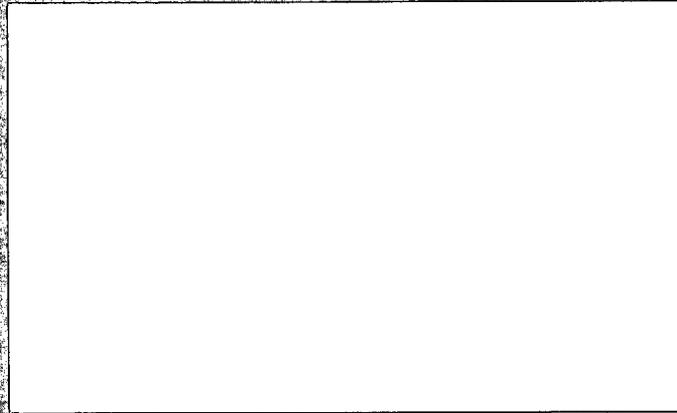


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**MONITORING
REPORTS**

DATE:

2003



AUG 22 2003

**BROWN AND
CALDWELL**

Environmental Engineers & Consultants

AUG 22 2003

**MARCH 2003 GROUNDWATER
SAMPLING REPORT
HOBBS, NEW MEXICO FACILITY**

BJ SERVICES COMPANY, U.S.A.

AUGUST 6, 2003

**MARCH 2003 GROUNDWATER SAMPLING REPORT
HOBBS, NEW MEXICO FACILITY
BJ SERVICES COMPANY, U.S.A.**

Prepared for

BJ Services Company, U.S.A.
11211 FM 2920
Tomball, Texas 77375

BC Project Number: 12832.018



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August 6, 2003

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"This report was prepared in accordance with the standards of the environmental consulting industry at the time it was prepared. It should not be relied upon by parties other than those for whom it was prepared, and then only to the extent of the scope of work which was authorized. This report does not guarantee that no additional environmental contamination beyond that described in this report exists at this site."

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1.0 INTRODUCTION

Brown and Caldwell conducted a quarterly groundwater sampling event at the BJ Services Company, U.S.A. (BJ Services) facility located at 2708 West County Road in Hobbs, New Mexico in March 2003. This report presents a description of the groundwater sampling field activities, a summary and evaluation of the analytical results, and an evaluation of remedial technologies applied at the facility. A groundwater potentiometric surface map and a hydrocarbon distribution map are included.

A layout of the facility is shown in Figure 1. The facility formerly operated an on-site fueling system. Subsurface impact near the former diesel fueling system was detected by the New Mexico Oil Conservation Division (NMOCD) during an on-site inspection on February 7, 1991. The fueling system was taken out of operation in July 1995. The NMOCD has required a quarterly groundwater monitoring program to assess the concentration of hydrocarbon constituents in groundwater as a result of the diesel fuel release.

A biosparging system was activated in November 1995 and expanded in March/April 1997 and February/March 1998 to remediate soil and groundwater at the former fuel island area of the facility. The biosparging system was deactivated on November 1, 2000 after achieving cleanup goals for groundwater. The confirmation soil sampling program specified in the NMOCD-approved Remedial Action Plan (RAP) for the facility was conducted in July 2001. The results of the confirmation soil sampling program were presented to NMOCD in the report for the June 2001 groundwater sampling event. In accordance with the RAP for the facility, four additional groundwater sampling events were conducted following the confirmation soil sampling event. Hydrocarbon concentrations in groundwater samples from applicable monitor wells remained below the target concentrations specified in the RAP during each of these sampling events, so a request to decommission the biosparging system was submitted to NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report for the facility.

BJ Services removed three field waste tanks from the facility on March 6-7, 1997. The ongoing groundwater monitoring program was expanded to address both the former fuel island and the former field waste tanks areas of the facility, as directed by NMOCD in correspondence dated January 21, 1999.

Table 1 presents a site chronology detailing the history of investigations into and the remediation of soil and groundwater impacts in the areas of the former fueling system and the former field waste tanks at the facility.

2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled six monitor wells (MW-5, MW-10, MW-11A, MW-12D, MW-14, and MW-15) at the facility on March 6, 2003 to determine the concentrations of dissolved-phase hydrocarbons and/or chloride in groundwater and to evaluate general groundwater quality in the area of the facility. The monitor well locations are shown in Figure 1. In the March 2002 Groundwater Sampling Report for the facility, Brown and Caldwell recommended installation of a new monitor well (MW-16) to replace monitor well OW-4, which has gone dry. Brown and Caldwell plans to install monitor well MW-16 in April 2003 now that this activity has been approved by the NMOCD and access privileges have been granted by the off-site landowner.

The following subsections describe the field activities conducted by Brown and Caldwell during the March 2003 event and present the results from the associated groundwater analyses.

2.1 Groundwater Sampling Activities

Groundwater level measurements were obtained from all accessible monitor wells at the facility on March 6, 2003 prior to purging and sampling the subset of wells listed above. Groundwater levels were measured to the nearest 0.01 foot with a water-level indicator. Current and historical groundwater elevation data for each well are presented in Table 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with an overall hydraulic gradient of approximately 0.007 foot/foot. The groundwater elevation data presented in Table 2 indicate that groundwater levels have continued to decline in monitor wells at the facility since late 1995. A groundwater elevation map for March 6, 2003 is presented in Figure 2.

Monitor wells MW-5, MW-10, MW-11A, MW-14 and MW-15 were purged and sampled with previously unused disposable bailers and clean, previously unused nylon string. Three well volumes were purged from monitor wells MW-5, MW-11A, and MW-15. Monitor wells MW-10 and MW-14 were purged dry after removal of 0.5 gallons and 1.1 gallons of groundwater, respectively. A submersible pump fitted with disposable polyethylene tubing was used to purge

monitor well MW-12D until groundwater stabilization occurred, with stabilization defined as variation of less than 0.5°C for temperature, less than 0.1 unit for pH, and less than 10% for specific conductivity between three consecutive measurements of groundwater during the purging process. Monitor well MW-15 had stabilized after removal of three well volumes of groundwater from the well. The wells were sampled in general order of least impacted to most impacted (based on analytical results from the January 2003 and preceding sampling events) to further mitigate the potential for cross-contamination between the wells.

Field parameter measurements for pH, specific conductivity, oxidation-reduction (redox) potential, dissolved oxygen content, and temperature were collected from wells containing an adequate volume of water during and upon completion of well purging. Ferrous iron and dissolved oxygen were measured in monitor wells MW-5, MW-10, and MW-11A upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix A. Field parameter readings for each well sampled during the March 2003 event are summarized in Table 3.

With the exception of monitor well MW-12D, groundwater samples were collected by pouring recovered water from a bailer. For monitor well MW-12D, the groundwater sample was collected directly from the discharge line of the down-hole pump. Using these methods, each sample was transferred to laboratory-prepared, clean glass and/or plastic containers, sealed with Teflon[®]-lined lids, labeled, and placed on ice in an insulated cooler for delivery to Southern Petroleum Laboratory in Houston, Texas for analysis using standard chain-of-custody procedures.

Field measurement equipment was decontaminated prior to and following each use. Decontamination procedures consisted of washing with distilled water and a non-phosphate detergent, then rinsing with distilled water. The submersible pump used to sample monitor well MW-12D was decontaminated first by pumping distilled water with a non-phosphate detergent through it and then by rinsing it with distilled water using containers at the surface. Purge and decontamination waters were discharged to an on-site water reclamation system at the BJ Services facility.

2.2 Results of Groundwater Analyses

Groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12D, MW-14 and MW-15 were analyzed for chloride content using Method E325.3. Table 4 presents current and cumulative results for chloride analyses performed on groundwater samples collected at the facility.

Chloride concentrations in monitor wells MW-5 and MW-12D in March 2003 remained less than the NMWQCC chloride standard of 250 milligrams per liter (mg/L). The March 2003 chloride concentration of 163 mg/L in downgradient monitor well MW-14 is also less than this standard, and is the lowest chloride concentration ever measured in this well. The chloride concentration of 272 mg/L in monitor well MW-15 exceeds the NMWQCC chloride standard. This is the first such exceedance in monitor well MW-15.

Groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12D were analyzed for gasoline-range total petroleum hydrocarbons (TPH-G) by EPA Method SW-8015B and for benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method SW-8021B. Analysis for diesel-range total petroleum hydrocarbons (TPH-D) was also performed on groundwater samples recovered from monitor wells MW-11A and MW-12D, but TPH-D analyses could not be performed for monitor wells MW-5 and MW-10 due to insufficient groundwater production from these wells. Current and cumulative analytical results for BTEX constituents, TPH-D, and TPH-G are presented in Table 5. Figure 3 presents a hydrocarbon distribution map for the March 2003 sampling event. All BTEX concentrations measured in groundwater during the March 2003 sampling event were less than applicable NMWQCC standards.

Analysis of groundwater from monitor wells MW-5, MW-10, MW-11A, and MW-12D for nitrate and sulfate (Method E300.0), dissolved methane (Method RSK 147), and alkalinity (Method E310.1) was performed to evaluate the potential for natural attenuation of hydrocarbons at the facility. The current and historical results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12, and MW-12D to assist in the evaluation of natural attenuation processes at the BJ Services facility are

presented in Table 6. Groundwater alkalinity may also be indicative of natural attenuation processes. Groundwater alkalinity values measured in the four wells of interest during the March 2003 sampling event are as follows:

- MW-5 (upgradient, background well): 243 mg/L;
- MW-10: 273 mg/L;
- MW-11A: 401 mg/L; and
- MW-12D: 241 mg/L.

Assuming adequate groundwater yield, analyses of groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12D, MW-14 and MW-15 for polynuclear aromatic hydrocarbons (PAHs, by Method 8310), RCRA metals and calcium, magnesium, potassium, and sodium (Methods 6010B and 7470A), carbonate and bicarbonate alkalinity (Method M2320B), fluoride (Method E300), hardness (Method E130.2), nitrate and sulfate (Method E300.0), dissolved methane (Method RSK 147) were performed in accordance with annual New Mexico Water Quality Control Commission (NMWQCC) requirements. Additional sampling for NMWQC constituents will be performed in June 2003 for analyses that could not be performed in March 2003 due to insufficient groundwater production from various wells at the facility. These parameters include the following:

- Hardness in monitor wells MW-10, MW-14, and MW-15;
- Methane in monitor wells MW-14 and MW-15;
- RCRA metals, calcium, magnesium, potassium, and sodium in monitor wells MW-10, MW-14, and MW-15; and
- PAHs in monitor wells MW-5, MW-10, MW-14, and MW-15.

Table 6 presents the analytical results for annual sampling and analysis of applicable wells for NMWQCC constituents. The March 2003 analytical results for geochemical parameters (i.e., carbonate, bicarbonate, hardness, fluoride, nitrate, sulfate, and cations) and RCRA metals are generally comparable to historic data for these parameters on a well-by-well basis. Groundwater from monitor well MW-11A displayed an elevated sodium content relative to previous sodium concentrations in the well. The March 2003 concentration of chloride in monitor well MW-11A is also elevated relative to pre-2003 concentrations in this well (see Table 4).

The laboratory analytical report and chain-of-custody documentation for the groundwater samples collected during the March 2003 sampling event are provided in Appendix B.

3.0 EVALUATION OF REMEDIAL TECHNOLOGIES

The following subsections present evaluations of the remedial technologies applied at the former fueling system and former field waste tanks areas of the BJ Services facility in Hobbs, New Mexico.

3.1 Biosparging System at the Former Fueling System Area

Brown and Caldwell recommended installation of a biosparging system at the former fueling system area of the facility in the Remedial Action Plan (RAP) submitted to the NMOCD in May 1994. The NMOCD approved the RAP on August 11, 1994. The biosparging system was installed in August 1995, with expansions completed in April 1997 and March 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in applicable former fueling system area monitor wells. In accordance with the RAP, confirmation soil sampling activities were conducted at the former fueling system area in July 2001 to verify the effectiveness of the biosparging system in remediating vadose zone soils. The analytical results for these soil samples, as discussed in the report for the June 2001 groundwater sampling event, indicated that remediation goals for soil in this area had been achieved.

Following the confirmation soil sampling activities, hydrocarbon concentrations in groundwater remained below target cleanup goals for four successive quarters. In accordance with the RAP for the facility, a request to decommission the biosparging system was submitted to the NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report.

3.2 Natural Attenuation at the Former Field Waste Tanks Area

Natural attenuation is the primary remediation mechanism for the dissolved-phase hydrocarbon plume located in the area of the former field waste tanks (see Figure 1).

Plume behavior is the primary evidence of natural attenuation. Secondary evidence of natural attenuation can be obtained by the collection and evaluation of data relating to the concentrations of indigenous electron acceptors such as dissolved oxygen, nitrate, sulfate, and carbon dioxide. A plume is shrinking when the rate of hydrocarbon loading from a source area is less than the rate of natural degradation of hydrocarbons. Plume shrinkage in the absence of aggressive remediation is indicative of the occurrence of natural attenuation processes. Conversely, a plume is expanding if the rate of hydrocarbon loading from a source area is greater than the rate of natural degradation of hydrocarbons through natural attenuation processes.

The former field waste tanks in the eastern portion of the facility were removed in March 1997. Concentrations of total BTEX in monitor wells in the area of the former field waste tanks have been generally stable or declining subsequent to removal of these tanks. Sporadic increases in total BTEX concentrations between quarterly sampling events have been observed in monitor wells in this area since March 1997, however. These increases may be attributed to sporadic loading rates from the vadose zone in excess of the rate of natural attenuation in the area. The following subsections present primary and secondary evidence of natural attenuation of hydrocarbons in groundwater at the former field waste tanks area of the facility.

3.2.1 Primary Evidence

The benzene concentration in monitor well MW-10 has decreased from a maximum of 1.3 mg/L in August 1995 (prior to removal of the field waste tanks) to less than the NMWQCC standard of 0.01 mg/L for BTEX in the nine applicable groundwater sampling events between December 2000 and March 2003. Benzene has not been detected in monitor well MW-10 since September 2001. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-10 have generally undergone similar decreases over this time period.

Benzene concentrations at the monitor well MW-11/11A location have generally decreased from a maximum of 0.970 mg/L in December 1996 (prior to removal of the field waste tanks). The March 2003 benzene concentration of 0.0032 mg/L in monitor well MW-11A is less than the NMWQCC

standard for benzene. Benzene concentrations in MW-11A have been less than the NMWQCC standard for benzene during seven of the eight groundwater sampling events conducted since June 2001.

Concentrations of each BTEX constituent at the monitor well MW-12/12D location have been below analytical detection limits for the past seven sampling events.

3.2.2 Secondary Evidence

The following lines of geochemical evidence can also be used to suggest that intrinsic bioremediation (an important natural attenuation mechanism) of dissolved-phase hydrocarbons is occurring in the area of the former field waste tanks.

1. Dissolved oxygen may be utilized as an electron acceptor during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

Groundwater samples were collected primarily using bailers during the March 2003 sampling event due to low water levels in the wells. Measured dissolved oxygen concentrations in most wells at the facility were therefore artificially elevated. The use of bailers may cause groundwater samples to become oxygenated, thus precluding a meaningful comparison of dissolved oxygen data.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility when down-hole pumps were utilized has indicated that dissolved oxygen concentrations were typically depressed in hydrocarbon-impacted monitor wells relative to non-impacted wells at the facility (see the June 2001 Groundwater Sampling Report for BJ Services Hobbs, New Mexico Facility, for example).

2. Nitrate may be utilized as an electron acceptor during intrinsic bioremediation after dissolved oxygen is depleted. Therefore, nitrate concentrations may be depressed in areas where intrinsic bioremediation is occurring.

Nitrate was detected at a concentration of 2.75 mg/L in background monitor well MW-5 during the March 2003 sampling event. Although there was minimal to no hydrocarbon impact at former field waste tanks area wells MW-10, MW-11A, and MW-12D in March 2003 (see Table 4), nitrate was not detected in monitor wells MW-10 and MW-11A; nitrate was detected at a concentration of 0.705 mg/L in monitor well MW-12D. The depressed to non-detectable nitrate concentrations observed during this sampling event at former field

waste tanks area wells MW-10, MW-11A, and MW-12D relative to the background nitrate concentration at the facility are likely due to residual effects of hydrocarbons in these areas.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors may become active. Ferrous iron is the reduction product of ferric iron, a common electron acceptor. Therefore, ferrous iron concentrations should increase in areas where intrinsic bioremediation is occurring.

A ferrous iron concentration of 0.0 mg/L was measured in background monitor well MW-5 during the March 2003 sampling event, but respective ferrous iron concentrations of 1.0 mg/L and 4.0 mg/L were measured in former field waste tanks area monitor wells MW-10 and MW-11A. The elevated ferrous iron concentrations in monitor wells MW-10 and MW-11A suggest that ferric iron has been used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area of the facility.

4. Microbes that utilize sulfate may become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through the use of sulfate as an electron acceptor.

In March 2003, sulfate concentrations in the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D ranged from 170 mg/L to 290 mg/L, whereas the sulfate concentration in background monitor well MW-5 was measured at 110 mg/L. The fact that sulfate concentrations in the former source area monitor wells are greater than the sulfate concentration in the background monitor well suggests that sulfate is not being utilized as an electron acceptor in the former field waste tanks area.

5. Methane is a reaction product generated during utilization of carbon dioxide as an electron acceptor, so its concentration may increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.

Dissolved methane was not detected in background monitor well MW-5 during the March 2003 groundwater sampling event. In the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D, dissolved methane concentrations ranged from 0.0031 mg/L to 0.0044 mg/L. The elevated dissolved methane concentrations in these wells relative to the background well suggest that utilization of carbon dioxide as an electron acceptor has occurred at the former field waste tanks area of the facility.

6. Redox potential is a measure of chemical energy in groundwater. The redox potential of groundwater from background monitor well MW-5 was measured at 72.7 mV in March 2003. Respective redox potentials of -43.7 mV, -25.1 mV, and -76.9 mV were measured in the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D in March 2003. The negative redox values in the former field waste tanks area monitor wells as compared to the positive redox value in the background well at the facility provides additional evidence that natural attenuation of hydrocarbons has occurred in the area of the former field waste tanks.

7. Alkalinity is expected to increase during natural attenuation processes as a result of the leaching of carbonates from mineral substrates by microbially-produced organic acids.

The alkalinity of groundwater from background monitor well MW-5 was measured at 243 mg/L in March 2003. An elevated alkalinity of 401 mg/L was measured in former field waste tanks area monitor well MW-11A, suggesting the occurrence of natural attenuation of hydrocarbons at this location.

The respective alkalinity values of 273 mg/L and 241 mg/L measured in monitor wells MW-10 and MW-12D are comparable to the alkalinity of 243 mg/L measured in background monitor well MW-5.

In conclusion, current nitrate and historic dissolved oxygen data suggest that these electron acceptors have been utilized during intrinsic bioremediation processes in the vicinity of the former field waste tanks area of the facility. Data for ferrous iron also indicates that utilization of ferric iron as an electron acceptor has occurred in this area of the facility. Current methane, redox, and alkalinity data provide further evidence that natural attenuation of hydrocarbons has occurred in this area.

It is recommended that monitoring for natural attenuation evaluation parameters continue in the former field waste tank area monitor wells MW-10, MW-11A, and MW-12D and in the background well, MW-5. Redox potential, dissolved oxygen content, ferrous iron content, and alkalinity serve as good indicators of the occurrence of intrinsic bioremediation of hydrocarbons, so it is also recommended that field testing for these parameters be continued in all wells to be sampled during upcoming groundwater monitoring events.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the March 2003 groundwater sampling event conducted at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- March 2003 benzene concentrations in all former field waste tanks area monitor wells are less than the NMWQCC standard of 0.01 mg/L for benzene. Based on generally decreasing hydrocarbon concentrations in these monitor wells over time and as substantiated by geochemical data, natural attenuation processes appear to be occurring in the vicinity of the former field waste tanks that were removed in March 1997.
- The chloride concentration measured in downgradient monitor well MW-14 during the March 2003 groundwater sampling event is less than the NMWQCC standard of 250 mg/L and is the lowest ever recorded during the monitoring history of this well. The March 2003 chloride concentration in monitor well MW-15 exceeded the NMWQCC chloride standard for the first time in the monitoring history of this well, however.

4.2 Recommendations

- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-10, MW-11A, and MW-12D. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters.
- Conduct additional sampling and analysis as necessary to complete the annual sampling requirements for NMWQCC parameters.
- Based on the recent approval from the NMOCD and the acquisition of access privileges, complete installation and sampling of an off-site monitor well (MW-16) to further investigate possible chloride impact to groundwater in the area of the facility.
- Upon approval from the NMOCD, decommission the biosparging system at the former fuel island area.

DISTRIBUTION

March 2003 Groundwater Sampling Report
BJ Services Company, U.S.A.
Hobbs, New Mexico

August 6, 2003

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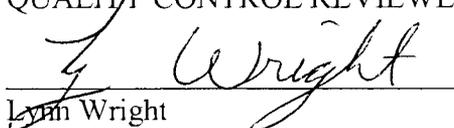
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Lynn Wright
Principal Geologist

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Tables

TABLES

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
February 7, 1991	The New Mexico Oil Conservation Division (NMOCD) conducted an on-site inspection, including sampling of the on-site fresh water well.
August 6, 1991	The NMOCD requested submittal of an investigation work plan.
September 5, 1991	Roberts/Schornick and Associates, Inc. (RSA) submitted Technical Work Plan for soil and groundwater investigation to the NMOCD.
November 15, 1991	The NMOCD approved the Technical Work Plan submitted by RSA.
December 16, 1991	RSA sampled the fresh water well. The analytical results were submitted to the NMOCD.
February 21, 1992	Western sampled the fresh water well. The analytical results were submitted to the NMOCD.
July 29 - August 10, 1992	Brown and Caldwell conducted a soil and groundwater investigation according to the approved Technical Work Plan. The investigation included drilling and sampling nine soil borings, sampling six hand-augured soil borings, installation and sampling of five monitor wells, and sampling of the fresh water well.
October 12, 1992	Brown and Caldwell submitted a Soil and Groundwater Investigation Report to the NMOCD.
December 2, 1992	The NMOCD requested the installation and sampling of four additional monitor wells, including a monitor well on an adjacent property.
April 13, 1993	Brown and Caldwell conducted a vapor extraction pilot test on the existing monitor wells.
April 15, 1993	Brown and Caldwell installed off-site monitor well MW-9.
April 22, 1993	Brown and Caldwell sampled off-site monitor well MW-9.
May 27, 1993	Brown and Caldwell submitted a letter report documenting the installation and sampling of off-site monitor well MW-9 to the NMOCD.
June 2, 1993	Brown and Caldwell conducted a short-term aquifer test using the fresh water well at the facility.
June 8, 1993	USTank Management, Inc. conducted a non-volumetric tank system tightness test on the diesel and unleaded gasoline aboveground storage tanks at the facility.
June 21, 1993	ENSR Consulting and Engineering (ENSR), the environmental consultant for the adjacent property owner on which off-site well MW-9 is located, submitted a request to sample monitor well MW-9.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

July 15, 1993	ENSR split a groundwater sample collected from monitor well MW-9 with Brown and Caldwell.
July 30, 1993	USTank Management, Inc. submitted a tank tightness test report to Brown and Caldwell. The report indicated that both tanks and their associated piping passed.
August 16-19, 1993	Brown and Caldwell installed two additional downgradient monitor wells. Brown and Caldwell sampled each of the existing and newly installed monitor wells.
January 26, 1994	Brown and Caldwell performed a groundwater monitoring event; the existing monitor wells and the fresh water well were purged and sampled. The groundwater samples were analyzed for BTEX.
May 6, 1994	A Remedial Action Plan (RAP) was submitted to the NMOCD.
August 11, 1994	The RAP was approved by the NMOCD.
May 3, 1995	Brown and Caldwell conducted the May 1995 groundwater sampling event.
July 31, 1995	Brown and Caldwell conducted the July 1995 groundwater sampling event.
August 2-9, 1995	Installation of the biosparging system was initiated. Nineteen combined injection/extraction wells and three vacuum extraction wells were installed.
August 14-26, 1995	Remedial Construction Services, Inc. (RCS) constructed the initial design of the biosparging system.
September 19, 1995	Operation of the extraction portion of the biosparging system commenced.
November 13, 1995	Operation of the injection portion of the biosparging system commenced.
November 14, 1995	Brown and Caldwell conducted the November 1995 groundwater sampling event.
February 23, 1996	Brown and Caldwell conducted the February 1996 groundwater sampling event.
May 31, 1996	Brown and Caldwell conducted the May 1996 groundwater sampling event.
August 23, 1996	Brown and Caldwell conducted the August 1996 groundwater sampling event.
December 2, 1996	Brown and Caldwell conducted the December 1996 groundwater sampling event.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

March 6-7, 1997	BJ Services removed three field waste tanks and associated hydrocarbon-impacted soil.
March 12, 1997	Brown and Caldwell conducted the March 1997 groundwater sampling event.
March 14, 1997	Vapor extraction well VE-4 was installed.
April 1997	Vapor extraction well VE-4 was connected to the vapor extraction system.
June 12, 1997	Brown and Caldwell conducted the June 1997 groundwater sampling event.
September 11-12, 1997	Brown and Caldwell conducted the September 1997 groundwater sampling event.
December 10, 1997	Brown and Caldwell conducted the December 1997 groundwater sampling event.
February 3-14, 1998	Air injection wells AI-20 through AI-24, vapor extraction wells VE-5 through VE-7, and monitor wells MW-11A and MW-12 were installed.
February 19, 1998	Operation of previously existing injection wells was suspended in preparation for start-up of new injection wells AI-20 through AI-24.
March 10, 1998	Operation of new air injection wells AI-20 through AI-24 and new vapor extraction wells VE-5 through VE-7 commenced.
March 23-24, 1998	Brown and Caldwell conducted the March 1998 groundwater sampling event.
March 24, 1998	Operation of previously existing injection wells and vapor extraction wells resumed.
June 23, 1998	Brown and Caldwell conducted the June 1998 groundwater sampling event.
September 30, 1998	Brown and Caldwell conducted the September 1998 groundwater sampling event.
December 9-10, 1998	Brown and Caldwell conducted the December 1998 groundwater sampling event.
January 21, 1999	The NMOCD requested submittal of a work plan by March 22, 1999 to perform additional groundwater delineation in the area of the former field waste tanks and the former AST/MW-6 area.
March 9-10, 1999	Brown and Caldwell conducted the March 1999 groundwater sampling event.
March 19, 1999	Brown and Caldwell submitted the work plan for groundwater delineation activities that was requested by the NMOCD.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

May 19, 1999	The NMOCD approved the groundwater delineation work plan.
June 10, 1999	Brown and Caldwell performed sampling of existing monitor wells for the June /July 1999 groundwater sampling event.
July 2, 1999	Brown and Caldwell completed plugging and abandonment of monitor wells MW-2, MW-6, and MW-11; installed and developed monitor wells MW-12D and MW-13; and sampled monitor wells MW-12D and MW-13 to complete the June/July 1999 groundwater sampling event.
July 14, 1999	Brown and Caldwell redirected air discharge from the shallow injection well injection system to Lateral No. 1 and optimized air flow to injection wells AI-16 and AI-17 to apply increased remedial pressure to the eastern portion of the west plume.
September 13-14, 1999	Brown and Caldwell conducted the September 1999 groundwater sampling event.
December 9, 1999	Brown and Caldwell conducted the December 1999 groundwater sampling event.
March 9-10, 2000	Brown and Caldwell conducted the March 2000 groundwater sampling event and shut off air flow to biosparging system Lateral Nos. 4S, 5S, 6S, and 7S.
June 8, 2000	Brown and Caldwell conducted the June 2000 groundwater sampling event.
September 13, 2000	Brown and Caldwell conducted the September 2000 groundwater sampling event.
November 1, 2000	Brown and Caldwell deactivated the biosparging system.
December 7, 2000	Brown and Caldwell conducted the December 2000 groundwater sampling event.
January 2001	Brown and Caldwell installed and sampled monitor wells MW-14 and MW-15.
March 8-9, 2001	Brown and Caldwell conducted the March 2001 groundwater sampling event.
June 21-22, 2001	Brown and Caldwell conducted the June 2001 groundwater sampling event.
July 23, 2001	Brown and Caldwell collected soil samples from four soil borings installed at the former fueling system area of the facility to confirm the effectiveness of the biosparging system in remediating hydrocarbon impact to soil, as specified in the NMOCD-approved RAP.
September 10, 2001	Brown and Caldwell conducted the September 2001 groundwater sampling event.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

December 6, 2001	Brown and Caldwell conducted the December 2001 groundwater sampling event.
February 26, 2002	Brown and Caldwell repaired the crushed well completion on monitor well MW-10.
February 28, 2002	NMOCD requested an evaluation of chloride content of groundwater at the facility.
March 11-12, 2002	Brown and Caldwell conducted the March 2002 groundwater sampling event. Groundwater samples from all water-producing wells at the facility were analyzed for chloride content.
May 21, 2002	Brown and Caldwell submitted the report for the March 2002 groundwater sampling event, including an evaluation of chloride content of groundwater at the facility and a recommendation for installation of a downgradient off-site well (MW-16) to replace off-site well OW-4, which has gone dry.
June 17-18, 2002	Brown and Caldwell conducted the June 2002 groundwater sampling event.
September 16, 2002	Brown and Caldwell conducted the September 2002 groundwater sampling event.
November 11, 2002	Brown and Caldwell submitted the June 2002 Groundwater Sampling Report and Biosparging System Closure Report.
January 9, 2003	Brown and Caldwell conducted the January 2003 groundwater sampling event.
March 6, 2003	Brown and Caldwell conducted the March 2003 groundwater sampling event.

Table 2
 Cumulative Groundwater Elevation Data
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-1	3,647.53	8/10/1992	53.22	0.00	3,594.31	(1)
		2/9/1993	53.03	0.00	3,594.50	
		8/18/1993	53.10	0.00	3,594.43	
		1/26/1994	53.31	0.00	3,594.22	
		5/3/1995	54.64	0.20	3,593.05	(2)
		7/31/1995	54.14	0.00	3,593.39	
		11/14/1995	53.69	0.00	3,593.84	
		2/23/1996	54.32	0.00	3,593.21	
		5/31/1996	54.14	0.00	3,593.39	
		8/23/1996	56.17	0.00	3,591.36	
		12/2/1996	55.27	0.00	3,592.26	
		3/12/1997	55.70	0.27	3,592.05	
		6/12/1997	55.08	0.02	3,592.47	
		9/12/1997	55.64	0.51	3,592.31	
		12/10/1997	55.46	0.00	3,592.07	PSH Sheen
		3/24/1998	55.81	0.00	3,591.72	PSH Sheen
		6/23/1998	56.38	0.06	3,591.20	
		9/30/1998	56.82	0.00	3,590.71	PSH Sheen
		12/9/1998	57.05	0.00	3,590.48	
		3/10/1999	57.45	0.00	3,590.08	
		6/10/1999	58.02	0.00	3,589.51	
		7/2/1999	57.90	0.00	3,589.63	
		9/14/1999	58.14	0.00	3,589.39	
		12/9/1999	-	-	-	
		3/9/2000	58.99	0.00	3,588.54	(3)
		06/00	-	-	-	
		09/00	-	-	-	
		12/7/00	-	-	-	
		3/8/2001	60.35	0.00	3,587.18	
		6/21/01	60.99	0.00	3,586.54	
9/10/01	61.17	0.00	3,586.36			
12/6/2001	-	not measured	-			
03/11/02	62.11	0.00	3,585.42			
6/17/02	62.53	0.00	3,585.00			
9/16/2002	62.43	0.00	3,585.10			
1/9/2003	62.61	0.00	3,584.92			
3/6/2003	62.72	0.00	3,584.81			
MW-2	3,644.84	8/10/1992	52.82	0.00	3,592.02	(1)
		2/9/1993	49.60	0.00	3,595.24	
		8/18/1993	49.71	0.00	3,595.13	
		1/26/1994	49.97	0.00	3,594.87	
		5/3/1995	-	-	-	(4),(5)
MW-3	3,645.00	8/10/1992	52.99	0.00	3,592.01	(1)
		2/9/1993	52.72	0.00	3,592.28	
		8/18/1993	52.82	0.00	3,592.18	
		1/26/1994	53.05	0.00	3,591.95	
		5/3/1995	54.31	0.00	3,590.69	
		7/31/1995	51.24	0.00	3,593.76	
		11/14/1995	51.10	0.00	3,593.90	
		2/23/1996	51.68	0.00	3,593.32	
		5/31/1996	51.45	0.00	3,593.55	
		8/23/1996	51.55	0.00	3,593.45	
		12/2/1996	52.23	0.00	3,592.77	
		3/12/1997	52.67	0.00	3,592.33	
		6/12/1997	52.68	0.00	3,592.32	
		9/11/1997	52.71	0.00	3,592.29	
		12/10/1997	52.89	0.00	3,592.11	
		3/23/1998	53.22	0.00	3,591.78	
		6/23/1998	53.66	0.00	3,591.34	
		9/30/1998	54.06	0.00	3,590.94	
		12/9/1998	54.36	0.00	3,590.64	
		3/10/1999	54.72	0.00	3,590.28	
		6/10/1999	55.17	0.00	3,589.83	
		7/2/1999	55.15	0.00	3,589.85	
		9/14/1999	55.42	0.00	3,589.58	
		12/9/1999	55.78	0.00	3,589.22	
		3/9/2000	56.23	0.00	3,588.77	
		6/8/2000	56.66	0.00	3,588.34	
		9/13/2000	56.77	0.00	3,588.23	

Table 2
 Cumulative Groundwater Elevation Data
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments		
MW-3 cont.	3,645.00	12/7/2000	57.15	0.00	3,587.85			
		3/8/2001	57.69	0.00	3,587.31			
		6/21/01	58.34	0.00	3,586.66			
		9/10/01	58.54	0.00	3,586.46			
		12/6/2001	59.04	0.00	3,585.96			
		3/11/2002	59.50	0.00	3,585.50			
		6/17/02	59.83	0.00	3,585.17			
		9/16/2002	59.80	0.00	3,585.20			
		1/9/2003	60.01	0.00	3,584.99			
		3/6/2003	60.10	0.00	3,584.90			
		MW-4	3,645.28	8/10/1992	50.55	0.00	3,594.73	(1)
				2/9/1993	50.26	0.00	3,595.02	
				8/18/1993	50.38	0.00	3,594.90	
1/26/1994	50.90			0.30	3,594.63			
5/3/1995	51.51			0.45	3,594.14			
7/31/1995	51.74			0.26	3,593.75			
11/14/1995	51.03			0.00	3,594.25			
2/23/1996	51.65			0.01	3,593.64			
5/31/1996	51.48			0.00	3,593.80			
8/23/1996	53.49			0.00	3,591.79			
12/2/1996	52.32			0.00	3,592.96			
3/12/1997	52.74			0.05	3,592.58			
6/12/1997	53.08			0.44	3,592.56			
9/12/1997	52.60			0.15	3,592.80			
12/10/1997	52.89			0.00	3,592.39	PSH Sheen		
3/24/1998	53.20			0.25	3,592.29			
6/23/1998	53.82			0.22	3,591.64			
9/30/1998	53.96			0.00	3,591.32	200 ml PSH		
12/9/1998	54.27			0.00	3,591.01			
3/10/1999	54.69			0.04	3,590.62			
6/10/1999	55.07			0.00	3,590.21			
7/2/1999	55.10			0.00	3,590.18			
9/14/1999	55.33			0.00	3,589.95			
12/9/1999	55.79			0.00	3,589.49			
3/10/2000	56.12			0.00	3,589.16			
6/8/2000	56.67			0.00	3,588.61			
9/13/2000	56.65			0.00	3,588.63			
12/7/2000	57.05			0.00	3,588.23			
3/8/2001	57.72			0.00	3,587.56			
6/21/01	58.18			0.00	3,587.10			
9/10/01	58.54			0.00	3,586.74			
12/6/2001	58.88			0.00	3,586.40			
3/11/2002	59.41			0.00	3,585.87			
6/17/02	59.67			0.00	3,585.61			
9/16/2002	59.71			0.00	3,585.57			
1/9/2003	59.91			0.00	3,585.37			
3/6/2003	60.03	0.00	3,585.25					
MW-5	3,647.72	8/10/1992	52.38	0.00	3,595.34	(1)		
		2/9/1993	52.06	0.00	3,595.66			
		8/18/1993	52.16	0.00	3,595.56			
		1/26/1994	52.50	0.00	3,595.22			
		5/3/1995	53.57	0.00	3,594.15			
		7/31/1995	53.27	0.00	3,594.45			
		11/14/1995	52.83	0.00	3,594.89			
		2/23/1996	53.57	0.00	3,594.15			
		5/31/1996	53.16	0.00	3,594.56			
		8/23/1996	53.41	0.00	3,594.31			
		12/2/1996	53.98	0.00	3,593.74			
		3/12/1997	54.44	0.00	3,593.28			
		6/12/1997	54.48	0.00	3,593.24			
		9/12/1997	54.29	0.00	3,593.43			
		12/10/1997	54.66	0.00	3,593.06			
		3/23/1998	55.05	0.00	3,592.67			
		6/23/1998	55.44	0.00	3,592.28			
		9/30/1998	55.65	0.00	3,592.07			
		12/9/1998	56.00	0.00	3,591.72			
		3/9/1999	56.45	0.00	3,591.27			
6/10/1999	56.91	0.00	3,590.81					
7/2/1999	56.93	0.00	3,590.79					
9/14/1999	57.12	0.00	3,590.60					

Table 2
 Cumulative Groundwater Elevation Data
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-5 cont.	3,647.72	12/9/1999	57.41	0.00	3,590.31	
		3/9/2000	57.92	0.00	3,589.80	
		6/8/2000	58.32	0.00	3,589.40	
		9/13/2000	58.36	0.00	3,589.36	
		12/7/2000	58.71	0.00	3,589.01	
		3/8/2001	59.36	0.00	3,588.36	
		6/21/01	59.94	0.00	3,587.78	
		9/10/01	59.85	0.00	3,587.87	
		12/6/2001	60.56	0.00	3,587.16	
		3/11/02	61.12	0.00	3,586.60	
		6/17/02	61.43	0.00	3,586.29	
		9/16/2002	61.52	0.00	3,586.20	
		1/9/2003	61.75	0.00	3,585.97	
		3/6/2003	61.90	0.00	3,585.82	
		MW-6	3,644.74	2/9/1993	50.58	0.00
8/18/1993	50.78			0.00	3,593.96	
1/26/1994	51.00			0.00	3,593.74	
5/3/1995	52.63			0.00	3,592.11	
7/31/1995	51.90			0.00	3,592.84	
11/14/1995	51.19			0.00	3,593.55	
2/23/1996	52.10			0.00	3,592.64	
5/31/1996	51.76			0.00	3,592.98	
8/23/1996	51.63			0.00	3,593.11	
12/2/1996	52.85			0.00	3,591.89	
3/12/1997	53.55			0.00	3,591.19	
6/12/1997	52.08			0.00	3,592.66	
9/11/1997	53.72			0.00	3,591.02	
12/10/1997	53.27			0.00	3,591.47	
3/23/1998	53.56			0.00	3,591.18	
6/23/1998	52.88			0.00	3,591.86	
9/30/1998	54.89			0.00	3,589.85	
12/9/1998	54.57			0.00	3,590.17	
3/10/1999	55.10			0.00	3,589.64	(5),(6)
MW-7	3,644.55	2/9/1993	50.53	0.00	3,594.02	(1)
		8/18/1993	50.74	0.00	3,593.81	
		1/26/1994	51.01	0.00	3,593.54	
		5/3/1995	52.25	0.00	3,592.30	
		7/31/1995	51.92	0.00	3,592.63	
		11/14/1995	51.48	0.00	3,593.07	
		2/23/1996	52.15	0.00	3,592.40	
		5/31/1996	51.78	0.00	3,592.77	
		8/23/1996	52.02	0.00	3,592.53	
		12/2/1996	52.52	0.00	3,592.03	
		3/12/1997	52.99	0.00	3,591.56	
		6/12/1997	53.08	0.00	3,591.47	
		9/11/1997	53.00	0.00	3,591.55	
		12/10/1997	53.28	0.00	3,591.27	
		3/23/1998	53.59	0.00	3,590.96	
		6/23/1998	54.20	0.00	3,590.35	
		9/30/1998	54.54	0.00	3,590.01	
		12/9/1998	54.74	0.00	3,589.81	
		3/9/1999	55.15	0.00	3,589.40	
		6/10/1999	55.66	0.00	3,588.89	
		7/2/1999	55.73	0.00	3,588.82	
		9/13/1999	55.94	0.00	3,588.61	
		12/9/1999	56.38	0.00	3,588.17	
		3/9/2000	56.74	0.00	3,587.81	
		6/8/2000	57.17	0.00	3,587.38	
		9/13/2000	57.40	0.00	3,587.15	
		12/7/2000	57.77	0.00	3,586.78	
		3/8/2001	58.29	0.00	3,586.26	
		6/21/01	58.91	0.00	3,585.64	
9/10/01	59.25	0.00	3,585.30			
12/6/2001	59.75	0.00	3,584.80			
3/11/2002	60.03	0.00	3,584.52			
6/17/02	60.39	0.00	3,584.16			
9/16/2002	60.39	0.00	3,584.16			
1/9/2003	60.53	0.00	3,584.02			
3/6/2003	60.61	0.00	3,583.94			

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-8	3,644.87	2/9/1993	50.48	0.00	3,594.39	(1)
		8/18/1993	50.67	0.00	3,594.20	
		1/26/1994	50.96	0.00	3,593.91	
		5/3/1995	52.15	0.00	3,592.72	
		7/31/1995	51.77	0.00	3,593.10	
		11/14/1995	51.37	0.00	3,593.50	
		2/23/1996	52.17	0.00	3,592.70	
		5/31/1996	51.55	0.00	3,593.32	
		8/23/1996	51.92	0.00	3,592.95	
		12/2/1996	52.43	0.00	3,592.44	
		3/12/1997	52.93	0.00	3,591.94	
		6/12/1997	53.96	0.00	3,590.91	
		9/11/1997	52.73	0.00	3,592.14	
		12/10/1997	53.15	0.00	3,591.72	
		3/23/1998	53.51	0.00	3,591.36	
		6/23/1998	54.01	0.00	3,590.86	
		9/30/1998	54.35	0.00	3,590.52	
		12/9/1998	54.60	0.00	3,590.27	
		3/9/1999	55.00	0.00	3,589.87	
		6/10/1999	55.56	0.00	3,589.31	
		7/2/1999	55.57	0.00	3,589.30	
		9/13/1999	55.72	0.00	3,589.15	
		12/9/1999	-	-	-	(3)
		3/9/2000	56.52	0.00	3,588.35	
		06/00	-	-	-	
		09/00	-	-	-	
		12/00	-	-	-	
		3/8/2001	58.11	0.00	3,586.76	
		6/21/01	58.72	0.00	3,586.15	
		9/10/01	58.94	0.00	3,585.93	
		12/6/2001	-	not measured	-	
3/11/2002	59.94	0.00	3,584.93			
6/17/02	60.22	0.00	3,584.65			
9/16/2002	60.24	0.00	3,584.63			
1/9/2003	60.42	0.00	3,584.45			
3/6/2003	60.52	0.00	3,584.35			
MW-9	3,644.78	4/22/1993	49.73	0.00	3,595.05	(1)
		7/15/1993	49.65	0.00	3,595.13	
		8/18/1993	49.85	0.00	3,594.93	
		1/26/1994	50.02	0.00	3,594.76	
		5/3/1995	51.35	0.00	3,593.43	
		7/31/1995	50.97	0.00	3,593.81	
		11/14/1995	50.43	0.00	3,594.35	
		2/23/1996	51.12	0.00	3,593.66	
		5/31/1996	50.89	0.00	3,593.89	
		8/23/1996	50.98	0.00	3,593.80	
		12/2/1996	51.58	0.00	3,593.20	
		3/12/1997	52.21	0.05	3,592.61	
		6/12/1997	52.10	0.00	3,592.68	
		9/12/1997	51.95	0.00	3,592.83	
		12/10/1997	52.37	0.00	3,592.41	
		3/23/1998	52.68	0.00	3,592.10	
		6/23/1998	53.08	0.00	3,591.70	
		9/30/1998	53.39	0.01	3,591.40	
		12/9/1998	53.68	0.00	3,591.10	
		3/10/1999	54.15	0.00	3,590.63	
		6/10/1999	54.68	0.00	3,590.10	
		7/2/1999	54.71	0.00	3,590.07	
		9/13/1999	54.71	0.00	3,590.07	
		12/9/1999	-	-	-	(3)
		3/9/2000	55.69	0.00	3,589.09	
		06/00	-	-	-	
09/00	-	-	-			
12/00	-	-	-			
3/8/2001	57.03	0.00	3,587.75			
6/21/01	57.91	0.00	3,586.87			
9/10/01	57.95	0.00	3,586.83			
12/6/2001	-	not measured	-			

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-9 cont.	3,644.78	3/11/2002	58.96	0.00	3,585.82	
		6/17/02	59.14	0.00	3,585.64	
		9/16/2002		not measured		
		1/9/2003	59.34	0.00	3,585.44	
		3/6/2003	59.48	0.00	3,585.3	
MW-10	3,644.47	8/18/1993	51.54	0.00	3,592.93	(1)
		1/26/1994	51.90	0.00	3,592.57	
		5/3/1995	52.97	0.00	3,591.50	
		7/31/1995	52.87	0.00	3,591.60	
		11/14/1995	52.51	0.00	3,591.96	
		2/23/1996	53.05	0.00	3,591.42	
		5/31/1996	52.79	0.00	3,591.68	
		8/23/1996	53.03	0.00	3,591.44	
		12/2/1996	53.41	0.00	3,591.06	
		3/12/1997	54.21	0.00	3,590.26	
		6/12/1997	53.99	0.00	3,590.48	
		9/12/1997	53.94	0.00	3,590.53	
		12/10/1997	54.12	0.00	3,590.35	
		3/23/1998	54.51	0.00	3,589.96	
		6/23/1998	55.12	0.00	3,589.35	
		9/30/1998	55.61	0.00	3,588.86	
		12/9/1998	55.80	0.00	3,588.67	
		3/9/1999	56.09	0.00	3,588.38	
		6/10/1999	56.60	0.00	3,587.87	
		7/2/1999	56.64	0.00	3,587.83	
		9/14/1999	56.91	0.00	3,587.56	
		12/9/1999	57.37	0.00	3,587.10	
		3/10/2000	57.71	0.00	3,586.76	
		6/8/2000	58.08	0.00	3,586.39	
		9/13/2000	58.44	0.00	3,586.03	
		12/7/2000	58.89	0.00	3,585.58	
		3/9/2001	59.31	0.00	3,585.16	
		6/21/01	59.89	0.00	3,584.58	
		9/10/01	61.34	0.00	3,583.13	
		12/6/2001	60.65	0.00	3,583.82	
3/11/2002	60.69	0.00	3,583.78			
6/17/02	60.98	0.00	3,583.49			
9/16/2002	61.00	0.00	3,583.47			
1/9/2003	61.07	0.00	3,583.40			
3/6/2003	61.19	0.00	3,583.28			
MW-11	3,643.78	8/18/1993	51.92	0.00	3,591.86	(1)
		1/26/1994	52.32	0.00	3,591.46	
		5/3/1995	53.38	0.00	3,590.40	
		7/31/1995	53.35	0.00	3,590.43	
		11/14/1995	52.96	0.00	3,590.82	
		2/23/1996	53.50	0.00	3,590.28	
		5/31/1996	53.25	0.00	3,590.53	
		8/23/1996	53.49	0.00	3,590.29	
		12/2/1996	53.79	0.00	3,589.99	
		3/12/1997	53.81	0.00	3,589.97	
		6/12/1997	53.96	0.00	3,589.82	
		9/12/1997	52.93	0.00	3,590.85	
		12/10/1997				
MW-11A	3,644.24	3/23/1998	54.79	0.00	3,589.45	(7)
		6/23/1998	55.43	0.00	3,588.81	
		9/30/1998	55.96	0.00	3,588.28	
		12/9/1998	56.13	0.00	3,588.11	
		3/10/1999	56.43	0.00	3,587.81	
		6/10/1999	56.94	0.00	3,587.30	
		7/2/1999	57.01	0.00	3,587.23	
		9/14/1999	57.36	0.00	3,586.88	
		12/9/1999	57.72	0.00	3,586.52	
		3/9/2000	58.01	0.00	3,586.23	
		6/8/2000	58.40	0.00	3,585.84	
		9/13/2000	58.84	0.00	3,585.40	
		12/7/2000	59.29	0.00	3,584.95	
		3/8/2001	59.72	0.00	3,584.52	
		6/21/01	60.28	0.00	3,583.96	
9/10/01	60.69	0.00	3,583.55			
12/6/2001	60.88	0.00	3,583.36			

Table 2
 Cumulative Groundwater Elevation Data
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-11A cont.	3,644.24	3/11/2002	61.42	0.00	3,582.82	
		6/17/02	61.55	0.00	3,582.69	
		9/16/2002	61.59	0.00	3,582.65	
		1/9/2003	61.67	0.00	3,582.57	
		3/6/2003	61.70	0.00	3,582.54	
MW-12	3,644.29	3/23/1998	54.72	0.00	3,589.57	(7)
		6/23/1998	55.48	0.00	3,588.81	
		9/30/1998	56.02	0.00	3,588.27	
		12/9/1998	56.17	0.00	3,588.12	
		3/10/1999	56.45	0.00	3,587.84	
		6/10/1999	56.97	0.00	3,587.32	
		7/2/1999	56.99	0.00	3,587.30	
		9/14/1999	57.41	0.00	3,586.88	
		12/9/1999	57.76	0.00	3,586.53	
		3/10/2000	58.08	0.00	3,586.21	
		6/8/2000	58.42	0.00	3,585.87	
		9/13/2000	58.85	0.00	3,585.44	
		12/7/2000	59.31	0.00	3,584.98	
		3/8/2001	59.76	0.00	3,584.53	
		6/21/01	60.29	0.00	3,584.00	
		9/10/01	60.79	0.00	3,583.50	
		well dry during this and subsequent monitoring events				
MW-12D	3,644.38	7/2/1999	57.13	0.00	3,587.25	(8)
		9/14/1999	57.74	0.00	3,586.64	
		12/9/1999	57.86	0.00	3,586.52	
		3/9/2000	58.24	0.00	3,586.14	
		6/8/2000	58.56	0.00	3,585.82	
		09/00	-	-	-	
		12/00	-	-	-	
		3/8/2001	-	-	-	
		6/21/01	-	-	-	
		9/10/01	-	-	-	
		12/6/2001	61.30	0.00	3,583.08	
		3/11/2002	61.61	0.00	3,582.77	
		6/17/02	61.71	0.00	3,582.67	
		9/16/2002	61.75	0.00	3,582.63	
		1/9/2003	61.86	0.00	3,582.52	
3/6/2003	61.91	0.00	3,582.47			
MW-13	3,645.52	7/2/1999	56.60	0.00	3,588.92	(9)
		9/14/1999	56.92	0.00	3,588.60	
		12/9/1999	57.28	0.00	3,588.24	
		3/10/2000	57.68	0.00	3,587.84	
		6/8/2000	58.04	0.00	3,587.48	
		9/13/2000	58.29	0.00	3,587.23	
		12/7/2000	58.68	0.00	3,586.84	
		3/8/2001	59.19	0.00	3,586.33	
		6/21/01	59.80	0.00	3,585.72	
		9/10/01	60.03	0.00	3,585.49	
		12/6/2001	60.59	0.00	3,584.93	
		3/11/2002	60.94	0.00	3,584.58	
		6/17/02	61.28	0.00	3,584.24	
		9/16/2002	61.23	0.00	3,584.29	
		1/9/2003	61.38	0.00	3,584.14	
3/6/2003	61.45	0.00	3,584.07			
MW-14	3,642.45	3/8/2001	61.07	0.00	3,581.38	
		6/21/01	61.71	0.00	3,580.74	
		9/10/01	62.31	0.00	3,580.14	
		12/6/2001	62.80	0.00	3,579.65	
		3/11/2002	62.70	0.00	3,579.75	
		6/17/02	62.65	0.00	3,579.80	
		9/16/2002	62.55	0.00	3,579.90	
		1/9/2003	62.59	0.00	3,579.86	
		3/6/2003	62.64	0.00	3,579.81	
MW-15	3,643.24	3/8/2001	59.79	0.00	3,583.45	
		6/21/01	60.49	0.00	3,582.75	
		9/10/01	61.02	0.00	3,582.22	
		12/6/2001	61.47	0.00	3,581.77	
		3/11/2002	61.65	0.00	3,581.59	
		6/17/02	61.68	0.00	3,581.56	
9/16/2002	61.47	0.00	3,581.77			

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments	
MW-15		1/9/2003	61.59	0.00	3,581.65		
cont.		3/6/2003	61.63	0.00	3,581.61		
OW-4	3,644.06	7/2/1999	58.18	0.00	3,585.88	(8)	
		9/14/1999	58.63	0.00	3,585.43		
		12/9/1999	58.92	0.00	3,585.14		
		3/9/2000	59.19	0.00	3,584.87		
		6/8/2000	59.56	0.00	3,584.50		
		9/13/2000	60.16	0.00	3,583.90		
		12/7/2000	61.15	0.00	3,582.91		
		3/8/2001	61.43	0.00	3,582.63	(10)	
		6/21/01	61.48	0.00	3,582.58		
		9/10/01	61.53	0.00	3,582.53		
		12/6/2001	well dry during this and subsequent monitoring events				

- (1) - Top of casing elevations and groundwater elevations of all monitor wells were relative to an arbitrary datum of 100.00 feet prior to March 1997 and have been converted to Mean Sea Level (MSL).
- (2) - For wells having measurable thickness of free product, the groundwater elevation was calculated as follows:
 $\text{Groundwater Elevation} = (\text{TOC elevation}) - (\text{depth to groundwater}) + [(\text{free product thickness}) \times (\text{SG of free product})]$
 Note: The specific gravity (SG) of the free product is 0.82.
- (3) - Not measured.
- (4) - Monitor well MW-2 could not be located after January 1994.
- (5) - Well plugged and abandoned July 2, 1999.
- (6) - Monitor well MW-11 could not be located after September 12, 1997.
- (7) - TOC elevations for MW-11A and MW-12 estimated relative to TOC elevation for MW-10.
- (8) - TOC elevations for MW-12D and OW-4 estimated relative to TOC elevation for MW-12.
- (9) - TOC elevation for MW-13 estimated relative to TOC elevation for MW-7.
- (10) - Well dry (measured depth to water is below base of screen); true groundwater elevation is less than listed groundwater elevation.

Table 3
 March 6, 2003 Field Screening Results for Groundwater Samples
 Hobbs, New Mexico Facility
 B.J Services Company, U.S.A.

Monitor Well	Cumulative Gallons Removed	pH	Temperature (°C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)
MW-5	1.3	7.46	18.37	1055	72.7	5.44	3.5	0.0
MW-10	0.5*	6.56	17.54	2611	-43.7	2.47	1.0	1.0
MW-11A	1.2	7.46	17.40	9181	-25.1	2.71	1.0	4.0
MW-12D	2.0	7.55	19.20	1094	-76.9	0.39	NM	NM
MW-14	1.1*	6.90	17.98	1654	69.5	7.49	NM	NM
MW-15	2.8	7.21	18.72	1517	54.3	5.08	NM	NM

Monitor wells MW-1, MW-8, and MW-9 not sampled.

Monitor well MW-2 not operative after January 1994; P&A'd 7/1/99.

Monitor well MW-6 P&A'd 7/1/99.

Monitor well MW-11 not operative after September 1997; P&A'd 7/1/99.

Monitor wells MW-12 and OW-4 were dry.

NM = Not Measured

* Well was purged dry using bailing techniques.

