was made as to whether the concentrations are increasing or decreasing over time. A trend is defined as whether the results of the last three sampling events show increases or decreases in concentrations.

Of the 21 wells that have been sampled, three wells show increasing concentrations of total BTEX (wells PZ-4, PZ-8, and PZ-21). Wells PZ-4 and 8 are close to the pit and the increases are probably the result of mobilization of the hydrocarbons from the pit. Well PZ-21 is southeast of the pit and the concentrations have increased over time. The increases are probably reflective of the leading edge of BTEX migration in this area.

Thirteen of the wells show decreases in total BTEX concentrations over time. The wells are: PZ-5, PZ-9, PZ-11, PZ-15, PZ-17, PZ-18, PZ-19, PZ-20, PZ-22, PZ-24, PZ-25, PZ-29, and PZ-30. These wells are located throughout the study area and the declines probably are the result of in situ bioremediation and natural attenuation. Of significance, are the wells that are located on the south side of the property. Wells (PZ-11, PZ-15, PZ-17, PZ-18, PZ-29, and PZ-30) all show some level of decline; however, the remaining concentrations in many of these wells are significant (greater than 10,000 parts per billion) of BTEX.

Water samples from five of the monitoring wells showed no change in concentrations with time. These wells are PZ-10, PZ-16, PZ-23, PZ-26, and PZ-31. These wells are generally located on the outer edges of the site, and show no to little impacts by hydrocarbons.

In summary, approximately 14% of the wells show increasing BTEX concentrations, 62% of the wells have decreasing concentrations and 24% had no visible change.

An estimate of BTEX mass dissolved in ground water beneath the site was made using a map of dissolved BTEX concentrations generated by Alpha Biosciences dated December 16, 1997 (Figure 24). This time was selected as it occurred before significant injection occurred and before significant declines in concentrations were observed. This time period would be reflective of a maximum amount of mass in the subsurface.

The total mass of BTEX dissolved in ground water was estimated by assigning an average concentration to the area between concentration contours. For example, the area between the 20,000 µg/L contour and 25,000 µg/L contour was assigned a concentration of 22,500 µg/L. This concentration was then multiplied by the volume of ground water in the shallow water-bearing unit between the two contours, assuming three feet of saturated thickness and a porosity of 0.25. The resulting product of concentration and volume produced an estimate of BTEX dissolved in ground water between those contours. The masses of dissolved BTEX for each set of contours within the calculation boundary, shown on Figure 24, were then computed and summed. The total mass of dissolved BTEX estimated to be in the shallow ground-water system beneath the site is approximately 12 kilograms (about 26 pounds).

HCI made an estimate of the amount of BTEX mass that may be sorbed to the soil matrix below the water table by assuming a range of expected values for the fraction of organic carbon in the soil and a partition coefficient for BTEX. The calculations indicate that 6 to 24 kilograms (13 to 53 pounds) of BTEX may be sorbed to the soil matrix within the shallow water-bearing unit. The total amount of mass of BTEX in the shallow water- bearing zone is estimated to range from approximately 40 to 80 pounds of BTEX.

As listed in Table 4, sheens of hydrocarbons were noted in several of the monitoring wells; however, free product greater than 0.01 inches has not been observed at the site. During the latest complete round of sampling (March 23, 1999), no free product was observed. Only sheens were noted. As such, dissolved-phased hydrocarbons in ground water need to be addressed rather than free-product hydrocarbons.

3.5 GENERAL CHEMISTRY

Table 3 lists the laboratory results for ground-water samples analyzed for general water chemistry. Monitoring well MW-6 is located to the northwest of the site (Figure 2) and is not impacted by hydrocarbons or injection of treatment fluids. The background water quality is not considered potable due to elevated total dissolved solids (approximately 3,000 mg/L) and sulfates (approximately 1,700 mg/L).

Figures 25 and 26 show the distribution of sulfate, dissolved oxygen, and nitrate-nitrogen concentrations for water samples collected on July 6, 1998. For comparison purposes, the analyses for samples collected from MW-6 are also plotted; however, these samples were collected on June 24, 1997. As noted on Figure 25 and in Table 2 sulfate concentrations are lowest in wells that have elevated hydrocarbon concentrations. Wells with the highest hydrocarbon concentrations also have the lowest dissolved oxygen concentrations (Figure 25). This correlation indicates that the conditions within the water bearing zone are anaerobic and that sulfate is being utilized by bacteria in the degradation of the hydrocarbons.

The background concentration of nitrate-nitrogen is low (approximately 1 mg/L) or nondectable. Nitrate concentrations are greater than 10 mg/L in wells on the eastern and northern side of the site. The nitrates in these wells are indicative of the treatment fluid that was injected into the water-bearing zone. The treatment fluid had a nitrate-nitrogen concentration of 47.5 mg/L. The lack of detectable nitrate in wells with elevated concentrations of hydrocarbons is another indication that the anaerobic bacteria are utilizing nitrate to degrade hydrocarbons.

Even though an oxidizer is no longer injected into the water-bearing zone, hydrocarbon degradation is occurring due to the naturally occurring dissolved sulfate that is contained within the shallow water-bearing zone.

4.0 DISCUSSION OF RECOMMENDED FUTURE APPROACHES

The Bisti Flare Pit site is located in a remote area where threats to human health and environment are minimal. The exposures to humans can only occur if contact is made with the shallow ground water. The shallow water-bearing zone cannot be utilized for a drinking water source due to the elevated sulfate concentrations, elevated total dissolved solids, low transmissibility, and its apparent limited lateral extent.

Migration of hydrocarbons to deeper geologic units is highly unlikely because of the underlying materials at the site. The geologic evidence at the site indicates that the entire site is underlain with low permeability clay, and this clay would minimize or prevent downward migration. In addition, there does not appear to be potential receptors within a reasonable distance to the site.

Given the isolated location of the site and low risks presented by the site, natural attenuation of the dissolved-phase hydrocarbons may be more effective in reducing hydrocarbon concentrations. The U.S. Environmental Protection Agency directive on natural attenuation (USEPA, 9200.4-17P, 1999) recommends the source of hydrocarbons be removed or isolated. The source of hydrocarbons for the dissolved-phase are the soils beneath the former pit. Over the next six months alternative approaches to the remediation of the soils in the bottom of the pit will be evaluated. The approaches that will be evaluated include: monitoring only, re-start the previous in situ remediation program that has been previously undertaken, simple nutrient addition with periodic addition of water and turning of the soils, and lastly, the removal of the hydrocarbon-impacted soils. The last alternative may include excavation with on-site treatment or excavation with off-site disposal.

Prior to undertaking an evaluation of alternative for the dissolved-phase hydrocarbons in ground water, the extent of hydrocarbons to the south and southeast of the site needs to be assessed. Given that the land to the south of the site is generally planted, HCI recommends that

ground-water samples from temporary wells or Hydropunches™ be collected. Figure 27 shows the approximate locations of the proposed monitoring wells. A proposal for an investigation was submitted to NAPI in October 1999. As of the date of this report, no response has been received by EPFS. In addition, HCI recommends that a borehole be drilled to a depth of 50 to 60 feet to evaluate geologic conditions, at depth, beneath the site. This borehole would be continuously logged. The borehole would be located on the site in an area where hydrocarbons have not been detected (e.g., near MW-6 that is located north of the site). If the geologic evidence demonstrates that the shallow water-bearing zone is perched, no additional investigation of deeper water-bearing zones is required.

Once the extent of hydrocarbons in the shallow zone has been evaluated, alternative remediation approaches can be evaluated. The approach preferred by EPFS and recommended by HCI is monitored natural attenuation. The naturally occurring sulfate in the shallow water-bearing zone will facilitate the degradation of the hydrocarbons.

If hydrocarbon migration to the south is to be prevented, then active remediation schemes will need to be considered. The active remediation approaches may include the introduction of oxidizing compounds (such as the previously introduced compounds or ORC™ compounds) or the introduction of oxygen into ground water using horizontal wells or a trench that is located along the south side of the site. These alternatives and others will be evaluated after geologic and water quality data are obtained from the investigations on the NAPI property.

5.0 SUMMARY AND CONCLUSIONS

Based upon the data collected at the Bisti Flare Pit site since 1996, the following conclusions can be made.

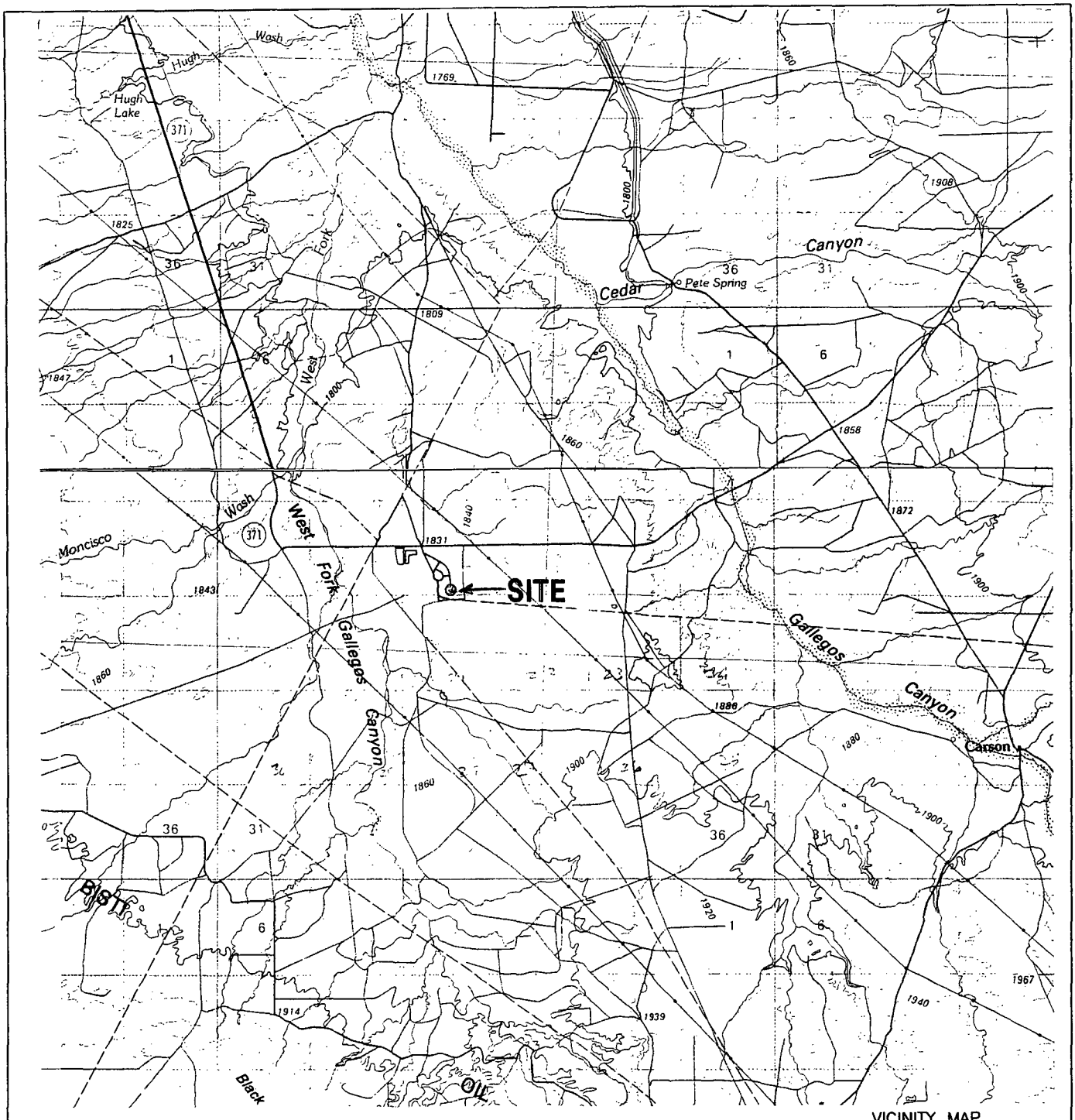
- The soils in the shallow-water bearing zone are of low transmissivities and ground water migrates at a low velocity under natural gradients to southeast.
- The in situ bioremediation program did enhance the degradation of hydrocarbons in soil within the flare pit and in ground water.
- The shallow water-bearing zone is not a source of drinking water due to high total dissolved solids, high sulfates, and low transmissivities.
- Free-phase hydrocarbons are not an issue at this site.
- The dissolved-phase hydrocarbons are being degraded under natural conditions due to the elevated sulfate concentrations in ground water.
- Additional remediation of the soil in the flare pit may be warranted to enhance the downgradient reduction of dissolved-phase hydrocarbons. The hydrocarbons in the shallow water-bearing zone are amenable to monitored natural attenuation.
- Additional investigation is required to assess the lateral and vertical extent of hydrocarbons in and beneath the shallow water-bearing zone. The focus of the lateral extent should be to the south and southeast of the site.

6.0 REFERENCES

Bear, J., 1979, Hydraulics of groundwater: McGraw-Hill Book Company, 569 p.

Bouwer, H., and Rice, R.C., 1976, A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells: Water Resources Research, v. 12, no. 3, p. 423-428.

U.S. Environmental Protection Agency, 1999, Use of monitored natural attenuation at Superfund, RCRA Corrective Action, and underground storage tank sites: Directive 9200.4-17P., 32 p.



VICINITY MAP

APPROXIMATE PROJECT LOCATION

N

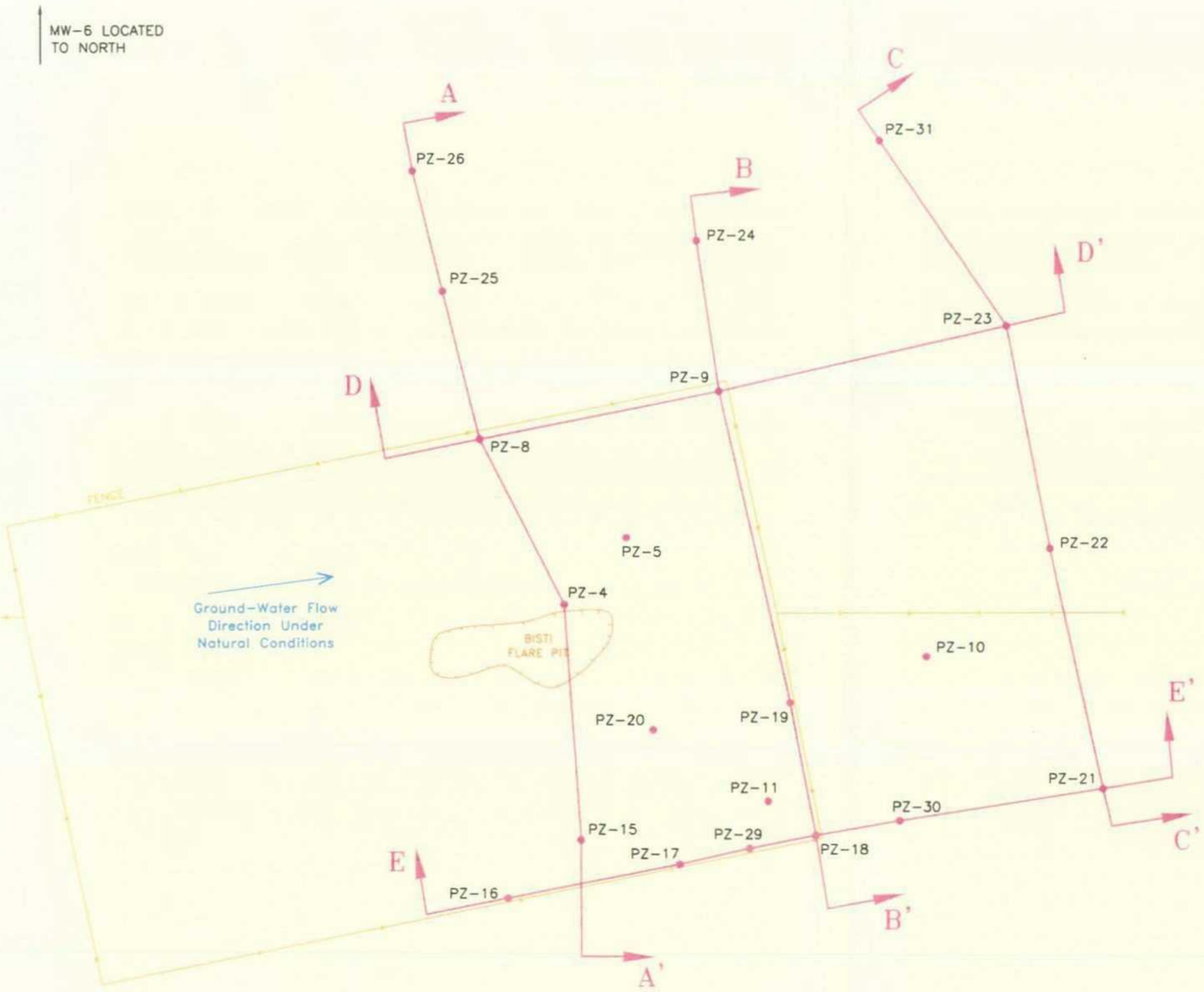
JOB NO.	HCI-1739	DATE:	2/23/00
BY:	RJS	DWG FILE:	LOCATION
DRAWN:	SAC	PLOT FILE:	LOCATION
CHECKED:		PLOT DATE:	2/23/00

HCI HYDROLOGIC CONSULTANTS, INC.

HCITASCA an company

Site Location

FIGURE 1



EXPLANATION

MONITORING WELL

A A' LINE OF CROSS SECTION

0 40 ft

Monitoring Well Location Map with Geologic Cross Sections

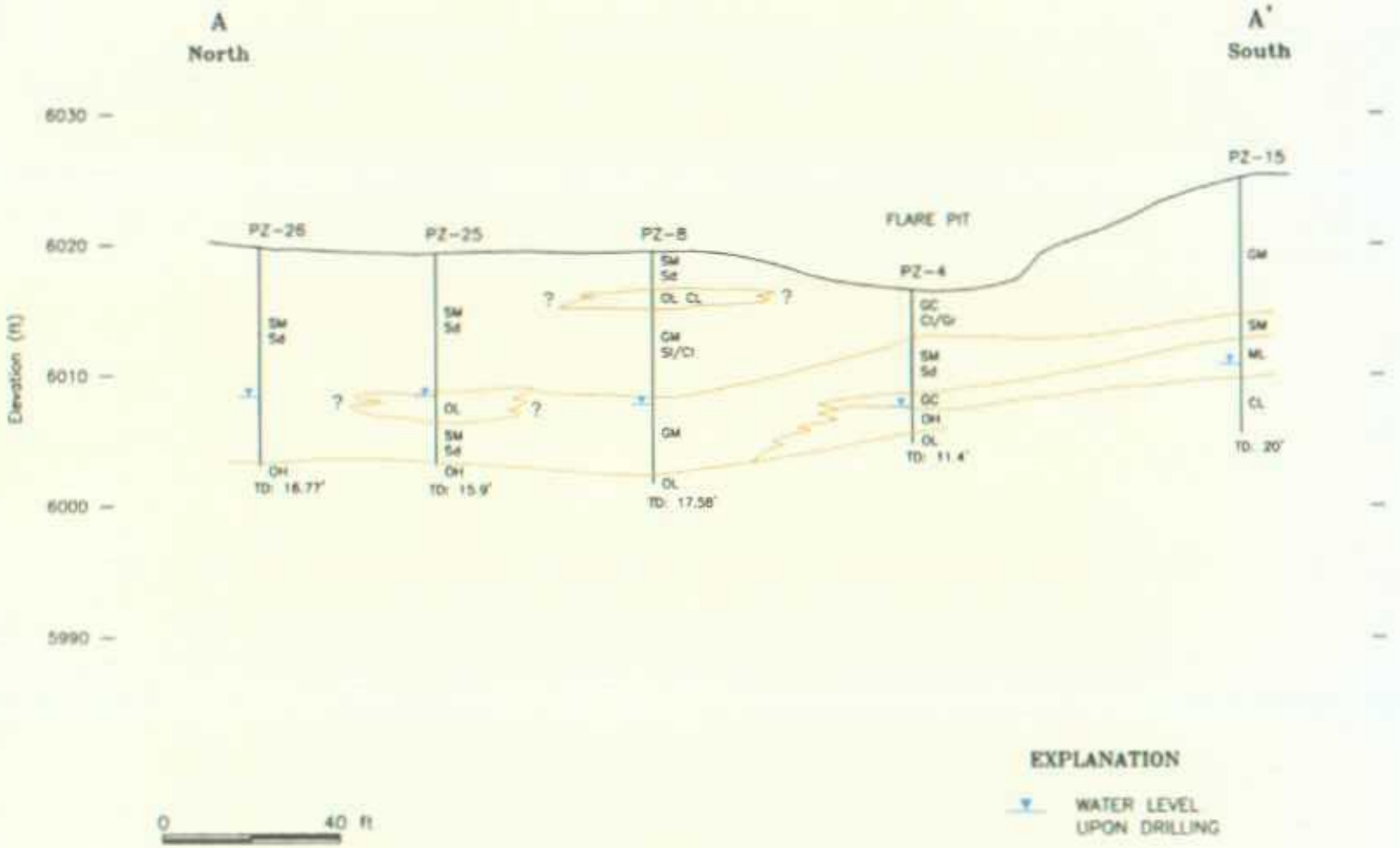
JOB NO. HCI-1739	DATE: 2/99
BY: RJS	FILE: BASE
CHKD:	PLOT: XSEC-LOC

HCI HYDROLOGIC CONSULTANTS, INC.

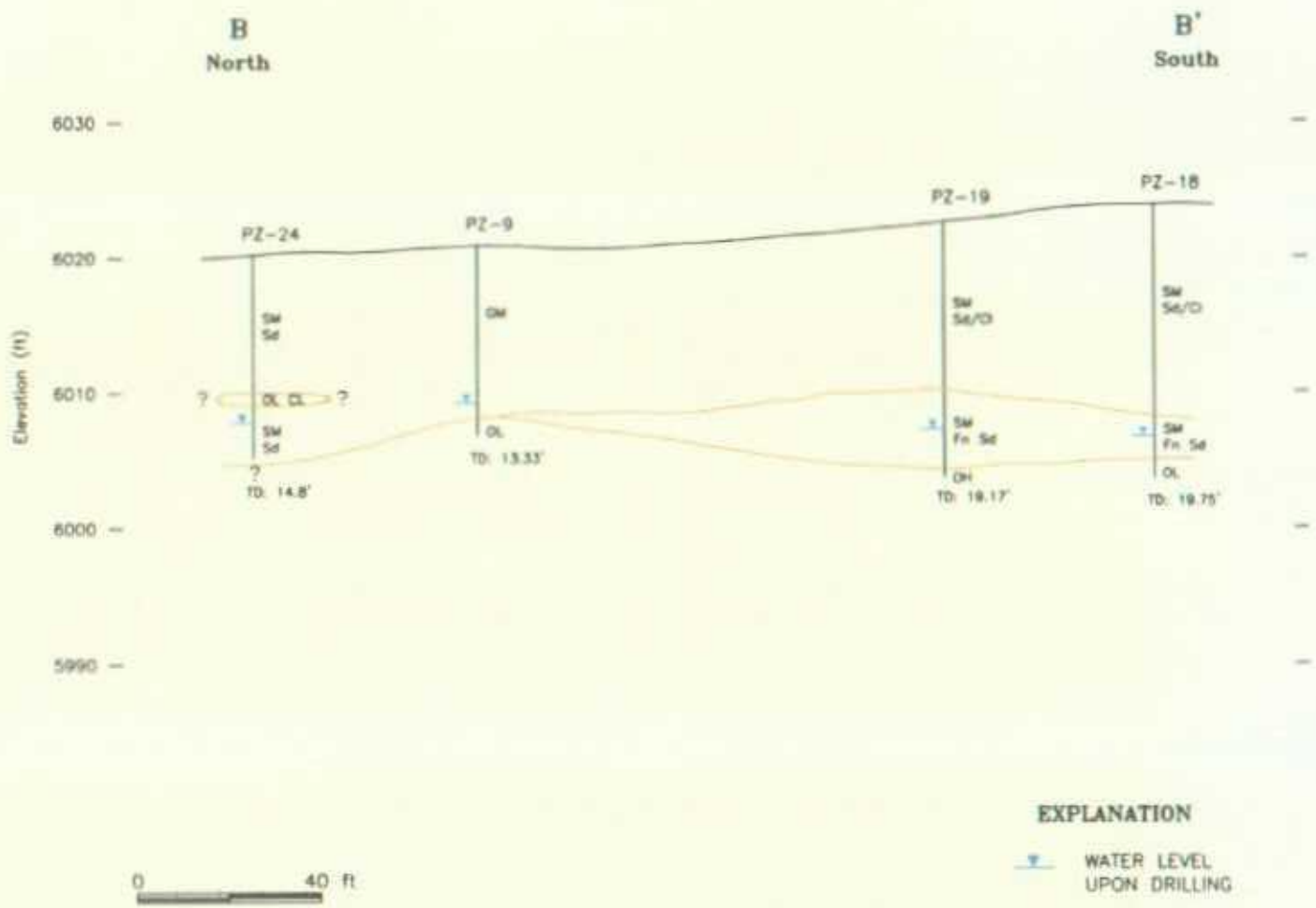
FIGURE 2

HCI HYDROLOGIC CONSULTANTS, INC.	JOB NO: HCI-1739	DATE: 2/99	FIGURE 3
	BY: RJS	DRAWING: TREATMNT	
	CHKD:	PLOT: TREATMNT	

Locations of Treatment Wells



HCI HYDROLOGIC CONSULTANTS, INC.	JOB NO: HCI-1739	DATE: 6/16/98	Cross Section A-A'
	BY: RJS	DRAWING: XSECS	FIGURE 4
	CHKD:	PLOT: XSECA	



HCI HYDROLOGIC CONSULTANTS, INC.	JOB NO: HCI-1739	DATE: 6/16/98	FIGURE 5
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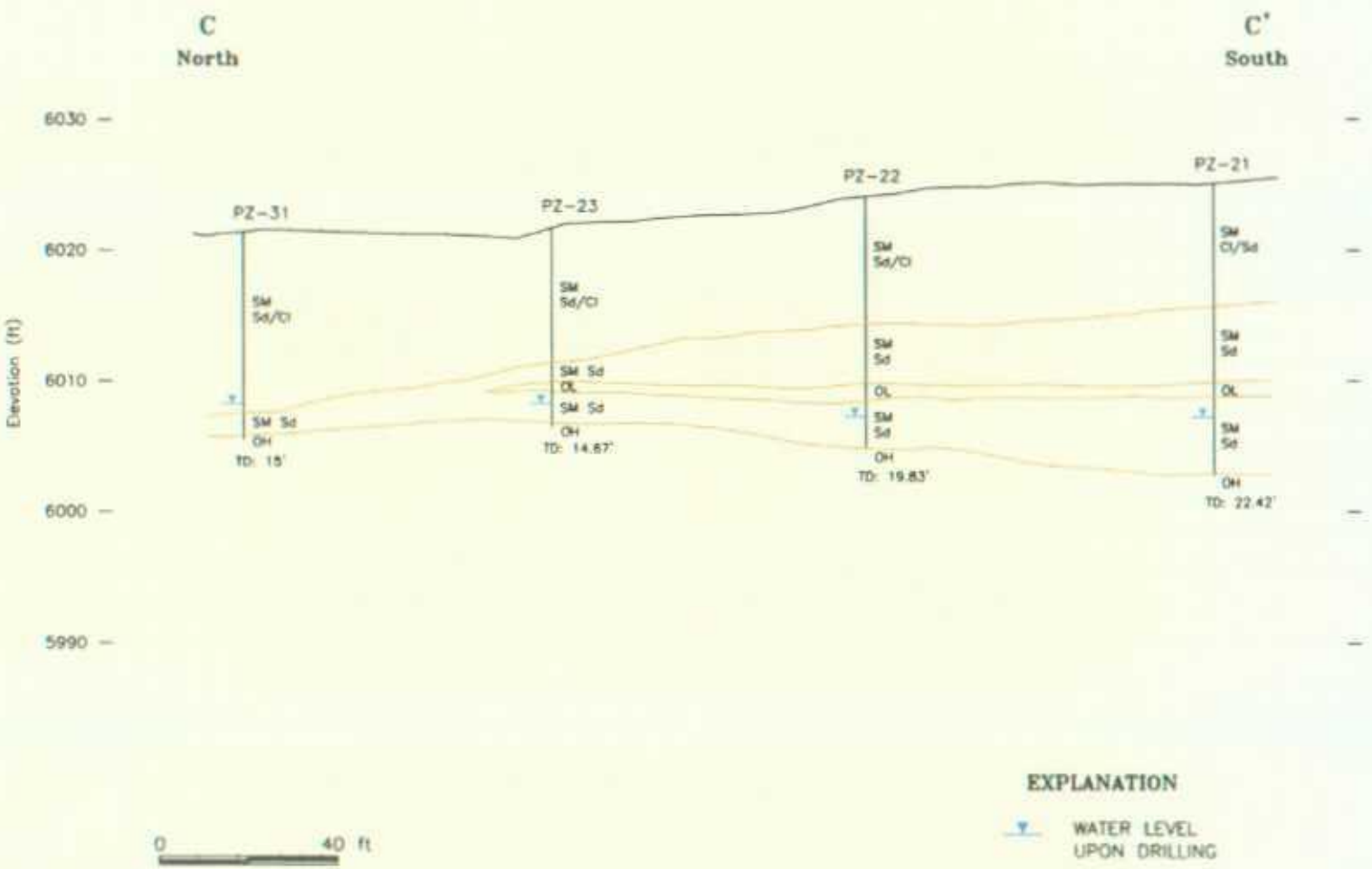
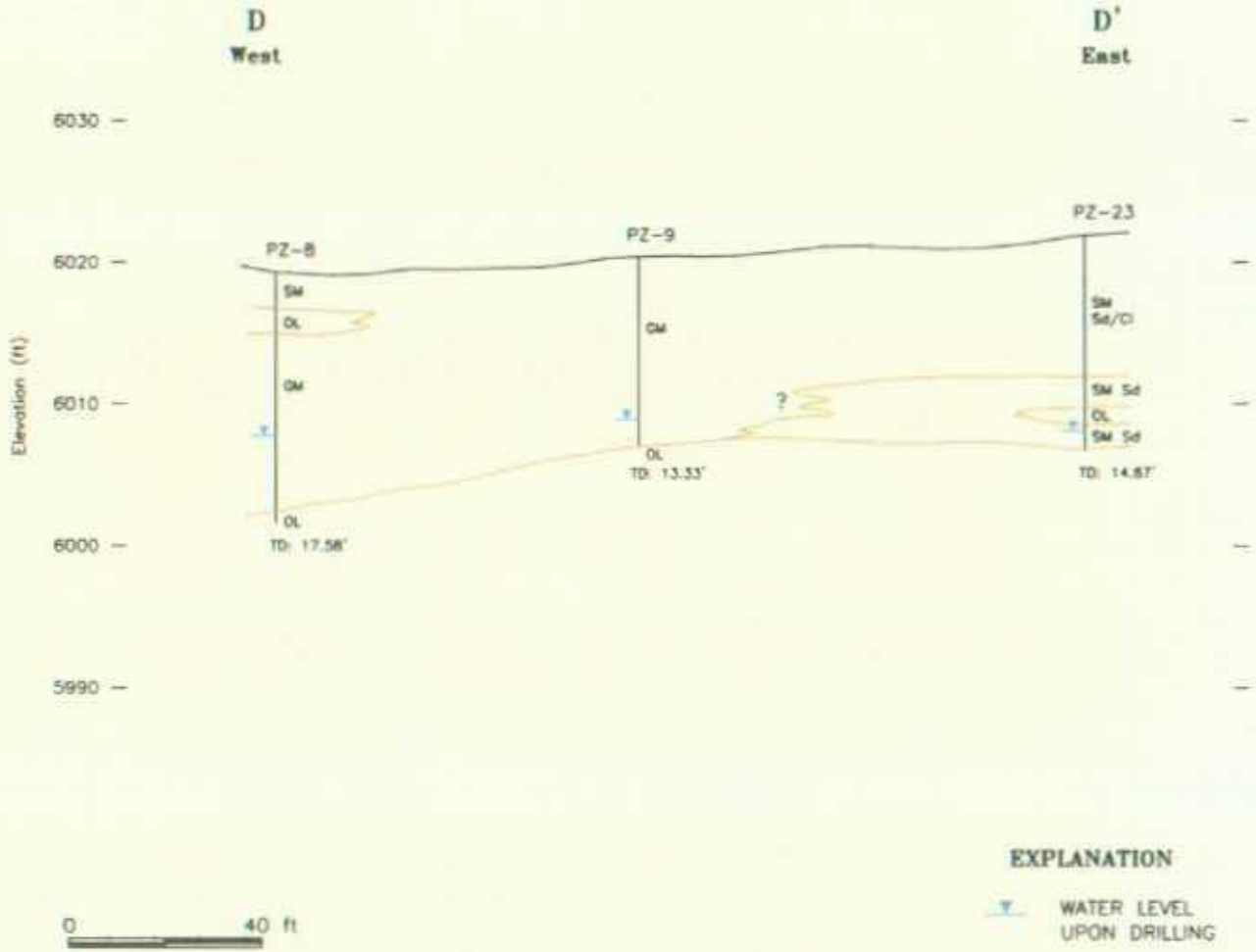
	CHKD:	PLOT: XSECB	