Table 4
 Cumulative Results⁽¹⁾ for Chloride⁽²⁾ Analyses
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Sample Date	Monitor Wells ⁽³⁾																
	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
8/1/95	160	150	310	130	380	310	350	110	2,200	3,400	NP	NP	NP	NP	NP	NP	NS
8/23/96	130	140	100	99	210	250	360	140	2,000	2,900	NP	NP	NP	NP	NP	NP	NS
3/23-24/98	212	206	126	151	183	223	364	164	2,390	NS	940	1,200	NP	NP	NP	NP	NS
3/9-10/99	163	156	142	155	411	238	274	123	1,160	NS	834	314	NP	NP	NP	NP	NS
6/10-7/2/99	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NA	195	496	NP	NP	266
3/9-10/00	238	196	196	196	NP	224	241	131	474	NP	1,290	327	117	276	NP	NP	238
1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	368	219	NS
3/8-9/01	NA	165	172	152	NP	224	250	127	879	NP	1,720	586	NS	276	327	NA	NS-D
6/21/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NA	NS	NA	222	222	NS-D
9/10/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	NA	NA	245	228	NS-D
9/18/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	79	NA	NA	NA	NS-D
12/6/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	NA	NA	276	215	NS-D
3/11-12/02	177	172	183	127	NP	188	241	110	861	NP	1,230	NS-D	76	207	284	224	NS-D
6/18/2002	NS	NA	NA	NA	NP	NA	NS	NS	NA	NP	NA	NS-D	NA	145	258	233	NS-D
9/16/2002	NS	NS	NS	121	NP	NS	NS	NS	1,030	NP	1,550	NS-D	86	NS	293	246	NS-D
1/9/2003	NS	NS	NS	123	NP	NS	NS	NS	525	NP	3,150	NS-D	95	NS	179	228	NS-D
3/6/2003	NS	NS	NS	116	NP	NS	NS	NS	363	NP	2,900	NS-D	102	NS	163	272	NS-D

⁽¹⁾ - in mg/L.

⁽²⁾ - NMWQCC standard for chloride is 250 mg/L.

⁽³⁾ - MW-2 not operative after May 3, 1995; P&A'd 7/1/99.

MW-6 P&A'd 7/1/99.

MW-11 P&A'd 7/1/99.

MW-11A installed February 1998.

MW-12 installed February 1998.

MW-12D installed June 1999.

MW-13 installed June 1999.

MW-14 installed January 2001.

MW-15 installed January 2001.

NP = not present at time of sampling event.

NS = not sampled during applicable sampling event.

NA = not analyzed for chloride during applicable sampling event.

NS-D = not sampled because well was dry during applicable sampling event.

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-1	8/10/92	Regular	5550.0	12090.0	2160.0	7370.0	NA	NA
	2/9/93	Regular	2100.0	6500.0	1300.0	7400.0	NA	NA
	8/19/93	Regular	3200.0	7300.0	1200.0	3700.0	NA	NA
	1/27/94	Regular	1930.0	4580.0	672.0	2390.0	NA	NA
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	390.0	1300.0	230.0	800.0	NA	5.7
	11/15/95	Regular	880.0	1800.0	300.0	970.0	NA	6.8
	2/23/96	Regular	1500.0	3700.0	620.0	2200.0	NA	21
	5/31/96	Regular	1100.0	1700.0	380.0	990.0	NA	7.5
	8/23/96	Regular	1800.0	3300.0	570.0	2100.0	NA	17
	12/2/96	Regular	5600.0	9600.0	2100.0	9600.0	100	64
	3/12/97	Regular	5500.0	9700.0	2600.0	8200.0	22	62
	6/12/97	Regular	5300.0	34000.0	7500.0	27000.0	180	160
	9/12/97	Regular	1800.0	4400.0	1000.0	3000.0	23	21
	12/10/97	Regular	7600.0	12000.0	2800.0	8200.0	11	71
	3/24/98	Regular	4800.0	7200.0	1200.0	2400.0	4.2	38
	6/23/98	Regular	53.0	680.0	580.0	1400.0	1.4	9.2
	9/30/1998	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/1998	Regular	< 1.0	1.5	17.0	110.0	1.4	0.31
	3/10/1999	Regular	< 1.0	< 1.0	8.2	110.0	0.62	0.85
	3/10/1999	Duplicate	< 1.0	< 1.0	7.9	110.0	0.66	0.84
	6/10/1999	Regular	< 1.0	1.1	< 1.0	28.0	0.53	0.55
	6/10/1999	Duplicate	< 1.0	1.8	< 1.0	41.0	0.69	0.76
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	9.1	14	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	2.0	< 1	< 1	< 1	0.49	0.58
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
6/18/2002	-	NS	NS	NS	NS	NS	NS	
9/16/2002	-	NS	NS	NS	NS	NS	NS	
1/9/2003	-	NS	NS	NS	NS	NS	NS	
3/6/2003	-	NS	NS	NS	NS	NS	NS	
MW-2 ¹	8/10/92	Regular	14.9	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	100.0	12.0	3.0	13.0	NA	NA
	1/27/94	Regular	< 1	1.2	2.0	2.5	NA	NA
MW-3	8/10/92	Regular	304.9	2099.0	6760.0	1586.0	NA	NA
	2/9/93	Regular	130.0	< 10	< 10	190.0	NA	NA
	8/19/93	Regular	560.0	3100.0	630.0	1900.0	NA	NA
	1/27/94	Regular	1070.0	5380.0	510.0	3120.0	NA	NA
	5/4/95	Regular	770.0	3300.0	470.0	1800.0	NA	NA
	8/1/95	Regular	490.0	2900.0	890.0	1600.0	NA	14
	11/15/95	Regular	250.0	1000.0	180.0	440.0	NA	2.9
	2/23/96	Regular	120.0	810.0	170.0	560.0	NA	4
5/31/96	Regular	670.0	3900.0	1200.0	2300.0	NA	15	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-3 (cont.)	8/23/96	Regular	330.0	2200.0	590.0	1500.0	NA	12
	12/2/96	Regular	220.0	1800.0	670.0	1000.0	0.89	7.4
	3/12/97	Regular	370.0	2000.0	960.0	1400.0	1.8	11
	6/12/97	Regular	860.0	4800.0	1700.0	2600.0	1.9	20
	9/11/97	Regular	770.0	3000.0	1600.0	1900.0	1.6	16
	12/10/97	Regular	240.0	740.0	500.0	450.0	0.59	5.3
	3/24/98	Regular	140.0	630.0	360.0	310.0	0.56	3.9
	6/23/98	Regular	100.0	720.0	350.0	490.0	0.40	4.9
	9/30/1998	Regular	42.0	470.0	450.0	530.0	1.0	3.8
	12/10/1998	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/1999	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/1999	Regular	1.7	3.1	<1.0	36.0	< 0.20	0.18
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.32	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.42	< 0.1
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	-	-	NS	NS	NS	NS	NS
	1/9/2003	-	-	NS	NS	NS	NS	NS
3/6/2003	-	-	NS	NS	NS	NS	NS	
MW-4	8/10/92	Regular	2594.0	10360.0	2160.0	6740.0	NA	NA
	2/9/93	Regular	5200.0	15000.0	2200.0	10000.0	NA	NA
	8/19/93	Regular	3000.0	12000.0	< 2000	7000.0	NA	NA
	1/27/94	Regular	NSP	NSP	NSP	NSP	NA	NSP
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	5700.0	17000.0	3500.0	13000.0	NA	120
	11/15/95	Regular	490.0	1600.0	310.0	1100.0	NA	5.2
	2/23/96	Regular	360.0	2800.0	560.0	2500.0	NA	18
	5/31/96	Regular	84.0	830.0	280.0	1100.0	NA	6.2
	8/23/96	Regular	110.0	1400.0	430.0	1800.0	NA	9.8
	12/2/96	Regular	190.0	2000.0	1800.0	7200.0	56	43
	3/12/97	Regular	220.0	1500.0	1500.0	4400.0	27	27
	6/12/97	Regular	47.0	270.0	360.0	950.0	2.5	6.2
	9/12/97	Regular	92.0	840.0	670.0	2100.0	15	7.6
	12/10/97	Regular	230.0	750.0	970.0	2300.0	3.7	16
	3/24/98	Regular	150.0	510.0	270.0	620.0	1.2	5.6
	6/23/98	Regular	160.0	890.0	590.0	1600.0	0.69	10
	9/30/1998	Regular	80.0	180.0	370.0	840.0	2.0	3.9
	12/10/1998	Regular	28.0	70.0	210.0	960.0	9.3	4.3
	12/10/1998	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
3/10/1999	Regular	8.0	20.0	250.0	1400.0	13.0	13	
6/10/1999	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63	
9/14/1999	Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17	
12/9/1999	Regular	< 1	2.5	2.3	20.1	2	0.53	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-4 (cont.)	3/10/2000	Regular	< 1	< 1	< 1	3.6	2.6	0.15
	6/8/2000	Regular	< 1	< 1	< 1	< 1	0.44	0.23
	9/13/2000	Regular	< 1	< 1	< 1	< 1	0.61	< 0.1
	12/7/2000	Regular	< 1	< 1	1.3	< 1	0.53	0.16
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.43	0.16
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	0.6	< 1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	-	NS	NS	NS	NS	NS	NS
	1/9/2003	-	NS	NS	NS	NS	NS	NS
	3/6/2003	-	NS	NS	NS	NS	NS	NS
	MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA
2/9/93		Regular	< 2	< 2	< 2	< 6	NA	NA
8/10/93		Regular	< 2	< 2	< 2	< 6	NA	NA
1/27/94		Regular	8.7	29.9	4.0	11.3	NA	NA
5/3/95		Regular	3.7	5.3	0.9	4.6	NA	NA
8/1/95		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
11/15/95		Regular	< 0.3	1.2	< 0.3	1.5	NA	NA
2/23/96		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
5/31/96		Regular	31.0	86.0	10.0	20.0	NA	NA
8/23/96		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
12/2/96		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
3/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
6/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
9/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
12/10/97		Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
3/23/98		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
6/23/98		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
9/30/1998		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
12/10/1998		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
3/9/1999		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
6/10/1999		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
9/14/1999		Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
12/9/1999		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
3/9/2000		Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
6/8/2000		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
9/13/2000		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/7/2000		Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
3/8/2001		Regular	< 1	< 1	< 1	< 1	0.56	< 0.1
6/21/2001		Regular	< 1	< 1	< 1	< 1	0.26	< 0.1
9/10/2001		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/6/2001		Regular	< 1	< 1	< 1	< 1	0.49	< 0.1
3/12/2002		Regular	< 1	< 1	< 1	< 1	< 0.24	< 0.1
6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.3 J	< 0.05	
1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1	
3/6/2003	Regular	< 1	< 1	< 1	< 1	NA	< 0.1	
MW-6 ¹	8/10/92	Regular	NS	NS	NS	NS	NA	NS

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-6 (cont.)	2/9/93	Regular	7000.0	19000.0	3100.0	7200.0	NA	NA
	8/19/93	Regular	8100.0	19000.0	3500.0	6400.0	NA	NA
	1/27/94	Regular	7960.0	20200.0	3830.0	6150.0	NA	NA
	5/4/95	Regular	11000.0	17000.0	2900.0	6000.0	NA	NA
	8/1/95	Regular	8300.0	12000.0	2500.0	5100.0	NA	60
	11/15/95	Regular	8900.0	17000.0	2900.0	5500.0	NA	57
	2/23/96	Regular	8100.0	10000.0	2300.0	4000.0	NA	58
	5/31/96	Regular	83.0	150.0	15.0	51.0	NA	0.57
	5/31/96	Duplicate	87.0	160.0	13.0	47.0	NA	0.52
	8/23/96	Regular	31.0	28.0	9.4	7.9	NA	0.46
	12/2/96	Regular	< 1	< 1	< 1	1.7	5.6	< 0.1
	3/12/97	Regular	12.0	< 5	6.8	18.0	12	< 0.5
	6/12/97	Regular	1900.0	1400.0	410.0	310.0	7.8	7.4
	9/11/97	Regular	11.0	1.3	3.4	< 1	1	< 0.1
	12/10/97	Regular	3.0	4.2	1.2	3.9	1.7	0.14
	3/23/98	Regular	3.6	< 1	4.0	< 1	< 0.2	< 0.1
	6/23/98	Regular	170.0	4.1	15.0	7.2	1.2	0.51
	9/30/1998	Regular	1000.0	420.0	140.0	270.0	4.0	3.3
	12/10/1998	Regular	7.6	6.6	1.7	5.8	2.0	< 0.1
3/10/1999	Regular	2500.0	930.0	590.0	1400.0	11.0	13	
MW-7	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	3.0	< 2	< 2	NA	NA
	1/27/94	Regular	1.1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	52.0	3.4	0.7	2.8	NA	NA
	8/1/95	Regular	22.0	2.2	0.9	2.8	NA	< 0.1
	11/15/95	Regular	8.4	0.8	< 0.3	0.9	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Duplicate	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	29.0	83.0	10.0	21.0	NA	0.25
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	4.7	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 5	< 5	< 5	< 5	1.8	< 0.5
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.66	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.21	< 0.1
	9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.29	< 0.1	
3/8/2001	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1	
6/21/2001	Regular	3.1	< 1	< 1	< 1	< 0.22	< 0.1	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-7 (cont.)	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.33	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	1.3	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	NA	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	-	NS	NS	NS	NS	NS	NS
	1/9/2003	-	NS	NS	NS	NS	NS	NS
	3/6/2003	-	NS	NS	NS	NS	NS	NS
MW-8	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	3.0	4.9	0.8	3.7	NA	NA
	8/1/95	Regular	3.1	1.2	0.5	1.6	NA	< 0.001
	8/1/95	Duplicate	3.6	1.5	0.5	1.5	NA	< 0.1
	11/15/95	Regular	< 0.3	0.5	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	1.8	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.6	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
12/6/2001	-	NS	NS	NS	NS	NS	NS	
3/12/2002	Regular	< 1	< 1	< 1	< 1	0.38	< 0.1	
6/18/2002	-	NS	NS	NS	NS	NS	NS	
9/16/2002	-	NS	NS	NS	NS	NS	NS	
1/9/2003	-	NS	NS	NS	NS	NS	NS	
3/6/2003	-	NS	NS	NS	NS	NS	NS	
MW-9	4/22/93	Regular	570.0	380.0	< 50	870.0	NA	NA
	7/15/93	Regular	121.0	7.3	3.0	458.0	NA	NA
	8/19/93	Regular	390.0	290.0	40.0	250.0	NA	NA
	1/27/94	Regular	327.0	357.0	51.1	293.0	NA	NA
	5/3/95	Regular	380.0	110.0	19.0	120.0	NA	NA
	8/1/95	Regular	660.0	410.0	91.0	310.0	NA	6.2
11/15/95	Regular	240.0	24.0	11.0	140.0	NA	1.5	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-9 (cont.)	11/15/95	Duplicate	170.0	18.0	10.0	120.0	NA	1.9
	2/23/96	Regular	170.0	18.0	2.3	160.0	NA	4.3
	5/31/96	Regular	120.0	16.0	3.0	200.0	NA	NA
	8/23/96	Regular	82.0	13.0	6.0	270.0	NA	4
	8/23/96	Duplicate	76.0	14.0	4.8	250.0	NA	4.4
	12/2/96	Regular	61.0	< 25	< 25	210.0	2.6	2.8
	12/2/96	Duplicate	86.0	13.0	2.4	270.0	3.7	2.9
	3/12/97	Regular	30.0	48.0	420.0	880.0	8.2	19
	6/12/97	Regular	4.7	2.1	11.0	97.0	2.6	2.2
	6/12/97	Duplicate	< 5	< 5	6.6	69.0	5.2	1.9
	9/12/97	Regular	2.1	2.3	2.1	120.0	1.2	1.9
	12/10/97	Regular	4.9	9.0	6.8	62.0	0.86	0.92
	3/24/98	Regular	< 1	< 1	< 1	26.0	0.9	1
	6/23/98	Regular	2.4	22.0	10.0	36.0	< 0.2	0.25
	9/30/1998	Regular	1.1	5.5	21.0	59.0	0.27	0.27
	12/10/1998	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
	3/10/1999	Regular	< 1.0	< 1.0	5.7	68.0	< 0.2	0.22
	6/10/1999	Regular	< 1.0	1.8	1.8	71.0	< 0.20	0.43
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	64.0	0.66	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.4	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	1	< 1	< 1	< 1	0.37	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
	9/16/2002	-	NS	NS	NS	NS	NS	NS
	1/9/2003	-	NS	NS	NS	NS	NS	NS
	3/6/2003	-	NS	NS	NS	NS	NS	NS
MW-10	8/19/93	Regular	190.0	460.0	< 200	240.0	NA	NA
	1/27/94	Regular	13.4	4.0	5.5	33.6	NA	NA
	5/4/95	Regular	980.0	15.0	11.0	84.0	NA	NA
	8/1/95	Regular	1300.0	32.0	32.0	100.0	NA	3.6
	11/15/95	Regular	1000.0	24.0	15.0	36.0	NA	1.7
	2/23/96	Regular	810.0	23.0	27.0	44.0	NA	2.4
	5/31/96	Regular	700.0	24.0	34.0	28.0	NA	2
	8/23/96	Regular	290.0	3.4	6.4	13.0	NA	1.4
	12/2/96	Regular	280.0	1.3	17.0	8.0	0.94	0.97
	3/12/97	Regular	110.0	< 5	17.0	< 5	0.61	0.57
	6/12/97	Regular	150.0	12.0	30.0	< 5	0.68	< 0.5
	9/12/97	Regular	87.0	2.3	26.0	2.7	0.76	0.33
	9/12/97	Duplicate	87.0	2.4	26.0	2.8	0.79	0.33
	12/10/97	Regular	41.0	9.8	12.0	7.7	1.1	0.28
	12/10/97	Duplicate	36.0	8.5	10.0	6.7	1.2	0.24
	3/23/98	Regular	36.0	< 5	5.9	< 5	1.6	< 0.5
	3/23/98	Duplicate	36.0	< 1	5.3	1.3	1.7	0.18

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G		
			micrograms per liter, ug/L				milligrams per liter, mg/L			
MW-10 (cont.)	6/23/98	Regular	37.0	< 5	< 5	< 5	2.1	< 0.5		
	9/30/1998	Regular	84.0	3.2	30.0	2.2	1.4	0.36		
	12/10/1998	Regular	29.0	1.0	7.0	1.0	0.86	0.18		
	3/9/1999	Regular	28.0	<5.0	5.8	<5.0	0.92	<0.5		
	6/10/1999	Regular	17.0	<1.0	<1.0	<1.0	0.30	0.16		
	9/14/1999	Regular	10.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10		
	12/9/1999	Regular	23.0	< 1	< 1	1.2	0.44	0.16		
	3/10/2000	Regular	300.0	4.3	6.6	43.2	1.2	0.85		
	6/8/2000	Regular	78.0	1.7	7.2	9.0	0.67	0.74		
	9/13/2000	Regular	23.0	1.5	1.1	2.9	1.6	0.41		
	12/7/2000	Regular	7.2	< 1	< 1	< 1	1.5	0.15		
	3/8/2001	Regular	3.4	1.1	< 1	< 1	3.4	0.2		
	6/22/2001	Regular	< 1	< 1	< 1	< 1	1.2	<0.1		
	9/10/01 and 9/18/01	Regular	2	< 1	< 1	< 1	2.3	<0.1		
	12/6/2001	Regular	No Valid Data							
	3/12/2002	Regular	< 1	< 1	< 1	< 1	3.2	< 0.1		
	6/18/2002	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1		
	9/16/2002	Regular	< 0.074	< 0.11	0.1	<0.082	3 J	< 0.05		
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1		
	3/6/2003	Regular	< 1	< 1	18	< 1	NA	< 0.1		
MW-11 ¹	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA		
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA		
	5/4/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA		
	8/1/95	Regular	44.0	29.0	5.5	13.0	NA	0.2		
	11/15/95	Regular	190.0	2.8	6.2	11.0	NA	0.4		
	2/23/96	Regular	49.0	1.2	0.5	4.0	NA	0.25		
	5/31/96	Regular	300.0	83.0	12.0	28.0	NA	0.8		
	8/23/96	Regular	100.0	1.2	0.3	4.7	NA	0.26		
	12/2/96	Regular	970.0	< 5	6.0	8.1	2	1.3		
	3/12/97	Regular	130.0	< 5	13.0	5.8	0.42	< 0.5		
	3/12/97	Duplicate	100.0	< 5	10.0	5.1	0.43	< 0.5		
	6/12/97	Regular	150.0	23.0	19.0	< 5	1.1	0.55		
	9/12/97	Regular	220.0	15.0	27.0	13.0	1	0.46		
MW-11A	3/24/98	Regular	24.0	5.0	< 5	< 5	0.28	0.14		
	6/23/98	Regular	9.9	< 5	< 5	< 5	< 0.2	< 0.5		
	9/30/1998	Regular	9.3	3.7	2.2	7.0	<0.20	0.1		
	12/10/1998	Regular	1.7	<1.0	<1.0	<1.0	<0.20	<0.1		
	3/10/1999	Regular	<5	< 5	< 5	< 5	0.3	<0.5		
	6/10/1999	Regular	<1.0	< 1.0	< 1.0	< 1.0	<0.20	<0.10		
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10		
	12/9/1999	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1		
	3/9/2000	Regular	1.2	< 1	< 1	< 1	0.43	< 0.1		
	6/8/2000	Regular	3.6	< 1	< 1	< 1	0.37	< 0.1		
	9/13/2000	Regular	1.4	< 1	< 1	< 1	0.36	< 0.1		
	12/7/00	Regular	26	< 1	< 1	3.3	0.3	0.12		
	3/8/01	Regular	12	< 5	< 5	< 5	2.2	< 0.5		
	6/22/2001	Regular	1.5	< 1	< 1	< 1	1	< 0.1		
	9/10/2001	Regular	7.9	< 1	< 1	< 1	1.1	< 0.1		
	12/6/2001	Regular	<1	< 1	< 1	< 1	1	< 0.1		

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-11A (cont.)	3/12/2002	Regular	1.8	< 1	< 1	1	1.6	< 0.1
	6/18/2002	Regular	2.9	< 0.1	1.3	< 1	0.91	< 0.1
	9/16/2002	Regular	9	< 0.11	41	< 0.082	1 J	0.2
	1/9/2003	Regular	12	< 1	< 1	1.2	< 1.0	0.4
	3/6/2003	Regular	3.2	< 1	< 1	1.2	< 1	0.13
MW-12	3/24/98	Regular	100.0	11.0	6.0	8.0	0.29	0.41
	6/23/98	Regular	88.0	< 5	< 5	< 5	< 0.2	< 0.5
	6/23/98	Duplicate	89.0	< 5	< 5	< 5	0.31	< 0.5
	9/30/1998	Regular	260.0	3.0	1.2	7.9	< 0.20	0.62
	12/10/1998	Regular	160.0	< 1.0	< 1.0	1.2	0.21	0.36
	3/10/1999	Regular	160.0	1.1	< 1.0	2.9	0.38	0.45
	6/10/1999	Regular	49.0	1.4	< 1.0	< 1.0	0.22	0.13
	9/14/1999	Regular	75.0	< 1.0	< 1.0	< 2.0	< 0.20	0.23
	12/9/1999	Regular	64.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Regular	93.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Duplicate	99.0	< 1	< 1	< 1	0.22	0.22
	6/8/2000	Regular	62.0	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/2000	Regular	34.0	< 1	< 1	< 1	0.23	< 0.1
	12/7/2000	Regular	27	< 1	2.9	1.9	< 0.25	< 0.1
	3/8/2001	Regular	14	< 1	< 1	< 1	2.1	0.1
	6/22/2001	Regular	12	< 1	< 1	< 1	0.51	0.11
	9/10/2001	Well Dry (Not Sampled) During This and Subsequent Monitoring Events						
MW-12D	7/2/1999	Regular	< 5	< 5	< 5	< 5	< 0.20	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.24	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	-	NS	NS	NS	NS	NS	NS
	6/22/2001	-	NS	NS	NS	NS	NS	NS
	9/18/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.44	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.2 J	< 0.05
1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1	
3/6/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1	
MW-13	7/2/1999	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/1999	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/1999	Regular	430.0	16.0	410.0	40.9	0.46	3.2
	3/10/2000	Regular	88.0	2.8	200.0	1.3	1.9	0.99
	6/8/2000	Regular	6.0	< 1	63.0	3.3	1.1	0.91
	9/13/2000	Regular	< 1.0	< 1.0	3.4	< 1.0	0.44	0.12
	12/7/2000	Regular	< 1	< 1	< 1	< 1	0.43	< 0.1
	3/8/2001	Regular	< 1	< 1	1.2	< 1	2	< 0.1
	6/22/2001	Regular	< 1	< 1	< 1	< 1	0.31	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
3/12/2002	Regular	< 1	< 1	< 1	< 1	0.84	< 0.1	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-13 (cont.)	6/18/2002	Regular	<1	<1	<1	<1	0.3	<0.1
	9/16/2002	-	NS	NS	NS	NS	NS	NS
	1/9/2003	-	NS	NS	NS	NS	NS	NS
	3/6/2003	-	NS	NS	NS	NS	NS	NS
MW-14	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	3/6/2003	Regular	NA	NA	NA	NA	NA	NA
MW-15	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	3/6/2003	Regular	NA	NA	NA	NA	NA	NA
OW-4	6/10/1999	Regular	<1.0	<1.0	<1.0	4.4	< 0.2	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	3/9/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	0.25	< 0.1
	6/8/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.21	< 0.1
	9/13/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	12/7/2000		Well Dry (Not Sampled) During This and Subsequent Monitoring Events					

¹ Well plugged and abandoned 7/1/99

NA = Not Analyzed

NS = Not Sampled

NS-D = Not Sampled because well was dry

NSP = Not Sampled due to Phase-Separated Hydrocarbons

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-5	3/23/1998	3.87	190	< 0.0012
	3/9/1999	< 0.1	195	< 0.0012
	6/10/1999	4.73	209	< 0.0012
	9/14/1999	4.3	210	< 0.0012
	12/9/1999	4.2	210	< 0.0012
	3/9/2000	5.3	260	< 0.0012
	6/8/2000	4.7	240	< 0.0012
	9/13/2000	3.93	200	< 0.0012
	12/7/2000	3.27	160	< 0.0012
	3/8/2001	3.24	180	< 0.0012
	6/21/2001	2.74	150	0.0017
	9/10/2001	NA ⁽²⁾	130	< 0.0012
	12/6/2001	2.38	120	< 0.0012
	3/12/2002	2.98	120	< 0.0012
	6/18/2002	2.56	110	0.002
	9/16/2002	2.4	105	0.002
	1/9/2003	2.1	97	0.004
3/6/2003	2.75	110	< 0.0012	
MW-10	3/23/1998	0.07	320	0.91
	6/23/1998	< 0.1	325	0.55
	9/30/1998	< 0.1	204	0.81
	12/10/1998	< 0.1	180	0.091
	3/9/1999	< 0.1	142	0.035
			223 ⁽³⁾	
	9/14/1999	< 0.10	160	0.0049
	12/9/1999	0.49	170	0.0039
	3/10/2000	0.1	160	0.0056
	6/8/2000	< 0.1	150	0.031
	9/13/2000	< 0.1	160	0.031
	12/7/2000	< 0.1	190	0.17
	3/8/2001	< 0.1	270	< 0.0012
	6/22/2001	< 0.1	270	0.044
	9/10/2001	NA	NA	NA
	3/12/2002	< 0.1	230	NA
	6/18/2002	< 0.1	240	0.007
9/16/2002	< 0.03	318	0.006	

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-10 (cont.)	1/9/2003	< 0.1	280	0.0024
	3/6/2003	< 0.1	270	0.0031
MW-11A	3/23/1998	< 0.05	190	0.14
	6/23/1998	< 0.1	225	0.11
	9/30/1998	0.4	196	0.043
	12/10/1998	0.7	188	0.033
	3/10/1999	< 0.1	164	0.094
		< 0.1 ⁽⁴⁾	227 ⁽³⁾	
	6/10/1999	< 0.1	181	0.0036
	9/13/1999	0.22	250	< 0.0012
	12/9/1999	< 0.1	290	0.0079
	3/9/2000	0.11	270	0.037
	6/8/2000	< 0.1	240	0.0069
	9/13/2000	< 0.1	320	< 0.0012
	12/7/2000	< 0.1	260	0.0096
	3/8/2001	< 0.1	330	0.0028
	6/22/2001	< 0.1	180	0.0074
	9/10/2001	NA	280	< 0.0012
	12/6/2001	< 0.1	240	0.0041
	3/12/2002	< 0.1	350	0.0044
	6/18/2002	< 0.1	560	0.0028
	9/16/2002	0.3	383	< 0.0012
1/9/2003	< 0.5	290	0.0063	
3/6/2003	< 0.1	290	0.0044	
MW-12	3/23/1998	< 0.05	240	< 0.0012
	6/23/1998	< 0.1	240	< 0.0012
	9/30/1998	< 0.1	168	< 0.0012
	12/10/1998	< 0.1	202	< 0.0012
	3/10/1999	< 0.1	137	< 0.0012
		< 0.1 ⁽⁴⁾	193 ⁽³⁾	
	6/10/1999	< 0.1	217	< 0.0012
	9/14/1999	< 0.10	230	< 0.0012
	12/9/1999	< 0.1	180	< 0.0012
	3/10/2000	< 0.1	210	< 0.0012
	6/8/2000	< 0.1	220	< 0.0012
	9/13/2000	< 0.1	240	< 0.0012
	12/7/2000	< 0.1	260	< 0.0012

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-12 (cont.)	3/8/2001	< 0.1	300	< 0.0012
	6/22/2001	< 0.1	360	0.0021
	9/10/2001	Well Dry (Not Sampled) During This and Subsequent Monitoring Events		
MW-12D	9/18/2001	NA	190	< 0.0012
	12/6/2001	< 0.1	200	< 0.0012
	3/12/2002	< 0.1	200	< 0.0012
	6/18/2002	< 0.1	180	0.0012
	9/16/2002	0.06	172	< 0.0012
	1/9/2003	< 0.1	150	0.005
	3/6/2003	0.705	170	0.0038

⁽¹⁾ - By EPA Method 300, except as noted

⁽²⁾ - NA indicates not analyzed

⁽³⁾ - By EPA Method 375.4

⁽⁴⁾ - By EPA Method 353.3

⁽⁵⁾ - NS-D indicates not sampled (well dry)

mg/L = milligrams per liter

Table 7
 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells ⁽¹⁾																		
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4		
Bicarbonate, as CaCO ₃ (mg/L)	8/1/1995	380	430	490	290	670	440	360	570	520	560	NP ⁽³⁾	NP	NP	NP	NP	NP	NP	NS ⁽³⁾	
	8/23/1996	310	310	210	270	120	400	280	390	520	430	NP	NP	NP	NP	NP	NP	NP	NS	
	3/23-24/1998	286	214	175	247	180	309	260	306	357	NS	319	451	NP	NP	NP	NP	NP	NS	
	3/9-10/1999	92	309	186	283	286	358	317	333	278	NS	335	386	NP	NP	NP	NP	NP	NS	
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	200	520	NP	NP	NP	316	
	3/9-10/2000	89.1	248	160	253	NP	301	362	279	455	NP	703	402	244	240	NP	NP	NP	1020	
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	374	250	NS	
	3/8-9/2001	90.9	242	232	222	NP	283	252	252	586	NP	646	475	NS	NS	NS	NA ⁽⁴⁾	NS	NS-D ⁽⁴⁾	
	3/11-12/2002	230	230	210	260	NP	260	340	260	784	NP	520	NS-D	260	164	NS	NS	NS	NS-D	
	3/16/2003	NS	NS	NS	243	NP	NS	NS	NS	273	NP	401	NS-D	241	NS	NS	373	231	NS-D	
Carbonate, as CaCO ₃ (mg/L)	8/1/1995	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NP	NP	NP	NP	NP	NP	NP	NS	
	8/23/1996	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NP	NP	NP	NP	NP	NP	NP	NS	
	3/23-24/1998	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NS	
	3/9-10/1999	<1	<1	<1	<1	<1	<1	<1	<1	<1	NS	<1	<1	<1	<1	<1	<1	<1	NS	
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	<1	<1	<1	<1	<1	<1	
	3/9-10/2000	<2	<2	<2	<2	NP	<2	<2	<2	<2	NP	<2	<2	<2	<2	<2	<2	<2	<2	<4
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	<2	<2	NS	
	3/8-9/2001	<2	<2	<2	<2	NP	<2	<2	<2	<2	NP	<2	<2	<2	<2	<2	NA	NS	NS-D	
	3/11-12/2002	<2	<2	<2	<2	NP	<2	<2	<2	<2	NP	<2	NS-D	<2	<2	<2	NS	NS	NS-D	
	3/16/2003	NS	NS	NS	<2	NP	NS	NS	NS	<2	NP	<2	NS-D	<2	<2	NS	3.03	<2	NS-D	
Hardness-Total, as CaCO ₃ (mg/L)	3/23-24/1998	430	430	275	342	440	670	740	510	1,450	NP	1,000	1,600	NP	NP	NP	NP	NP	NS	
	3/9-10/1999	250	440	310	340	640	780	680	370	720	NS	1,150	460	NP	NP	NP	NP	NP	NS	
	3/9-10/2000	600	450	500	1,200	NP	660	760	430	760	NP	880	700	260	540	NP	NP	NP	3,000	
	3/8-9/2001	310	470	610	440	NP	590	590	1,000	1,300	NP	1,900	1,300	670	670	NA	NS	NS	NS-D	
	3/11-12/2002	420	420	450	420	NP	ND ⁽⁶⁾	ND	ND	1,200	NP	1,400	NS-D	330	750	NS	NS	NS	NS-D	
	3/16/2003	NS	NS	NS	690	NP	NS	NS	NS	NA	NP	1,500	NS-D	360	NS	NA	NA	NA	NS-D	
Hydroxide (mg/L)	8/1/1995	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NP	NP	NP	NP	NP	NP	NP	NS	
	8/23/1996	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NP	NP	NP	NP	NP	NP	NP	NS	
	3/23-24/1998	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.039	<0.0012	0.91	NS	0.14	<0.0012	NP	NP	NP	NP	NP	NS	
	3/9-10/1999	NS	NS	NS	<0.0012	NS	NS	NS	NS	0.035	NS	0.094	<0.0012	NP	NP	NP	NP	NP	NS	
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NA	NA	0.0015	0.0017	NP	NP	NP	<0.0012	
	3/9-10/2000	<0.0012	<0.0012	<0.0012	<0.0012	NP	<0.0012	0.13	<0.0012	0.0056	NP	0.037	<0.0012	<0.0012	<0.0012	NA	NS	NS	<0.0012	
Methane (mg/L)	3/8-9/2001	<0.0012	<0.0012	<0.0012	<0.0012	NP	<0.0012	<0.0012	<0.0012	<0.0012	NP	0.0028	<0.0012	NS	<0.0012	NA	NS	NS	NS-D	
	3/11-12/2002	0.007	<0.0012	0.0024	<0.0012	NP	ND	ND	ND	ND	NP	0.0044	NS-D	<0.0012	<0.0012	NS	NS	NS	NS-D	
	3/16/2003	NS	NS	NS	<0.0012	NP	NS	NS	NS	0.0031	NP	0.0044	NS-D	0.0038	NS	NA	NA	NA	NS-D	
	8/1/1995	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NP	NP	NP	NP	NP	NP	NP	NS	
	8/23/1996	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NP	NP	NP	NP	NP	NP	NP	NS	
	3/23-24/1998	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.039	<0.0012	0.91	NS	0.14	<0.0012	NP	NP	NP	NP	NP	<0.0012	
Anions (mg/L)	3/9-10/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NA	NA	0.0015	0.0017	NP	NP	NP	NS	
	6/10/1999-7/2/1999	<0.0012	<0.0012	<0.0012	<0.0012	NP	<0.0012	<0.0012	<0.0012	<0.0012	NP	0.0028	<0.0012	NS	<0.0012	NA	NS	NS	NS-D	
	3/9-10/2000	<0.0012	<0.0012	<0.0012	<0.0012	NP	<0.0012	<0.0012	<0.0012	<0.0012	NP	0.0044	NS-D	<0.0012	<0.0012	NS	NS	NS	NS-D	
	3/11-12/2002	0.007	<0.0012	0.0024	<0.0012	NP	ND	ND	ND	ND	NP	0.0044	NS-D	<0.0012	<0.0012	NS	NS	NS	NS-D	
	3/16/2003	NS	NS	NS	<0.0012	NP	NS	NS	NS	0.0031	NP	0.0044	NS-D	0.0038	NS	NA	NA	NA	NS-D	
	8/1/1995	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NP	NP	NP	NP	NP	NP	NP	NS	
Chloride	3/23-24/1998	0.9	1.2	1.2	0.6	1.1	0.8	0.9	1.3	6.1	NS	2.9	4.2	NP	NP	NP	NP	NP	NS	
	3/9-10/1999	1.54	1.46	1.5	1.38	1.79	1.56	1.44	1.84	4.93	NS	3.08	3.13	NP	NP	NP	NP	NP	NS	
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	1.83	2.22	NP	NP	NP	NP	3.45	
	3/9-10/2000	1.7	1.1	1.1	1.1	NP	0.75	0.69	1.5	1	NP	<0.1	1.7	1.3	NP	NP	NP	NP	3.8	
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	
	3/8-9/2001	1.3	0.77	0.63	0.86	NP	0.69	0.66	0.92	1.2	NP	1.1	1.9	NS	NS	NA	NS	NS	NS-D	
3/11-12/2002	1.2	1.4	1.2	1.4	NP	1.3	1.1	1.5	1.8	NP	2.1	NS-D	1.4	2.3	NS	NS	NS	NS-D		
3/16/2003	NS	NS	NS	1.1	NP	NS	NS	NS	1.6	NP	4.1	NS-D	1.2	NS	2.3	NS	0.91	NS-D		

Table 7
 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Monitor Wells ⁽¹⁾																
	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Nitrate (Nitrogen as N)	8/1/1995	5.6	15	28	1.3	9.2	11	38	<0.1	5.5	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	11	7.6	12	<0.5	10	8.6	24	<5	11	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	1.78	3.07	2.59	3.87	3.92	1.84	4.27	0.07	NS	<0.05	<0.05	<0.05	NP	NP	NP	NS
	3/9-10/1999	0.7	2.1	2.6	NA	3.3	0.7	3.7	NA	NP	<0.1	<0.1	<0.1	NP	NP	NP	NS
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	2.1	2.4	NP	NP	3.96
	3/9-10/2000	0.33	2.9	3.7	5.3	NP	3.6	0.35	7.2	0.1	NP	0.11	<0.1	0.14	<0.1	NP	3.6
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	4.5	4.88	NS
	3/8-9/2001	4.31	2.56	4.75	3.24	NP	2.82	0.664	7.9	<0.1	NP	<0.1	<0.1	NS	NA	NS	NS-D
	3/11-12/2002	5.7	3.86	8.55	2.98	NP	3.23	0.607	6.34	<0.1	NP	<0.1	<0.1	<0.1	NS	NS	NS-D
	3/6/2003	NS	NS	NS	2.75	NP	NS	NS	NS	<0.1	NP	<0.1	NS-D	0.705	NS	5.82	3.67
Sulfate	8/1/1995	150	150	230	6.7	180	160	150	130	230	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	130	150	140	85	80	160	180	120	130	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	130	180	190	230	310	250	230	320	NS	190	240	240	193	NP	NP	NS
	3/9-10/1999	196	162	178	195	246	240	146	223	NP	227	193	227	193	NP	NP	NS
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	249	334	NP	NP	192
	3/9-10/2000	530	190	250	260	NP	280	170	160	NP	270	210	200	170	NP	NP	200
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NP	NP	NS	NS	NS	180	130	NS
	3/8-9/2001	210	170	180	180	NP	260	240	150	270	NP	300	300	380	NA	NS	NS-D
	3/11-12/2002	190	150	160	120	NP	240	250	130	230	NP	NS-D	200	380	NS	NS	NS-D
	3/6/2003	NS	NS	NS	110	NP	NS	NS	NS	270	NP	NS-D	170	NS	150	150	NS
Calcium	8/1/1995	120	120	160	320	300	300	180	610	490	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	120	130	110	62	270	230	190	390	440	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	129	122	109	94	208	215	142	417	NS	259	388	417	NP	NP	NP	NS
	3/9-10/1999	80.2	129	116	141	233	197	122	214	NP	308	148	NP	NP	NP	NP	NS
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	113	389	NP	NP	141
	3/9-10/2000	155	119	387	NP	167	215	110	177	NP	229	180	78.1	122	NP	NP	882
	1/14/2001	NS	NS	NS	NP	NP	NS	NS	NS	NP	NS	NS	NS	NS	179	150	NS
	3/8-9/2001	86.8	148	157	143	172	183	381	331	NP	466	338	NS	198	NA	NS	NS-D
	3/11-12/2002	112	121	143	NP	ND	ND	ND	303	NP	330	NS-D	120	225	NS	NS	NS-D
	3/6/2003	NS	NS	NS	288	NP	NS	NS	NS	NA	NP	NS-D	135	NS	NA	NA	NS-D
Magnesium	8/1/1995	34	36	27	72	42	49	43	130	130	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	120	32	18	28	40	48	44	84	120	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	36	30	18	20	47	52	36	130	NS	96	108	NP	NP	NP	NP	NS
	3/9-10/1999	19.7	31.5	20.4	62.2	54.4	47.7	28.5	43	NP	101	32.1	NP	NP	NP	NP	NS
	6/10/1999-7/2/1999	NS	NS	NS	NP	NP	NS	NS	NS	NP	NS	NS	16.6	83.9	NP	NP	44.3
	3/9-10/2000	41.3	27.5	26.3	29.2	44.3	39.1	26.2	61	NP	47.7	30.6	7.25	38.8	NP	NP	74.5
	1/14/2001	NS	NS	NS	NP	NP	NS	NS	NS	NP	NS	NS	NS	NS	87.5	28.3	NS
	3/8-9/2001	20.7	24.9	25.9	16.6	41.1	37.4	28.2	95.1	NP	93.4	95.3	NS	52.3	NA	NS	NS-D
	3/11-12/2002	27.3	20.7	20.7	13	ND	ND	ND	ND	NP	103	NS-D	6.06	44.7	NS	NS	NS-D
	3/6/2003	NS	NS	NS	19.6	NP	NS	NS	NS	NA	NP	NS-D	6.74	NS	NA	NA	NS-D
Potassium	8/1/1995	2.4	2.6	4.2	3	3.4	5	4.1	35	46	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	2.4	3	3.1	2.4	3.7	3.9	2.6	41	53	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	<20	<20	<20	<20	<20	<20	<20	20	NS	30	70	NP	NP	NP	NP	NS
3/9-10/1999	3	4	4	4	9	4	3	15	NP	21	101	NP	NP	NP	NP	NS	

Table 7
 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells (0)																	
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4	
Potassium	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	66	6	NP	NP	3	
	3/9-10/2000	4.01	4.11	3.95	5.61	NP	6.98	4.53	4.08	18.3	NP	18.6	104	70.6	2.84	NP	NP	10.7	
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	3.59	NP	NS	
	3/8-9/2001	<2	2.56	2.76	2.25	NP	5.15	2.94	3.84	19.5	NP	33.5	47.2	NS	2.26	NA	NS	NS-D	
	3/11-12/2002	2.82	4.05	2.79	3.55	NP	ND	ND	ND	ND	NP	41.5	NS-D	72	2.82	NS	NS	NS-D	
	3/6/2003	NS	NS	NS	3.72	NP	NS	NS	NS	NS	NP	39.4	NS-D	55.6	NS	NA	NA	NS-D	
Sodium	8/1/1995	100	93	140	110	130	95	94	98	660	2000	NP	NP	NP	NP	NP	NP	NS	
	8/23/1996	100	110	88	120	120	96	100	83	960	2600	NP	NP	NP	NP	NP	NP	NS	
	3/23-24/1998	113	126	109	130	100	92	101	118	1090	NS	312	381	NP	NP	NP	NP	NS	
	3/9-10/1999	126	135	124	155	141	110	115	122	856	NP	225	180	NP	NP	NP	NP	NS	
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	121	165	NP	NP	103	
	3/9-10/2000	123	112	115	123	NP	95.1	95.4	99.1	181	NP	608	129	103	114	NP	NP	97.3	
Metals (mg/L)	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	NS	NS	NS	144	108	NS	
	3/8-9/2001	141	124	135	147	NP	121	118	119	410	NP	801	185	NS	142	NA	NS	NS-D	
	3/11-12/2002	147	133	128	145	NP	ND	ND	ND	ND	NP	660	NS-D	79.4	127	NS	NS	NS-D	
	3/6/2003	NS	NS	NS	144	NP	NS	NS	NS	NS	NP	1550	NS-D	68.8	NS	NA	NA	NS-D	
	Arsenic	8/1/1995	0.0076	0.0043	<0.002	0.0059	0.028	0.0033	0.0034	0.0055	0.015	0.0086	NP	NP	NP	NP	NP	NP	NS
		8/23/1996	0.0078	0.0066	0.0059	0.0067	0.018	0.0036	0.0033	0.0044	0.028	0.011	NP	NP	NP	NP	NP	NP	NS
3/23-24/1998		0.007	0.007	0.008	0.007	0.013	<0.005	<0.005	0.005	0.035	NS	0.019	0.013	NP	NP	NP	NP	NS	
3/9-10/1999		0.013	0.009	0.012	0.005	0.02	0.006	0.005	0.007	0.026	NP	0.036	0.066	NP	NP	NP	NP	NS	
6/10/1999-7/2/1999		NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	0.022	0.008	NP	NP	<0.005	
3/9-10/2000		0.0178	0.00817	0.0178	0.0173	NP	0.00849	0.00953	0.00757	0.0474	NP	0.108	0.0948	0.0143	<0.005	NP	NP	0.034	
Barium	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	0.00511	<0.005	NS	
	3/8-9/2001	0.0205	0.0094	0.0386	0.00974	NP	0.00694	NA	0.013	0.133	NP	0.08	0.0445	NS	0.00673	NA	NS	NS-D	
	3/11-12/2002	0.00939	0.00889	0.0101	0.0104	NP	ND	ND	ND	0.286	NP	0.086	NS-D	0.0471	0.012	NS	NS	NS-D	
	3/6/2003	NS	NS	NS	0.0125	NP	NS	NS	NS	NA	NP	0.0387	NS-D	0.0491	NS	NA	NA	NS-D	
	8/1/1995	0.069	0.38	0.34	0.049	1.1	0.069	0.075	0.089	0.37	0.2	NP	NP	NP	NP	NP	NP	NS	
	8/23/1996	0.064	0.24	0.069	0.038	0.29	0.061	0.066	0.089	0.26	0.2	NP	NP	NP	NP	NP	NP	NS	
Cadmium	3/23-24/1998	0.11	0.182	0.044	0.044	0.208	0.059	0.074	0.066	0.287	NS	0.163	0.157	NP	NP	NP	NP	NS	
	3/9-10/1999	0.058	0.059	0.045	0.054	0.555	0.076	0.052	0.043	0.17	NP	0.174	0.144	NP	NP	NP	NP	NS	
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	0.155	0.333	NP	NP	0.062	
	3/9-10/2000	0.0917	0.108	0.0694	0.184	NP	0.046	0.236	0.0419	0.281	NP	0.872	0.245	0.0962	1.13	NP	NP	1.49	
	1/14/2001	NS	NS	NS	NS	NP	NP	NS	NS	NS	NP	NS	NS	NS	NS	NS	0.0833	NS	
	3/8-9/2001	0.044	0.119	0.0978	0.00555	NP	0.043	0.0512	0.111	0.23	NP	0.401	0.603	NS	0.171	NA	NA	NS-D	
Cadmium	3/11-12/2002	0.06	0.0797	0.0805	0.0524	NP	ND	ND	ND	0.294	NP	0.348	NS-D	0.0865	0.109	NS	NS	NS-D	
	3/6/2003	NS	NS	NS	0.15	NP	NS	NS	NS	NA	NP	0.297	NS-D	0.1	NS	NA	NA	NS-D	
	8/1/1995	<0.001	<0.001	0.0052	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NP	NP	NP	NP	NP	NP	NS	
	8/23/1996	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NP	NP	NP	NP	NP	NP	NS	
	3/23-24/1998	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NS	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NS	
	3/9-10/1999	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NP	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Cadmium	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	<0.005	<0.005	NP	NP	<0.005	
	3/9-10/2000	<0.005	<0.005	0.0178	<0.005	NP	<0.005	<0.005	<0.005	<0.005	NP	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	1/14/2001	NS	NS	NS	<0.005	NP	NS	NS	NS	<0.005	NP	NS	NS	NS	NS	NP	NP	NS	
3/8-9/2001	<0.005	<0.005	0.0121	<0.005	NP	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NS-D	

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 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells ⁽¹⁾																
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Cadmium	3/11-12/2002	<0.005	<0.005	<0.005	<0.005	NP	ND	ND	NS	<0.005	NP	<0.005	NS-D	<0.005	NS	NS	NS-D	NS-D
	3/6/2003	NS	NS	NS	<0.005	NP	NS	NS	NS	NA	NP	<0.005	NS-D	<0.005	NS	NA	NS-D	NS-D
	8/1/1995	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	<0.01	<0.01	<0.01	<0.01	0.049	<0.01	<0.01	<0.01	<0.01	<0.01	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NS
	3/9-10/1999	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	6/10/1995-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	0.02	0.02	NP	NP	<0.01
	3/9-10/2000	<0.01	<0.01	<0.01	0.0248	NP	<0.01	<0.01	<0.01	0.031	NP	0.0342	0.0124	<0.01	<0.01	<0.01	<0.01	0.105
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	<0.01	NS	
	3/8-9/2001	<0.01	<0.01	0.0104	0.0101	NP	<0.01	<0.01	0.013	0.0109	NP	0.0392	0.0469	NS	0.0104	NA	NS	NS-D
	3/11-12/2002	<0.01	<0.01	<0.01	<0.01	NP	ND	ND	ND	0.0246	NP	0.023	NS-D	<0.01	0.0114	NS	NS	NS-D
	3/6/2003	NS	NS	NS	0.0174	NP	NS	NS	NS	NA	NP	0.0168	NS-D	0.01	NS	NA	NS-D	NS-D
Lead	8/1/1995	<0.002	<0.002	0.0044	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0025	NP	NP	NP	NP	NP	NS	
	8/23/1996	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	NP	NP	NP	NP	NP	NS	
	3/23-24/1998	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NS	<0.005	<0.005	<0.005	<0.005	<0.005	NS	
	3/9-10/1999	<0.005	<0.005	<0.005	<0.005	0.13	<0.005	<0.005	<0.005	<0.005	NP	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	NS
	6/10/1995-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	<0.005	<0.005	<0.005	<0.005	<0.005
	3/9-10/2000	<0.005	<0.005	<0.005	0.00565	NP	<0.005	<0.005	<0.005	0.00661	NP	0.00595	<0.005	<0.005	<0.005	<0.005	<0.005	0.0355
Mercury	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	<0.005	NA	NS	
	3/8-9/2001	<0.005	<0.005	0.00602	<0.005	NP	<0.005	<0.005	0.00597	0.0222	NP	0.0119	0.00627	NS	<0.005	NA	NS-D	
	3/11-12/2002	<0.005	<0.005	<0.005	<0.005	NP	ND	ND	ND	0.0234	NP	<0.005	NS-D	<0.005	<0.005	NS	NS-D	
	3/6/2003	NS	NS	NS	<0.005	NP	NS	NS	NS	NA	NP	<0.005	NS-D	<0.005	<0.005	NA	NS-D	
	8/1/1995	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NP	NP	NP	NP	NP	NS	
	8/23/1996	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NP	NP	NP	NP	NP	NS	
Selenium	3/23-24/1998	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NS	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
	3/9-10/1999	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NP	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
	6/10/1995-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	<0.0002	<0.0002	<0.0002	<0.0002	
	3/9-10/2000	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	<0.0002	<0.0002	<0.0002	<0.0002	
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	<0.0002	<0.0002	
	3/8-9/2001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Acenaphthene	3/11-12/2002	<0.0002	<0.0002	<0.0002	0.000243	NP	ND	ND	ND	<0.0002	NP	<0.0002	NS-D	<0.0002	<0.0002	NS	NS-D	
	3/6/2003	NS	NS	NS	<0.0002	NP	NS	NS	NS	NA	NP	<0.0002	NS-D	<0.0002	NS	NA	NS-D	
	8/1/1995	<0.004	<0.004	<0.004	<0.004	<0.004	NS	NS	NS	NS	NP	NP	NP	NP	NP	NP	NS	
	8/23/1996	<0.004	<0.004	<0.004	<0.004	<0.004	NS	NS	NS	NS	NP	NP	NP	NP	NP	NP	NS	
	3/23-24/1998	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	3/9-10/1999	0.005	0.006	<0.005	0.006	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
PAHs (µg/L)	6/10/1995-7/2/1999	<0.005	<0.005	<0.005	<0.005	NP	NP	NP	NP	NP	NP	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	3/9-10/2000	<0.005	<0.005	<0.005	<0.005	NP	0.00926	<0.005	<0.005	<0.005	NP	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	
	3/8-9/2001	<0.005	0.00508	0.00587	0.00587	NP	0.00617	<0.005	0.0054	<0.005	NP	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	3/11-12/2002	0.00549	0.00625	<0.005	0.00558	NP	ND	ND	ND	<0.005	NP	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	3/6/2003	NS	NS	NS	<0.005	NP	NS	NS	NS	NA	NP	<0.005	NS-D	<0.005	NS	NA	NS-D	

Table 7
 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells ⁽¹⁾																	
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4	
Acenaphthene	3/23-24/1998	< 10	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	NS	NS
	3/9-10/1999	< 0.1	< 0.1	< 2.0	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1	< 0.1	NP	NS
	6/10/1999-7/21/1999	NS	NS	NS	NS	NP	NS	< 0.1	< 0.1	< 0.1	NP	NS							
	3/9-10/2000	0.28	< 0.1	< 0.1	< 0.1	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	< 0.1
	1/14/2001	NS	NS	NS	NS	NP	NS	< 0.1	< 0.1	< 0.1	NP	NS							
	3/8-9/2001	< 0.12	< 0.13	< 0.12	< 0.1	NP	< 0.13	< 0.12	< 0.12	< 0.15	< 0.12	< 0.12	< 0.12	< 0.12	< 0.13	< 0.12	< 0.12	NS	NS-D
	3/11-12/2002	< 0.1	< 0.11	< 0.1	< 0.1	NP	ND	< 0.1	< 0.1	< 0.1	< 0.1	NS	NS-D						
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	< 0.1	NS-D	< 0.1	NS	NA	NA	NS-D	NS-D
	8/1/1995	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NS
	8/23/1996	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NS
Anthracene	3/23-24/1998	< 10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NS
	3/9-10/1999	< 0.1	< 0.1	< 0.1	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NS
	6/10/1999-7/21/1999	NS	NS	NS	NS	NP	NS	< 0.1	< 0.1	< 0.1	NP	NS							
	3/9-10/2000	0.91	< 0.1	< 0.1	< 0.1	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1.8	< 0.1	< 0.1	NP	< 0.1
	1/14/2001	NS	NS	NS	NS	NP	NS	< 0.1	< 0.1	< 0.1	NP	NS							
	3/8-9/2001	< 0.12	< 0.13	< 0.12	< 0.1	NP	< 0.13	< 0.12	< 0.12	0.71	< 0.12	< 0.13	< 0.13	< 0.13	< 0.12	< 0.12	< 0.12	NS	NS-D
	3/11-12/2002	< 0.1	< 0.11	< 0.1	< 0.1	NP	ND	ND	ND	ND	ND	1.1	NS-D	< 0.1	< 0.1	< 0.1	< 0.1	NS	NS-D
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	< 0.1	NS-D	< 0.1	NS	NA	NA	NS-D	NS-D
	8/1/1995	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NS
	8/23/1996	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NS
Benzo(k)anthracene	3/23-24/1998	< 10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NS
	3/9-10/1999	< 0.1	< 0.1	< 0.1	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NS
	6/10/1999-7/21/1999	NS	NS	NS	NS	NP	NS	< 0.1	< 0.1	< 0.1	NP	NS							
	3/9-10/2000	0.12	< 0.1	< 0.1	< 0.1	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	< 0.1
	1/14/2001	NS	NS	NS	NS	NP	NS	< 0.1	< 0.1	< 0.1	NP	NS							
	3/8-9/2001	< 0.12	< 0.13	< 0.12	< 0.1	NP	< 0.13	< 0.12	< 0.12	< 0.15	< 0.12	< 0.13	< 0.13	< 0.13	< 0.12	< 0.12	< 0.12	NS	NS-D
	3/11-12/2002	< 0.1	< 0.11	< 0.1	< 0.1	NP	ND	ND	ND	ND	ND	< 0.1	NS-D	< 0.1	< 0.1	< 0.1	< 0.1	NS	NS-D
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	< 0.1	NS-D	< 0.1	NS	NA	NA	NS-D	NS-D
	8/1/1995	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NS
	8/23/1996	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NS
Benzo(k)fluoranthene	3/23-24/1998	< 10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NS
	3/9-10/1999	< 0.1	< 0.1	< 0.1	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NS
	6/10/1999-7/21/1999	NS	NS	NS	NS	NP	NS	< 0.1	< 0.1	< 0.1	NP	NS							
	3/9-10/2000	0.18	< 0.1	< 0.1	< 0.1	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	< 0.1
	1/14/2001	NS	NS	NS	NS	NP	NS	< 0.1	< 0.1	< 0.1	NP	NS							
	3/8-9/2001	< 0.12	< 0.13	< 0.12	< 0.1	NP	< 0.13	< 0.12	< 0.12	< 0.15	< 0.12	< 0.13	< 0.13	< 0.13	< 0.12	< 0.12	< 0.12	NS	NS-D
	3/11-12/2002	< 0.1	< 0.11	< 0.1	< 0.1	NP	ND	ND	ND	ND	ND	< 0.1	NS-D	< 0.1	< 0.1	< 0.1	< 0.1	NS	NS-D
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	< 0.1	NS-D	< 0.1	NS	NA	NA	NS-D	NS-D
	8/1/1995	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NS
	8/23/1996	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NS

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 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells ⁽¹⁾																				
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4				
Benzo(k)fluoranthene	3/11-12/2002	< 0.1	< 0.11	< 0.1	< 0.1	NP	ND	ND	ND	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NS	NS	NS-D	NS	NS	NS-D	
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NS	NP	< 5	< 5	< 5	< 5	< 5	NP	NP	NS-D	NP	NP	NS-D	
Benzo(a)pyrene	8/1/1995	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	< 10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NP	NP	NP	NP	NS
	3/9-10/1999	< 0.1	< 0.1	0.2	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NP	NP	NP	NP	NS
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS	NP	NP	NP	< 0.1
	3/9-10/2000	< 0.1	< 0.1	< 0.1	< 0.1	NP	NS	NS	NS	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS	NP	NP	NP	< 0.1
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS	NP	NP	NP	< 0.1
	3/8-9/2001	< 0.12	< 0.13	< 0.12	< 0.1	NP	< 0.13	< 0.12	< 0.12	NP	< 0.15	< 0.13	< 0.13	< 0.13	< 0.12	NP	NP	NS-D	NP	NP	NP	NS-D
	3/11-12/2002	< 0.1	< 0.11	< 0.1	< 0.1	NP	ND	ND	ND	NP	ND	ND	NS-D	NS-D	< 0.1	NP	NP	NS-D	NP	NP	NP	NS-D
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NS	NP	NA	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS-D	NP	NP	NP	NS-D
Fluorene	8/1/1995	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	< 10	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	NP	NP	NP	NP	NP	NP	NS
	3/9-10/1999	< 0.1	< 0.1	< 2.0	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NP	NP	NP	NP	NS
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS	NP	NP	NP	< 0.1
	3/9-10/2000	25	< 0.1	0.36	< 0.1	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS	NP	NP	NP	< 0.1
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS	NP	NP	NP	< 0.1
	3/8-9/2001	< 0.12	< 0.13	< 0.12	< 0.1	NP	< 0.13	< 0.12	< 0.12	NP	< 0.15	< 0.13	< 0.13	< 0.13	< 0.12	NP	NP	NS-D	NP	NP	NP	NS-D
	3/11-12/2002	< 0.1	< 0.11	< 0.1	< 0.1	NP	ND	ND	ND	NP	ND	ND	NS-D	NS-D	< 0.1	NP	NP	NS-D	NP	NP	NP	NS-D
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NS	NP	NA	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS-D	NP	NP	NP	NS-D
Naphthalene	8/1/1995	< 5	210	1700	< 5	470	< 5	15	92	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	230	110	440	< 5	< 30	< 5	< 84	< 76	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	130	23	< 0.1	< 0.1	< 0.1	< 0.1	4	8	NS	0.8	11	11	11	11	NP	NP	NP	NP	NP	NP	NS
	3/9-10/1999	10	8	170	0.1	160	< 0.1	< 0.1	6	NP	< 0.1	19	19	19	19	NP	NP	NP	NP	NP	NP	NS
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NP	< 0.1	NS	NS	NS	NS	NP	NP	NP	NP	NP	NP	< 0.1
	3/9-10/2000	2.4	< 0.1	0.44	< 0.1	NP	< 0.1	0.42	1.5	NP	< 0.1	NS	0.26	0.26	0.26	NP	NP	NP	NP	NP	NP	< 0.1
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NP	< 0.1	NS	NS	NS	NS	NP	NP	NP	NP	NP	NP	< 0.1
	3/8-9/2001	< 0.12	< 0.13	< 0.12	< 0.1	NP	< 0.13	< 0.12	< 0.12	NP	< 0.15	0.21	0.21	0.21	0.21	NP	NP	NS	NP	NP	NP	NS-D
	3/11-12/2002	< 0.1	< 0.11	< 0.1	< 0.1	NP	ND	ND	ND	NP	ND	ND	NS-D	NS-D	< 0.1	NP	NP	NS-D	NP	NP	NP	NS-D
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NS	NP	NA	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS-D	NP	NP	NP	NS-D
Phenanthrene	8/1/1995	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	< 10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NP	NP	NP	NP	NS
	3/9-10/1999	< 0.1	< 0.1	2	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NP	NP	NP	NP	< 0.1
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS	NP	NP	NP	< 0.1
	3/9-10/2000	0.65	< 0.1	< 0.1	< 0.1	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS	NP	NP	NP	< 0.1
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NP	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS	NP	NP	NP	< 0.1
	3/8-9/2001	< 0.12	< 0.13	< 0.12	< 0.1	NP	< 0.13	< 0.12	< 0.12	NP	< 0.15	< 0.13	< 0.13	< 0.13	< 0.12	NP	NP	NS-D	NP	NP	NP	NS-D
	3/11-12/2002	< 0.1	< 0.11	< 0.1	< 0.1	NP	ND	ND	ND	NP	ND	ND	NS-D	NS-D	< 0.1	NP	NP	NS-D	NP	NP	NP	NS-D
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NS	NP	NA	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NS-D	NP	NP	NP	NS-D
Pyrene	8/1/1995	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	< 10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NP	NP	NP	NP	NS
	3/9-10/1999	< 0.1	< 0.1	0.4	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NP	NP	NP	NP	NP	NP	NS

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 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells ⁽¹⁾																
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Pyrene	6/10/1999-7/2/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.1	NP	NP	NP	<0.1
	3/9-10/2000	<2	<0.1	<0.1	<0.1	NP	<0.1	<0.1	<0.1	NS	NP	<0.1	<0.1	<0.1	NP	NP	NP	<0.1
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	NS	NS	NP	NP	NP	NS
	3/8-9/2001	<0.12	<0.13	<0.12	<0.1	NP	<0.13	<0.12	<0.15	NP	NP	<0.13	<0.13	NS	NP	NP	NP	NS-D
3/11-12/2002	<0.1	<0.11	<0.1	<0.1	NP	ND	ND	NS	NS	NP	<0.1	NS-D	<0.1	NP	NS	NS	NS	NS-D
	3/16/2003	NS	NS	NS	NA	NP	NS	NS	NA	NP	<0.1	NS-D	<0.1	NS	NA	NA	NA	NS-D
VOCs (µg/L)																		
Acetone	3/23-24/1998	NS	NS	NS	NS	NS	NS	NS	NS	NS	<100	<100	NP	NP	NP	NP	NP	NS
	6/10-7/2/99	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	130	<100	NP	NP	NP	<100
	3/9-10/2000	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NA	<100	NP	NS
	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NS-D	NA	NA	NA	NS	NS	NS-D
3/16/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	NA	NS-D	NA	NS	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NS	NS	NS	NS	NP	NP	NP	<5	NP	NP	NP	NP	NA
sec-Butylbenzene	6/10-7/2/99	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	<5	5	NP	NP	NP	<5
	6/10-7/2/1999	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/9-10/2000	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NS-D	NA	NA	NP	NP	NP	NS-D
3/16/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	NA	NS-D	NA	NS	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NS	NS	NS	NS	NP	NP	NP	<5	NP	NP	NP	NP	NS
Isopropylbenzene	6/10-7/2/99	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	<5	31	NP	NP	NP	<5
	6/10-7/2/1999	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/9-10/2000	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NS-D	NA	NA	NP	NP	NP	NS-D
3/16/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	NA	NS-D	NA	NS	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NP	NS	NS	NS	NP	NP	NP	<5	NP	NP	NP	NP	NS
Naphthalene	6/10-7/2/99	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	<5	NP	NP	NP	NP	<5
	6/10-7/2/1999	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/9-10/2000	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NS-D	NA	NA	NP	NP	NP	NS-D
3/16/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	NA	NS-D	NA	NS	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NP	NS	NS	NS	NP	NP	NP	<5	NP	NP	NP	NP	NS
n-Propylbenzene	6/10-7/2/99	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	<5	190	NP	NP	NP	<5
	6/10-7/2/1999	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/9-10/2000	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NS-D	NA	NA	NP	NP	NP	NS-D
3/16/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	NA	NS-D	NA	NS	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NP	NS	NS	NS	NP	NP	NP	<5	NP	NP	NP	NP	NS
1,2,4-Trimethylbenzene	6/10-7/2/99	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	<5	68	NP	NP	NP	<5
	6/10-7/2/1999	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/9-10/2000	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NS-D	NA	NA	NP	NP	NP	NS-D
3/16/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	NA	NS-D	NA	NS	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NP	NS	NS	NS	NP	NP	NP	<5	NP	NP	NP	NP	NS
1,3,5-Trimethylbenzene	6/10-7/2/99	NS	NS	NS	NS	NP	NS	NS	NS	NP	NS	NS	<5	93	NP	NP	NP	<5
	6/10-7/2/1999	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/9-10/2000	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NP	NP	NP	NS
	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NS-D	NA	NA	NP	NP	NP	NS-D
3/16/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	NA	NS-D	NA	NS	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NP	NS	NS	NS	NP	NP	NP	<5	NP	NP	NP	NP	NS
6/10-7/2/99	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	<5	93	NP	NP	NP	<5
	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NP	NP	<5	NP	NP	NP	NP	<5

Table 7
 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells ⁽¹⁾																
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Phenol	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	NA	NA	NS	NS	NS-D
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	NA	NS-D	NA	NS	NA	NA	NS-D

(1) - MW-2 not operative after May 3, 1995; MW-11 not operative after September 1997; MW-2, MW-6, and MW-11 P&A'd 7/1/99.

(2) - NP = Well not present at time of sampling event.

(3) - NS = Well not sampled.

(4) - NA = Not Analyzed.

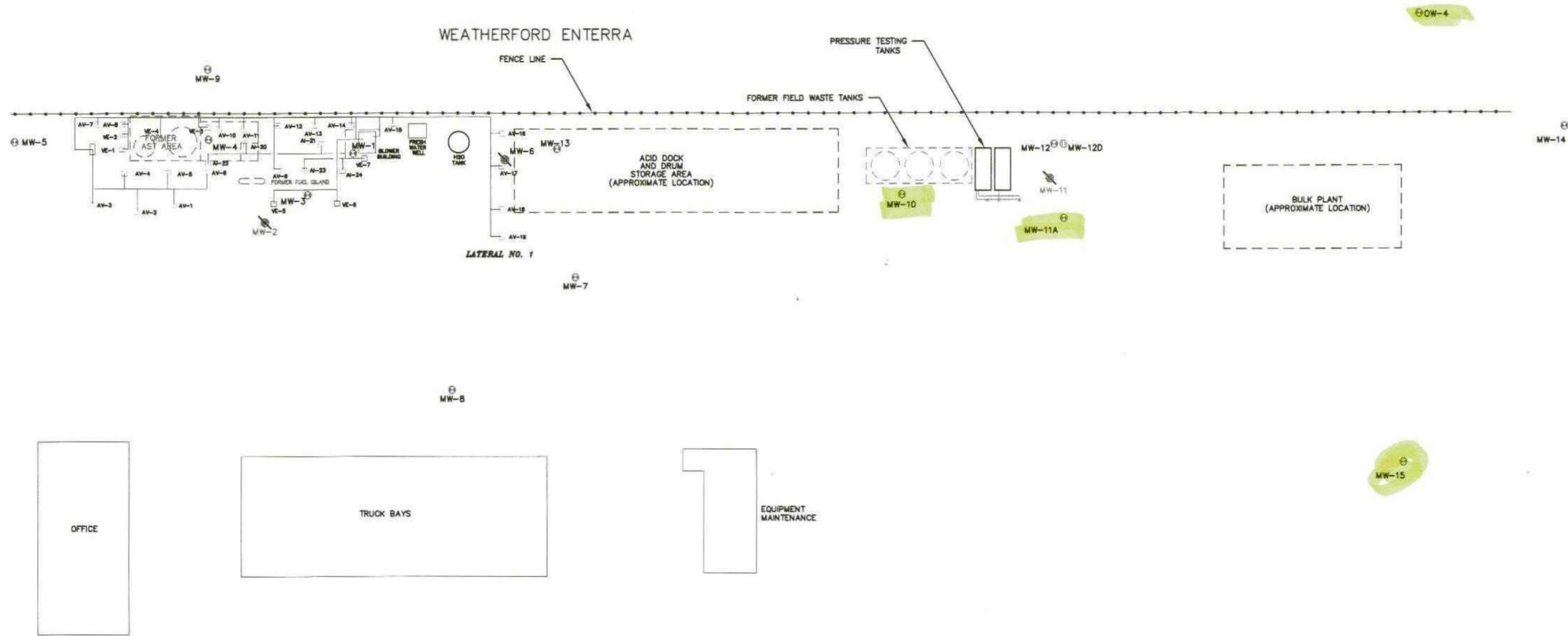
(5) - NS-D = Well not sampled (dry well).

(6) - ND = No data - sample aliquot not collected due to insufficient well yield.

Figures

BROWN AND
CALDWELL

FIGURES



P:\Cad\JOBS\BJServices\12832\SiteMap02.dwg

BROWN AND CALDWELL
HOUSTON, TEXAS

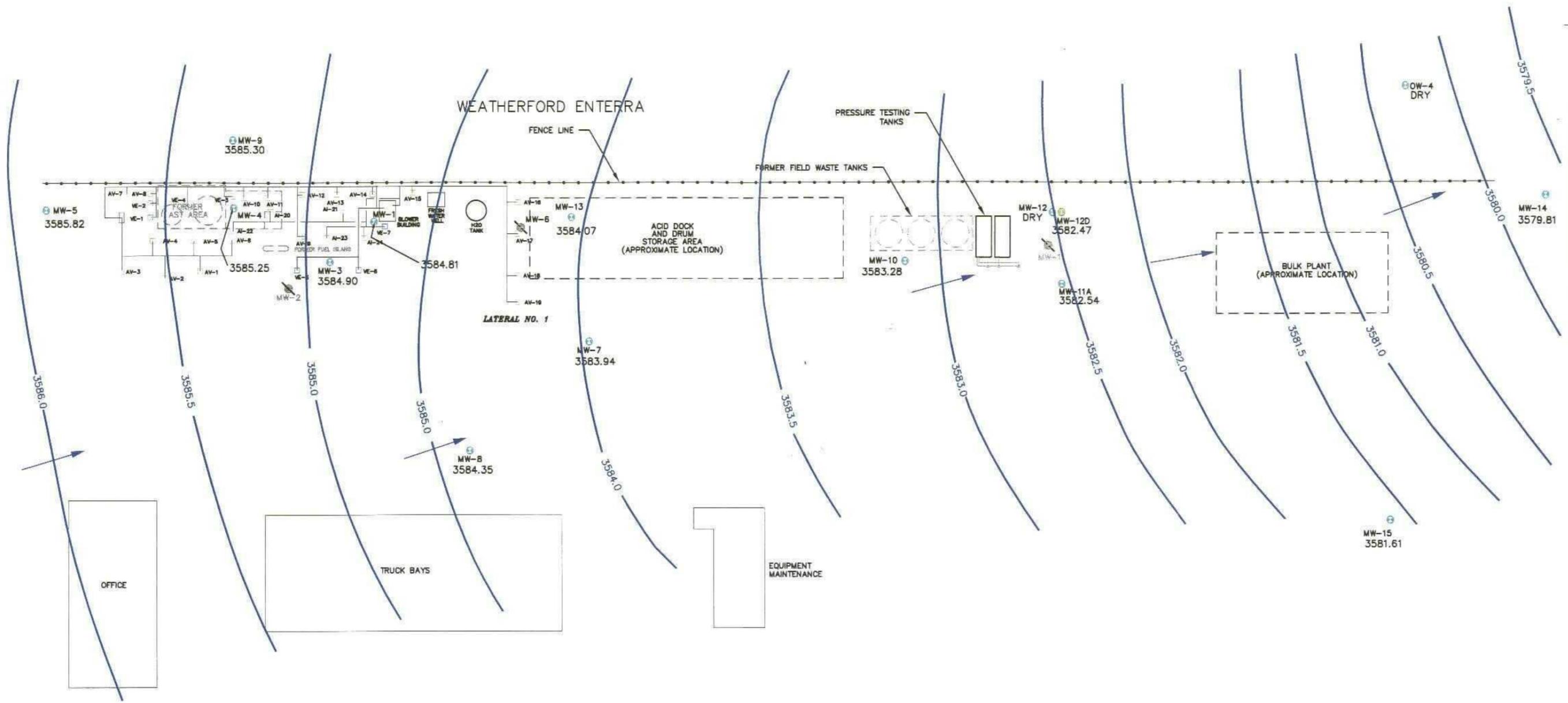
SUBMITTED: _____ DATE: _____
PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL

0 30 60
SCALE: 1" = 60'
DRAWN BY: CLK DATE: 6/01
CHK'D BY: _____ DATE: _____
APPROVED: _____ DATE: _____

LEGEND
 MW-3 EXISTING MONITOR WELL LOCATION
 BIOSPARGING SYSTEM
 MW-2 MONITOR WELL (PLUGGED AND ABANDONED)

TITLE	SITE MAP	DATE	4/6/01
CLIENT	BJ SERVICES COMPANY, U.S.A.	PROJECT NUMBER	12832.023
SITE	HOBBS, NEW MEXICO	FIGURE NUMBER	1

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BROWN AND CALDWELL
HOUSTON, TEXAS

SUBMITTED: _____ DATE: _____
PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL

0 30 60
SCALE: 1" = 60'
DRAWN BY: CLK DATE 6/01
CHK'D BY: _____ DATE _____
REV'D BY: CLK DATE 6/02

3584.90
MW-3
MONITOR WELL LOCATION WITH GROUNDWATER ELEVATION (feet AMSL)

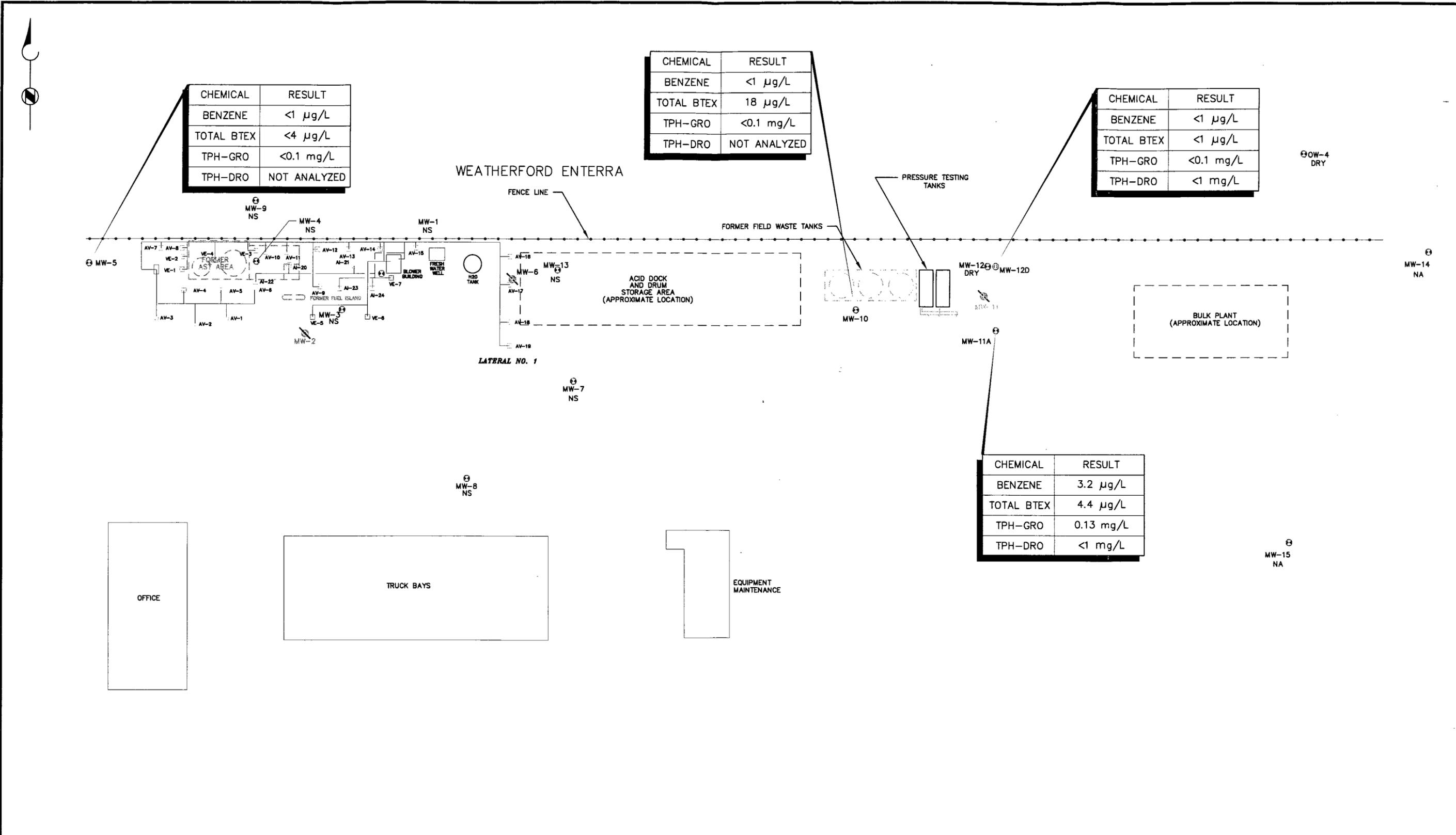
LEGEND

BIOSPARGING SYSTEM

GROUNDWATER FLOW DIRECTION

MONITOR WELL (PLUGGED AND ABANDONED)

TITLE	GROUNDWATER ELEVATION MAP FOR MARCH 6, 2003	DATE	6/26/02
CLIENT	BJ SERVICES COMPANY, U.S.A.	PROJECT NUMBER	12832.017
SITE	HOBBS, NEW MEXICO	FIGURE NUMBER	2



CHEMICAL	RESULT
BENZENE	<1 µg/L
TOTAL BTEX	<4 µg/L
TPH-GRO	<0.1 mg/L
TPH-DRO	NOT ANALYZED

CHEMICAL	RESULT
BENZENE	<1 µg/L
TOTAL BTEX	18 µg/L
TPH-GRO	<0.1 mg/L
TPH-DRO	NOT ANALYZED

CHEMICAL	RESULT
BENZENE	<1 µg/L
TOTAL BTEX	<1 µg/L
TPH-GRO	<0.1 mg/L
TPH-DRO	<1 mg/L

CHEMICAL	RESULT
BENZENE	3.2 µg/L
TOTAL BTEX	4.4 µg/L
TPH-GRO	0.13 mg/L
TPH-DRO	<1 mg/L

BROWN AND CALDWELL
HOUSTON, TEXAS

SUBMITTED: _____ DATE: _____
PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL

0 30 60
SCALE: 1" = 60'
DRAWN BY: CLK DATE 6/01
CHK'D BY: _____ DATE _____
APPROVED: _____ DATE _____

- LEGEND**
- MW-3 EXISTING MONITOR WELL LOCATION
 - BIOSPARGING SYSTEM
 - MW-2 MONITOR WELL (PLUGGED AND ABANDONED)
 - NS WELL NOT SAMPLED
 - NA WELL NOT ANALYZED FOR BTEX/TPH

TITLE	HYDROCARBON DISTRIBUTION MAP FOR MARCH 6, 2003	DATE	4/6/01	
CLIENT	BJ SERVICES COMPANY, U.S.A.		PROJECT NUMBER	12832.018
SITE	HOBBS, NEW MEXICO		FIGURE NUMBER	3

BROWN AND
CALDWELL

Appendices

APPENDICES

APPENDIX A

Groundwater Sampling Forms

WELL ID: MW-5

1. PROJECT INFORMATION

Project Number: 12032 Task Number: 010 Date: 3/6/03 Time: 1543
 Client: BT Services Personnel: Cabulose / MW-5
 Project Location: B Hobbs, NM Weather: 30SFWL Wind, Clear

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 64.50 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 61.90 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: - feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 2.60 feet Well Volume: 0.4 gal Screened Interval (from GS): _____
 Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.60 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s):
 Materials: Pump Bailer Stainless PVC Teflon® Other: _____ 1. YSI-610
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope Tubing Polyethylene Polypropylene Teflon® Other: Nylon 2. Hannah Tubability
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
1550	0.0								
1553	0.5	7.25	15.85	1090	83.2	5.65	-	-	Clear
1557	1.3	7.96	18.37	1055	72.7	5.44	-	-	

4. SAMPLING DATA

Method(s): Bailer, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-5 Sample Time: 1559 # of Containers: 7
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: 0.0 mg/L
 DO: 3.5 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

WELL ID: MW-10

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 018 Date: 3/16/03 Time: 10:10
 Client: BJ Services Personnel: Matt / Ebulipese
 Project Location: Hobbs, NM Weather: 30's SW wind

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 63.51 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 61.19 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: — feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 2.32 feet Well Volume: 0.37 gal Screened Interval (from GS): _____
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump Bailer Stainless PVC Teflon® Other: _____ Equipment Model(s):
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. YSI-610
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: nylon 2. _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 3. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
<u>11:15</u>	<u>0.5</u>	<u>6.56</u>	<u>17.54</u>	<u>2011</u>	<u>43.7</u>	<u>2.47</u>	<u>—</u>	<u>—</u>	<u>grey water, brown flakes</u>
<u>11:20</u>	<u>1.0</u>								

4. SAMPLING DATA

Method(s): Bailer, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-10 Sample Time: 1957 # of Containers: 7
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: 1.0 mg/L
 DO: 1.0 mg/L
 Nitrate: — mg/L
 Sulfate: — mg/L
 Alkalinity: — mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: Amorel

WELL ID: MW-11A

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 018 Date: 3/6/03 Time: 1333
 Client: BJ Services Personnel: MONTY/Edwin/...
 Project Location: Hobbs, NM Weather: S0SE SW Windy clear

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 63.82 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 61.70 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: — feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 2.12 feet Well Volume: 0.34 gal Screened Interval (from GS): _____
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: — gal/min
 Equipment Model(s):
 1. 6 YST-610
 2. _____
 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
1357	0.0								
1407	0.5	7.02	18.34	8909	66.1	3.32	—	—	Black color, sandy
1417	1.2	7.96	17.40	9181	-25.1	2.71	—	—	

4. SAMPLING DATA

Method(s): Bailer, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: — Field Filtered? Yes No
 Sample ID: MW-11A Sample Time: 1417 # of Containers: 11
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 4.6 mg/L
 DO: 1.0 mg/L
 Nitrate: — mg/L
 Sulfate: — mg/L
 Alkalinity: — mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

WELL ID: MW-12D

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 018 Date: 3/6/03 Time: 1208
 Client: BJ Services Personnel: Egubese/Matt
 Project Location: Hobbs, NM Weather: 90s windy clear

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 87.58 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 61.91 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: — feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 25.67 feet Well Volume: 4.1 gal Screened Interval (from GS): _____ 0.65
Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.607 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: 0.083 gal/min
 Equipment Model(s):
 1. YST610
 2. _____
 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other: <u>DTW</u>	Comments
1236	0.0	—	—	—	—	—	—	61.89	—
1239	0.25	8.00	18.53	1071	3.4	9.27	—	—	—
1242	0.50	7.80	18.61	1094	-6.5	1.68	—	62.16	Clear
1245	0.75	7.69	18.76	1092	-16.9	1.10	—	62.17	—
1248	1.0	7.60	18.99	1092	-53.3	0.72	—	—	—
1251	1.25	7.59	19.05	1093	-57.2	0.65	—	62.16	—
1254	1.50	7.56	19.14	1094	-67.0	0.46	—	62.13	—
1257	1.75	7.56	19.14	1094	-70.7	0.44	—	62.14	—

4. SAMPLING DATA

Time: 1300 Temp: 19.20 pH: 7.55 Spec. Cond.: 1094 ORP: -76.9 Dissolved Oxygen: 0.39 Turbidity: — Other: 62.12 **Geochemical Analyses**
 Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: 62.12 Field Filtered? Yes No
 Sample ID: MW-12D Sample Time: 1300 # of Containers: 14
 Duplicate Sample Collected? Yes No ID: —
 Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet

Signature: [Signature]

WELL ID: MW-14

1. PROJECT INFORMATION

Project Number: 12932 Task Number: 018 Date: 3/6/03 Time: 10:28
 Client: BJ Services Personnel: MRA/Egubwale
 Project Location: Hobbs, NM Weather: 40's °F, Windy, clear

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 69.37 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 62.64 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: — feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 6.73 feet Well Volume: 108 gal Screened Interval (from GS): _____
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s): _____
 Materials: Pump Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. YSI-610
 Materials: Rope Tubing Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
11:38	0.0								
11:42	0.5	6.90	18.01	1676	154A	7.59	—	—	clean study
11:50	0.1.1	6.90	17.98	1654	69.5	7.49	—	—	

4. SAMPLING DATA

Method(s): Bailor, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing Rope Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-14 Sample Time: 1521 # of Containers: 1
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

WELL ID: MW-15

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 018 Date: 3/6/03 Time: 1525
 Client: BJ Services Personnel: Martinez/Egbert
 Project Location: Jalisco, NM Weather: ☐

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 67.01 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 61.63 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: — feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 5.38 feet Well Volume: .96 gal Screened Interval (from GS): _____
Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s): _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. YSI-610
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. —
 Was well purged dry? Yes No Pumping Rate: — gal/min 3. —

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
1527	0.0	—	—	—	—	—	—	—	—
1530	0.5	7.46	18.67	1533	48.6	5.05	—	—	Clear
1532	1.0	7.36	18.71	1533	49.0	5.09	—	—	—
1536	1.5	7.27	18.70	1540	50.3	5.15	—	—	—
1538	2.0	7.23	18.57	1539	52.1	5.12	—	—	—
1540	2.8	7.21	18.72	1517	54.3	5.08	—	—	—

4. SAMPLING DATA

Method(s): Bailer, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing (Rope) Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: — Field Filtered? Yes No
 Sample ID: MW-15 Sample Time: 1541 # of Containers: 1
 Duplicate Sample Collected? Yes No ID: —

Geochemical Analyses
 Ferrous Iron: — mg/L
 DO: — mg/L
 Nitrate: — mg/L
 Sulfate: — mg/L
 Alkalinity: — mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

B

BROWN AND
CALDWELL

APPENDIX B

Laboratory Analytical Report



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
03021042

Report To: Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886	Project Name: BJ Hobbs/12832 Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported:
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The data in this report applies to the analysis of six water samples and a trip blank . These samples were received on March 7, 2003 and assigned analyses as designated on the chain-of-custody except as noted below.

SPL did not receive nitric acid-preserved bottles for hardness for samples MW-10, MW-14, and MW-15. Per Rick Rexroad of Brown & Caldwell, these analyses should not be assigned. Also, the bottle for DRO on sample MW-10 was not received. Therefore, this analysis could not be performed.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

A method blank and a Laboratory Control Sample (LCS) were included in each batch. The LCS recoveries were acceptable, and the target compounds were not detected in the blanks.

Any data flags or quality control exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.


Pat Lynch
Senior Project Manager

4/21/2003

Date



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03021042

Report To: Brown & Caldwell
 Rick Rexroad
 1415 Louisiana
 Suite 2509
 Houston
 TX
 77002-
 ph: (713) 759-0999 fax: (713) 308-3886

Project Name: BJ Hobbs/12832
Site: Hobbs, NM
Site Address:
PO Number:
State: New Mexico

State Cert. No.:
Date Reported:

Fax To: Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-5	03021042-01	Water	3/6/2003 3:59:00 PM	3/7/2003 10:00:00 AM	181713	<input type="checkbox"/>
MW-10	03021042-02	Water	3/6/2003 2:57:00 PM	3/7/2003 10:00:00 AM	181713	<input type="checkbox"/>
MW-11A	03021042-03	Water	3/6/2003 2:17:00 PM	3/7/2003 10:00:00 AM	181713	<input type="checkbox"/>
MW-12D	03021042-04	Water	3/6/2003 1:00:00 PM	3/7/2003 10:00:00 AM	181713	<input type="checkbox"/>
MW-14	03021042-05	Water	3/6/2003 3:21:00 PM	3/7/2003 10:00:00 AM	181713	<input type="checkbox"/>
MW-15	03021042-06	Water	3/6/2003 3:41:00 PM	3/7/2003 10:00:00 AM	181713	<input type="checkbox"/>
Trip Blank 3/6/03	03021042-07	Water	3/6/2003	3/7/2003 10:00:00 AM	181713	<input type="checkbox"/>

Patricia Lynch
 Pat Lynch
 Senior Project Manager

4/21/2003

Date

Joel Grice
 Laboratory Director
 Ted Yen
 Quality Assurance Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-5 Collected: 03/06/2003 15:59 SPL Sample ID: 03021042-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Bicarbonate	243	2	1		03/19/03 15:00	RA	1565187
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Carbonate	ND	2	1		03/19/03 15:00	RA	1565201
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	116	2	2		03/19/03 11:00	RA	1565108
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		03/19/03 11:56	D_R	1562709
Surr: 1,4-Difluorobenzene	99.0 %	74-121	1		03/19/03 11:56	D_R	1562709
Surr: 4-Bromofluorobenzene	79.0 %	55-150	1		03/19/03 11:56	D_R	1562709
HARDNESS, TOTAL (TITRIMETRIC, EDTA)			MCL	E130.2	Units: mg/L		
Hardness (As CaCO3)	690	120	25		03/21/03 12:00	CV	1568292
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		03/17/03 12:27	ER	1558987
Ethylene	ND	0.0032	1		03/17/03 12:27	ER	1558987
Methane	ND	0.0012	1		03/17/03 12:27	ER	1558987
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Fluoride	1.1	0.1	1		03/17/03 19:00	CV	1562629
Sulfate	110	4	20		03/17/03 21:19	CV	1562640
MERCURY, TOTAL			MCL	SW7470A	Units: mg/L		
Mercury	ND	0.0002	1		03/19/03 18:46	MW	1564540

Prep Method	Prep Date	Prep Initials
SW7470A	03/19/2003 14:00	MW

METALS BY METHOD 6010B, TOTAL			MCL	SW6010B	Units: mg/L		
Arsenic	0.0125	0.005	1		03/20/03 21:56	NS	1567446
Lead	ND	0.005	1		03/20/03 21:56	NS	1567446
Selenium	ND	0.005	1		03/20/03 21:56	NS	1567446
Barium	0.15	0.005	1		03/20/03 12:29	EG	1565960
Cadmium	ND	0.005	1		03/20/03 12:29	EG	1565960
Calcium	288	0.1	1		03/20/03 12:29	EG	1565960
Chromium	0.0174	0.01	1		03/20/03 12:29	EG	1565960
Magnesium	19.6	0.1	1		03/20/03 12:29	EG	1565960
Potassium	3.72	2	1		03/20/03 12:29	EG	1565960
Silver	ND	0.01	1		03/20/03 12:29	EG	1565960
Sodium	144	0.5	1		03/20/03 12:29	EG	1565960

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-5 Collected: 03/06/2003 15:59 SPL Sample ID: 03021042-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Prep Method	Prep Date	Prep Initials					
SW3010A	03/13/2003 8:00	MW					

NITRATE NITROGEN (AS N), TOTAL MCL E353.2 Units: mg/L

Nitrogen,Nitrate (As N)	2.75	0.1	1		03/07/03 17:31	CV	1552891
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PURGEABLE AROMATICS MCL SW8021B Units: ug/L

Benzene	ND	1	1		03/19/03 11:56	D_R	1562571
Ethylbenzene	ND	1	1		03/19/03 11:56	D_R	1562571
Toluene	ND	1	1		03/19/03 11:56	D_R	1562571
Xylenes,Total	ND	1	1		03/19/03 11:56	D_R	1562571
Surr: 4-Bromofluorobenzene	97.9	% 56-158	1		03/19/03 11:56	D_R	1562571
Surr: 1,4-Difluorobenzene	103	% 46-160	1		03/19/03 11:56	D_R	1562571

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-10

Collected: 03/06/2003 14:57

SPL Sample ID: 03021042-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Bicarbonate	273	2	1		03/19/03 15:00	RA	1565189
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Carbonate	ND	2	1		03/19/03 15:00	RA	1565203
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	363	5	5		03/19/03 11:00	RA	1565111
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		03/19/03 12:21	D_R	1562710
Surr: 1,4-Difluorobenzene	112	% 74-121	1		03/19/03 12:21	D_R	1562710
Surr: 4-Bromofluorobenzene	96.3	% 55-150	1		03/19/03 12:21	D_R	1562710
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		03/17/03 13:22	ER	1558989
Ethylene	ND	0.0032	1		03/17/03 13:22	ER	1558989
Methane	0.0031	0.0012	1		03/17/03 13:22	ER	1558989
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Fluoride	1.6	0.1	1		03/17/03 19:38	CV	1562632
Sulfate	270	10	50		03/17/03 21:57	CV	1562643
NITRATE NITROGEN (AS N), TOTAL			MCL	E353.2	Units: mg/L		
Nitrogen,Nitrate (As N)	ND	0.1	1		03/07/03 17:31	CV	1552894
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		03/19/03 12:21	D_R	1562572
Ethylbenzene	18	1	1		03/19/03 12:21	D_R	1562572
Toluene	ND	1	1		03/19/03 12:21	D_R	1562572
Xylenes,Total	ND	1	1		03/19/03 12:21	D_R	1562572
Surr: 4-Bromofluorobenzene	103	% 56-158	1		03/19/03 12:21	D_R	1562572
Surr: 1,4-Difluorobenzene	105	% 46-160	1		03/19/03 12:21	D_R	1562572

Qualifiers:

ND/U - Not Detected at the Reporting Limit
 B - Analyte detected in the associated Method Blank
 * - Surrogate Recovery Outside Advisable QC Limits
 J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)
 D - Surrogate Recovery Unreportable due to Dilution
 MI - Matrix Interference



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-11A Collected: 03/06/2003 14:17 SPL Sample ID: 03021042-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Bicarbonate	401	2	1		03/19/03 15:00	RA	1565190
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Carbonate	ND	2	1		03/19/03 15:00	RA	1565204
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	2900	50	50		03/19/03 11:00	RA	1565112
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	1	1		03/21/03 22:18	ER	1571634
Surr: n-Pentacosane	76.2 %	18-120	1		03/21/03 22:18	ER	1571634
Prep Method	Prep Date	Prep Initials					
SW3510C	03/08/2003 16:25	KL					
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	0.13	0.1	1		03/19/03 12:46	D_R	1562711
Surr: 1,4-Difluorobenzene	112 %	74-121	1		03/19/03 12:46	D_R	1562711
Surr: 4-Bromofluorobenzene	83.7 %	55-150	1		03/19/03 12:46	D_R	1562711
HARDNESS, TOTAL (TITRIMETRIC, EDTA)			MCL	E130.2	Units: mg/L		
Hardness (As CaCO3)	1500	120	25		03/21/03 12:00	CV	1568295
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		03/17/03 13:41	ER	1558992
Ethylene	ND	0.0032	1		03/17/03 13:41	ER	1558992
Methane	0.0044	0.0012	1		03/17/03 13:41	ER	1558992
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Fluoride	4.1	0.5	5		03/17/03 23:00	CV	1562648
Sulfate	290	10	50		03/17/03 22:09	CV	1562644
MERCURY, TOTAL			MCL	SW7470A	Units: mg/L		
Mercury	ND	0.0002	1		03/19/03 18:48	MW	1564541
Prep Method	Prep Date	Prep Initials					
SW7470A	03/19/2003 14:00	MW					
METALS BY METHOD 6010B, TOTAL			MCL	SW6010B	Units: mg/L		
Arsenic	0.0387	0.005	1		03/20/03 22:01	NS	1567447
Lead	ND	0.005	1		03/20/03 22:01	NS	1567447
Selenium	ND	0.005	1		03/20/03 22:01	NS	1567447
Barium	0.297	0.005	1		03/20/03 12:36	EG	1565961
Cadmium	ND	0.005	1		03/20/03 12:36	EG	1565961
Calcium	470	0.1	1		03/20/03 12:36	EG	1565961

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-11A

Collected: 03/06/2003 14:17 SPL Sample ID: 03021042-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Chromium	0.0168	0.01	1		03/20/03 12:36	EG	1565961
Magnesium	160	0.1	1		03/20/03 12:36	EG	1565961
Potassium	39.4	2	1		03/20/03 12:36	EG	1565961
Silver	ND	0.01	1		03/20/03 12:36	EG	1565961
Sodium	1550	5	10		03/20/03 12:44	EG	1565962

Prep Method	Prep Date	Prep Initials
SW3010A	03/13/2003 8:00	MW

NITRATE NITROGEN (AS N), TOTAL	MCL	E353.2	Units: mg/L
Nitrogen,Nitrate (As N)	ND	0.1	1 03/07/03 17:31 CV 1552895

POLYNUCLEAR AROMATIC HYDROCARBONS	MCL	SW8310	Units: ug/L
Acenaphthene	ND	0.1	1 03/19/03 2:52 DL 1561994
Acenaphthylene	ND	0.1	1 03/19/03 2:52 DL 1561994
Anthracene	ND	0.1	1 03/19/03 2:52 DL 1561994
Benz(a)anthracene	ND	0.1	1 03/19/03 2:52 DL 1561994
Benzo(a)pyrene	ND	0.1	1 03/19/03 2:52 DL 1561994
Benzo(b)fluoranthene	ND	0.1	1 03/19/03 2:52 DL 1561994
Benzo(g,h,i)perylene	ND	0.1	1 03/19/03 2:52 DL 1561994
Benzo(k)fluoranthene	ND	0.1	1 03/19/03 2:52 DL 1561994
Chrysene	ND	0.1	1 03/19/03 2:52 DL 1561994
Dibenzo(a,h)anthracene	ND	0.1	1 03/19/03 2:52 DL 1561994
Fluoranthene	ND	0.1	1 03/19/03 2:52 DL 1561994
Fluorene	ND	0.1	1 03/19/03 2:52 DL 1561994
Indeno(1,2,3-cd)pyrene	ND	0.1	1 03/19/03 2:52 DL 1561994
Naphthalene	ND	0.1	1 03/19/03 2:52 DL 1561994
Phenanthrene	ND	0.1	1 03/19/03 2:52 DL 1561994
Pyrene	ND	0.1	1 03/19/03 2:52 DL 1561994
Surr: 1-Fluoronaphthalene	55.1 %	30-130	1 03/19/03 2:52 DL 1561994
Surr: Phenanthrene-d10	68.1 %	33-130	1 03/19/03 2:52 DL 1561994

Prep Method	Prep Date	Prep Initials
SW3510C	03/08/2003 16:41	KL

PURGEABLE AROMATICS	MCL	SW8021B	Units: ug/L
Benzene	3.2	1	1 03/19/03 12:46 D_R 1562573
Ethylbenzene	ND	1	1 03/19/03 12:46 D_R 1562573
Toluene	ND	1	1 03/19/03 12:46 D_R 1562573
Xylenes,Total	ND	1	1 03/19/03 12:46 D_R 1562573
Surr: 4-Bromofluorobenzene	99.9 %	56-158	1 03/19/03 12:46 D_R 1562573
Surr: 1,4-Difluorobenzene	107 %	46-160	1 03/19/03 12:46 D_R 1562573

Qualifiers:
 ND/U - Not Detected at the Reporting Limit
 B - Analyte detected in the associated Method Blank
 * - Surrogate Recovery Outside Advisable QC Limits
 J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)
 D - Surrogate Recovery Unreportable due to Dilution
 MI - Matrix Interference



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-12D Collected: 03/06/2003 13:00 SPL Sample ID: 03021042-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	241	2	1		03/19/03 15:00	RA	1565191
ALKALINITY, CARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2	1		03/19/03 15:00	RA	1565205
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	102	2	2		03/19/03 11:00	RA	1565113
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	ND	1	1		03/21/03 22:56	ER	1571635
Surr: n-Pentacosane	50.4 %	18-120	1		03/21/03 22:56	ER	1571635

Prep Method	Prep Date	Prep Initials
	03/08/2003 16:25	

GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND	0.1	1		03/19/03 13:12	D_R	1562712
Surr: 1,4-Difluorobenzene	100 %	74-121	1		03/19/03 13:12	D_R	1562712
Surr: 4-Bromofluorobenzene	77.7 %	55-150	1		03/19/03 13:12	D_R	1562712

HARDNESS, TOTAL (TITRIMETRIC, EDTA)				MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	360	25	5		03/21/03 12:00	CV	1568296

HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg/L	
Ethane	ND	0.0025	1		03/17/03 13:55	ER	1558994
Ethylene	ND	0.0032	1		03/17/03 13:55	ER	1558994
Methane	0.0038	0.0012	1		03/17/03 13:55	ER	1558994

ION CHROMATOGRAPHY				MCL	E300.0	Units: mg/L	
Fluoride	1.2	0.1	1		03/17/03 20:03	CV	1562634
Sulfate	170	4	20		03/17/03 22:22	CV	1562645

MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002	1		03/19/03 18:51	MW	1564542

Prep Method	Prep Date	Prep Initials
SW7470A	03/19/2003 14:00	MW

METALS BY METHOD 6010B, TOTAL				MCL	SW6010B	Units: mg/L	
Arsenic	0.0491	0.005	1		03/20/03 22:07	NS	1567448
Lead	ND	0.005	1		03/20/03 22:07	NS	1567448
Selenium	ND	0.005	1		03/20/03 22:07	NS	1567448
Barium	0.1	0.005	1		03/20/03 12:52	EG	1565963
Cadmium	ND	0.005	1		03/20/03 12:52	EG	1565963
Calcium	135	0.1	1		03/20/03 12:52	EG	1565963

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID MW-12D

Collected: 03/06/2003 13:00

SPL Sample ID: 03021042-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Chromium	0.01	0.01	1		03/20/03 12:52	EG	1565963
Magnesium	6.74	0.1	1		03/20/03 12:52	EG	1565963
Potassium	55.6	2	1		03/20/03 12:52	EG	1565963
Silver	ND	0.01	1		03/20/03 12:52	EG	1565963
Sodium	68.8	0.5	1		03/20/03 12:52	EG	1565963

Prep Method	Prep Date	Prep Initials
SW3010A	03/13/2003 8:00	MW
	03/13/2003 8:00	

NITRATE NITROGEN (AS N), TOTAL		MCL	E353.2	Units: mg/L	
Nitrogen,Nitrate (As N)	0.705	0.1	1	03/07/03 17:31	CV 1552896

POLYNUCLEAR AROMATIC HYDROCARBONS		MCL	SW8310	Units: ug/L	
Acenaphthene	ND	0.1	1	03/19/03 3:29	DL 1561995
Acenaphthylene	ND	0.1	1	03/19/03 3:29	DL 1561995
Anthracene	ND	0.1	1	03/19/03 3:29	DL 1561995
Benz(a)anthracene	ND	0.1	1	03/19/03 3:29	DL 1561995
Benzo(a)pyrene	ND	0.1	1	03/19/03 3:29	DL 1561995
Benzo(b)fluoranthene	ND	0.1	1	03/19/03 3:29	DL 1561995
Benzo(g,h,i)perylene	ND	0.1	1	03/19/03 3:29	DL 1561995
Benzo(k)fluoranthene	ND	0.1	1	03/19/03 3:29	DL 1561995
Chrysene	ND	0.1	1	03/19/03 3:29	DL 1561995
Dibenzo(a,h)anthracene	ND	0.1	1	03/19/03 3:29	DL 1561995
Fluoranthene	ND	0.1	1	03/19/03 3:29	DL 1561995
Fluorene	ND	0.1	1	03/19/03 3:29	DL 1561995
Indeno(1,2,3-cd)pyrene	ND	0.1	1	03/19/03 3:29	DL 1561995
Naphthalene	ND	0.1	1	03/19/03 3:29	DL 1561995
Phenanthrene	ND	0.1	1	03/19/03 3:29	DL 1561995
Pyrene	ND	0.1	1	03/19/03 3:29	DL 1561995
Surr: 1-Fluoronaphthalene	48.3	% 30-130	1	03/19/03 3:29	DL 1561995
Surr: Phenanthrene-d10	63.6	% 33-130	1	03/19/03 3:29	DL 1561995

Prep Method	Prep Date	Prep Initials
SW3510C	03/08/2003 16:41	KL

PURGEABLE AROMATICS		MCL	SW8021B	Units: ug/L	
Benzene	ND	1	1	03/19/03 13:12	D_R 1562713
Ethylbenzene	ND	1	1	03/19/03 13:12	D_R 1562713
Toluene	ND	1	1	03/19/03 13:12	D_R 1562713
Xylenes,Total	ND	1	1	03/19/03 13:12	D_R 1562713
Surr: 4-Bromofluorobenzene	97.5	% 56-158	1	03/19/03 13:12	D_R 1562713
Surr: 1,4-Difluorobenzene	103	% 46-160	1	03/19/03 13:12	D_R 1562713

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID MW-14

Collected: 03/06/2003 15:21

SPL Sample ID: 03021042-05

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Bicarbonate	373	2	1		03/19/03 15:00	RA	1565192
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Carbonate	3.03	2	1		03/19/03 15:00	RA	1565206
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	163	2	2		03/19/03 11:00	RA	1565114
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Fluoride	2.3	0.1	1		03/17/03 20:16	CV	1562635
Sulfate	150	4	20		03/17/03 22:34	CV	1562646
NITRATE NITROGEN (AS N), TOTAL			MCL	E353.2	Units: mg/L		
Nitrogen, Nitrate (As N)	5.82	0.1	1		03/07/03 17:31	CV	1552897

Qualifiers:

ND/U - Not Detected at the Reporting Limit
 B - Analyte detected in the associated Method Blank
 * - Surrogate Recovery Outside Advisable QC Limits
 J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)
 D - Surrogate Recovery Unreportable due to Dilution
 MI - Matrix Interference



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Client Sample ID MW-15

Collected: 03/06/2003 15:41

SPL Sample ID: 03021042-06

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL			
Alkalinity, Bicarbonate	231	2	1	M2320 B	03/19/03 15:00	RA	1565193
ALKALINITY, CARBONATE				MCL			
Alkalinity, Carbonate	ND	2	1	M2320 B	03/19/03 15:00	RA	1565207
CHLORIDE, TOTAL				MCL			
Chloride	272	5	5	E325.3	03/19/03 11:00	RA	1565115
ION CHROMATOGRAPHY				MCL			
Fluoride	0.91	0.1	1	E300.0	03/17/03 20:28	CV	1562636
Sulfate	150	4	20		03/17/03 22:47	CV	1562647
NITRATE NITROGEN (AS N), TOTAL				MCL			
Nitrogen,Nitrate (As N)	3.67	0.1	1	E353.2	03/07/03 17:31	CV	1552898

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



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Client Sample ID Trip Blank 3/6/03

Collected: 03/06/2003 0:00

SPL Sample ID: 03021042-07

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		03/19/03 16:07 D_R		1564346
Ethylbenzene	ND	1	1		03/19/03 16:07 D_R		1564346
Toluene	ND	1	1		03/19/03 16:07 D_R		1564346
Xylenes, Total	ND	1	1		03/19/03 16:07 D_R		1564346
Surr: 4-Bromofluorobenzene	97.1	% 56-158	1		03/19/03 16:07 D_R		1564346
Surr: 1,4-Difluorobenzene	104	% 46-160	1		03/19/03 16:07 D_R		1564346

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

Quality Control Documentation



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/12832

Analysis: Diesel Range Organics
Method: SW8015B

WorkOrder: 03021042
Lab Batch ID: 26207

Method Blank

Samples in Analytical Batch:

RunID: HP_V_030321A-1571637 Units: mg/L
Analysis Date: 03/22/2003 0:13 Analyst: ER
Preparation Date: 03/08/2003 16:25 Prep By: KL Method SW3510C

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Diesel Range Organics and Surr: n-Pentacosane.

Laboratory Control Sample (LCS)

RunID: HP_V_030321A-1571636 Units: mg/L
Analysis Date: 03/21/2003 23:34 Analyst: ER
Preparation Date: 03/08/2003 16:25 Prep By: KL Method SW3510C

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Diesel Range Organics.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03030291-01
RunID: HP_V_030321A-1571632 Units: mg/L
Analysis Date: 03/21/2003 21:02 Analyst: ER
Preparation Date: 03/08/2003 16:25 Prep By: KL Method SW3510C

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Diesel Range Organics.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
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Brown & Caldwell

BJ Hobbs/12832

Analysis: Headspace Gas Analysis
Method: RSK147

WorkOrder: 03021042
Lab Batch ID: R79993

Method Blank

Samples in Analytical Batch:

RunID: VARC_030317A-1558971 Units: mg/L
Analysis Date: 03/17/2003 11:03 Analyst: ER

Lab Sample ID	Client Sample ID
03021042-01D	MW-5
03021042-02D	MW-10
03021042-03D	MW-11A
03021042-04D	MW-12D

Analyte	Result	Rep Limit
Ethane	ND	0.0025
Ethylene	ND	0.0032
Methane	ND	0.0012

Sample Duplicate

Original Sample: 03021042-04
RunID: VARC_030317A-1558994 Units: mg/L
Analysis Date: 03/17/2003 13:55 Analyst: ER

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Butane	ND	ND	0	50
Ethane	ND	ND	0	50
Ethylene	ND	ND	0	50
Isobutane	ND	ND	0	50
Methane	0.0038	0.00313	20	50
Propane	ND	ND	0	50
Propylene	ND	ND	0	50

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
 B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
 J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
 N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Hobbs/12832

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 03021042
Lab Batch ID: R80151

Method Blank

Samples in Analytical Batch:

RunID: HP_U_030319A-1562565 Units: ug/L
Analysis Date: 03/19/2003 4:52 Analyst: D_R

Lab Sample ID Client Sample ID
03021042-01A MW-5
03021042-02A MW-10
03021042-03A MW-11A
03021042-04A MW-12D
03021042-07A Trip Blank 3/6/03

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, and two surrogate compounds.

Laboratory Control Sample (LCS)

RunID: HP_U_030319A-1562564 Units: ug/L
Analysis Date: 03/19/2003 4:01 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03030421-01
RunID: HP_U_030319A-1564347 Units: ug/L
Analysis Date: 03/19/2003 16:58 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
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Brown & Caldwell
BJ Hobbs/12832

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 03021042
Lab Batch ID: R80156

Method Blank

Samples in Analytical Batch:

RunID: HP_U_030319C-1562708 Units: mg/L
Analysis Date: 03/19/2003 4:52 Analyst: D_R

Lab Sample ID Client Sample ID
03021042-01A MW-5
03021042-02A MW-10
03021042-03A MW-11A
03021042-04A MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Gasoline Range Organics, Surr: 1,4-Difluorobenzene, Surr: 4-Bromofluorobenzene.

Laboratory Control Sample (LCS)

RunID: HP_U_030319C-1562707 Units: mg/L
Analysis Date: 03/19/2003 4:26 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Gasoline Range Organics.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03030421-02
RunID: HP_U_030319C-1564422 Units: mg/L
Analysis Date: 03/19/2003 17:49 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Gasoline Range Organics.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
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Brown & Caldwell

BJ Hobbs/12832

Analysis: Polynuclear Aromatic Hydrocarbons
Method: SW8310

WorkOrder: 03021042
Lab Batch ID: 26211

Method Blank

Samples in Analytical Batch:

RunID: 2_030318A-1561985 Units: ug/L
Analysis Date: 03/18/2003 19:34 Analyst: DL
Preparation Date: 03/08/2003 16:41 Prep By: KL Method SW3510C

Lab Sample ID Client Sample ID
03021042-03F MW-11A
03021042-04F MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Lists various polynuclear aromatic hydrocarbons and their detection results.