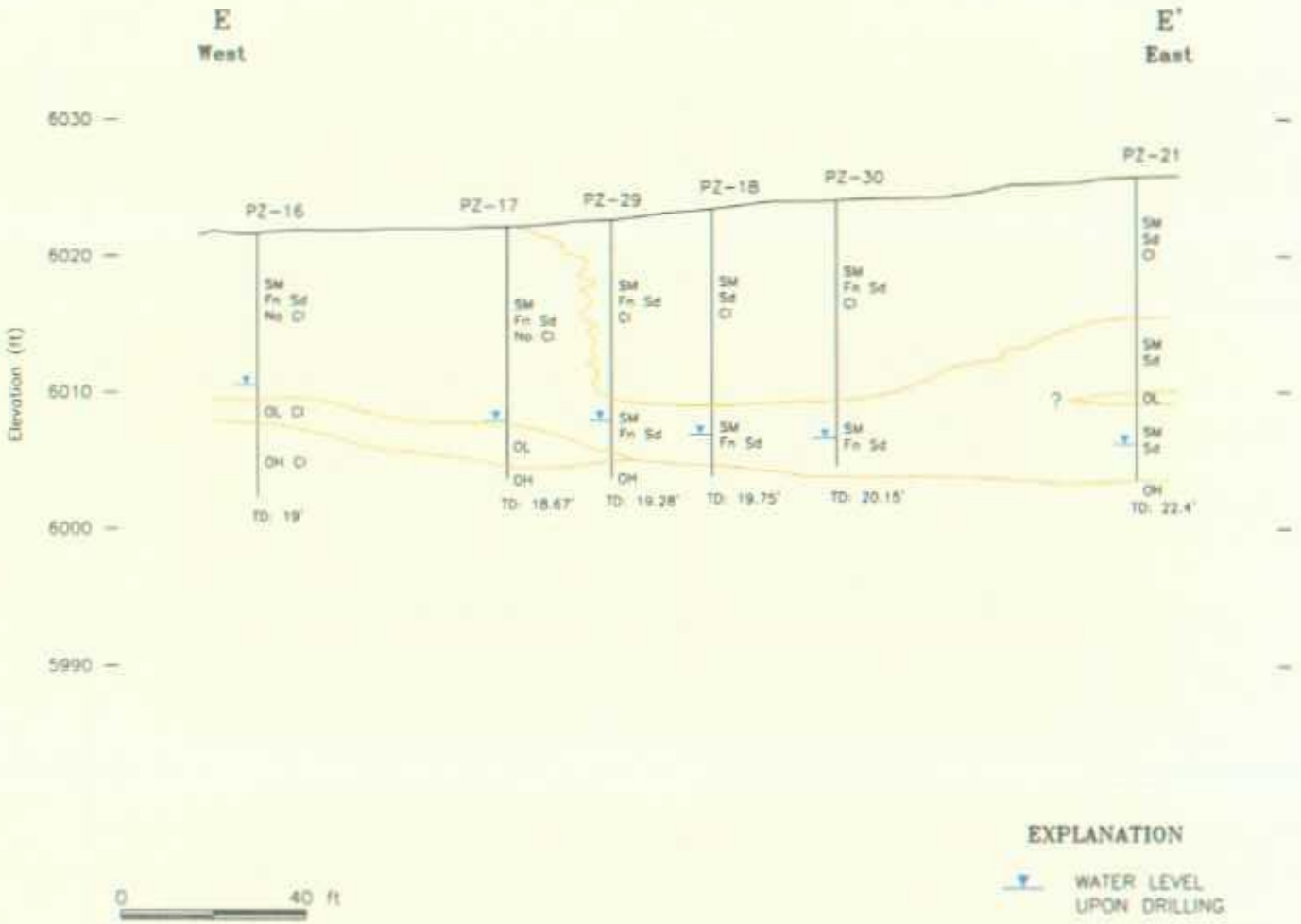
Cross Section B-B'



HCI HYDROLOGIC CONSULTANTS, INC.	JOB NO: HCI-1739	DATE: 6/16/98	Cross Section C-C'
	BY: RJS	DRAWING: XSECS	FIGURE 6
	CHKD:	PLOT: XSECC	



HCI HYDROLOGIC CONSULTANTS, INC.	JOB NO: HCI-1739	DATE: 6/16/98	Cross Section D-D'
	BY: RJS	DRAWING: XSECS	FIGURE 7
	CHKD: RJS	PLOT: XSECD	



HCI HYDROLOGIC CONSULTANTS, INC.	JOB NO: HCI-1739	DATE: 6/16/98	FIGURE 8
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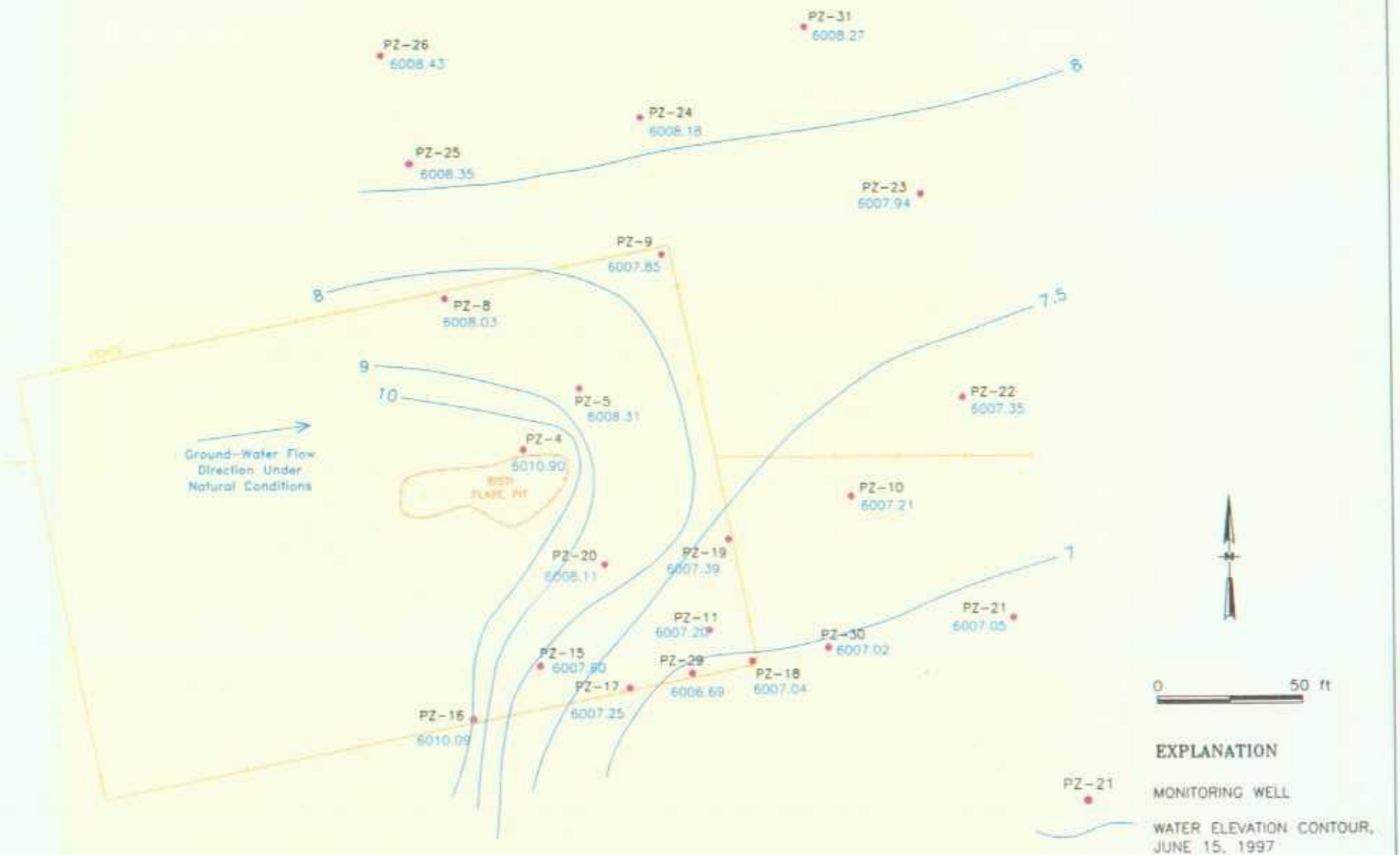
	CHKD:	PLOT: XSECE	

Cross Section E-E'

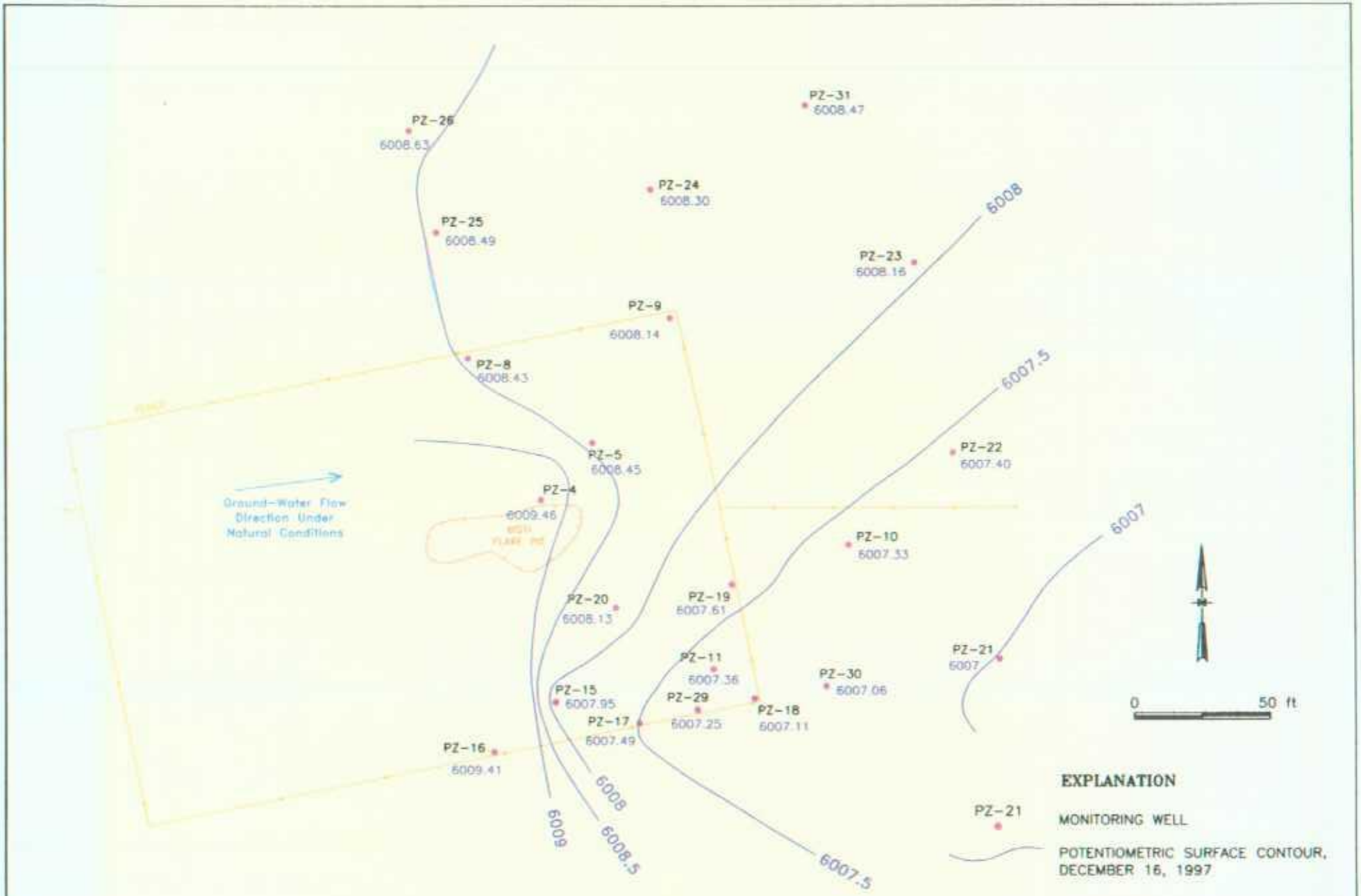


HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	GW-LEVLS
CHKD:		PLOT:	GW-6-97

June 15, 1997 Water Levels

FIGURE 9



HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	GW-LEVLS
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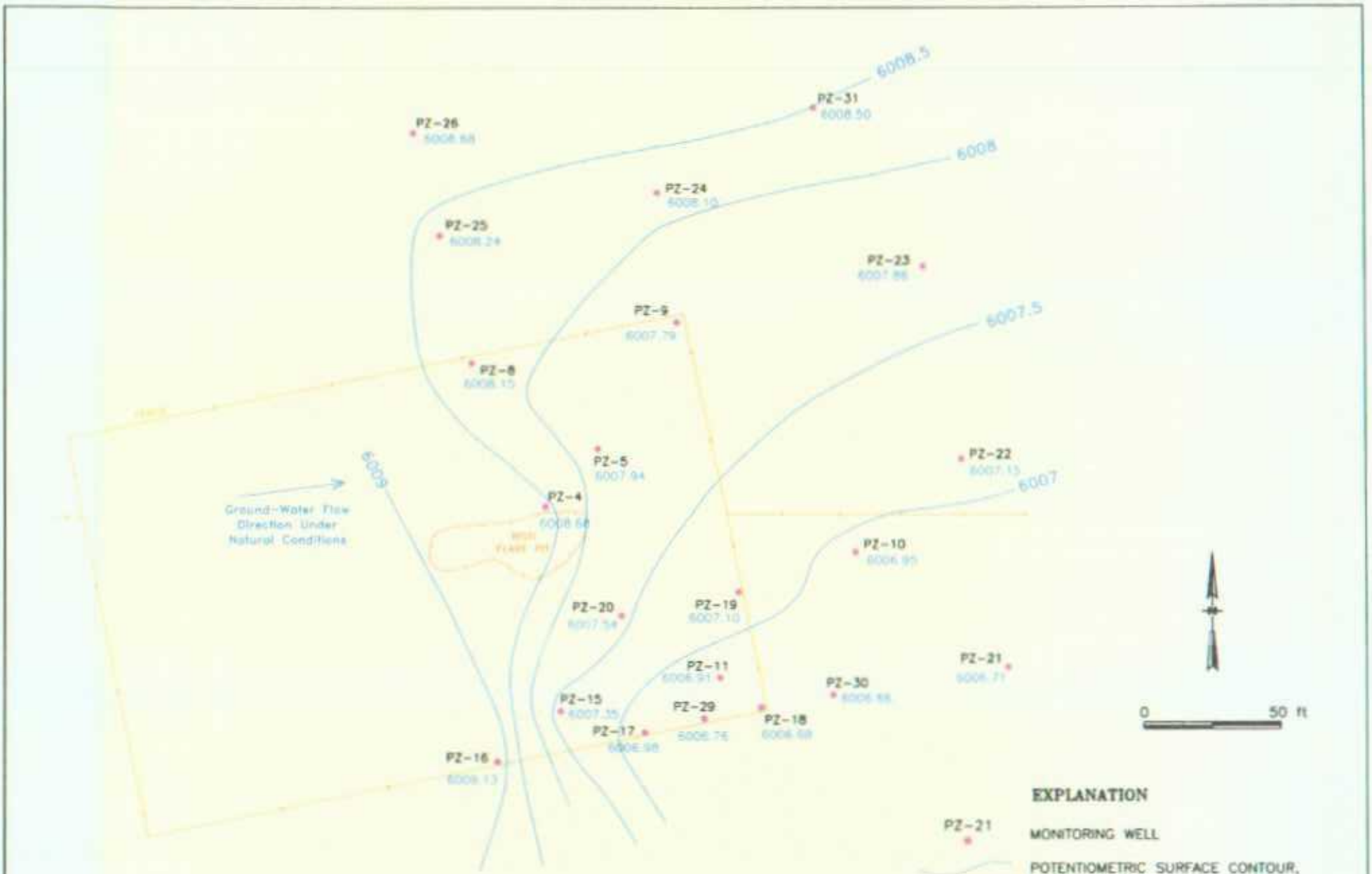
Ground-Water Potentiometric Surface Map
December 16, 1997

FIGURE
10



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JOB NO:	HCI-1739	DATE:	2/99
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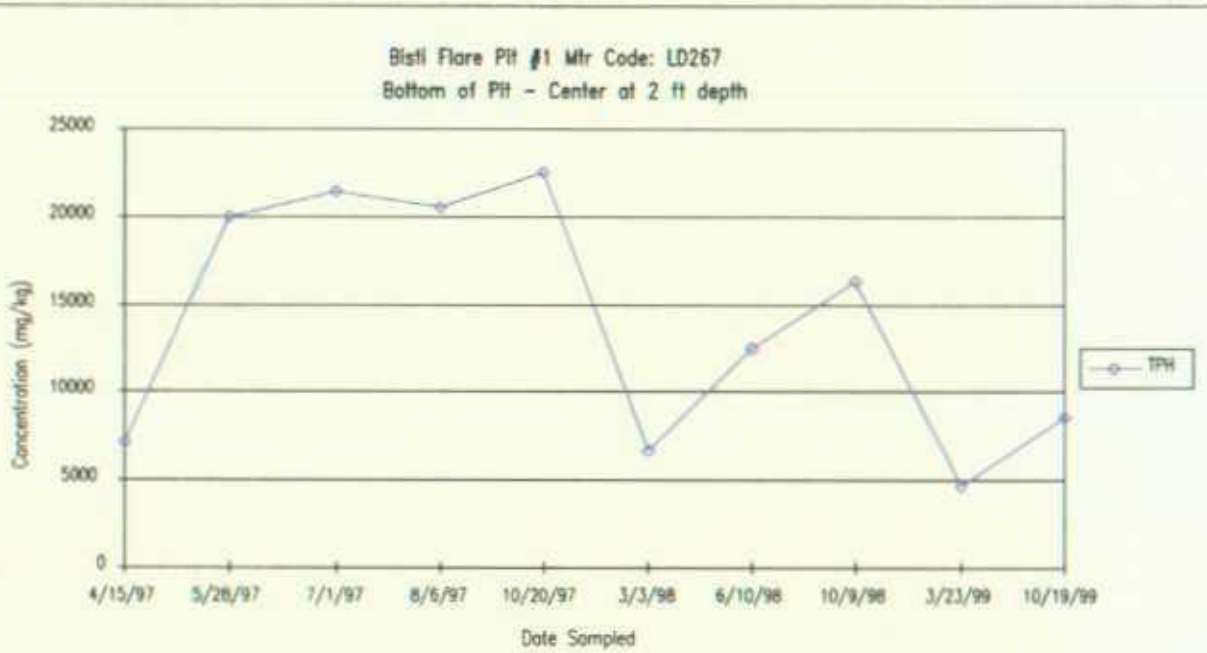
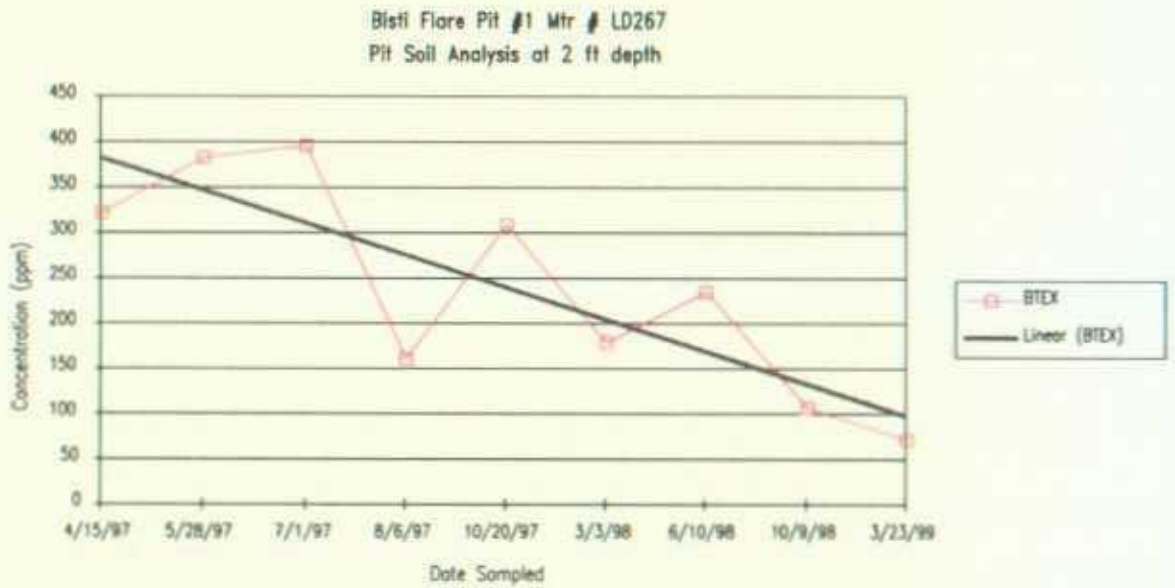
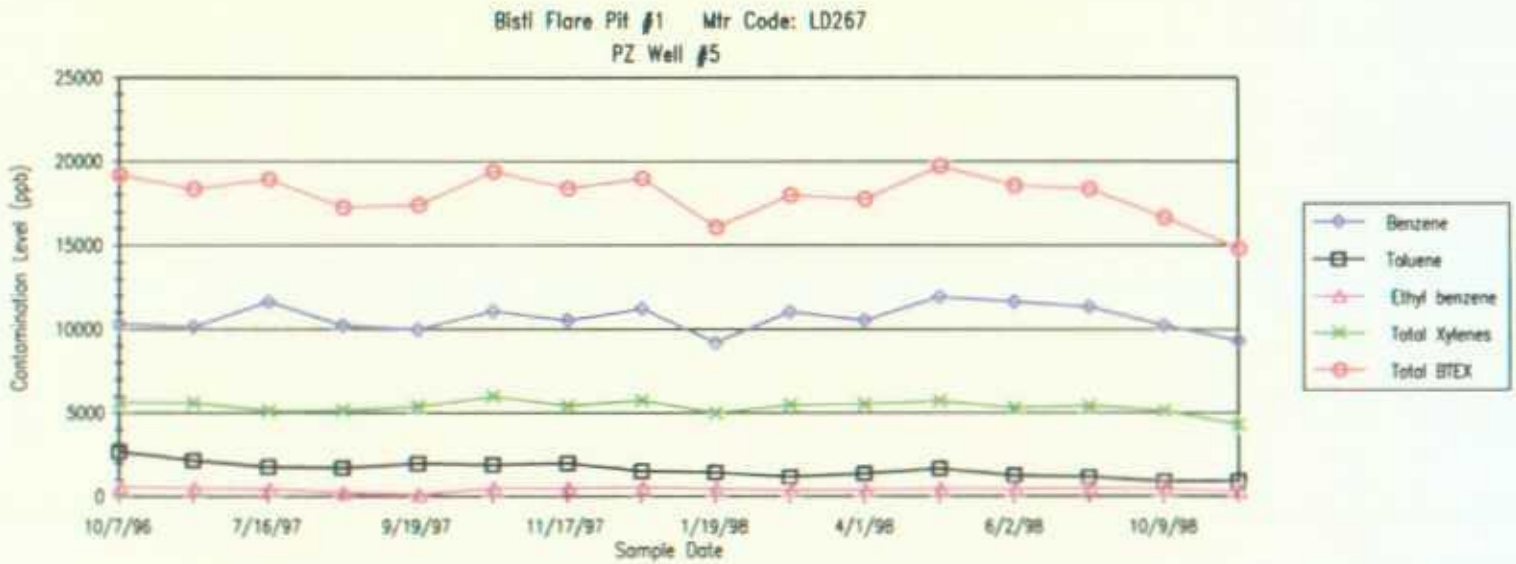
Ground-Water Potentiometric Surface Map
March 23, 1999

FIGURE 11





HCI HYDROLOGIC CONSULTANTS, INC.	JOB NO: HCI-1739	DATE: 2/99	TPH and BTEX Concentrations in Pit Soil	FIGURE 12
	BY: RJS	DRAWING: PIT-SOIL		
	CHKD:	PLOT: PIT-SOIL		

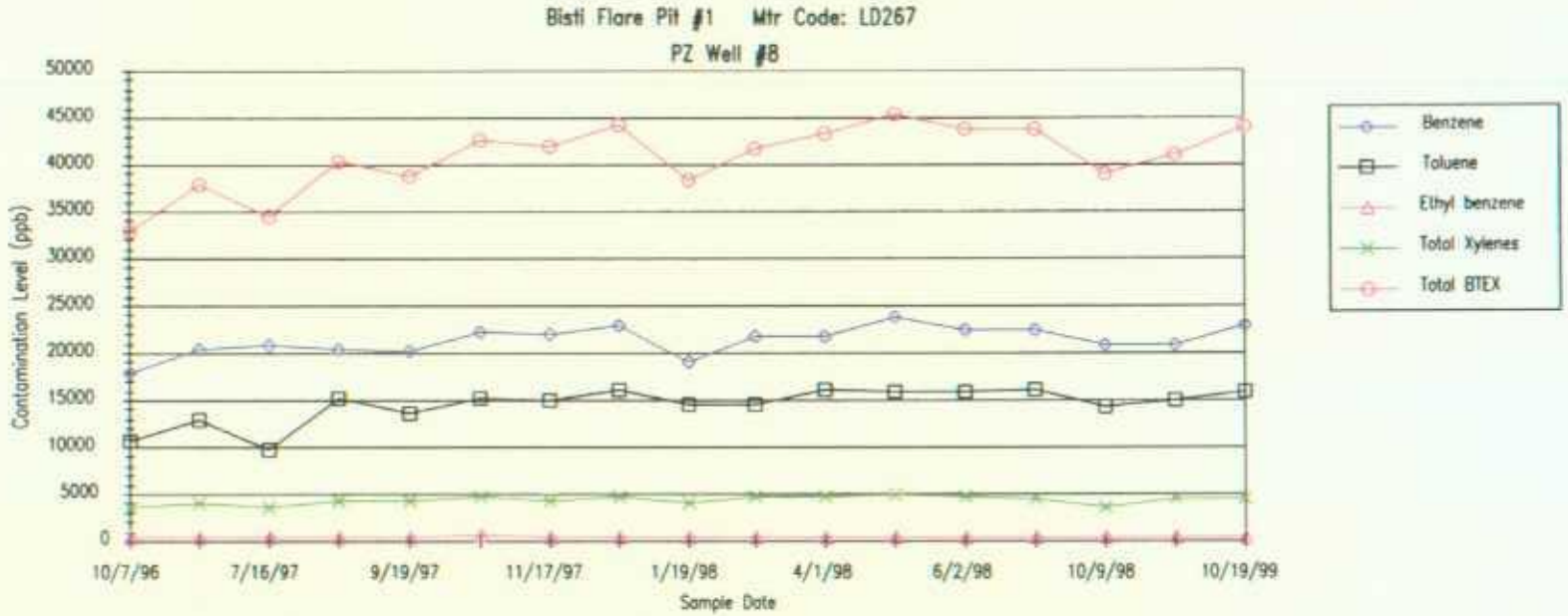


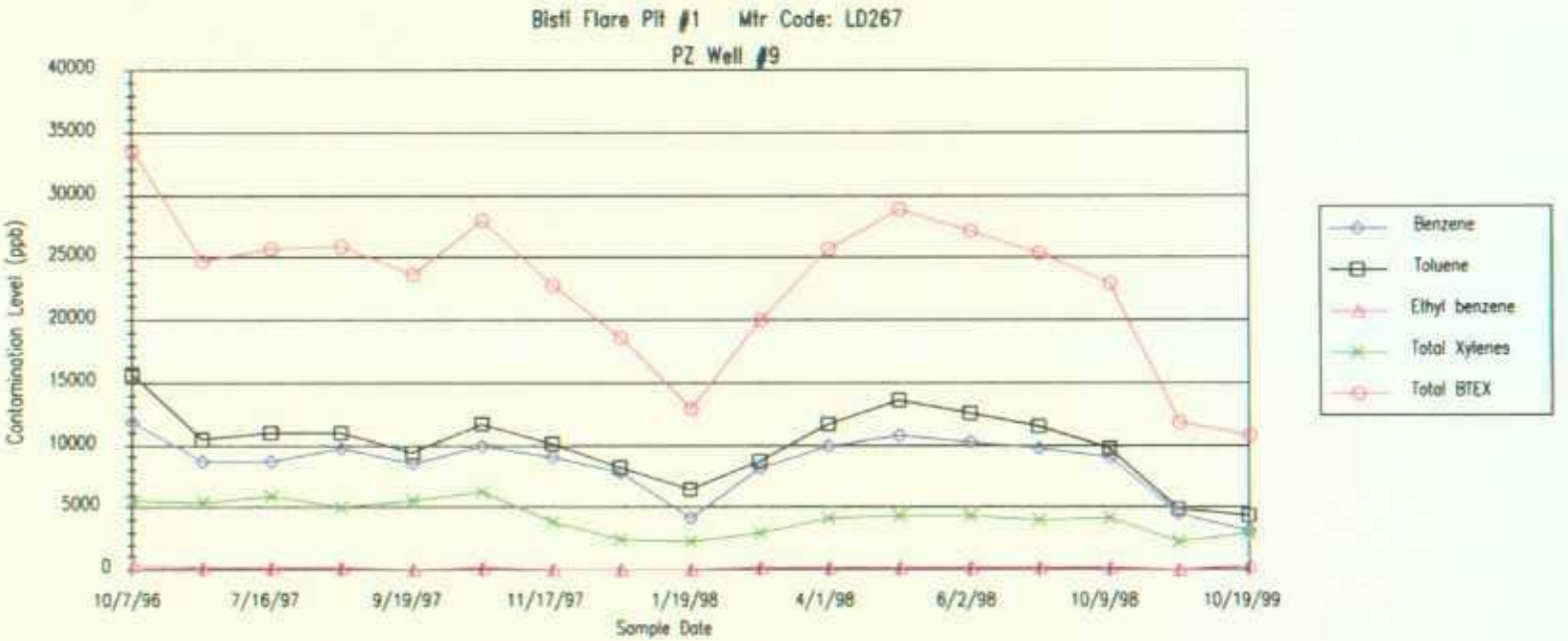
HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	PZ4-5
CHKD:		PLOT:	PZ4-5

BTEX Concentrations – PZ Wells #4 and #5

FIGURE 13



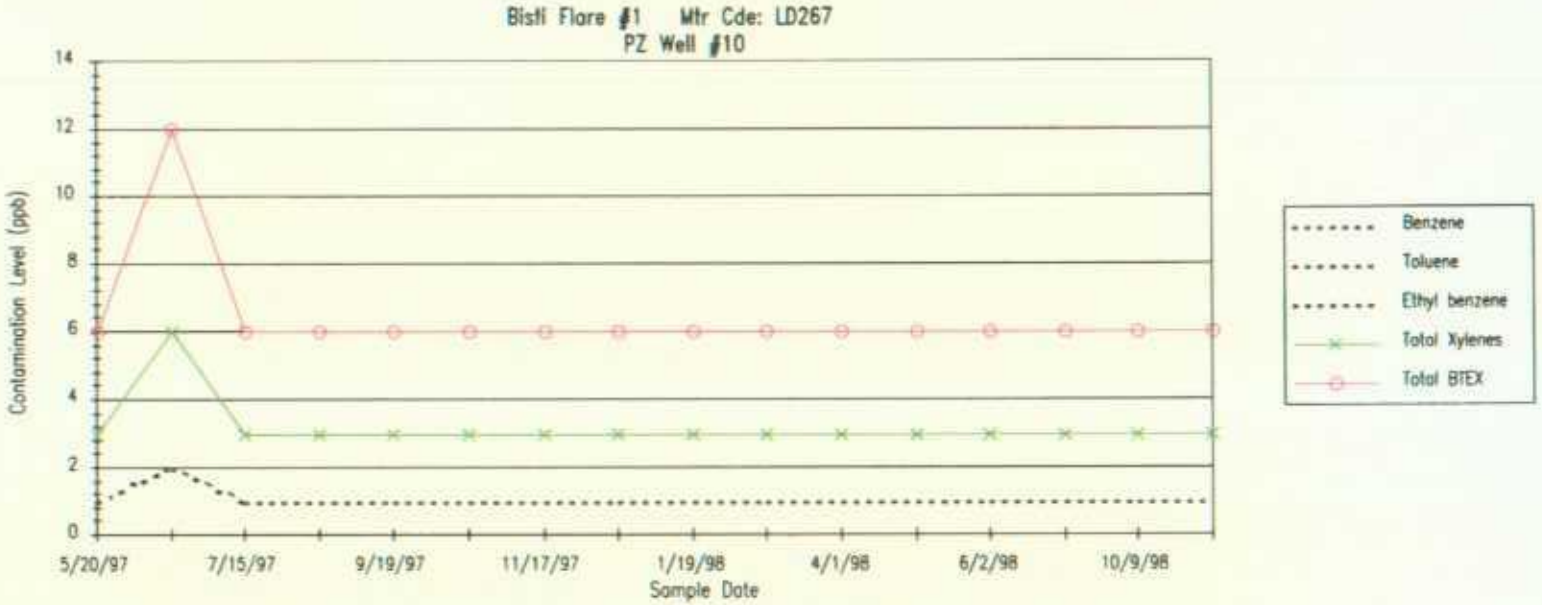


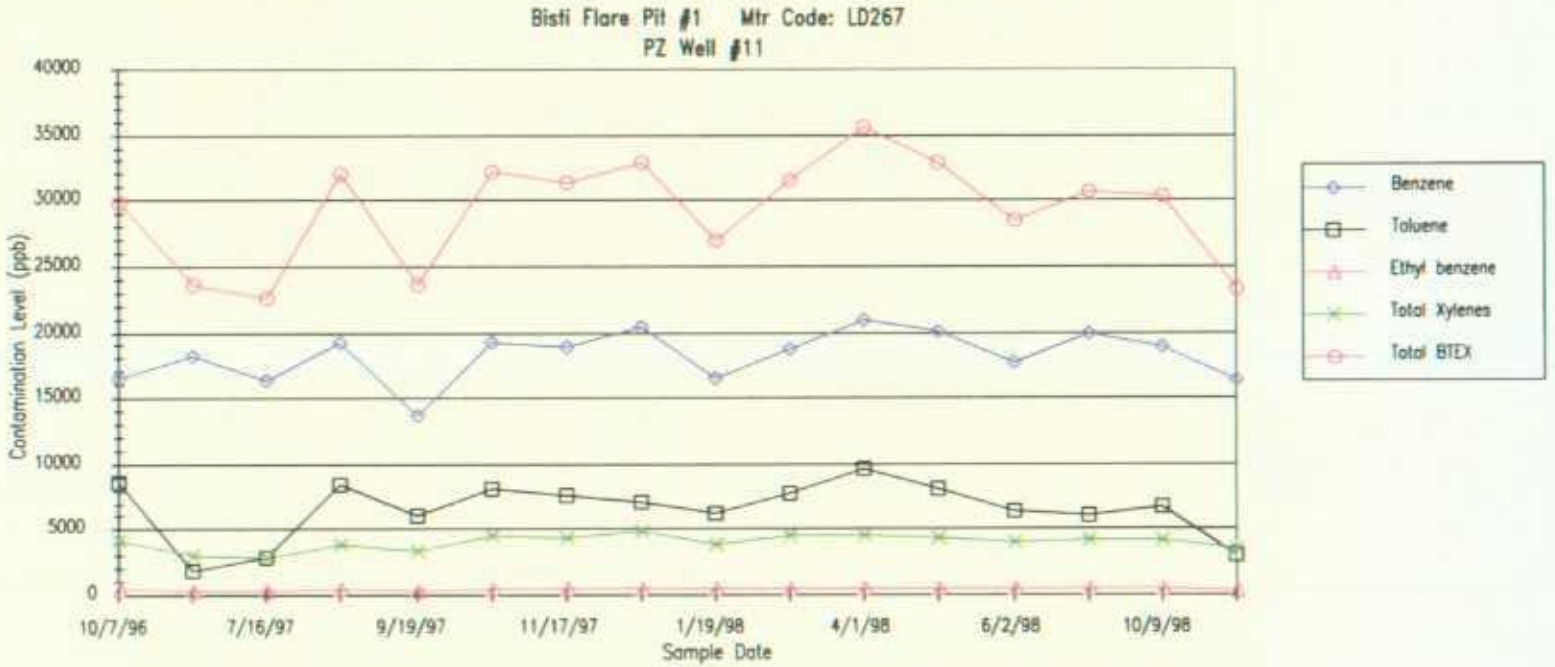
HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	PZ8-9
CHKD:		PLOT:	PZ8-9

BTEX Concentrations – PZ Wells #8 and #9

FIGURE 14



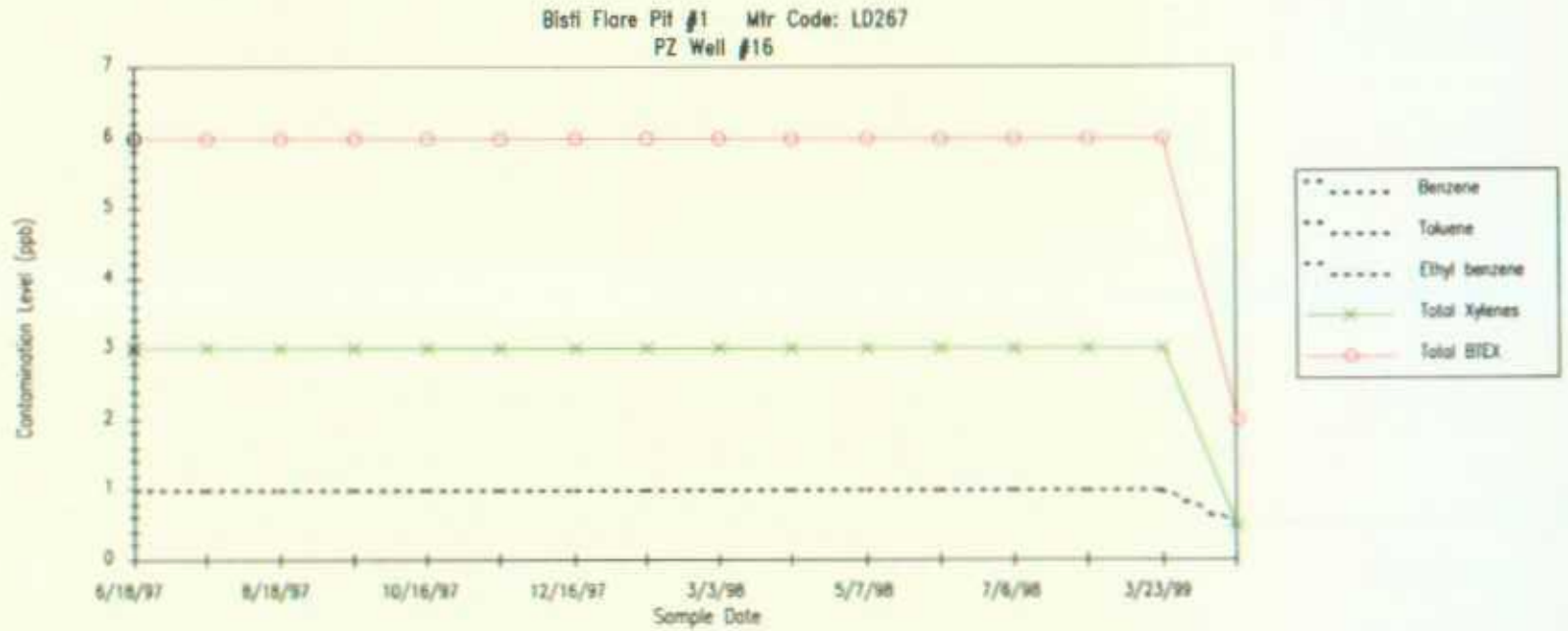


HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	PZ10-11
CHKD:		PLOT:	PZ10-11

BTEX Concentrations – PZ Wells #10 and #11

FIGURE 15

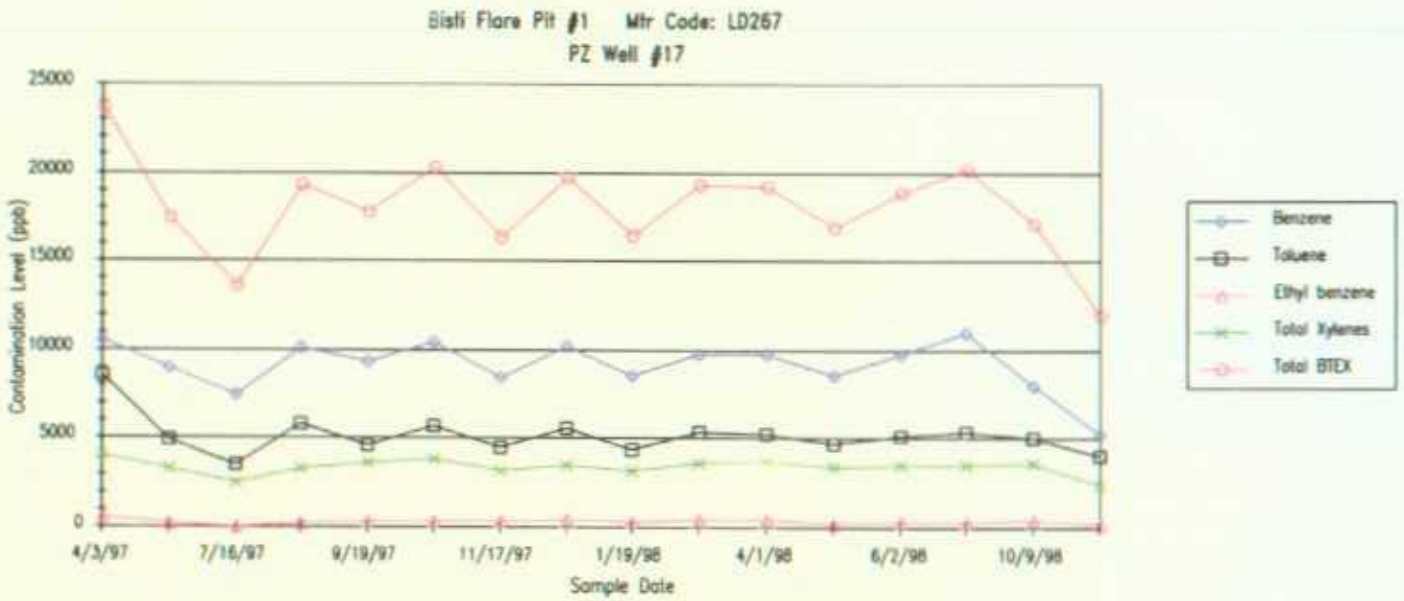


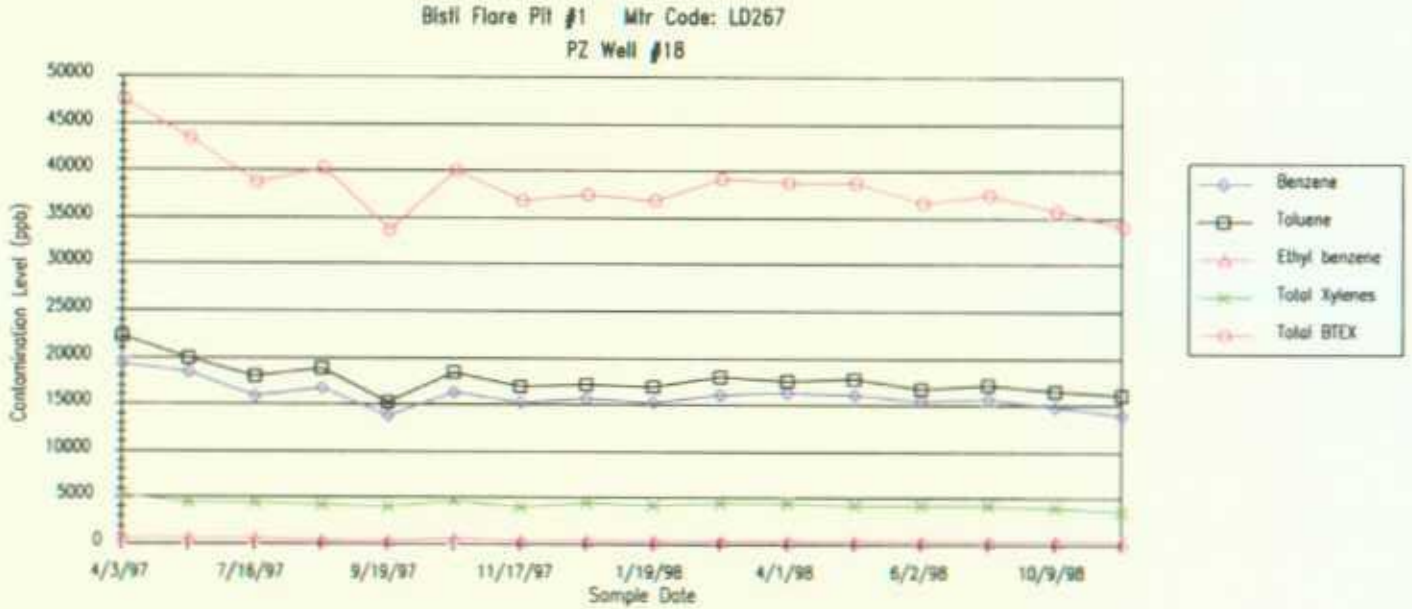
HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	PZ15-16
CHKD:		PLOT:	PZ15-16

BTEX Concentrations – PZ Wells #15 and #16

FIGURE 16



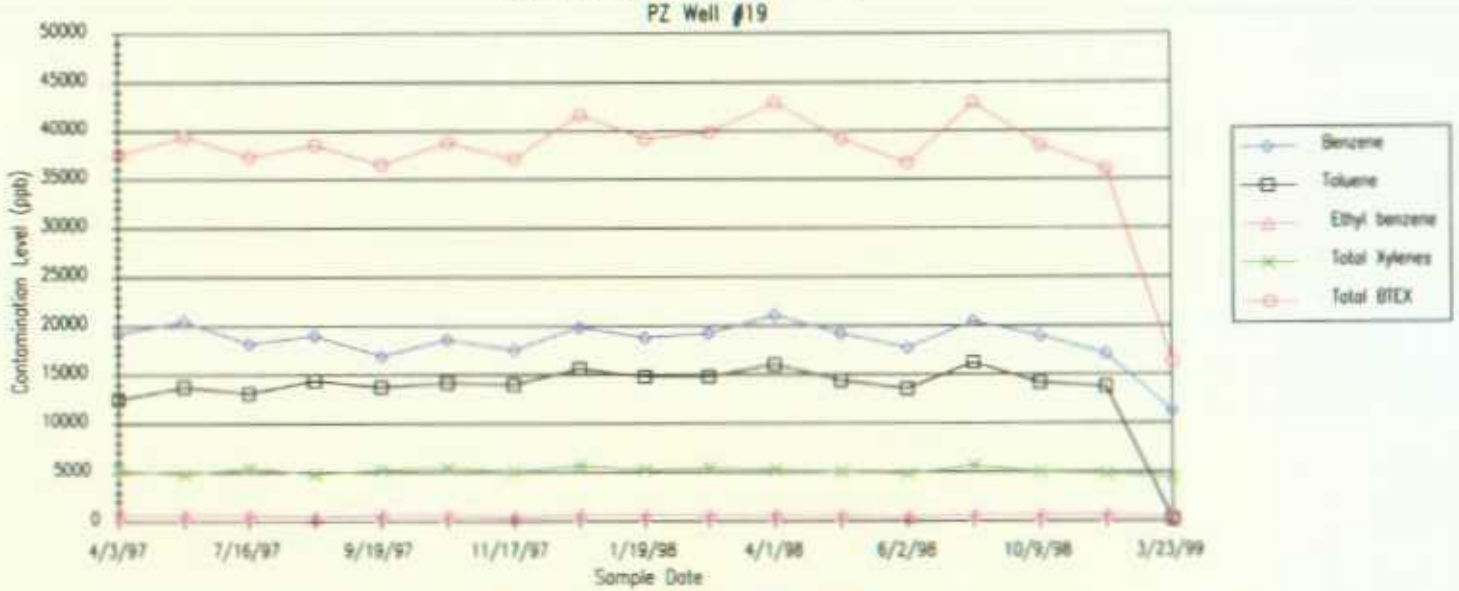


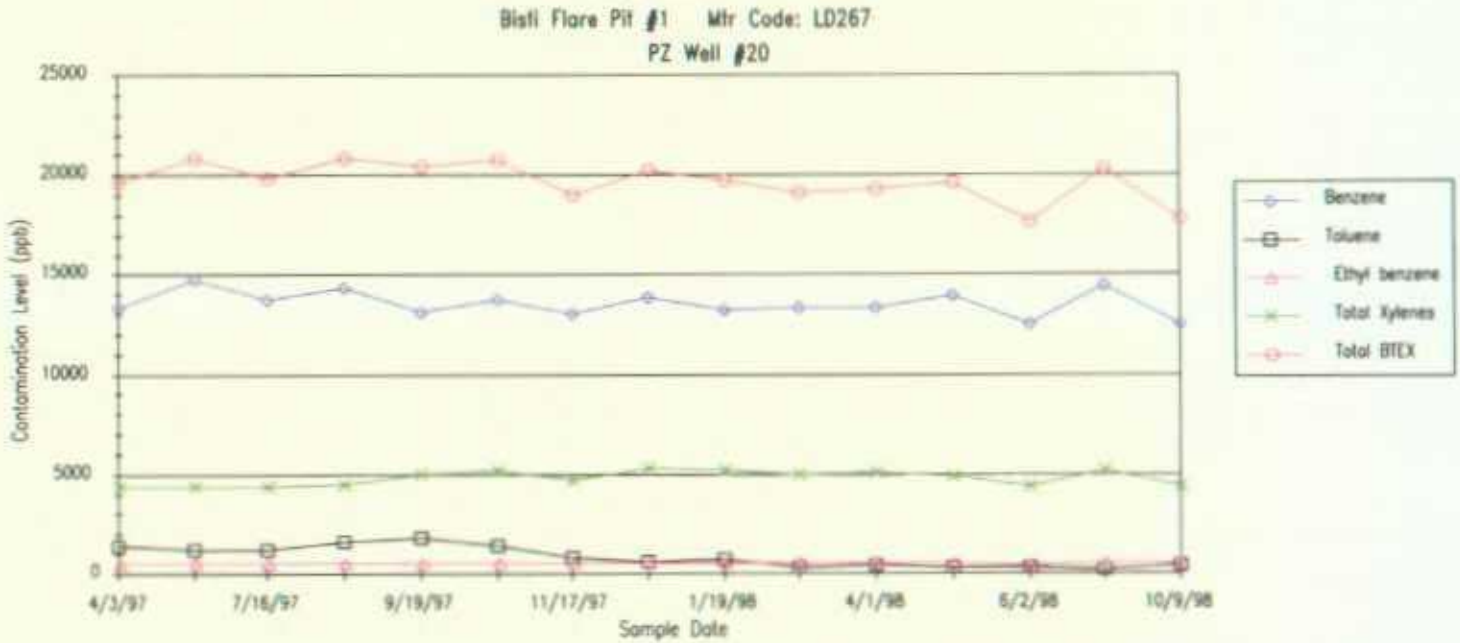
HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	PZ17-18
CHKD:		PLOT:	PZ17-18

BTEX Concentrations – PZ Wells #17 and #18

FIGURE 17



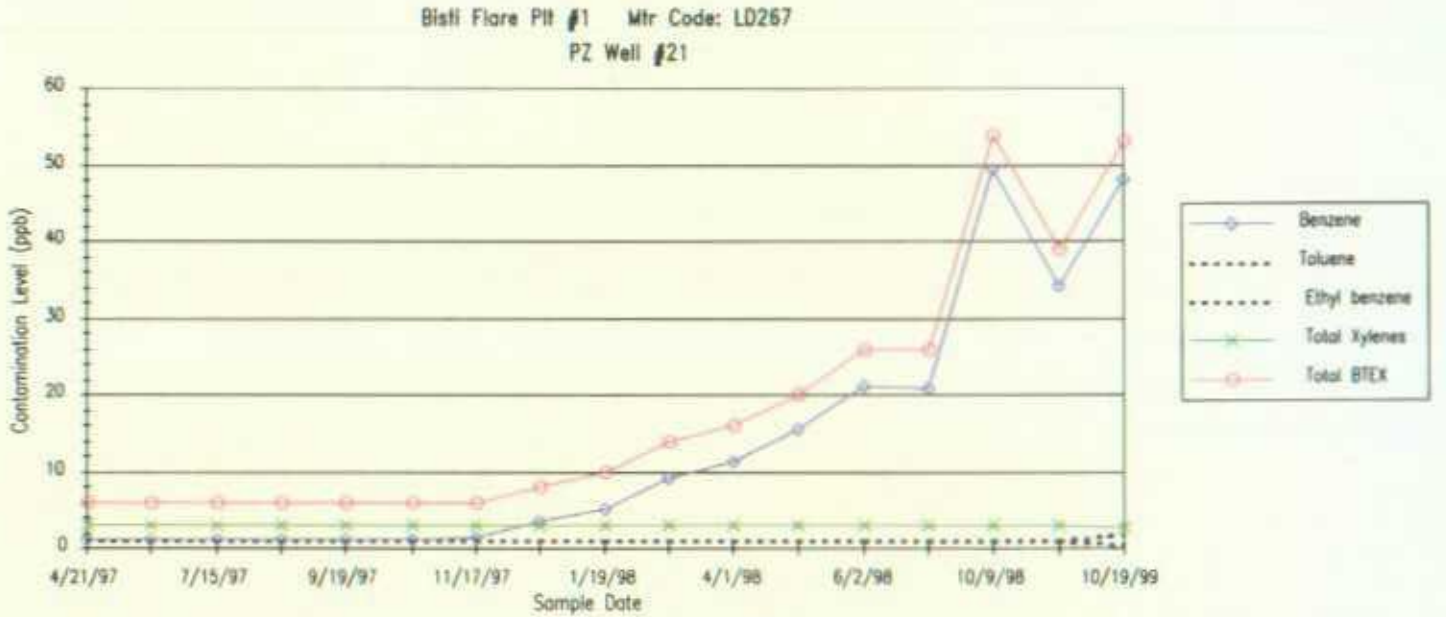


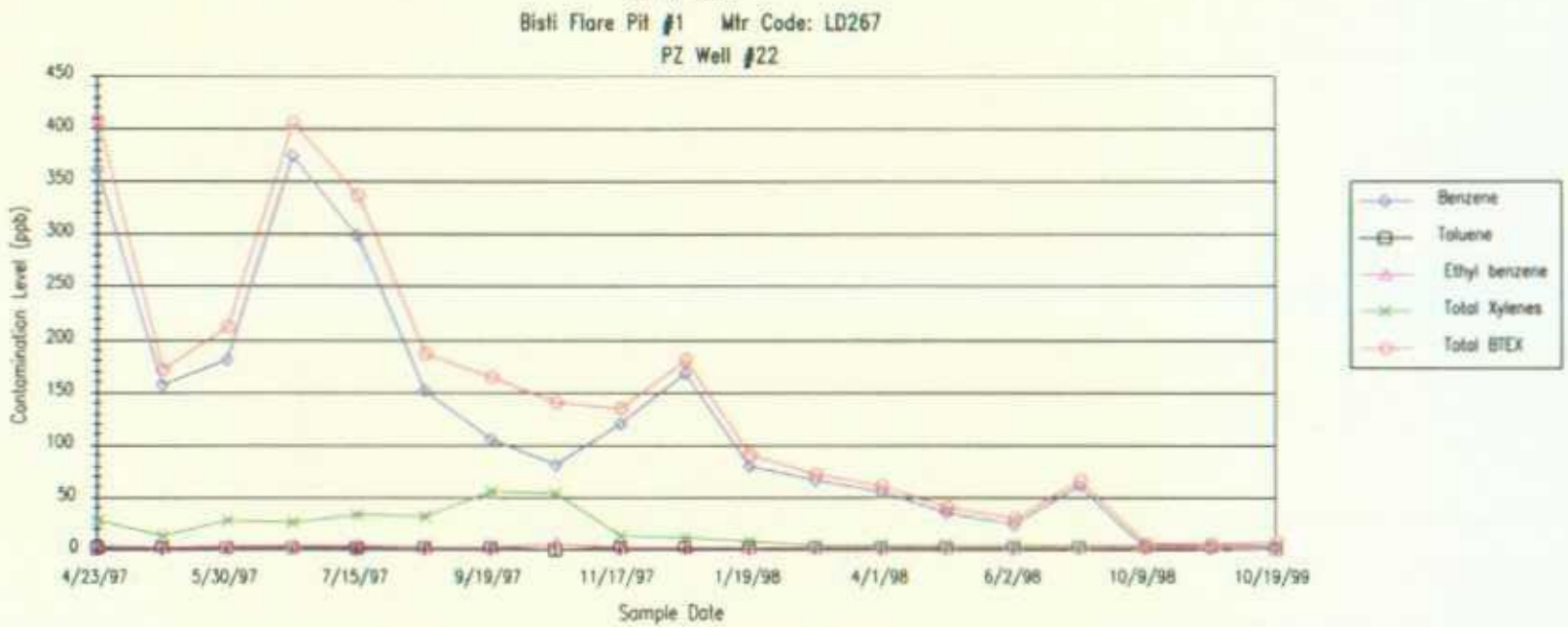
HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	PZ19-20
CHKD:		PLOT:	PZ19-20

BTEX Concentrations – PZ Wells #19 and #20

FIGURE 18





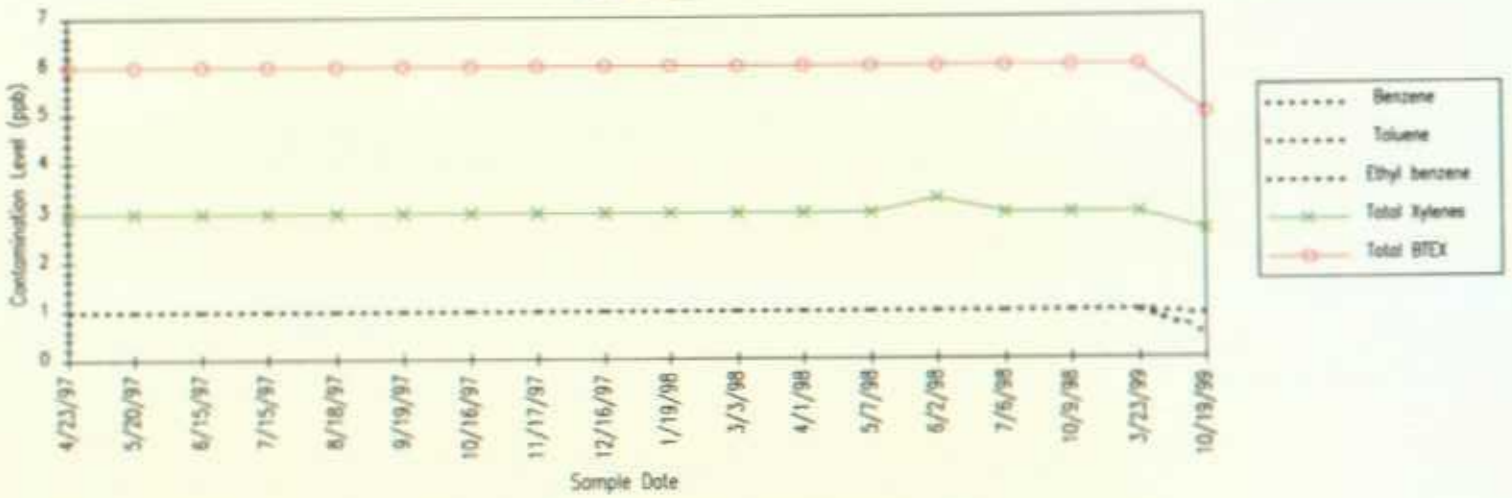
HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	PZ21-22
CHKD:		PLOT:	PZ21-22

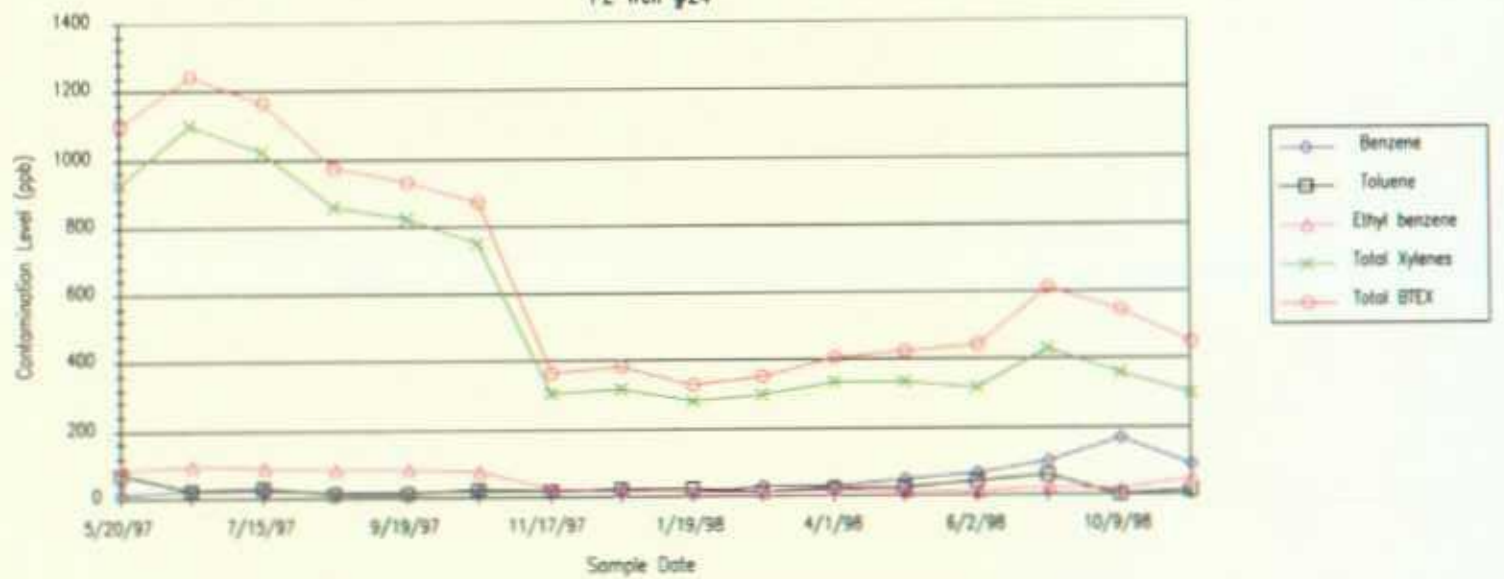
BTEX Concentrations – PZ Wells #21 and #22

FIGURE 19

Bisti Flare Pit #1 Mtr Code: LD267
PZ Well #23



Bisti Flare Pit #1 Mtr Code: LD267
PZ Well #24



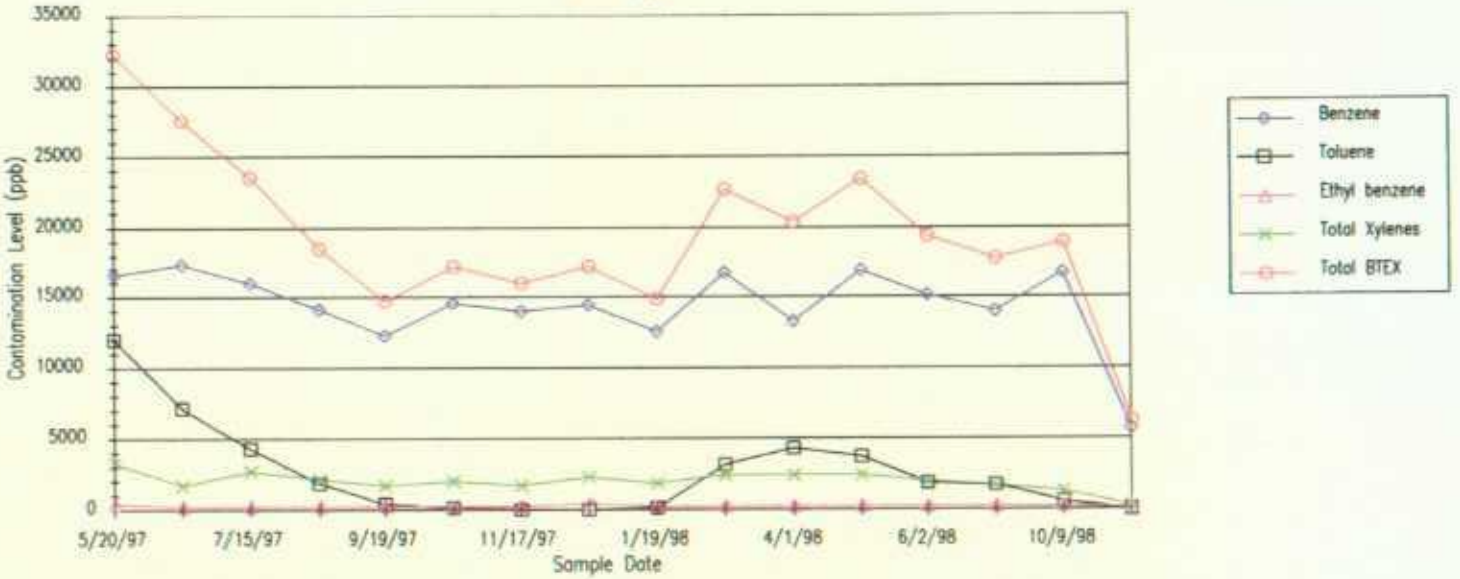
HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	PZ23-24
CHKD:		PLOT:	PZ23-24

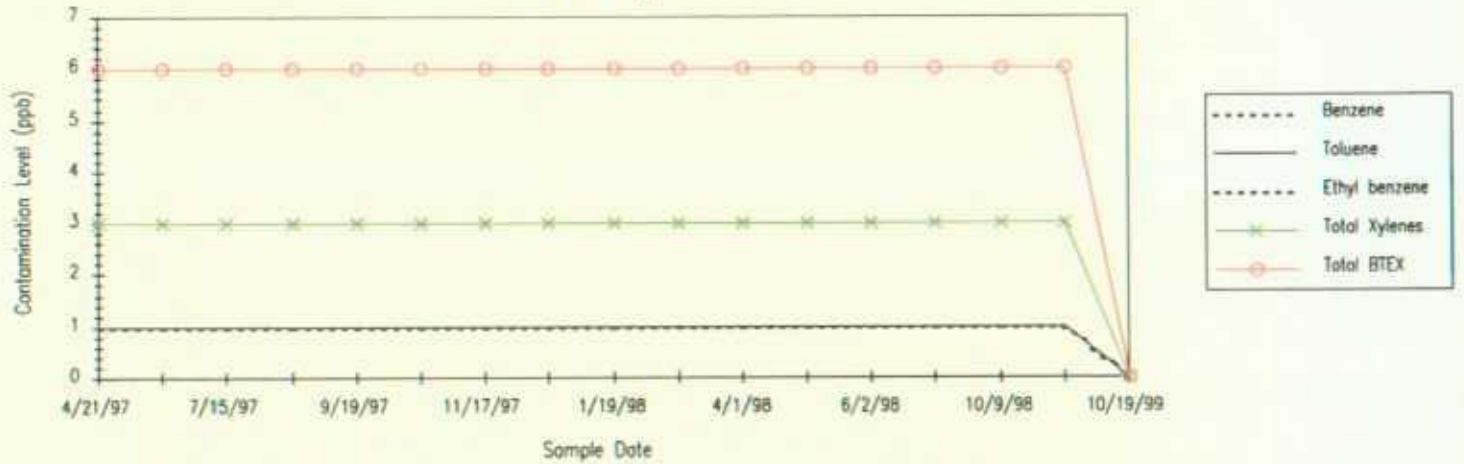
BTEX Concentrations - PZ Wells #23 and #24

FIGURE 20

Bisti Flare Pit #1 Mtr Code: LD267
PZ Well #25



Bisti Flare Pit #1 Mtr Code: LD 267
PZ Well #26

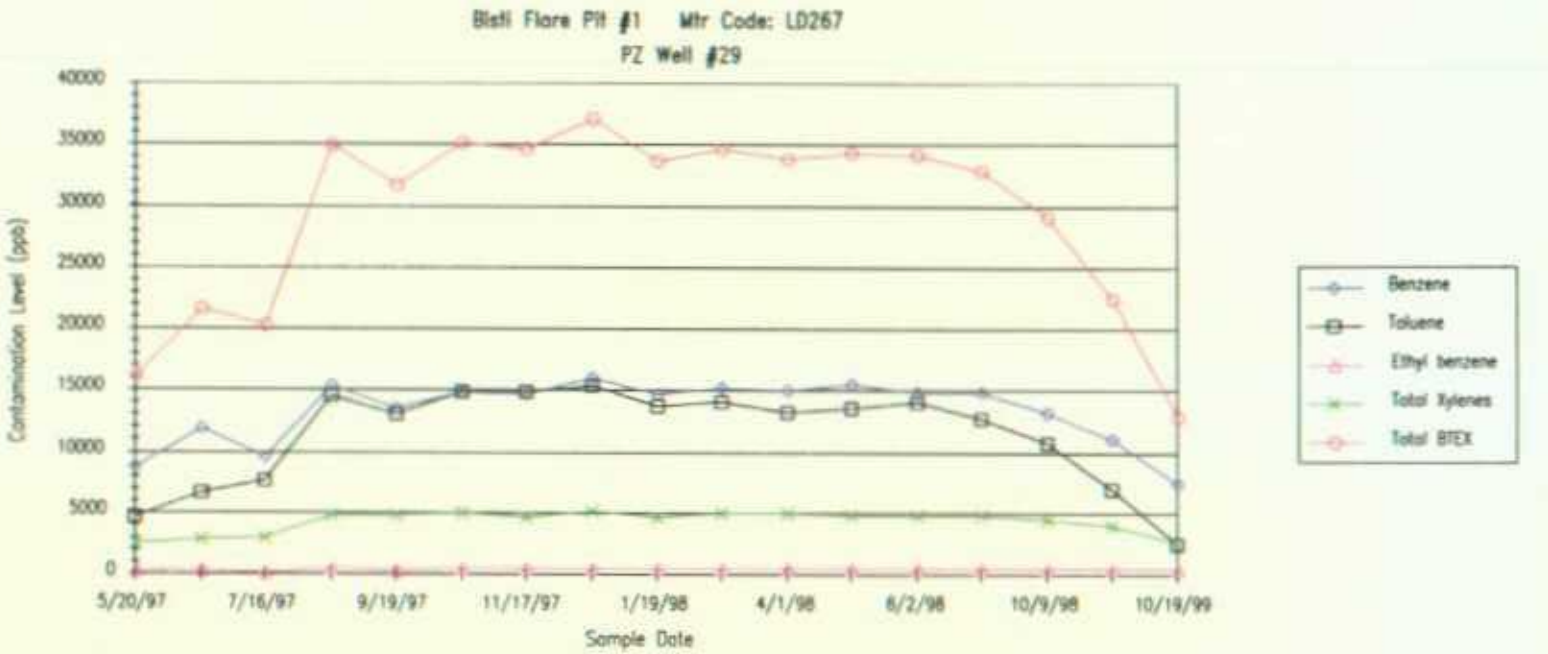


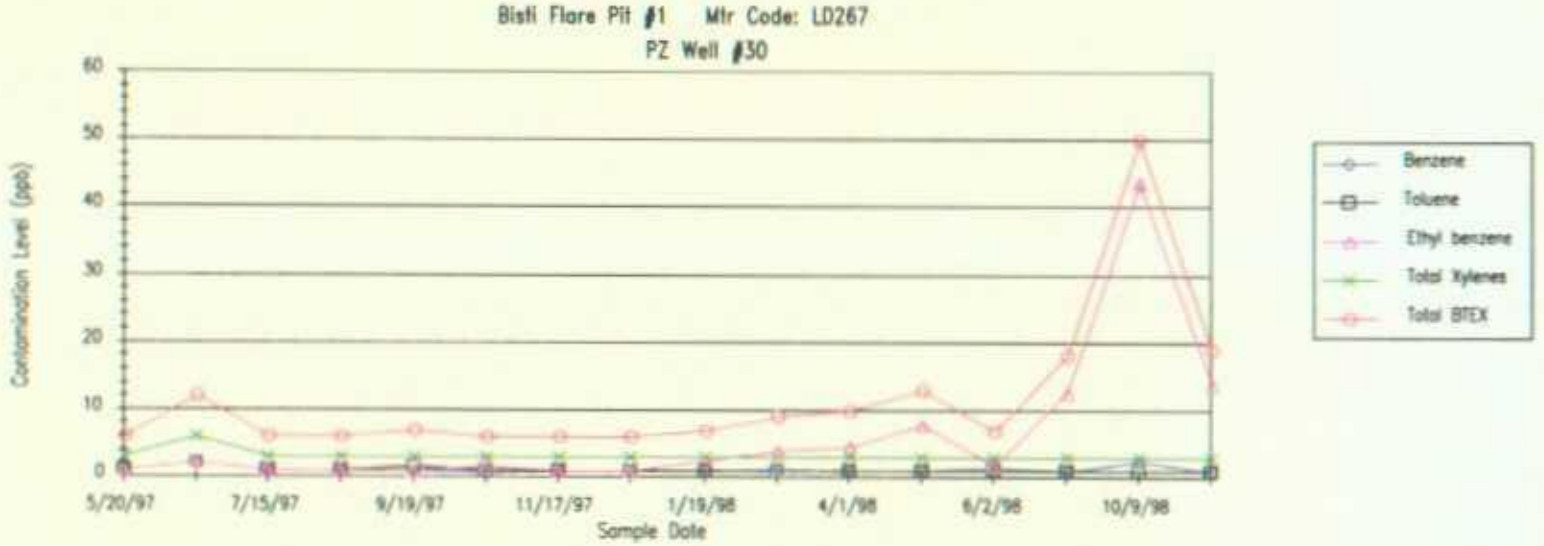
HCI HYDROLOGIC CONSULTANTS, INC.

JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	PZ25-26
CHKD:		PLOT:	PZ25-26

BTEX Concentrations – PZ Wells #25 and #26

FIGURE 21



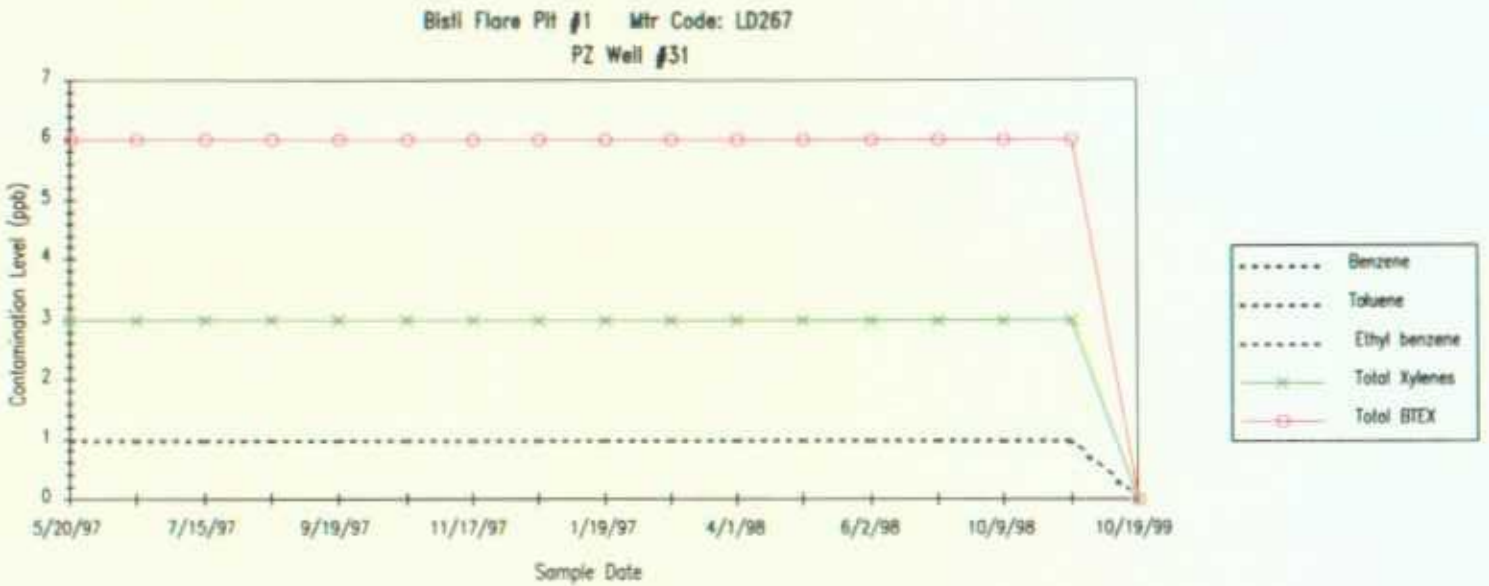


HCI HYDROLOGIC CONSULTANTS, INC.

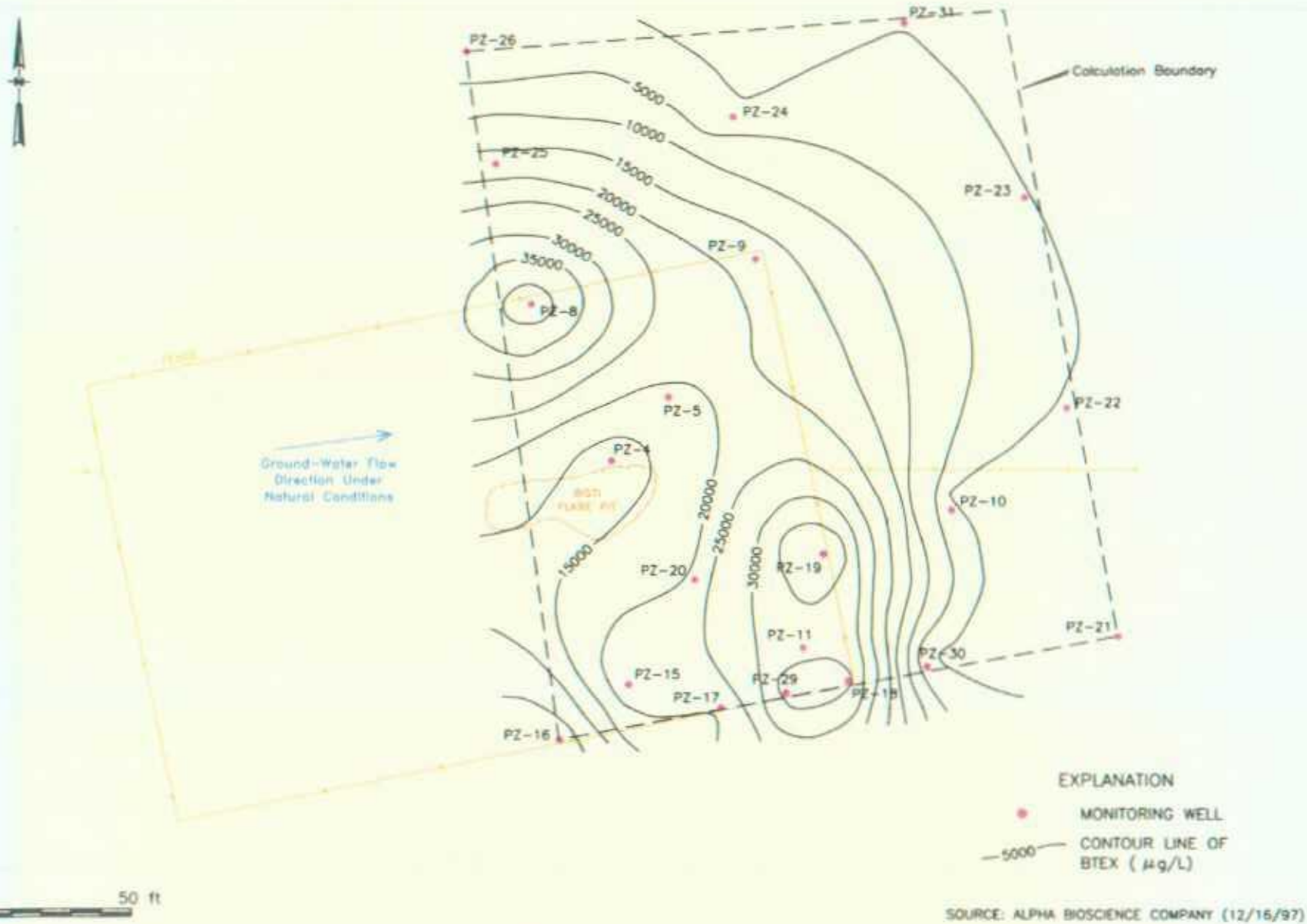
JOB NO:	HCI-1739	DATE:	2/99
BY:	RJS	DRAWING:	PZ29-30
CHKD:		PLOT:	PZ29-30

BTEX Concentrations – PZ Wells #29 and #30

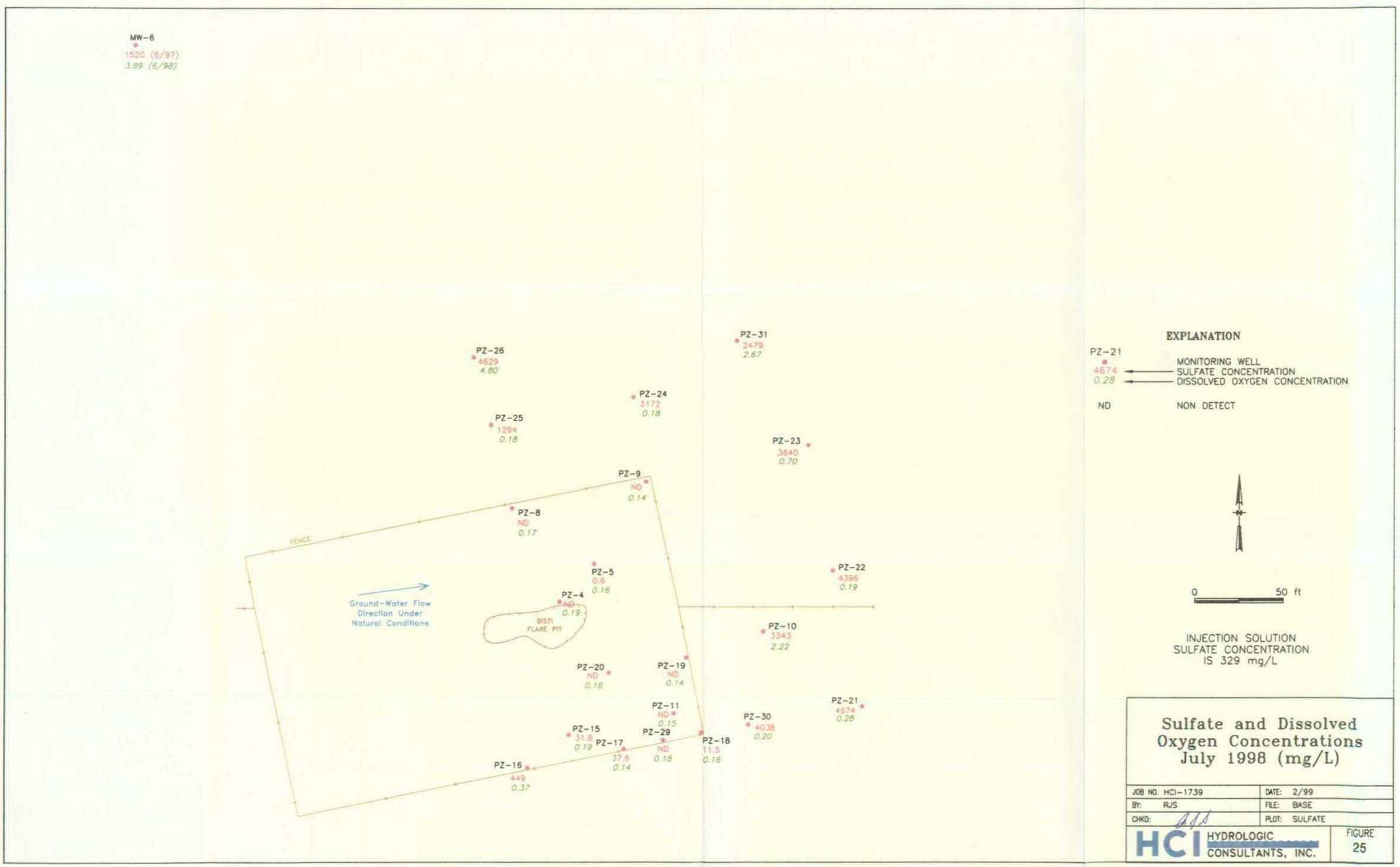
FIGURE 22



HCI HYDROLOGIC CONSULTANTS, INC.	JOB NO: HCI-1739	DATE: 2/99	BTEX Concentrations - PZ Well #31
	BY: RJS	DRAWING: PZ31	FIGURE 23
	CHKD:	PLOT: PZ31	



HCI HYDROLOGIC CONSULTANTS, INC.	JOB NO: HCI-1739 DATE: 7/22/98 BY: PDW DRAWING: BASE CHKD: PLOT: BTEX	Approximate Distribution of BTEX in Ground Water	FIGURE 24

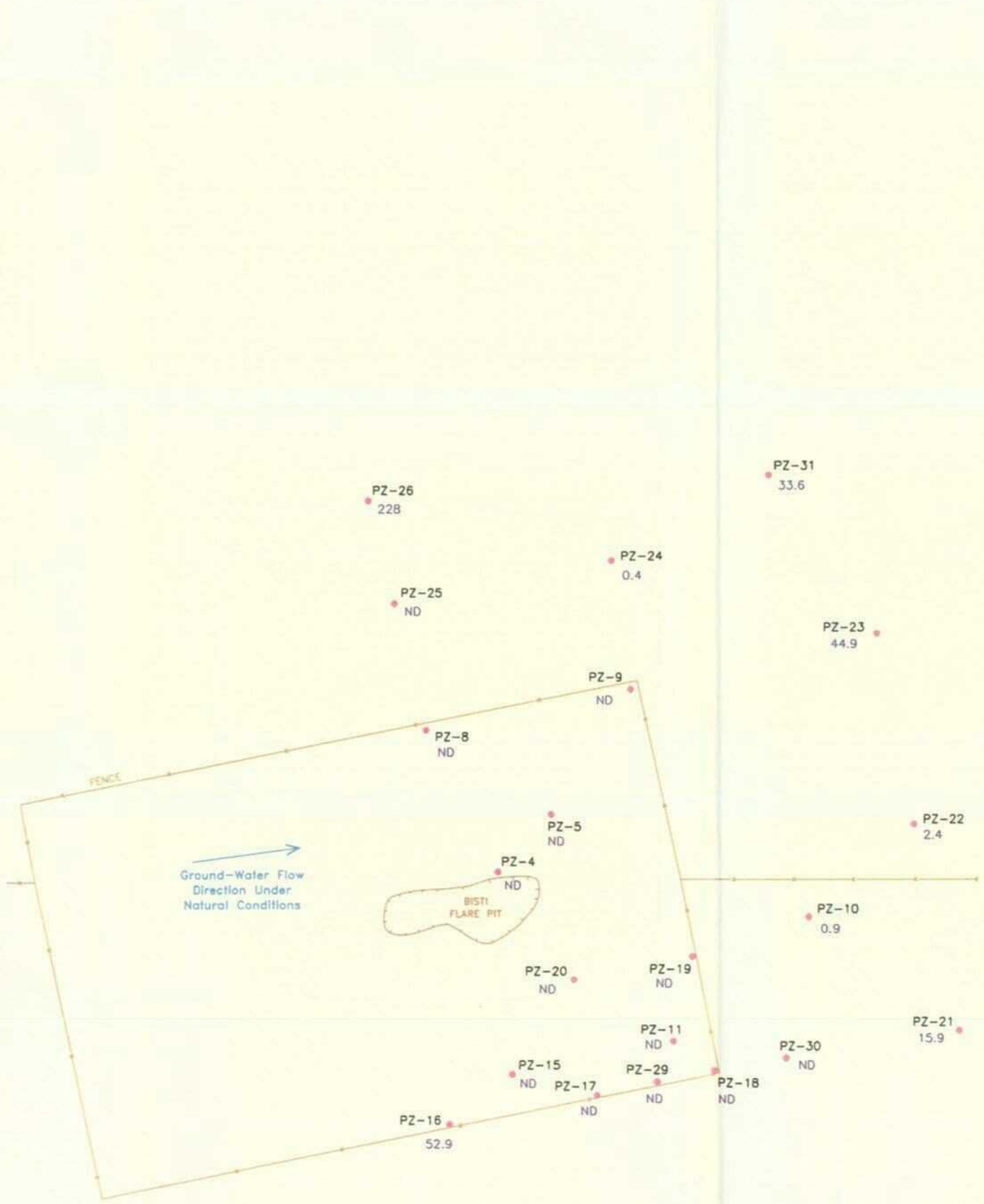


Sulfate and Dissolved Oxygen Concentrations July 1998 (mg/L)

JOB NO. HCI-1739	DATE: 2/99
BY: RJS	FILE: BASE
CHKD:	PLOT: SULFATE

HCI HYDROLOGIC CONSULTANTS, INC.

FIGURE 25



EXPLANATION

PZ-21
15.9 ← MONITORING WELL
NITRATE-NITROGEN CONCENTRATION

ND NON DETECT

N

0 50 ft

INJECTION SOLUTION
NITRATE CONCENTRATION
IS 47.5 mg/L

Nitrate - Nitrogen Concentrations July 1998 (mg/L)

JOB NO. HCI-1739	DATE: 2/99
BY: RJS	FILE: BASE
CHKD:	PLOT: NITRATE

HCI HYDROLOGIC CONSULTANTS, INC.

FIGURE 26

MW-6 LOCATED
TO NORTH

PZ-26
228

PZ-31
33.6

PZ-24
0.4

PZ-25
ND

PZ-23
44.9

PZ-32
*

PZ-9
ND

PZ-8
ND

FENCE

PZ-5
ND

PZ-22
2.4

Ground-Water Flow
Direction Under
Natural Conditions

PZ-4
ND

BISTI
FLARE PIT

PZ-10
0.9

PZ-20
ND

PZ-19
ND

PZ-11
ND

PZ-21
15.9

PZ-33
*

PZ-30
ND

PZ-15
ND

PZ-17
ND

PZ-29
ND

PZ-18
ND

PZ-16
52.9

PZ-34
*

EXPLANATION

PZ-21
15.9 ← MONITORING WELL
NITRATE-NITROGEN CONCENTRATION

ND NON DETECT

PZ-32
* PROPOSED MONITORING WELL OR
TEMPORARY MONITORING WELL LOCATION

N

0 40 ft

Proposed Monitoring Well Locations

JOB NO. HCI-1739	DATE: 2/99
BY: RJS	FILE: BASE
CHKD:	PLOT: PROP-MW

HCI HYDROLOGIC CONSULTANTS, INC.

FIGURE 27

HCI HYDROLOGIC CONSULTANTS, INC.

TABLE 1

Summary of Former Boreholes and Wells

Borehole or Well Number	Activity
HA #1	Plugged when turning/treating of pit bottom. Total Depth 8'.
HA #2	Dry, excavated during turning/treating pit bottom
HA #3	Was not stable, excavated during turning/treating of pit bottom
HA #6	Could not set well due to auger refusal and dry hole
HA #7	Dry hole
HA #12	Dry hole and auger refusal
HA #13	Dry hole and auger refusal
HA #14	Dry hole
HA #27	Insufficient water to set well
HA #28	Insufficient water to set well

HCI HYDROLOGIC CONSULTANTS, INC.

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
5/20/97	PZ-4	3770	177	74.6	6530	10552
6/16/97	PZ-4	5070	446	195	4490	10201
7/16/97	PZ-4	6210	375	124	4250	11000
8/18/97	PZ-4	3170	740	137	3420	7467
9/19/97	PZ-4	3330	367	89.5	3870	7657
10/16/97	PZ-4	4140	974	266	4130	9510
11/17/97	PZ-4	4570	629	241	3650	9090
12/16/97	PZ-4	4890	634	319	4400	10243
1/19/98	PZ-4	5640	942	340	4340	11262
3/3/98	PZ-4	6710	939	315	4680	12644
4/1/98	PZ-4	7000	688	359	4610	12657
5/7/98	PZ-4	7260	420	338	4520	12538
6/2/98	PZ-4	7110	783	371	4900	13164
7/6/98	PZ-4	8220	714	391	5360	14685
10/9/98	PZ-4	8180	983	413	4880	14456
3/23/99	PZ-4	7110	980	412	5750	14252

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
10/7/96	PZ-5	10300	2700	560	5600	19160
6/16/97	PZ-5	10100	2150	493	5580	18323
7/16/97	PZ-5	11600	1770	431	5110	18911
8/18/97	PZ-5	10200	1710	207	5120	17237
9/19/97	PZ-5	9960	1960	91.8	5370	17382
10/16/97	PZ-5	11050	1890	477	5950	19367
11/17/97	PZ-5	10500	1980	463	5410	18353
12/16/97	PZ-5	11200	1520	518	5720	18958
1/19/98	PZ-5	9180	1440	458	4970	16048
3/3/98	PZ-5	11000	1160	374	5430	17964
4/1/98	PZ-5	10500	1360	398	5490	17748
5/7/98	PZ-5	11900	1660	449	5690	19699
6/2/98	PZ-5	11600	1250	432	5270	18552
7/6/98	PZ-5	11300	1170	470	5410	18350
10/9/98	PZ-5	10200	891	436	5100	16627
3/23/99	PZ-5	9280	928	309	4270	14787

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
10/7/96	PZ-8	18000	10700	550	3600	32850
6/16/97	PZ-8	20400	13000	462	4040	37902
7/16/97	PZ-8	20800	9660	536	3640	34636
8/18/97	PZ-8	20400	15300	502	4260	40462
9/19/97	PZ-8	20300	13700	546	4310	38856
10/16/97	PZ-8	22300	15200	572	4700	42772
11/17/97	PZ-8	22100	15100	519	4280	41999
12/16/97	PZ-8	23000	16100	555	4680	44335
1/19/98	PZ-8	19100	14600	470	4140	38310
3/3/98	PZ-8	21900	14600	563	4850	41913
4/1/98	PZ-8	21900	16100	550	4780	43330
5/7/98	PZ-8	23900	15900	561	5010	45371
6/2/98	PZ-8	22500	16000	548	4840	43888
7/6/98	PZ-8	22500	16200	493	4610	43803
10/9/98	PZ-8	20800	14300	402	3650	39152
3/23/99	PZ-8	21000	15000	470	4570	41040
10/19/99	PZ-8	23000	16000	380	4600	43980

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
10/7/96	PZ-9	11900	15700	400	5500	33500
6/16/97	PZ-9	8610	10500	193	5310	24613
7/16/97	PZ-9	8620	11000	250	5900	25770
8/18/97	PZ-9	9710	11000	183	4980	25873
9/19/97	PZ-9	8580	9420	1	5570	23571
10/16/97	PZ-9	9970	11700	156	6220	28046
11/17/97	PZ-9	8960	10100	41	3740	22841
12/16/97	PZ-9	7890	8100	33.6	2520	18544
1/19/98	PZ-9	4170	6490	22.1	2240	12922
3/3/98	PZ-9	8200	8760	103	3020	20083
4/1/98	PZ-9	9860	11600	160	4150	25770
5/7/98	PZ-9	10800	13600	185	4340	28925
6/2/98	PZ-9	10200	12500	224	4290	27214
7/6/98	PZ-9	9710	11400	188	4080	25378
10/9/98	PZ-9	8980	9740	120	4170	23010
3/23/99	PZ-9	4530	4940	42.6	2340	11853
10/19/99	PZ-9	3200	4300	310	2900	10710

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
5/20/97	PZ-10	1	1	1	3	6
6/16/97	PZ-10	2	2	2	6	12
7/15/97	PZ-10	1	1	1	3	6
8/18/97	PZ-10	1	1	1	3	6
9/19/97	PZ-10	1	1	1	3	6
10/16/97	PZ-10	1	1	1	3	6
11/17/97	PZ-10	1	1	1	3	6
12/16/97	PZ-10	1	1	1	3	6
1/19/98	PZ-10	1	1	1	3	6
3/3/98	PZ-10	1	1	1	3	6
4/1/98	PZ-10	1	1	1	3	6
5/7/98	PZ-10	1	1	1	3	6
6/2/98	PZ-10	1	1	1	3	6
7/6/98	PZ-10	1	1	1	3	6
10/9/98	PZ-10	1	1	1	3	6
3/23/99	PZ-10	1	1	1	3	6

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
10/7/96	PZ-11	16600	8600	500	4200	29900
6/16/97	PZ-11	18300	1930	385	2970	23585
7/16/97	PZ-11	16400	2870	374	2950	22594
8/18/97	PZ-11	19300	8450	463	3870	32083
9/19/97	PZ-11	13600	6160	400	3410	23570
10/16/97	PZ-11	19200	8080	513	4520	32313
11/17/97	PZ-11	18900	7590	517	4350	31357
12/16/97	PZ-11	20400	7030	587	4910	32927
1/19/98	PZ-11	16500	6280	444	3800	27024
3/3/98	PZ-11	18800	7780	465	4520	31565
4/1/98	PZ-11	21000	9590	517	4530	35637
5/7/98	PZ-11	20100	8080	464	4330	32974
6/2/98	PZ-11	17800	6350	430	3980	28560
7/6/98	PZ-11	19900	6140	489	4200	30729
10/9/98	PZ-11	18900	6790	455	4300	30445
3/23/99	PZ-11	16400	3000	414	3550	23364

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
10/7/96	PZ-15	13000	7600	280	1900	22780
6/16/97	PZ-15	11800	3750	337	2390	18277
7/16/97	PZ-15	16800	7630	504	3440	28374
8/18/97	PZ-15	16200	9180	441	2990	28811
9/19/97	PZ-15	15500	6970	469	2840	25779
10/16/97	PZ-15	16900	6680	477	2840	26897
11/17/97	PZ-15	16300	6690	439	2700	26129
12/16/97	PZ-15	16400	6020	499	3090	26009
1/19/98	PZ-15	17000	7350	504	3200	28054
3/3/98	PZ-15	18000	7070	519	3430	29019
4/1/98	PZ-15	18100	6590	489	3410	28589
5/7/98	PZ-15	18300	6460	463	3150	28373
6/2/98	PZ-15	16600	5760	552	3420	26332
7/6/98	PZ-15	18100	5220	521	3330	27171
10/9/98	PZ-15	15300	4030	495	2790	22615
3/23/99	PZ-15	15400	4180	510	2830	22920

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
6/18/97	PZ-16	1	1	1	3	6
7/16/97	PZ-16	1	1	1	3	6
8/18/97	PZ-16	1	1	1	3	6
9/19/97	PZ-16	1	1	1	3	6
10/16/97	PZ-16	1	1	1	3	6
11/17/97	PZ-16	1	1	1	3	6
12/16/97	PZ-16	1	1	1	3	6
1/19/98	PZ-16	1	1	1	3	6
3/3/98	PZ-16	1	1	1	3	6
4/1/98	PZ-16	1	1	1	3	6
5/7/98	PZ-16	1	1	1	3	6
6/2/98	PZ-16	1	1	1	3	6
7/6/98	PZ-16	1	1	1	3	6
10/9/98	PZ-16	1	1	1	3	6
3/23/99	PZ-16	1	1	1	3	6
10/19/99	PZ-16	0.5	0.5	0.5	0.5	2

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
4/3/97	PZ-17	10500	8600	507	4100	23707
6/16/97	PZ-17	8980	4950	192	3260	17382
7/16/97	PZ-17	7490	3550	50	2550	13640
8/18/97	PZ-17	10100	5800	184	3250	19334
9/19/97	PZ-17	9300	4610	290	3600	17800
10/16/97	PZ-17	10400	5700	358	3820	20278
11/17/97	PZ-17	8400	4450	332	3210	16392
12/16/97	PZ-17	10200	5560	410	3540	19710
1/19/98	PZ-17	8510	4410	349	3210	16479
3/3/98	PZ-17	9800	5380	425	3660	19265
4/1/98	PZ-17	9770	5270	408	3690	19138
5/7/98	PZ-17	8550	4700	256	3410	16916
6/2/98	PZ-17	9800	5150	362	3550	18862
7/6/98	PZ-17	11000	5340	346	3460	20146
10/9/98	PZ-17	8040	5050	400	3600	17090
3/23/99	PZ-17	5210	4100	217	2460	11987

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
4/3/97	PZ-18	19200	22300	593	5340	47433
6/16/97	PZ-18	18500	19900	558	4450	43408
7/16/97	PZ-18	15800	18100	552	4380	38832
8/18/97	PZ-18	16800	18800	485	4220	40305
9/19/97	PZ-18	13800	15300	408	4110	33618
10/16/97	PZ-18	16400	18400	538	4650	39988
11/17/97	PZ-18	15300	16900	471	4120	36791
12/16/97	PZ-18	15600	17100	476	4410	37586
1/19/98	PZ-18	15300	16900	490	4180	36870
3/3/98	PZ-18	16100	18100	499	4440	39139
4/1/98	PZ-18	16300	17600	479	4360	38739
5/7/98	PZ-18	16200	17800	463	4210	38673
6/2/98	PZ-18	15400	16700	467	4190	36757
7/6/98	PZ-18	15700	17100	452	4220	37472
10/9/98	PZ-18	14900	16600	460	3930	35890
3/23/99	PZ-18	14000	16000	420	3650	34070

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
4/3/97	PZ-19	19200	12500	583	5220	37503
6/16/97	PZ-19	20400	13700	543	4740	39383
7/16/97	PZ-19	18200	13200	597	5320	37317
8/18/97	PZ-19	18900	14300	514	4780	38494
9/19/97	PZ-19	16800	13800	560	5270	36430
10/16/97	PZ-19	18500	14200	575	5420	38695
11/17/97	PZ-19	17500	14000	512	5080	37092
12/16/97	PZ-19	19800	15600	605	5650	41655
1/19/98	PZ-19	18700	14800	552	5180	39232
3/3/98	PZ-19	19100	14700	596	5390	39786
4/1/98	PZ-19	21000	16100	559	5260	42919
5/7/98	PZ-19	19200	14300	543	5080	39123
6/2/98	PZ-19	17800	13600	520	4820	36740
7/6/98	PZ-19	20500	16200	605	5620	42925
10/9/98	PZ-19	18900	14200	526	4940	38566
3/23/99	PZ-19	17000	13800	521	4810	36131

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
4/3/97	PZ-20	13300	1400	538	4400	19638
6/16/97	PZ-20	14700	1200	514	4370	20784
7/16/97	PZ-20	13700	1170	520	4410	19800
8/18/97	PZ-20	14300	1640	474	4430	20844
9/19/97	PZ-20	13100	1840	506	5000	20446
10/16/97	PZ-20	13700	1380	545	5150	20775
11/17/97	PZ-20	13000	788	485	4690	18963
12/16/97	PZ-20	13800	588	533	5270	20191
1/19/98	PZ-20	13200	748	530	5220	19698
3/3/98	PZ-20	13300	340	526	4950	19116
4/1/98	PZ-20	13300	388	527	5050	19265
5/7/98	PZ-20	13900	352	491	4850	19593
6/2/98	PZ-20	12500	341	447	4350	17638
7/6/98	PZ-20	14400	203	553	5190	20346
10/9/98	PZ-20	12500	437	482	4410	17829
3/23/99	PZ-20	11200	245	445	4390	16280

HCI HYDROLOGIC CONSULTANTS, INC.