Laboratory Control Sample (LCS)

RunID: 2_030318A-1561986 Units: ug/L
Analysis Date: 03/18/2003 20:11 Analyst: DL
Preparation Date: 03/08/2003 16:41 Prep By: KL Method SW3510C

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Shows recovery data for various analytes.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Hobbs/12832

Analysis: Polynuclear Aromatic Hydrocarbons
Method: SW8310

WorkOrder: 03021042
Lab Batch ID: 26211

Laboratory Control Sample (LCS)

RunID: 2_030318A-1561986 Units: ug/L
Analysis Date: 03/18/2003 20:11 Analyst: DL
Preparation Date: 03/08/2003 16:41 Prep By: KL Method SW3510C

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Naphthalene, Phenanthrene, and Pyrene.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03030242-10
RunID: 2_030318A-1561987 Units: ug/L
Analysis Date: 03/18/2003 20:47 Analyst: DL
Preparation Date: 03/08/2003 16:41 Prep By: KL Method SW3510C

Large table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Lists various polynuclear aromatic hydrocarbons and their recovery percentages.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Hobbs/12832

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03021042
Lab Batch ID: 26335

Method Blank

Samples in Analytical Batch:

RunID: TJA_030319C-1565954 Units: mg/L
Analysis Date: 03/20/2003 11:51 Analyst: EG
Preparation Date: 03/13/2003 8:00 Prep By: MW Method SW3010A

Lab Sample ID Client Sample ID
03021042-01E MW-5
03021042-03E MW-11A
03021042-04E MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Barium, Cadmium, Calcium, Chromium, Magnesium, Potassium, Silver, Sodium.

Laboratory Control Sample (LCS)

RunID: TJA_030319C-1565955 Units: mg/L
Analysis Date: 03/20/2003 11:56 Analyst: EG
Preparation Date: 03/13/2003 8:00 Prep By: MW Method SW3010A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Barium, Cadmium, Calcium, Chromium, Magnesium, Potassium, Silver, Sodium.

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 03030442-01
RunID: TJA_030319C-1565957 Units: mg/L
Analysis Date: 03/20/2003 12:10 Analyst: EG
Preparation Date: 03/13/2003 8:00 Prep By: Method

Table with 12 columns: Analyte, Sample Result, PDS Spike Added, PDS Result, PDS % Recovery, PDSD Spike Added, PDSD Result, PDSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Barium, Cadmium.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/12832

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03021042
Lab Batch ID: 26335

Calcium	65.9	10	75.07	91.68	10	74.15	82.50	10.54	20	75	125
Chromium	ND	10	9.96	99.60	10	9.859	98.59	1.019	20	75	125
Magnesium	43.2	10	52.27	90.71	10	51.81	86.04	5.276	20	75	125
Potassium	ND	100	91.05	91.05	100	91.72	91.72	0.7376	20	75	125
Silver	ND	10	9.75	97.22	10	9.604	95.76	1.517	20	75	125
Sodium	64	10	73.03	89.89	10	72.45	84.02	6.752	20	75	125

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
 B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
 J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
 N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Hobbs/12832

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03021042
Lab Batch ID: 26335C-T

Method Blank

Samples in Analytical Batch:

RunID: TJAT_030320B-1567440 Units: mg/L
Analysis Date: 03/20/2003 21:20 Analyst: NS
Preparation Date: 03/13/2003 8:00 Prep By: MW Method SW3010A

Lab Sample ID Client Sample ID
03021042-01E MW-5
03021042-03E MW-11A
03021042-04E MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Rows for Arsenic, Lead, Selenium.

Laboratory Control Sample (LCS)

RunID: TJAT_030320B-1567441 Units: mg/L
Analysis Date: 03/20/2003 21:25 Analyst: NS
Preparation Date: 03/13/2003 8:00 Prep By: MW Method SW3010A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows for Arsenic, Lead, Selenium.

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 03030442-01
RunID: TJAT_030320B-1567443 Units: mg/L
Analysis Date: 03/20/2003 21:38 Analyst: NS
Preparation Date: 03/13/2003 8:00 Prep By: Method

Table with 12 columns: Analyte, Sample Result, PDS Spike Added, PDS Result, PDS % Recovery, PDSD Spike Added, PDSD Result, PDSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows for Arsenic, Lead, Selenium.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/12832

Analysis: Mercury, Total
Method: SW7470A

WorkOrder: 03021042
Lab Batch ID: 26425

Method Blank

Samples in Analytical Batch:

RunID: HGLC_030319B-1564519 Units: mg/L
Analysis Date: 03/19/2003 17:59 Analyst: MW
Preparation Date: 03/19/2003 14:00 Prep By: MW Method SW7470A
Lab Sample ID Client Sample ID
03021042-01E MW-5
03021042-03E MW-11A
03021042-04E MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Row: Mercury, ND, 0.0002

Laboratory Control Sample (LCS)

RunID: HGLC_030319B-1564520 Units: mg/L
Analysis Date: 03/19/2003 18:01 Analyst: MW
Preparation Date: 03/19/2003 14:00 Prep By: MW Method SW7470A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Mercury, 0.002, 0.00208, 104, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03030434-01
RunID: HGLC_030319B-1564522 Units: mg/L
Analysis Date: 03/19/2003 18:05 Analyst: MW
Preparation Date: 03/19/2003 14:00 Prep By: MW Method SW7470A

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Mercury, ND, 0.002, 0.002003, 100.2, 0.002, 0.001951, 97.53, 2.665, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/12832

Analysis: Nitrate Nitrogen (as N), Total
Method: E353.2

WorkOrder: 03021042
Lab Batch ID: R79715

Method Blank

Samples in Analytical Batch:

RunID: WET_030307ZG-1552886 Units: mg/L
Analysis Date: 03/07/2003 17:31 Analyst: CV

Table with 2 columns: Lab Sample ID, Client Sample ID. Rows include 03021042-01H through 03021042-06G.

Table with 3 columns: Analyte, Result, Rep Limit. Row: Nitrogen,Nitrate (As N), ND, 0.10

Laboratory Control Sample (LCS)

RunID: WET_030307ZG-1552888 Units: mg/L
Analysis Date: 03/07/2003 17:31 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Nitrogen,Nitrate (As N), 5, 4.994, 100, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03021042-01
RunID: WET_030307ZG-1552892 Units: mg/L
Analysis Date: 03/07/2003 17:31 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Nitrogen,Nitrate (As N), 2.751, 5, 7.379, 92.56, 5, 7.361, 92.20, 0.3897, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
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HOUSTON, TX 77054
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Brown & Caldwell
BJ Hobbs/12832

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03021042
Lab Batch ID: R80155

Method Blank

Samples in Analytical Batch:

RunID: IC1_030317A-1562624 Units: mg/L
Analysis Date: 03/17/2003 17:57 Analyst: CV

Lab Sample ID Client Sample ID
03021042-01H MW-5
03021042-02C MW-10
03021042-03C MW-11A
03021042-04C MW-12D
03021042-05G MW-14
03021042-06G MW-15

Table with 3 columns: Analyte, Result, Rep Limit. Rows: Fluoride (ND, 0.10), Sulfate (ND, 0.20)

Laboratory Control Sample (LCS)

RunID: IC1_030317A-1562625 Units: mg/L
Analysis Date: 03/17/2003 18:09 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows: Fluoride, Sulfate

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03021042-01
RunID: IC1_030317A-1562630 Units: mg/L
Analysis Date: 03/17/2003 19:13 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Fluoride

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/12832

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03021042
Lab Batch ID: R80155A

Method Blank

Samples in Analytical Batch:

RunID: IC1_030317A-1562624 Units: mg/L
Analysis Date: 03/17/2003 17:57 Analyst: CV

Lab Sample ID Client Sample ID
03021042-01H MW-5
03021042-02C MW-10
03021042-03C MW-11A
03021042-04C MW-12D
03021042-05G MW-14
03021042-06G MW-15

Table with 3 columns: Analyte, Result, Rep Limit. Rows: Fluoride (ND, 0.10), Sulfate (ND, 0.20)

Laboratory Control Sample (LCS)

RunID: IC1_030317A-1562625 Units: mg/L
Analysis Date: 03/17/2003 18:09 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows: Fluoride (10, 9.89, 99, 80, 120), Sulfate (10, 9.65, 96, 80, 120)

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03021042-01
RunID: IC1_030317A-1562641 Units: mg/L
Analysis Date: 03/17/2003 21:31 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Sulfate (107, 200, 324, 109, 200, 318, 106, 2.80, 20, 80, 120)

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
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Brown & Caldwell
BJ Hobbs/12832

Analysis: Chloride, Total
Method: E325.3

WorkOrder: 03021042
Lab Batch ID: R80248

Method Blank

Samples in Analytical Batch:

RunID: WET_030319Q-1565105 Units: mg/L
Analysis Date: 03/19/2003 11:00 Analyst: RA

Table with 2 columns: Lab Sample ID, Client Sample ID. Rows include 03021042-01H through 03021042-06G.

Table with 3 columns: Analyte, Result, Rep Limit. Row for Chloride with result ND and limit 1.0.

Laboratory Control Sample (LCS)

RunID: WET_030319Q-1565107 Units: mg/L
Analysis Date: 03/19/2003 11:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Chloride with values 233, 226.9, 97, 90, 110.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03021042-01
RunID: WET_030319Q-1565109 Units: mg/L
Analysis Date: 03/19/2003 11:00 Analyst: RA

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Chloride with values 116.2, 100, 225.1, 108.9, 100, 225.1, 108.9, 0, 20, 85, 115.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Hobbs/12832

Analysis: Alkalinity, Bicarbonate
Method: M2320 B

WorkOrder: 03021042
Lab Batch ID: R80253

Method Blank

RunID: WET_030319T-1565184 Units: mg/L
Analysis Date: 03/19/2003 15:00 Analyst: RA

Samples in Analytical Batch:

Table with 2 columns: Lab Sample ID, Client Sample ID. Rows include 03021042-01H through 03021042-06G.

Table with 3 columns: Analyte, Result, Rep Limit. Row: Alkalinity, Bicarbonate, ND, 2.0

Laboratory Control Sample (LCS)

RunID: WET_030319T-1565186 Units: mg/L
Analysis Date: 03/19/2003 15:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Alkalinity, Bicarbonate, 98.9, 95.95, 97, 90, 110

Sample Duplicate

Original Sample: 03021042-01
RunID: WET_030319T-1565187 Units: mg/L
Analysis Date: 03/19/2003 15:00 Analyst: RA

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Row: Alkalinity, Bicarbonate, 243, 244.4, 0, 20

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
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Brown & Caldwell

BJ Hobbs/12832

Analysis: Alkalinity, Carbonate
Method: M2320 B

WorkOrder: 03021042
Lab Batch ID: R80254

Method Blank

Samples in Analytical Batch:

RunID: WET_030319U-1565198 Units: mg/L
Analysis Date: 03/19/2003 15:00 Analyst: RA

Lab Sample ID Client Sample ID
03021042-01H MW-5
03021042-02C MW-10
03021042-03C MW-11A
03021042-04H MW-12D
03021042-05G MW-14
03021042-06G MW-15

Table with 3 columns: Analyte, Result, Rep Limit. Row: Alkalinity, Carbonate, ND, 2.0

Laboratory Control Sample (LCS)

RunID: WET_030319U-1565200 Units: mg/L
Analysis Date: 03/19/2003 15:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Alkalinity, Carbonate, 98.9, 95.95, 97, 90, 110

Sample Duplicate

Original Sample: 03021042-01
RunID: WET_030319U-1565201 Units: mg/L
Analysis Date: 03/19/2003 15:00 Analyst: RA

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Row: Alkalinity, Carbonate, ND, ND, 0, 20

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell

BJ Hobbs/12832

Analysis: Hardness, Total (Titrimetric, EDTA)
Method: E130.2

WorkOrder: 03021042
Lab Batch ID: R80388

Method Blank

Samples in Analytical Batch:

RunID: WET_030321I-1568289 Units: mg/L
Analysis Date: 03/21/2003 12:00 Analyst: CV

Lab Sample ID Client Sample ID
03021042-01E MW-5
03021042-03E MW-11A
03021042-04E MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Row: Hardness (As CaCO3), ND, 5.0

Laboratory Control Sample (LCS)

RunID: WET_030321I-1568291 Units: mg/L
Analysis Date: 03/21/2003 12:00 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Hardness (As CaCO3), 289, 286, 99, 94, 108

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03021042-01
RunID: WET_030321I-1568293 Units: mg/L
Analysis Date: 03/21/2003 12:00 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Hardness (As CaCO3), 688, 1250, 1940, 100, 1250, 1940, 100, 0, 20, 81, 111

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

Sample Receipt Checklist
And
Chain of Custody



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	03021042	Received By:	NB
Date and Time Received:	3/7/2003 10:00:00 AM	Carrier name:	FedEx
Temperature:	3	Chilled by:	Water Ice

1. Shipping container/cooler in good condition? Yes No Not Present
2. Custody seals intact on shipping container/cooler? Yes No Not Present
3. Custody seals intact on sample bottles? Yes No Not Present
4. Chain of custody present? Yes No
5. Chain of custody signed when relinquished and received? Yes No
6. Chain of custody agrees with sample labels? Yes No
Did not receive containers for DRO analysis for sample MW-10
7. Samples in proper container/bottle? Yes No
Did not receive nitric acid-preserved bottles for hardness for samples MW-10, MW-14, & MW-15.
8. Sample containers intact? Yes No
9. Sufficient sample volume for indicated test? Yes No
10. All samples received within holding time? Yes No
11. Container/Temp Blank temperature in compliance? Yes No
12. Water - VOA vials have zero headspace? Yes No Not Applicable
13. Water - pH acceptable upon receipt? Yes No Not Applicable

SPL Representative:

Contact Date & Time:

Client Name Contacted:

Non Conformance Issues:

Client Instructions:



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No: 03850780

181706

page 1 of 2

Client Name: Brown and Caldwell

Address/Phone: 1415 Louisiana St # 2500

Client Contact: Rick Rexroad

Project Name: B7 Hobbs

Project Number: 12832

Project Location: Hobbs, NM

Invoice To: Rick Rexroad

SAMPLE ID DATE TIME comp grab

matrix bottle size pres. W=water S=soil SL=sludge O=other: P=plastic A=amber glass G=glass V=vial 1=1 liter 4=4oz 40=40ml 8=8oz 16=16oz 1=HCl 2=HNO3 3=H2SO4 O=other:

Number of Containers

Requested Analysis Chloride 329.3 fluoride 300.0 CaCO3 130.1 Carbonate /it CO3

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Requested Analysis
MW-14	3/6/03	1521	X	X	W	P	1	1	1	Chloride 329.3
MW-15	3/6/03	1941	X	X	W	P	1	1	1	fluoride 300.0
MW-5	3/6/03	1559	X	X	W	PV	40.1	1, 2	7	CaCO3 130.1
MW-10	3/6/03	1457	X	X	W	PV	40.1	1	7	Carbonate /it CO3
MW-12D	3/6/03	1300	X	X	W	PV	40.1	1, 2	14	
MW-11A	3/6/03	1417	X	X	W	PV	40.1	1, 2	11	

Client/Consultant Remarks: eto changes priority analysis for MW-14, MW-10, MW-11A, MW-12D = CaCO3 IF not enough sample CO3, HCO3 last priority & not enough sample

Requested TAT Special Reporting Requirements Fax Results Level 3 QC Level 4 QC Raw Data Special Detection Limits (specify): Intact? PM review (initial):

1. Relinquished by Sampler: [Signature] Date: 3/6/03 Time: 1330
2. Received by: [Signature] Date: 3/7/03 Time: 1000
3. Relinquished by: [Signature] Date: 3/7/03 Time: 1000
4. Received by: [Signature] Date: 3/7/03 Time: 1000
5. Relinquished by: [Signature] Date: 3/7/03 Time: 1000

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901
500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775
DANKING #5 838282-341984 838202-342009



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No: 03850785

3/7

13

page 1 of 2

Client Name: Brown and Caldwell

Address/Phone: 1415 Louisiana St # 2508

Client Contact: Rvk Renard 713-759-8199

Project Name: BT Hobbs

Project Number: 12832

Project Location: Hobbs, NM

Invoice To: Rvk Renard

SAMPLE ID DATE TIME comp grab

matrix bottle size pres. Number of Containers

Requested Analysis: BTEX 80213, TPH 908015, TPH DRO 8015, nitrate/nitrat 300, methane RSK/SRP 147/175, alkalinity 310-1, RCRA metals 305X 601017000, PAHs 8310, Ca, Mg, K, Na 6010

Table with columns: SAMPLE ID, DATE, TIME, comp, grab, matrix, bottle, size, pres., Number of Containers, Requested Analysis. Rows include MW-14, MW-15, MW-S, MW-10, MW-11A, MW-12D, Trip Blank 3-6-03 3/6/03.

Client/Consultant Remarks: Chloride priority analysis if not enough sample MW-14, MW-15, Ca, CO2, HCO3, CO3. Laboratory remarks: 1st priority if not enough sample for

Requested TAT: 24hr, 72hr, 48hr, Standard, Other. Special Reporting Requirements: Standard QC, Level 3, Level 4. Raw Data: date, time. Received by: Laboratory.

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901. 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775. 4918th Drive, New Orleans, LA 70119 (504) 947-5777. DICKENS #15, 838202341984, 838202342009.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03021042

Report To: Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886	Project Name: BJ Hobbs/12832 Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported:
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This Report Contains A Total Of 32 Pages

Excluding This Page

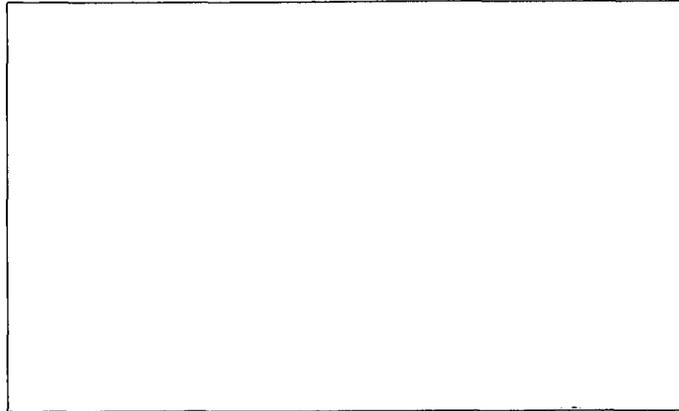
And

Chain Of Custody

4/21/2003

Date





**BROWN AND
CALDWELL**

Environmental Engineers & Consultants

**DECEMBER 2003 GROUNDWATER
SAMPLING REPORT
HOBBS, NEW MEXICO FACILITY**

BJ SERVICES COMPANY, U.S.A.

JULY 16, 2004

**DECEMBER 2003 GROUNDWATER SAMPLING REPORT
HOBBS, NEW MEXICO FACILITY
BJ SERVICES COMPANY, U.S.A.**

Prepared for

BJ Services Company, U.S.A.
11211 FM 2920
Tomball, Texas 77375

BC Project Number: 12832.019



Richard L. Rexroad, P.G.
Project Manager

July 16, 2004

Brown and Caldwell
1415 Louisiana, Suite 2500
Houston, Texas 77002 - (713) 759-0999

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"This report was prepared in accordance with the standards of the environmental consulting industry at the time it was prepared. It should not be relied upon by parties other than those for whom it was prepared, and then only to the extent of the scope of work which was authorized. This report does not guarantee that no additional environmental contamination beyond that described in this report exists at this site."

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DISTRIBUTION AND QA/QC REVIEWER'S SIGNATURE

FIGURES

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D-3	1977 Aerial Photograph
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- 2 Cumulative Groundwater Elevation Data
- 3 December 18, 2003 Field Screening Results for Groundwater Samples
- 4 Cumulative Results for Chloride Analyses
- 5 Cumulative BTEX and TPH Analytical Results for Groundwater Samples
- 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

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- A Groundwater Sampling Forms
- B Laboratory Analytical Reports
- C Oil & Gas Well Search
- D Historic Aerial Photographs
- E Current Water Well Search

1.0 INTRODUCTION

Brown and Caldwell conducted a quarterly groundwater sampling event at the BJ Services Company, U.S.A. (BJ Services) facility located at 2708 West County Road in Hobbs, New Mexico on December 17-18, 2003. This report presents a description of the groundwater sampling field activities, a summary and evaluation of the analytical results, and an evaluation of remedial technologies applied at the facility. A groundwater potentiometric surface map and a hydrocarbon distribution map are included.

A layout of the facility is shown in Figure 1. The facility formerly operated an on-site fueling system. The New Mexico Oil Conservation Division (NMOCD) detected evidence of subsurface impact near the former diesel fueling system during an on-site inspection on February 7, 1991. The fueling system was taken out of operation in July 1995. The NMOCD has required a quarterly groundwater monitoring program to assess the concentration of hydrocarbon constituents in groundwater as a result of the diesel fuel release.

A biosparging system was activated in November 1995 and expanded in March/April 1997 and February/March 1998 to remediate soil and groundwater at the former fuel island area of the facility. The biosparging system was deactivated on November 1, 2000 after achieving cleanup goals for groundwater. The confirmation soil sampling program specified in the NMOCD-approved Remedial Action Plan (RAP) for the facility was conducted in July 2001. The results of the confirmation soil sampling program were presented to NMOCD in the report for the June 2001 groundwater sampling event. In accordance with the RAP for the facility, four additional groundwater sampling events were conducted following the confirmation soil sampling event. Hydrocarbon concentrations in groundwater samples from applicable monitor wells remained below the target concentrations specified in the RAP during each of these sampling events, so a request to decommission the biosparging system was submitted to NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report for the facility.

BJ Services removed three field waste tanks from the facility on March 6-7, 1997. The ongoing groundwater monitoring program was expanded to address both the former fuel island and the former field waste tanks areas of the facility, as directed by NMOCD in correspondence dated January 21, 1999.

Table 1 presents a site chronology detailing the history of investigations into and the remediation of hydrocarbon impacts to soil and groundwater in the areas of the former fueling system and the former field waste tanks at the facility, along with the history of investigations conducted by BJ Services regarding chloride impact to groundwater at and in the vicinity of its facility in Hobbs, New Mexico.

2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled seven monitor wells (MW-5, MW-10, MW-11A, MW-12D, MW-14, MW-15, and MW-16) at the facility on December 18, 2003 to evaluate concentrations of dissolved-phase hydrocarbons and chloride in groundwater. The monitor well locations are shown in Figure 1. The following subsections describe the field activities conducted by Brown and Caldwell during the current groundwater sampling event and present the results from the associated groundwater analyses.

2.1 Groundwater Sampling Activities

Groundwater level measurements were obtained from all monitor wells at the facility prior to purging and sampling the wells listed above. Groundwater levels were measured to the nearest 0.01 foot with an electronic water-level indicator. Current and historical groundwater elevation data for each well are presented in Table 2. The groundwater elevation data presented in Table 2 indicate that groundwater levels have continued to decline in monitor wells at the facility since late 1995. A groundwater elevation map for December 17, 2003 is presented in Figure 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with hydraulic gradient ranging from 0.006 foot/foot (ft/ft) in the western portion of the facility to 0.010 ft/ft in the eastern portion of the groundwater monitoring area.

Monitor wells MW-12D and MW-16 were purged with a submersible pump and previously unused down-hole tubing. The remaining wells were purged with previously unused disposable bailers and clean, previously unused polyethylene rope. Three well volumes were purged from monitor wells MW-5 and MW-15. Monitor wells MW-10, MW-11A, and MW-14 were purged dry.

Low flow/low stress purging was performed prior to sampling of monitor wells MW-12D and MW-16 to maintain the water level at or near the static water level. Field parameter measurements for pH, specific conductivity, oxidation-reduction potential, dissolved oxygen, and temperature were collected during purging of these wells. Ferrous iron and dissolved oxygen concentrations

were measured in groundwater from monitor wells MW-5, MW-10, MW-11A and MW-12D upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix A and are summarized in Table 3.

Groundwater samples were obtained directly from the discharge line of the submersible pump or by pouring recovered water from a bailer into laboratory-prepared, clean glass or plastic containers, sealed with Teflon[®]-lined lids, labeled, and placed on ice in an insulated cooler for delivery to Southern Petroleum Laboratory in Houston, Texas for analysis using standard chain-of-custody procedures.

Field measurement equipment was decontaminated prior to and following each use. Decontamination procedures consisted of washing with distilled water and a non-phosphate detergent, then rinsing with distilled water. Purge and decontamination waters were discharged to an on-site water reclamation system at the BJ Services facility.

2.2 Results of Groundwater Analyses

Groundwater samples from monitor wells MW-14, MW-15, and MW-16 were analyzed for chloride content using Method E325.3. Table 4 presents current and cumulative results for chloride analyses performed on groundwater samples collected at the facility. The current chloride concentration in monitor well MW-14 remains less than the New Mexico Water Quality Control Commission (NMWQCC) chloride standard of 250 milligrams per liter (mg/L). The chloride concentrations in monitor wells MW-15 and MW-16 exceed the NMWQCC chloride standard.

Groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12D were analyzed for diesel- and gasoline-range total petroleum hydrocarbons (TPH-D and TPH-G) using EPA Method SW-8015B and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method SW-8021B. Current and cumulative analytical results for BTEX constituents, TPH-D, and TPH-G are presented in Table 5. Figure 3 presents a hydrocarbon distribution map for December

18, 2003. All BTEX concentrations measured in groundwater during the current sampling event were less than applicable NMWQCC standards.

Analysis of groundwater from monitor wells MW-5, MW-10, MW-11A, and MW-12D for nitrate and sulfate (Method E300.0), dissolved methane (Method RSK 147), and alkalinity (Method E310.1) was performed to evaluate mechanisms for natural attenuation of hydrocarbons at the facility. Current and historical results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12, and MW-12D are presented in Table 6.

The laboratory analytical reports and chain-of-custody documentation for groundwater samples collected during the current sampling event are provided in Appendix B.

3.0 EVALUATION OF REMEDIAL TECHNOLOGIES

Evaluations of remedial technologies applied at the former fueling system and former field waste tanks areas of the BJ Services facility in Hobbs, New Mexico are presented in Sections 3.1 and 3.2, respectively. Section 3.3 presents an evaluation of chloride impact to groundwater at and in the vicinity of the facility.

3.1 Biosparging System at the Former Fueling System Area

Brown and Caldwell recommended installation of a biosparging system at the former fueling system area of the facility in a Remedial Action Plan (RAP) submitted to the NMOCD in May 1994. The NMOCD approved the RAP on August 11, 1994. The biosparging system was installed in August 1995, with expansions completed in April 1997 and March 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in former fueling system area monitor wells. In accordance with the RAP, confirmation soil sampling activities were conducted at the former fueling system area in July 2001 to verify the effectiveness of the biosparging system in remediating vadose zone soils. The analytical results for these soil samples, as discussed in the report for the June 2001 groundwater sampling event, indicated that remediation goals for soil in this area had been achieved.

Following the confirmation soil sampling activities, hydrocarbon concentrations in groundwater remained below target cleanup goals for four successive quarters. In accordance with the RAP for the facility, a request to decommission the biosparging system was submitted to the NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report.

3.2 Natural Attenuation at the Former Field Waste Tanks Area

Natural attenuation is the primary remediation mechanism for the dissolved-phase hydrocarbon plume located in the area of the former field waste tanks (see Figure 1).

Plume behavior is the primary evidence of natural attenuation. Secondary evidence of natural attenuation can be obtained by collection and evaluation of data relating to the concentrations of indigenous electron acceptors such as dissolved oxygen, nitrate, sulfate, and carbon dioxide. A plume is shrinking when the rate of hydrocarbon loading from a source area is less than the rate of natural degradation of hydrocarbons. Plume shrinkage in the absence of aggressive remediation is indicative of the occurrence of natural attenuation processes. Conversely, a plume is expanding if the rate of hydrocarbon loading from a source area is greater than the rate of natural degradation of hydrocarbons through natural attenuation processes.

The former field waste tanks in the eastern portion of the facility were removed in March 1997. Concentrations of total BTEX in monitor wells in this area have been generally stable or declining subsequent to removal of these tanks. Sporadic increases in total BTEX concentrations between quarterly sampling events have been observed in monitor wells in this area since March 1997, however. These increases may be attributed to sporadic loading rates from the vadose zone in excess of the rate of natural attenuation in the area. The following subsections present primary and secondary evidence of natural attenuation of hydrocarbons in groundwater at the former field waste tanks area of the facility.

3.2.1 Primary Evidence

The benzene concentration in monitor well MW-10 has decreased from a maximum of 1.3 mg/L in August 1995 (prior to removal of the field waste tanks) to less than the NMWQCC standard of 0.01 mg/L for benzene in the 12 applicable groundwater sampling events from December 2000 to December 2003. Benzene has not been detected in monitor well MW-10 since September 2001, a span of eight consecutive quarterly groundwater sampling events. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-10 were non-detect during the current sampling event and have generally been non-detect since December 2000. Detectable concentrations of TPH-D in monitor well MW-10 have ranged from 0.3 mg/L to 3.4 mg/L. TPH-D concentrations in monitor well MW-10 have been less than 1 mg/L during the four most recent quarterly groundwater

sampling events. TPH-G has not been detected in monitor well MW-10 during the last 10 quarterly groundwater sampling events.

Benzene concentrations at the monitor well MW-11/11A location have generally decreased from a maximum of 0.970 mg/L in December 1996 (prior to removal of the field waste tanks). The current benzene concentration of 0.0034 mg/L in monitor well MW-11A is less than the NMWQCC standard for benzene. Benzene concentrations in MW-11A have been less than the NMWQCC standard for benzene during 10 of the 11 groundwater sampling events conducted from June 2001 through December 2003, including the last four consecutive quarterly groundwater sampling events. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-11A have been at low to typically non-detectable concentrations since March 1998. Detectable concentrations of TPH-D in monitor well MW-11A have ranged from 0.28 mg/L to 2.2 mg/L. TPH-G concentrations in monitor well MW-11A have been less than 1 mg/L in each of the last seven quarterly groundwater sampling events. TPH-G concentrations have been less than 1 mg/L throughout the monitoring history of well MW-11A.

Concentrations of each BTEX constituent at the monitor well MW-12/12D location have been below analytical detection limits for the past 11 sampling events. TPH-D has not been detected at this location since September 2002, and TPH-G has not been detected since June 2001.

3.2.2 Secondary Evidence

The following lines of geochemical evidence can also be used to suggest that intrinsic bioremediation (an important natural attenuation mechanism) of dissolved-phase hydrocarbons is occurring in the area of the former field waste tanks.

1. Dissolved oxygen may be utilized as an electron acceptor during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

Groundwater samples from monitor wells MW-5, MW-10 and MW-11A were collected using bailers during the current sampling event. The use of bailers may cause

groundwater samples to become oxygenated, thus precluding a meaningful comparison of dissolved oxygen data.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility when down-hole pumps were utilized has indicated that dissolved oxygen concentrations were typically depressed in hydrocarbon-impacted monitor wells relative to non-impacted wells at the facility (see the June 2001 Groundwater Sampling Report for BJ Services Hobbs, New Mexico Facility, for example).

2. Nitrate may be utilized as an electron acceptor during intrinsic bioremediation after dissolved oxygen is depleted. Therefore, nitrate concentrations may be depressed in areas where intrinsic bioremediation is occurring.

Nitrate was detected at a concentration of 2.5 mg/L in background monitor well MW-5 during the current sampling event. Although minimal to no hydrocarbon impact was detected at former field waste tanks area wells MW-10, MW-11A, and MW-12D during the current sampling event (see Table 5), nitrate was detected in monitor well MW-10 at a concentration of 0.28 mg/L; nitrate was not detected in monitor wells MW-11A or MW-12D. The depressed to non-detectable nitrate concentrations observed during the current sampling event at former field waste tanks area wells MW-10, MW-11A, and MW-12D relative to the background nitrate concentration at the facility are likely due to residual effects of hydrocarbons in these areas.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors may become active. Ferrous iron is the reduction product of ferric iron, a common electron acceptor. Therefore, ferrous iron concentrations should increase in areas where intrinsic bioremediation is occurring.

The elevated ferrous iron concentrations in monitor wells MW-10, MW-11A and MW-12D relative to background well MW-5 suggest that ferric iron has been used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area of the facility.

4. Microbes that utilize sulfate may become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through the use of sulfate as an electron acceptor.

During the current sampling event, sulfate concentrations in the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D ranged from 160 mg/L to 350 mg/L, whereas the sulfate concentration in background monitor well MW-5 was measured at 110 mg/L. The fact that sulfate concentrations in the former source area monitor wells are greater than the sulfate concentration in the background monitor well suggests that sulfate is not being utilized as an electron acceptor in the former field waste tanks area.

5. Methane is a reaction product generated during utilization of carbon dioxide as an electron acceptor, so its concentration may increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.

Dissolved methane was not detected in background monitor well MW-5 or in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D during the current groundwater sampling event. These data indicate that carbon dioxide is not presently being utilized as an electron acceptor at the former field waste tanks area of the facility.

6. Microbes produce fatty acids as a byproduct during degradation of hydrocarbons. These fatty acids react with carbonate mineral substrates to release carbonate into solution, causing alkalinity of groundwater to increase. Elevated alkalinity therefore suggests that natural attenuation of hydrocarbons is occurring.

Background monitor well MW-5 displayed an alkalinity of 234 mg/L during the current sampling event. Alkalinity was measured at respective concentrations of 279 mg/L and 386 mg/L in former field waste tanks area monitor wells MW-10 and MW-11A in December 2003. The elevated alkalinity values in monitor wells MW-10 and MW-11A may be a result of intrinsic bioremediation of residual hydrocarbons in these areas.

In conclusion, current nitrate and historic dissolved oxygen data suggest that these electron acceptors have been utilized during intrinsic bioremediation processes in the vicinity of the former field waste tanks area of the facility. Data for ferrous iron also indicates utilization of ferric iron as an electron acceptor in this area of the facility. Alkalinity data provide further evidence of natural attenuation of hydrocarbons at the former field waste tanks area.

It is recommended that monitoring for natural attenuation evaluation parameters continue during future sampling events of former field waste tank area monitor wells MW-10, MW-11A, and MW-12D and the background well, MW-5. Redox potential, dissolved oxygen content, ferrous iron content, and alkalinity serve as good indicators of the occurrence of intrinsic bioremediation of hydrocarbons, so testing for these parameters in all wells to be sampled during future groundwater monitoring events is recommended.

3.3 Chloride Evaluation

Based on NMOCD concerns regarding potential chloride impact to downgradient water wells, BJ Services investigated chloride impact to groundwater at and in the vicinity of its Hobbs, New Mexico facility. Figure 4 presents a map of chloride distribution in groundwater, based on the most recent chloride concentration datum available for each well (see Table 4). The data presented in Figure 4 suggest that the former field wastes tanks at the BJ Services facility may have served as a

source of chloride impact to groundwater within the facility, based on exceedances of the NMWQCC chloride standard of 250 mg/L in this area. Previous groundwater sampling conducted by BJ Services at the on-site nested monitor well MW-12/MW-12D location indicated that the degree of chloride impact to groundwater decreased with depth within the uppermost aquifer at the facility (see Table 4).

Groundwater modeling conducted by Brown and Caldwell prior to installation of off-site monitor well MW-16 indicated an anticipated chloride concentration of less than 250 mg/L at the proposed downgradient monitor well MW-16 location east of the BJ Services facility, based on historic data that defined an eastward decrease in chloride concentrations within the BJ Services facility. Specifically, historic chloride concentrations in the area of monitor wells MW-11 and MW-11A, which are located in proximity to BJ Services' former field waste tanks, ranged from 834 mg/L to 3,400 mg/L whereas chloride concentrations in the area of monitor wells MW-14 and MW-15, which are located further east within the BJ Services facility, ranged from 123 mg/L to 368 mg/L.

Off-site monitor well MW-16 has been sampled four times since its installation in May 2003, with chloride concentrations in the well ranging from 823 mg/L to 983 mg/L. During the post-May 2003 time period, chloride concentrations in wells at the BJ Services facility have remained consistent with previous chloride data. Chloride concentrations in monitor wells MW-14 and MW-15, which are located in the eastern portion of the BJ Services facility, have ranged from 123 mg/L to 298 mg/L since May 2003, and chloride was detected at a concentration of 3,240 mg/L in monitor well MW-11A in October 2003. The elevated chloride concentrations detected in monitor well MW-16 suggest the presence of a separate, off-site source of chloride impact to groundwater east of the BJ Services facility. The previously documented eastward decrease in chloride concentrations within the BJ Services facility indicates that groundwater chloride concentrations would likely be at or below 250 mg/L at the eastern boundary of the BJ Services facility if there was no off-site source of chloride impact, as indicated in Figure 4.

To confirm the suspected off-site source of chloride impact, Brown and Caldwell conducted a search of NMOCD files relating to permitted oil & gas exploration and production activities in the

area (see Section 3.3.1). In addition, Brown and Caldwell obtained several historical aerial photographs depicting industrial development in the vicinity (see Section 3.3.2). Section 3.3.3 presents the results of a current water well search conducted by Brown and Caldwell to determine whether water wells are present downgradient of the BJ Services facility. Section 3.3.4 summarizes chloride impact to groundwater at and in the vicinity of the BJ Services Hobbs, New Mexico facility.

3.3.1 Oil & Gas Well Search

Brown and Caldwell performed a search of NMOCD files to determine whether permitted drilling activities have been conducted to the east of the BJ Services facility. This search, which is fully documented in Appendix C, indicates the presence of an active injection well located approximately 1/8-mile east/northeast of the northeast corner of the BJ Services facility (i.e., Well No. 4, as identified in Appendix C). Injection wells are used for disposal of oil-field wastes, including saltwater produced from subsurface formations. Waste fluids are typically delivered to an injection well site by truck or surface piping, and are usually stored in tanks, where separation of solids and oil from saltwater occurs. Waste materials are then injected under pressure into suitable geologic formations in the deep subsurface. The reported total depth of the active injection well located east/northeast of the BJ Services facility is 4,441 feet. Under this general operational scenario, mechanisms by which chloride impact to shallow groundwater can occur include one or more of the following:

- Spillage from trucks delivering oil-field wastes, including saltwater, to the injection well site;
- Leakage of oil-field wastes, including saltwater, from surface piping used for conveyance of wastes to the injection well site;
- Leakage of oil-field wastes, including saltwater, from storage/separation tanks at the injection well site; and
- Leakage of wastes from the injection well into the shallow subsurface during high-pressure injection activities.

The oil & gas well search presented in Appendix C also located 14 oil wells within an approximate ½-mile radius north, east, and south of the BJ Services facility. The oil & gas well search was not extended to the west of the BJ Services facility.

The high degree of oil & gas exploration and production activity in the area of the BJ Services facility and, in particular, the saltwater injection well located east of the facility suggest that off-site sources of chloride impact to groundwater are likely.

3.3.2 Historical Aerial Photographs

Appendix D contains a series of aerial photographs that show the BJ Services facility and its surroundings at the following times:

- 1997;
- 1986;
- 1977;
- 1966; and
- 1949.

The 1997 aerial photograph (Figure D-1) shows the rectangular BJ Services facility and the pie-shaped Weatherford Enterra facility located to its north. These facilities are located east and southeast of West County Road, which runs northward, then northeastward, through the area. The 1997 aerial photograph also shows an apparently non-vegetated area east of the BJ Services facility, near the monitor well MW-16 location (see also Figure 1). Field observations in October 2003 confirmed an area of stressed vegetation at this location. This area of stressed vegetation may be associated with operation of the nearby active injection well discussed in Section 3.3.1.

The 1986 aerial photograph is presented as Figure D-2. The BJ Services facility and the Weatherford Enterra facility are visible in Figure D-2. The 1986 aerial photograph shows the same non-vegetated area east of the BJ Services facility, near the monitor well MW-16 location, as was shown in the 1997 aerial photograph. The presence of numerous other non-vegetated areas,

especially to the south and southeast of the BJ Services facility, suggests an increased level of oil & gas exploration and production activities in the area in 1986 relative to 1997. A surface impoundment or similar structure appeared to be present on property to the west of the BJ Services facility in 1986.

Figure D-3 is a 1977 aerial photograph of the area. The BJ Services facility is visible in Figure D-3, but the Weatherford Enterra facility had not been developed in 1977. The 1977 aerial photograph shows the same non-vegetated area east of the BJ Services facility, near the monitor well MW-16 location, as was shown in the 1997 and 1986 aerial photographs. The level of oil & gas exploration and production activities in the area in 1977 appears to be comparable to that suggested in the 1986 aerial photograph. Three to four settling basins or similar structures were present on the property to the west of the BJ Services facility in 1977.

The 1966 aerial photograph is presented as Figure D-4. The BJ Services facility had not been developed in 1966. The 1966 aerial photograph shows the same non-vegetated area east of the BJ Services facility, near the monitor well MW-16 location, as was shown in the 1997, 1986, and 1977 aerial photographs. The same settling basins or similar structures that were shown on the property to the west of the BJ Services facility in the 1977 aerial photograph are also visible in the 1966 aerial photograph.

The 1949 aerial photograph, which is presented as Figure D-5, shows the presence of settling basins or similar structures on the property immediately south or southeast of the eastern portion of the present-day BJ Services facility.

Thus, the historic aerial photographs presented in Appendix D document oil & gas-related exploration and production activities that have been conducted in the vicinity of the BJ Services facility over the past 55 years. At least three possible off-site sources of chloride impact to groundwater are indicated in these photographs. These possible off-site sources are as follows:

- The non-vegetated area east of the BJ Services facility, near the monitor well MW-16 location, as indicated in the 1997, 1986, and 1977 aerial photographs, may have been the location of an oil well and associated brine pits, and may be or have been associated with operation of the nearby active injection well;
- The surface impoundment and/or settling basins on the property located immediately west of the BJ Services facility, as indicated in the 1986, 1977, and 1966 aerial photographs, which may have been used for management of saltwater produced from local oil wells; and
- The settling basins or similar structures on the property immediately south or southeast of the eastern portion of the BJ Services facility, as indicated in the 1949 aerial photograph, which may also have may have been used for management of saltwater produced from local oil wells.

3.3.3 Water Well Search

Brown and Caldwell obtained a current water well search within a 1-mile radius of the BJ Services facility to determine whether downgradient water wells are present east of the facility. This water well search, which is fully documented in Appendix E, indicates the presence of one generally downgradient water well. This well, which is identified as Well No. 4 in Appendix E, is owned by the City of Eunice and is located approximately ½ mile east/southeast of the BJ Services facility. This well is not currently used.

3.3.4 Summary

The historic and current eastward decreases in chloride concentrations within the BJ Services facility, as described herein, indicate that chloride concentrations in groundwater to the east of the BJ Services facility would likely be at or below 250 mg/L if an apparent off-site source of chloride impact was not present. The elevated chloride concentrations detected in off-site monitor well MW-16 are apparently attributable to one or more off-site sources. Potential sources of chloride impact east of the BJ Services facility include an active injection well and historic oil & gas exploration and production activities conducted in this area, as documented in NMOCD files and historic aerial photographs. There are no currently active water wells within a 1-mile radius downgradient of the BJ Services facility that are affected by this chloride impact. Based on these

findings, further investigation by BJ Services into the occurrence of chloride at and in the vicinity of its Hobbs, New Mexico facility is unwarranted.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the December 2003 and previous groundwater sampling events at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Operation of the biospraying system installed in the area of the former fuel island at the facility has successfully remediated soil and groundwater impacts to meet performance requirements specified in the RAP for this portion of the facility.
- The substantial reduction in hydrocarbon concentrations in the vicinity of the former field waste tanks is attributable to natural attenuation of hydrocarbons, based on generally decreasing hydrocarbon concentrations in applicable monitor wells over time and as substantiated by geochemical data. Current benzene concentrations in all former field waste tanks area monitor wells are less than the NMWQCC standard of 0.01 mg/L for benzene. Benzene concentrations in all former field waste tanks area monitor wells have been less than the NMWQCC benzene standard of 0.01 mg/L during each of the last four quarterly groundwater sampling events.
- The chloride concentration measured in downgradient monitor well MW-14 during the current 2003 groundwater sampling event remains less than the NMWQCC standard of 250 mg/L. The chloride concentrations in monitor wells MW-15 and MW-16 exceed the NMWQCC chloride standard, however. Elevated chloride concentrations in groundwater east of the BJ Services facility are apparently attributable to one or more off-site sources. In the absence of these apparent sources, chloride impact attributable to the onsite source would likely be at or below the NMWQCC standard of 250 mg/L at the eastern boundary of the BJ Services facility.

4.2 Recommendations

- Upon approval from the NMOCD, decommission the biospraying system at the former fuel island area.
- Given that the removal of the former field waste tanks and associated impacted soil in March 1997 constituted effective source removal and that constituent concentrations in all applicable wells have been less than applicable NMWQCC standards for four consecutive quarterly groundwater sampling events, closure for the former field waste tanks area is recommended.

- Given that chloride impact to groundwater attributable to the BJ Services facility at concentrations exceeding the NMWQCC standard of 250 mg/L appears to be limited to the BJ Services facility and there is no current downgradient usage of groundwater within 1 mile of the facility, BJ Services should discontinue sampling and analysis pertaining to chloride impact to groundwater within the uppermost aquifer at and in the vicinity of its Hobbs, New Mexico facility.
- Given that BJ Services has demonstrated compliance with regard to hydrocarbon impacts at the former fuel island and former field waste tanks source area and with regard to chloride issues, granting of overall site closure by NMOCD, with no additional groundwater monitoring activities, is recommended.

DISTRIBUTION

December 2003 Groundwater Sampling Report
BJ Services Company, U.S.A.
Hobbs, New Mexico

July 16, 2004

Final Distribution as follows:

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Oil Conservation Division
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1625 N. French Dr.
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Attention: Mr. Chris Williams

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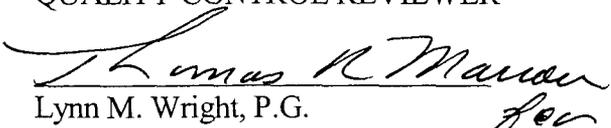
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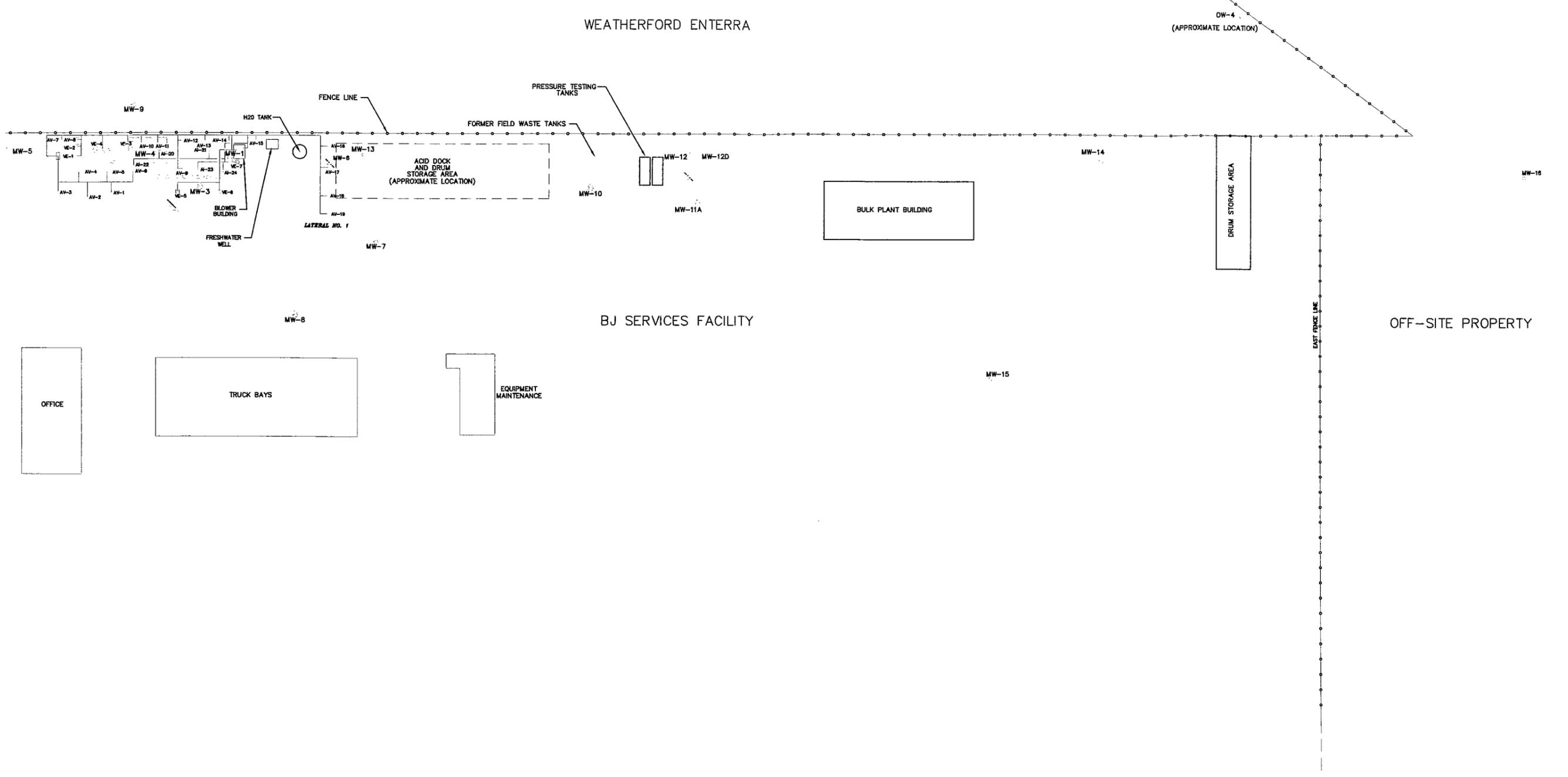
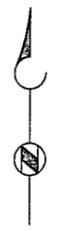
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QUALITY CONTROL REVIEWER


Lynn M. Wright, P.G.
Supervising Geologist

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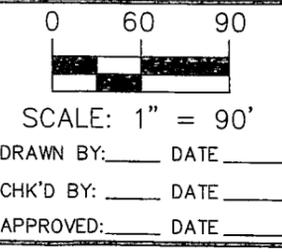
FIGURES



BROWN AND CALDWELL
HOUSTON, TEXAS

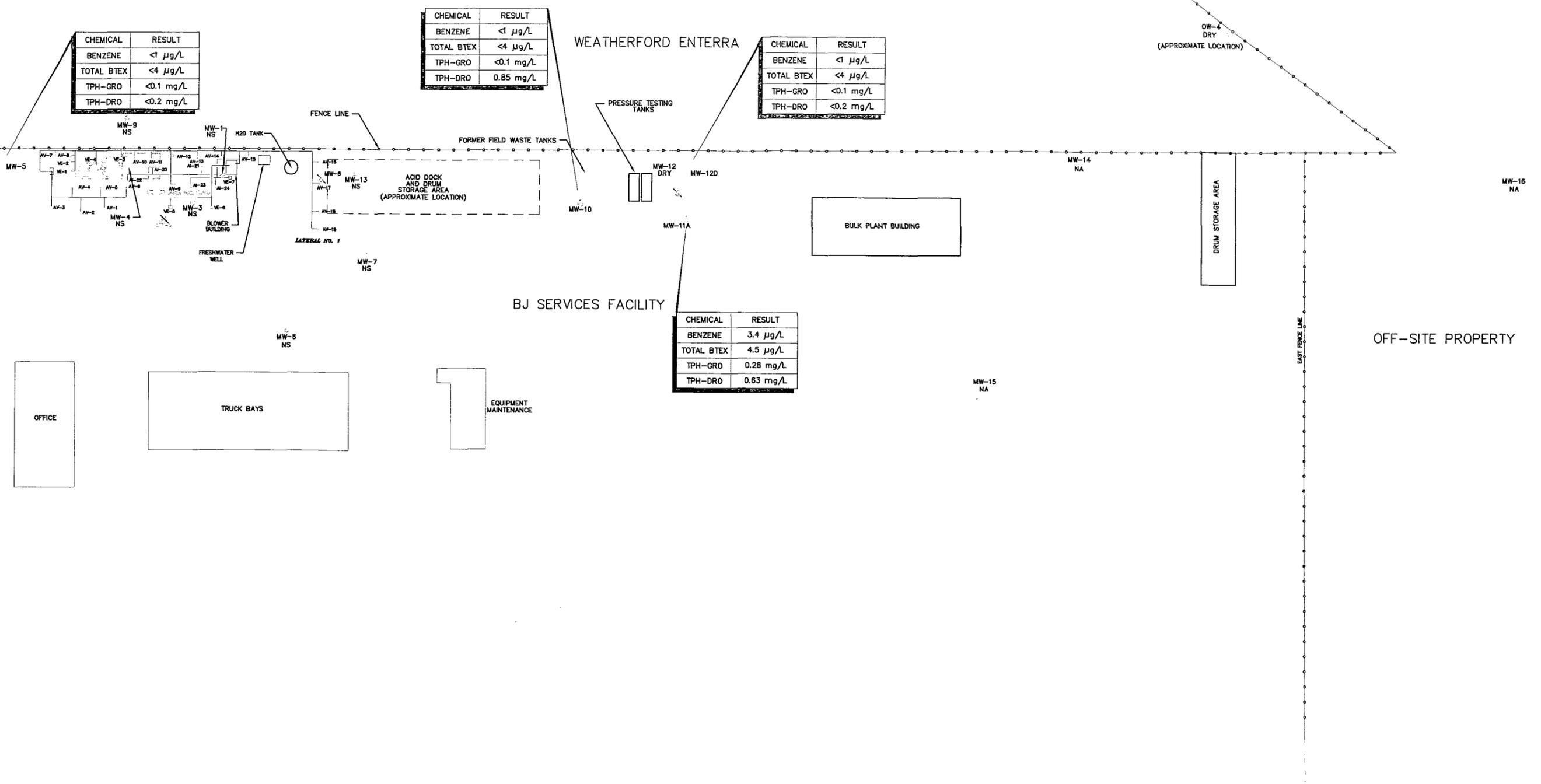
SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

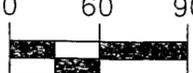


LEGEND	
MW-3	EXISTING MONITOR WELL LOCATION
MW-3	BIOSPARGING SYSTEM
MW-2	MONITOR WELL (PLUGGED AND ABANDONED)

TITLE	SITE MAP	DATE	9/11/00
CLIENT	BJ SERVICES COMPANY, U.S.A.		PROJECT NUMBER
SITE	HOBBS, NEW MEXICO		FIGURE NUMBER
			1

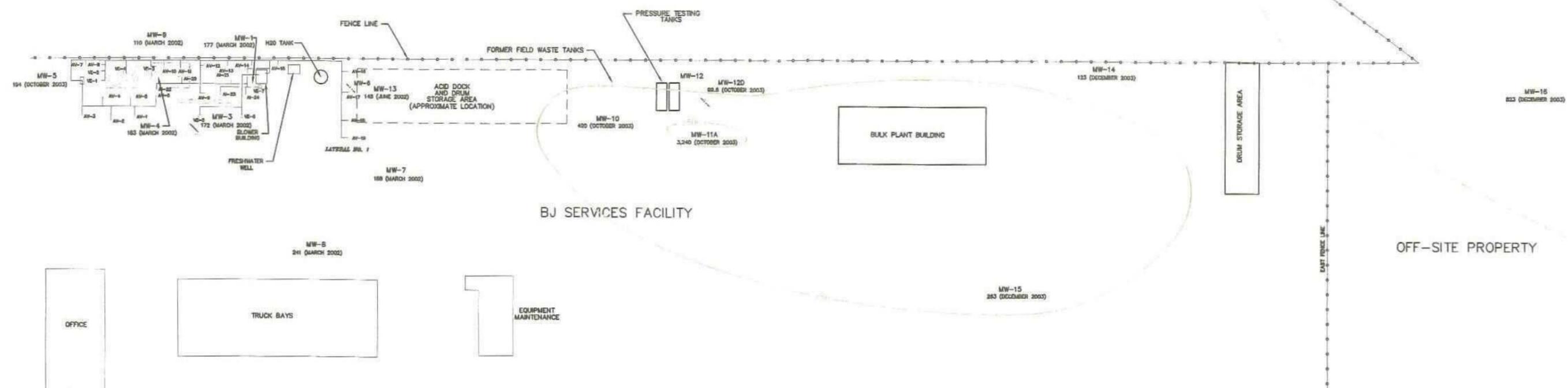


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<p>BROWN AND CALDWELL HOUSTON, TEXAS</p> <p>SUBMITTED: _____ DATE: _____ PROJECT MANAGER</p> <p>APPROVED: _____ DATE: _____ BROWN AND CALDWELL</p>	<p>0 60 90</p>  <p>SCALE: 1" = 90'</p> <p>DRAWN BY: _____ DATE: _____</p> <p>CHK'D BY: _____ DATE: _____</p> <p>APPROVED: _____ DATE: _____</p>	<p style="text-align: center;"><u>LEGEND</u></p> <p>MW-3 EXISTING MONITOR WELL LOCATION NS = NOT SAMPLED</p> <p> BIOSPARINGS SYSTEM NA = NOT ANALYZED</p> <p> MW-2 MONITOR WELL (PLUGGED AND ABANDONED)</p> <p> GROUNDWATER FLOW DIRECTION</p>	<p>TITLE HYDROCARBON DISTRIBUTION MAP FOR DECEMBER 18, 2003</p>	<p>DATE 9/11/00</p>		
			<p>CLIENT BJ SERVICES COMPANY, U.S.A.</p>		<p>PROJECT NUMBER 12832.018</p>	
			<p>SITE HOBBS, NEW MEXICO</p>		<p>FIGURE NUMBER 3</p>	



WEATHERFORD ENTERRA



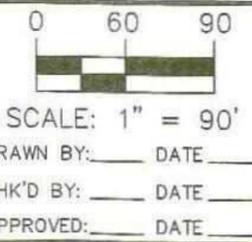
BJ SERVICES FACILITY

OFF-SITE PROPERTY

BROWN AND CALDWELL
HOUSTON, TEXAS

SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL



LEGEND	
MW-3 183 (MARCH 2002)	MONITOR WELL LOCATION, WITH MOST RECENT CHLORIDE CONCENTRATION (mg/L) AND DATE
	BIOSPARGING SYSTEM
	MONITOR WELL (PLUGGED AND ABANDONED)
	CHLORIDE ISOCONCENTRATION LINE (CONTOUR INTERVAL = LOGARITHMIC)

TITLE	CHLORIDE DISTRIBUTION IN GROUNDWATER	DATE	9/11/00
CLIENT	BJ SERVICES COMPANY, U.S.A.	PROJECT NUMBER	12832.018
SITE	HOBBS, NEW MEXICO	FIGURE NUMBER	4

Tables

BROWN AND
CALDWELL

TABLES

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
February 7, 1991	The New Mexico Oil Conservation Division (NMOCD) conducted an on-site inspection, including sampling of the on-site fresh water well.
August 6, 1991	The NMOCD requested submittal of an investigation work plan.
September 5, 1991	Roberts/Schornick and Associates, Inc. (RSA) submitted Technical Work Plan for soil and groundwater investigation to the NMOCD.
November 15, 1991	The NMOCD approved the Technical Work Plan submitted by RSA.
December 16, 1991	RSA sampled the fresh water well. The analytical results were submitted to the NMOCD.
February 21, 1992	Western sampled the fresh water well. The analytical results were submitted to the NMOCD.
July 29 - August 10, 1992	Brown and Caldwell conducted a soil and groundwater investigation according to the approved Technical Work Plan. The investigation included drilling and sampling nine soil borings, sampling six hand-augured soil borings, installation and sampling of five monitor wells, and sampling of the fresh water well.
October 12, 1992	Brown and Caldwell submitted a Soil and Groundwater Investigation Report to the NMOCD.
December 2, 1992	The NMOCD requested the installation and sampling of four additional monitor wells, including a monitor well on an adjacent property.
April 13, 1993	Brown and Caldwell conducted a vapor extraction pilot test on the existing monitor wells.
April 15, 1993	Brown and Caldwell installed off-site monitor well MW-9.
April 22, 1993	Brown and Caldwell sampled off-site monitor well MW-9.
May 27, 1993	Brown and Caldwell submitted a letter report documenting the installation and sampling of off-site monitor well MW-9 to the NMOCD.
June 2, 1993	Brown and Caldwell conducted a short-term aquifer test using the fresh water well at the facility.
June 8, 1993	USTank Management, Inc. conducted a non-volumetric tank system tightness test on the diesel and unleaded gasoline aboveground storage tanks at the facility.
June 21, 1993	ENSR Consulting and Engineering (ENSR), the environmental consultant for the adjacent property owner on which off-site well MW-9 is located, submitted a request to sample monitor well MW-9.

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Hobbs, New Mexico

July 15, 1993	ENSR split a groundwater sample collected from monitor well MW-9 with Brown and Caldwell.
July 30, 1993	USTank Management, Inc. submitted a tank tightness test report to Brown and Caldwell. The report indicated that both tanks and their associated piping passed.
August 16-19, 1993	Brown and Caldwell installed two additional downgradient monitor wells. Brown and Caldwell sampled each of the existing and newly installed monitor wells.
January 26, 1994	Brown and Caldwell performed a groundwater monitoring event; the existing monitor wells and the fresh water well were purged and sampled. The groundwater samples were analyzed for BTEX.
May 6, 1994	A Remedial Action Plan (RAP) was submitted to the NMOCD.
August 11, 1994	The RAP was approved by the NMOCD.
May 3, 1995	Brown and Caldwell conducted the May 1995 groundwater sampling event.
July 31, 1995	Brown and Caldwell conducted the July 1995 groundwater sampling event.
August 2-9, 1995	Installation of the biosparging system was initiated. Nineteen combined injection/extraction wells and three vacuum extraction wells were installed.
August 14-26, 1995	Remedial Construction Services, Inc. (RCS) constructed the initial design of the biosparging system.
September 19, 1995	Operation of the extraction portion of the biosparging system commenced.
November 13, 1995	Operation of the injection portion of the biosparging system commenced.
November 14, 1995	Brown and Caldwell conducted the November 1995 groundwater sampling event.
February 23, 1996	Brown and Caldwell conducted the February 1996 groundwater sampling event.
May 31, 1996	Brown and Caldwell conducted the May 1996 groundwater sampling event.
August 23, 1996	Brown and Caldwell conducted the August 1996 groundwater sampling event.
December 2, 1996	Brown and Caldwell conducted the December 1996 groundwater sampling event.

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Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

March 6-7, 1997	BJ Services removed three field waste tanks and associated hydrocarbon-impacted soil.
March 12, 1997	Brown and Caldwell conducted the March 1997 groundwater sampling event.
March 14, 1997	Vapor extraction well VE-4 was installed.
April 1997	Vapor extraction well VE-4 was connected to the vapor extraction system.
June 12, 1997	Brown and Caldwell conducted the June 1997 groundwater sampling event.
September 11-12, 1997	Brown and Caldwell conducted the September 1997 groundwater sampling event.
December 10, 1997	Brown and Caldwell conducted the December 1997 groundwater sampling event.
February 3-14, 1998	Air injection wells AI-20 through AI-24, vapor extraction wells VE-5 through VE-7, and monitor wells MW-11A and MW-12 were installed.
February 19, 1998	Operation of previously existing injection wells was suspended in preparation for start-up of new injection wells AI-20 through AI-24.
March 10, 1998	Operation of new air injection wells AI-20 through AI-24 and new vapor extraction wells VE-5 through VE-7 commenced.
March 23-24, 1998	Brown and Caldwell conducted the March 1998 groundwater sampling event.
March 24, 1998	Operation of previously existing injection wells and vapor extraction wells resumed.
June 23, 1998	Brown and Caldwell conducted the June 1998 groundwater sampling event.
September 30, 1998	Brown and Caldwell conducted the September 1998 groundwater sampling event.
December 9-10, 1998	Brown and Caldwell conducted the December 1998 groundwater sampling event.
January 21, 1999	The NMOCD requested submittal of a work plan by March 22, 1999 to perform additional groundwater delineation in the area of the former field waste tanks and the former AST/MW-6 area.
March 9-10, 1999	Brown and Caldwell conducted the March 1999 groundwater sampling event.
March 19, 1999	Brown and Caldwell submitted the work plan for groundwater delineation activities that was requested by the NMOCD.

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BJ Services Company, U.S.A.
Hobbs, New Mexico

May 19, 1999	The NMOCD approved the groundwater delineation work plan.
June 10, 1999	Brown and Caldwell performed sampling of existing monitor wells for the June /July 1999 groundwater sampling event.
July 2, 1999	Brown and Caldwell completed plugging and abandonment of monitor wells MW-2, MW-6, and MW-11; installed and developed monitor wells MW-12D and MW-13; and sampled monitor wells MW-12D and MW-13 to complete the June/July 1999 groundwater sampling event.
July 14, 1999	Brown and Caldwell redirected air discharge from the shallow injection well injection system to Lateral No. 1 and optimized air flow to injection wells AI-16 and AI-17 to apply increased remedial pressure to the eastern portion of the west plume.
September 13-14, 1999	Brown and Caldwell conducted the September 1999 groundwater sampling event.
December 9, 1999	Brown and Caldwell conducted the December 1999 groundwater sampling event.
March 9-10, 2000	Brown and Caldwell conducted the March 2000 groundwater sampling event and shut off air flow to biosparging system Lateral Nos. 4S, 5S, 6S, and 7S.
June 8, 2000	Brown and Caldwell conducted the June 2000 groundwater sampling event.
September 13, 2000	Brown and Caldwell conducted the September 2000 groundwater sampling event.
November 1, 2000	Brown and Caldwell deactivated the biosparging system.
December 7, 2000	Brown and Caldwell conducted the December 2000 groundwater sampling event.
January 2001	Brown and Caldwell installed and sampled monitor wells MW-14 and MW-15.
March 8-9, 2001	Brown and Caldwell conducted the March 2001 groundwater sampling event.
June 21-22, 2001	Brown and Caldwell conducted the June 2001 groundwater sampling event.
July 23, 2001	Brown and Caldwell collected soil samples from four soil borings installed at the former fueling system area of the facility to confirm the effectiveness of the biosparging system in remediating hydrocarbon impact to soil, as specified in the NMOCD-approved RAP.
September 10, 2001	Brown and Caldwell conducted the September 2001 groundwater sampling event.

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Hobbs, New Mexico

December 6, 2001	Brown and Caldwell conducted the December 2001 groundwater sampling event.
February 26, 2002	Brown and Caldwell repaired the crushed well completion on monitor well MW-10.
February 28, 2002	NMOCD requested an evaluation of chloride content of groundwater at the facility.
March 11-12, 2002	Brown and Caldwell conducted the March 2002 groundwater sampling event. Groundwater samples from all water-producing wells at the facility were analyzed for chloride content.
May 21, 2002	Brown and Caldwell submitted the report for the March 2002 groundwater sampling event, including an evaluation of chloride content of groundwater at the facility and a recommendation for installation of a downgradient off-site well (MW-16) to replace off-site well OW-4, which has gone dry.
June 17-18, 2002	Brown and Caldwell conducted the June 2002 groundwater sampling event.
September 16, 2002	Brown and Caldwell conducted the September 2002 groundwater sampling event.
November 11, 2002	Brown and Caldwell submitted the June 2002 Groundwater Sampling Report and Biosparging System Closure Report.
January 9, 2003	Brown and Caldwell conducted the January 2003 groundwater sampling event.
March 6, 2003	Brown and Caldwell conducted the March 2003 groundwater sampling event.
May 13, 2003	Brown and Caldwell installed monitor well MW-16 at a location to the west of the facility.
June 19, 2003	Brown and Caldwell initiated the June 2003 groundwater sampling event.
August 22, 2003	Brown and Caldwell completed the June 2003 groundwater sampling event.
October 2, 2003	Brown and Caldwell conducted the October 2003 groundwater sampling event.
December 17-18, 2003	Brown and Caldwell conducted the December 2003 groundwater sampling event.

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments	
MW-1	3,647.53	8/10/1992	53.22	0.00	3,594.31	(1)	
		2/9/1993	53.03	0.00	3,594.50		
		8/18/1993	53.10	0.00	3,594.43		
		1/26/1994	53.31	0.00	3,594.22		
		5/3/1995	54.64	0.20	3,593.05	(2)	
		7/31/1995	54.14	0.00	3,593.39		
		11/14/1995	53.69	0.00	3,593.84		
		2/23/1996	54.32	0.00	3,593.21		
		5/31/1996	54.14	0.00	3,593.39		
		8/23/1996	56.17	0.00	3,591.36		
		12/2/1996	55.27	0.00	3,592.26		
		3/12/1997	55.70	0.27	3,592.05		
		6/12/1997	55.08	0.02	3,592.47		
		9/12/1997	55.64	0.51	3,592.31		
		12/10/1997	55.46	0.00	3,592.07	PSH Sheen	
		3/24/1998	55.81	0.00	3,591.72	PSH Sheen	
		6/23/1998	56.38	0.06	3,591.20		
		9/30/1998	56.82	0.00	3,590.71	PSH Sheen	
		12/9/1998	57.05	0.00	3,590.48		
		3/10/1999	57.45	0.00	3,590.08		
		6/10/1999	58.02	0.00	3,589.51		
		7/2/1999	57.90	0.00	3,589.63		
		9/14/1999	58.14	0.00	3,589.39		
		12/9/1999	-	-	-	(3)	
		3/9/2000	58.99	0.00	3,588.54		
		06/00	-	-	-		
		09/00	-	-	-		
		12/7/00	-	-	-		
		3/8/2001	60.35	0.00	3,587.18		
		6/21/01	60.99	0.00	3,586.54		
		9/10/01	61.17	0.00	3,586.36		
		12/6/2001		not measured			
		03/11/02		62.11	0.00	3,585.42	
6/17/02		62.53	0.00	3,585.00			
9/16/2002		62.43	0.00	3,585.10			
1/9/2003		62.61	0.00	3,584.92			
3/6/2003		62.72	0.00	3,584.81			
6/19/2003		-	-	-	(3) - well not located		
10/2/2003		62.97	0.00	3,584.56			
12/17/2003		63.21	0.00	3,584.32			
MW-2	3,644.84	8/10/1992	52.82	0.00	3,592.02	(1)	
		2/9/1993	49.60	0.00	3,595.24		
		8/18/1993	49.71	0.00	3,595.13		
		1/26/1994	49.97	0.00	3,594.87		
		5/3/1995	-	-	-	(4),(5)	
MW-3	3,645.00	8/10/1992	52.99	0.00	3,592.01	(1)	
		2/9/1993	52.72	0.00	3,592.28		
		8/18/1993	52.82	0.00	3,592.18		
		1/26/1994	53.05	0.00	3,591.95		
		5/3/1995	54.31	0.00	3,590.69		
		7/31/1995	51.24	0.00	3,593.76		
		11/14/1995	51.10	0.00	3,593.90		
		2/23/1996	51.68	0.00	3,593.32		
		5/31/1996	51.45	0.00	3,593.55		
		8/23/1996	51.55	0.00	3,593.45		
		12/2/1996	52.23	0.00	3,592.77		
		3/12/1997	52.67	0.00	3,592.33		
		6/12/1997	52.68	0.00	3,592.32		
		9/11/1997	52.71	0.00	3,592.29		
		12/10/1997	52.89	0.00	3,592.11		
		3/23/1998	53.22	0.00	3,591.78		
		6/23/1998	53.66	0.00	3,591.34		
9/30/1998	54.06	0.00	3,590.94				
12/9/1998	54.36	0.00	3,590.64				
3/10/1999	54.72	0.00	3,590.28				
6/10/1999	55.17	0.00	3,589.83				
7/2/1999	55.15	0.00	3,589.85				

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Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-3 cont.	3,645.00	9/14/1999	55.42	0.00	3,589.58	
		12/9/1999	55.78	0.00	3,589.22	
		3/9/2000	56.23	0.00	3,588.77	
		6/8/2000	56.66	0.00	3,588.34	
		9/13/2000	56.77	0.00	3,588.23	
		12/7/2000	57.15	0.00	3,587.85	
		3/8/2001	57.69	0.00	3,587.31	
		6/21/01	58.34	0.00	3,586.66	
		9/10/01	58.54	0.00	3,586.46	
		12/6/2001	59.04	0.00	3,585.96	
		3/11/2002	59.50	0.00	3,585.50	
		6/17/02	59.83	0.00	3,585.17	
		9/16/2002	59.80	0.00	3,585.20	
		1/9/2003	60.01	0.00	3,584.99	
		3/6/2003	60.10	0.00	3,584.90	
				6/19/2003	-	
		10/2/2003	60.34	0.00	3,584.66	
		12/17/2003	60.50	0.00	3,584.50	
MW-4	3,645.28	8/10/1992	50.55	0.00	3,594.73	(1)
		2/9/1993	50.26	0.00	3,595.02	
		8/18/1993	50.38	0.00	3,594.90	
		1/26/1994	50.90	0.30	3,594.63	
		5/3/1995	51.51	0.45	3,594.14	
		7/31/1995	51.74	0.26	3,593.75	
		11/14/1995	51.03	0.00	3,594.25	
		2/23/1996	51.65	0.01	3,593.64	
		5/31/1996	51.48	0.00	3,593.80	
		8/23/1996	53.49	0.00	3,591.79	
		12/2/1996	52.32	0.00	3,592.96	
		3/12/1997	52.74	0.05	3,592.58	
		6/12/1997	53.08	0.44	3,592.56	
		9/12/1997	52.60	0.15	3,592.80	
		12/10/1997	52.89	0.00	3,592.39	
		3/24/1998	53.20	0.25	3,592.29	
		6/23/1998	53.82	0.22	3,591.64	
		9/30/1998	53.96	0.00	3,591.32	
		12/9/1998	54.27	0.00	3,591.01	
		3/10/1999	54.69	0.04	3,590.62	
		6/10/1999	55.07	0.00	3,590.21	
		7/2/1999	55.10	0.00	3,590.18	
		9/14/1999	55.33	0.00	3,589.95	
		12/9/1999	55.79	0.00	3,589.49	
		3/10/2000	56.12	0.00	3,589.16	
		6/8/2000	56.67	0.00	3,588.61	
		9/13/2000	56.65	0.00	3,588.63	
		12/7/2000	57.05	0.00	3,588.23	
		3/8/2001	57.72	0.00	3,587.56	
		6/21/01	58.18	0.00	3,587.10	
		9/10/01	58.54	0.00	3,586.74	
		12/6/2001	58.88	0.00	3,586.40	
3/11/2002	59.41	0.00	3,585.87			
6/17/02	59.67	0.00	3,585.61			
9/16/2002	59.71	0.00	3,585.57			
1/9/2003	59.91	0.00	3,585.37			
3/6/2003	60.03	0.00	3,585.25			
6/19/2003	60.16	0.00	3,585.12			
10/2/2003	60.30	0.00	3,584.98			
12/17/2003	60.35	0.00	3,584.93			
MW-5	3,647.72	8/10/1992	52.38	0.00	3,595.34	(1)
		2/9/1993	52.06	0.00	3,595.66	
		8/18/1993	52.16	0.00	3,595.56	
		1/26/1994	52.50	0.00	3,595.22	
		5/3/1995	53.57	0.00	3,594.15	
		7/31/1995	53.27	0.00	3,594.45	
		11/14/1995	52.83	0.00	3,594.89	
		2/23/1996	53.57	0.00	3,594.15	
		5/31/1996	53.16	0.00	3,594.56	

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Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-5 cont.	3,647.72	8/23/1996	53.41	0.00	3,594.31	
		12/2/1996	53.98	0.00	3,593.74	
		3/12/1997	54.44	0.00	3,593.28	
		6/12/1997	54.48	0.00	3,593.24	
		9/12/1997	54.29	0.00	3,593.43	
		12/10/1997	54.66	0.00	3,593.06	
		3/23/1998	55.05	0.00	3,592.67	
		6/23/1998	55.44	0.00	3,592.28	
		9/30/1998	55.65	0.00	3,592.07	
		12/9/1998	56.00	0.00	3,591.72	
		3/9/1999	56.45	0.00	3,591.27	
		6/10/1999	56.91	0.00	3,590.81	
		7/2/1999	56.93	0.00	3,590.79	
		9/14/1999	57.12	0.00	3,590.60	
		12/9/1999	57.41	0.00	3,590.31	
		3/9/2000	57.92	0.00	3,589.80	
		6/8/2000	58.32	0.00	3,589.40	
		9/13/2000	58.36	0.00	3,589.36	
		12/7/2000	58.71	0.00	3,589.01	
		3/8/2001	59.36	0.00	3,588.36	
		6/21/01	59.94	0.00	3,587.78	
		9/10/01	59.85	0.00	3,587.87	
		12/6/2001	60.56	0.00	3,587.16	
		3/11/02	61.12	0.00	3,586.60	
		6/17/02	61.43	0.00	3,586.29	
		9/16/2002	61.52	0.00	3,586.20	
		1/9/2003	61.75	0.00	3,585.97	
		3/6/2003	61.90	0.00	3,585.82	
		6/19/2003	62.01	0.00	3,585.71	
		10/2/2003	62.16	0.00	3,585.56	
12/17/2003	62.35	0.00	3,585.37			
MW-6	3,644.74	2/9/1993	50.58	0.00	3,594.16	(1)
		8/18/1993	50.78	0.00	3,593.96	
		1/26/1994	51.00	0.00	3,593.74	
		5/3/1995	52.63	0.00	3,592.11	
		7/31/1995	51.90	0.00	3,592.84	
		11/14/1995	51.19	0.00	3,593.55	
		2/23/1996	52.10	0.00	3,592.64	
		5/31/1996	51.76	0.00	3,592.98	
		8/23/1996	51.63	0.00	3,593.11	
		12/2/1996	52.85	0.00	3,591.89	
		3/12/1997	53.55	0.00	3,591.19	
		6/12/1997	52.08	0.00	3,592.66	
		9/11/1997	53.72	0.00	3,591.02	
		12/10/1997	53.27	0.00	3,591.47	
		3/23/1998	53.56	0.00	3,591.18	
		6/23/1998	52.88	0.00	3,591.86	
		9/30/1998	54.89	0.00	3,589.85	
		12/9/1998	54.57	0.00	3,590.17	
		3/10/1999	55.10	0.00	3,589.64	
		7/2/1999	-	-	-	(5),(6)
MW-7	3,644.55	2/9/1993	50.53	0.00	3,594.02	(1)
		8/18/1993	50.74	0.00	3,593.81	
		1/26/1994	51.01	0.00	3,593.54	
		5/3/1995	52.25	0.00	3,592.30	
		7/31/1995	51.92	0.00	3,592.63	
		11/14/1995	51.48	0.00	3,593.07	
		2/23/1996	52.15	0.00	3,592.40	
		5/31/1996	51.78	0.00	3,592.77	
		8/23/1996	52.02	0.00	3,592.53	
		12/2/1996	52.52	0.00	3,592.03	
		3/12/1997	52.99	0.00	3,591.56	
		6/12/1997	53.08	0.00	3,591.47	
		9/11/1997	53.00	0.00	3,591.55	
		12/10/1997	53.28	0.00	3,591.27	
		3/23/1998	53.59	0.00	3,590.96	
		6/23/1998	54.20	0.00	3,590.35	
		9/30/1998	54.54	0.00	3,590.01	

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Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-7 cont.	3,644.55	12/9/1998	54.74	0.00	3,589.81	
		3/9/1999	55.15	0.00	3,589.40	
		6/10/1999	55.66	0.00	3,588.89	
		7/2/1999	55.73	0.00	3,588.82	
		9/13/1999	55.94	0.00	3,588.61	
		12/9/1999	56.38	0.00	3,588.17	
		3/9/2000	56.74	0.00	3,587.81	
		6/8/2000	57.17	0.00	3,587.38	
		9/13/2000	57.40	0.00	3,587.15	
		12/7/2000	57.77	0.00	3,586.78	
		3/8/2001	58.29	0.00	3,586.26	
		6/21/01	58.91	0.00	3,585.64	
		9/10/01	59.25	0.00	3,585.30	
		12/6/2001	59.75	0.00	3,584.80	
		3/11/2002	60.03	0.00	3,584.52	
		6/17/02	60.39	0.00	3,584.16	
		9/16/2002	60.39	0.00	3,584.16	
		1/9/2003	60.53	0.00	3,584.02	
		3/6/2003	60.61	0.00	3,583.94	
		6/19/2003	60.73	0.00	3,583.82	
		10/2/2003	60.84	0.00	3,583.71	
12/17/2003	60.99	0.00	3,583.56			
MW-8	3,644.87	2/9/1993	50.48	0.00	3,594.39	(1)
		8/18/1993	50.67	0.00	3,594.20	
		1/26/1994	50.96	0.00	3,593.91	
		5/3/1995	52.15	0.00	3,592.72	
		7/31/1995	51.77	0.00	3,593.10	
		11/14/1995	51.37	0.00	3,593.50	
		2/23/1996	52.17	0.00	3,592.70	
		5/31/1996	51.55	0.00	3,593.32	
		8/23/1996	51.92	0.00	3,592.95	
		12/2/1996	52.43	0.00	3,592.44	
		3/12/1997	52.93	0.00	3,591.94	
		6/12/1997	53.96	0.00	3,590.91	
		9/11/1997	52.73	0.00	3,592.14	
		12/10/1997	53.15	0.00	3,591.72	
		3/23/1998	53.51	0.00	3,591.36	
		6/23/1998	54.01	0.00	3,590.86	
		9/30/1998	54.35	0.00	3,590.52	
		12/9/1998	54.60	0.00	3,590.27	
		3/9/1999	55.00	0.00	3,589.87	
		6/10/1999	55.56	0.00	3,589.31	
		7/2/1999	55.57	0.00	3,589.30	
		9/13/1999	55.72	0.00	3,589.15	
		12/9/1999	-	-	-	(3)
		3/9/2000	56.52	0.00	3,588.35	
		06/00	-	-	-	
		09/00	-	-	-	
		12/00	-	-	-	
		3/8/2001	58.11	0.00	3,586.76	
		6/21/01	58.72	0.00	3,586.15	
		9/10/01	58.94	0.00	3,585.93	
		12/6/2001		not measured		
		3/11/2002	59.94	0.00	3,584.93	
		6/17/02	60.22	0.00	3,584.65	
9/16/2002	60.24	0.00	3,584.63			
1/9/2003	60.42	0.00	3,584.45			
3/6/2003	60.52	0.00	3,584.35			
6/19/2003	60.63	0.00	3,584.24			
10/2/2003	60.75	0.00	3,584.12			
12/17/2003	60.92	0.00	3,583.95			
MW-9	3,644.78	4/22/1993	49.73	0.00	3,595.05	(1)
		7/15/1993	49.65	0.00	3,595.13	
		8/18/1993	49.85	0.00	3,594.93	
		1/26/1994	50.02	0.00	3,594.76	
		5/3/1995	51.35	0.00	3,593.43	
		7/31/1995	50.97	0.00	3,593.81	
		11/14/1995	50.43	0.00	3,594.35	
		2/23/1996	51.12	0.00	3,593.66	

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments	
MW-9 cont.	3,644.78	5/31/1996	50.89	0.00	3,593.89	PSH Sheen PSH Sheen PSH Sheen PSH Sheen PSH Sheen PSH Sheen	
		8/23/1996	50.98	0.00	3,593.80		
		12/2/1996	51.58	0.00	3,593.20		
		3/12/1997	52.21	0.05	3,592.61		
		6/12/1997	52.10	0.00	3,592.68		
		9/12/1997	51.95	0.00	3,592.83		
		12/10/1997	52.37	0.00	3,592.41		
		3/23/1998	52.68	0.00	3,592.10		
		6/23/1998	53.08	0.00	3,591.70		
		9/30/1998	53.39	0.01	3,591.40		
		12/9/1998	53.68	0.00	3,591.10		
		3/10/1999	54.15	0.00	3,590.63		
		6/10/1999	54.68	0.00	3,590.10		
		7/2/1999	54.71	0.00	3,590.07		
		9/13/1999	54.71	0.00	3,590.07		
		12/9/1999	-	-	-		(3)
		3/9/2000	55.69	0.00	3,589.09		
		06/00	-	-	-		
		09/00	-	-	-		
		12/00	-	-	-		
		3/8/2001	57.03	0.00	3,587.75		
		6/21/01	57.91	0.00	3,586.87		
		9/10/01	57.95	0.00	3,586.83		
		12/6/2001	not measured				
		3/11/2002	58.96	0.00	3,585.82		
		6/17/02	59.14	0.00	3,585.64		
		9/16/2002	not measured				
		1/9/2003	59.34	0.00	3,585.44		
		3/6/2003	59.48	0.00	3,585.30		
		6/19/2003	59.64	0.00	3,585.14		
		10/2/2003	59.76	0.00	3,585.02		
		12/17/2003	59.93	0.00	3,584.85		
		MW-10	3,644.47	8/18/1993	51.54	0.00	3,592.93
1/26/1994	51.90			0.00	3,592.57		
5/3/1995	52.97			0.00	3,591.50		
7/31/1995	52.87			0.00	3,591.60		
11/14/1995	52.51			0.00	3,591.96		
2/23/1996	53.05			0.00	3,591.42		
5/31/1996	52.79			0.00	3,591.68		
8/23/1996	53.03			0.00	3,591.44		
12/2/1996	53.41			0.00	3,591.06		
3/12/1997	54.21			0.00	3,590.26		
6/12/1997	53.99			0.00	3,590.48		
9/12/1997	53.94			0.00	3,590.53		
12/10/1997	54.12			0.00	3,590.35		
3/23/1998	54.51			0.00	3,589.96		
6/23/1998	55.12			0.00	3,589.35		
9/30/1998	55.61			0.00	3,588.86		
12/9/1998	55.80			0.00	3,588.67		
3/9/1999	56.09			0.00	3,588.38		
6/10/1999	56.60			0.00	3,587.87		
7/2/1999	56.64			0.00	3,587.83		
9/14/1999	56.91			0.00	3,587.56		
12/9/1999	57.37			0.00	3,587.10		
3/10/2000	57.71			0.00	3,586.76		
6/8/2000	58.08			0.00	3,586.39		
9/13/2000	58.44			0.00	3,586.03		
12/7/2000	58.89			0.00	3,585.58		
3/9/2001	59.31			0.00	3,585.16		
6/21/01	59.89			0.00	3,584.58		
9/10/01	61.34			0.00	3,583.13		
12/6/2001	60.65			0.00	3,583.82		
3/11/2002	60.69			0.00	3,583.78		
6/17/02	60.98			0.00	3,583.49		
9/16/2002	61.00			0.00	3,583.47		
1/9/2003	61.07	0.00	3,583.40				
3/6/2003	61.19	0.00	3,583.28				
6/19/2003	61.26	0.00	3,583.21				
10/2/2003	61.38	0.00	3,583.09				
12/17/2003	61.55	0.00	3,582.92				

Table 2
 Cumulative Groundwater Elevation Data
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-11	3,643.78	8/18/1993	51.92	0.00	3,591.86	(1)
		1/26/1994	52.32	0.00	3,591.46	
		5/3/1995	53.38	0.00	3,590.40	
		7/31/1995	53.35	0.00	3,590.43	
		11/14/1995	52.96	0.00	3,590.82	
		2/23/1996	53.50	0.00	3,590.28	
		5/31/1996	53.25	0.00	3,590.53	
		8/23/1996	53.49	0.00	3,590.29	
		12/2/1996	53.79	0.00	3,589.99	
		3/12/1997	53.81	0.00	3,589.97	
		6/12/1997	53.96	0.00	3,589.82	
		9/12/1997	52.93	0.00	3,590.85	
		12/10/1997	-	-	-	
MW-11A	3,644.24	3/23/1998	54.79	0.00	3,589.45	(7)
		6/23/1998	55.43	0.00	3,588.81	
		9/30/1998	55.96	0.00	3,588.28	
		12/9/1998	56.13	0.00	3,588.11	
		3/10/1999	56.43	0.00	3,587.81	
		6/10/1999	56.94	0.00	3,587.30	
		7/2/1999	57.01	0.00	3,587.23	
		9/14/1999	57.36	0.00	3,586.88	
		12/9/1999	57.72	0.00	3,586.52	
		3/9/2000	58.01	0.00	3,586.23	
		6/8/2000	58.40	0.00	3,585.84	
		9/13/2000	58.84	0.00	3,585.40	
		12/7/2000	59.29	0.00	3,584.95	
		3/8/2001	59.72	0.00	3,584.52	
		6/21/01	60.28	0.00	3,583.96	
		9/10/01	60.69	0.00	3,583.55	
		12/6/2001	60.88	0.00	3,583.36	
		3/11/2002	61.42	0.00	3,582.82	
		6/17/02	61.55	0.00	3,582.69	
		9/16/2002	61.59	0.00	3,582.65	
		1/9/2003	61.67	0.00	3,582.57	
		3/6/2003	61.70	0.00	3,582.54	
		6/19/2003	61.84	0.00	3,582.40	
10/2/2003	61.88	0.00	3,582.36			
12/17/2003	62.05	0.00	3,582.19			
MW-12	3,644.29	3/23/1998	54.72	0.00	3,589.57	(7)
		6/23/1998	55.48	0.00	3,588.81	
		9/30/1998	56.02	0.00	3,588.27	
		12/9/1998	56.17	0.00	3,588.12	
		3/10/1999	56.45	0.00	3,587.84	
		6/10/1999	56.97	0.00	3,587.32	
		7/2/1999	56.99	0.00	3,587.30	
		9/14/1999	57.41	0.00	3,586.88	
		12/9/1999	57.76	0.00	3,586.53	
		3/10/2000	58.08	0.00	3,586.21	
		6/8/2000	58.42	0.00	3,585.87	
		9/13/2000	58.85	0.00	3,585.44	
		12/7/2000	59.31	0.00	3,584.98	
		3/8/2001	59.76	0.00	3,584.53	
		6/21/01	60.29	0.00	3,584.00	
9/10/01	60.79	0.00	3,583.50			
MW-12D	3,644.38	well dry during this and subsequent monitoring events				(8)
		7/2/1999	57.13	0.00	3,587.25	
		9/14/1999	57.74	0.00	3,586.64	
		12/9/1999	57.86	0.00	3,586.52	
		3/9/2000	58.24	0.00	3,586.14	
		6/8/2000	58.56	0.00	3,585.82	
		09/00	-	-	-	
		12/00	-	-	-	
		3/8/2001	-	-	-	
		6/21/01	-	-	-	
		9/10/01	-	-	-	
		12/6/2001	61.30	0.00	3,583.08	
3/11/2002	61.61	0.00	3,582.77			

**Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.**

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-12D cont.	3,644.38	6/17/02	61.71	0.00	3,582.67	
		9/16/2002	61.75	0.00	3,582.63	
		1/9/2003	61.86	0.00	3,582.52	
		3/6/2003	61.91	0.00	3,582.47	
		6/19/2003	61.95	0.00	3,582.43	
		10/2/2003	62.05	0.00	3,582.33	
		12/17/2003	62.21	0.00	3,582.17	
MW-13	3,645.52	7/2/1999	56.60	0.00	3,588.92	(9)
		9/14/1999	56.92	0.00	3,588.60	
		12/9/1999	57.28	0.00	3,588.24	
		3/10/2000	57.68	0.00	3,587.84	
		6/8/2000	58.04	0.00	3,587.48	
		9/13/2000	58.29	0.00	3,587.23	
		12/7/2000	58.68	0.00	3,586.84	
		3/8/2001	59.19	0.00	3,586.33	
		6/21/01	59.80	0.00	3,585.72	
		9/10/01	60.03	0.00	3,585.49	
		12/6/2001	60.59	0.00	3,584.93	
		3/11/2002	60.94	0.00	3,584.58	
		6/17/02	61.28	0.00	3,584.24	
		9/16/2002	61.23	0.00	3,584.29	
		1/9/2003	61.38	0.00	3,584.14	
		3/6/2003	61.45	0.00	3,584.07	
		6/19/2003	61.58	0.00	3,583.94	
10/2/2003	61.70	0.00	3,583.82			
12/17/2003	61.93	0.00	3,583.59			
MW-14	3,642.45	3/8/2001	61.07	0.00	3,581.38	
		6/21/01	61.71	0.00	3,580.74	
		9/10/01	62.31	0.00	3,580.14	
		12/6/2001	62.80	0.00	3,579.65	
		3/11/2002	62.70	0.00	3,579.75	
		6/17/02	62.65	0.00	3,579.80	
		9/16/2002	62.55	0.00	3,579.90	
		1/9/2003	62.59	0.00	3,579.86	
		3/6/2003	62.64	0.00	3,579.81	
		6/19/2003	62.64	0.00	3,579.81	
		10/2/2003	62.73	0.00	3,579.72	
12/17/2003	62.93	0.00	3,579.52			
MW-15	3,643.24	3/8/2001	59.79	0.00	3,583.45	
		6/21/01	60.49	0.00	3,582.75	
		9/10/01	61.02	0.00	3,582.22	
		12/6/2001	61.47	0.00	3,581.77	
		3/11/2002	61.65	0.00	3,581.59	
		6/17/02	61.68	0.00	3,581.56	
		9/16/2002	61.47	0.00	3,581.77	
		1/9/2003	61.59	0.00	3,581.65	
		3/6/2003	61.63	0.00	3,581.61	
		6/19/2003	61.62	0.00	3,581.62	
		10/2/2003	61.70	0.00	3,581.54	
		12/17/2003	61.83	0.00	3,581.41	
		MW-16	3,643.73	6/19/2003	66.50	0.00
10/2/2003	66.61			0.00	3,577.12	
12/17/2003	66.72			0.00	3,577.01	
OW-4	3,644.06	7/2/1999	58.18	0.00	3,585.88	(8)
		9/14/1999	58.63	0.00	3,585.43	
		12/9/1999	58.92	0.00	3,585.14	
		3/9/2000	59.19	0.00	3,584.87	
		6/8/2000	59.56	0.00	3,584.50	
		9/13/2000	60.16	0.00	3,583.90	
		12/7/2000	61.15	0.00	3,582.91	
		3/8/2001	61.43	0.00	3,582.63	
		6/21/01	61.48	0.00	3,582.58	
		9/10/01	61.53	0.00	3,582.53	
		12/6/2001				

(1) - Top of casing elevations and groundwater elevations of all monitor wells were relative to an arbitrary datum of 100.00 feet prior to March 1997 and have been converted to Mean Sea Level (MSL)

(2) - For wells having measurable thickness of free product, the groundwater elevation was calculated as follows:
Groundwater Elevation = (TOC elevation)-(depth to groundwater)+[(free product thickness)(SG of free product)]
Note: The specific gravity (SG) of the free product is 0.82.

(3) - Not measured.

(4) - Monitor well MW-2 could not be located after January 1994.

(5) - Well plugged and abandoned July 2, 1999.

(6) - Monitor well MW-11 could not be located after September 12, 1997.

(7) - TOC elevations for MW-11A and MW-12 estimated relative to TOC elevation for MW-10.

(8) - TOC elevations for MW-12D and OW-4 estimated relative to TOC elevation for MW-12.

(9) - TOC elevation for MW-13 estimated relative to TOC elevation for MW-7.

(10) - Well dry (measured depth to water is below base of screen); true groundwater elevation is less than listed groundwater elevation.

Table 3
December 18, 2003 Field Screening Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Cumulative Liters Removed	pH	Temperature (°C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)
MW-5	4.6	NM ⁽²⁾	NM	NM	NM	NM	3.6	1.00
MW-10	NM ⁽¹⁾	NM	NM	NM	NM	NM	2.0	6.8
MW-11A	NM	NM	NM	NM	NM	NM	1.5	7.8
MW-12D	2.0	6.80	16.58	1,124	-108	0.63	1.2	2.2
MW-14	3.7 ⁽¹⁾	NM	NM	NM	NM	NM	NM	NM
MW-15	9.2 ⁽¹⁾	NM	NM	NM	NM	NM	NM	NM
MW-16	3.0	6.77	17.31	3,478	58.9	6.79	NM	NM

Monitor wells MW-1, MW-3, MW-4, MW-7, MW-8, MW-9, and MW-13 not sampled.

Monitor well MW-2 not operative after January 1994; P&A'd 7/1/99.

Monitor well MW-6 P&A'd 7/1/99.

Monitor well MW-11 not operative after September 1997; P&A'd 7/1/99.

Monitor wells MW-12 and OW-4 were dry.

Monitor wells MW-5 and MW-15 were purged by removing 3 well volumes of groundwater from each well

⁽¹⁾ - Well was purged dry using bailing techniques.

⁽²⁾ - NM = Not measured

Table 4
 Cumulative Results⁽¹⁾ for Chloride⁽²⁾ Analyses
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Sample Date	Monitor Wells ⁽³⁾																	
	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
8/1/95	160	150	310	130	380	310	350	110	2,200	3,400	NP	NP	NP	NP	NP	NP	NP	NS
8/23/96	130	140	100	99	210	250	360	140	2,000	2,900	NP	NP	NP	NP	NP	NP	NP	NS
3/23-24/98	212	206	126	151	183	223	364	164	2,390	NS	940	1,200	NP	NP	NP	NP	NP	NS
3/9-10/99	163	156	142	155	411	238	274	123	1,160	NS	834	314	NP	NP	NP	NP	NP	NS
6/10-7/2/99	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NA	195	496	NP	NP	NP	266
3/9-10/00	258	196	196	196	NP	224	241	131	474	NP	1,290	327	117	276	NP	NP	NP	258
1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	368	219	NP	NS
3/8-9/01	NA	165	172	152	NP	224	250	127	879	NP	1,720	586	NS	276	327	NA	NP	NS-D
6/21/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NA	NS	NA	222	222	NP	NS-D
9/10/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	NA	NA	245	228	NP	NS-D
9/18/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	79	NA	NA	NA	NP	NS-D
12/6/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	NA	NA	276	215	NP	NS-D
3/11-12/02	177	172	183	127	NP	188	241	110	861	NP	1,230	NS-D	76	207	284	224	NP	NS-D
6/18/2002	NS	NA	NA	NA	NP	NA	NS	NS	NA	NP	NA	NS-D	NA	145	258	233	NP	NS-D
9/16/2002	NS	NS	NS	121	NP	NS	NS	NS	1,030	NP	1,550	NS-D	86	NS	293	246	NP	NS-D
1/9/2003	NS	NS	NS	123	NP	NS	NS	NS	525	NP	3,150	NS-D	95	NS	179	228	NP	NS-D
3/6/2003	NS	NS	NS	116	NP	NS	NS	NS	363	NP	2,900	NS-D	102	NS	163	272	NP	NS-D
6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS-D	89.3	NS	NS	NS	983	NS-D
8/22/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS-D	NS	NS	182	280	841	NS-D
10/2/2003	NS	NS	NS	194	NP	NS	NS	NS	420	NP	3,240	NS-D	99.8	NS	175	298	963	NS-D
12/18/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA	NP	NA	NS-D	NA	NS	123	263	823	NS-D

⁽¹⁾ - in mg/L.

⁽²⁾ - NMWQCC standard for chloride is 250 mg/L.

⁽³⁾ - MW-2 not operative after May 3, 1995; P&A'd 7/1/99.

MW-6 P&A'd 7/1/99.

MW-11 P&A'd 7/1/99.

MW-11A installed February 1998.

MW-12 installed February 1998 (screened at the top of the saturated zone).

MW-12D installed June 1999, adjacent to MW-12 (screened in a lower portion of the uppermost saturated zone).

MW-13 installed June 1999.

MW-14 installed January 2001.

MW-15 installed January 2001.

MW-16 installed May 2003.

NP = not present at time of sampling event.

NS = not sampled during applicable sampling event.

NA = not analyzed for chloride during applicable sampling event.

NS-D = not sampled because well was dry during applicable sampling event.

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-1	8/10/92	Regular	5550.0	12090.0	2160.0	7370.0	NA	NA
	2/9/93	Regular	2100.0	6500.0	1300.0	7400.0	NA	NA
	8/19/93	Regular	3200.0	7300.0	1200.0	3700.0	NA	NA
	1/27/94	Regular	1930.0	4580.0	672.0	2390.0	NA	NA
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	390.0	1300.0	230.0	800.0	NA	5.7
	11/15/95	Regular	880.0	1800.0	300.0	970.0	NA	6.8
	2/23/96	Regular	1500.0	3700.0	620.0	2200.0	NA	21
	5/31/96	Regular	1100.0	1700.0	380.0	990.0	NA	7.5
	8/23/96	Regular	1800.0	3300.0	570.0	2100.0	NA	17
	12/2/96	Regular	5600.0	9600.0	2100.0	9600.0	100	64
	3/12/97	Regular	5500.0	9700.0	2600.0	8200.0	22	62
	6/12/97	Regular	5300.0	34000.0	7500.0	27000.0	180	160
	9/12/97	Regular	1800.0	4400.0	1000.0	3000.0	23	21
	12/10/97	Regular	7600.0	12000.0	2800.0	8200.0	11	71
	3/24/98	Regular	4800.0	7200.0	1200.0	2400.0	4.2	38
	6/23/98	Regular	53.0	680.0	580.0	1400.0	1.4	9.2
	9/30/1998	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/1998	Regular	< 1.0	1.5	17.0	110.0	1.4	0.31
	3/10/1999	Regular	< 1.0	< 1.0	8.2	110.0	0.62	0.85
	3/10/1999	Duplicate	< 1.0	< 1.0	7.9	110.0	0.66	0.84
	6/10/1999	Regular	< 1.0	1.1	< 1.0	28.0	0.53	0.55
	6/10/1999	Duplicate	< 1.0	1.8	< 1.0	41.0	0.69	0.76
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	9.1	14	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	2.0	< 1	< 1	< 1	0.49	0.58
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
6/18/2002	-	-	-	-	-	-	-	
through	-	-	NS	NS	NS	NS	NS	
December 2003	-	-	-	-	-	-	-	
MW-2 ¹	8/10/92	Regular	14.9	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	100.0	12.0	3.0	13.0	NA	NA
	1/27/94	Regular	< 1	1.2	2.0	2.5	NA	NA
MW-3	8/10/92	Regular	304.9	2099.0	6760.0	1586.0	NA	NA
	2/9/93	Regular	130.0	< 10	< 10	190.0	NA	NA
	8/19/93	Regular	560.0	3100.0	630.0	1900.0	NA	NA
	1/27/94	Regular	1070.0	5380.0	510.0	3120.0	NA	NA
	5/4/95	Regular	770.0	3300.0	470.0	1800.0	NA	NA
	8/1/95	Regular	490.0	2900.0	890.0	1600.0	NA	14
	11/15/95	Regular	250.0	1000.0	180.0	440.0	NA	2.9
	2/23/96	Regular	120.0	810.0	170.0	560.0	NA	4
	5/31/96	Regular	670.0	3900.0	1200.0	2300.0	NA	15
	8/23/96	Regular	330.0	2200.0	590.0	1500.0	NA	12

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-3 (cont.)	12/2/96	Regular	220.0	1800.0	670.0	1000.0	0.89	7.4
	3/12/97	Regular	370.0	2000.0	960.0	1400.0	1.8	11
	6/12/97	Regular	860.0	4800.0	1700.0	2600.0	1.9	20
	9/11/97	Regular	770.0	3000.0	1600.0	1900.0	1.6	16
	12/10/97	Regular	240.0	740.0	500.0	450.0	0.59	5.3
	3/24/98	Regular	140.0	630.0	360.0	310.0	0.56	3.9
	6/23/98	Regular	100.0	720.0	350.0	490.0	0.40	4.9
	9/30/1998	Regular	42.0	470.0	450.0	530.0	1.0	3.8
	12/10/1998	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/1999	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/1999	Regular	1.7	3.1	<1.0	36.0	< 0.20	0.18
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.32	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.42	< 0.1
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
9/16/2002	-	-	-	-	-	-	-	-
through	-	-	NS	NS	NS	NS	NS	NS
December 2003	-	-	-	-	-	-	-	-
MW-4	8/10/92	Regular	2594.0	10360.0	2160.0	6740.0	NA	NA
	2/9/93	Regular	5200.0	15000.0	2200.0	10000.0	NA	NA
	8/19/93	Regular	3000.0	12000.0	< 2000	7000.0	NA	NA
	1/27/94	Regular	NSP	NSP	NSP	NSP	NA	NSP
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	5700.0	17000.0	3500.0	13000.0	NA	120
	11/15/95	Regular	490.0	1600.0	310.0	1100.0	NA	5.2
	2/23/96	Regular	360.0	2800.0	560.0	2500.0	NA	18
	5/31/96	Regular	84.0	830.0	280.0	1100.0	NA	6.2
	8/23/96	Regular	110.0	1400.0	430.0	1800.0	NA	9.8
	12/2/96	Regular	190.0	2000.0	1800.0	7200.0	56	43
	3/12/97	Regular	220.0	1500.0	1500.0	4400.0	27	27
	6/12/97	Regular	47.0	270.0	360.0	950.0	2.5	6.2
	9/12/97	Regular	92.0	840.0	670.0	2100.0	15	7.6
	12/10/97	Regular	230.0	750.0	970.0	2300.0	3.7	16
	3/24/98	Regular	150.0	510.0	270.0	620.0	1.2	5.6
	6/23/98	Regular	160.0	890.0	590.0	1600.0	0.69	10
	9/30/1998	Regular	80.0	180.0	370.0	840.0	2.0	3.9
	12/10/1998	Regular	28.0	70.0	210.0	960.0	9.3	4.3
	12/10/1998	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
3/10/1999	Regular	8.0	20.0	250.0	1400.0	13.0	13	
6/10/1999	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63	
9/14/1999	Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17	
12/9/1999	Regular	< 1	2.5	2.3	20.1	2	0.53	
3/10/2000	Regular	< 1	< 1	< 1	3.6	2.6	0.15	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-4 (cont.)	6/8/2000	Regular	< 1	< 1	< 1	< 1	0.44	0.23
	9/13/2000	Regular	< 1	< 1	< 1	< 1	0.61	< 0.1
	12/7/2000	Regular	< 1	< 1	1.3	< 1	0.53	0.16
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.43	0.16
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	0.6	< 1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002							
	through	-		NS	NS	NS	NS	NS
	December 2003							
	MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA
2/9/93		Regular	< 2	< 2	< 2	< 6	NA	NA
8/10/93		Regular	< 2	< 2	< 2	< 6	NA	NA
1/27/94		Regular	8.7	29.9	4.0	11.3	NA	NA
5/3/95		Regular	3.7	5.3	0.9	4.6	NA	NA
8/1/95		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
11/15/95		Regular	< 0.3	1.2	< 0.3	1.5	NA	NA
2/23/96		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
5/31/96		Regular	31.0	86.0	10.0	20.0	NA	NA
8/23/96		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
12/2/96		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
3/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
6/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
9/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
12/10/97		Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
3/23/98		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
6/23/98		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
9/30/1998		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
12/10/1998		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
3/9/1999		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
6/10/1999		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
9/14/1999		Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
12/9/1999		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
3/9/2000		Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
6/8/2000		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
9/13/2000		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/7/2000		Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
3/8/2001		Regular	< 1	< 1	< 1	< 1	0.56	< 0.1
6/21/2001		Regular	< 1	< 1	< 1	< 1	0.26	< 0.1
9/10/2001		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/6/2001		Regular	< 1	< 1	< 1	< 1	0.49	< 0.1
3/12/2002		Regular	< 1	< 1	< 1	< 1	< 0.24	< 0.1
6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.3 J	< 0.05	
1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1	
3/6/2003	Regular	< 1	< 1	< 1	< 1	NA	< 0.1	
8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1	
10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.1	< 0.1	
12/18/2003	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-6 ¹	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	7000.0	19000.0	3100.0	7200.0	NA	NA
	8/19/93	Regular	8100.0	19000.0	3500.0	6400.0	NA	NA
	1/27/94	Regular	7960.0	20200.0	3830.0	6150.0	NA	NA
	5/4/95	Regular	11000.0	17000.0	2900.0	6000.0	NA	NA
	8/1/95	Regular	8300.0	12000.0	2500.0	5100.0	NA	60
	11/15/95	Regular	8900.0	17000.0	2900.0	5500.0	NA	57
	2/23/96	Regular	8100.0	10000.0	2300.0	4000.0	NA	58
	5/31/96	Regular	83.0	150.0	15.0	51.0	NA	0.57
	5/31/96	Duplicate	87.0	160.0	13.0	47.0	NA	0.52
	8/23/96	Regular	31.0	28.0	9.4	7.9	NA	0.46
	12/2/96	Regular	< 1	< 1	< 1	1.7	5.6	< 0.1
	3/12/97	Regular	12.0	< 5	6.8	18.0	12	< 0.5
	6/12/97	Regular	1900.0	1400.0	410.0	310.0	7.8	7.4
	9/11/97	Regular	11.0	1.3	3.4	< 1	1	< 0.1
	12/10/97	Regular	3.0	4.2	1.2	3.9	1.7	0.14
	3/23/98	Regular	3.6	< 1	4.0	< 1	< 0.2	< 0.1
	6/23/98	Regular	170.0	4.1	15.0	7.2	1.2	0.51
9/30/1998	Regular	1000.0	420.0	140.0	270.0	4.0	3.3	
12/10/1998	Regular	7.6	6.6	1.7	5.8	2.0	< 0.1	
3/10/1999	Regular	2500.0	930.0	590.0	1400.0	11.0	13	
MW-7	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	3.0	< 2	< 2	NA	NA
	1/27/94	Regular	1.1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	52.0	3.4	0.7	2.8	NA	NA
	8/1/95	Regular	22.0	2.2	0.9	2.8	NA	< 0.1
	11/15/95	Regular	8.4	0.8	< 0.3	0.9	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Duplicate	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	29.0	83.0	10.0	21.0	NA	0.25
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	4.7	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
12/9/1999	Regular	< 5	< 5	< 5	< 5	1.8	< 0.5	
3/9/2000	Regular	< 1	< 1	< 1	< 1	0.66	< 0.1	
6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.21	< 0.1	
9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.29	< 0.1	
3/8/2001	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-7 (cont.)	6/21/2001	Regular	3.1	<1	<1	<1	<0.22	<0.1
	9/10/2001	Regular	<1	<1	<1	<1	<0.33	<0.1
	12/6/2001	Regular	<1	<1	<1	<1	1.3	<0.1
	3/12/2002	Regular	<1	<1	<1	<1	NA	<0.1
	6/18/2002	Regular	<1	<1	<1	<1	<0.2	<0.1
	9/16/2002 through December 2003	-	NS	NS	NS	NS	NS	NS
	MW-8	8/10/92	Regular	NS	NS	NS	NS	NA
2/9/93		Regular	<2	<2	<2	<6	NA	NA
8/19/93		Regular	<2	<2	<2	<2	NA	NA
1/27/94		Regular	<1	<1	<1	<1	NA	NA
5/3/95		Regular	3.0	4.9	0.8	3.7	NA	NA
8/1/95		Regular	3.1	1.2	0.5	1.6	NA	<0.001
8/1/95		Duplicate	3.6	1.5	0.5	1.5	NA	<0.1
11/15/95		Regular	<0.3	0.5	<0.3	<0.6	NA	<0.1
2/23/96		Regular	<0.3	<0.3	<0.3	<0.6	NA	<0.1
5/31/96		Regular	<0.3	<0.3	<0.3	<0.6	NA	<0.1
8/23/96		Regular	<0.3	<0.3	<0.3	<0.6	NA	<0.1
12/2/96		Regular	<1	<1	<1	<1	<0.1	<0.1
3/12/97		Regular	<1	<1	<1	1.8	<0.1	<0.1
6/12/97		Regular	<1	<1	<1	<1	<0.1	<0.1
9/11/97		Regular	<1	<1	<1	<1	0.1	<0.1
12/10/97		Regular	<1	<1	<1	<1	0.3	<0.1
3/23/98		Regular	<1	<1	<1	<1	<0.2	<0.1
6/23/98		Regular	<1	<1	<1	<1	<0.2	<0.1
9/30/1998		Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
12/10/1998		Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
3/9/1999		Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
6/10/1999		Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
9/13/1999		Regular	<1.0	<1.0	<1.0	<2.0	<0.20	<0.10
12/9/1999		-	NS	NS	NS	NS	NS	NS
3/9/2000		Regular	<1	<1	<1	<1	0.55	<0.1
6/8/2000		-	NS	NS	NS	NS	NS	NS
9/13/2000		-	NS	NS	NS	NS	NS	NS
12/7/2000		-	NS	NS	NS	NS	NS	NS
3/8/2001		Regular	<1	<1	<1	<1	1.6	<0.1
6/21/2001		-	NS	NS	NS	NS	NS	NS
9/10/2001		-	NS	NS	NS	NS	NS	NS
12/6/2001	-	NS	NS	NS	NS	NS	NS	
3/12/2002	Regular	<1	<1	<1	<1	0.38	<0.1	
6/18/2002	-	NS	NS	NS	NS	NS	NS	
9/16/2002 through December 2003	-	NS	NS	NS	NS	NS	NS	
MW-9	4/22/93	Regular	570.0	380.0	<50	870.0	NA	NA
	7/15/93	Regular	121.0	7.3	3.0	458.0	NA	NA
	8/19/93	Regular	390.0	290.0	40.0	250.0	NA	NA
	1/27/94	Regular	327.0	357.0	51.1	293.0	NA	NA
	5/3/95	Regular	380.0	110.0	19.0	120.0	NA	NA
	8/1/95	Regular	660.0	410.0	91.0	310.0	NA	6.2