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
4/21/97	PZ-21	1	1	1	3	6
6/16/97	PZ-21	1	1	1	3	6
7/15/97	PZ-21	1	1	1	3	6
8/18/97	PZ-21	1	1	1	3	6
9/19/97	PZ-21	1	1	1	3	6
10/16/97	PZ-21	1	1	1	3	6
11/17/97	PZ-21	1.34	1	1	3	6
12/16/97	PZ-21	3.39	1	1	3	8
1/19/98	PZ-21	5.04	1	1	3	10
3/3/98	PZ-21	9.06	1	1	3	14
4/1/98	PZ-21	11.3	1	1	3	16
5/7/98	PZ-21	15.4	1	1	3	20
6/2/98	PZ-21	21	1	1	3	26
7/6/98	PZ-21	20.7	1	1	3	26
10/9/98	PZ-21	49.4	1	1	3	54
3/23/99	PZ-21	34.1	1	1	3	39
10/19/99	PZ-21	48	1.9	0.5	2.6	53

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
4/23/97	PZ-22	361	1	4.11	28.4	408
5/20/97	PZ-22	156	1	1.12	13.1	171
5/30/97	PZ-22	180	1	3.05	27.7	212
6/15/97	PZ-22	374	1.34	4.25	26.1	406
7/15/97	PZ-22	299	2	3.24	33.9	338
8/18/97	PZ-22	152	1	1.82	30.9	186
9/19/97	PZ-22	105	1.19	2.66	56	165
10/16/97	PZ-22	80.3	0.62	6.03	54	141
11/17/97	PZ-22	120	1	1.88	12.5	135
12/16/97	PZ-22	168	1	1.71	10.6	181
1/19/98	PZ-22	79.7	1	1	7.96	90
3/3/98	PZ-22	65.8	1	1	3.9	72
4/1/98	PZ-22	56	1	1	3	61
5/7/98	PZ-22	35.4	1	1	3	40
6/2/98	PZ-22	24.1	1	1	3	29
7/6/98	PZ-22	61.5	1	1	3	67
10/9/98	PZ-22	1	1	1	3	6
3/23/99	PZ-22	1	1	1	3	6
10/19/99	PZ-22	1.9	0.5	0.5	4.2	7

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
4/23/97	PZ-23	1	1	1	3	6
5/20/97	PZ-23	1	1	1	3	6
6/15/97	PZ-23	1	1	1	3	6
7/15/97	PZ-23	1	1	1	3	6
8/18/97	PZ-23	1	1	1	3	6
9/19/97	PZ-23	1	1	1	3	6
10/16/97	PZ-23	1	1	1	3	6
11/17/97	PZ-23	1	1	1	3	6
12/16/97	PZ-23	1	1	1	3	6
1/19/98	PZ-23	1	1	1	3	6
3/3/98	PZ-23	1	1	1	3	6
4/1/98	PZ-23	1	1	1	3	6
5/7/98	PZ-23	1	1	1	3	6
6/2/98	PZ-23	1	1	1	3.29	6
7/6/98	PZ-23	1	1	1	3	6
10/9/98	PZ-23	1	1	1	3	6
3/23/99	PZ-23	1	1	1	3	6
10/19/99	PZ-23	0.9	0.5	0.5	2.6	5

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
5/20/97	PZ-24	13.4	74.6	86.3	924	1098
6/15/97	PZ-24	25.7	24.4	96.3	1100	1246
7/15/97	PZ-24	26.5	28.8	92.1	1020	1167
8/18/97	PZ-24	19	12.8	81.9	861	975
9/19/97	PZ-24	17.9	11.7	82.5	821	933
10/16/97	PZ-24	17.9	24.9	80.8	750	874
11/17/97	PZ-24	20.2	15.2	24.1	306	365
12/16/97	PZ-24	20.6	24.3	18.3	319	382
1/19/98	PZ-24	12.2	25.6	11.7	281	331
3/3/98	PZ-24	28.4	12.1	11.1	301.4	353
4/1/98	PZ-24	27.4	26.2	16.01	339	409
5/7/98	PZ-24	50.4	24.8	14.9	335	425
6/2/98	PZ-24	68.6	39.8	13.3	320	442
7/6/98	PZ-24	99.4	57.7	22.2	432	611
10/9/98	PZ-24	167	2.36	20	359	548
3/23/99	PZ-24	92.4	9.61	49.1	299	450

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
5/20/97	PZ-25	16600	12000	365	3250	32215
6/15/97	PZ-25	17400	7160	318	1690	27568
7/15/97	PZ-25	16100	4280	348	2790	23518
8/18/97	PZ-25	14200	1800	287	2150	18437
9/19/97	PZ-25	12300	360	277	1780	14717
10/16/97	PZ-25	14700	173	319	1970	17162
11/17/97	PZ-25	14000	65.4	287	1660	16012
12/16/97	PZ-25	14500	51.7	383	2310	17245
1/19/98	PZ-25	12600	184	299	1860	14943
3/3/98	PZ-25	16800	3100	351	2430	22681
4/1/98	PZ-25	13300	4290	347	2500	20437
5/7/98	PZ-25	16900	3730	329	2440	23399
6/2/98	PZ-25	15200	1910	305	2020	19435
7/6/98	PZ-25	14000	1700	293	1780	17773
10/9/98	PZ-25	16800	537	356	1290	18983
3/23/99	PZ-25	5790	57.3	147	333	6327

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
4/21/97	PZ-26	1	1	1	3	6
6/15/97	PZ-26	1	1	1	3	6
7/15/97	PZ-26	1	1	1	3	6
8/18/97	PZ-26	1	1	1	3	6
9/19/97	PZ-26	1	1	1	3	6
10/16/97	PZ-26	1	1	1	3	6
11/17/97	PZ-26	1	1	1	3	6
12/16/97	PZ-26	1	1	1	3	6
1/19/98	PZ-26	1	1	1	3	6
3/3/98	PZ-26	1	1	1	3	6
4/1/98	PZ-26	1	1	1	3	6
5/7/98	PZ-26	1	1	1	3	6
6/2/98	PZ-26	1	1	1	3	6
7/6/98	PZ-26	1	1	1	3	6
10/9/98	PZ-26	1	1	1	3	6
3/23/99	PZ-26	1	1	1	3	6
10/19/99	PZ-26	<0.5	<0.5	<0.5	<0.5	<2.0

HCI HYDROLOGIC CONSULTANTS, INC.

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
5/20/97	PZ-29	8790	4600	318	2560	16268
6/16/97	PZ-29	11900	6630	335	2820	21685
7/16/97	PZ-29	9630	7620	210	2940	20400
8/18/97	PZ-29	15300	14600	429	4780	35109
9/19/97	PZ-29	13500	13100	396	4760	31756
10/16/97	PZ-29	14800	14800	554	5040	35194
11/17/97	PZ-29	14700	14800	497	4680	34677
12/16/97	PZ-29	16100	15400	550	5170	37220
1/19/98	PZ-29	14700	13800	515	4670 -	33685
3/3/98	PZ-29	15200	14000	468	5020	34688
4/1/98	PZ-29	15100	13300	485	4930	33815
5/7/98	PZ-29	15600	13500	460	4820	34380
6/2/98	PZ-29	14900	14100	484	4780	34264
7/6/98	PZ-29	14900	12700	484	4830	32914
10/9/98	PZ-29	13300	10800	508	4530	29138
3/23/99	PZ-29	11000	6980	454	4000	22434
10/19/99	PZ-29	7500	2400	440	2600	12940

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
5/20/97	PZ-30	1	1	1	3	6
6/16/97	PZ-30	2	2	2	6	12
7/15/97	PZ-30	1	1	1	3	6
8/18/97	PZ-30	1	1	1	3	6
9/19/97	PZ-30	1	1.5	1	3	7
10/16/97	PZ-30	0.7518	0.8693	1.62	3	6
11/17/97	PZ-30	1	1	1	3	6
12/16/97	PZ-30	1	1	1	3	6
1/19/98	PZ-30	1	1	2.39	3	7
3/3/98	PZ-30	1.13	1	3.83	3	9
4/1/98	PZ-30	1	1	4.54	3	10
5/7/98	PZ-30	1	1	7.75	3	13
6/2/98	PZ-30	1	1.35	1.66	3	7
7/6/98	PZ-30	1	1	12.8	3	18
10/9/98	PZ-30	2.51	1	43.6	3	50
3/23/99	PZ-30	1	1	14	3	19

HCI HYDROLOGIC CONSULTANTS, INC.

TABLE 2

Water Quality Analyses

Date Sampled	Well #	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX
5/20/97	PZ-31	1	1	1	3	6
6/18/97	PZ-31	1	1	1	3	6
7/15/97	PZ-31	1	1	1	3	6
8/18/97	PZ-31	1	1	1	3	6
9/19/97	PZ-31	1	1	1	3	6
10/16/97	PZ-31	1	1	1	3	6
11/17/97	PZ-31	1	1	1	3	6
12/16/97	PZ-31	1	1	1	3	6
1/19/97	PZ-31	1	1	1	3	6
3/3/98	PZ-31	1	1	1	3	6
4/1/98	PZ-31	1	1	1	3	6
5/7/98	PZ-31	1	1	1	3	6
6/2/98	PZ-31	1	1	1	3	6
7/6/98	PZ-31	1	1	1	3	6
10/9/98	PZ-31	1	1	1	3	6
3/23/99	PZ-31	1	1	1	3	6
10/19/99	PZ-31	<0.5	<0.5	<0.5	<0.5	<2.0

TABLE 3

General Water Chemistry
(Page 1 of 3)

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

Sample #	Meter/ Line #	Site Name	Sample Date	MW #	pH	HCO3	Ca	Mg	Cl	SO4	NO3-N	NO2-N	NH4	PO4	K	Na	TDS	Lab Cond
970195	LD267	Bisti Flare Pit #1	3/11/97	MW-6	8.1	414	112	20	380	1816	1.7	<0.6	<1.9	<2.0	1.1	1202	3680	5290
970595	LD267	Bisti Flare Pit #1	6/24/97	MW-6	8.5	394	89	15	286	1520	<0.6	<0.6	<0.6	<0.6	1.9	1010	3180	4280
970467	LD267	Bisti Flare Pit #1	5/20/97	PZ-4	7.2	1510	233	29	1650	<1.1	<1.1	<1.1	14.9	<1.1	29	1530	4670	5980
970515	LD267	Bisti Flare Pit #1	5/30/97	PZ-4	7.8	1510	237	25	2038	<1.1	<1.1	<1.1	<0.6	21	20.6	1700	5390	7250
970567	LD267	Bisti Flare Pit #1	6/16/97	PZ-4	7	1320	263	30	2180	<1.1	<1.1	<1.1	99.1	<1.1	28.7	1570	5210	7410
970671	LD267	Bisti Flare Pit #1	7/16/97	PZ-4	6.8	1247	268	30	2110	<1.1	<1.1	<1.1	99.6	<1.1	26.1	1430	5020	7640
971030	LD267	Bisti Flare Pit #1	9/19/97	PZ-4	7.33	783	223	25.7	1420	<1.1	<1.1	<1.1	59	<1.1	186	723	3400	5250
980071	LD267	Bisti Flare Pit #1	1/19/98	PZ-4	6.69	1068	235	27.8	1683	<1.1	<1.1	<1.1	<0.6	<1.1	124	1079	4090	6020
980521	LD267	Bisti Flare Pit #1	7/6/98	PZ-4	6.63	11.27	319	36.1	2310	<0.2	<0.2	<0.2	<0.6	3.1	96.3	1488	4880	7370
960787	LD267	Bisti Flare Pit #1	9/25/96	HA-5	6.8	925	182	68	3983	<10	<1.1	NR	NR	44.2	<1	2696	7660	11350
960840	LD267	Bisti Flare Pit #1	10/7/96	PZ-5	6.9	911	178	64	4200	2.34	0.18	NR	NR	43.1	1.52	2889	7640	11760
970672	LD267	Bisti Flare Pit #1	7/16/97	PZ-5	7.1	974	201	74	3820	<1.1	<1.1	<1.1	<0.6	42.9	20.4	2460	7390	11600
971032	LD267	Bisti Flare Pit #1	9/19/97	PZ-5	7.48	1010	163	56.9	3600	<1.1	<1.1	<1.1	<0.6	37	8.9	2290	6860	10400
980062	LD267	Bisti Flare Pit #1	1/19/98	PZ-5	7.02	1049	165	59.6	3341	<1.1	<0.2	<0.2	<0.6	26.5	1.02	2353	6840	10010
980511	LD267	Bisti Flare Pit #1	7/6/98	PZ-5	6.91	1064	175	62.2	3485	0.6	<0.2	<0.2	<0.2	24.6	10.5	2290	6910	10090
960841	LD267	Bisti Flare Pit #1	10/7/96	PZ-8	6.6	705	387	102	5794	20.6	0.29	NR	NR	26.9	1.17	3252	10100	13770
970673	LD267	Bisti Flare Pit #1	7/16/97	PZ-8	6.8	485	321	103	5080	<1.1	<1.1	<1.1	<0.6	38.1	21.8	2860	9150	13700
971033	LD267	Bisti Flare Pit #1	9/19/97	PZ-8	7.11	627	347	94.6	5280	2.9	<1.1	<1.1	<0.6	33.8	<0.6	2790	9790	13200
980063	LD267	Bisti Flare Pit #1	1/19/98	PZ-8	6.66	561	357	107	5040	1.1	<1.1	<1.1	<0.6	31.4	<0.6	2942	9360	13070
980512	LD267	Bisti Flare Pit #1	7/6/98	PZ-8	6.60	454	311	100	5267	<0.2	<0.2	<0.2	<0.6	33.9	1.2	2780	9920	12890
960843	LD267	Bisti Flare Pit #1	10/7/97	PZ-9	7.2	1441	40	15	1000	32	<0.1	NR	NR	0.5	1.45	1167	3020	4750
970674	LD267	Bisti Flare Pit #1	7/16/97	PZ-9	7.2	1541	37	16	962	<0.6	<0.6	<0.6	<0.6	<0.6	4.7	1140	3080	4850
971034	LD267	Bisti Flare Pit #1	9/19/97	PZ-9	7.66	1520	31.4	14.1	972	<0.6	<0.6	<0.6	<0.1	<0.6	0.5	1100	2970	4820
980064	LD267	Bisti Flare Pit #1	1/19/98	PZ-9	7.15	1389	31.3	15.4	1066	0.7	<0.2	<0.2	<0.1	<0.2	<0.1	1197	3144	4860
980513	LD267	Bisti Flare Pit #1	7/6/98	PZ-9	7.03	1290	37.8	20.1	1411	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	1354	3740	5610
970470	LD267	Bisti Flare Pit #1	5/20/97	PZ-10	7.7	798	349	108	365	3680	12.8	<1.1	<0.6	<1.1	1	2040	6730	6940
970654	LD267	Bisti Flare Pit #1	7/15/97	PZ-10	7.2	865	435	113	454	4180	7.5	<1.1	<0.6	<1.1	0.9	1850	1300	8350
971027	LD267	Bisti Flare Pit #1	9/19/97	PZ-10	7.59	922	435	108	468	4150	6.54	<1.1	<0.6	<1.1	5.48	1840	7550	8290
980056	LD267	Bisti Flare Pit #1	1/19/98	PZ-10	7.19	978	426	116.0	481	3958	4.27	<0.2	<0.1	<0.2	5.75	1919	7390	7680
980505	LD267	Bisti Flare Pit #1	7/6/98	PZ-10	7.33	1125	333	97.5	493	3343	0.9	<0.1	<0.6	<0.1	8.2	1759	6640	7310
960844	LD267	Bisti Flare Pit #1	10/7/97	PZ-11	7.1	833	89	43	643	24.2	1.36	NR	NR	6.5	1.35	1835	4890	7890
970675	LD267	Bisti Flare Pit #1	7/16/97	PZ-11	7.1	913	105	51	2830	<1.1	<1.1	<1.1	<0.6	12	20.6	1990	5620	9100
971035	LD267	Bisti Flare Pit #1	9/19/97	PZ-11	7.57	836	71.3	41	2780	<1.1	<1.1	<1.1	<0.6	10	8.88	1980	5180	8580
980065	LD267	Bisti Flare Pit #1	1/19/98	PZ-11	7.11	886	68.1	39.6	2651	<1.1	<1.1	<1.1	<0.2	10.1	11.9	2001	5300	8360
980517	LD267	Bisti Flare Pit #1	7/6/98	PZ-11	7.04	873	64.2	41.1	2746	<0.2	<0.2	<0.2	<0.2	9.9	<0.6	1931	5260	8290
960845	LD267	Bisti Flare Pit #1	10/7/97	PZ-15	6.9	1424	131	47	3785	241	1.38	NR	NR	5.8	1.82	2975	7560	11310
970676	LD267	Bisti Flare Pit #1	7/16/97	PZ-15	7.2	1604	120	57	3960	51	<1.1	<1.1	<0.6	6.1	21.4	2970	8370	12600
971036	LD267	Bisti Flare Pit #1	9/19/97	PZ-15	7.81	1520	102	50.7	4040	19.5	<1.1	<1.1	<0.3	5.24	11.5	2960	7840	12000
980072	LD267	Bisti Flare Pit #1	1/19/98	PZ-15	7.12	1590	105	48.7	3812	32.1	<1.1	<1.1	<0.2	6.5	<0.2	2987	8000	11590
980520	LD267	Bisti Flare Pit #1	7/6/98	PZ-15	7.15	1591	107	51.5	4003	31.8	<0.2	<0.2	<0.2	9.3	<0.6	2898	7360	11610
970582	LD267	Bisti Flare Pit #1	6/18/97	PZ-16	8.1	554	17	3	50	450	52.7	<0.6	<0.2	<0.6	3.4	546	1560	2180
970677	LD267	Bisti Flare Pit #1	7/16/97	PZ-16	8.1	537	15	3	48	437	37.6	<0.6	<0.6	<0.6	4.2	485	1440	2180

TABLE 3

General Water Chemistry
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HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

Sample #	Meter/ Line #	Site Name	Sample Date	MW #	pH	HCO3	Ca	Mg	Cl	SO4	NO3-N	NO2-N	NH4	PO4	K	Na	TDS	Lab Cond
971037	LD267	Bisti Flare Pit #1	9/19/97	PZ-16	8.66	497	14.8	2.9	44.1	456	42.6	<0.1	<0.1	<0.1	2.41	521	1450	2180
980052	LD267	Bisti Flare Pit #1	1/19/98	PZ-16	7.94	569	12.4	2.22	41.3	440	52	<0.1	<0.1	<0.1	2.13	535	1532	2250
980501	LD267	Bisti Flare Pit #1	7/6/98	PZ-16	7.90	583	12.2	2.40	42.0	449	52.9	<0.6	<0.6	<0.6	3.1	542	1604	2220
970258	LD267	Bisti Flare Pit #1	4/3/97	PZ-17	8.1	2372	63	27	1436	106	1.1	<0.6	<0.3	4.8	0.8	1765	4690	8580
970678	LD267	Bisti Flare Pit #1	7/16/97	PZ-17	7.7	2319	108	30	1720	47	<1.1	<1.1	<0.6	<1.1	0.3	1830	5060	7870
971030	LD267	Bisti Flare Pit #1	9/19/97	PZ-17	7.93	2030	103	29.5	2110	26	<1.1	<1.1	<0.3	4.6	<0.3	1870	5290	8070
980066	LD267	Bisti Flare Pit #1	1/19/98	PZ-17	7.78	1752	85.7	38.1	2536	34	<1.1	<1.1	<0.2	6.9	<0.2	2174	5660	8650
980514	LD267	Bisti Flare Pit #1	7/6/98	PZ-17	6.96	1346	192	57.2	3576	37.6	<0.2	<0.2	<0.2	16.5	<0.6	2589	6960	10650
970255	LD267	Bisti Flare Pit #1	4/3/97	PZ-18	7.6	2649	33	20	457	99	0.8	<0.6	<0.3	0.8	0.3	1290	3310	5070
970679	LD267	Bisti Flare Pit #1	7/16/97	PZ-18	7.6	2710	29	20	454	20	<0.6	<0.6	<0.6	<0.6	<0.6	1300	3260	4970
971038	LD267	Bisti Flare Pit #1	9/19/97	PZ-18	8.24	2570	27.6	18.9	496	27.6	0.83	<0.1	<0.1	0.53	<0.1	1310	3030	4710
980067	LD267	Bisti Flare Pit #1	1/19/98	PZ-18	7.58	2355	25.2	17.4	520	16.4	<0.2	<0.2	<0.1	<0.2	<0.1	1142	3092	4540
980516	LD267	Bisti Flare Pit #1	7/6/98	PZ-18	7.50	2053	22.8	16.8	625	11.5	<0.2	<0.2	<0.2	<0.2	<0.1	1179	2936	4420
970256	LD267	Bisti Flare Pit #1	4/3/97	PZ-19	6.7	691	209	64	3694	3	<0.6	<0.6	<0.3	15	0.6	2137	6620	11140
970680	LD267	Bisti Flare Pit #1	7/16/97	PZ-19	6.8	719	219	72	3520	<1.1	<1.1	<1.1	<0.6	25.5	0.6	2200	6980	10600
971039	LD267	Bisti Flare Pit #1	9/19/97	PZ-19	7.14	665	230	69	3640	<0.6	<0.6	<0.6	<0.3	23.8	9.37	2220	6920	10100
980068	LD267	Bisti Flare Pit #1	1/19/98	PZ-19	6.62	625	225	71.6	3541	<0.6	<0.6	<0.6	<0.6	20	<0.6	2188	6890	9540
980518	LD267	Bisti Flare Pit #1	7/6/98	PZ-19	6.60	585	231	73.9	3674	<0.2	<0.2	<0.2	<0.6	20.2	0.2	2221	7050	9610
970257	LD267	Bisti Flare Pit #1	4/3/97	PZ-20	6.6	726	316	76	3301	2	<0.6	<0.6	<0.3	8	0.9	1794	6010	10241
970681	LD267	Bisti Flare Pit #1	7/16/97	PZ-20	6.8	761	343	77	2750	<1.1	<1.1	<1.1	<0.6	6.5	8.1	1540	5650	8460
971040	LD267	Bisti Flare Pit #1	9/19/97	PZ-20	7.15	811	329	67.1	2460	<0.6	<0.6	<0.6	<0.6	4.86	2.73	1440	5330	7510
980069	LD267	Bisti Flare Pit #1	1/19/98	PZ-20	6.62	852	340	74.3	2615	<0.6	<0.6	<0.6	<0.6	6.3	6.04	1502	5700	7580
980519	LD267	Bisti Flare Pit #1	7/6/98	PZ-20	6.52	815	413	94.2	3265	<0.2	<0.2	<0.2	<0.6	7.2	6.7	1836	6750	8540
970323	LD267	Bisti Flare Pit #1	4/21/97	PZ-21	7.9	493	427	95	559	3780	22.3	7.9	<0.1	<1.1	1.5	1690	6670	8340
970655	LD267	Bisti Flare Pit #1	7/15/97	PZ-21	7.4	574	493	125	792	4420	27.5	<1.1	<0.6	<1.1	0.7	2010	8370	9250
971026	LD267	Bisti Flare Pit #1	9/19/97	PZ-21	7.66	578	469	116	761	4270	25.3	<1.1	<0.6	<1.1	<0.6	1910	7970	8760
980058	LD267	Bisti Flare Pit #1	1/19/98	PZ-21	7.16	561	503	128	773	4332	21.2	<0.2	<0.1	<0.2	<0.6	2031	8080	8270
980507	LD267	Bisti Flare Pit #1	7/6/98	PZ-21	7.15	567	509	129	762	4674	15.9	<0.6	<0.6	<0.6	<0.6	2010	8390	8760
970338	LD267	Bisti Flare Pit #1	4/23/97	PZ-22	7.3	726	449	134	973	4040	<1.1	<1.1	<0.6	<1.1	<0.6	2190	8420	10500
970656	LD267	Bisti Flare Pit #1	7/15/97	PZ-22	7	733	464	144	1130	4570	<1.1	<1.1	<0.6	<1.1	0.6	2310	9220	10150
971029	LD267	Bisti Flare Pit #1	9/19/97	PZ-22	7.87	670	457	139	1110	4780	<1.1	<1.1	<0.6	<1.1	<0.6	2330	9230	10100
980059	LD267	Bisti Flare Pit #1	1/19/98	PZ-22	7.23	645	451	149	979	4410	<1.1	<1.1	<0.6	<1.1	<0.6	2233	8770	9350
980508	LD267	Bisti Flare Pit #1	7/6/98	PZ-22	6.94	722	421	130	1021	4396	2.4	<1.1	<0.6	<1.1	8.9	2159	8500	9250
970339	LD267	Bisti Flare Pit #1	4/23/97	PZ-23	8.6	49	12	2	29	167	1.2	<0.1	<0.1	<0.1	<0.6	110	378	590
970392	LD267	Bisti Flare Pit #1	5/5/97	PZ-23	7.8	435	351	93	760	4740	37.4	<1.1	<0.6	<1.1	<0.6	2370	8390	9080
970657	LD267	Bisti Flare Pit #1	7/15/97	PZ-23	7.6	426	323	95	736	4450	37.3	<1.1	<0.6	<1.1	<0.6	2210	8310	9360
971021	LD268	Bisti Flare Pit #1	9/19/97	PZ-23	7.95	408	283	80.1	698	4080	42.6	<0.6	<0.6	<0.6	<0.6	2070	7660	8090
980055	LD268	Bisti Flare Pit #1	1/19/98	PZ-23	7.51	388	283	86.7	677	3888	41	<0.2	<0.1	<0.2	<0.6	2073	7400	8150
980504	LD268	Bisti Flare Pit #1	7/6/98	PZ-23	7.45	394	251	76.3	677	3640	44.9	<0.6	<0.6	<0.6	<0.6	1965	7080	8120
970476	LD267	Bisti Flare Pit #1	5/20/97	PZ-24	7.8	722	381	85	555	4540	22.4	15.2	<1.1	<1.1	<1.1	2380	8590	8880
970658	LD267	Bisti Flare Pit #1	7/15/97	PZ-24	7.3	739	373	79	612	5070	21.5	17.6	<0.6	<1.1	<0.6	2570	9400	10400
971024	LD267	Bisti Flare Pit #1	9/19/97	PZ-24	7.71	736	370	75.3	609	5120	19.6	12.6	<0.6	<1.1	7.52	2510	9150	10200

TABLE 3

General Water Chemistry
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HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

Sample #	Meter/ Line #	Site Name	Sample Date	MW #	pH	HCO3	Ca	Mg	Cl	SO4	NO3-N	NO2-N	NH4	PO4	K	Na	TDS	Lab Cond
980060	LD267	Bisti Flare Pit #1	1/19/98	PZ-24	7.33	705	369	82.2	617	4900	13.3	17.5	<0.6	<0.2	9.41	2513	9060	9540
980509	LD267	Bisti Flare Pit #1	7/6/98	PZ-24	7.30	890	200	43.6	506	3172	0.4	<0.6	<0.6	<0.6	<0.6	1863	6210	7280
970473	LD267	Bisti Flare Pit #1	5/20/97	PZ-25	7.4	1500	400	104	894	3920	<1.1	<1.1	<1.1	<1.1	<1.1	2960	8770	9100
970659	LD267	Bisti Flare Pit #1	7/15/97	PZ-25	7.1	1571	379	88	1010	3840	<1.1	<1.1	<1.1	<1.1	0.4	2490	8770	10100
971025	LD267	Bisti Flare Pit #1	9/19/97	PZ-25	7.53	2170	289	68.5	969	2890	<1.1	<1.1	<0.6	<1.1	<0.6	2260	7540	9000
980061	LD267	Bisti Flare Pit #1	1/19/98	PZ-25	7.10	2474	250	70.8	1049	2369	<1.1	<1.1	<0.6	<1.1	<0.6	2286	7290	8520
980510	LD267	Bisti Flare Pit #1	7/6/98	PZ-25	7.22	2977	155	50.0	1024	1294	<1.6	<1.6	<0.6	<1.6	<0.6	2133	5800	7920
970322	LD267	Bisti Flare Pit #1	4/21/97	PZ-26	8	477	461	100	920	5190	55.8	<1.1	<0.6	<1.1	1.1	2450	9250	11700
970660	LD267	Bisti Flare Pit #1	7/15/97	PZ-26	7.5	375	498	109	1230	4690	127	<1.1	<0.6	<1.1	2.1	2620	10100	11200
971023	LD267	Bisti Flare Pit #1	9/19/97	PZ-26	7.72	374	495	105	1250	4770	137	<1.1	<0.6	<1.1	7.8	2580	10000	10900
980053	LD267	Bisti Flare Pit #1	1/19/98	PZ-26	7.41	308	541	122	1261	4804	160	<1.1	<0.1	<1.1	<0.6	2706	10370	10580
980502	LD267	Bisti Flare Pit #1	7/6/98	PZ-26	7.33	271	555	126	1450	4629	228	<0.6	<0.6	<0.6	13.9	2770	10760	11330
970474	LD267	Bisti Flare Pit #1	5/20/97	PZ-29	7.5	1600	81	54	1880	188	<1.1	<1.1	<0.6	<1.1	1	1950	4850	7000
970682	LD267	Bisti Flare Pit #1	7/16/97	PZ-29	7.3	1841	111	40	1860	34	<1.1	<1.1	<0.6	<1.1	1	1720	4782	7570
971041	LD267	Bisti Flare Pit #1	9/19/97	PZ-29	7.89	1630	95.1	47	2370	9.8	<0.6	<0.6	<0.3	8.03	7.03	1970	5310	8310
980070	LD267	Bisti Flare Pit #1	1/19/98	PZ-29	7.16	1466	86.6	45.6	2374	<0.6	<0.6	<0.6	<0.2	18.2	<0.2	2020	5540	8040
980515	LD267	Bisti Flare Pit #1	7/6/98	PZ-29	7.08	1329	92.1	48.2	2644	<0.2	<0.2	<0.2	<0.2	17.4	<0.6	2014	5470	8480
970469	LD267	Bisti Flare Pit #1	5/20/97	PZ-30	7.3	879	494	121	596	4040	9.3	<1.1	<0.6	<1.1	<0.6	2310	7860	7720
970661	LD267	Bisti Flare Pit #1	7/15/97	PZ-30	7.1	900	468	111	676	4060	<1.1	<1.1	<0.6	<1.1	0.4	1970	8020	8880
971028	LD267	Bisti Flare Pit #1	9/19/97	PZ-30	7.63	889	447	99.5	551	4090	<1.1	<1.1	<0.6	<1.1	<0.6	1830	7480	8270
980057	LD267	Bisti Flare Pit #1	1/19/98	PZ-30	6.99	888	455	109.0	522	4003	<1.1	<1.1	<0.1	<1.1	<0.6	1904	7480	7700
980506	LD267	Bisti Flare Pit #1	7/6/98	PZ-30	688	925	442	108.0	665	4038	<1.1	<1.1	<0.6	<1.1	<0.6	1894	7660	8120
970475	LD267	Bisti Flare Pit #1	5/20/97	PZ-31	7.9	743	233	57	386	3200	36.1	<1.1	<0.6	<1.1	<0.6	2090	6160	6680
970662	LD267	Bisti Flare Pit #1	7/15/97	PZ-31	7.7	755	227	49	377	3010	33.2	<1.1	<0.6	<1.1	<0.6	1690	6050	7240
971022	LD267	Bisti Flare Pit #1	9/19/97	PZ-31	8.01	763	221	46.9	372	3040	33.4	<0.6	<0.6	<0.6	<0.6	1670	5870	6960
980054	LD267	Bisti Flare Pit #1	1/19/98	PZ-31	7.3	773	237	55	371	3077	32.4	<0.2	<0.1	<0.2	<0.6	1734	5950	6710
980503	LD267	Bisti Flare Pit #1	7/6/98	PZ-31	7.54	603	134	33.4	344	2479	33.6	<0.6	<0.6	<0.6	<0.6	1478	5000	6080

TABLE 4

Bisti #1 Flare Pit
Summary of Ground-Water Elevation and Monitoring Data

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-04	06/15/97	1118	6018.06	7.16	7.16	0.00	6010.90	NM	NM	NM	NM	NM
PZ-04	07/15/97	NM	6018.06	7.91	7.91	0.00	6010.15	NM	8200	NM	NM	NM
PZ-04	08/18/97	NM	6018.06	7.23	7.23	0.00	6010.83	NM	NM	0.08	NM	66.0
PZ-04	09/19/97	1734	6018.06	7.15	7.15	0.00	6010.91	SHEEN	6600	0.10	NM	66.0
PZ-04	10/16/97	1421	6018.06	7.58	7.58	0.00	6010.48	SHEEN	6000	0.11	NM	65.8
PZ-04	11/17/97	1450	6018.06	8.31	8.31	0.00	6009.75	NM	6800	0.16	NM	64.9
PZ-04	12/16/97	1515	6018.06	8.60	8.60	0.00	6009.46	SHEEN	6800	0.19	NM	63.9
PZ-04	01/19/98	1715	6018.06	8.65	8.65	0.00	6009.41	SHEEN	7500	0.16	NM	60.1
PZ-04	03/03/98	1715	6018.06	8.89	8.89	0.00	6009.17	SHEEN	7900	0.13	NM	57.7
PZ-04	04/01/98	1456	6018.06	8.91	8.91	0.00	6009.15	SHEEN	8600	0.19	NM	57.4
PZ-04	05/07/98	1532	6018.06	8.92	8.92	0.00	6009.14	SHEEN	8600	0.18	6.8	57.9
PZ-04	06/02/98	NM	6018.06	8.97	8.97	NM	6009.09	NM	8400	0.16	6.5	59.9
PZ-04	07/06/98	NM	6018.06	8.97	8.97	NM	6009.09	SHEEN	7700	0.19	6.5	62.2
PZ-O4	10/09/98	NM	6018.06	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-04	03/23/99	NM	6018.06	9.38	9.38	NM	6008.68	SHEEN	NM	NM	NM	NM
PZ-05	12/20/96	NM	6023.65	15.58	15.58	0.00	6008.07	NM	NM	NM	NM	NM
PZ-05	04/23/97	NM	6023.65	15.57	15.57	0.00	6008.08	NM	NM	NM	NM	NM
PZ-05	05/03/97	NM	6023.65	15.65	15.65	0.00	6008.00	NM	NM	NM	NM	NM
PZ-05	06/15/97	NM	6023.65	15.34	15.34	0.00	6008.31	NM	NM	NM	NM	NM
PZ-05	07/15/97	1122	6023.65	15.32	15.32	0.00	6008.33	NM	10000+	NM	NM	NM
PZ-05	08/18/97	NM	6023.65	15.15	15.15	0.00	6008.50	NM	NM	0.10	NM	59.9
PZ-05	09/19/97	1744	6023.65	14.97	14.97	0.00	6008.68	NM	10000+	0.14	NM	61.9
PZ-05	10/16/97	1430	6023.65	14.97	14.97	0.00	6008.68	NM	10000+	0.10	NM	62.2
PZ-05	11/17/97	1350	6023.65	15.11	15.11	0.00	6008.54	SHEEN	10000+	0.20	NM	62.1
PZ-05	12/16/97	1417	6023.65	15.20	15.20	0.00	6008.45	NM	10000+	0.22	NM	61.0
PZ-05	01/19/98	1610	6023.65	15.18	15.18	0.00	6008.47	SHEEN	10000+	0.21	NM	58.6
PZ-05	03/03/98	1600	6023.65	15.21	15.21	0.00	6008.44	SHEEN	10000+	0.14	NM	56.1
PZ-05	04/01/98	1410	6023.65	15.18	15.18	0.00	6008.47	NM	10000+	0.27	NM	55.0
PZ-05	05/07/98	1440	6023.65	15.17	15.17	0.00	6008.48	SHEEN	10000+	0.29	6.6	55.2
PZ-05	06/02/98	1515	6023.65	15.30	15.30	0.00	6008.35	SHEEN	9200	0.38	6.8	56.3
PZ-05	07/06/98	1222	6023.65	15.42	15.42	NM	6008.23	SHEEN	8400	0.16	6.7	57.6
PZ-05	10/09/98	NM	6023.65	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-05	03/23/99	NM	6023.65	15.71	15.71	NM	6007.94	SHEEN	NM	NM	NM	NM