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-9 (cont.)	11/15/95	Regular	240.0	24.0	11.0	140.0	NA	1.5
	11/15/95	Duplicate	170.0	18.0	10.0	120.0	NA	1.9
	2/23/96	Regular	170.0	18.0	2.3	160.0	NA	4.3
	5/31/96	Regular	120.0	16.0	3.0	200.0	NA	NA
	8/23/96	Regular	82.0	13.0	6.0	270.0	NA	4
	8/23/96	Duplicate	76.0	14.0	4.8	250.0	NA	4.4
	12/2/96	Regular	61.0	< 25	< 25	210.0	2.6	2.8
	12/2/96	Duplicate	86.0	13.0	2.4	270.0	3.7	2.9
	3/12/97	Regular	30.0	48.0	420.0	880.0	8.2	19
	6/12/97	Regular	4.7	2.1	11.0	97.0	2.6	2.2
	6/12/97	Duplicate	< 5	< 5	6.6	69.0	5.2	1.9
	9/12/97	Regular	2.1	2.3	2.1	120.0	1.2	1.9
	12/10/97	Regular	4.9	9.0	6.8	62.0	0.86	0.92
	3/24/98	Regular	< 1	< 1	< 1	26.0	0.9	1
	6/23/98	Regular	2.4	22.0	10.0	36.0	< 0.2	0.25
	9/30/1998	Regular	1.1	5.5	21.0	59.0	0.27	0.27
	12/10/1998	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
	3/10/1999	Regular	< 1.0	< 1.0	5.7	68.0	< 0.2	0.22
	6/10/1999	Regular	< 1.0	1.8	1.8	71.0	< 0.20	0.43
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	64.0	0.66	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.4	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	1	< 1	< 1	< 1	0.37	< 0.1
6/18/2002	-	NS	NS	NS	NS	NS	NS	
9/16/2002 through December 2003	-	NS	NS	NS	NS	NS	NS	
MW-10	8/19/93	Regular	190.0	460.0	< 200	240.0	NA	NA
	1/27/94	Regular	13.4	4.0	5.5	33.6	NA	NA
	5/4/95	Regular	980.0	15.0	11.0	84.0	NA	NA
	8/1/95	Regular	1300.0	32.0	32.0	100.0	NA	3.6
	11/15/95	Regular	1000.0	24.0	15.0	36.0	NA	1.7
	2/23/96	Regular	810.0	23.0	27.0	44.0	NA	2.4
	5/31/96	Regular	700.0	24.0	34.0	28.0	NA	2
	8/23/96	Regular	290.0	3.4	6.4	13.0	NA	1.4
	12/2/96	Regular	280.0	1.3	17.0	8.0	0.94	0.97
	3/12/97	Regular	110.0	< 5	17.0	< 5	0.61	0.57
	6/12/97	Regular	150.0	12.0	30.0	< 5	0.68	< 0.5
	9/12/97	Regular	87.0	2.3	26.0	2.7	0.76	0.33
	9/12/97	Duplicate	87.0	2.4	26.0	2.8	0.79	0.33
	12/10/97	Regular	41.0	9.8	12.0	7.7	1.1	0.28
	12/10/97	Duplicate	36.0	8.5	10.0	6.7	1.2	0.24
3/23/98	Regular	36.0	< 5	5.9	< 5	1.6	< 0.5	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G		
			micrograms per liter, ug/L				milligrams per liter, mg/L			
MW-10 (cont.)	3/23/98	Duplicate	36.0	< 1	5.3	1.3	1.7	0.18		
	6/23/98	Regular	37.0	< 5	< 5	< 5	2.1	< 0.5		
	9/30/1998	Regular	84.0	3.2	30.0	2.2	1.4	0.36		
	12/10/1998	Regular	29.0	1.0	7.0	1.0	0.86	0.18		
	3/9/1999	Regular	28.0	<5.0	5.8	<5.0	0.92	<0.5		
	6/10/1999	Regular	17.0	<1.0	<1.0	<1.0	0.30	0.16		
	9/14/1999	Regular	10.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10		
	12/9/1999	Regular	23.0	< 1	< 1	1.2	0.44	0.16		
	3/10/2000	Regular	300.0	4.3	6.6	43.2	1.2	0.85		
	6/8/2000	Regular	78.0	1.7	7.2	9.0	0.67	0.74		
	9/13/2000	Regular	23.0	1.5	1.1	2.9	1.6	0.41		
	12/7/2000	Regular	7.2	< 1	< 1	< 1	1.5	0.15		
	3/8/2001	Regular	3.4	1.1	< 1	< 1	3.4	0.2		
	6/22/2001	Regular	< 1	< 1	< 1	< 1	1.2	<0.1		
	9/10/01 and 9/18/01	Regular	2	< 1	< 1	< 1	2.3	<0.1		
	12/6/2001	Regular	No Valid Data							
	3/12/2002	Regular	< 1	< 1	< 1	< 1	3.2	< 0.1		
	6/18/2002	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1		
	9/16/2002	Regular	< 0.074	< 0.11	0.1	<0.082	3 J	< 0.05		
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1		
	3/6/2003	Regular	< 1	< 1	18	< 1	NA	< 0.1		
	8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1		
	10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.2	< 0.1		
12/18/2003	Regular	< 1	< 1	< 1	< 1	0.9	< 0.1			
MW-11 ¹	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA		
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA		
	5/4/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA		
	8/1/95	Regular	44.0	29.0	5.5	13.0	NA	0.2		
	11/15/95	Regular	190.0	2.8	6.2	11.0	NA	0.4		
	2/23/96	Regular	49.0	1.2	0.5	4.0	NA	0.25		
	5/31/96	Regular	300.0	83.0	12.0	28.0	NA	0.8		
	8/23/96	Regular	100.0	1.2	0.3	4.7	NA	0.26		
	12/2/96	Regular	970.0	< 5	6.0	8.1	2	1.3		
	3/12/97	Regular	130.0	< 5	13.0	5.8	0.42	< 0.5		
	3/12/97	Duplicate	100.0	< 5	10.0	5.1	0.43	< 0.5		
	6/12/97	Regular	150.0	23.0	19.0	< 5	1.1	0.55		
9/12/97	Regular	220.0	15.0	27.0	13.0	1	0.46			
MW-11A	3/24/98	Regular	24.0	5.0	< 5	< 5	0.28	0.14		
	6/23/98	Regular	9.9	< 5	< 5	< 5	< 0.2	< 0.5		
	9/30/1998	Regular	9.3	3.7	2.2	7.0	<0.20	0.1		
	12/10/1998	Regular	1.7	<1.0	<1.0	<1.0	<0.20	<0.1		
	3/10/1999	Regular	<5	< 5	< 5	< 5	0.3	<0.5		
	6/10/1999	Regular	<1.0	< 1.0	< 1.0	< 1.0	<0.20	<0.10		
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10		
	12/9/1999	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1		
	3/9/2000	Regular	1.2	< 1	< 1	< 1	0.43	< 0.1		
	6/8/2000	Regular	3.6	< 1	< 1	< 1	0.37	< 0.1		
	9/13/2000	Regular	1.4	< 1	< 1	< 1	0.36	< 0.1		
	12/7/00	Regular	26	< 1	< 1	3.3	0.3	0.12		
	3/8/01	Regular	12	< 5	< 5	< 5	2.2	< 0.5		

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-11A (cont.)	6/22/2001	Regular	1.5	< 1	< 1	< 1	1	< 0.1
	9/10/2001	Regular	7.9	< 1	< 1	< 1	1.1	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	1	< 0.1
	3/12/2002	Regular	1.8	< 1	< 1	1	1.6	< 0.1
	6/18/2002	Regular	2.9	< 0.1	1.3	< 1	0.91	< 0.1
	9/16/2002	Regular	9	< 0.11	41	< 0.082	1 J	0.2
	1/9/2003	Regular	12	< 1	< 1	1.2	< 1.0	0.4
	3/6/2003	Regular	3.2	< 1	< 1	1.2	< 1	0.13
	8/21/2003	Regular	3.7	< 1	< 1	< 1	< 1	< 0.1
	10/2/2003	Regular	3.7	< 1	< 1	< 1	< 1.2	< 0.1
	12/18/2003	Regular	3.4	< 1	1.1	< 1	0.63	0.28
MW-12	3/24/98	Regular	100.0	11.0	6.0	8.0	0.29	0.41
	6/23/98	Regular	88.0	< 5	< 5	< 5	< 0.2	< 0.5
	6/23/98	Duplicate	89.0	< 5	< 5	< 5	0.31	< 0.5
	9/30/1998	Regular	260.0	3.0	1.2	7.9	< 0.20	0.62
	12/10/1998	Regular	160.0	< 1.0	< 1.0	1.2	0.21	0.36
	3/10/1999	Regular	160.0	1.1	< 1.0	2.9	0.38	0.45
	6/10/1999	Regular	49.0	1.4	< 1.0	< 1.0	0.22	0.13
	9/14/1999	Regular	75.0	< 1.0	< 1.0	< 2.0	< 0.20	0.23
	12/9/1999	Regular	64.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Regular	93.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Duplicate	99.0	< 1	< 1	< 1	0.22	0.22
	6/8/2000	Regular	62.0	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/2000	Regular	34.0	< 1	< 1	< 1	0.23	< 0.1
	12/7/2000	Regular	27	< 1	2.9	1.9	< 0.25	< 0.1
	3/8/2001	Regular	14	< 1	< 1	< 1	2.1	0.1
	6/22/2001	Regular	12	< 1	< 1	< 1	0.51	0.11
	9/10/2001	Well Dry (Not Sampled) During This and Subsequent Monitoring Events						
MW-12D	7/2/1999	Regular	< 5	< 5	< 5	< 5	< 0.20	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.24	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	-	NS	NS	NS	NS	NS	NS
	6/22/2001	-	NS	NS	NS	NS	NS	NS
	9/18/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.44	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.2 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	3/6/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	6/20/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1	
10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.2	< 0.1	
12/18/2003	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
MW-13	7/2/1999	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/1999	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/1999	Regular	430.0	16.0	410.0	40.9	0.46	3.2

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
	3/10/2000	Regular	88.0	2.8	200.0	1.3	1.9	0.99
MW-13 (cont.)	6/8/2000	Regular	6.0	< 1	63.0	3.3	1.1	0.91
	9/13/2000	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/2000	Regular	<1	<1	<1	<1	0.43	< 0.1
	3/8/2001	Regular	<1	<1	1.2	<1	2	< 0.1
	6/22/2001	Regular	< 1	< 1	< 1	< 1	0.31	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.84	< 0.1
	6/18/2002	Regular	<1	<1	<1	<1	0.3	<0.1
	9/16/2002 through December 2003	-	NS	NS	NS	NS	NS	NS
MW-14	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
	12/18/03	Regular	NA	NA	NA	NA	NA	NA
MW-15	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
	12/18/03	Regular	NA	NA	NA	NA	NA	NA
MW-16	6/20/2003	Regular	< 5	< 5	< 5	< 5	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
	12/18/03	Regular	NA	NA	NA	NA	NA	NA
OW-4	6/10/1999	Regular	<1.0	<1.0	<1.0	4.4	< 0.2	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	3/9/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	0.25	< 0.1
	6/8/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.21	< 0.1
	9/13/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	12/7/2000		Well Dry (Not Sampled) During This and Subsequent Monitoring Events					

¹ Well plugged and abandoned 7/1/99

NA = Not Analyzed

NS = Not Sampled

NS-D = Not Sampled because well was dry

NSP = Not Sampled due to Phase-Separated Hydrocarbons

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-5	3/23/1998	3.87	190	< 0.0012
	3/9/1999	< 0.1	195	< 0.0012
	6/10/1999	4.73	209	< 0.0012
	9/14/1999	4.3	210	< 0.0012
	12/9/1999	4.2	210	< 0.0012
	3/9/2000	5.3	260	< 0.0012
	6/8/2000	4.7	240	< 0.0012
	9/13/2000	3.93	200	< 0.0012
	12/7/2000	3.27	160	< 0.0012
	3/8/2001	3.24	180	< 0.0012
	6/21/2001	2.74	150	0.0017
	9/10/2001	NA ⁽²⁾	130	< 0.0012
	12/6/2001	2.38	120	< 0.0012
	3/12/2002	2.98	120	< 0.0012
	6/18/2002	2.56	110	0.002
	9/16/2002	2.4	105	0.002
	1/9/2003	2.1	97	0.004
	3/6/2003	2.75	110	< 0.0012
	8/21/2003	2.4	100	< 0.0012
	10/2/2003	2.5	100	< 0.0012
12/18/2003	2.5	110	< 0.0012	
MW-10	3/23/1998	0.07	320	0.91
	6/23/1998	< 0.1	325	0.55
	9/30/1998	< 0.1	204	0.81
	12/10/1998	< 0.1	180	0.091
	3/9/1999	< 0.1	142	0.035
			223 ⁽³⁾	
	9/14/1999	< 0.10	160	0.0049
	12/9/1999	0.49	170	0.0039
	3/10/2000	0.1	160	0.0056
	6/8/2000	< 0.1	150	0.031
	9/13/2000	< 0.1	160	0.031
	12/7/2000	< 0.1	190	0.17
	3/8/2001	< 0.1	270	< 0.0012
	6/22/2001	< 0.1	270	0.044
	9/10/2001	NA	NA	NA
	3/12/2002	< 0.1	230	NA
6/18/2002	< 0.1	240	0.007	

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-10 (cont.)	9/16/2002	< 0.03	318	0.006
	1/9/2003	< 0.1	280	0.0024
	3/6/2003	< 0.1	270	0.0031
	8/21/2003	0.21	350	< 0.0012
	10/2/2003	0.11	360	< 0.0012
	12/18/2003	0.28	350	< 0.0012
MW-11A	3/23/1998	< 0.05	190	0.14
	6/23/1998	< 0.1	225	0.11
	9/30/1998	0.4	196	0.043
	12/10/1998	0.7	188	0.033
	3/10/1999	< 0.1	164	0.094
		< 0.1 ⁽⁴⁾	227 ⁽³⁾	
	6/10/1999	< 0.1	181	0.0036
	9/13/1999	0.22	250	< 0.0012
	12/9/1999	< 0.1	290	0.0079
	3/9/2000	0.11	270	0.037
	6/8/2000	< 0.1	240	0.0069
	9/13/2000	< 0.1	320	< 0.0012
	12/7/2000	< 0.1	260	0.0096
	3/8/2001	< 0.1	330	0.0028
	6/22/2001	< 0.1	180	0.0074
	9/10/2001	NA	280	< 0.0012
	12/6/2001	< 0.1	240	0.0041
	3/12/2002	< 0.1	350	0.0044
	6/18/2002	< 0.1	560	0.0028
	9/16/2002	0.3	383	< 0.0012
	1/9/2003	< 0.5	290	0.0063
	3/6/2003	< 0.1	290	0.0044
	8/21/2003	0.68	340	< 0.0012
10/2/2003	1.4	350	< 0.0012	
12/18/2003	< 0.1	320	< 0.0012	
MW-12	3/23/1998	< 0.05	240	< 0.0012
	6/23/1998	< 0.1	240	< 0.0012
	9/30/1998	< 0.1	168	< 0.0012
	12/10/1998	< 0.1	202	< 0.0012
	3/10/1999	< 0.1	137	< 0.0012
		< 0.1 ⁽⁴⁾	193 ⁽³⁾	
	6/10/1999	< 0.1	217	< 0.0012
	9/14/1999	< 0.10	230	< 0.0012
	12/9/1999	< 0.1	180	< 0.0012
	3/10/2000	< 0.1	210	< 0.0012

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-12 (cont.)	6/8/2000	< 0.1	220	< 0.0012
	9/13/2000	< 0.1	240	< 0.0012
	12/7/2000	< 0.1	260	< 0.0012
	3/8/2001	< 0.1	300	< 0.0012
	6/22/2001	< 0.1	360	0.0021
	9/10/2001	Well Dry (Not Sampled) During This and Subsequent Monitoring Events		
MW-12D	9/18/2001	NA	190	< 0.0012
	12/6/2001	< 0.1	200	< 0.0012
	3/12/2002	< 0.1	200	< 0.0012
	6/18/2002	< 0.1	180	0.0012
	9/16/2002	0.06	172	< 0.0012
	1/9/2003	< 0.1	150	0.005
	3/6/2003	0.705	170	0.0038
	6/20/2003	< 0.1	160	< 0.0012
	8/22/2003	< 0.1	160	< 0.0012
	10/2/2003	< 0.1	140	< 0.0012
	12/18/2003	< 0.1	160	< 0.0012

⁽¹⁾ - By EPA Method 300, except as noted

⁽²⁾ - NA indicates not analyzed

⁽³⁾ - By EPA Method 375.4

⁽⁴⁾ - By EPA Method 353.3

⁽⁵⁾ - NS-D indicates not sampled (well dry)

mg/L = milligrams per liter

BROWN AND
CALDWELL

Appendices

APPENDICES

A

BROWN AND
CALDWELL

APPENDIX A

Groundwater Sampling Forms

WELL ID: MW-10

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 019 Date: 12-18-03 Time: 0930
 Client: BT SERVICES Personnel: JE/RB
 Project Location: Hobbs, NM Weather: cloudy 32°F windy

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>63.5</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Static Water: <u>61.55</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: _____ feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>1.96</u> feet	Well Volume: <u>0.31</u> gal
Pump Intake depth: _____ (from GS)	Screened Interval (from GS): _____

Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: 2" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purge dry? Yes No Pumping Rate: _____ gal/min

Equipment Model(s)

- Bailor
- water probe
- Head kit

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
Table content is crossed out with a large X.									

4. SAMPLING DATA

Method(s): Bailor, Size: 2" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: _____ Field Filtered? Yes No

Sample ID: MW-10 Sample Time: 0930 # of Containers: 2

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 6.8 mg/L
 DO: 2.0 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Sampled for BTEX, TPH-C10, Nitrate, sulfate, alkalinity, Dissolved metals

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

WELL ID: MW-11A

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 019 Date: 12-18-03 Time: 0805
 Client: BJ Personnel: JE/RB
 Project Location: HORBS, LOAN Weather: Cold ± 55°F / Windy

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 63.22 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 62.05 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: - feet From: Top of Well Casing (TOC) Top of Protective Casing Other: 50-65
 Length of Water Column: 1.77 feet Well Volume: 0.283 gal Screened Interval (from GS): 50-65'
 Pump intake depth _____ (from GS) 3 WU = 0.849 gal Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.55 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 2" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Equipment Model(s)
 1. Bailer
 2. water probe
 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
									<u>Bailed out 214-1 gal</u>

4. SAMPLING DATA

Method(s): Bailer, Size: 2" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-11A Sample Time: 0930 # of Containers: 3
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: 7.8 mg/L
 DO: 1.5 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

BJTEX, TPH-D, TPH-G, NO3, SO4, Alkalinity 5
Dissolved Methane

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature JE

WELL ID: MU-12D

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 019 Date: 12-18-03 Time: 1030
 Client: BJ Services Personnel: JE/RB
 Project Location: 170 BBS Weather: cloud/windy

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>87.58</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input checked="" type="checkbox"/> Other: <u>Historical</u>
Depth to Static Water: <u>62.21</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: _____ feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>25.37</u> feet	Well Volume: <u>4.24</u> gal
Pump Intake depth: <u>67</u> (from GS)	Screened Interval (from GS): <u>77 1/2 - 87 1/2'</u> <small>Note: 2-inch well = 0.16 gal/R 4-inch well = 0.55 gal/R</small>

3. PURGE DATA

Purge Method: Bailor, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Equipment Model(s)
 1. Electric Pump
 2. Water Meter/Head
 3. USL 620 m05

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1126	L	—	7c	µS/cm	DRP	mg/L	—	78	
1129	0.5	6.57	16.44	1120	-81	1.44	—	62.36	
1132	1.0	6.70	15.87	1124	-93	0.87	—	62.32	
1135	1.5	6.76	16.18	1121	-103	0.68	—	62.32	
1138	2.0	6.80	16.58	1124	-108	0.63	—	62.32	

4. SAMPLING DATA

Method(s): Bailor, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: 62.32 Field Filtered? Yes No

Sample ID: MW-12D Sample Time: 1140 # of Containers: 2

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 2.2 mg/L
 DO: 1.2 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Sampled for BTEX, TPH-G, TPH-D, NO3, SO4, Alkalinity, and Dissolved Methane.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

WELL ID: MW-14

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 019 Date: 7-18-03 Time: 1245
 Client: BT Personnel: JE/RB
 Project Location: Hohl Weather: 60°/36°P/windy

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>69.37</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input checked="" type="checkbox"/> Other: <u>Historical Report</u>
Depth to Static Water: <u>62.55</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: _____ feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>6.82</u> feet	Well Volume: <u>325</u> gal
Pump intake depth: _____ (from GS)	1.0912 gal X 35 = 3.82 w/c volume = (3.23 gal)
	Screened Interval (from GS): <u>54.95</u> - <u>69.5</u> <small>Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft</small>

3. PURGE DATA

Purge Method: Bailer, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Equipment Model(s)
 1. Bailer
 2. W-probe
 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
<u>Bailer Dry at 1 gallon done</u>									

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: _____ Field Filtered? Yes No

Sample ID: MW-14 Sample Time: 1335 # of Containers: 1

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Bailer dry at 1 gallon

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-16

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 019 Date: 12-19-03 Time: 1545
 Client: BT Services Personnel: JE/RB
 Project Location: HOBBS Weather: Cold / +60°F / Windy

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>77.0</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Static Water: <u>66.72</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: <u> </u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>10.28</u> feet	Well Volume: <u>1.644</u> gal
Pump intake depth: <u>69</u> (from GS)	Screened Interval (from GS): _____

Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft
 3 well volume: $1.644 \times 3 = 4.932$ gallons

3. PURGE DATA

Purge Method: Bailor, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: 0.176 gal/min

Equipment Model(s)
 1. Fultz Pump
 2. Water Probe
 3. YSI

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1555	0		01	246	ORP	0.5/L	—	66.78	
1558	0.5	6.88	15.90	3446	58.4	4.52	—	66.89	sl. cloudy
1600	1.0	6.83	15.99	3485	58.3	5.81	—	66.88	
1603	1.5	6.82	16.31	3475	58.7	6.42	—	66.90	
1606	2.0	6.78	17.08	3478	58.9	6.62	—	66.91	
1609	2.5	6.77	17.26	3477	58.8	6.74	—	66.93	
1612	3.0	6.77	17.31	3478	58.9	6.79	—	66.95	
	3.5								

4. SAMPLING DATA

Method(s): Bailor, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: 66.95 Field Filtered? Yes No

Sample ID: MW-16 Sample Time: 1615 # of Containers: 1

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

CHLORIDES

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

B

BROWN AND
CALDWELL

APPENDIX B

Laboratory Analytical Reports



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03120780

Report To: Brown & Caldwell
 Rick Rexroad
 1415 Louisiana
 Suite 2509
 Houston
 TX
 77002-
 ph: (713) 759-0999

fax: (713) 308-3886

Project Name: BJ-Hobbs #12832

Site: Hobbs, NM

Site Address:

PO Number:

State: New Mexico

State Cert. No.:

Date Reported:

fax To: Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
W-5	03120780-01	Water	12/18/03 9:50:00 AM	12/19/03 9:30:00 AM	188096	<input type="checkbox"/>
MW-11A	03120780-02	Water	12/18/03 9:30:00 AM	12/19/03 9:30:00 AM	188096	<input type="checkbox"/>
W-10	03120780-03	Water	12/18/03 9:40:00 AM	12/19/03 9:30:00 AM	188096	<input type="checkbox"/>
W-12D	03120780-04	Water	12/18/03 11:40:00 AM	12/19/03 9:30:00 AM	188096	<input type="checkbox"/>
Trip Blank	03120780-05	Water	12/18/03	12/19/03 9:30:00 AM	188096	<input type="checkbox"/>

Fabricea L Lynch
 Fabricea Lynch
 Senior Project Manager

1/5/04

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
03120780

Report To: Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886	Project Name: BJ-Hobbs #12832 Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported:
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The data in this report applies to the analysis of four water samples for the BJ Services site in Hobbs, New Mexico. These samples were received on December 19, 2003, assigned to SPL Certificate of Analysis No. 03120780, and analyzed for the parameters as noted on Chain-of-Custody No.188096 .

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.


Pat Lynch
Senior Project Manager

1/7/2004

Date



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-5 Collected: 12/18/2003 9:50 SPL Sample ID: 03120780-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY (AS CaCO3), TOTAL			MCL	E310.1	Units: mg/L		
Alkalinity, Total (As CaCO3)	234	2	1		12/30/03 12:00	J_C	2023664

DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	0.2	1		01/02/04 3:10	AM	2024953
Surr: n-Pentacosane	78.2	% 39-142	1		01/02/04 3:10	AM	2024953

Prep Method	Prep Date	Prep Initials
SW3510C	12/20/2003 7:56	K_L

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/27/03 0:34	AE	2019751
Surr: 1,4-Difluorobenzene	106	% 74-121	1		12/27/03 0:34	AE	2019751
Surr: 4-Bromofluorobenzene	102	% 55-150	1		12/27/03 0:34	AE	2019751

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		12/22/03 20:58	J_F	2011153

ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen, Nitrate (As N)	2.5	0.1	1		12/19/03 17:37	CV	2006831
Sulfate	110	4	20		12/30/03 19:22	CV	2025263

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/27/03 0:34	AE	2019849
Ethylbenzene	ND	1	1		12/27/03 0:34	AE	2019849
Toluene	ND	1	1		12/27/03 0:34	AE	2019849
Xylenes, Total	ND	1	1		12/27/03 0:34	AE	2019849
Surr: 4-Bromofluorobenzene	106	% 57-157	1		12/27/03 0:34	AE	2019849
Surr: 1,4-Difluorobenzene	103	% 39-163	1		12/27/03 0:34	AE	2019849

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-11A

Collected: 12/18/2003 9:30

SPL Sample ID: 03120780-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY (AS CaCO3), TOTAL			MCL	E310.1	Units: mg/L		
Alkalinity, Total (As CaCO3)	386	2	1		12/30/03 12:00	J_C	2023665
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	0.63	0.2	1		01/02/04 3:48	AM	2024955
Surr: n-Pentacosane	68.0	% 39-142	1		01/02/04 3:48	AM	2024955
Prep Method	Prep Date	Prep Initials					
SW3510C	12/20/2003 7:56	K_L					
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	0.28	0.1	1		12/27/03 0:59	AE	2019752
Surr: 1,4-Difluorobenzene	127 MI	% 74-121	1	*	12/27/03 0:59	AE	2019752
Surr: 4-Bromofluorobenzene	105	% 55-150	1		12/27/03 0:59	AE	2019752
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		12/22/03 21:07	J_F	2011154
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen,Nitrate (As N)	ND	0.1	1		12/19/03 18:15	CV	2006834
Sulfate	320	10	50		12/30/03 19:35	CV	2025265
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	3.4	1	1		12/27/03 0:59	AE	2019850
Ethylbenzene	1.1	1	1		12/27/03 0:59	AE	2019850
Toluene	ND	1	1		12/27/03 0:59	AE	2019850
Xylenes,Total	ND	1	1		12/27/03 0:59	AE	2019850
Surr: 4-Bromofluorobenzene	103	% 57-157	1		12/27/03 0:59	AE	2019850
Surr: 1,4-Difluorobenzene	91.8	% 39-163	1		12/27/03 0:59	AE	2019850

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



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Client Sample ID MW-10

Collected: 12/18/2003 9:40

SPL Sample ID: 03120780-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY (AS CaCO3), TOTAL			MCL	E310.1	Units: mg/L		
Alkalinity, Total (As CaCO3)	279	2	1		12/30/03 12:00	J_C	2023666

DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	0.85	0.25	1		01/02/04 4:26	AM	2024956
Surr: n-Pentacosane	67.8	% 39-142	1		01/02/04 4:26	AM	2024956

Prep Method	Prep Date	Prep Initials
SW3510C	12/20/2003 7:56	K_L

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/27/03 1:26	AE	2019753
Surr: 1,4-Difluorobenzene	107	% 74-121	1		12/27/03 1:26	AE	2019753
Surr: 4-Bromofluorobenzene	119	% 55-150	1		12/27/03 1:26	AE	2019753

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		12/22/03 21:27	J_F	2011158

ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen,Nitrate (As N)	0.28	0.1	1		12/19/03 18:27	CV	2006835
Sulfate	350	20	100		12/30/03 19:48	CV	2025266

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/27/03 1:26	AE	2019852
Ethylbenzene	ND	1	1		12/27/03 1:26	AE	2019852
Toluene	ND	1	1		12/27/03 1:26	AE	2019852
Xylenes,Total	ND	1	1		12/27/03 1:26	AE	2019852
Surr: 4-Bromofluorobenzene	105	% 57-157	1		12/27/03 1:26	AE	2019852
Surr: 1,4-Difluorobenzene	98.6	% 39-163	1		12/27/03 1:26	AE	2019852

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID MW-12D Collected: 12/18/2003 11:40 SPL Sample ID: 03120780-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY (AS CaCO3), TOTAL			MCL	E310.1	Units: mg/L		
Alkalinity, Total (As CaCO3)	189	2	1		12/30/03 12:00	J_C	2023667

DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	0.2	1		01/02/04 5:05	AM	2024957
Surr: n-Pentacosane	77.2	% 39-142	1		01/02/04 5:05	AM	2024957

Prep Method	Prep Date	Prep Initials
SW3510C	12/20/2003 7:56	K_L

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/27/03 1:51	AE	2019754
Surr: 1,4-Difluorobenzene	105	% 74-121	1		12/27/03 1:51	AE	2019754
Surr: 4-Bromofluorobenzene	105	% 55-150	1		12/27/03 1:51	AE	2019754

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		12/22/03 21:36	J_F	2011157

ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen,Nitrate (As N)	ND	0.1	1		12/19/03 18:40	CV	2006836
Sulfate	160	4	20		12/30/03 20:26	CV	2025270

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/27/03 1:51	AE	2019853
Ethylbenzene	ND	1	1		12/27/03 1:51	AE	2019853
Toluene	ND	1	1		12/27/03 1:51	AE	2019853
Xylenes,Total	ND	1	1		12/27/03 1:51	AE	2019853
Surr: 4-Bromofluorobenzene	99.3	% 57-157	1		12/27/03 1:51	AE	2019853
Surr: 1,4-Difluorobenzene	98.7	% 39-163	1		12/27/03 1:51	AE	2019853

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
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Client Sample ID Trip Blank Collected: 12/18/2003 0:00 SPL Sample ID: 03120780-05

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/27/03 2:17	AE	2019855
Ethylbenzene	ND	1	1		12/27/03 2:17	AE	2019855
Toluene	ND	1	1		12/27/03 2:17	AE	2019855
Xylenes, Total	ND	1	1		12/27/03 2:17	AE	2019855
Surr: 4-Bromofluorobenzene	98.4	% 57-157	1		12/27/03 2:17	AE	2019855
Surr: 1,4-Difluorobenzene	94.7	% 39-163	1		12/27/03 2:17	AE	2019855

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL

Quality Control Documentation



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell

BJ-Hobbs #12832

Analysis: Diesel Range Organics
Method: SW8015B

WorkOrder: 03120780
Lab Batch ID: 34298

Method Blank

Samples in Analytical Batch:

RunID: HP_V_031231E-2024944 Units: mg/L
Analysis Date: 12/31/2003 19:32 Analyst: AM
Preparation Date: 12/20/2003 7:56 Prep By: K_L Method SW3510C

Lab Sample ID Client Sample ID
03120780-01B MW-5
03120780-02B MW-11A
03120780-03B MW-10
03120780-04B MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Rows: Diesel Range Organics, Surr: n-Pentacosane.

Laboratory Control Sample (LCS)

RunID: HP_V_031231E-2024946 Units: mg/L
Analysis Date: 12/31/2003 20:10 Analyst: AM
Preparation Date: 12/20/2003 7:56 Prep By: K_L Method SW3510C

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Diesel Range Organics.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03120820-01
RunID: HP_V_031231E-2024949 Units: mg/L
Analysis Date: 12/31/2003 21:26 Analyst: AM
Preparation Date: 12/20/2003 7:56 Prep By: K_L Method SW3510C

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Diesel Range Organics.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
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Brown & Caldwell
BJ-Hobbs #12832

Analysis: Headspace Gas Analysis
Method: RSK147

WorkOrder: 03120780
Lab Batch ID: R100842

Method Blank

Samples in Analytical Batch:

RunID: VARC_031222C-2011143 Units: mg/L
Analysis Date: 12/22/2003 18:30 Analyst: J_F

Lab Sample ID Client Sample ID
03120780-01D MW-5
03120780-02D MW-11A
03120780-03D MW-10
03120780-04D MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Row: Methane, ND, 0.0012

Laboratory Control Sample (LCS)

RunID: VARC_031222C-2011144 Units: mg/L
Analysis Date: 12/22/2003 18:40 Analyst: J_F

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Methane, 1000, 823, 82, 70, 130

Sample Duplicate

Original Sample: 03120666-01
RunID: VARC_031222C-2011145 Units: mg/L
Analysis Date: 12/22/2003 18:51 Analyst: J_F

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Rows: Butane, Ethane, Ethylene, Isobutane, Methane, Propane, Propylene

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ-Hobbs #12832

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 03120780
Lab Batch ID: R101220

Method Blank

Samples in Analytical Batch:

RunID: HP_S_031226B-2019738 Units: mg/L
Analysis Date: 12/26/2003 18:05 Analyst: AE

Lab Sample ID Client Sample ID
03120780-01A MW-5
03120780-02A MW-11A
03120780-03A MW-10
03120780-04A MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Gasoline Range Organics, Surr: 1,4-Difluorobenzene, and Surr: 4-Bromofluorobenzene.

Laboratory Control Sample (LCS)

RunID: HP_S_031226B-2019735 Units: mg/L
Analysis Date: 12/26/2003 13:25 Analyst: AE

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Gasoline Range Organics.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03120727-04
RunID: HP_S_031226B-2019736 Units: mg/L
Analysis Date: 12/26/2003 17:13 Analyst: AE

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Gasoline Range Organics.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell

BJ-Hobbs #12832

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 03120780
Lab Batch ID: R101225

Method Blank

Samples in Analytical Batch:

RunID: HP_S_031226A-2019827 Units: ug/L
Analysis Date: 12/26/2003 18:05 Analyst: AE

Lab Sample ID Client Sample ID
03120780-01A MW-5
03120780-02A MW-11A
03120780-03A MW-10
03120780-04A MW-12D
03120780-05A Trip Blank

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, Surr: 1,4-Difluorobenzene, Surr: 4-Bromofluorobenzene.

Laboratory Control Sample (LCS)

RunID: HP_S_031226A-2019817 Units: ug/L
Analysis Date: 12/26/2003 12:59 Analyst: AE

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03120727-01
RunID: HP_S_031226A-2019820 Units: ug/L
Analysis Date: 12/26/2003 16:21 Analyst: AE

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
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Brown & Caldwell

BJ-Hobbs #12832

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03120780
Lab Batch ID: R100656

Method Blank

Samples in Analytical Batch:

RunID: IC1_031219A-2006827 Units: mg/L
Analysis Date: 12/19/2003 16:46 Analyst: CV

Lab Sample ID Client Sample ID
03120780-01C MW-5
03120780-02C MW-11A
03120780-03C MW-10
03120780-04C MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Row: Nitrogen, Nitrate (As N), ND, 0.10.

Laboratory Control Sample (LCS)

RunID: IC1_031219A-2006828 Units: mg/L
Analysis Date: 12/19/2003 16:59 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Nitrogen, Nitrate (As N), 10, 10.5, 105, 80, 120.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03120780-01
RunID: IC1_031219A-2006832 Units: mg/L
Analysis Date: 12/19/2003 17:49 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Nitrogen, Nitrate (As N), 2.46, 10, 13.3, 109, 10, 13.3, 109, 0.00150, 20, 80, 120.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell

BJ-Hobbs #12832

Analysis: Alkalinity (as CaCO3), Total
Method: E310.1

WorkOrder: 03120780
Lab Batch ID: R101404

Method Blank

Samples in Analytical Batch:

RunID: WET_031230S-2023656 Units: mg/L
Analysis Date: 12/30/2003 12:00 Analyst: J_C

Lab Sample ID Client Sample ID
03120780-01C MW-5
03120780-02C MW-11A
03120780-03C MW-10
03120780-04C MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Row: Alkalinity, Total (As CaCO3), ND, 2.0

Laboratory Control Sample (LCS)

RunID: WET_031230S-2023658 Units: mg/L
Analysis Date: 12/30/2003 12:00 Analyst: J_C

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Alkalinity, Total (As CaCO3), 101, 98.5, 98, 90, 110

Sample Duplicate

Original Sample: 03120713-01
RunID: WET_031230S-2023659 Units: mg/L
Analysis Date: 12/30/2003 12:00 Analyst: J_C

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Row: Alkalinity, Total (As CaCO3), 408, 407.9, 0, 20

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell

BJ-Hobbs #12832

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03120780
Lab Batch ID: R101495

Method Blank

Samples in Analytical Batch:

RunID: IC1_031230A-2025235 Units: mg/L
Analysis Date: 12/30/2003 13:09 Analyst: CV

Lab Sample ID Client Sample ID
03120780-01C MW-5
03120780-02C MW-11A
03120780-03C MW-10
03120780-04C MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Row: Sulfate, ND, 0.20

Laboratory Control Sample (LCS)

RunID: IC1_031230A-2025236 Units: mg/L
Analysis Date: 12/30/2003 13:21 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Sulfate, 10, 10.4, 104, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03120713-03
RunID: IC1_031230A-2025243 Units: mg/L
Analysis Date: 12/30/2003 16:00 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Sulfate, 0.838, 10, 12.1, 112, 10, 11.9, 111, 1.27, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

*Sample Receipt Checklist
And
Chain of Custody*



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder: 03120780

Received By: RE

Date and Time Received: 12/19/03 9:30:00 AM

Carrier name: Fedex-Standard Overnight

Temperature: 3.8°C

Chilled by: Water Ice

- | | | | |
|--|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| 2. Custody seals intact on shipping container/cooler? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| 3. Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 4. Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 5. Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 6. Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 7. Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 8. Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 9. Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 10. All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 11. Container/Temp Blank temperature in compliance? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 12. Water - VOA vials have zero headspace? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Applicable <input type="checkbox"/> |
| 13. Water - pH acceptable upon receipt? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Applicable <input type="checkbox"/> |

SPL Representative:

Contact Date & Time:

Client Name Contacted:

Non Conformance Issues:

Client Instructions:



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03120777

Report To: Brown & Caldwell
 Rick Rexroad
 1415 Louisiana
 Suite 2509
 Houston
 TX
 77002-
 ph: (713) 759-0999 fax: (713) 308-3886

Project Name: BJ-Hobbs/12832
Site: Hobbs, NM
Site Address:

PO Number:
State: New Mexico
State Cert. No.:
Date Reported:

Fax To: Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-14	03120777-01	Water	12/18/03	12/19/03 9:30:00 AM	188100	<input type="checkbox"/>
MW-15	03120777-02	Water	12/18/03	12/19/03 9:30:00 AM	188100	<input type="checkbox"/>
MW-16	03120777-03	Water	12/18/03	12/19/03 9:30:00 AM	188100	<input type="checkbox"/>

Patricia L. Lynch
 Patricia L. Lynch
 Senior Project Manager

1/5/04
 Date

Joel Grice
 Laboratory Director

 Ted Yen
 Quality Assurance Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
03120777

Report To: Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886	Project Name: BJ-Hobbs/12832 Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported:
---	--

The data in this report applies to the analysis of three water samples for the BJ Services site in Hobbs, New Mexico. These samples were received on December 19, 2003, assigned to SPL Certificate of Analysis No. 03120777, and analyzed for the parameters as noted on Chain-of-Custody No.188100 .

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.


Pat Lynch
Senior Project Manager

1/7/2004

Date



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-14 Collected: 12/18/2003 0:00 SPL Sample ID: 03120777-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	123	2	2		12/30/03 18:00	RA	2025391

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL



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HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-15 Collected: 12/18/2003 0:00 SPL Sample ID: 03120777-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	263	5	5		12/30/03 18:00	RA	2025394

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-16 Collected: 12/18/2003 0:00 SPL Sample ID: 03120777-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	823	10	10		12/30/03 18:00	RA	2025395

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

Quality Control Documentation



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ-Hobbs/12832

Analysis: Chloride, Total
Method: E325.3

WorkOrder: 03120777
Lab Batch ID: R101502

Method Blank

Samples in Analytical Batch:

RunID: WET_031230X-2025387 Units: mg/L
Analysis Date: 12/30/2003 18:00 Analyst: RA

Lab Sample ID Client Sample ID
03120777-01A MW-14
03120777-02A MW-15
03120777-03A MW-16

Table with 3 columns: Analyte, Result, Rep Limit. Row: Chloride, ND, 1.0

Laboratory Control Sample (LCS)

RunID: WET_031230X-2025389 Units: mg/L
Analysis Date: 12/30/2003 18:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Chloride, 78, 77.05, 99, 90, 110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03120777-01
RunID: WET_031230X-2025392 Units: mg/L
Analysis Date: 12/30/2003 18:00 Analyst: RA

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Chloride, 122.6, 100, 220.7, 98.07, 100, 220.7, 98.07, 0, 20, 85, 115

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

*Sample Receipt Checklist
And
Chain of Custody*



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder: 03120777

Received By: R_R

Date and Time Received: 12/19/03 9:30:00 AM

Carrier name: FedEx

Temperature: 4.2°C

Chilled by: Water Ice

- | | | | |
|--|---|-----------------------------|--|
| 1. Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| 2. Custody seals intact on shipping container/cooler? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 3. Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 4. Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 5. Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 6. Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 7. Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 8. Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 9. Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 10. All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 11. Container/Temp Blank temperature in compliance? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 12. Water - VOA vials have zero headspace? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Applicable <input checked="" type="checkbox"/> |
| 13. Water - pH acceptable upon receipt? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Applicable <input checked="" type="checkbox"/> |

SPL Representative:

Contact Date & Time:

Client Name Contacted:

Non Conformance Issues:

Client Instructions:

C

BROWN AND
CALDWELL

APPENDIX C

Oil & Gas Well Search



**Banks
Information
Solutions, Inc.**

Oil & Gas Well Search

December 18, 2003

CLIENT

**Brown & Caldwell
Attention: Rick Rexroad
1415 Louisiana Street, #250
Houston, Texas 77002
Phone: 713-759-0999
Fax: 713-308-3886**

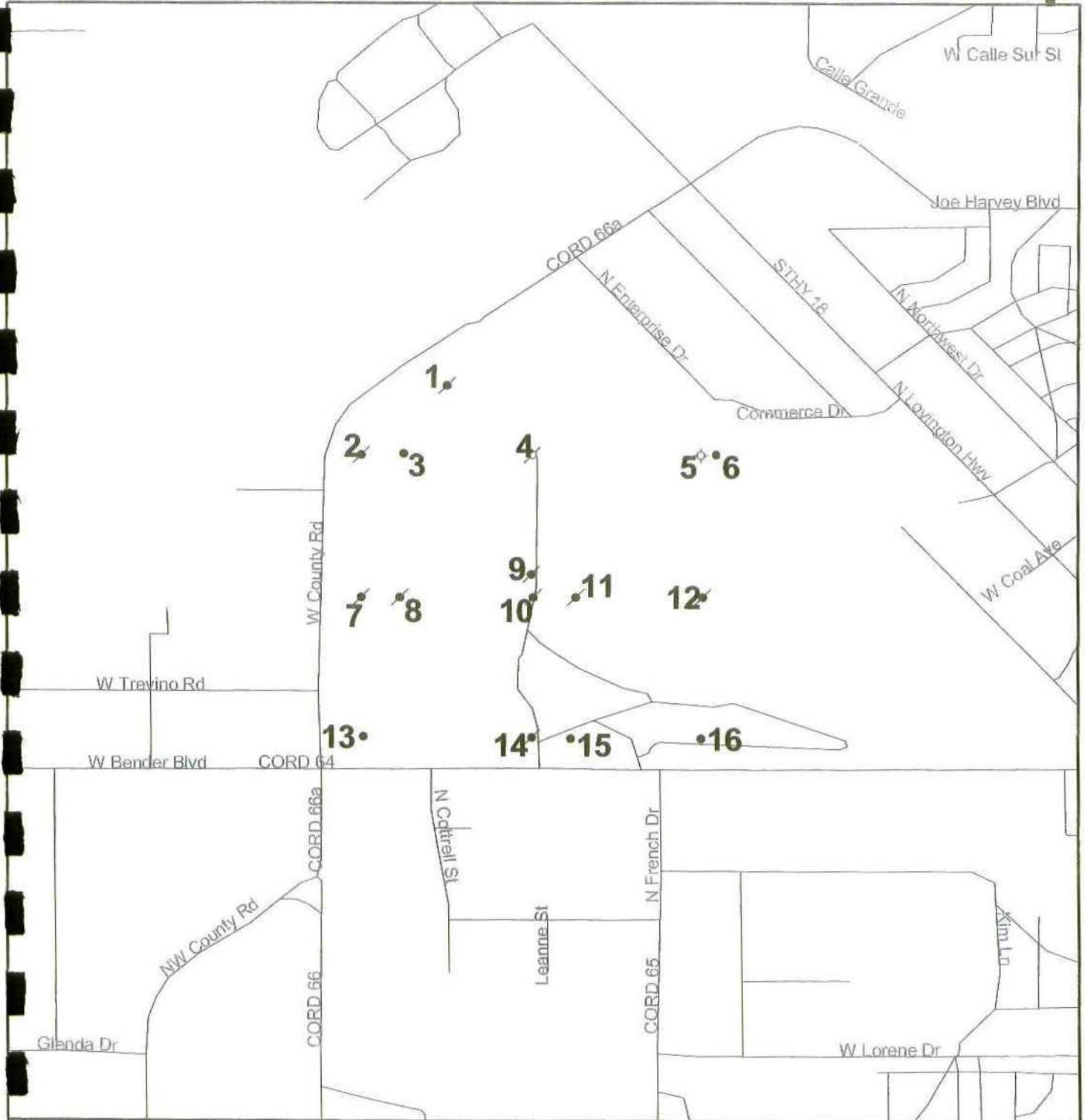
SITE

**BJ Services
Hobbs, New Mexico
Lea County**

Banks Information Solutions, Inc. P.O. Box 12851, Capitol Station Austin, Texas 78711
1701 Nueces Austin, Texas 78701 512-478-0059 FAX 512-478-1433
E-Mail banks@banksinfo.com www.banksinfo.com



Site Map



BJ Services Facility
Hobbs, New Mexico
Lea County

0 0.5 Miles

-  Local road
-  Water body
-  Park
-  State
-  Highway
-  Primary road
-  Secondary road



Oil & Gas Well Search

Subject Property: BJ Services
 Hobbs, New Mexico
 Lea County

Wells were searched within eastern half of section 20.

REPORT SUMMARY	
WELL TYPE	NUMBER IDENTIFIED
Oil Wells	5
Gas Wells	0
Other Types of Wells*	11
TOTAL NUMBER OF WELLS FOUND	16

*May include dry holes, abandoned locations, disposal, injection, domestic or water supply wells.

SOURCES AND LIMITATIONS

Banks Information Solutions, Inc. has performed a thorough and diligent search of all wells recorded with the Louisiana Department of Natural Resources (LDNR). All information was obtained from the LDNR. Although Banks performs quality assurance and quality control on all research projects, we recognize that any inaccuracies of the well locations and well data could possibly be traced to the appropriate regulatory authority. Therefore, Banks cannot guarantee the accuracy of the data or well location(s) of those maps and records maintained by the Louisiana Department of Natural Resources.

MAP ID #	OPERATOR	LEASE	WELL #	DRILLED DATE	Plug Date	Depth	TYPE / STATUS	API #	COMMENTS
1	Moran Oil Prod. & Drng.	SM-20	1	3/24/62	Unknown	6175'	Oil	30-025-07374	Plugged and Abandoned
2	Sun Oil Company	McKinley B	1	1/28/47	Unknown	8010'	Oil	30-025-07380	Plugged and Abandoned
3	Morris R. Antwell	McKinley B	1-A	3/20/52	N/A	4270'	Oil	30-025-07379	Active
4	Shell Oil Co.	North Hobbs (GBSA) Unit Sec. 20	WI-421	2/24/82	N/A	4414'	Injection	30-025-07388	Active
5	Morris R. Antwell	Morris	1	11/3/52	Unknown	4294'	Dry	30-025-07389	Plugged and Abandoned
6	Robinson Oil Co.	Morris #002	2	5/29/82	N/A	4230'	Oil	30-025-27777	Active
7	Humble Oil & Refg Co.	BA Bowers B	2	12/24/32	Unknown	4247'	Oil	30-025-07372	Assumed Plugged and Abandoned
8	Shell Western E & P Inc.	North Hobbs G/SA UT. Sec 20 #331	2-AO	3/17/54	Unknown	4202'	Oil	30-025-07381	Assumed Plugged and Abandoned
9	Occidental Permian Ltd.	North Hobbs G/SA UT. #432	3	1/23/54	Unknown	4210'	Oil	30-025-07387	Assumed Plugged and Abandoned
10	Sweet C H Oil Co.	Brown Grimes	1	11/27/34	Unknown	4244	Oil	30-025-07376	Assumed Plugged and Abandoned
11	Occidental Permian Ltd.	North Hobbs G/SA UT. #432	1-AO	5/25/52	Unknown	4253'	Oil	30-025-07386	Assumed Plugged and Abandoned
12	Occidental Permian Ltd.	North Hobbs G/SA Unit #131	131	7/2/83	Unknown	4235'	Oil	30-025-07393	Assumed Plugged and Abandoned
13	Occidental Permian Ltd.	North Hobbs G/SA Unit #341	1	10/5/69	N/A	4242'	Oil	30-025-07371	Active
14	Humble Oil & Refg Co.	Bowers B	3	1/31/33	Unknown	4225'	Oil	30-025-07373	Assumed Plugged and Abandoned
15	Sweet C H Oil Co.	Bowers-Federal	3	3/1/54	Unknown	4230'	Oil	30-025-07385	Assumed Plugged and Abandoned
16	Occidental Permian Ltd.	North Hobbs G/SA Unit #141	1	1/15/35	N/A	4219'	Oil	30-025-07390	Active

D

BROWN AND
CALDWELL

APPENDIX D

Historic Aerial Photographs

Date of photo: 1997

Scale of photo: 1" = 500' ↑
N

Agency: _____

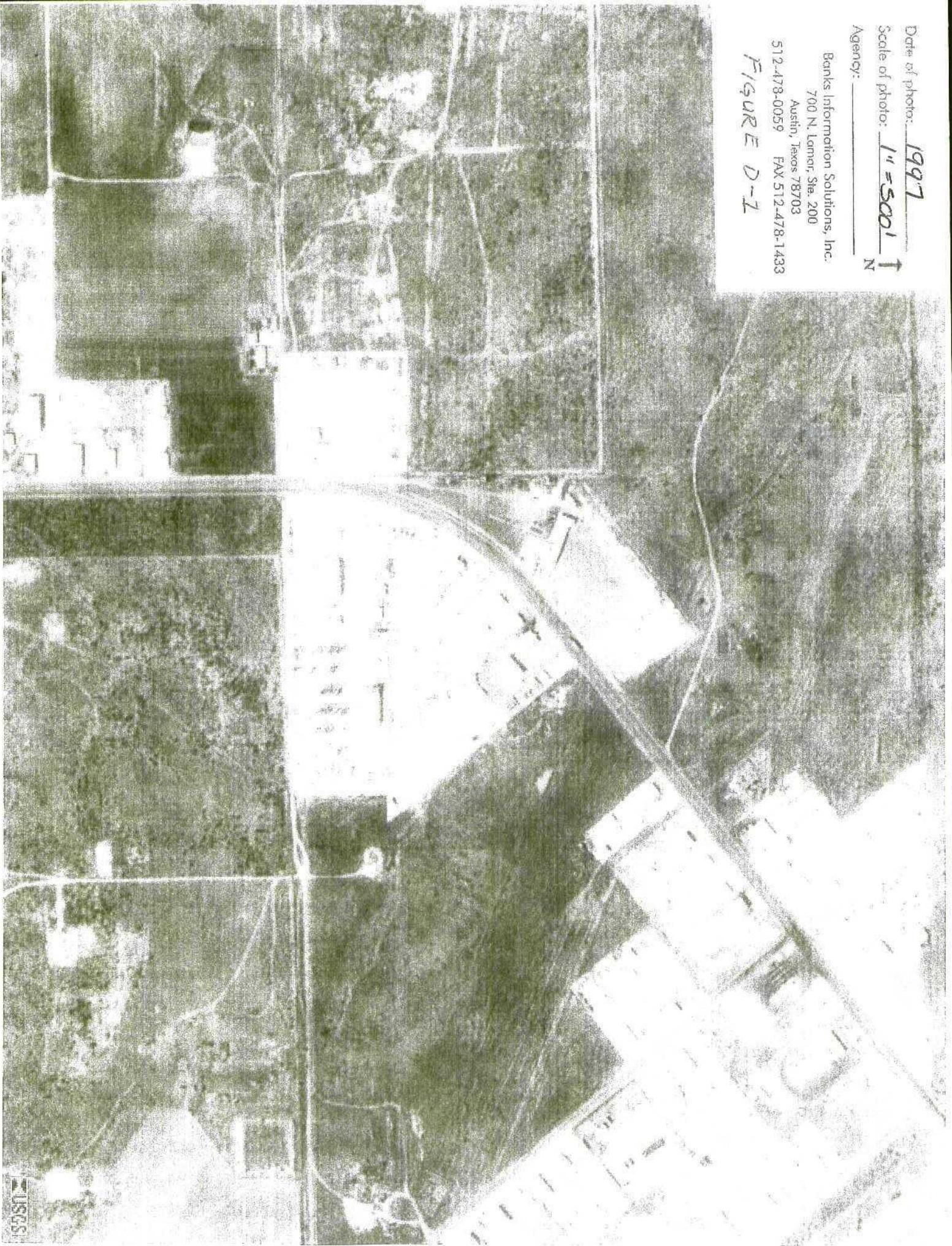
Banks Information Solutions, Inc.

700 N. Lamar, Ste. 200

Austin, Texas 78703

512-478-0059 FAX 512-478-1433

FIGURE D-1



USGS

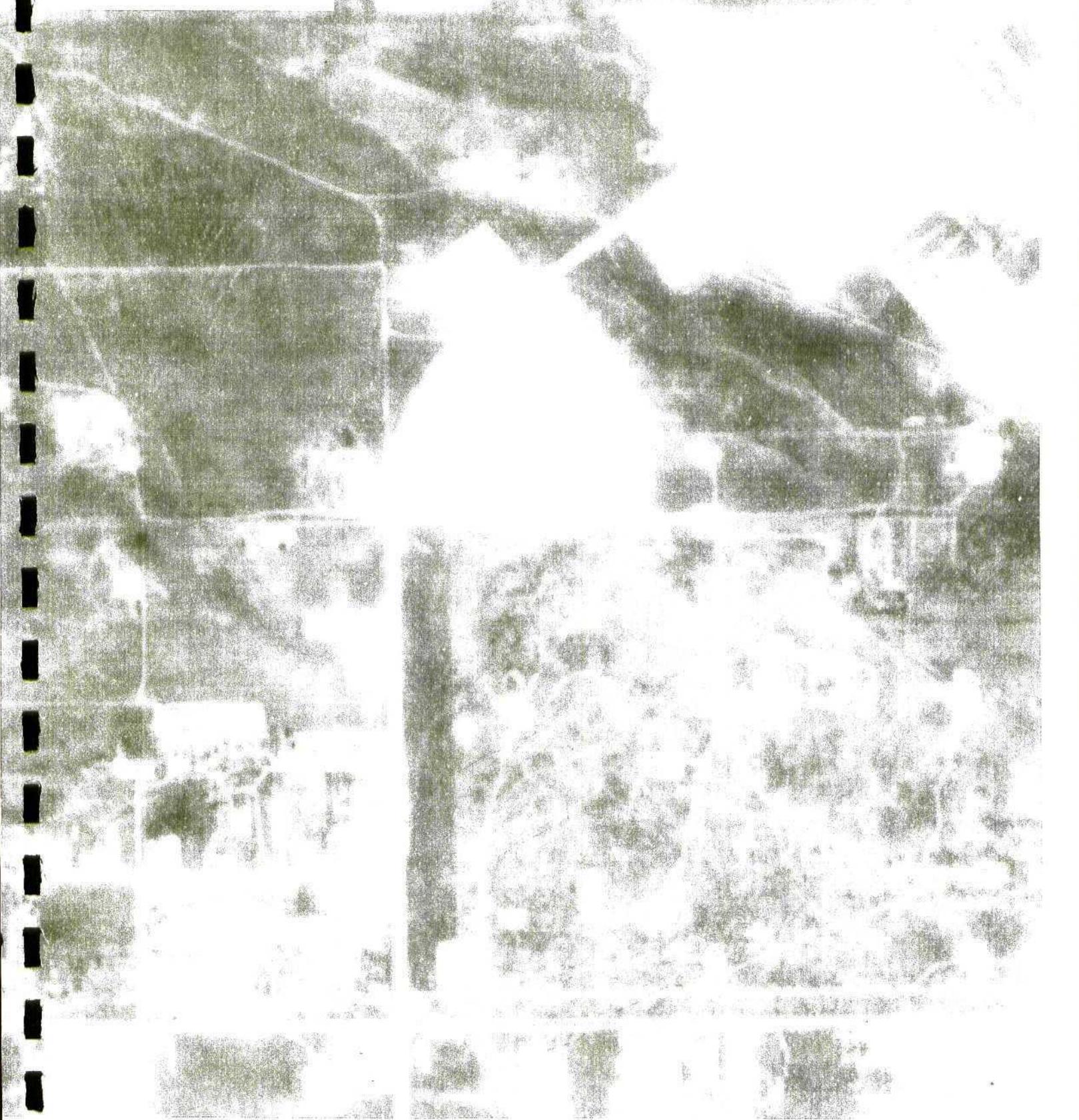
Date of photo: 1980

Scale of photo: 1" = 500'

Agency: _____

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Austin, Texas 78703
512-478-0059 FAX 512-478-1433

FIGURE D-2



Date of photo: 1977

Scale of photo: 1" = 500'

Agency: _____

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Austin, Texas 78703
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FIGURE D-3



Date of photo: 1966

Scale of photo: 1" = 500'

Agency: _____

Banks Information Solutions, Inc.