TABLE 4

Bisti #1 Flare Pit
Summary of Ground-Water Elevation and Monitoring Data

HCI HYDROLOGIC CONSULTANTS, INC. COLORADO

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-08	12/20/96	NM	6022	14.10	14.10	0.00	6007.90	NM	NM	NM	NM	NM
PZ-08	04/23/97	NM	6022	13.93	13.93	0.00	6008.07	NM	NM	NM	NM	NM
PZ-08	05/03/97	11:16	6022	14.15	14.15	0.00	6007.85	NM	NM	NM	NM	NM
PZ-08	06/15/97	NM	6022	13.97	13.97	0.00	6008.03	NM	NM	NM	NM	NM
PZ-08	07/15/97	1124	6022	13.86	13.86	0.00	6008.14	NM	10000+	NM	NM	NM
PZ-08	08/18/97	NM	6022	13.66	13.66	0.00	6008.34	NM	NM	0.13	NM	59.5
PZ-08	09/19/97	1751	6022	13.47	13.47	0.00	6008.53	SHEEN	10000+	0.16	NM	61.2
PZ-08	10/16/97	1438	6022	13.54	13.54	0.00	6008.46	NM	10000+	0.09	NM	62.1
PZ-08	11/17/97	1400	6022	13.53	13.53	0.00	6008.47	NM	10000+	0.21	NM	61.3
PZ-08	12/16/97	1422	6022	13.57	13.57	0.00	6008.43	NM	10000+	0.19	NM	59.9
PZ-08	01/19/98	1615	6022	13.39	13.39	0.00	6008.61	SHEEN	10000+	0.16	NM	56.8
PZ-08	03/03/98	1604	6022	13.38	13.38	0.00	6008.62	NM	10000+	0.13	NM	54.5
PZ-08	04/01/98	1415	6022	13.37	13.37	0.00	6008.63	SHEEN	10000+	0.26	NM	53.6
PZ-08	05/07/98	1447	6022	13.38	13.38	0.00	6008.62	SHEEN	10000+	0.24	6.3	54.0
PZ-08	06/02/98	1518	6022	13.44	13.44	NM	6008.56	SHEEN	10000+	0.37	6.5	55.2
PZ-08	07/06/98	1227	6022	13.50	13.50	NM	6008.50	SHEEN	10000+	0.17	6.5	56.7
PZ-08	10/09/98	NM	6022	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-08	03/23/99	NM	6022	13.85	13.85	NM	6008.15	SHEEN	NM	NM	NM	NM
PZ-08	10/19/99	NM	6022	13.99	13.99	NM	6008.01	SHEEN	NM	NM	NM	NM
PZ-09	12/20/96	NM	6021.51	13.67	13.67	0.00	6007.84	NM	NM	NM	NM	NM
PZ-09	04/23/97	NM	6021.51	13.74	13.74	0.00	6007.77	NM	NM	NM	NM	NM
PZ-09	05/03/97	11:13	6021.51	13.88	13.88	0.00	6007.63	NM	NM	NM	NM	NM
PZ-09	06/15/97	NM	6021.51	13.66	13.66	0.00	6007.85	NM	NM	NM	NM	NM
PZ-09	07/15/97	1126	6021.51	13.61	13.61	0.00	6007.90	NM	4800	NM	NM	NM
PZ-09	08/18/97	NM	6021.51	13.43	13.43	0.00	6008.08	NM	NM	0.10	NM	61.9
PZ-09	09/19/97	1802	6021.51	13.29	13.29	0.00	6008.22	NM	6000	0.12	NM	63.7
PZ-09	10/16/97	1445	6021.51	13.38	13.38	0.00	6008.13	NM	5600	0.11	NM	63.5
PZ-09	11/17/97	1405	6021.51	13.34	13.34	0.00	6008.17	NM	5000	0.20	NM	61.5
PZ-09	12/16/97	1427	6021.51	13.37	13.37	0.00	6008.14	NM	5400	0.20	NM	59.4
PZ-09	01/19/98	1625	6021.51	13.23	13.23	0.00	6008.28	SHEEN	5600	0.17	NM	55.6
PZ-09	03/03/98	1610	6021.51	13.25	13.25	0.00	6008.26	NM	5800	0.15	NM	53.2
PZ-09	04/01/98	1420	6021.51	13.27	13.27	0.00	6008.24	SHEEN	6000	0.24	NM	52.7
PZ-09	05/07/98	1453	6021.51	13.37	13.37	0.00	6008.14	SHEEN	6200	0.24	6.6	54.0
PZ-09	06/02/98	1521	6021.51	13.45	13.45	NM	6008.06	SHEEN	5400	0.19	6.8	56.1
PZ-09	07/06/98	1232	6021.51	13.50	13.50	NM	6008.01	SHEEN	5600	0.14	6.8	58.3
PZ-09	10/09/98	NM	6021.51	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-09	03/23/99	NM	6021.51	13.72	13.72	NM	6007.79	SHEEN	NM	NM	NM	NM
PZ-09	10/19/99	NM	6021.51	13.81	13.81	NM	6007.70	SHEEN	NM	NM	NM	NM

TABLE 4

Bisti #1 Flare Pit
Summary of Ground-Water Elevation and Monitoring Data

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-10	12/20/96	NM	NM	20.54	20.54	0.00	NM	NM	NM	NM	NM	NM
PZ-10	04/23/97	NM	NM	DRY	DRY	NM	DRY	NM	NM	NM	NM	NM
PZ-10	05/03/97	NM	NM	DRY	DRY	NM	DRY	NM	NM	NM	NM	NM
PZ-10	06/15/97	NM	6025.40	18.19	18.19	0.00	6007.21	NM	NM	NM	NM	NM
PZ-10	07/15/97	1049	6025.40	18.20	18.20	0.00	6007.20	NM	8500	NM	NM	NM
PZ-10	08/18/97	NM	6025.40	18.02	18.02	0.00	6007.38	NM	8100	1.21	NM	57.9
PZ-10	09/19/97	1657	6025.40	17.90	17.90	0.00	6007.50	NM	9400	0.34	NM	59.2
PZ-10	10/16/97	1331	6025.40	18.50	18.50	0.00	6006.90	NM	8800	0.37	NM	59.9
PZ-10	11/17/97	1245	6025.40	18.05	18.05	0.00	6007.35	NM	8000	0.48	NM	59.7
PZ-10	12/16/97	1340	6025.40	18.07	18.07	0.00	6007.33	NM	9500	0.34	NM	59.4
PZ-10	01/19/98	1520	6025.40	17.97	17.97	0.00	6007.43	NM	9700	3.48	NM	57.6
PZ-10	03/03/98	1505	6025.40	17.98	17.98	0.00	6007.42	NM	9400	NM	NM	55.4
PZ-10	04/01/98	1330	6025.40	18.01	18.01	0.00	6007.39	NM	9000	4.51	NM	54.5
PZ-10	05/07/98	1402	6025.40	18.16	18.16	0.00	6007.24	NM	8500	4.60	6.9	54.3
PZ-10	06/02/98	1445	6025.40	18.21	18.21	NM	6007.19	NM	7400	4.29	NM	54.7
PZ-10	07/06/98	1125	6025.40	18.30	18.30	NM	6007.10	NM	7200	2.22	7.2	55.6
PZ-10	10/09/98	NM	6025.40	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-10	03/23/99	NM	6025.40	18.45	18.45	NM	6006.95	NM	NM	NM	NM	NM
PZ-11	12/20/96	NM	6023.94	16.61	16.61	0.00	6007.33	NM	NM	NM	NM	NM
PZ-11	04/23/97	NM	6023.94	16.73	16.73	0.00	6007.21	NM	NM	NM	NM	NM
PZ-11	05/03/97	11:28	6023.94	16.84	16.84	0.00	6007.10	NM	NM	NM	NM	NM
PZ-11	06/15/97	NM	6023.94	16.74	16.74	0.00	6007.20	NM	NM	NM	NM	NM
PZ-11	07/15/97	1106	6023.94	16.69	16.69	0.00	6007.25	NM	8300	NM	NM	NM
PZ-11	08/18/97	NM	6023.94	16.51	16.51	0.00	6007.43	NM	NM	0.10	NM	57.6
PZ-11	09/19/97	1810	6023.94	16.39	16.39	0.00	6007.55	NM	10000+	0.12	NM	59.4
PZ-11	10/16/97	1455	6023.94	16.43	16.43	0.00	6007.51	NM	10000	0.12	NM	59.7
PZ-11	11/17/97	1415	6023.94	16.48	16.48	0.00	6007.46	NM	9000	0.21	NM	59.4
PZ-11	12/16/97	1435	6023.94	16.58	16.58	0.00	6007.36	NM	9600	0.21	NM	59.0
PZ-11	01/19/98	1650	6023.94	16.53	16.53	0.00	6007.41	SHEEN	9800	0.17	NM	56.8
PZ-11	03/03/98	1615	6023.94	16.54	16.54	0.00	6007.40	NM	9500	0.14	NM	55.0
PZ-11	04/01/98	1425	6023.94	16.51	16.51	0.00	6007.43	SHEEN	9000	0.20	NM	54.0
PZ-11	05/07/98	1500	6023.94	16.57	16.57	0.00	6007.37	SHEEN	9200	0.23	6.6	54.1
PZ-11	06/02/98	1525	6023.94	16.65	16.65	NM	6007.29	SHEEN	7800	0.15	6.8	54.7
PZ-11	07/06/98	1255	6023.94	16.75	16.75	NM	6007.19	SHEEN	8000	0.15	6.9	55.4
PZ-11	10/09/98	NM	6023.94	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-11	03/23/99	NM	6023.94	17.03	17.03	NM	6006.91	SHEEN	NM	NM	NM	NM

TABLE 4

Bisti #1 Flare Pit
Summary of Ground-Water Elevation and Monitoring Data

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-15	12/20/96	NM	6024.87	17.33	17.33	0.00	6007.54	NM	NM	NM	NM	NM
PZ-15	04/23/97	NM	6024.87	17.41	17.41	0.00	6007.46	NM	NM	NM	NM	NM
PZ-15	05/03/97	11:40	6024.87	17.54	17.54	0.00	6007.33	NM	NM	NM	NM	NM
PZ-15	06/15/97	NM	6024.87	17.27	17.27	0.00	6007.60	NM	NM	NM	NM	NM
PZ-15	07/15/97	1058	6024.87	17.14	17.14	0.00	6007.73	NM	10000+	NM	NM	NM
PZ-15	08/18/97	NM	6024.87	16.82	16.82	0.00	6008.05	NM	8000	0.12	NM	56.7
PZ-15	09/19/97	1817	6024.87	16.62	16.63	0.01	6008.24	TRACE	10000+	0.13	NM	58.1
PZ-15	10/16/97	1504	6024.87	16.70	16.71	0.01	6008.16	TRACE	10000+	0.12	NM	58.8
PZ-15	11/17/97	1454	6024.87	16.80	16.81	0.01	6008.06	TRACE	10000+	0.23	NM	58.8
PZ-15	12/16/97	1520	6024.87	16.92	16.92	0.00	6007.95	TRACE	10000+	0.23	NM	58.6
PZ-15	01/19/98	1720	6024.87	16.89	16.89	0.00	6007.98	SHEEN	10000+	0.16	NM	57.2
PZ-15	03/03/98	1717	6024.87	16.89	16.89	0.00	6007.98	TRACE	10000+	0.15	NM	55.2
PZ-15	04/01/98	1502	6024.87	16.82	16.82	0.00	6008.05	SHEEN	10000+	0.21	NM	54.1
PZ-15	05/07/98	1537	6024.87	16.83	16.83	0.00	6008.04	SHEEN	10000+	0.22	NM	53.6
PZ-15	06/02/98	1548	6024.87	16.95	16.95	NM	6007.92	SHEEN	10000+	0.18	6.7	54.3
PZ-15	07/0698	1310	6024.87	17.10	17.10	NM	6007.77	SHEEN	10000+	0.19	6.6	54.7
PZ-15	10/09/98	NM	6024.87	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-15	03/23/99	NM	6024.87	17.52	17.52	NM	6007.35	SHEEN	NM	NM	NM	NM
PZ-16	06/15/97	NM	6024.59	14.50	14.50	0.00	6010.09	NM	NM	NM	NM	NM
PZ-16	07/15/97	1330	6024.59	14.07	14.07	0.00	6010.52	NM	2700	NM	NM	NM
PZ-16	08/18/97	NM	6024.59	14.24	14.24	0.00	6010.35	NM	2400	0.22	NM	55.2
PZ-16	09/19/97	1826	6024.59	14.22	14.22	0.00	6010.37	NM	2200	0.42	NM	57.0
PZ-16	10/16/97	1257	6024.59	14.60	14.60	0.00	6009.99	NM	2200	0.30	NM	57.4
PZ-16	11/17/97	1215	6024.59	14.84	14.84	0.00	6009.75	NM	2200	0.49	NM	57.9
PZ-16	12/16/97	1315	6024.59	15.18	15.18	0.00	6009.41	NM	2800	0.68	NM	57.4
PZ-16	01/19/98	1455	6024.59	15.43	15.43	0.00	6009.16	NM	2800	0.56	NM	55.6
PZ-16	03/03/98	1435	6024.59	15.80	15.80	0.00	6008.79	NM	2800	0.94	NM	53.6
PZ-16	04/01/98	1302	6024.59	15.90	15.90	0.00	6008.69	NM	2200	0.79	NM	52.7
PZ-16	05/07/98	1335	6024.59	15.99	15.99	0.00	6008.60	NM	2500	0.66	7.4	52.5
PZ-16	06/02/98	1312	6024.59	16.01	16.01	0.00	6008.58	NM	2200	3.22	7.4	52.2
PZ-16	07/06/98	1055	6024.59	15.98	15.98	0.00	6008.61	NM	2100	0.37	7.6	53.4
PZ-16	10/09/98	NM	6024.59	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-16	03/23/99	NM	6024.59	15.46	15.46	NM	6009.13	NM	NM	NM	NM	NM
PZ-16	10/19/99	NM	6024.59	14.85	14.85	NM	6009.74	NM	NM	NM	NM	NM

TABLE 4

Bisti #1 Flare Pit
Summary of Ground-Water Elevation and Monitoring Data

HCI HYDROLOGIC CONSULTANTS, INC. COLORADO

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-17	04/23/97	NM	6023.72	16.67	16.67	0.00	6007.05	NM	NM	NM	NM	NM
PZ-17	05/03/97	11:38	6023.72	16.57	16.57	0.00	6007.15	NM	NM	NM	NM	NM
PZ-17	06/15/97	NM	6023.72	16.47	16.47	0.00	6007.25	NM	NM	NM	NM	NM
PZ-17	07/15/97	1100	6023.72	16.37	16.37	0.00	6007.35	NM	7600	NM	NM	NM
PZ-17	08/18/97	NM	6023.72	16.18	16.18	0.00	6007.54	NM	NM	0.10	NM	58.1
PZ-17	09/19/97	1725	6023.72	16.08	16.08	0.00	6007.64	NM	9800	0.34	NM	58.8
PZ-17	10/16/97	1512	6023.72	16.10	16.10	0.00	6007.62	NM	9400	0.11	NM	59.5
PZ-17	11/17/97	1420	6023.72	16.15	16.15	0.00	6007.57	NM	10000	0.16	NM	58.8
PZ-17	12/16/97	1440	6023.72	16.23	16.23	0.00	6007.49	NM	9600	0.25	NM	57.7
PZ-17	01/19/98	1635	6023.72	16.32	16.32	0.00	6007.40	NM	10000+	0.17	NM	55.0
PZ-17	03/03/98	1620	6023.72	16.30	16.30	0.00	6007.42	NM	10000+	0.15	NM	52.9
PZ-17	04/01/98	1430	6023.72	16.25	16.25	0.00	6007.47	NM	10000+	0.20	NM	52.0
PZ-17	05/07/98	1505	6023.72	16.24	16.24	0.00	6007.48	NM	10000+	0.24	6.8	52.3
PZ-17	06/02/98	1530	6023.72	16.34	16.34	NM	6007.38	NM	10000+	0.18	6.9	54.0
PZ-17	07/06/98	1237	6023.72	16.43	16.43	NM	6007.29	NM	10000+	0.14	6.8	54.5
PZ-17	10/09/98	NM	6023.72	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-17	03/23/99	NM	6023.72	16.74	16.74	NM	6006.98	NM	NM	NM	NM	NM
PZ-18	04/23/97	NM	6024.33	17.31	17.31	0.00	6007.02	NM	NM	NM	NM	NM
PZ-18	05/03/97	11:35	6024.33	17.36	17.36	0.00	6006.97	NM	NM	NM	NM	NM
PZ-18	06/15/97	NM	6024.33	17.29	17.29	0.00	6007.04	NM	NM	NM	NM	NM
PZ-18	07/15/97	1104	6024.33	17.28	17.28	0.00	6007.05	NM	4700	NM	NM	NM
PZ-18	08/18/97	NM	6024.33	17.14	17.14	0.00	6007.19	NM	NM	0.12	NM	56.5
PZ-18	09/19/97	1832	6024.33	17.07	17.07	0.00	6007.26	SHEEN	5400	0.34	NM	57.7
PZ-18	10/16/97	1520	6024.33	17.13	17.13	0.00	6007.20	NM	5400	0.11	NM	58.5
PZ-18	11/17/97	1425	6024.33	17.15	17.15	0.00	6007.18	NM	5300	0.21	NM	58.5
PZ-18	12/16/97	1446	6024.33	17.22	17.22	0.00	6007.11	NM	5300	0.25	NM	58.1
PZ-18	01/19/98	1645	6024.33	17.19	17.19	0.00	6007.14	SHEEN	5300	0.15	NM	55.9
PZ-18	03/03/98	1625	6024.33	17.19	17.19	0.00	6007.14	SHEEN	5000	0.15	NM	54.3
PZ-18	04/01/98	1437	6024.33	17.17	17.17	0.00	6007.16	SHEEN	4800	0.22	NM	53.4
PZ-18	05/07/98	1515	6024.33	17.27	17.27	0.00	6007.06	SHEEN	4800	0.20	7.5	53.2
PZ-18	06/02/98	1540	6024.33	17.32	17.32	NM	6007.01	SHEEN	4300	0.2	7.2	54
PZ-18	07/06/98	1250	6024.33	17.40	17.40	NM	6006.93	SHEEN	4400	0.16	7.2	54.1
PZ-18	10/09/98	NM	6024.33	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-18	03/23/99	NM	6024.33	17.65	17.65	NM	6006.68	SHEEN	NM	NM	NM	NM

TABLE 4

Bisti #1 Flare Pit
Summary of Ground-Water Elevation and Monitoring Data

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-19	04/23/97	NM	6024.19	16.85	16.85	0.00	6007.34	NM	NM	NM	NM	NM
PZ-19	05/03/97	11:25	6024.19	16.96	16.96	0.00	6007.23	NM	NM	NM	NM	NM
PZ-19	06/15/97	NM	6024.19	16.80	16.80	0.00	6007.39	NM	NM	NM	NM	NM
PZ-19	07/15/97	1114	6024.19	16.74	16.74	0.00	6007.45	NM	9800	NM	NM	NM
PZ-19	08/18/97	NM	6024.19	16.56	16.56	0.00	6007.63	NM	NM	0.11	NM	58.3
PZ-19	09/19/97	1840	6024.19	16.44	16.44	0.00	6007.75	SHEEN	10000	0.32	NM	59.7
PZ-19	10/16/97	1530	6024.19	16.44	16.44	0.00	6007.75	NM	10000+	0.13	NM	60.6
PZ-19	11/17/97	1436	6024.19	16.48	16.48	0.00	6007.71	NM	10000+	0.18	NM	60.3
PZ-19	12/16/97	1453	6024.19	16.58	16.58	0.00	6007.61	NM	10000+	0.19	NM	59.7
PZ-19	01/19/98	1652	6024.19	16.58	16.58	0.00	6007.61	SHEEN	10000+	0.14	NM	57.9
PZ-19	03/03/98	1632	6024.19	16.61	16.61	0.00	6007.58	NM	10000+	0.14	NM	55.8
PZ-19	04/01/98	1442	6024.19	16.55	16.55	0.00	6007.64	SHEEN	10000+	0.22	NM	54.9
PZ-19	05/07/98	1522	6024.19	16.58	16.58	0.00	6007.61	SHEEN	10000+	0.20	6.8	54.7
PZ-19	06/02/98	1542	6024.19	16.67	16.67	NM	6007.52	SHEEN	9200	0.18	6.5	55.4
PZ-19	07/06/98	1300	6024.19	16.78	16.78	NM	6007.41	SHEEN	9400	0.14	6.6	56.1
PZ-19	10/09/98	NM	6024.19	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-19	03/23/99	NM	6024.19	17.09	17.09	NM	6007.1	SHEEN	NM	NM	NM	NM
PZ-20	04/23/97	NM	6023.95	16.10	16.10	0.00	6007.85	NM	NM	NM	NM	NM
PZ-20	05/03/97	11:23	6023.95	16.13	16.13	0.00	6007.82	NM	NM	NM	NM	NM
PZ-20	06/15/97	NM	6023.95	15.84	15.84	0.00	6008.11	NM	NM	NM	NM	NM
PZ-20	07/15/97	1112	6023.95	15.79	15.79	0.00	6008.16	NM	8200	NM	NM	NM
PZ-20	08/18/97	NM	6023.95	15.60	15.60	0.00	6008.35	NM	NM	0.10	NM	59.0
PZ-20	09/19/97	1847	6023.95	15.49	15.49	0.00	6008.46	SHEEN	9000	0.12	NM	60.4
PZ-20	10/16/97	1535	6023.95	15.50	15.50	0.00	6008.45	NM	8200	0.12	NM	61.3
PZ-20	11/17/97	1440	6023.95	15.67	15.67	0.00	6008.28	NM	9200	0.20	NM	61.2
PZ-20	12/16/97	1500	6023.95	15.82	15.82	0.00	6008.13	NM	9100	0.19	NM	60.3
PZ-20	01/19/98	1700	6023.95	15.85	15.85	0.00	6008.10	SHEEN	9800	0.11	NM	57.7
PZ-20	03/03/98	1638	6023.95	15.86	15.86	0.00	6008.09	NM	9900	0.14	NM	55.4
PZ-20	04/01/98	1448	6023.95	15.78	15.78	0.00	6008.17	SHEEN	10000+	0.20	NM	54.5
PZ-20	05/07/98	1527	6023.95	15.78	15.78	0.00	6008.17	SHEEN	10000+	0.21	6.7	54.5
PZ-20	06/02/98	1545	6023.95	15.93	15.93	0.00	6008.02	SHEEN	9200	0.43	6.5	55.4
PZ-20	07/06/98	1305	6023.95	16.05	16.05	NM	6007.9	SHEEN	9200	0.16	6.4	56.3
PZ-20	10/09/98	NM	6023.95	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-20	03/23/99	NM	6023.95	16.41	16.41	NM	6007.54	SHEEN	NM	NM	NM	NM

TABLE 4

Bisti #1 Flare Pit
Summary of Ground-Water Elevation and Monitoring Data

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-21	04/23/97	NM	6028.60	21.45	21.45	0.00	6007.15	NM	NM	NM	NM	NM
PZ-21	05/03/97	10:08	6028.60	21.76	21.76	0.00	6006.84	NM	NM	NM	NM	NM
PZ-21	06/15/97	NM	6028.60	21.55	21.55	0.00	6007.05	NM	NM	NM	NM	NM
PZ-21	07/15/97	1043	6028.60	21.68	21.68	0.00	6006.92	NM	9200	NM	NM	NM
PZ-21	08/18/97	NM	6028.60	21.55	21.55	0.00	6007.05	NM	8300	0.12	NM	55.2
PZ-21	09/19/97	1652	6028.60	21.44	21.44	0.00	6007.16	NM	9800	0.30	NM	56.5
PZ-21	10/16/97	1337	6028.60	21.59	21.59	0.00	6007.01	NM	9000	0.18	NM	57.0
PZ-21	11/17/97	1250	6028.60	21.58	21.58	0.00	6007.02	NM	8100	0.28	NM	57.2
PZ-21	12/16/97	1352	6028.60	21.60	21.60	0.00	6007.00	NM	10000	0.26	NM	57.4
PZ-21	01/19/98	1553	6028.60	21.40	21.40	0.00	6007.20	NM	10000+	0.22	NM	56.3
PZ-21	03/03/98	1515	6028.60	21.50	21.50	0.00	6007.10	NM	10000+	1.56	NM	54.9
PZ-21	04/01/98	1342	6028.60	21.57	21.57	0.00	6007.03	NM	8200	2.70	NM	54.0
PZ-21	05/07/98	1415	6028.60	21.71	21.71	0.00	6006.89	NM	10000+	2.60	7.2	53.6
PZ-21	06/02/98	1455	6028.60	21.72	21.72	0.00	6006.88	NM	8000	2.62	7.1	53.8
PZ-21	07/06/98	1135	6028.60	21.82	21.82	0.00	6006.78	NM	7000	0.28	6.9	54.0
PZ-21	10/09/98	NM	6028.60	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-21	03/23/99	NM	6028.60	21.89	21.89	0.00	6006.71	NM	NM	NM	NM	NM
PZ-21	10/19/99	NM	6028.60	22.09	22.09	0.00	6006.51	NM	NM	NM	NM	NM
PZ-22	05/03/97	10:00	6027.13	20.06	20.06	0.00	6007.07	NM	NM	NM	NM	NM
PZ-22	06/15/97	NM	6027.13	19.78	19.78	0.00	6007.35	NM	NM	NM	NM	NM
PZ-22	07/15/97	1320	6027.13	19.78	19.78	0.00	6007.35	NM	10000	NM	NM	NM
PZ-22	08/18/97	NM	6027.13	19.72	19.72	0.00	6007.41	NM	9300	0.16	NM	57.2
PZ-22	09/19/97	1713	6027.13	19.57	19.57	0.00	6007.56	NM	10000+	0.52	NM	58.6
PZ-22	10/16/97	1355	6027.13	19.74	19.74	0.00	6007.39	NM	10000+	1.75	NM	59.2
PZ-22	11/17/97	1301	6027.13	19.71	19.71	0.00	6007.42	NM	9400	1.50	NM	59.4
PZ-22	12/16/97	1358	6027.13	19.73	19.73	0.00	6007.40	NM	10000+	0.71	NM	59.0
PZ-22	01/19/98	1540	6027.13	19.48	19.48	0.00	6007.65	NM	10000+	0.32	NM	57.6
PZ-22	03/03/98	1544	6027.13	19.58	19.58	0.00	6007.55	NM	10000+	0.76	NM	55.6
PZ-22	04/01/98	1348	6027.13	19.68	19.68	0.00	6007.45	NM	10000+	0.49	NM	54.7
PZ-22	05/07/98	1420	6027.13	19.83	19.83	0.00	6007.30	NM	10000+	0.37	6.3	54.7
PZ-22	06/02/98	1458	6027.13	19.84	19.84	0.00	6007.29	NM	8400	0.38	NM	54.7
PZ-22	07/06/98	1140	6027.13	19.97	19.97	0.00	6007.16	NM	8200	0.19	7.1	55.4
PZ-22	10/09/98	NM	6027.13	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-22	03/23/99	NM	6027.13	19.98	19.98	0.00	6007.15	NM	NM	NM	NM	NM
PZ-22	10/19/99	NM	6027.13	20.18	20.18	0.00	6006.95	NM	NM	NM	NM	NM

TABLE 4

Bisti #1 Flare Pit
Summary of Ground-Water Elevation and Monitoring Data

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-23	05/03/97	09:58	6024.71	16.87	16.87	0.00	6007.84	NM	NM	NM	NM	NM
PZ-23	06/15/97	NM	6024.71	16.77	16.77	0.00	6007.94	NM	NM	NM	NM	NM
PZ-23	07/15/97	1102	6024.71	16.74	16.74	0.00	6007.97	NM	9500	NM	NM	NM
PZ-23	08/18/97	NM	6024.71	16.65	16.65	0.00	6008.06	NM	8400	2.19	NM	59.7
PZ-23	09/19/97	1500	6024.71	16.58	16.58	0.00	6008.13	NM	9200	2.33	NM	61.3
PZ-23	10/16/97	1324	6024.71	16.59	16.59	0.00	6008.12	NM	9000	8.20	NM	61.5
PZ-23	11/17/97	1235	6024.71	16.55	16.55	0.00	6008.16	NM	8000	2.11	NM	60.1
PZ-23	12/16/97	1332	6024.71	16.55	16.55	0.00	6008.16	NM	9800	1.43	NM	58.3
PZ-23	01/19/98	1512	6024.71	16.54	16.54	0.00	6008.17	NM	10000+	0.86	NM	55.4
PZ-23	03/03/98	1500	6024.71	16.57	16.57	0.00	6008.14	NM	10000+	NM	NM	52.9
PZ-23	04/01/98	1324	6024.71	16.58	16.58	0.00	6008.13	NM	9000	1.90	NM	52.2
PZ-23	05/07/98	1355	6024.71	16.64	16.64	0.00	6008.07	NM	9400	1.55	6.8	52.9
PZ-23	06/02/98	1438	6024.71	16.70	16.70	0.00	6008.01	NM	7200	1.70	7.1	54.1
PZ-23	07/06/98	111	6024.71	16.75	16.75	0.00	6007.96	NM	7200	0.70	7.2	56.3
PZ-23	10/09/98	NM	6024.71	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-23	03/23/99	NM	6024.71	16.85	16.85	NM	6007.86	NM	NM	NM	NM	NM
PZ-23	10/19/99	NM	6024.71	16.85	16.85	NM	6007.86	NM	NM	NM	NM	NM
PZ-24	06/15/97	NM	6023.01	14.83	14.83	0.00	6008.18	NM	NM	NM	NM	NM
PZ-24	07/15/97	1128	6023.01	14.85	14.85	0.00	6008.16	NM	10000	NM	NM	NM
PZ-24	08/18/97	NM	6023.01	14.75	14.75	0.00	6008.26	NM	9200	0.15	NM	59.7
PZ-24	09/19/97	1541	6023.01	14.61	14.61	0.00	6008.40	NM	10000+	0.15	NM	61.2
PZ-24	10/16/97	1407	6023.01	14.68	14.68	0.00	6008.33	NM	10000+	0.24	NM	61.5
PZ-24	11/17/97	1335	6023.01	14.63	14.63	0.00	6008.38	NM	9400	0.30	NM	60.3
PZ-24	12/16/97	1405	6023.01	14.71	14.71	0.00	6008.30	NM	10000+	0.48	NM	58.1
PZ-24	01/19/98	1550	6023.01	14.48	14.48	0.00	6008.53	NM	10000+	0.18	NM	55.2
PZ-24	03/03/98	1550	6023.01	14.59	14.59	0.00	6008.42	NM	9000	0.15	NM	53.1
PZ-24	04/01/98	1355	6023.01	14.65	14.65	0.00	6008.36	NM	7800	0.20	NM	52.3
PZ-24	05/07/98	1425	6023.01	14.75	14.75	0.00	6008.26	NM	8400	0.32	6.6	52.9
PZ-24	06/02/98	1500	6023.01	14.79	14.79	0.00	6008.22	NM	6900	0.38	7.2	54.5
PZ-24	07/06/98	1147	6023.01	14.89	14.89	0.00	6008.12	SHEEN	7000	0.18	7.2	56.7
PZ-24	10/09/98	NM	6023.01	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-24	03/23/99	NM	6023.01	14.91	14.91	NM	6008.1	SHEEN	NM	NM	NM	NM

TABLE 4

Bisti #1 Flare Pit
Summary of Ground-Water Elevation and Monitoring Data

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-25	06/15/97	NM	6021.35	13.00	13.00	0.00	6008.35	NM	NM	NM	NM	NM
PZ-25	07/15/97	1130	6021.35	13.05	13.05	0.00	6008.30	NM	10000	NM	NM	NM
PZ-25	08/18/97	NM	6021.35	12.92	12.92	0.00	6008.43	NM	9200	0.12	NM	59.7
PZ-25	09/19/97	1548	6021.35	12.79	12.79	0.00	6008.56	SHEEN	10000+	0.12	NM	61.0
PZ-25	10/16/97	1411	6021.35	12.85	12.85	0.00	6008.50	NM	10000+	0.11	NM	61.3
PZ-25	11/17/97	1345	6021.35	12.82	12.82	0.00	6008.53	NM	9000	0.24	NM	60.1
PZ-25	12/16/97	1410	6021.35	12.86	12.86	0.00	6008.49	SHEEN	10000+	0.30	NM	57.9
PZ-25	01/19/98	1557	6021.35	12.70	12.70	0.00	6008.65	SHEEN	10000+	0.17	NM	54.5
PZ-25	03/03/98	1554	6021.35	12.73	12.73	0.00	6008.62	SHEEN	9800	0.48	NM	52.7
PZ-25	04/01/98	1400	6021.35	12.76	12.76	0.00	6008.59	SHEEN	9000	0.23	NM	52.2
PZ-25	05/07/98	1431	6021.35	12.86	12.86	0.00	6008.49	SHEEN	9100	0.35	6.9	52.9
PZ-25	06/02/98	1505	6021.35	12.91	12.91	NM	6008.44	NM	7700	0.41	7.1	54.3
PZ-25	07/06/98	1152	6021.35	13.02	13.02	NM	6008.33	SHEEN	7300	0.18	NM	56.7
PZ-25	10/09/98	NM	6021.35	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-25	03/23/99	NM	6021.35	13.11	13.11	NM	6008.24	SHEEN	NM	NM	NM	NM
PZ-26	04/23/97	NM	6021.00	12.62	12.62	0.00	6008.38	NM	NM	NM	NM	NM
PZ-26	05/03/97	10:18	6021.00	12.73	12.73	0.00	6008.27	NM	NM	NM	NM	NM
PZ-26	06/15/97	NM	6021.00	12.57	12.57	0.00	6008.43	NM	NM	NM	NM	NM
PZ-26	07/15/97	1028	6021.00	12.56	12.56	0.00	6008.44	NM	10000+	NM	NM	NM
PZ-26	08/18/97	NM	6021.00	12.48	12.48	0.00	6008.52	NM	10000+	4.48	NM	58.6
PZ-26	09/19/97	1535	6021.00	12.38	12.38	0.00	6008.62	NM	10000+	5.22	NM	60.3
PZ-26	10/16/97	1311	6021.00	12.40	12.40	0.00	6008.60	NM	10000+	5.31	NM	61.0
PZ-26	11/17/97	1225	6021.00	12.36	12.36	0.00	6008.64	NM	10000+	5.24	NM	60.1
PZ-26	12/16/97	1322	6021.00	12.37	12.37	0.00	6008.63	NM	10000+	5.88	NM	57.9
PZ-26	01/19/98	1500	6021.00	12.33	12.33	0.00	6008.67	NM	10000+	7.11	NM	55.6
PZ-26	03/03/98	1442	6021.00	12.40	12.40	0.00	6008.60	NM	10000+	7.10	NM	53.1
PZ-26	04/01/98	1310	6021.00	12.42	12.42	0.00	6008.58	NM	10000+	7.37	NM	52.5
PZ-26	05/07/98	1342	6021.00	12.50	12.50	0.00	6008.50	NM	10000+	NM	7.3	53.1
PZ-26	6/2/98	1315	6021.00	12.55	12.55	0.00	6008.45	NM	10000+	7.78	6.7	54.3
PZ-26	07/06/98	1104	6021.00	12.62	12.62	0.00	6008.38	NM	10000+	4.8	NM	56.1
PZ-26	10/09/98	NM	6021.00	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-26	03/23/99	NM	6021.00	12.67	12.67	0.00	6008.33	NM	NM	NM	NM	NM
PZ-26	10/19/99	NM	6021.00	12.71	12.71	0.00	6008.29	NM	NM	NM	NM	NM