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Austin, Texas 78703

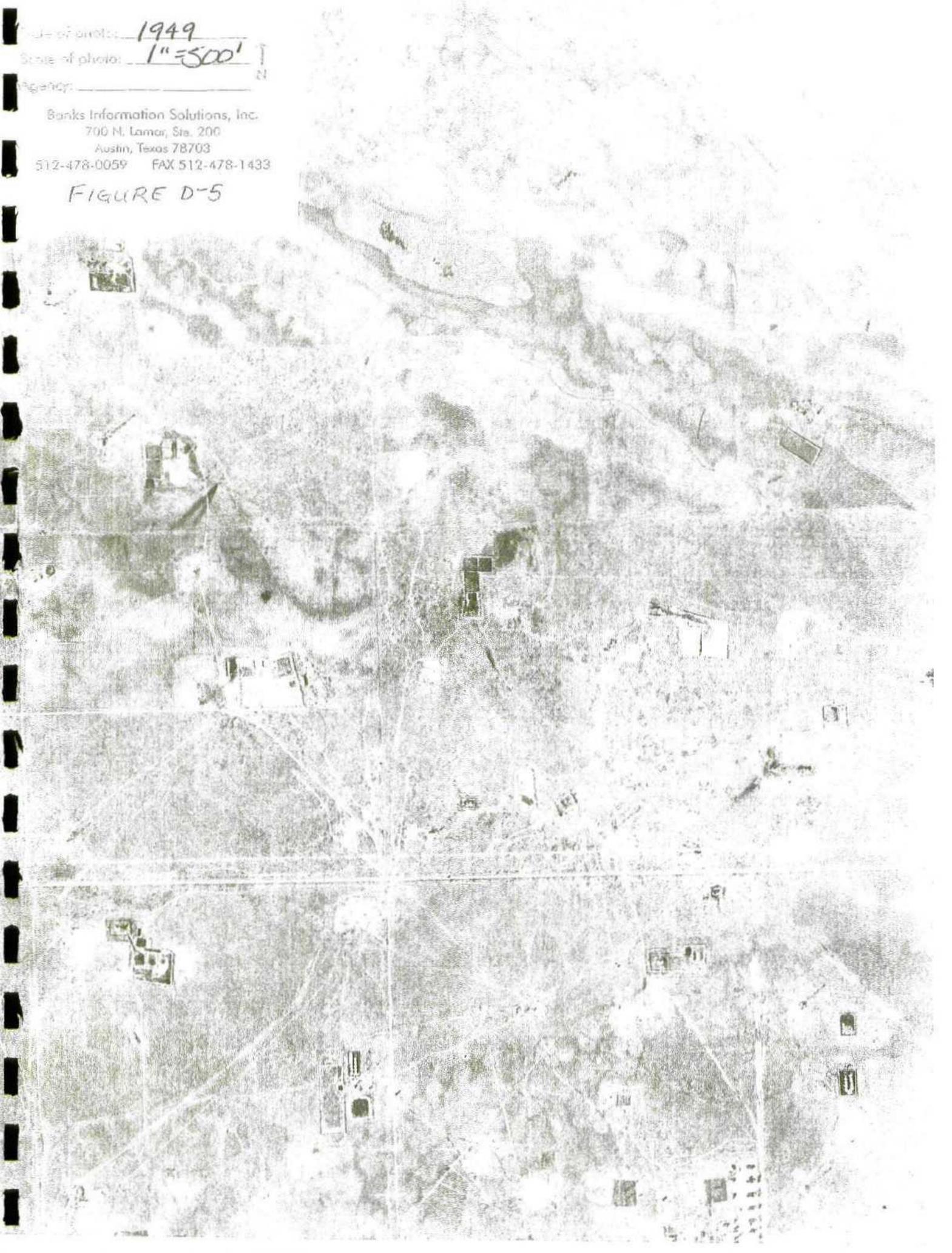
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FIGURE D-4

Date of photo: 1949
Scale of photo: 1" = 500'
Agency: _____

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FIGURE D-5

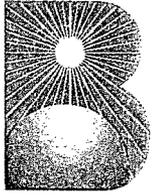


E

BROWN AND
CALDWELL

APPENDIX E

Current Water Well Search



Banks
Information
Solutions, Inc.

Water Well ReportTM

December 8, 2003

CLIENT

Brown & Caldwell, Inc.
1415 Louisiana Street, #2500
Houston, TX 77002

SITE

BJ Services Facility
Hobbs, New Mexico
Lea County
120803-038

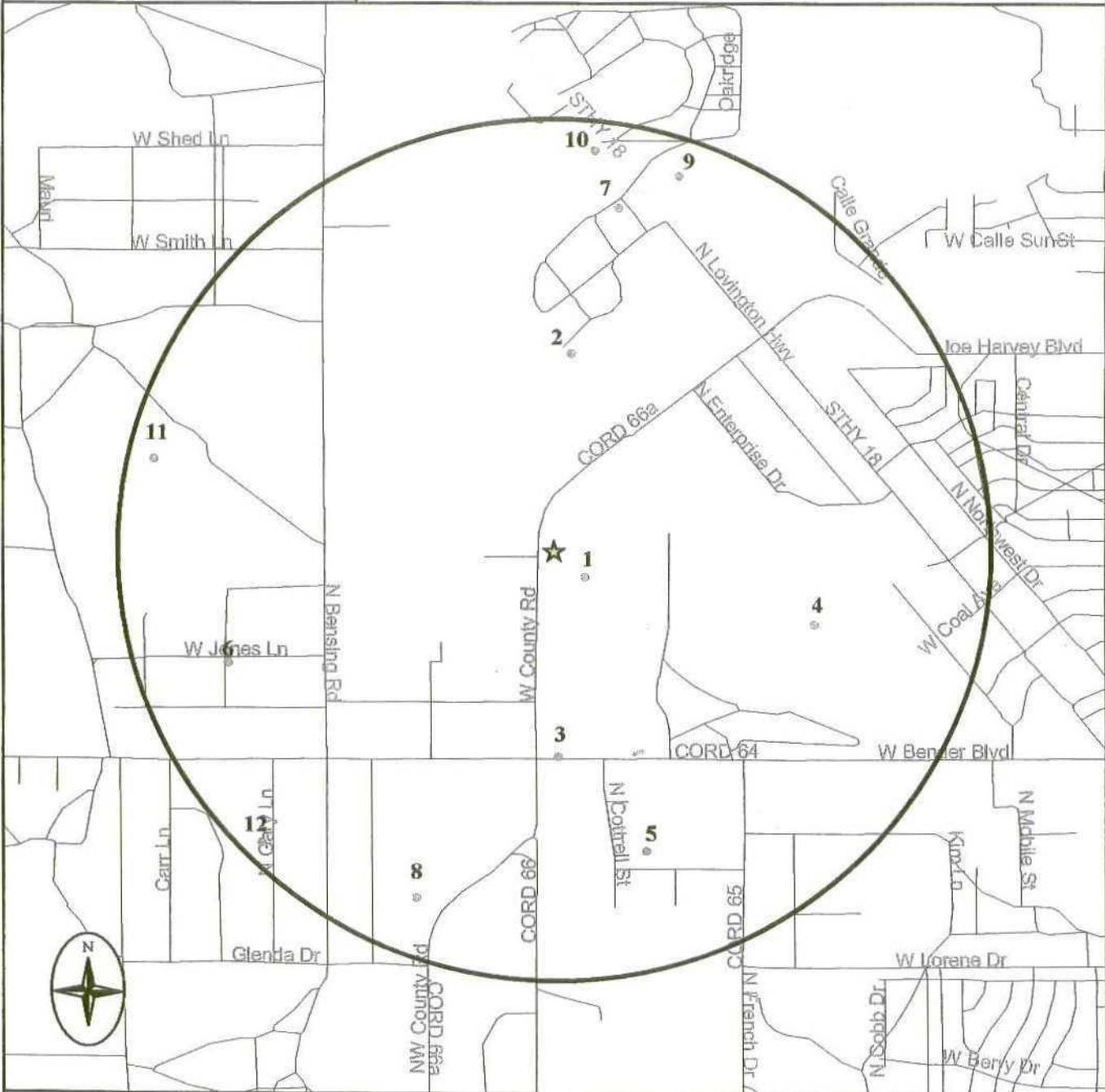
P.O. Box 12851, Capitol Station, Austin, TX 78711
700 N. Lamar, Suite 200 Austin, TX 78703
512.478.0059 FAX 512.478.1433 e-mail banks@banksinfo.com
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Banks
Information
Solutions, Inc.

Water Well Report™

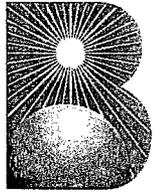
Map of Wells within One and One-Quarter Miles



- ★ Subject Site
- ⊙ Ground Water Wells (Cluster)
- Ground Water Well
- ✈ Airport
- Hospital
- Primary road
- Secondary and connecting road
- Local road
- Access road
- Water body
- Park
- State



Banks Information Solutions, Inc.
P.O. Box 12851, Capitol Station Austin, Texas 78711
700 N. Lamar, Suite 200 Austin, Texas 78703
512-478-0059 FAX 512-478-1433 E Mail: BANKS@BANKSINFO.COM
December 8, 2003



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Water Well Report TM

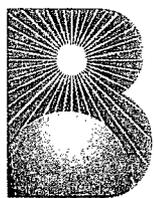
DETAILS

State ID	324356103100701	MAP ID 1
Banks ID	3502501465	
Owner Of Well	CITY OF EUNICE	
Type Of Well	Irrigation	
Depth Drilled	N/A '	
Completion Date	N/A	
Longitude	-103.168611111	
Latitude	32.7322222222	

State ID	L 04320	MAP ID 2
Banks ID	3502503683	
Owner Of Well	INC. DONNELLY DRILLING CO.	
Type Of Well	Industrial	
Depth Drilled	112 '	
Completion Date	11/10/1959	
Longitude	-103.169161	
Latitude	32.740158	

State ID	324333103101101	MAP ID 3
Banks ID	3502501442	
Owner Of Well	NOLEN, KEN, AND NOLEN CONSTRUCTIO	
Type Of Well	Domestic	
Depth Drilled	102 '	
Completion Date	4/26/1993	
Longitude	-103.169722222	
Latitude	32.7258333333	

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Water Well Report TM

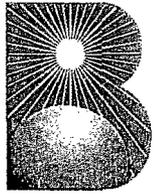
DETAILS

State ID	324350103093301	MAP ID
Banks ID	3502501458	4
Owner Of Well	CITY OF EUNICE	
Type Of Well	Unused	
Depth Drilled	130 '	
Completion Date	N/A	
Longitude	-103.159166667	
Latitude	32.73055555556	

State ID	324321103095801	MAP ID
Banks ID	3502501426	5
Owner Of Well	N/A	
Type Of Well	Unused	
Depth Drilled	N/A '	
Completion Date	N/A	
Longitude	-103.166111111	
Latitude	32.7225	

State ID	324345103110001	MAP ID
Banks ID	3502501455	6
Owner Of Well	JONES, CHARLES B.	
Type Of Well	Irrigation	
Depth Drilled	N/A '	
Completion Date	N/A	
Longitude	-103.183333333	
Latitude	32.72916666667	

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Water Well ReportTM

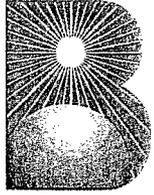
DETAILS

State ID	324443103100201	MAP ID
Banks ID	3502501501	7
Owner Of Well	STATE OF NEW MEXICO	
Type Of Well	Domestic	
Depth Drilled	100 '	
Completion Date	N/A	
Longitude	-103.167222222	
Latitude	32.74527777778	

State ID	324315103103201	MAP ID
Banks ID	3502501416	8
Owner Of Well	RYLANT, W.L.	
Type Of Well	Domestic	
Depth Drilled	N/A '	
Completion Date	N/A	
Longitude	-103.175555556	
Latitude	32.72083333333	

State ID	324447103095301	MAP ID
Banks ID	3502501506	9
Owner Of Well	STATE OF NEW MEXICO	
Type Of Well	Recreation	
Depth Drilled	120 '	
Completion Date	N/A	
Longitude	-103.164722222	
Latitude	32.74638888889	

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Water Well ReportTM

DETAILS

State ID	L 04686	MAP ID
Banks ID	3502503685	10
Owner Of Well	CACTUS DRILLING COMPANY	
Type Of Well	Industrial	
Depth Drilled	125 '	
Completion Date	8/3/1961	
Longitude	-103.168212	
Latitude	32.74728	

State ID	324411103111101	MAP ID
Banks ID	3502501477	11
Owner Of Well	HUSTON, H.G.	
Type Of Well	Stock	
Depth Drilled	N/A '	
Completion Date	N/A	
Longitude	-103.186388889	
Latitude	32.73638888889	

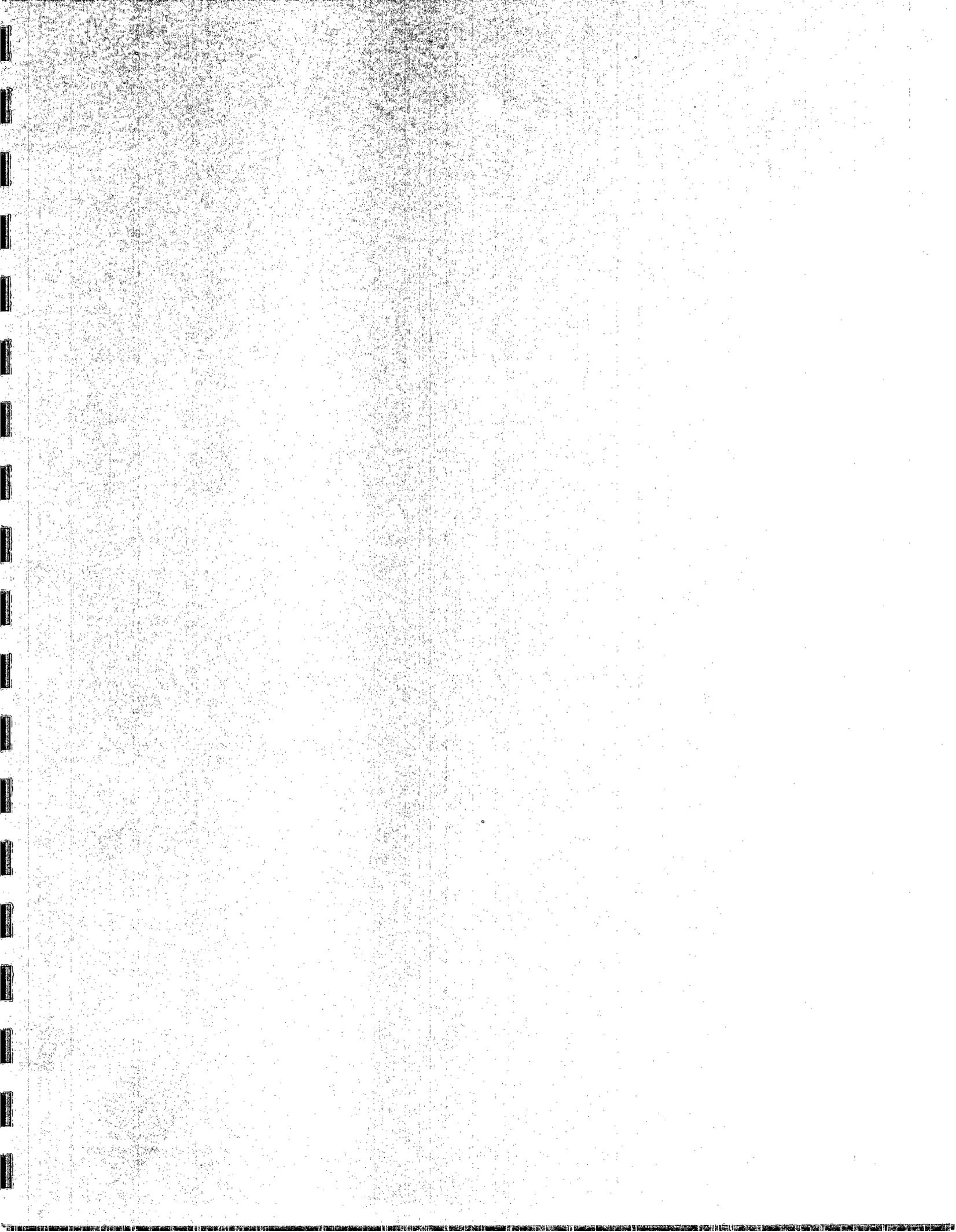
State ID	324322103105501	MAP ID
Banks ID	3502501430	12
Owner Of Well	N/A	
Type Of Well	N/A	
Depth Drilled	70 '	
Completion Date	N/A	
Longitude	-103.181944444	
Latitude	32.72277777778	

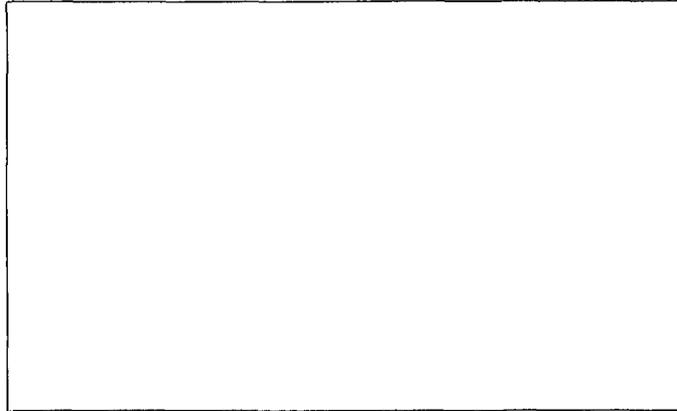
P.O. Box 12851, Capitol Station, Austin, TX 78711
 700 N. Lamar, Suite 200 Austin, TX 78703
 512.478.0059 FAX 512.478.1433 e-mail banks@banksinfo.com
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Water Well Report™ Research Mapping Protocol

Banks Information Solutions, Inc. Water Well Report™ is prepared from existing state water well databases and/or additional file data/records research conducted at the State Engineers Office located in Santa Fe, New Mexico. In New Mexico, water wells are located within a grid system using section, township, and range. The locations of these wells on the enclosed map were plotted using a GIS program, ArcView 3.2, with the aid of the section, township, and range of the wells provided by the drillers logs.

Banks Information Solutions, Inc. has performed a thorough and diligent search of all groundwater well information provided and recorded with the New Mexico State Engineers Office. All mapped locations are based on information obtained from the NMSEO. Although Banks performs quality assurance and quality control on all research projects, we recognize that any inaccuracies of the records and mapped well locations could possibly be traced to the appropriate regulatory authority or the actual driller. It may be possible that some water well schedules and logs have never been submitted to the regulatory authority by the water driller and, thus, may explain the possible unaccountability of privately drilled wells. It is uncertain if the above listing provides 100% of the existing wells within the area of review. Therefore, Banks Information Solutions, Inc. cannot fully guarantee the accuracy of the data or well location(s) of those maps and records maintained by the New Mexico State Engineer regulatory authorities.





**BROWN AND
CALDWELL**

Environmental Engineers & Consultants

**OCTOBER 2003 GROUNDWATER
SAMPLING REPORT
HOBBS, NEW MEXICO FACILITY**

BJ SERVICES COMPANY, U.S.A.

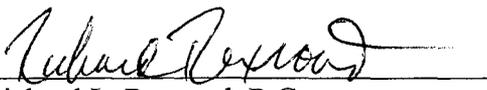
OCTOBER 29, 2003

**OCTOBER 2003 GROUNDWATER SAMPLING REPORT
HOBBS, NEW MEXICO FACILITY
BJ SERVICES COMPANY, U.S.A.**

Prepared for

BJ Services Company, U.S.A.
11211 FM 2920
Tomball, Texas 77375

BC Project Number: 12832.018


Richard L. Rexroad, P.G.
Project Manager

October 29, 2003

Brown and Caldwell
1415 Louisiana, Suite 2500
Houston, Texas 77002 - (713) 759-0999

P:\Wp\BJSERV\12832\107r.doc

"This report was prepared in accordance with the standards of the environmental consulting industry at the time it was prepared. It should not be relied upon by parties other than those for whom it was prepared, and then only to the extent of the scope of work which was authorized. This report does not guarantee that no additional environmental contamination beyond that described in this report exists at this site."

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2.2	Results of Groundwater Analyses	4
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APPENDICES

- A Groundwater Sampling Forms
- B Laboratory Analytical Reports

1.0 INTRODUCTION

Brown and Caldwell conducted a quarterly groundwater sampling event at the BJ Services Company, U.S.A. (BJ Services) facility located at 2708 West County Road in Hobbs, New Mexico on October 2, 2003. This report presents a description of the groundwater sampling field activities, a summary and evaluation of the analytical results, and an evaluation of remedial technologies applied at the facility. A groundwater potentiometric surface map and a hydrocarbon distribution map are included.

A layout of the facility is shown in Figure 1. The facility formerly operated an on-site fueling system. Subsurface impact near the former diesel fueling system was detected by the New Mexico Oil Conservation Division (NMOCD) during an on-site inspection on February 7, 1991. The fueling system was taken out of operation in July 1995. The NMOCD has required a quarterly groundwater monitoring program to assess the concentration of hydrocarbon constituents in groundwater as a result of the diesel fuel release.

A biosparging system was activated in November 1995 and expanded in March/April 1997 and February/March 1998 to remediate soil and groundwater at the former fuel island area of the facility. The biosparging system was deactivated on November 1, 2000 after achieving cleanup goals for groundwater. The confirmation soil sampling program specified in the NMOCD-approved Remedial Action Plan (RAP) for the facility was conducted in July 2001. The results of the confirmation soil sampling program were presented to NMOCD in the report for the June 2001 groundwater sampling event. In accordance with the RAP for the facility, four additional groundwater sampling events were conducted following the confirmation soil sampling event. Hydrocarbon concentrations in groundwater samples from applicable monitor wells remained below the target concentrations specified in the RAP during each of these sampling events, so a request to decommission the biosparging system was submitted to NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report for the facility.

BJ Services removed three field waste tanks from the facility on March 6-7, 1997. The ongoing groundwater monitoring program was expanded to address both the former fuel island and the former field waste tanks areas of the facility, as directed by NMOCD in correspondence dated January 21, 1999.

Table 1 presents a site chronology detailing the history of investigations into and the remediation of soil and groundwater impacts in the areas of the former fueling system and the former field waste tanks at the facility.

2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled seven monitor wells (MW-5, MW-10, MW-11A, MW-12D, MW-14, MW-15, and MW-16) at the facility on October 2, 2003 to determine the concentrations of dissolved-phase hydrocarbons and/or chloride in groundwater. The monitor well locations are shown in Figure 1. The following subsections describe the field activities conducted by Brown and Caldwell during the current groundwater sampling event and present the results from the associated groundwater analyses.

2.1 Groundwater Sampling Activities

Groundwater level measurements were obtained from all accessible monitor wells at the facility prior to purging and sampling the subset of wells listed above. Groundwater levels were measured to the nearest 0.01 foot with an electronic water-level indicator. Current and historical groundwater elevation data for each well are presented in Table 2. The groundwater elevation data presented in Table 2 indicate that groundwater levels have continued to decline in monitor wells at the facility since late 1995. A groundwater elevation map for October 2, 2003 is presented in Figure 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with hydraulic gradient ranging from 0.005 foot/foot (ft/ft) in the western portion of the facility to 0.009 ft/ft in the eastern portion of the groundwater monitoring area.

The monitor wells were purged with a submersible pump and previously unused downhole tubing or previously unused disposable bailers and clean, previously unused polyethylene rope. Three well volumes were purged from monitor wells MW-11A, MW-14, and MW-15. Monitor well MW-10 was purged dry after removal of 0.2 liters of groundwater (see Table 3).

Low flow/low stress purging was performed prior to sampling of monitor wells MW-5, MW-12D and MW-16 to maintain the water level at or near the static water level. Field parameter measurements for pH, specific conductivity, oxidation-reduction potential, dissolved oxygen, and temperature were collected during purging of these wells. Ferrous iron and dissolved oxygen

concentrations were measured in groundwater from monitor wells MW-5, MW-10, MW-11A and MW-12D upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix A and are summarized in Table 3.

Groundwater samples were obtained directly from the discharge line of the submersible pump or by pouring recovered water from a bailer into laboratory-prepared, clean glass or plastic containers, sealed with Teflon[®]-lined lids, labeled, and placed on ice in an insulated cooler for delivery to Southern Petroleum Laboratory in Houston, Texas for analysis using standard chain-of-custody procedures.

Field measurement equipment was decontaminated prior to and following each use. Decontamination procedures consisted of washing with distilled water and a non-phosphate detergent, then rinsing with distilled water. Purge and decontamination waters were discharged to an on-site water reclamation system at the BJ Services facility.

2.2 Results of Groundwater Analyses

Groundwater samples from monitor wells MW-14, MW-15, and MW-16 were analyzed for chloride content using Method E325.3. Table 4 presents current and cumulative results for chloride analyses performed on groundwater samples collected at the facility. The current chloride concentration in monitor well MW-14 remains less than the New Mexico Water Quality Control Commission (NMWQCC) chloride standard of 250 milligrams per liter (mg/L). The chloride concentrations in monitor wells MW-15 and MW-16 exceed the NMWQCC chloride standard.

Groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12D were analyzed for diesel- and gasoline-range total petroleum hydrocarbons (TPH-D and TPH-G) using EPA Method SW-8015B and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method SW-8021B. Current and cumulative analytical results for BTEX constituents, TPH-D, and TPH-G are presented in Table 5. Figure 3 presents a hydrocarbon distribution map for October 2,

2003. All BTEX concentrations measured in groundwater during the current sampling event were less than applicable NMWQCC standards.

Analysis of groundwater from monitor wells MW-5, MW-10, MW-11A, and MW-12D for nitrate and sulfate (Method E300.0), dissolved methane (Method RSK 147), and alkalinity (Method E310.1) was performed to evaluate the potential for natural attenuation of hydrocarbons at the facility. The current and historical results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12, and MW-12D are presented in Table 6.

The laboratory analytical reports and chain-of-custody documentation for the groundwater samples collected during the current sampling event are provided in Appendix B.

3.0 EVALUATION OF REMEDIAL TECHNOLOGIES

The following subsections present evaluations of the remedial technologies applied at the former fueling system and former field waste tanks areas of the BJ Services facility in Hobbs, New Mexico.

3.1 Biosparging System at the Former Fueling System Area

Brown and Caldwell recommended installation of a biosparging system at the former fueling system area of the facility in the Remedial Action Plan (RAP) submitted to the NMOCD in May 1994. The NMOCD approved the RAP on August 11, 1994. The biosparging system was installed in August 1995, with expansions completed in April 1997 and March 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in applicable former fueling system area monitor wells. In accordance with the RAP, confirmation soil sampling activities were conducted at the former fueling system area in July 2001 to verify the effectiveness of the biosparging system in remediating vadose zone soils. The analytical results for these soil samples, as discussed in the report for the June 2001 groundwater sampling event, indicated that remediation goals for soil in this area had been achieved.

Following the confirmation soil sampling activities, hydrocarbon concentrations in groundwater remained below target cleanup goals for four successive quarters. In accordance with the RAP for the facility, a request to decommission the biosparging system was submitted to the NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report.

3.2 Natural Attenuation at the Former Field Waste Tanks Area

Natural attenuation is the primary remediation mechanism for the dissolved-phase hydrocarbon plume located in the area of the former field waste tanks (see Figure 1).

Plume behavior is the primary evidence of natural attenuation. Secondary evidence of natural attenuation can be obtained by the collection and evaluation of data relating to the concentrations of indigenous electron acceptors such as dissolved oxygen, nitrate, sulfate, and carbon dioxide. A plume is shrinking when the rate of hydrocarbon loading from a source area is less than the rate of natural degradation of hydrocarbons. Plume shrinkage in the absence of aggressive remediation is indicative of the occurrence of natural attenuation processes. Conversely, a plume is expanding if the rate of hydrocarbon loading from a source area is greater than the rate of natural degradation of hydrocarbons through natural attenuation processes.

The former field waste tanks in the eastern portion of the facility were removed in March 1997. Concentrations of total BTEX in monitor wells in the area of the former field waste tanks have been generally stable or declining subsequent to removal of these tanks. Sporadic increases in total BTEX concentrations between quarterly sampling events have been observed in monitor wells in this area since March 1997, however. These increases may be attributed to sporadic loading rates from the vadose zone in excess of the rate of natural attenuation in the area. The following subsections present primary and secondary evidence of natural attenuation of hydrocarbons in groundwater at the former field waste tanks area of the facility.

3.2.1 Primary Evidence

The benzene concentration in monitor well MW-10 has decreased from a maximum of 1.3 mg/L in August 1995 (prior to removal of the field waste tanks) to less than the NMWQCC standard of 0.01 mg/L for BTEX in the 11 applicable groundwater sampling events from December 2000 to October 2003. Benzene has not been detected in monitor well MW-10 since September 2001. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-10 were non-detect during the current sampling event and have generally been non-detect since December 2000. Detectable concentrations of TPH-D in monitor well MW-10 have ranged from 0.3 mg/L to 3.4 mg/L. TPH-D has not been detected in this well during the three most recent applicable sampling events, and TPH-G has not been detected during the last nine quarterly groundwater sampling events.

Benzene concentrations at the monitor well MW-11/11A location have generally decreased from a maximum of 0.970 mg/L in December 1996 (prior to removal of the field waste tanks). The current benzene concentration of 0.0037 mg/L in monitor well MW-11A is less than the NMWQCC standard for benzene. Benzene concentrations in MW-11A have been less than the NMWQCC standard for benzene during nine of the ten groundwater sampling events conducted from June 2001 through October 2003. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-11A have been at low to typically non-detectable concentrations since March 1998. Detectable concentrations of TPH-D in monitor well MW-11A have ranged from 0.28 mg/L to 2.2 mg/L. TPH-D has not been detected in monitor well MW-11A during the last four quarterly sampling events, and TPH-G has not been detected during the last two sampling events.

Concentrations of each BTEX constituent at the monitor well MW-12/12D location have been below analytical detection limits for the past 10 sampling events. TPH-D has not been detected at this location since September 2002, and TPH-G has not been detected since June 2001.

3.2.2 Secondary Evidence

The following lines of geochemical evidence can also be used to suggest that intrinsic bioremediation (an important natural attenuation mechanism) of dissolved-phase hydrocarbons is occurring in the area of the former field waste tanks.

1. Dissolved oxygen may be utilized as an electron acceptor during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

Groundwater samples from monitor wells MW-10 and MW-11A were collected using bailers during the current sampling event. The use of bailers may cause groundwater samples to become oxygenated, thus precluding a meaningful comparison of dissolved oxygen data.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility when down-hole pumps were utilized has indicated that dissolved oxygen concentrations were typically depressed in hydrocarbon-impacted

monitor wells relative to non-impacted wells at the facility (see the June 2001 Groundwater Sampling Report for BJ Services Hobbs, New Mexico Facility, for example).

2. Nitrate may be utilized as an electron acceptor during intrinsic bioremediation after dissolved oxygen is depleted. Therefore, nitrate concentrations may be depressed in areas where intrinsic bioremediation is occurring.

Nitrate was detected at a concentration of 2.5 mg/L in background monitor well MW-5 during the current sampling event. Although minimal to no hydrocarbon impact was detected at former field waste tanks area wells MW-10, MW-11A, and MW-12D during the current sampling event (see Table 5), nitrate was detected in monitor wells MW-10 and MW-11A at respective concentrations of 0.11 mg/L and 1.4 mg/L; nitrate was not detected in monitor well MW-12D. The depressed to non-detectable nitrate concentrations observed during the current sampling event at former field waste tanks area wells MW-10, MW-11A, and MW-12D relative to the background nitrate concentration at the facility are likely due to residual effects of hydrocarbons in these areas.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors may become active. Ferrous iron is the reduction product of ferric iron, a common electron acceptor. Therefore, ferrous iron concentrations should increase in areas where intrinsic bioremediation is occurring.

The elevated ferrous iron concentrations in monitor wells MW-10, MW-11A and MW-12D relative to background well MW-5 suggest that ferric iron has been used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area of the facility.

4. Microbes that utilize sulfate may become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through the use of sulfate as an electron acceptor.

During the current sampling event, sulfate concentrations in the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D ranged from 140 mg/L to 360 mg/L, whereas the sulfate concentration in background monitor well MW-5 was measured at 100 mg/L. The fact that sulfate concentrations in the former source area monitor wells are greater than the sulfate concentration in the background monitor well suggests that sulfate is not being utilized as an electron acceptor in the former field waste tanks area.

5. Methane is a reaction product generated during utilization of carbon dioxide as an electron acceptor, so its concentration may increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.

Dissolved methane was not detected in background monitor well MW-5 or in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D during the current groundwater sampling event. These data indicate that carbon dioxide is no longer being utilized as an electron acceptor at the former field waste tanks area of the facility.

In conclusion, current nitrate and historic dissolved oxygen data suggest that these electron acceptors have been utilized during intrinsic bioremediation processes in the vicinity of the former field waste tanks area of the facility. Data for ferrous iron also indicates that utilization of ferric iron as an electron acceptor has occurred in this area of the facility.

It is recommended that monitoring for natural attenuation evaluation parameters continue in former field waste tank area monitor wells MW-10, MW-11A, and MW-12D and in the background well, MW-5. Redox potential, dissolved oxygen content, ferrous iron content, and alkalinity serve as good indicators of the occurrence of intrinsic bioremediation of hydrocarbons, so testing for these parameters in all wells to be sampled during upcoming groundwater monitoring events is recommended.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the current groundwater sampling event at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Current benzene concentrations in all former field waste tanks area monitor wells are less than the NMWQCC standard of 0.01 mg/L for benzene. There were no detections of toluene, ethylbenzene, xylenes, TPH-D, or TPH-G in these wells during the current groundwater sampling event. Based on generally decreasing hydrocarbon concentrations in these monitor wells over time and as substantiated by geochemical data, natural attenuation appears to have substantially reduced hydrocarbon concentrations in the vicinity of the former field waste tanks that were removed in March 1997.
- The chloride concentration measured in downgradient monitor well MW-14 during the current 2003 groundwater sampling event remains less than the NMWQCC standard of 250 mg/L. The chloride concentrations in monitor wells MW-15 and MW-16 exceed the NMWQCC chloride standard, however.

4.2 Recommendations

- Develop a plan to investigate and remediate off-site chloride impact to groundwater.
- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-10, MW-11A, and MW-12D. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters. If BTEX constituent concentrations in all of these wells remain less than applicable NMWQCC standards and TPH-D and TPH-G concentrations decrease or remain relatively constant for four consecutive quarters, then closure for the former field waste tanks area is recommended.
- Upon approval from the NMOCD, decommission the biosparging system at the former fuel island area.

DISTRIBUTION

October 2003 Groundwater Sampling Report
BJ Services Company, U.S.A.
Hobbs, New Mexico

October 29, 2003

Final Distribution as follows:

1 copy to: State of New Mexico
Energy, Minerals, and Natural Resources Dept.
Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Attention: Mr. Wayne Price

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Oil Conservation Division, Hobbs District Office
1625 N. French Dr.
Post Office Box 1980
Hobbs, New Mexico 88240

Attention: Mr. Chris Williams

1 copy to: BJ Services Company, U.S.A.
2708 West County Road
Hobbs, New Mexico 88240

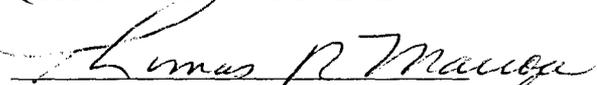
Attention: John Adcock

1 copy to: BJ Services Company, U.S.A.
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Tomball, Texas 77375

Attention: Ms. Jo Ann Cobb

1 copy to: Brown and Caldwell Project File

QUALITY CONTROL REVIEWER


Lynn M. Wright, P.G.
Supervising Geologist

Figures

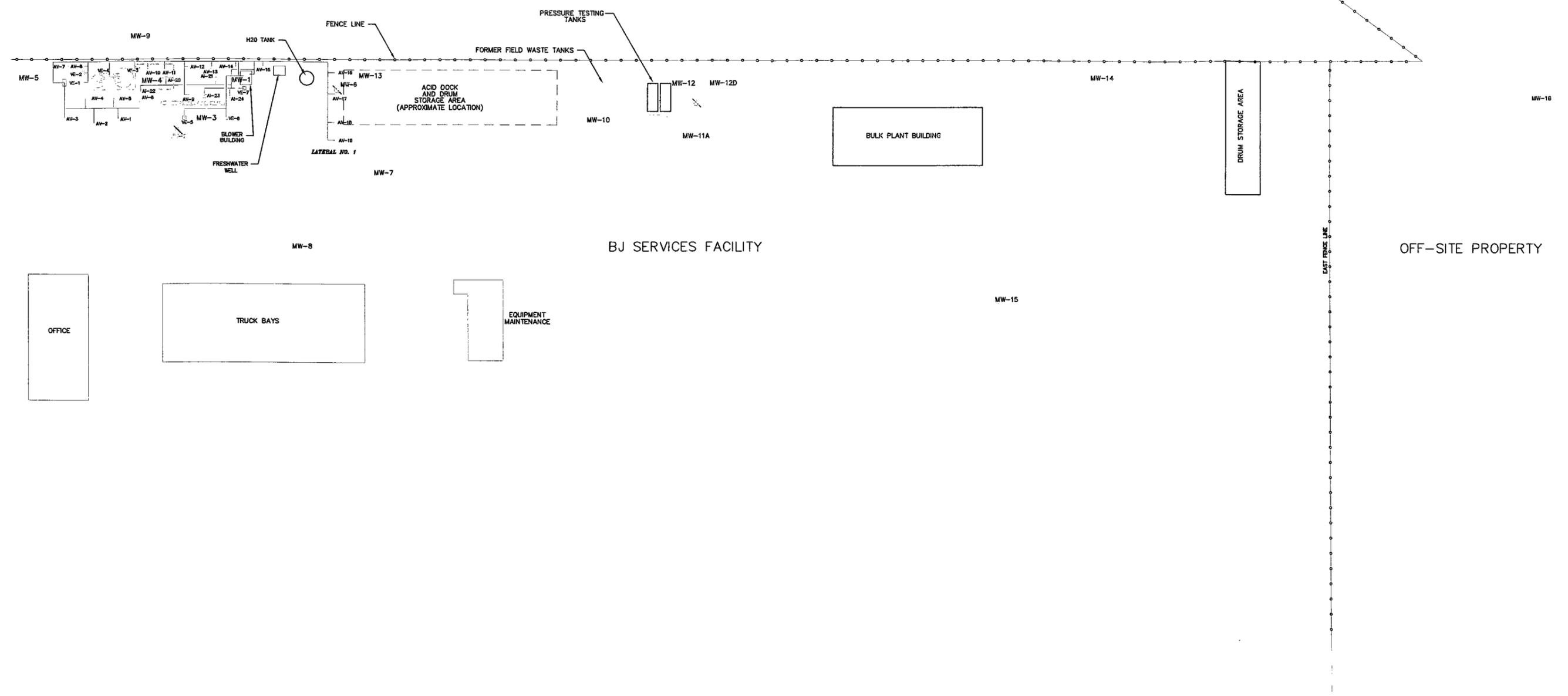
BROWN AND
CALDWELL

FIGURES



WEATHERFORD ENTERRA

DW-4
(APPROXIMATE LOCATION)



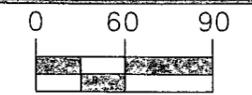
BJ SERVICES FACILITY

OFF-SITE PROPERTY

BROWN AND CALDWELL
HOUSTON, TEXAS

SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL



SCALE: 1" = 90'

DRAWN BY: _____ DATE: _____

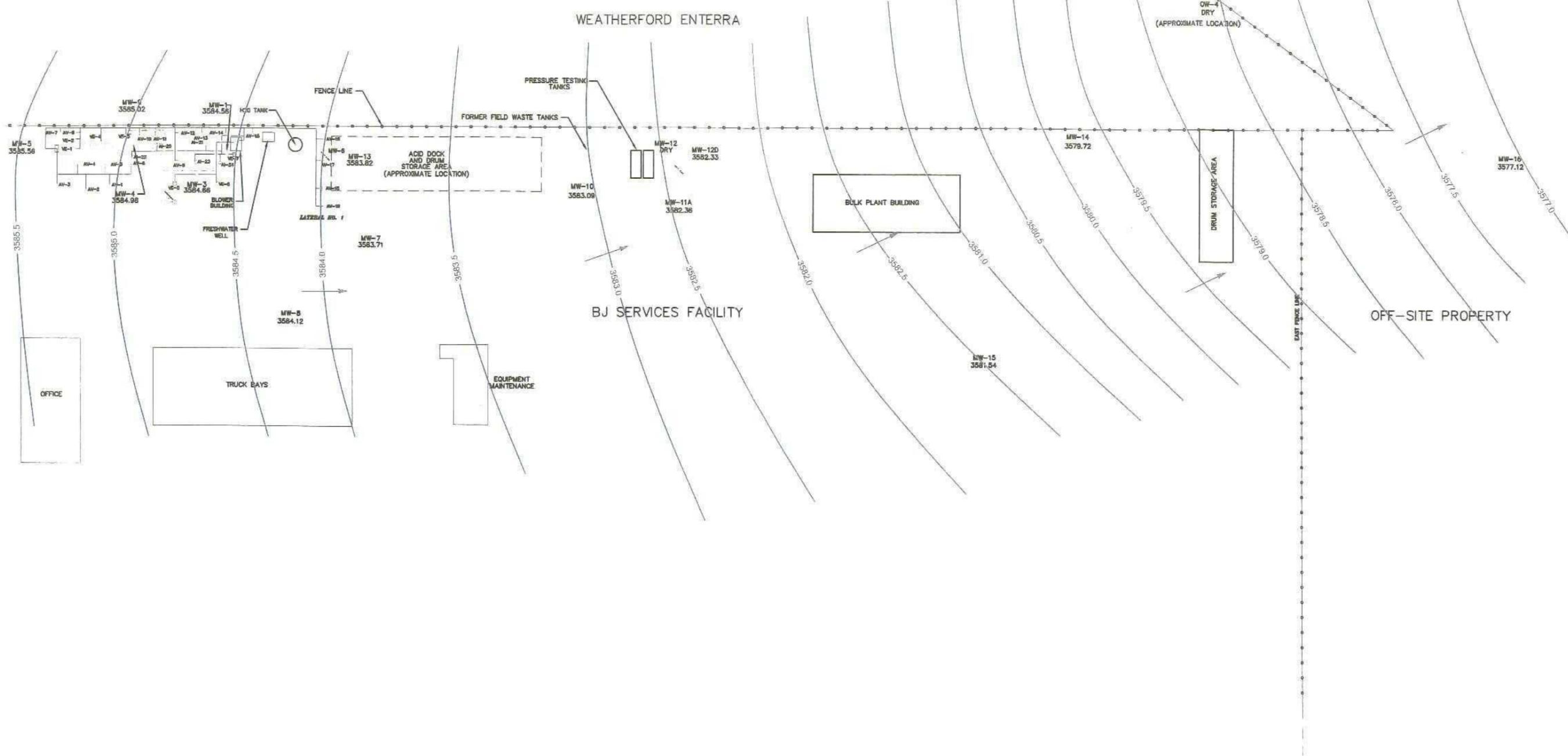
CHK'D BY: _____ DATE: _____

APPROVED: _____ DATE: _____

LEGEND

- MW-3 EXISTING MONITOR WELL LOCATION
-  BIOSPARGING SYSTEM
-  MW-2 MONITOR WELL (PLUGGED AND ABANDONED)

TITLE	SITE MAP	DATE	9/11/00
CLIENT	BJ SERVICES COMPANY, U.S.A.	PROJECT NUMBER	12832.018
SITE	HOBBS, NEW MEXICO	FIGURE NUMBER	1



BROWN AND CALDWELL
HOUSTON, TEXAS

SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

0 60 90

SCALE: 1" = 90'

DRAWN BY: _____ DATE: _____

CHK'D BY: _____ DATE: _____

APPROVED: _____ DATE: _____

3584.66

LEGEND

MW-3 EXISTING MONITOR WELL LOCATION WITH GROUNDWATER ELEVATION (FEET AMSL)

□ T BIOSPARGING SYSTEM

MW-2 MONITOR WELL (PLUGGED AND ABANDONED)

→ GROUNDWATER FLOW DIRECTION

TITLE
GROUNDWATER ELEVATION MAP FOR OCTOBER 2, 2003

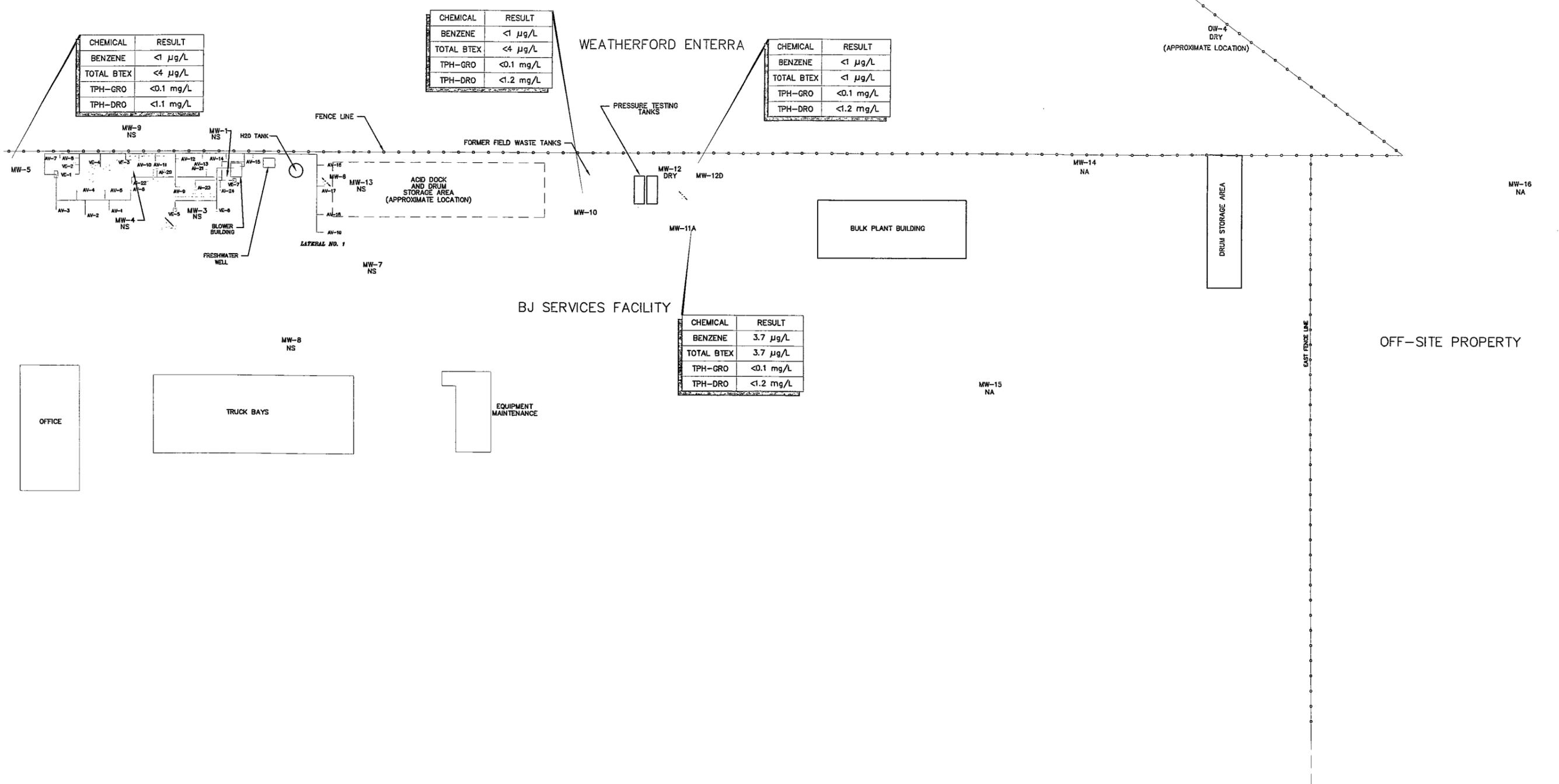
CLIENT
BJ SERVICES COMPANY, U.S.A.

SITE
HOBBS, NEW MEXICO

DATE
10/15/03

PROJECT NUMBER
12832.018

FIGURE NUMBER
2



CHEMICAL	RESULT
BENZENE	<1 µg/L
TOTAL BTEX	<4 µg/L
TPH-GRO	<0.1 mg/L
TPH-DRO	<1.1 mg/L

CHEMICAL	RESULT
BENZENE	<1 µg/L
TOTAL BTEX	<4 µg/L
TPH-GRO	<0.1 mg/L
TPH-DRO	<1.2 mg/L

CHEMICAL	RESULT
BENZENE	<1 µg/L
TOTAL BTEX	<1 µg/L
TPH-GRO	<0.1 mg/L
TPH-DRO	<1.2 mg/L

CHEMICAL	RESULT
BENZENE	3.7 µg/L
TOTAL BTEX	3.7 µg/L
TPH-GRO	<0.1 mg/L
TPH-DRO	<1.2 mg/L

BROWN AND CALDWELL
HOUSTON, TEXAS

SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

0 60 90

SCALE: 1" = 90'

DRAWN BY: CLK DATE 9/00

CHK'D BY: _____ DATE _____

APPROVED: CLK DATE 10/03

LEGEND

MW-3 EXISTING MONITOR WELL LOCATION

□ BIOSPARGING SYSTEM

— MONITOR WELL (PLUGGED AND ABANDONED)

MW-2

→ GROUNDWATER FLOW DIRECTION

TITLE	HYDROCARBON DISTRIBUTION MAP FOR OCTOBER 2, 2003	DATE	10/28/03	
CLIENT	BJ SERVICES COMPANY, U.S.A.		PROJECT NUMBER	12832.018
SITE	HOBBS, NEW MEXICO		FIGURE NUMBER	3

Tables

BROWN AND
CALDWELL

TABLES

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
February 7, 1991	The New Mexico Oil Conservation Division (NMOCD) conducted an on-site inspection, including sampling of the on-site fresh water well.
August 6, 1991	The NMOCD requested submittal of an investigation work plan.
September 5, 1991	Roberts/Schornick and Associates, Inc. (RSA) submitted Technical Work Plan for soil and groundwater investigation to the NMOCD.
November 15, 1991	The NMOCD approved the Technical Work Plan submitted by RSA.
December 16, 1991	RSA sampled the fresh water well. The analytical results were submitted to the NMOCD.
February 21, 1992	Western sampled the fresh water well. The analytical results were submitted to the NMOCD.
July 29 - August 10, 1992	Brown and Caldwell conducted a soil and groundwater investigation according to the approved Technical Work Plan. The investigation included drilling and sampling nine soil borings, sampling six hand-augured soil borings, installation and sampling of five monitor wells, and sampling of the fresh water well.
October 12, 1992	Brown and Caldwell submitted a Soil and Groundwater Investigation Report to the NMOCD.
December 2, 1992	The NMOCD requested the installation and sampling of four additional monitor wells, including a monitor well on an adjacent property.
April 13, 1993	Brown and Caldwell conducted a vapor extraction pilot test on the existing monitor wells.
April 15, 1993	Brown and Caldwell installed off-site monitor well MW-9.
April 22, 1993	Brown and Caldwell sampled off-site monitor well MW-9.
May 27, 1993	Brown and Caldwell submitted a letter report documenting the installation and sampling of off-site monitor well MW-9 to the NMOCD.
June 2, 1993	Brown and Caldwell conducted a short-term aquifer test using the fresh water well at the facility.
June 8, 1993	USTank Management, Inc. conducted a non-volumetric tank system tightness test on the diesel and unleaded gasoline aboveground storage tanks at the facility.
June 21, 1993	ENSR Consulting and Engineering (ENSR), the environmental consultant for the adjacent property owner on which off-site well MW-9 is located, submitted a request to sample monitor well MW-9.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

July 15, 1993	ENSR split a groundwater sample collected from monitor well MW-9 with Brown and Caldwell.
July 30, 1993	USTank Management, Inc. submitted a tank tightness test report to Brown and Caldwell. The report indicated that both tanks and their associated piping passed.
August 16-19, 1993	Brown and Caldwell installed two additional downgradient monitor wells. Brown and Caldwell sampled each of the existing and newly installed monitor wells.
January 26, 1994	Brown and Caldwell performed a groundwater monitoring event; the existing monitor wells and the fresh water well were purged and sampled. The groundwater samples were analyzed for BTEX.
May 6, 1994	A Remedial Action Plan (RAP) was submitted to the NMOCD.
August 11, 1994	The RAP was approved by the NMOCD.
May 3, 1995	Brown and Caldwell conducted the May 1995 groundwater sampling event.
July 31, 1995	Brown and Caldwell conducted the July 1995 groundwater sampling event.
August 2-9, 1995	Installation of the biosparging system was initiated. Nineteen combined injection/extraction wells and three vacuum extraction wells were installed.
August 14-26, 1995	Remedial Construction Services, Inc. (RCS) constructed the initial design of the biosparging system.
September 19, 1995	Operation of the extraction portion of the biosparging system commenced.
November 13, 1995	Operation of the injection portion of the biosparging system commenced.
November 14, 1995	Brown and Caldwell conducted the November 1995 groundwater sampling event.
February 23, 1996	Brown and Caldwell conducted the February 1996 groundwater sampling event.
May 31, 1996	Brown and Caldwell conducted the May 1996 groundwater sampling event.
August 23, 1996	Brown and Caldwell conducted the August 1996 groundwater sampling event.
December 2, 1996	Brown and Caldwell conducted the December 1996 groundwater sampling event.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

March 6-7, 1997	BJ Services removed three field waste tanks and associated hydrocarbon-impacted soil.
March 12, 1997	Brown and Caldwell conducted the March 1997 groundwater sampling event.
March 14, 1997	Vapor extraction well VE-4 was installed.
April 1997	Vapor extraction well VE-4 was connected to the vapor extraction system.
June 12, 1997	Brown and Caldwell conducted the June 1997 groundwater sampling event.
September 11-12, 1997	Brown and Caldwell conducted the September 1997 groundwater sampling event.
December 10, 1997	Brown and Caldwell conducted the December 1997 groundwater sampling event.
February 3-14, 1998	Air injection wells AI-20 through AI-24, vapor extraction wells VE-5 through VE-7, and monitor wells MW-11A and MW-12 were installed.
February 19, 1998	Operation of previously existing injection wells was suspended in preparation for start-up of new injection wells AI-20 through AI-24.
March 10, 1998	Operation of new air injection wells AI-20 through AI-24 and new vapor extraction wells VE-5 through VE-7 commenced.
March 23-24, 1998	Brown and Caldwell conducted the March 1998 groundwater sampling event.
March 24, 1998	Operation of previously existing injection wells and vapor extraction wells resumed.
June 23, 1998	Brown and Caldwell conducted the June 1998 groundwater sampling event.
September 30, 1998	Brown and Caldwell conducted the September 1998 groundwater sampling event.
December 9-10, 1998	Brown and Caldwell conducted the December 1998 groundwater sampling event.
January 21, 1999	The NMOCD requested submittal of a work plan by March 22, 1999 to perform additional groundwater delineation in the area of the former field waste tanks and the former AST/MW-6 area.
March 9-10, 1999	Brown and Caldwell conducted the March 1999 groundwater sampling event.
March 19, 1999	Brown and Caldwell submitted the work plan for groundwater delineation activities that was requested by the NMOCD.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

May 19, 1999	The NMOCD approved the groundwater delineation work plan.
June 10, 1999	Brown and Caldwell performed sampling of existing monitor wells for the June /July 1999 groundwater sampling event.
July 2, 1999	Brown and Caldwell completed plugging and abandonment of monitor wells MW-2, MW-6, and MW-11; installed and developed monitor wells MW-12D and MW-13; and sampled monitor wells MW-12D and MW-13 to complete the June/July 1999 groundwater sampling event.
July 14, 1999	Brown and Caldwell redirected air discharge from the shallow injection well injection system to Lateral No. 1 and optimized air flow to injection wells AI-16 and AI-17 to apply increased remedial pressure to the eastern portion of the west plume.
September 13-14, 1999	Brown and Caldwell conducted the September 1999 groundwater sampling event.
December 9, 1999	Brown and Caldwell conducted the December 1999 groundwater sampling event.
March 9-10, 2000	Brown and Caldwell conducted the March 2000 groundwater sampling event and shut off air flow to biosparging system Lateral Nos. 4S, 5S, 6S, and 7S.
June 8, 2000	Brown and Caldwell conducted the June 2000 groundwater sampling event.
September 13, 2000	Brown and Caldwell conducted the September 2000 groundwater sampling event.
November 1, 2000	Brown and Caldwell deactivated the biosparging system.
December 7, 2000	Brown and Caldwell conducted the December 2000 groundwater sampling event.
January 2001	Brown and Caldwell installed and sampled monitor wells MW-14 and MW-15.
March 8-9, 2001	Brown and Caldwell conducted the March 2001 groundwater sampling event.
June 21-22, 2001	Brown and Caldwell conducted the June 2001 groundwater sampling event.
July 23, 2001	Brown and Caldwell collected soil samples from four soil borings installed at the former fueling system area of the facility to confirm the effectiveness of the biosparging system in remediating hydrocarbon impact to soil, as specified in the NMOCD-approved RAP.
September 10, 2001	Brown and Caldwell conducted the September 2001 groundwater sampling event.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

December 6, 2001	Brown and Caldwell conducted the December 2001 groundwater sampling event.
February 26, 2002	Brown and Caldwell repaired the crushed well completion on monitor well MW-10.
February 28, 2002	NMOCD requested an evaluation of chloride content of groundwater at the facility.
March 11-12, 2002	Brown and Caldwell conducted the March 2002 groundwater sampling event. Groundwater samples from all water-producing wells at the facility were analyzed for chloride content.
May 21, 2002	Brown and Caldwell submitted the report for the March 2002 groundwater sampling event, including an evaluation of chloride content of groundwater at the facility and a recommendation for installation of a downgradient off-site well (MW-16) to replace off-site well OW-4, which has gone dry.
June 17-18, 2002	Brown and Caldwell conducted the June 2002 groundwater sampling event.
September 16, 2002	Brown and Caldwell conducted the September 2002 groundwater sampling event.
November 11, 2002	Brown and Caldwell submitted the June 2002 Groundwater Sampling Report and Biosparging System Closure Report.
January 9, 2003	Brown and Caldwell conducted the January 2003 groundwater sampling event.
March 6, 2003	Brown and Caldwell conducted the March 2003 groundwater sampling event.
May 13, 2003	Brown and Caldwell installed monitor well MW-16 at a location to the west of the facility.
June 19, 2003	Brown and Caldwell initiated the June 2003 groundwater sampling event.
August 22, 2003	Brown and Caldwell completed the June 2003 groundwater sampling event.
October 2, 2003	Brown and Caldwell conducted the October 2003 groundwater sampling event.