TABLE 4

Bisti #1 Flare Pit
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HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-29	06/15/97	NM	6023.85	17.16	17.16	0.00	6006.69	NM	NM	NM	NM	NM
PZ-29	07/15/97	1102	6023.85	16.72	16.72	0.00	6007.13	NM	7200	NM	NM	NM
PZ-29	08/18/97	NM	6023.85	16.54	16.54	0.00	6007.31	NM	NM	0.12	NM	56.5
PZ-29	09/19/97	1852	6023.85	16.45	16.45	0.00	6007.40	SHEEN	10000	0.40	NM	57.9
PZ-29	10/16/97	1544	6023.85	16.49	16.49	0.00	6007.36	NM	9800	0.12	NM	58.5
PZ-29	11/17/97	1444	6023.85	16.53	16.53	0.00	6007.32	SHEEN	9800	0.16	NM	58.5
PZ-29	12/16/97	1509	6023.85	16.60	16.60	0.00	6007.25	NM	9400	0.21	NM	58.1
PZ-29	01/19/98	1705	6023.85	16.64	16.64	0.00	6007.21	SHEEN	9700	0.20	NM	55.9
PZ-29	03/03/98	1643	6023.85	16.62	16.62	0.00	6007.23	NM	9500	0.15	NM	54.0
PZ-29	04/01/98	1453	6023.85	16.58	16.58	0.00	6007.27	SHEEN	9800	0.18	NM	53.1
PZ-29	05/07/98	1510	6023.85	16.62	16.62	0.00	6007.23	SHEEN	9500	0.23	7.1	53.1
PZ-29	06/02/98	1535	6023.85	16.70	16.70	0.00	6007.15	SHEEN	8200	0.20	6.8	54.0
PZ-29	07/06/98	1244	6023.85	16.79	16.79	0.00	6007.06	SHEEN	8000	0.18	6.8	54.5
PZ-29	10/09/98	NM	6023.85	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-29	03/23/99	NM	6023.85	17.09	17.09	0.00	6006.76	SHEEN	NM	NM	NM	NM
PZ-29	10/19/99	NM	6023.85	17.24	17.24	0.00	6006.61	SHEEN	NM	NM	NM	NM
PZ-30	06/15/97	NM	6027.24	20.22	20.22	0.00	6007.02	NM	NM	NM	NM	NM
PZ-30	07/15/97	1045	6027.24	20.23	20.23	0.00	6007.01	NM	8800	NM	NM	NM
PZ-30	08/18/97	NM	6027.24	20.11	20.11	0.00	6007.13	NM	8400	0.15	NM	55.9
PZ-30	09/19/97	1707	6027.24	20.03	20.03	0.00	6007.21	NM	9200	0.23	NM	57.4
PZ-30	10/16/97	1344	6027.24	20.12	20.12	0.00	6007.12	NM	8600	0.24	NM	58.3
PZ-30	11/17/97	1255	6027.24	20.13	20.13	0.00	6007.11	NM	8200	0.29	NM	58.1
PZ-30	12/16/97	1345	6027.24	20.18	20.18	0.00	6007.06	NM	9400	0.41	NM	57.7
PZ-30	01/19/98	1527	6027.24	20.15	20.15	0.00	6007.09	NM	9900	0.38	NM	56.1
PZ-30	03/03/98	1510	6027.24	20.15	20.15	0.00	6007.09	NM	9400	0.32	NM	54.1
PZ-30	04/01/98	1335	6027.24	20.13	20.13	0.00	6007.11	NM	8800	0.34	NM	53.2
PZ-30	05/07/98	1407	6027.24	20.27	20.27	0.00	6006.97	NM	9200	0.30	6.9	52.9
PZ-30	06/02/98	1450	6027.24	20.31	20.31	0.00	6006.93	NM	7800	0.63	6.8	53.2
PZ-30	07/06/98	1130	6027.24	20.37	20.37	0.00	6006.87	NM	7800	0.2	6.8	54.0
PZ-30	10/09/98	NM	6027.24	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-30	03/23/99	NM	6027.24	20.58	20.58	0.00	6006.66	NM	NM	NM	NM	NM

TABLE 4

Bisti #1 Flare Pit
Summary of Ground-Water Elevation and Monitoring Data

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

WELL #	DATE	TIME	TOP OF PIPE ELEVATION	AIR/OIL INTERFACE (feet))	WATER OUTAGE (feet)	PRODUCT THICKNESS (feet))	WATER LEVEL ELEVATION (feet)	ACCUMULATED PRODUCT (gallons)	COND. uohms/cm	DISSOLVED OXYGEN ppm	pH	TEMP DEG. NM
PZ-31	06/15/97	NM	6023.65	15.38	15.38	0.00	6008.27	NM	NM	NM	NM	NM
PZ-31	07/15/97	1034	6023.65	15.38	15.38	0.00	6008.27	NM	7900	NM	NM	NM
PZ-31	08/18/97	NM	6023.65	15.30	15.30	0.00	6008.35	NM	6800	0.18	NM	59.5
PZ-31	09/19/97	1524	6023.65	15.22	15.22	0.00	6008.43	NM	8200	0.22	NM	61.0
PZ-31	10/16/97	1355	6023.65	15.22	15.22	0.00	6008.43	NM	7400	0.23	NM	61.7
PZ-31	11/17/97	1230	6023.65	15.16	15.16	0.00	6008.49	NM	7000	0.26	NM	60.4
PZ-31	12/16/97	1327	6023.65	15.18	15.18	0.00	6008.47	NM	8200	0.60	NM	58.3
PZ-31	01/19/98	1505	6023.65	15.13	15.13	0.00	6008.52	NM	8600	0.47	NM	55.6
PZ-31	03/03/98	1450	6023.65	15.23	15.23	0.00	6008.42	NM	8100	1.64	NM	52.9
PZ-31	04/01/98	1316	6023.65	15.26	15.26	0.00	6008.39	NM	7200	2.53	NM	52.3
PZ-31	05/07/98	1350	6023.65	15.33	15.33	0.00	6008.32	NM	7100	4.63	6.6	52.9
PZ-31	06/02/98	1435	6023.65	15.37	15.37	0.00	6008.28	NM	6200	3.04	7.3	54.3
PZ-31	07/06/98	1111	6023.65	15.42	15.42	0.00	6008.23	NM	5600	2.67	7.3	56.7
PZ-31	10/09/98	NM	6023.65	NM	NM	NM	NM	NM	NM	NM	NM	NM
PZ-31	03/23/99	NM	6023.65	15.45	15.45	0.00	6008.20	NM	NM	NM	NM	NM
PZ-31	10/19/99	NM	6023.65	15.45	15.45	0.00	6008.20	NM	NM	NM	NM	NM
MW-6	05/03/97	10:41	6020.67	9.88	9.88	0.00	6010.79	NM	NM	NM	NM	NM
MW-6	08/18/97	NM	6020.67	9.62	9.62	0.00	6011.05	NM	NM	NM	NM	NM
MW-6	09/19/97	NM	6020.67	9.49	9.49	0.00	6011.18	NM	NM	NM	NM	NM
MW-6	10/16/97	NM	6020.67	9.35	9.35	0.00	6011.32	NM	NM	0.90	NM	63.3
MW-6	11/17/97	NM	6020.67	9.76	9.76	0.00	6010.91	NM	NM	0.40	NM	60.1
MW-6	12/16/97	NM	6020.67	10.20	10.20	0.00	6010.47	NM	NM	0.62	NM	56.8
MW-6	01/19/98	NM	6020.67	10.38	10.38	0.00	6010.29	NM	NM	0.65	NM	53.8
MW-6	03/03/98	NM	6020.67	10.80	10.80	0.00	6009.87	NM	NM	0.29	NM	51.4
MW-6	04/01/98		6020.67	11.02	11.02	0.00	6009.65	NM	NM	0.50	NM	51.1
MW-6	05/07/98		6020.67	11.23	11.23	0.00	6009.44	NM	NM	0.54	NM	52.0

NM = Not Measured.

TABLE 5

Estimated Hydraulic Conductivities

Piezometer	Hydraulic Conductivity[1] (ft/min)
PZ-4	4.6×10^{-5}
PZ-5	Not usable
PZ-8	5.5×10^{-5}
PZ-11	2.0×10^{-4}
PZ-15	9.2×10^{-5}
PZ-16	4.83×10^{-5}
PZ-18	2.1×10^{-4}
PZ-19	2.4×10^{-4}
PZ-20	2.1×10^{-4}
PZ-21	4.6×10^{-4}
PZ-22	2.5×10^{-3}
PZ-24	6.0×10^{-4}
PZ-25	Did not recover
PZ-26	7.9×10^{-4}
PZ-30	1.1×10^{-3}
PZ-31	1.6×10^{-3}
PZ-29	1.0×10^{-4}
Geometric Mean	2.6×10^{-4}

on calculations using Rice-Bouwer Method.

TABLE 6

Saturated Thickness

Piezometer Number	Saturated Thickness
PZ-4	3
PZ-5	4
PZ-8	5.5
PZ-9	1.5
PZ-10	3.5
PZ-11	3.5
PZ-15	0.5
PZ-16	2.5
PZ-17	1
PZ-18	3
PZ-19	3.5
PZ-20	4
PZ-21	3.5
PZ-22	2
PZ-23	1
PZ-24	3.5
PZ-25	3.5
PZ-26	5.5
PZ-29	1.5
PZ-30	2.5
PZ-31	3
Average Thickness	2.9

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.

TABLE 7

Analyses of Pit Soil Samples

Date	TPH mg/kg	BTEX mg/kg	Microbes cfu x 10+6/cm	Temp. F
9/23/96	60000	549	NM	NM
4/15/97	7130	322	38	57.0
5/28/97	20000	383	110	NM
7/1/97	21400	395	45	78.0
8/6/97	20500	160	30	83.2
10/20/97	22500	308	130	61.0
3/3/98	6700	179	35	51
6/10/98	12500	235	75	NM
10/9/98	16300	107	NM	NM
3/23/99	4700	72	NM	NM
10/19/99	8700	NM	NM	NM

** All samples represented collected in center of pit at a 2 ft depth.
NM Not Measured

Results for Analysis of Pit Soil Obtained 9/23/96 and 6/10/98

	6/10/98	6/10/98	6/10/98	6/10/98	9/23/96	9/23/96	6/10/98	6/10/98
Sample Depth (ft)	Benzene mg/kg	Toluene mg/kg	E-Benzene mg/kg	Total Xylenes mg/kg	Total BTEX mg/kg	TPH mg/kg	Total BTEX mg/kg	TPH mg/kg
0	2.5	2.5	2.5	7.5	444	30500	15	1042
2	4.46	9.57	14.6	207	549	60000	235	12500
4	7.5	8.84	14.7	203	388	10500	234	13200
6	7.17	11.7	12.4	185	484	18200	216	11900

Sample	9/23/96	Distribution 9/23/96			6/10/98	Distribution for 6/10/98		
Depth (ft)	TPH (mg/kg)	C6 - C10	C10 - C22	C22 - C36	TPH (mg/kg)	C6 - C10	C10 - C22	C22 - C36
0	30500	13000	11000	6500	1042	32	490	520
2	60000	13000	28000	19000	12500	5300	4800	2400
4	10500	6900	2600	1000	13200	5900	4900	2400
6	18200	11000	4900	2300	11900	4700	4400	2800

APPENDIX A

Site Assessment Form

FIELD PIT SITE ASSESSMENT FORM

GENERAL

Meter: LD267 Location: BIST I FLARE PIT #1
Operator #: N/A Operator Name: EPFS P/L District: N/A
Coordinates: Letter: N Section 16 Township: 26N Range: 12W
Or Latitude _____ Longitude _____
Pit Type: Dehydrator ___ Location Drip: ___ Line Drip: ___ Other: FLARE PIT
Site Assessment Date: 3/15/00 Area: N/A Run: N/A

SITE ASSESSMENT

NMOCD Zone: (From NMOCD Maps) Inside ☒ (1) Outside ☐ (2)

Land Type: BLM ☐ (1) State ☐ (2) Fee ☐ (3) Indian NAVAJO INDIAN RESERVATION

Depth to Groundwater
Less Than 50 Feet (20 points) ☒ (1)
50 Ft to 99 Ft (10 points) ☐ (2)
Greater Than 100 Ft (0 points) ☐ (3)

Wellhead Protection Area :
Is it less than 1000 ft from wells, springs, or other sources of fresh water extraction? , or ; Is it less than 200 ft from a private domestic water source? ☐ (1) YES (20 points) ☒ (2) NO (0 points)

Horizontal Distance to Surface Water Body
Less Than 200 Ft (20 points) ☐ (1)
200 Ft to 1000 Ft (10 points) ☐ (2)
Greater Than 1000 Ft (0 points) ☒ (3)
Name of Surface Water Body _____
(Surface Water Body : Perennial Rivers, Major Wash, Streams, Creeks, Irrigation Canals, Ditches, Lakes, Ponds)
Distance to Nearest Ephemeral Stream ☐ (1) < 100' (Navajo Pits Only)
☒ (2) > 100'

TOTAL HAZARD RANKING SCORE: 20 **POINTS**

REMARKS

Remarks : NAPI CORN FIELD BORDERS SOUTHERN EDGE OF PIT FENCE LINE.

(8P3190) 04/08/94

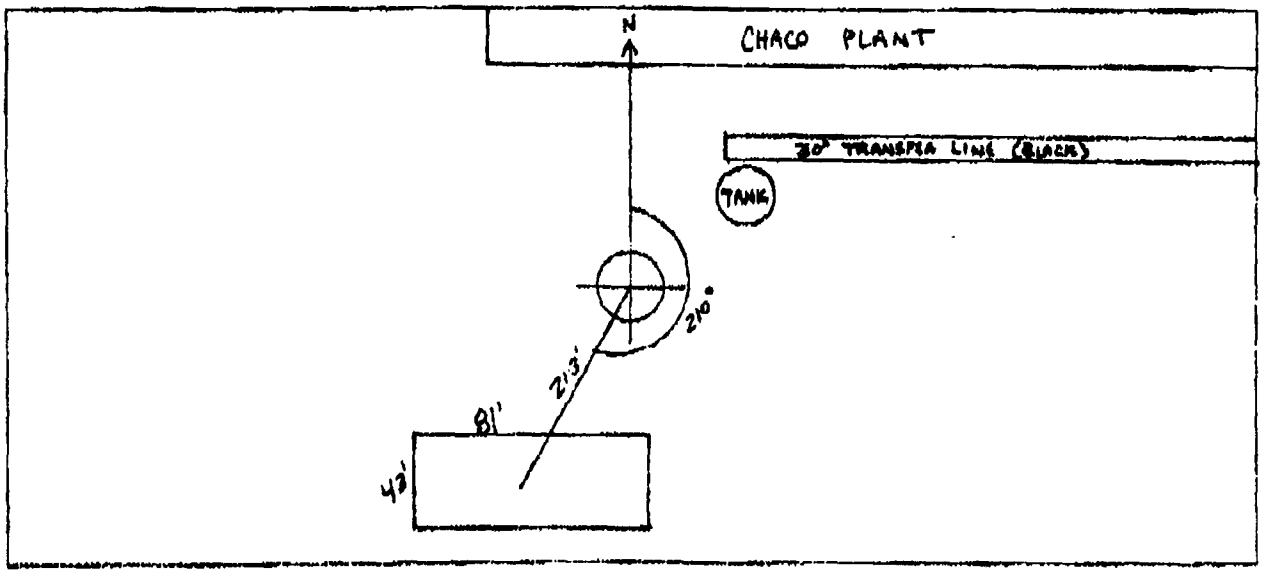
ORIGINAL PIT LOCATION

ORIGINAL PIT LOCATION

30" ABOVE GROUND TRANSFER LINE

Original Pit : a) Degrees from North 210° Footage from ~~Wellhead~~ 213'

b) Length : 81' Width : 43' Depth : 6'



REMARKS

Remarks :

MEASURED DISTANCE FROM CENTER OF PIT TO AN ABOVE GROUND 30" TRANSFER LINE. MEASURED TO WEST END OF LINE. LINE IS BLACK.

Completed By:

Signature

3/15/00

Date

APPENDIX B

Geologic Logs

SOIL TEST BORING LOG NO. HA-01

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N	DEPTH, FEET	STRATIGRAPHY	WATER LEV. FT.	TOP OF BORING IS IN PIT BOTTOM
	SC	STAINED DARK GREY	960769	27,400	17		Y				
			960770	84,600	25						
			960771	7,830	13						
-5-								-5-			
			960772	24,700	12						
			960773	171	8						
	SM	OLIVE GREY CLAY	960774	10,500	6						
-10-								-10-			
		TOTAL DEPTH 9.00'									
-15-		NOTE: DEPTH MEASUREMENTS ARE FROM BOTTOM OF PIT.						-15-			
-20-								-20-			

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 09/23/96 BORING NO: HA-01

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: N/A

TOTAL DEPTH: 9.00' CASING TYPE/SIZE: N/A SLOT: _____ DRILL METH: HAND AUGER

COMMENTS: WELL WAS DESTROYED BY EXCAVATION ON 2/26/97

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: NONE

HA-01 BORING LOG

BISTI FLARE PIT #1
METER CODE: LD267
SAN JUAN COUNTY, NM

ALPHA BIOSCIENCE COMPANY
2030 AFTON PLACE
FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. HA-02

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N	DEPTH, FEET	STRATIGRAPHY	WATER LEV. FT.	TOP OF BORING IS IN PIT BOTTOM
-5-	GM	LIGHT BROWN						-5-			
	ML	DRY HARD CLAY									
-10-	SC	YELLOWISH ORANGE SANDSTONE	960765	416	<0.5		N	-10-			
		REFUSAL AT TOTAL DEPTH 11.33'									
-15-		NOTE: DEPTH MEASUREMENTS ARE FROM BOTTOM OF PIT.						-15-			
-20-								-20-			

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 09/05/96 BORING NO: HA-02

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: N/A

TOTAL DEPTH: 11.33' CASING TYPE/SIZE: N/A SLOT: _____ DRILL METH: HAND AUGER

COMMENTS: WELL WAS DESTROYED BY EXCAVATION ON 6/23/97

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: NONE

HA-02 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. HA-03

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
	GC	GREENISH GREY				269	Y
						170	
-5-						159	Y
	SM	OLIVE GREY					
-10-	OH	OLIVE GREY CLAY				109	Y
		OLIVE GREY HARD CLAY					
		TOTAL DEPTH 10.58'					
		NOTE: DEPTH MEASUREMENTS ARE FROM BOTTOM OF PIT.					
-15-							
-20-							

DEPTH, FEET | STRATIGRAPHY | WATER LEV. FT. | TOP OF BORING IS IN PIT BOTTOM

-5- -10- -15- -20-

WATER LEV. FT. ↓ 5.27'

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 09/23/96 BORING NO: HA-03

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: N/A

TOTAL DEPTH: 10.58' CASING TYPE/SIZE: N/A SLOT: _____ DRILL METH: HAND AUGER

COMMENTS: WELL WAS DESTROYED BY EXCAVATION ON 2/26/97

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: NONE

HA-03 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. HA-06

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0	GM	YELLOWISH ORANGE					Y
	SM	OLIVE GREY					
	ML	DARK GREY					
15	ML	OLIVE GREY	960788	2,000	4		Y
		REFUSAL AT 15.17' DUE TO OBSTRUCTION					

DEPTH, FEET: 0, -5, -10, -15, -20

STRATIGRAPHY

WATER LEV. FT.: ▼ 14.00'

GROUND LEVEL

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 9/25/96 BORING NO: HA-06

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: N/A

TOTAL DEPTH: 15.17' CASING TYPE/SIZE: SLOT: DRILL METH: HAND AUGER

COMMENTS: WELL PLUGGED 9/29/96

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: N/A

HA-06 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. HA-07

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N	DEPTH, FEET	STRATIGRAPHY	WATER LEV. FT.	GROUND LEVEL
-5-	GC	YELLOWISH ORANGE					N	-5-			
	GC	GREENISH GREY									
-10-	OL	LIGHT GREY						-10-			
-15-	GW	LIGHT BROWN	960789	<10	<0.5		N	-15-			
-20-		REFUSAL AT 16.92'. DUE TO HARD SANDSTONE						-20-			

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 09/25/96 BORING NO: HA-07

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: N/A

TOTAL DEPTH: 16.92' CASING TYPE/SIZE: N/A SLOT: _____ DRILL METH: HAND AUGER

COMMENTS: WELL DRY, NO HC ODORS, WELL PLUGGED 9/27/96

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: NONE

HA-07 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. HA-12

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-5-	GM	YELLOWISH ORANGE	960795	<10	<0.5		N
-15-	ML	GREENISH GREY					
-20-	CL	OLIVE GREY					
	SC	LIGHT BROWN					
		REFUSAL AT 22.67' DUE TO HARD SANDSTONE					

DEPTH, FEET | STRATIGRAPHY | WATER LEV. FT. | GROUND LEVEL

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 09/27/96 BORING NO: HA-12

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: N/A

TOTAL DEPTH: 22.67' CASING TYPE/SIZE: N/A SLOT: _____ DRILL METH: HAND AUGER

COMMENTS: WELL DRY, NO HC ODORS, WELL PLUGGED 9/27/96

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: NONE

HA-12 BORING LOG

BISTI FLARE PIT #1
METER CODE: LD267
SAN JUAN COUNTY, NM

ALPHA BIOSCIENCE COMPANY
2030 AFTON PLACE
FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. HA-13

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N	DEPTH, FEET	STRATIGRAPHY	WATER LEV. FT.	GROUND LEVEL
-5-	GM	YELLOWISH ORANGE					N	-5- -10-			
		REFUSAL AT 11.58' DUE TO HARD SANDSTONE						-15- -20-			

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 09/27/96 BORING NO: HA-13

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: N/A

TOTAL DEPTH: 11.58' CASING TYPE/SIZE: N/A SLOT: _____ DRILL METH: HAND AUGER

COMMENTS: WELL DRY, NO HC ODORS, WELL PLUGGED 9/27/96

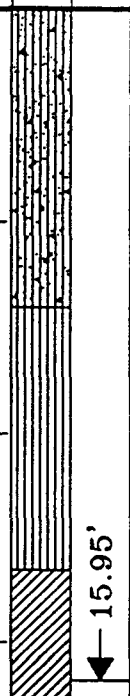
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: NONE

HA-13 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. HA-14

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-5-	GM	YELLOWISH ORANGE					
-10-	ML	GREENISH GREY					Y
-15-						206 248	Y
						240 244	Y
						290 132	Y
-20-						150+	Y
	CL	STAINED LIGHT GREY					
		LIGHT BROWN COURSE SANDSTONE					
		TOTAL DEPTH 22.83'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 09/30/96 BORING NO: HA-14

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: N/A

TOTAL DEPTH: 22.83' CASING TYPE/SIZE: N/A SLOT: _____ DRILL METH: HAND AUGER

COMMENTS: WATER LEVEL @ 15.95' ON 10/03/96 - WELL DRY ON 12/13/96.

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: NONE

HA-14 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. HA-27

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-20-	SM	SURFACE TO 20.50' YELLOWISH ORANGE FINE SAND	970388	<10	<0.5	0	N
		TOTAL DEPTH 20.50'					

DEPTH, FEET: -5-, -10-, -15-, -20-

STRATIGRAPHY

WATER LEV. FT.

GROUND LEVEL

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 5/5/97 BORING NO: HA-27

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: PLUGGED

TOTAL DEPTH: 20.50' CASING TYPE/SIZE: SLOT: DRILL METH: HAND AUGER

COMMENTS:

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: WELL PLUGGED

HA-27 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. HA-28

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0		SURFACE TO 18.17' YELLOWISH ORANGE FINE					
	SM	SAND	970390	<10	<0.5	2.9	N
	OH	LIGHT BROWN CLAY					
18.75		TOTAL DEPTH 18.75'					

DEPTH, FEET: 0, -5, -10, -15, -20

STRATIGRAPHY

WATER LEV. FT.

GROUND LEVEL

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 5/5/97 BORING NO: HA-28

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: PLUGGED

TOTAL DEPTH: 18.75' CASING TYPE/SIZE: SLOT: DRILL METH: HAND AUGER

COMMENTS:

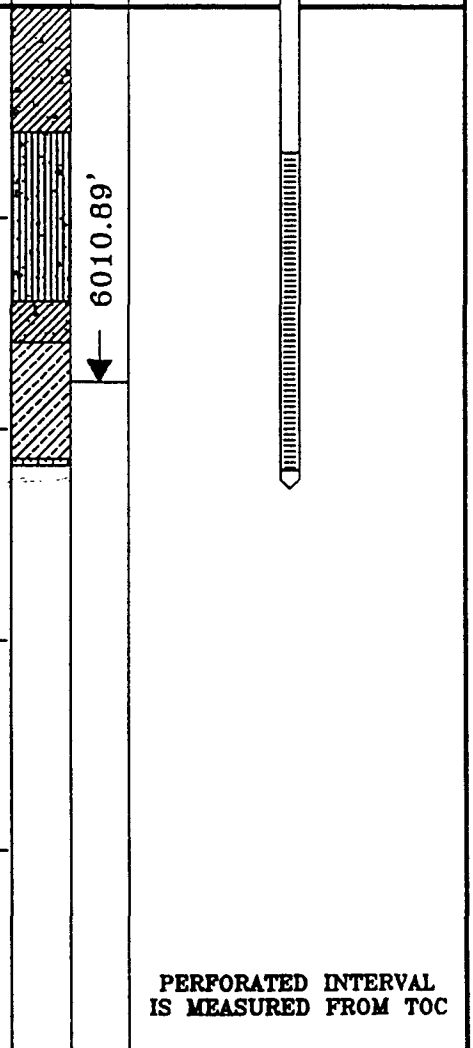
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: WELL PLUGGED

HA-28 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-04

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0	GC	GREENISH GREY					
-5	SM	OLIVE GREY					
	GC	OLIVE GREY	960766	4,700	6	75	Y
-10	OH	OLIVE GREY				212	
	OL	OLIVE GREY HARD CLAY				63	
		TOTAL DEPTH 11.40'					
-15		NOTE: DEPTH MEASUREMENTS ARE FROM BOTTOM OF PIT.					
-20							



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 09/23/96 BORING NO: PZ-04

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6018.00'

TOTAL DEPTH: 11.40' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS: WELL LOCATED IN PIT, FREE PRODUCT (0.01') FOUND 9/25/96

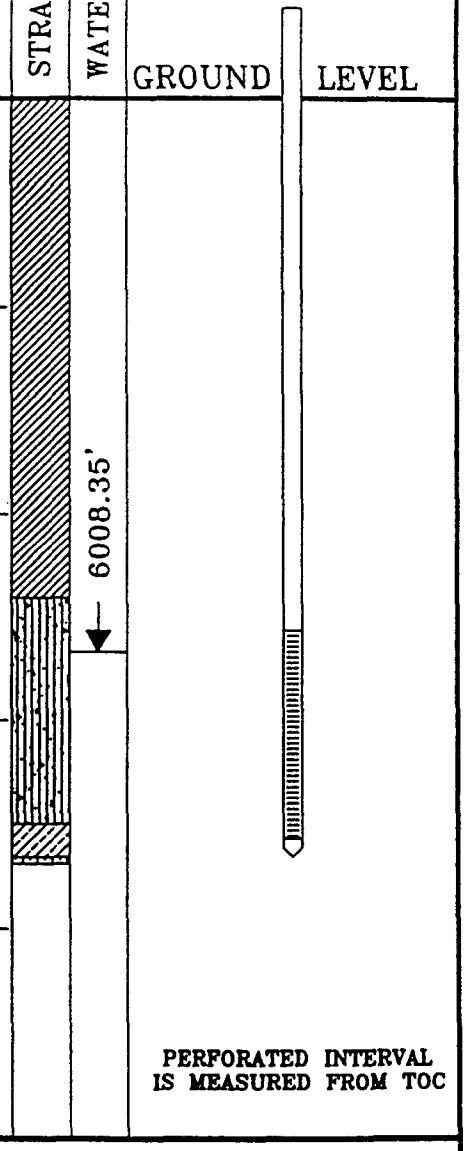
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 5.00' - 12.50'

PZ-04 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-5

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-5-	GW	YELLOWISH ORANGE	960767	2,430	5	269	Y
						150	Y
-15-	GM	STAINED GREY CLAY				274	Y
	OH	OLIVE GREY CLAY	960768	974	<0.5		
	OL	OLIVE GREY HARD CLAY					
-20-		TOTAL DEPTH 18.25'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 9/27/96 BORING NO: PZ-5

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6023.93'

TOTAL DEPTH: 18.25' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 15.00' - 20.00'

PZ-5 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-8

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-5-	SM	LIGHT BROWN					
	OL	STAINED DARK GREY CLAY					
-10-	GM	YELLOWISH ORANGE					Y
							Y
-15-			960790	227	1		
	GM	STAINED LT. GREY	960791	<10	<0.5		
	OL	OLIVE GREY HARD CLAY					
-20-		TOTAL DEPTH 17.58'					

DEPTH, FEET | STRATIGRAPHY | WATER LEV. FT. 6008.24' | TOP OF CASING | GROUND LEVEL

PERFORATED INTERVAL IS MEASURED FROM TOC

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 09/27/96 BORING NO: PZ-8

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6022.34' 6019.51

TOTAL DEPTH: 17.58' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS: STRONG HC ODOR FROM 11' TO 13'

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 12.00' - 17.00'

PZ-8 BORING LOG

BISTI FLARE PIT #1
METER CODE: LD267
SAN JUAN COUNTY, NM

ALPHA BIOSCIENCE COMPANY
2030 AFTON PLACE
FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-09

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0							
-5-							
-10-	GM	YELLOWISH ORANGE					Y
	GM	DARK GREY					Y
	OL	OLIVE GREY HARD CLAY					
-15-		TOTAL DEPTH 13.33'					
-20-							

DEPTH, FEET | STRATIGRAPHY | WATER LEV. FT. 6008.14'

TOP OF CASING

GROUND LEVEL

PERFORATED INTERVAL IS MEASURED FROM TOC

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 10/03/96 BORING NO: PZ-09 GW

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6021.81' 6020.48

TOTAL DEPTH: 13.33' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

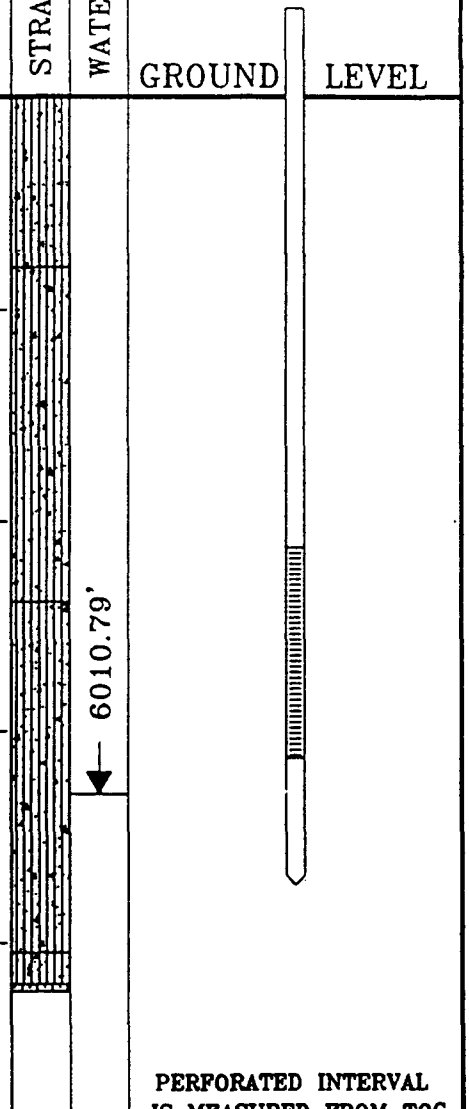
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 10.00' - 15.00'

PZ-09 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-10

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0	SM	GREENISH GREY					
5							
10	SM	YELLOWISH ORANGE					
15			960792	<10	<0.5		
20	SM	YELLOWISH ORANGE					
	GM	STAINED DARK GREY	960793	<10	<0.5		Y
	OL	OLIVE GREY HARD CLAY					
		WELL PLUGGED BACK TO A DEPTH OF 18.67'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 9/27/96 BORING NO: PZ-10

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6027.33'

TOTAL DEPTH: 21.17' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS: COULD NOT CLEAN OUT WELL - PUSHED CASING 2' INTO FILL.

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 12.50' - 17.50'

PZ-10 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-11

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-5-							
-10-	GM	YELLOWISH ORANGE					Y
	GM	STAINED LT. GREY					Y
-15-							
	GM	STAINED OLIVE GREY	960794	4,720	6		Y
-20-	OL	OLIVE GREY HARD CLAY					
		TOTAL DEPTH 19'7"					

DEPTH, FEET | STRATIGRAPHY | WATER LEV. FT. 6007.62'

TOP OF CASING GROUND LEVEL

PERFORATED INTERVAL IS MEASURED FROM TOC

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 10/03/96 BORING NO: PZ-11

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6024.23'

TOTAL DEPTH: 19'7" CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

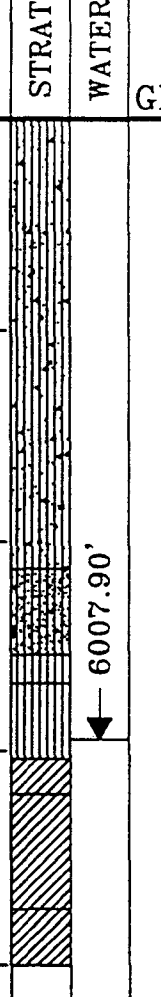
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 15.00' - 20.00'

PZ-11 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-15

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-5-							
	GM	YELLOWISH ORANGE				291	Y
	SM	OLIVE GREY					
	ML	DARK GREY				294	Y
-15-	ML	OLIVE GREY					
	CL	DARK GREY					
	CL	LIGHT BROWN					
-20-	CL	LIGHT GREY				68	Y
		TOTAL DEPTH 20.00'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 10/03/96 BORING NO: PZ-15

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6025.23'

TOTAL DEPTH: 20.00' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 17.50' - 22.50'

PZ-15 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-16

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0	SM	YELLOWISH ORANGE					
5	SM	YELLOWISH BROWN FINE SAND					
10	OL	GREENISH GREY CLAY					
15	OH	LIGHT BROWN FINE CLAY	970142	15	<0.5		N
20		TOTAL DEPTH 19.00'					

DEPTH, FEET | STRATIGRAPHY | WATER LEV. FT. 6010.29'

TOP OF CASING

GROUND LEVEL

PERFORATED INTERVAL IS MEASURED FROM TOC

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 02/24/97 BORING NO: PZ-16

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6024.53' 6021.53

TOTAL DEPTH: 19.00' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

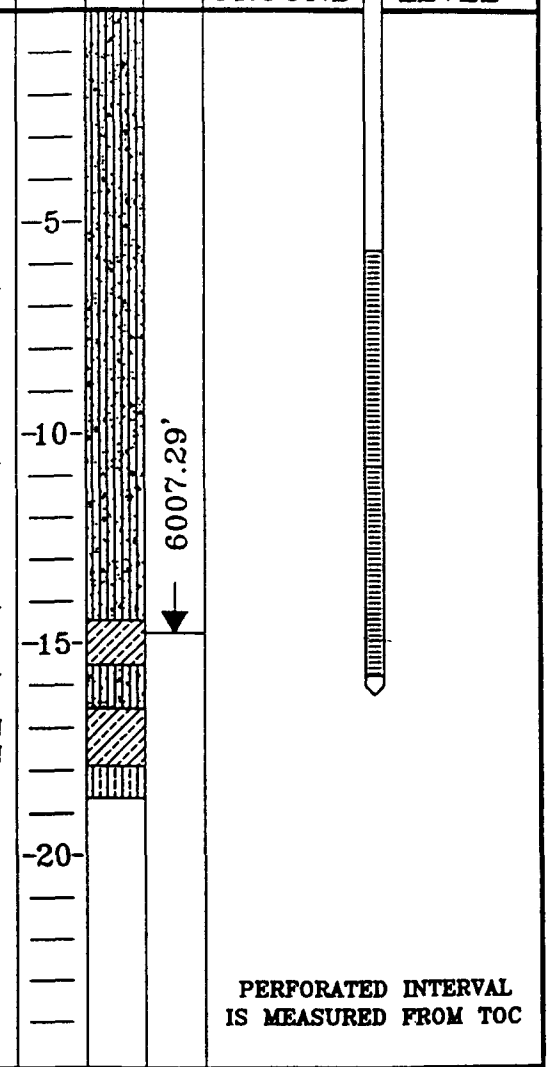
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 15.00' - 22.50'

PZ-16 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-17

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-5-			961052	36			
			961053	20			
	SM	DARK GREY FINE SAND	970143	10	<0.5		Y
	SM	LIGHT GREY FINE SAND					
-10-	SM	DARK GREY FINE SAND	970144	25	<0.5		Y
	SM	DARK GREY FINE SAND					
	SM	DARK GREY FINE SAND					Y
-15-	OH	YELLOW/ORANGE CLAY	970145	12	1.29		Y
	SM	YELLOW/ORANGE SAND					Y
	OH	LIGHT BROWN CLAY					N
	OH	YELLOW/ORANGE CLAY	970146	14	<0.5		N
	OL	YELLOWISH ORANGE HARD CLAY					
-20-		DRILLED TO TD OF 18.67'					
		PLUGGED BACK TO 16.25'					
		SEALED WITH BENTONITE FROM 16.25' - 18.67'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 02/24/97 BORING NO: PZ-17

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6023.82' 6022.01

TOTAL DEPTH: 18'8" CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS: PLUGGED BACK TO 16'3"

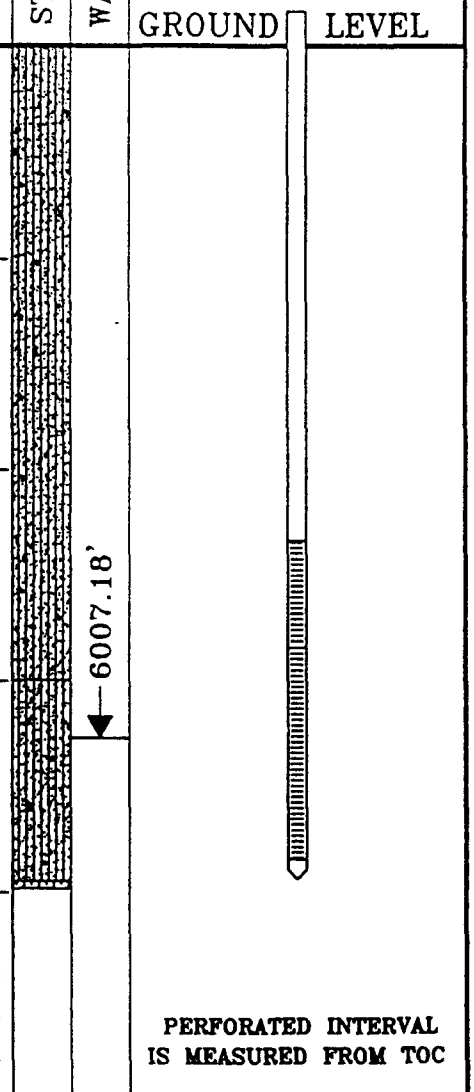
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 7.50' - 17.50'

PZ-17 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-18

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-15	SM	LAYERS OF YELLOWISH ORANGE SAND AND LIGHT GREY CLAY	970151	24	<0.5		Y
			970152	16,300	84.6		Y
-20	SM	DARK GREY FINE SAND					
	OL	OLIVE GREY HARD CLAY					
		TOTAL DEPTH 19.75'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 02/24/97 BORING NO: PZ-18

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6024.43'

TOTAL DEPTH: 19.75' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

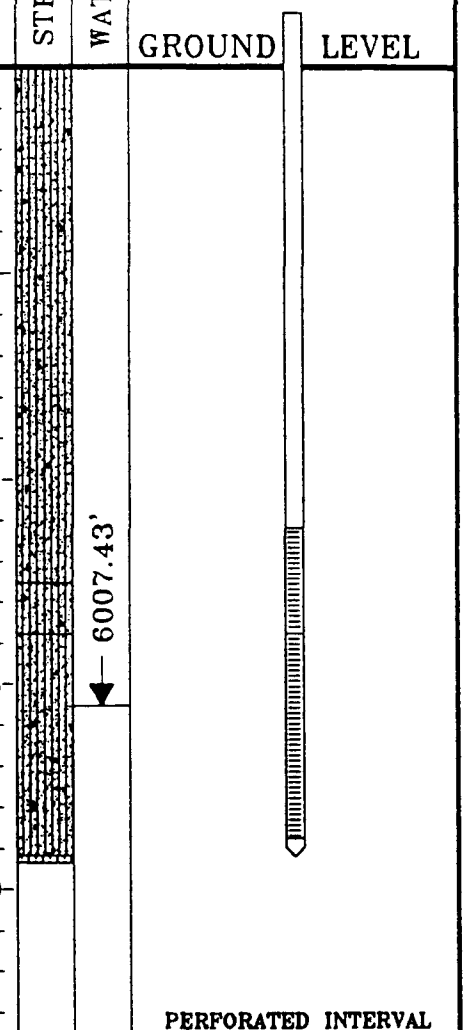
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 12.50' - 20.00'

PZ-18 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-19

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-5-							
-10-	SM	LAYERS OF YELLOWISH ORANGE SAND AND LIGHT GREY CLAY	970149	37	<0.5		Y
	SM	LIGHT/DARK GREY FINE SAND					
-15-							
	SM	DARK GREY FINE SAND	970150	254	1.19		Y
-20-	OH	OLIVE GREY HARD CLAY					
		TOTAL DEPTH 19.17'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 02/24/97 BORING NO: PZ-19

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6024.29'

TOTAL DEPTH: 19.17' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 12.50' - 20.00'

PZ-19 BORING LOG

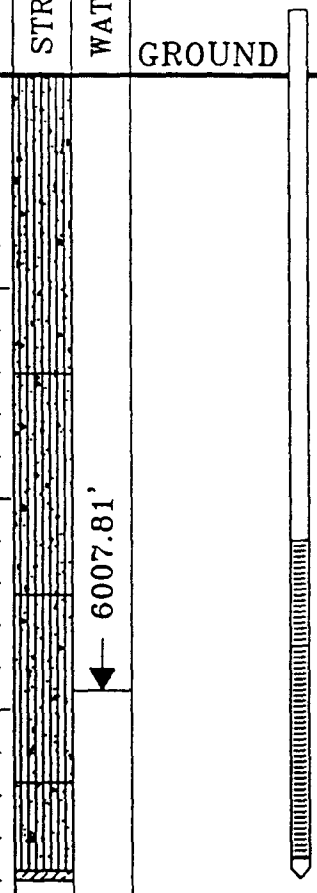
BISTI FLARE PIT #1
METER CODE: LD267
SAN JUAN COUNTY, NM

ALPHA BIOSCIENCE COMPANY
2030 AFTON PLACE
FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-20

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
-5-	SM	LAYERS OF YELLOWISH ORANGE SAND AND LIGHT GREY CLAY					
-10-	SM	YELLOWISH ORANGE FINE SAND	970147	1520	<0.5		Y
-15-	SM	GREY FINE SAND	970148	108	<0.5		Y
	SM	GREY AND DARK GREY FINE SAND					
-20-	OL	YELLOWISH ORANGE HARD CLAY					
		TOTAL DEPTH 19.00'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 02/24/97 BORING NO: PZ-20

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6024.04'

TOTAL DEPTH: 19.00' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

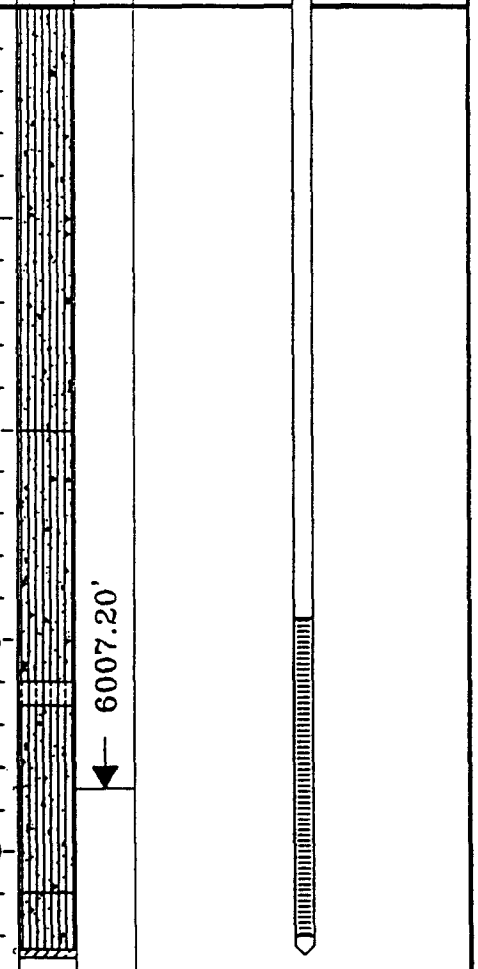
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 12.50' - 20.00'

PZ-20 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-21

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0	SM	LAYERS OF LIGHT GREY CLAY AND YELLOWISH ORANGE SAND FROM SURFACE TO 10'					
15	SM	YELLOWISH ORANGE SAND					
	OL	LIGHT BROWN CLAY WITH SOME CALECHE MIXED IN					
20	SM	YELLOWISH ORANGE WET SAND	970306	17	<0.5		
	SM	LIGHT BROWN FINE WET SAND					
	OH	LIGHT BROWN CLAY					
		TOTAL DEPTH 22.42'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 4/23/97 BORING NO: PZ-21

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6028.65' 6027.65

TOTAL DEPTH: 22.42' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

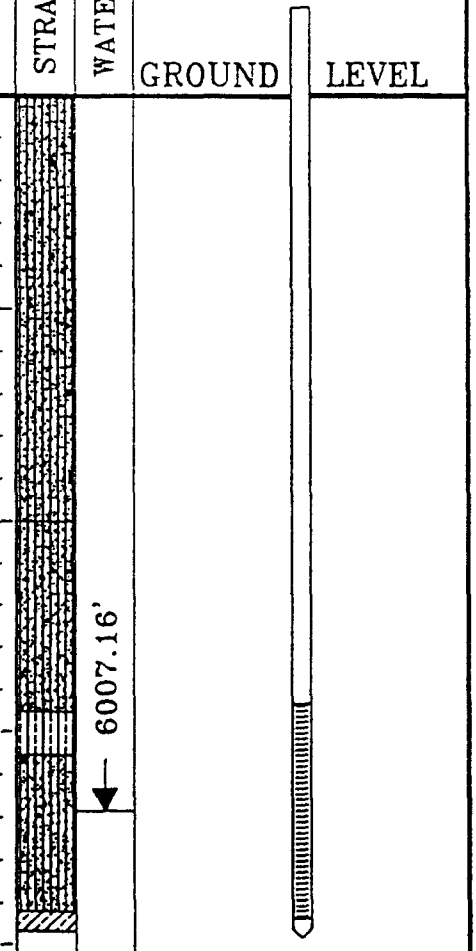
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 17.50' - 25.00'

PZ-21 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-22

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0	SM	LAYERS OF LIGHT GREY CLAY AND YELLOWISH ORANGE SAND FROM SURFACE TO 10'					
10	SM	YELLOWISH ORANGE SAND					
15	OL	LIGHT BROWN CLAY WITH SOME CALECHE					
	SM	YELLOWISH ORANGE WET SAND					
	SM	LIGHT GREY WET SAND	970306	12	<0.5		
			970307	13	<0.5		
20	OH	LIGHT BROWN CLAY					
		TOTAL DEPTH 19.83'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 4/16/97 BORING NO: PZ-22

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6027.22'

TOTAL DEPTH: 19.83' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 17.50' - 22.50'

PZ-22 BORING LOG

BISTI FLARE PIT #1
METER CODE: LD267
SAN JUAN COUNTY, NM

ALPHA BIOSCIENCE COMPANY
2030 AFTON PLACE
FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-23

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0	SM	LAYERS OF LIGHT GREY CLAY AND YELLOWISH ORANGE SAND FROM SURFACE TO 10'					
10	SM	YELLOWISH ORANGE SAND					
	OL	LT. BROWN CLAY WITH SOME CALECHE					
15	SM	YELLOWISH ORANGE WET SAND	970309	12	<0.5		
	OH	OLIVE GREY CLAY					
		TOTAL DEPTH 14.67'					

DEPTH, FEET | STRATIGRAPHY | WATER LEV. FT. 6007.91' | TOP OF CASING | GROUND LEVEL

PERFORATED INTERVAL IS MEASURED FROM TOC

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 4/16/97 BORING NO: PZ-23

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6024.80' 6021.68

TOTAL DEPTH: 14.67' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

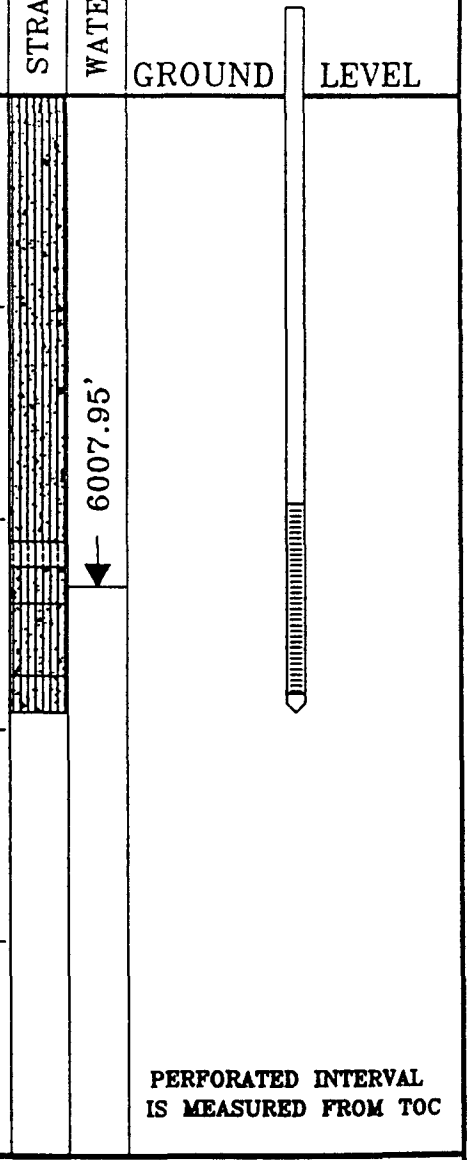
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 12.50' - 17.50'

PZ-23 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-24

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0-	SM	YELLOWISH ORANGE SAND FROM SURFACE TO 10.50'					
	OL	LIGHT BROWN CLAY WITH SOME CALECHE MIXED IN					
	SM	YELLOWISH ORANGE SAND (WET)	970310	662	<0.5		
	SM	YELLOWISH ORANGE WET FINE SAND	970311	11,500	<0.5		
	SM	DARK GREY WET FINE SAND					
-15-		TOTAL DEPTH 14.80'					
-20-							



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 5/16/97 BORING NO: PZ-24

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6022.98'

TOTAL DEPTH: 14.80' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 12.50' - 17.50'

PZ-24 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-25

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0-	SM	YELLOWISH ORANGE SAND FROM SURFACE TO 10.25'					
	OL	LIGHT BROWN CLAY WITH SOME CALECHE MIXED IN					
	SM	YELLOWISH ORANGE SAND					
			970312	5,940	30.0		
	SM	YELLOWISH ORANGE SAND					
	SM	LT. GREY FINE WET SAND					
-15-	OH	OLIVE GREY CLAY					
		TOTAL DEPTH 15.90'					
-20-							

DEPTH, FEET | STRATIGRAPHY | WATER LEV. FT. 6008.16'

TOP OF CASING

GROUND LEVEL

PERFORATED INTERVAL IS MEASURED FROM TOC

CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 5/16/97 BORING NO: PZ-25

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6021.31'

TOTAL DEPTH: 15.90' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

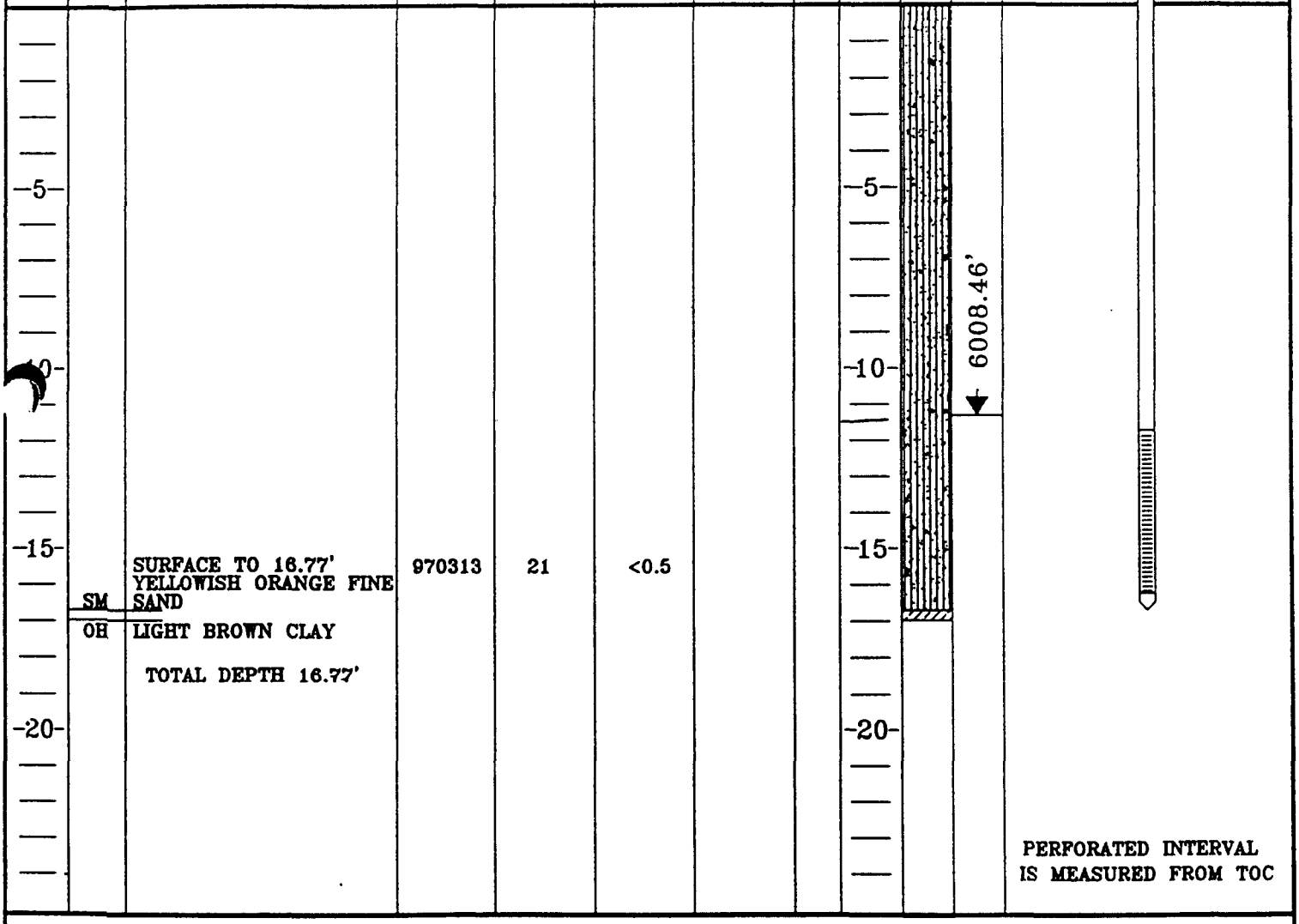
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 12.50' - 17.50'

PZ-25 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-26

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0	SM	SURFACE TO 16.77' YELLOWISH ORANGE FINE SAND	970313	21	<0.5		
15	OH	LIGHT BROWN CLAY					
		TOTAL DEPTH 16.77'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 5/16/97 BORING NO: PZ-26

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6021.08'

TOTAL DEPTH: 16.77' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

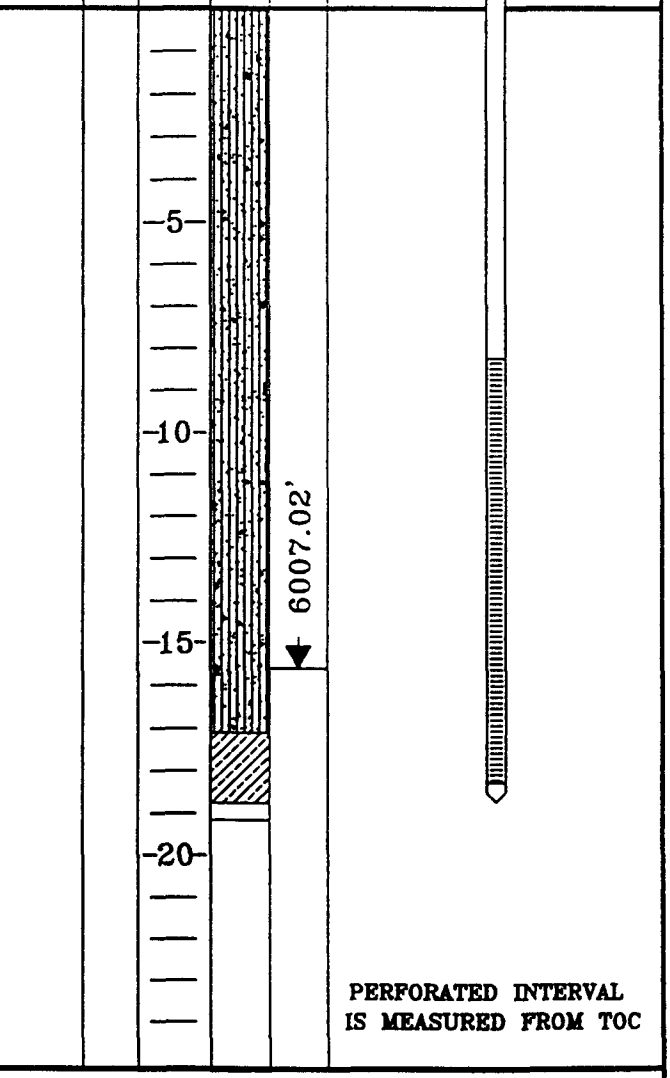
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 12.50' - 17.50'

PZ-26 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-29

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0		SURFACE TO 12.33' YELLOWISH ORANGE FINE SAND WITH SOME CLAY LENS	970416	18.9	<0.5		
	SM	LIGHT GREY FINE SAND					
15	SM	DARK GREY FINE SAND	970417	5,340	61.9		
	SM	LIGHT GREY FINE SAND					
	OH	MULTI COLORED CLAY (GREEN/BROWN/ORANGE)	970418	<10	<0.5		
20		TOTAL DEPTH 19.28'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 5/9/97 BORING NO: PZ-29

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6023.84' 6022.62

TOTAL DEPTH: 19.28' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

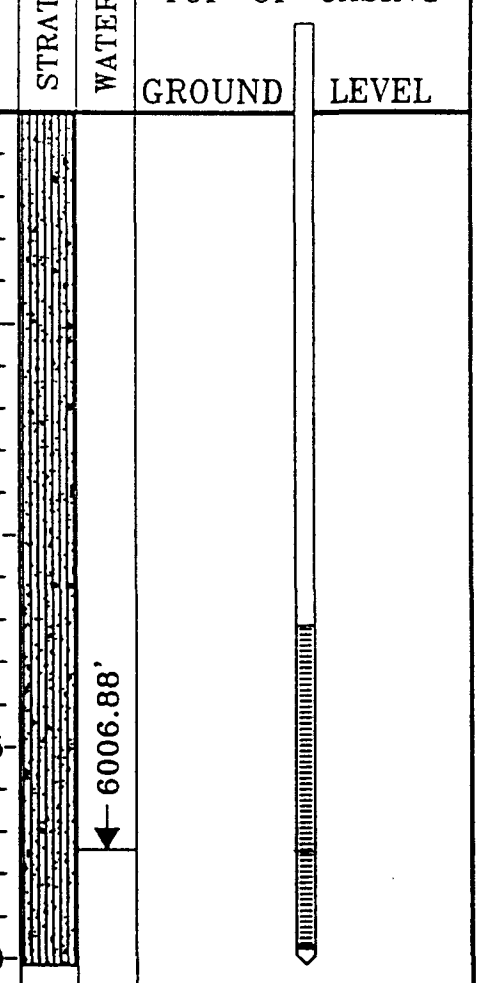
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 10.00' - 20.00'

PZ-29 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-30

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0		SURFACE TO 15.75' YELLOWISH ORANGE FINE SAND WITH SOME CLAY LENS					
15	SM	LIGHT BROWN FINE SAND					
	SM	LIGHT BROWN FINE SAND	970420	<10	<0.5		
20	SM	LIGHT GREY FINE SAND	970421	<10	<0.5		
	SM	DARK GREY FINE SAND					
	SM	WET SAND FILLED HOLE					
		TOTAL DEPTH 20.15'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 5/9/97 BORING NO: PZ-30

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6027.17' 6025.17

TOTAL DEPTH: 20.15' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

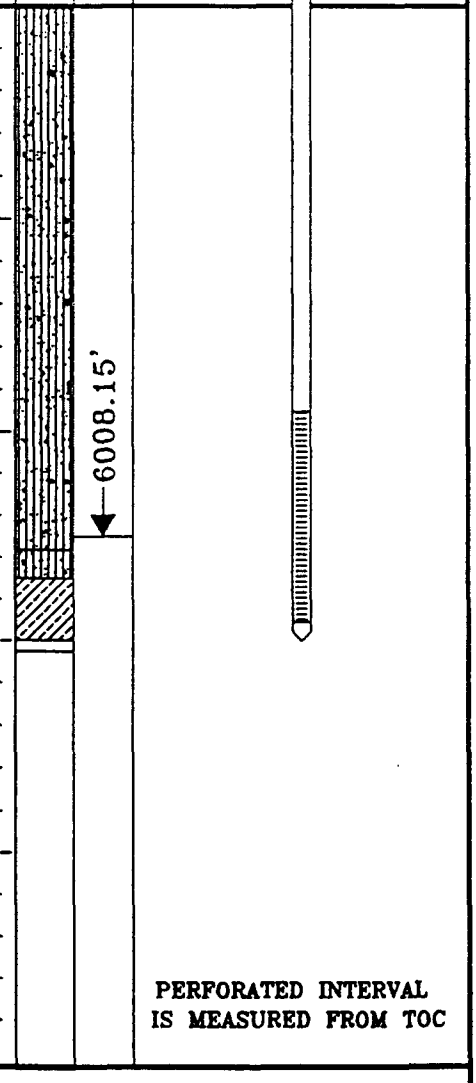
DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 15.00' - 22.50'

PZ-30 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

SOIL TEST BORING LOG NO. PZ-31

SOIL BORING DETAILS

DEPTH, FEET	UNIFIED SOIL CL.	SAMPLE DESCRIPTION	SAMPLE NO.	SOIL CONTAMINATION: TPH PPM	SOIL CONTAMINATION: BENZENE CONC. PPM	SOIL CONTAMINATION: ORG. VAPOR CONC. (PPM)	SOIL CONTAMINATION: VISIBLE Y/N
0		SURFACE TO 12.83' YELLOWISH ORANGE FINE					
	SM	SAND WITH SOME CLAY					
	SM	LIGHT BROWN SAND WITH SOME CALECHE					
15	OH	LIGHT BROWN CLAY	970419	<10	<0.5		
		TOTAL DEPTH 15.00'					



CLIENT: EL PASO FIELD SERVICES DATE DRILLED: 5/9/97 BORING NO: PZ-31

SITE: BISTI FLARE PIT #1, SAN JUAN COUNTY TOP CASING ELEV: 6023.65'

TOTAL DEPTH: 15.00' CASING TYPE/SIZE: PVC-2" SLOT: .010 DRILL METH: HAND AUGER

COMMENTS:

DRILLER: ALPHA LOGGED BY: B. D. PERF. INTERVAL: 12.50' - 17.50'

PZ-31 BORING LOG	BISTI FLARE PIT #1 METER CODE: LD267 SAN JUAN COUNTY, NM	ALPHA BIOSCIENCE COMPANY 2030 AFTON PLACE FARMINGTON, NM 87401

APPENDIX C

Analysis of Injection Fluids

EL PASO FIELD SERVICES

Field Services Laboratory

Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	970800
DATE SAMPLED:	07/31/97
TIME SAMPLED (Hrs):	0812
SAMPLED BY:	N/A
MATRIX:	Water
METER CODE:	LD267
SAMPLE SITE NAME:	Bisti Flare Pit #1
SAMPLE POINT:	Treatment Solution

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	7.0	Units	08/05/97
Alkalinity as $C0_3$	0	PPM	08/05/97
Alkalinity as $HC0_3$	128	PPM	08/05/97
Calcium as Ca	80	PPM	08/05/97
Magnesium as Mg	13	PPM	08/05/97
Total Hardness as $CaC0_3$	253	PPM	08/05/97
Chloride as Cl	2,160	PPM	08/06/97
Sulfate as $S0_4$	329	PPM	08/06/97
Fluoride as F	6.4	PPM	08/05/97
Nitrate as $N0_3$-N	47.5	PPM	08/06/97
Nitrite as $N0_2$-N	<1.1	PPM	08/06/97
Ammonium as NH_4^+	123	PPM	08/05/97
Phosphate as PO_4	120	PPM	08/06/97
Potassium as K	2,400	PPM	08/05/97
Sodium as Na	49	PPM	08/05/97
Total Dissolved Solids	5,650	PPM	08/05/97
Conductivity	9,070	umhos/cm	08/05/97
Anion/Cation %	1.3%	%, <5.0 Accepted	08/11/97

Lab Remarks:

This solution consists of 40% Biocatalyst, 60% make-up water, 11# Nutrients (5 1/2 oz per BBL), 8oz

Ammonium Nitrate, 20 gallons Microbes/load and 2% KCl.

EL PASO FIELD SERVICES

Field Services Laboratory

Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	970906
DATE SAMPLED:	08/19/97
TIME SAMPLED (Hrs):	1520
SAMPLED BY:	Bob Durbin
MATRIX:	Water
METER CODE:	N/A
SAMPLE SITE NAME:	Bisti Flare Pit #1
SAMPLE POINT:	Microbial Treatment Solution

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	7.1	Units	08/20/97
Alkalinity as $C0_3$	0	PPM	08/20/97
Alkalinity as $HC0_3$	153	PPM	08/20/97
Calcium as Ca	54	PPM	08/26/97
Magnesium as Mg	9	PPM	08/26/97
Total Hardness as $CaC0_3$	173	PPM	08/26/97
Chloride as Cl	22	PPM	08/20/97
Sulfate as $S0_4$	130	PPM	08/20/97
Fluoride as F	3.7	PPM	08/21/97
Nitrate as $N0_3$-N	35.6	PPM	08/20/97
Nitrite as $N0_2$-N	<0.6	PPM	08/20/97
Ammonium as NH_4^+	112	PPM	08/26/97
Phosphate as PO_4	97	PPM	08/20/97
Potassium as K	52.1	PPM	08/26/97
Sodium as Na	24	PPM	08/26/97
Dissolved Iron	2.47	PPM	09/04/97
Dissolved Copper	0.46	PPM	09/09/97
Dissolved Manganese	0.63	PPM	09/09/97
Dissolved Zinc	0.58	PPM	09/09/97
Total Dissolved Solids	554	PPM	08/20/97
Calculated TDS	614	PPM	08/20/97
Conductivity	967	umhos/cm	08/20/97
Anion/Cation %	1.9%	%, <5.0 Accepted	09/09/97

Lab Remarks:

- This treatment solution consisted of 31BBLs (40% Biocatalyst, 60% Make-up water), 11# Nutrients (5 1/2 oz per BBL), 8 oz Ammonium Sulfate, 31 ml Liquid Iron Solution, 20 gallons Microbes/load. The Iron Solution is 0.05% Copper, 3.25% Iron, 0.15% Manganese and 0.15% Zinc.