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-1	3,647.53	8/10/1992	53.22	0.00	3,594.31	(1)
		2/9/1993	53.03	0.00	3,594.50	
		8/18/1993	53.10	0.00	3,594.43	
		1/26/1994	53.31	0.00	3,594.22	
		5/3/1995	54.64	0.20	3,593.05	(2)
		7/31/1995	54.14	0.00	3,593.39	
		11/14/1995	53.69	0.00	3,593.84	
		2/23/1996	54.32	0.00	3,593.21	
		5/31/1996	54.14	0.00	3,593.39	
		8/23/1996	56.17	0.00	3,591.36	
		12/2/1996	55.27	0.00	3,592.26	
		3/12/1997	55.70	0.27	3,592.05	
		6/12/1997	55.08	0.02	3,592.47	
		9/12/1997	55.64	0.51	3,592.31	
		12/10/1997	55.46	0.00	3,592.07	
		3/24/1998	55.81	0.00	3,591.72	PSH Sheen
		6/23/1998	56.38	0.06	3,591.20	PSH Sheen
		9/30/1998	56.82	0.00	3,590.71	PSH Sheen
		12/9/1998	57.05	0.00	3,590.48	
		3/10/1999	57.45	0.00	3,590.08	
		6/10/1999	58.02	0.00	3,589.51	
		7/2/1999	57.90	0.00	3,589.63	
		9/14/1999	58.14	0.00	3,589.39	
		12/9/1999	-	-	-	
		3/9/2000	58.99	0.00	3,588.54	(3)
		06/00	-	-	-	
		09/00	-	-	-	
		12/7/00	-	-	-	
		3/8/2001	60.35	0.00	3,587.18	
		6/21/01	60.99	0.00	3,586.54	
9/10/01	61.17	0.00	3,586.36			
12/6/2001		not measured				
03/11/02		62.11	0.00	3,585.42		
6/17/02		62.53	0.00	3,585.00		
9/16/2002		62.43	0.00	3,585.10		
1/9/2003		62.61	0.00	3,584.92		
3/6/2003		62.72	0.00	3,584.81		
6/19/2003		-	-	-	(3) - well not located	
		10/2/2003	62.97	0.00	3,584.56	
MW-2	3,644.84	8/10/1992	52.82	0.00	3,592.02	(1)
		2/9/1993	49.60	0.00	3,595.24	
		8/18/1993	49.71	0.00	3,595.13	
		1/26/1994	49.97	0.00	3,594.87	
		5/3/1995	-	-	-	(4),(5)
MW-3	3,645.00	8/10/1992	52.99	0.00	3,592.01	(1)
		2/9/1993	52.72	0.00	3,592.28	
		8/18/1993	52.82	0.00	3,592.18	
		1/26/1994	53.05	0.00	3,591.95	
		5/3/1995	54.31	0.00	3,590.69	
		7/31/1995	51.24	0.00	3,593.76	
		11/14/1995	51.10	0.00	3,593.90	
		2/23/1996	51.68	0.00	3,593.32	
		5/31/1996	51.45	0.00	3,593.55	
		8/23/1996	51.55	0.00	3,593.45	
		12/2/1996	52.23	0.00	3,592.77	
		3/12/1997	52.67	0.00	3,592.33	
		6/12/1997	52.68	0.00	3,592.32	
		9/11/1997	52.71	0.00	3,592.29	
		12/10/1997	52.89	0.00	3,592.11	
		3/23/1998	53.22	0.00	3,591.78	
		6/23/1998	53.66	0.00	3,591.34	
9/30/1998	54.06	0.00	3,590.94			
12/9/1998	54.36	0.00	3,590.64			
3/10/1999	54.72	0.00	3,590.28			
6/10/1999	55.17	0.00	3,589.83			
7/2/1999	55.15	0.00	3,589.85			

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-3 cont.	3,645.00	9/14/1999	55.42	0.00	3,589.58	
		12/9/1999	55.78	0.00	3,589.22	
		3/9/2000	56.23	0.00	3,588.77	
		6/8/2000	56.66	0.00	3,588.34	
		9/13/2000	56.77	0.00	3,588.23	
		12/7/2000	57.15	0.00	3,587.85	
		3/8/2001	57.69	0.00	3,587.31	
		6/21/01	58.34	0.00	3,586.66	
		9/10/01	58.54	0.00	3,586.46	
		12/6/2001	59.04	0.00	3,585.96	
		3/11/2002	59.50	0.00	3,585.50	
		6/17/02	59.83	0.00	3,585.17	
		9/16/2002	59.80	0.00	3,585.20	
		1/9/2003	60.01	0.00	3,584.99	
		3/6/2003	60.10	0.00	3,584.90	
			6/19/2003	-	-	-
	10/2/2003	60.34	0.00	3,584.66		
MW-4	3,645.28	8/10/1992	50.55	0.00	3,594.73	(1)
		2/9/1993	50.26	0.00	3,595.02	
		8/18/1993	50.38	0.00	3,594.90	
		1/26/1994	50.90	0.30	3,594.63	
		5/3/1995	51.51	0.45	3,594.14	
		7/31/1995	51.74	0.26	3,593.75	
		11/14/1995	51.03	0.00	3,594.25	
		2/23/1996	51.65	0.01	3,593.64	
		5/31/1996	51.48	0.00	3,593.80	
		8/23/1996	53.49	0.00	3,591.79	
		12/2/1996	52.32	0.00	3,592.96	
		3/12/1997	52.74	0.05	3,592.58	
		6/12/1997	53.08	0.44	3,592.56	
		9/12/1997	52.60	0.15	3,592.80	
		12/10/1997	52.89	0.00	3,592.39	PSH Sheen
		3/24/1998	53.20	0.25	3,592.29	
		6/23/1998	53.82	0.22	3,591.64	
		9/30/1998	53.96	0.00	3,591.32	200 ml PSH
		12/9/1998	54.27	0.00	3,591.01	
		3/10/1999	54.69	0.04	3,590.62	
		6/10/1999	55.07	0.00	3,590.21	
		7/2/1999	55.10	0.00	3,590.18	
		9/14/1999	55.33	0.00	3,589.95	
		12/9/1999	55.79	0.00	3,589.49	
		3/10/2000	56.12	0.00	3,589.16	
		6/8/2000	56.67	0.00	3,588.61	
		9/13/2000	56.65	0.00	3,588.63	
		12/7/2000	57.05	0.00	3,588.23	
		3/8/2001	57.72	0.00	3,587.56	
		6/21/01	58.18	0.00	3,587.10	
9/10/01	58.54	0.00	3,586.74			
12/6/2001	58.88	0.00	3,586.40			
3/11/2002	59.41	0.00	3,585.87			
6/17/02	59.67	0.00	3,585.61			
9/16/2002	59.71	0.00	3,585.57			
1/9/2003	59.91	0.00	3,585.37			
3/6/2003	60.03	0.00	3,585.25			
6/19/2003	60.16	0.00	3,585.12			
10/2/2003	60.30	0.00	3,584.98			
MW-5	3,647.72	8/10/1992	52.38	0.00	3,595.34	(1)
		2/9/1993	52.06	0.00	3,595.66	
		8/18/1993	52.16	0.00	3,595.56	
		1/26/1994	52.50	0.00	3,595.22	
		5/3/1995	53.57	0.00	3,594.15	
		7/31/1995	53.27	0.00	3,594.45	
		11/14/1995	52.83	0.00	3,594.89	
		2/23/1996	53.57	0.00	3,594.15	
		5/31/1996	53.16	0.00	3,594.56	

Table 2
Cumulative Groundwater Elevation Data
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BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-5 cont.	3,647.72	8/23/1996	53.41	0.00	3,594.31	
		12/2/1996	53.98	0.00	3,593.74	
		3/12/1997	54.44	0.00	3,593.28	
		6/12/1997	54.48	0.00	3,593.24	
		9/12/1997	54.29	0.00	3,593.43	
		12/10/1997	54.66	0.00	3,593.06	
		3/23/1998	55.05	0.00	3,592.67	
		6/23/1998	55.44	0.00	3,592.28	
		9/30/1998	55.65	0.00	3,592.07	
		12/9/1998	56.00	0.00	3,591.72	
		3/9/1999	56.45	0.00	3,591.27	
		6/10/1999	56.91	0.00	3,590.81	
		7/2/1999	56.93	0.00	3,590.79	
		9/14/1999	57.12	0.00	3,590.60	
		12/9/1999	57.41	0.00	3,590.31	
		3/9/2000	57.92	0.00	3,589.80	
		6/8/2000	58.32	0.00	3,589.40	
		9/13/2000	58.36	0.00	3,589.36	
		12/7/2000	58.71	0.00	3,589.01	
		3/8/2001	59.36	0.00	3,588.36	
		6/21/01	59.94	0.00	3,587.78	
		9/10/01	59.85	0.00	3,587.87	
		12/6/2001	60.56	0.00	3,587.16	
		3/11/02	61.12	0.00	3,586.60	
		6/17/02	61.43	0.00	3,586.29	
		9/16/2002	61.52	0.00	3,586.20	
		1/9/2003	61.75	0.00	3,585.97	
3/6/2003	61.90	0.00	3,585.82			
6/19/2003	62.01	0.00	3,585.71			
10/2/2003	62.16	0.00	3,585.56			
MW-6	3,644.74	2/9/1993	50.58	0.00	3,594.16	(1)
		8/18/1993	50.78	0.00	3,593.96	
		1/26/1994	51.00	0.00	3,593.74	
		5/3/1995	52.63	0.00	3,592.11	
		7/31/1995	51.90	0.00	3,592.84	
		11/14/1995	51.19	0.00	3,593.55	
		2/23/1996	52.10	0.00	3,592.64	
		5/31/1996	51.76	0.00	3,592.98	
		8/23/1996	51.63	0.00	3,593.11	
		12/2/1996	52.85	0.00	3,591.89	
		3/12/1997	53.55	0.00	3,591.19	
		6/12/1997	52.08	0.00	3,592.66	
		9/11/1997	53.72	0.00	3,591.02	
		12/10/1997	53.27	0.00	3,591.47	
		3/23/1998	53.56	0.00	3,591.18	
		6/23/1998	52.88	0.00	3,591.86	
		9/30/1998	54.89	0.00	3,589.85	
		12/9/1998	54.57	0.00	3,590.17	
		3/10/1999	55.10	0.00	3,589.64	
		7/2/1999	-	-	-	(5),(6)
MW-7	3,644.55	2/9/1993	50.53	0.00	3,594.02	(1)
		8/18/1993	50.74	0.00	3,593.81	
		1/26/1994	51.01	0.00	3,593.54	
		5/3/1995	52.25	0.00	3,592.30	
		7/31/1995	51.92	0.00	3,592.63	
		11/14/1995	51.48	0.00	3,593.07	
		2/23/1996	52.15	0.00	3,592.40	
		5/31/1996	51.78	0.00	3,592.77	
		8/23/1996	52.02	0.00	3,592.53	
		12/2/1996	52.52	0.00	3,592.03	
		3/12/1997	52.99	0.00	3,591.56	
		6/12/1997	53.08	0.00	3,591.47	
		9/11/1997	53.00	0.00	3,591.55	
		12/10/1997	53.28	0.00	3,591.27	
		3/23/1998	53.59	0.00	3,590.96	
		6/23/1998	54.20	0.00	3,590.35	
		9/30/1998	54.54	0.00	3,590.01	

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-7 cont.	3,644.55	12/9/1998	54.74	0.00	3,589.81	
		3/9/1999	55.15	0.00	3,589.40	
		6/10/1999	55.66	0.00	3,588.89	
		7/2/1999	55.73	0.00	3,588.82	
		9/13/1999	55.94	0.00	3,588.61	
		12/9/1999	56.38	0.00	3,588.17	
		3/9/2000	56.74	0.00	3,587.81	
		6/8/2000	57.17	0.00	3,587.38	
		9/13/2000	57.40	0.00	3,587.15	
		12/7/2000	57.77	0.00	3,586.78	
		3/8/2001	58.29	0.00	3,586.26	
		6/21/01	58.91	0.00	3,585.64	
		9/10/01	59.25	0.00	3,585.30	
		12/6/2001	59.75	0.00	3,584.80	
		3/11/2002	60.03	0.00	3,584.52	
		6/17/02	60.39	0.00	3,584.16	
		9/16/2002	60.39	0.00	3,584.16	
		1/9/2003	60.53	0.00	3,584.02	
		3/6/2003	60.61	0.00	3,583.94	
		6/19/2003	60.73	0.00	3,583.82	
10/2/2003	60.84	0.00	3,583.71			
MW-8	3,644.87	2/9/1993	50.48	0.00	3,594.39	(1)
		8/18/1993	50.67	0.00	3,594.20	
		1/26/1994	50.96	0.00	3,593.91	
		5/3/1995	52.15	0.00	3,592.72	
		7/31/1995	51.77	0.00	3,593.10	
		11/14/1995	51.37	0.00	3,593.50	
		2/23/1996	52.17	0.00	3,592.70	
		5/31/1996	51.55	0.00	3,593.32	
		8/23/1996	51.92	0.00	3,592.95	
		12/2/1996	52.43	0.00	3,592.44	
		3/12/1997	52.93	0.00	3,591.94	
		6/12/1997	53.96	0.00	3,590.91	
		9/11/1997	52.73	0.00	3,592.14	
		12/10/1997	53.15	0.00	3,591.72	
		3/23/1998	53.51	0.00	3,591.36	
		6/23/1998	54.01	0.00	3,590.86	
		9/30/1998	54.35	0.00	3,590.52	
		12/9/1998	54.60	0.00	3,590.27	
		3/9/1999	55.00	0.00	3,589.87	
		6/10/1999	55.56	0.00	3,589.31	
		7/2/1999	55.57	0.00	3,589.30	
		9/13/1999	55.72	0.00	3,589.15	
		12/9/1999	-	-	-	(3)
		3/9/2000	56.52	0.00	3,588.35	
		06/00	-	-	-	
		09/00	-	-	-	
		12/00	-	-	-	
		3/8/2001	58.11	0.00	3,586.76	
		6/21/01	58.72	0.00	3,586.15	
		9/10/01	58.94	0.00	3,585.93	
		12/6/2001	not measured			
		3/11/2002	59.94	0.00	3,584.93	
		6/17/02	60.22	0.00	3,584.65	
9/16/2002	60.24	0.00	3,584.63			
1/9/2003	60.42	0.00	3,584.45			
3/6/2003	60.52	0.00	3,584.35			
6/19/2003	60.63	0.00	3,584.24			
10/2/2003	60.75	0.00	3,584.12			
MW-9	3,644.78	4/22/1993	49.73	0.00	3,595.05	(1)
		7/15/1993	49.65	0.00	3,595.13	
		8/18/1993	49.85	0.00	3,594.93	
		1/26/1994	50.02	0.00	3,594.76	
		5/3/1995	51.35	0.00	3,593.43	
		7/31/1995	50.97	0.00	3,593.81	
		11/14/1995	50.43	0.00	3,594.35	
		2/23/1996	51.12	0.00	3,593.66	

Table 2
 Cumulative Groundwater Elevation Data
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-11	3,643.78	8/18/1993	51.92	0.00	3,591.86	(1)
		1/26/1994	52.32	0.00	3,591.46	
		5/3/1995	53.38	0.00	3,590.40	
		7/31/1995	53.35	0.00	3,590.43	
		11/14/1995	52.96	0.00	3,590.82	
		2/23/1996	53.50	0.00	3,590.28	
		5/31/1996	53.25	0.00	3,590.53	
		8/23/1996	53.49	0.00	3,590.29	
		12/2/1996	53.79	0.00	3,589.99	
		3/12/1997	53.81	0.00	3,589.97	
		6/12/1997	53.96	0.00	3,589.82	
		9/12/1997	52.93	0.00	3,590.85	
		12/10/1997	-	-	-	
MW-11A	3,644.24	3/23/1998	54.79	0.00	3,589.45	(7)
		6/23/1998	55.43	0.00	3,588.81	
		9/30/1998	55.96	0.00	3,588.28	
		12/9/1998	56.13	0.00	3,588.11	
		3/10/1999	56.43	0.00	3,587.81	
		6/10/1999	56.94	0.00	3,587.30	
		7/2/1999	57.01	0.00	3,587.23	
		9/14/1999	57.36	0.00	3,586.88	
		12/9/1999	57.72	0.00	3,586.52	
		3/9/2000	58.01	0.00	3,586.23	
		6/8/2000	58.40	0.00	3,585.84	
		9/13/2000	58.84	0.00	3,585.40	
		12/7/2000	59.29	0.00	3,584.95	
		3/8/2001	59.72	0.00	3,584.52	
		6/21/01	60.28	0.00	3,583.96	
		9/10/01	60.69	0.00	3,583.55	
		12/6/2001	60.88	0.00	3,583.36	
		3/11/2002	61.42	0.00	3,582.82	
		6/17/02	61.55	0.00	3,582.69	
		9/16/2002	61.59	0.00	3,582.65	
		1/9/2003	61.67	0.00	3,582.57	
		3/6/2003	61.70	0.00	3,582.54	
		6/19/2003	61.84	0.00	3,582.40	
10/2/2003	61.88	0.00	3,582.36			
MW-12	3,644.29	3/23/1998	54.72	0.00	3,589.57	(7)
		6/23/1998	55.48	0.00	3,588.81	
		9/30/1998	56.02	0.00	3,588.27	
		12/9/1998	56.17	0.00	3,588.12	
		3/10/1999	56.45	0.00	3,587.84	
		6/10/1999	56.97	0.00	3,587.32	
		7/2/1999	56.99	0.00	3,587.30	
		9/14/1999	57.41	0.00	3,586.88	
		12/9/1999	57.76	0.00	3,586.53	
		3/10/2000	58.08	0.00	3,586.21	
		6/8/2000	58.42	0.00	3,585.87	
		9/13/2000	58.85	0.00	3,585.44	
		12/7/2000	59.31	0.00	3,584.98	
		3/8/2001	59.76	0.00	3,584.53	
		6/21/01	60.29	0.00	3,584.00	
9/10/01	60.79	0.00	3,583.50			
12/6/2001	well dry during this and subsequent monitoring events					
MW-12D	3,644.38	7/2/1999	57.13	0.00	3,587.25	(8)
		9/14/1999	57.74	0.00	3,586.64	
		12/9/1999	57.86	0.00	3,586.52	
		3/9/2000	58.24	0.00	3,586.14	
		6/8/2000	58.56	0.00	3,585.82	
		09/00	-	-	-	
		12/00	-	-	-	
		3/8/2001	-	-	-	
		6/21/01	-	-	-	
		9/10/01	-	-	-	
		12/6/2001	61.30	0.00	3,583.08	
3/11/2002	61.61	0.00	3,582.77			

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-12D cont.	3,644.38	6/17/02	61.71	0.00	3,582.67	
		9/16/2002	61.75	0.00	3,582.63	
		1/9/2003	61.86	0.00	3,582.52	
		3/6/2003	61.91	0.00	3,582.47	
		6/19/2003	61.95	0.00	3,582.43	
		10/2/2003	62.05	0.00	3,582.33	
MW-13	3,645.52	7/2/1999	56.60	0.00	3,588.92	(9)
		9/14/1999	56.92	0.00	3,588.60	
		12/9/1999	57.28	0.00	3,588.24	
		3/10/2000	57.68	0.00	3,587.84	
		6/8/2000	58.04	0.00	3,587.48	
		9/13/2000	58.29	0.00	3,587.23	
		12/7/2000	58.68	0.00	3,586.84	
		3/8/2001	59.19	0.00	3,586.33	
		6/21/01	59.80	0.00	3,585.72	
		9/10/01	60.03	0.00	3,585.49	
		12/6/2001	60.59	0.00	3,584.93	
		3/11/2002	60.94	0.00	3,584.58	
		6/17/02	61.28	0.00	3,584.24	
		9/16/2002	61.23	0.00	3,584.29	
		1/9/2003	61.38	0.00	3,584.14	
		3/6/2003	61.45	0.00	3,584.07	
		6/19/2003	61.58	0.00	3,583.94	
10/2/2003	61.70	0.00	3,583.82			
MW-14	3,642.45	3/8/2001	61.07	0.00	3,581.38	
		6/21/01	61.71	0.00	3,580.74	
		9/10/01	62.31	0.00	3,580.14	
		12/6/2001	62.80	0.00	3,579.65	
		3/11/2002	62.70	0.00	3,579.75	
		6/17/02	62.65	0.00	3,579.80	
		9/16/2002	62.55	0.00	3,579.90	
		1/9/2003	62.59	0.00	3,579.86	
		3/6/2003	62.64	0.00	3,579.81	
		6/19/2003	62.64	0.00	3,579.81	
10/2/2003	62.73	0.00	3,579.72			
MW-15	3,643.24	3/8/2001	59.79	0.00	3,583.45	
		6/21/01	60.49	0.00	3,582.75	
		9/10/01	61.02	0.00	3,582.22	
		12/6/2001	61.47	0.00	3,581.77	
		3/11/2002	61.65	0.00	3,581.59	
		6/17/02	61.68	0.00	3,581.56	
		9/16/2002	61.47	0.00	3,581.77	
		1/9/2003	61.59	0.00	3,581.65	
		3/6/2003	61.63	0.00	3,581.61	
		6/19/2003	61.62	0.00	3,581.62	
10/2/2003	61.70	0.00	3,581.54			
MW-16	3,643.73	6/19/2003	66.50	0.00	3,577.23	
		10/2/2003	66.61	0.00	3,577.12	
OW-4	3,644.06	7/2/1999	58.18	0.00	3,585.88	(8)
		9/14/1999	58.63	0.00	3,585.43	
		12/9/1999	58.92	0.00	3,585.14	
		3/9/2000	59.19	0.00	3,584.87	
		6/8/2000	59.56	0.00	3,584.50	
		9/13/2000	60.16	0.00	3,583.90	
		12/7/2000	61.15	0.00	3,582.91	
		3/8/2001	61.43	0.00	3,582.63	
		6/21/01	61.48	0.00	3,582.58	
		9/10/01	61.53	0.00	3,582.53	
		12/6/2001				well dry during this and subsequent monitoring events

- ⁽¹⁾ - Top of casing elevations and groundwater elevations of all monitor wells were relative to an arbitrary datum of 100.00 feet prior to March 1997 and have been converted to Mean Sea Level (MSL).
- ⁽²⁾ - For wells having measurable thickness of free product, the groundwater elevation was calculated as follows:
Groundwater Elevation = (TOC elevation)-(depth to groundwater)+[(free product thickness)x(SG of free product)]
Note: The specific gravity (SG) of the free product is 0.82.
- ⁽³⁾ - Not measured.
- ⁽⁴⁾ - Monitor well MW-2 could not be located after January 1994.
- ⁽⁵⁾ - Well plugged and abandoned July 2, 1999.
- ⁽⁶⁾ - Monitor well MW-11 could not be located after September 12, 1997.
- ⁽⁷⁾ - TOC elevations for MW-11A and MW-12 estimated relative to TOC elevation for MW-10.
- ⁽⁸⁾ - TOC elevations for MW-12D and OW-4 estimated relative to TOC elevation for MW-12.
- ⁽⁹⁾ - TOC elevation for MW-13 estimated relative to TOC elevation for MW-7.
- ⁽¹⁰⁾ - Well dry (measured depth to water is below base of screen); true groundwater elevation is less than listed groundwater elevation.

Table 3
October 2003 Field Screening Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Date	Cumulative Liters Removed	pH	Temperature (°C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)
MW-5	10/2/03	3.0	6.76	21.91	1,076	84	5.38	5.6	0.0
MW-10	10/2/03	0.2 ⁽¹⁾	NM ⁽²⁾	NM	NM	NM	NM	3.6	2.2
MW-11	10/2/03	1.0	NM	NM	NM	NM	NM	8.4	4.2
MW-12D	10/2/03	2.5	6.97	20.44	1,139	39	0.74	1.0	1.0
MW-16	10/2/03	2.5	6.28	17.92	2,445	93	7.04	NM	NM

Monitor wells MW-1, MW-3, MW-4, MW-7, MW-8, MW-9, and MW-13 not sampled.

Monitor well MW-2 not operative after January 1994; P&A'd 7/1/99.

Monitor well MW-6 P&A'd 7/1/99.

Monitor well MW-11 not operative after September 1997; P&A'd 7/1/99.

Monitor wells MW-12 and OW-4 were dry.

Monitor wells MW-11A, MW-14 and MW-15 were purged by removing 3 well volumes of groundwater from each well

(1) - Well was purged dry using bailing techniques.

(2) - NM = Not measured

Table 4
 Cumulative Results⁽¹⁾ for Chloride⁽²⁾ Analyses
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Sample Date	Monitor Wells ⁽³⁾																	
	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
8/1/95	160	150	310	130	380	310	350	110	2,200	3,400	NP	NP	NP	NP	NP	NP	NP	NS
8/23/96	130	140	100	99	210	250	360	140	2,000	2,900	NP	NP	NP	NP	NP	NP	NP	NS
3/23-24/98	212	206	126	151	183	223	364	164	2,390	NS	940	1,200	NP	NP	NP	NP	NP	NS
3/9-10/99	163	156	142	155	411	238	274	123	1,160	NS	834	314	NP	NP	NP	NP	NP	NS
6/10-7/2/99	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NA	195	496	NP	NP	NP	266
3/9-10/00	258	196	196	196	NP	224	241	131	474	NP	1,290	327	117	276	NP	NP	NP	258
1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	219	NP	NS
3/8-9/01	NA	165	172	152	NP	224	250	127	879	NP	1,720	586	NS	276	NA	NA	NP	NS-D
6/21/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NA	NS	NA	222	222	NP	NS-D
9/10/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	NA	NA	245	228	NP	NS-D
9/18/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	79	NA	NA	NA	NP	NS-D
12/6/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	NA	NA	276	215	NP	NS-D
3/11-12/02	177	172	183	127	NP	188	241	110	861	NP	1,230	NS-D	76	207	284	224	NP	NS-D
6/18/2002	NS	NA	NA	NA	NP	NA	NS	NS	NA	NP	NA	NS-D	NA	145	258	233	NP	NS-D
9/16/2002	NS	NS	NS	121	NP	NS	NS	NS	1,030	NP	1,550	NS-D	86	NS	293	246	NP	NS-D
1/9/2003	NS	NS	NS	123	NP	NS	NS	NS	525	NP	3,150	NS-D	95	NS	179	228	NP	NS-D
3/6/2003	NS	NS	NS	116	NP	NS	NS	NS	363	NP	2,900	NS-D	102	NS	163	272	NP	NS-D
6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS-D	89.3	NS	NS	NS	983	NS-D
8/22/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS-D	NS	NS	182	280	841	NS-D
10/2/2003	NS	NS	NS	194	NP	NS	NS	NS	420	NP	3,240	NS-D	99.8	NS	175	298	963	NS-D

⁽¹⁾ - in mg/L.

⁽²⁾ - NMWQCC standard for chloride is 250 mg/L.

⁽³⁾ - MW-2 not operative after May 3, 1995; P&A'd 7/1/99.

MW-6 P&A'd 7/1/99.

MW-11 P&A'd 7/1/99.

MW-11A installed February 1998.

MW-12 installed February 1998.

MW-12D installed June 1999.

MW-13 installed June 1999.

MW-14 installed January 2001.

MW-15 installed January 2001.

MW-16 installed May 2003.

NP = not present at time of sampling event.

NS = not sampled during applicable sampling event.

NA = not analyzed for chloride during applicable sampling event.

NS-D = not sampled because well was dry during applicable sampling event.

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-1	8/10/92	Regular	5550.0	12090.0	2160.0	7370.0	NA	NA
	2/9/93	Regular	2100.0	6500.0	1300.0	7400.0	NA	NA
	8/19/93	Regular	3200.0	7300.0	1200.0	3700.0	NA	NA
	1/27/94	Regular	1930.0	4580.0	672.0	2390.0	NA	NA
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	390.0	1300.0	230.0	800.0	NA	5.7
	11/15/95	Regular	880.0	1800.0	300.0	970.0	NA	6.8
	2/23/96	Regular	1500.0	3700.0	620.0	2200.0	NA	21
	5/31/96	Regular	1100.0	1700.0	380.0	990.0	NA	7.5
	8/23/96	Regular	1800.0	3300.0	570.0	2100.0	NA	17
	12/2/96	Regular	5600.0	9600.0	2100.0	9600.0	100	64
	3/12/97	Regular	5500.0	9700.0	2600.0	8200.0	22	62
	6/12/97	Regular	5300.0	34000.0	7500.0	27000.0	180	160
	9/12/97	Regular	1800.0	4400.0	1000.0	3000.0	23	21
	12/10/97	Regular	7600.0	12000.0	2800.0	8200.0	11	71
	3/24/98	Regular	4800.0	7200.0	1200.0	2400.0	4.2	38
	6/23/98	Regular	53.0	680.0	580.0	1400.0	1.4	9.2
	9/30/1998	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/1998	Regular	< 1.0	1.5	17.0	110.0	1.4	0.31
	3/10/1999	Regular	< 1.0	< 1.0	8.2	110.0	0.62	0.85
	3/10/1999	Duplicate	< 1.0	< 1.0	7.9	110.0	0.66	0.84
	6/10/1999	Regular	< 1.0	1.1	< 1.0	28.0	0.53	0.55
	6/10/1999	Duplicate	< 1.0	1.8	< 1.0	41.0	0.69	0.76
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	9.1	14	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	2.0	< 1	< 1	< 1	0.49	0.58
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
12/6/2001	-	NS	NS	NS	NS	NS	NS	
3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
6/18/2002	-	-	-	-	-	-	-	
through October 2003	-	-	NS	NS	NS	NS	NS	
MW-2 ¹	8/10/92	Regular	14.9	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	100.0	12.0	3.0	13.0	NA	NA
	1/27/94	Regular	< 1	1.2	2.0	2.5	NA	NA
MW-3	8/10/92	Regular	304.9	2099.0	6760.0	1586.0	NA	NA
	2/9/93	Regular	130.0	< 10	< 10	190.0	NA	NA
	8/19/93	Regular	560.0	3100.0	630.0	1900.0	NA	NA
	1/27/94	Regular	1070.0	5380.0	510.0	3120.0	NA	NA
	5/4/95	Regular	770.0	3300.0	470.0	1800.0	NA	NA
	8/1/95	Regular	490.0	2900.0	890.0	1600.0	NA	14
	11/15/95	Regular	250.0	1000.0	180.0	440.0	NA	2.9
	2/23/96	Regular	120.0	810.0	170.0	560.0	NA	4
	5/31/96	Regular	670.0	3900.0	1200.0	2300.0	NA	15
	8/23/96	Regular	330.0	2200.0	590.0	1500.0	NA	12

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-3 (cont.)	12/2/96	Regular	220.0	1800.0	670.0	1000.0	0.89	7.4
	3/12/97	Regular	370.0	2000.0	960.0	1400.0	1.8	11
	6/12/97	Regular	860.0	4800.0	1700.0	2600.0	1.9	20
	9/11/97	Regular	770.0	3000.0	1600.0	1900.0	1.6	16
	12/10/97	Regular	240.0	740.0	500.0	450.0	0.59	5.3
	3/24/98	Regular	140.0	630.0	360.0	310.0	0.56	3.9
	6/23/98	Regular	100.0	720.0	350.0	490.0	0.40	4.9
	9/30/1998	Regular	42.0	470.0	450.0	530.0	1.0	3.8
	12/10/1998	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/1999	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/1999	Regular	1.7	3.1	<1.0	36.0	< 0.20	0.18
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.32	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.42	< 0.1
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
9/16/2002	-	-	NS	NS	NS	NS	NS	
through	-	-	NS	NS	NS	NS	NS	
October 2003	-	-	NS	NS	NS	NS	NS	
MW-4	8/10/92	Regular	2594.0	10360.0	2160.0	6740.0	NA	NA
	2/9/93	Regular	5200.0	15000.0	2200.0	10000.0	NA	NA
	8/19/93	Regular	3000.0	12000.0	< 2000	7000.0	NA	NA
	1/27/94	Regular	NSP	NSP	NSP	NSP	NA	NSP
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	5700.0	17000.0	3500.0	13000.0	NA	120
	11/15/95	Regular	490.0	1600.0	310.0	1100.0	NA	5.2
	2/23/96	Regular	360.0	2800.0	560.0	2500.0	NA	18
	5/31/96	Regular	84.0	830.0	280.0	1100.0	NA	6.2
	8/23/96	Regular	110.0	1400.0	430.0	1800.0	NA	9.8
	12/2/96	Regular	190.0	2000.0	1800.0	7200.0	56	43
	3/12/97	Regular	220.0	1500.0	1500.0	4400.0	27	27
	6/12/97	Regular	47.0	270.0	360.0	950.0	2.5	6.2
	9/12/97	Regular	92.0	840.0	670.0	2100.0	15	7.6
	12/10/97	Regular	230.0	750.0	970.0	2300.0	3.7	16
	3/24/98	Regular	150.0	510.0	270.0	620.0	1.2	5.6
	6/23/98	Regular	160.0	890.0	590.0	1600.0	0.69	10
	9/30/1998	Regular	80.0	180.0	370.0	840.0	2.0	3.9
	12/10/1998	Regular	28.0	70.0	210.0	960.0	9.3	4.3
	12/10/1998	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
	3/10/1999	Regular	8.0	20.0	250.0	1400.0	13.0	13
6/10/1999	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63	
9/14/1999	Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17	
12/9/1999	Regular	< 1	2.5	2.3	20.1	2	0.53	
3/10/2000	Regular	< 1	< 1	< 1	3.6	2.6	0.15	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-4 (cont.)	6/8/2000	Regular	< 1	< 1	< 1	< 1	0.44	0.23
	9/13/2000	Regular	< 1	< 1	< 1	< 1	0.61	< 0.1
	12/7/2000	Regular	< 1	< 1	1.3	< 1	0.53	0.16
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.43	0.16
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	0.6	< 1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002							
	through	-		NS	NS	NS	NS	NS
	October 2003							
	MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA
2/9/93		Regular	< 2	< 2	< 2	< 6	NA	NA
8/10/93		Regular	< 2	< 2	< 2	< 6	NA	NA
1/27/94		Regular	8.7	29.9	4.0	11.3	NA	NA
5/3/95		Regular	3.7	5.3	0.9	4.6	NA	NA
8/1/95		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
11/15/95		Regular	< 0.3	1.2	< 0.3	1.5	NA	NA
2/23/96		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
5/31/96		Regular	31.0	86.0	10.0	20.0	NA	NA
8/23/96		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
12/2/96		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
3/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
6/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
9/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
12/10/97		Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
3/23/98		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
6/23/98		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
9/30/1998		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
12/10/1998		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
3/9/1999		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
6/10/1999		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
9/14/1999		Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
12/9/1999		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
3/9/2000		Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
6/8/2000		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
9/13/2000		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/7/2000		Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
3/8/2001		Regular	< 1	< 1	< 1	< 1	0.56	< 0.1
6/21/2001		Regular	< 1	< 1	< 1	< 1	0.26	< 0.1
9/10/2001		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/6/2001		Regular	< 1	< 1	< 1	< 1	0.49	< 0.1
3/12/2002		Regular	< 1	< 1	< 1	< 1	< 0.24	< 0.1
6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
9/16/2002	Regular		< 0.074	< 0.068	< 0.082	0.3 J	< 0.05	
1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1	
3/6/2003	Regular	< 1	< 1	< 1	< 1	NA	< 0.1	
8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1	
10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.1	< 0.1	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-6 ¹ (cont.)	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	7000.0	19000.0	3100.0	7200.0	NA	NA
	8/19/93	Regular	8100.0	19000.0	3500.0	6400.0	NA	NA
	1/27/94	Regular	7960.0	20200.0	3830.0	6150.0	NA	NA
	5/4/95	Regular	11000.0	17000.0	2900.0	6000.0	NA	NA
	8/1/95	Regular	8300.0	12000.0	2500.0	5100.0	NA	60
	11/15/95	Regular	8900.0	17000.0	2900.0	5500.0	NA	57
	2/23/96	Regular	8100.0	10000.0	2300.0	4000.0	NA	58
	5/31/96	Regular	83.0	150.0	15.0	51.0	NA	0.57
	5/31/96	Duplicate	87.0	160.0	13.0	47.0	NA	0.52
	8/23/96	Regular	31.0	28.0	9.4	7.9	NA	0.46
	12/2/96	Regular	< 1	< 1	< 1	1.7	5.6	< 0.1
	3/12/97	Regular	12.0	< 5	6.8	18.0	12	< 0.5
	6/12/97	Regular	1900.0	1400.0	410.0	310.0	7.8	7.4
	9/11/97	Regular	11.0	1.3	3.4	< 1	1	< 0.1
	12/10/97	Regular	3.0	4.2	1.2	3.9	1.7	0.14
	3/23/98	Regular	3.6	< 1	4.0	< 1	< 0.2	< 0.1
	6/23/98	Regular	170.0	4.1	15.0	7.2	1.2	0.51
	9/30/1998	Regular	1000.0	420.0	140.0	270.0	4.0	3.3
12/10/1998	Regular	7.6	6.6	1.7	5.8	2.0	< 0.1	
3/10/1999	Regular	2500.0	930.0	590.0	1400.0	11.0	13	
MW-7	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	3.0	< 2	< 2	NA	NA
	1/27/94	Regular	1.1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	52.0	3.4	0.7	2.8	NA	NA
	8/1/95	Regular	22.0	2.2	0.9	2.8	NA	< 0.1
	11/15/95	Regular	8.4	0.8	< 0.3	0.9	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Duplicate	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	29.0	83.0	10.0	21.0	NA	0.25
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	4.7	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
12/9/1999	Regular	< 5	< 5	< 5	< 5	1.8	< 0.5	
3/9/2000	Regular	< 1	< 1	< 1	< 1	0.66	< 0.1	
6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.21	< 0.1	
9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.29	< 0.1	
3/8/2001	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-7 (cont.)	6/21/2001	Regular	3.1	< 1	< 1	< 1	< 0.22	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.33	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	1.3	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	NA	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002 through October 2003	-	NS	NS	NS	NS	NS	NS
MW-8	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	3.0	4.9	0.8	3.7	NA	NA
	8/1/95	Regular	3.1	1.2	0.5	1.6	NA	< 0.001
	8/1/95	Duplicate	3.6	1.5	0.5	1.5	NA	< 0.1
	11/15/95	Regular	< 0.3	0.5	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	1.8	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.6	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
12/6/2001	-	NS	NS	NS	NS	NS	NS	
3/12/2002	Regular	< 1	< 1	< 1	< 1	0.38	< 0.1	
6/18/2002	-	NS	NS	NS	NS	NS	NS	
9/16/2002 through October 2003	-	NS	NS	NS	NS	NS	NS	
MW-9	4/22/93	Regular	570.0	380.0	< 50	870.0	NA	NA
	7/15/93	Regular	121.0	7.3	3.0	458.0	NA	NA
	8/19/93	Regular	390.0	290.0	40.0	250.0	NA	NA
	1/27/94	Regular	327.0	357.0	51.1	293.0	NA	NA
	5/3/95	Regular	380.0	110.0	19.0	120.0	NA	NA
	8/1/95	Regular	660.0	410.0	91.0	310.0	NA	6.2

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-9 (cont.)	11/15/95	Regular	240.0	24.0	11.0	140.0	NA	1.5
	11/15/95	Duplicate	170.0	18.0	10.0	120.0	NA	1.9
	2/23/96	Regular	170.0	18.0	2.3	160.0	NA	4.3
	5/31/96	Regular	120.0	16.0	3.0	200.0	NA	NA
	8/23/96	Regular	82.0	13.0	6.0	270.0	NA	4
	8/23/96	Duplicate	76.0	14.0	4.8	250.0	NA	4.4
	12/2/96	Regular	61.0	< 25	< 25	210.0	2.6	2.8
	12/2/96	Duplicate	86.0	13.0	2.4	270.0	3.7	2.9
	3/12/97	Regular	30.0	48.0	420.0	880.0	8.2	19
	6/12/97	Regular	4.7	2.1	11.0	97.0	2.6	2.2
	6/12/97	Duplicate	< 5	< 5	6.6	69.0	5.2	1.9
	9/12/97	Regular	2.1	2.3	2.1	120.0	1.2	1.9
	12/10/97	Regular	4.9	9.0	6.8	62.0	0.86	0.92
	3/24/98	Regular	< 1	< 1	< 1	26.0	0.9	1
	6/23/98	Regular	2.4	22.0	10.0	36.0	< 0.2	0.25
	9/30/1998	Regular	1.1	5.5	21.0	59.0	0.27	0.27
	12/10/1998	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
	3/10/1999	Regular	< 1.0	< 1.0	5.7	68.0	< 0.2	0.22
	6/10/1999	Regular	< 1.0	1.8	1.8	71.0	< 0.20	0.43
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	64.0	0.66	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.4	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	1	< 1	< 1	< 1	0.37	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
9/16/2002 through October 2003	-	NS	NS	NS	NS	NS	NS	
MW-10	8/19/93	Regular	190.0	460.0	< 200	240.0	NA	NA
	1/27/94	Regular	13.4	4.0	5.5	33.6	NA	NA
	5/4/95	Regular	980.0	15.0	11.0	84.0	NA	NA
	8/1/95	Regular	1300.0	32.0	32.0	100.0	NA	3.6
	11/15/95	Regular	1000.0	24.0	15.0	36.0	NA	1.7
	2/23/96	Regular	810.0	23.0	27.0	44.0	NA	2.4
	5/31/96	Regular	700.0	24.0	34.0	28.0	NA	2
	8/23/96	Regular	290.0	3.4	6.4	13.0	NA	1.4
	12/2/96	Regular	280.0	1.3	17.0	8.0	0.94	0.97
	3/12/97	Regular	110.0	< 5	17.0	< 5	0.61	0.57
	6/12/97	Regular	150.0	12.0	30.0	< 5	0.68	< 0.5
	9/12/97	Regular	87.0	2.3	26.0	2.7	0.76	0.33
	9/12/97	Duplicate	87.0	2.4	26.0	2.8	0.79	0.33
	12/10/97	Regular	41.0	9.8	12.0	7.7	1.1	0.28
	12/10/97	Duplicate	36.0	8.5	10.0	6.7	1.2	0.24
	3/23/98	Regular	36.0	< 5	5.9	< 5	1.6	< 0.5

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G		
			micrograms per liter, ug/L				milligrams per liter, mg/L			
MW-10 (cont.)	3/23/98	Duplicate	36.0	< 1	5.3	1.3	1.7	0.18		
	6/23/98	Regular	37.0	< 5	< 5	< 5	2.1	< 0.5		
	9/30/1998	Regular	84.0	3.2	30.0	2.2	1.4	0.36		
	12/10/1998	Regular	29.0	1.0	7.0	1.0	0.86	0.18		
	3/9/1999	Regular	28.0	< 5.0	5.8	< 5.0	0.92	< 0.5		
	6/10/1999	Regular	17.0	< 1.0	< 1.0	< 1.0	0.30	0.16		
	9/14/1999	Regular	10.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10		
	12/9/1999	Regular	23.0	< 1	< 1	1.2	0.44	0.16		
	3/10/2000	Regular	300.0	4.3	6.6	43.2	1.2	0.85		
	6/8/2000	Regular	78.0	1.7	7.2	9.0	0.67	0.74		
	9/13/2000	Regular	23.0	1.5	1.1	2.9	1.6	0.41		
	12/7/2000	Regular	7.2	< 1	< 1	< 1	1.5	0.15		
	3/8/2001	Regular	3.4	1.1	< 1	< 1	3.4	0.2		
	6/22/2001	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1		
	9/10/01 and 9/18/01	Regular	2	< 1	< 1	< 1	2.3	< 0.1		
	12/6/2001	Regular	No Valid Data							
	3/12/2002	Regular	< 1	< 1	< 1	< 1	3.2	< 0.1		
	6/18/2002	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1		
	9/16/2002	Regular	< 0.074	< 0.11	0.1	< 0.082	3 J	< 0.05		
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1		
3/6/2003	Regular	< 1	< 1	18	< 1	NA	< 0.1			
8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1			
10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.2	< 0.1			
MW-11 ¹	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA		
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA		
	5/4/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA		
	8/1/95	Regular	44.0	29.0	5.5	13.0	NA	0.2		
	11/15/95	Regular	190.0	2.8	6.2	11.0	NA	0.4		
	2/23/96	Regular	49.0	1.2	0.5	4.0	NA	0.25		
	5/31/96	Regular	300.0	83.0	12.0	28.0	NA	0.8		
	8/23/96	Regular	100.0	1.2	0.3	4.7	NA	0.26		
	12/2/96	Regular	970.0	< 5	6.0	8.1	2	1.3		
	3/12/97	Regular	130.0	< 5	13.0	5.8	0.42	< 0.5		
	3/12/97	Duplicate	100.0	< 5	10.0	5.1	0.43	< 0.5		
6/12/97	Regular	150.0	23.0	19.0	< 5	1.1	0.55			
9/12/97	Regular	220.0	15.0	27.0	13.0	1	0.46			
MW-11A	3/24/98	Regular	24.0	5.0	< 5	< 5	0.28	0.14		
	6/23/98	Regular	9.9	< 5	< 5	< 5	< 0.2	< 0.5		
	9/30/1998	Regular	9.3	3.7	2.2	7.0	< 0.20	0.1		
	12/10/1998	Regular	1.7	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1		
	3/10/1999	Regular	< 5	< 5	< 5	< 5	0.3	< 0.5		
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.10		
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10		
	12/9/1999	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1		
	3/9/2000	Regular	1.2	< 1	< 1	< 1	0.43	< 0.1		
	6/8/2000	Regular	3.6	< 1	< 1	< 1	0.37	< 0.1		
	9/13/2000	Regular	1.4	< 1	< 1	< 1	0.36	< 0.1		
	12/7/00	Regular	26	< 1	< 1	3.3	0.3	0.12		
	3/8/01	Regular	12	< 5	< 5	< 5	2.2	< 0.5		

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-11A (cont.)	6/22/2001	Regular	1.5	< 1	< 1	< 1	1	< 0.1
	9/10/2001	Regular	7.9	< 1	< 1	< 1	1.1	< 0.1
	12/6/2001	Regular	<1	< 1	< 1	< 1	1	< 0.1
	3/12/2002	Regular	1.8	< 1	< 1	1	1.6	< 0.1
	6/18/2002	Regular	2.9	< 0.1	1.3	< 1	0.91	< 0.1
	9/16/2002	Regular	9	< 0.11	41	< 0.082	1 J	0.2
	1/9/2003	Regular	12	< 1	< 1	1.2	< 1.0	0.4
	3/6/2003	Regular	3.2	< 1	< 1	1.2	< 1	0.13
	8/21/2003	Regular	3.7	< 1	< 1	< 1	< 1	< 0.1
	10/2/2003	Regular	3.7	< 1	< 1	< 1	< 1.2	< 0.1
MW-12	3/24/98	Regular	100.0	11.0	6.0	8.0	0.29	0.41
	6/23/98	Regular	88.0	< 5	< 5	< 5	< 0.2	< 0.5
	6/23/98	Duplicate	89.0	< 5	< 5	< 5	0.31	< 0.5
	9/30/1998	Regular	260.0	3.0	1.2	7.9	< 0.20	0.62
	12/10/1998	Regular	160.0	< 1.0	< 1.0	1.2	0.21	0.36
	3/10/1999	Regular	160.0	1.1	< 1.0	2.9	0.38	0.45
	6/10/1999	Regular	49.0	1.4	< 1.0	< 1.0	0.22	0.13
	9/14/1999	Regular	75.0	< 1.0	< 1.0	< 2.0	< 0.20	0.23
	12/9/1999	Regular	64.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Regular	93.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Duplicate	99.0	< 1	< 1	< 1	0.22	0.22
	6/8/2000	Regular	62.0	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/2000	Regular	34.0	< 1	< 1	< 1	0.23	< 0.1
	12/7/2000	Regular	27	< 1	2.9	1.9	< 0.25	< 0.1
	3/8/2001	Regular	14	< 1	< 1	< 1	2.1	0.1
	6/22/2001	Regular	12	< 1	< 1	< 1	0.51	0.11
9/10/2001	Well Dry (Not Sampled) During This and Subsequent Monitoring Events							
MW-12D	7/2/1999	Regular	< 5	< 5	< 5	< 5	< 0.20	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.24	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	-	NS	NS	NS	NS	NS	NS
	6/22/2001	-	NS	NS	NS	NS	NS	NS
	9/18/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.44	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.2 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
3/6/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1	
6/20/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1	
8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1	
10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.2	< 0.1	
MW-13	7/2/1999	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/1999	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/1999	Regular	430.0	16.0	410.0	40.9	0.46	3.2
	3/10/2000	Regular	88.0	2.8	200.0	1.3	1.9	0.99

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-13 (cont.)	6/8/2000	Regular	6.0	< 1	63.0	3.3	1.1	0.91
	9/13/2000	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/2000	Regular	<1	<1	<1	<1	0.43	<0.1
	3/8/2001	Regular	<1	<1	1.2	<1	2	<0.1
	6/22/2001	Regular	<1	<1	<1	<1	0.31	<0.1
	9/10/2001	Regular	<1	<1	<1	<1	0.3	<0.1
	12/6/2001	Regular	<1	<1	<1	<1	<0.2	<0.1
	3/12/2002	Regular	<1	<1	<1	<1	0.84	<0.1
	6/18/2002	Regular	<1	<1	<1	<1	0.3	<0.1
	9/16/2002 through October 2003	-	NS	NS	NS	NS	NS	NS
MW-14	1/14/2001	Regular	< 1	< 1	< 1	< 1	<0.2	<0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
MW-15	1/14/2001	Regular	< 1	< 1	< 1	< 1	<0.2	<0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
MW-16	6/20/2003	Regular	< 5	< 5	< 5	< 5	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
OW-4	6/10/1999	Regular	<1.0	<1.0	<1.0	4.4	< 0.2	<0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	3/9/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	0.25	< 0.1
	6/8/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.21	< 0.1
	9/13/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	12/7/2000	Well Dry (Not Sampled) During This and Subsequent Monitoring Events						

¹ Well plugged and abandoned 7/1/99

NA = Not Analyzed

NS = Not Sampled

NS-D = Not Sampled because well was dry

NSP = Not Sampled due to Phase-Separated Hydrocarbons

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-5	3/23/1998	3.87	190	< 0.0012
	3/9/1999	< 0.1	195	< 0.0012
	6/10/1999	4.73	209	< 0.0012
	9/14/1999	4.3	210	< 0.0012
	12/9/1999	4.2	210	< 0.0012
	3/9/2000	5.3	260	< 0.0012
	6/8/2000	4.7	240	< 0.0012
	9/13/2000	3.93	200	< 0.0012
	12/7/2000	3.27	160	< 0.0012
	3/8/2001	3.24	180	< 0.0012
	6/21/2001	2.74	150	0.0017
	9/10/2001	NA ⁽²⁾	130	< 0.0012
	12/6/2001	2.38	120	< 0.0012
	3/12/2002	2.98	120	< 0.0012
	6/18/2002	2.56	110	0.002
	9/16/2002	2.4	105	0.002
	1/9/2003	2.1	97	0.004
	3/6/2003	2.75	110	< 0.0012
8/21/2003	2.4	100	< 0.0012	
10/2/2003	2.5	100	< 0.0012	
MW-10	3/23/1998	0.07	320	0.91
	6/23/1998	< 0.1	325	0.55
	9/30/1998	< 0.1	204	0.81
	12/10/1998	< 0.1	180	0.091
	3/9/1999	< 0.1	142	0.035
			223 ⁽³⁾	
	9/14/1999	< 0.10	160	0.0049
	12/9/1999	0.49	170	0.0039
	3/10/2000	0.1	160	0.0056
	6/8/2000	< 0.1	150	0.031
	9/13/2000	< 0.1	160	0.031
	12/7/2000	< 0.1	190	0.17
	3/8/2001	< 0.1	270	< 0.0012
	6/22/2001	< 0.1	270	0.044
	9/10/2001	NA	NA	NA
	3/12/2002	< 0.1	230	NA
6/18/2002	< 0.1	240	0.007	

Table 6
 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
 MW-10, MW-11A, MW-12, and MW-12D
 Hobbs, New Mexico
 BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-10 (cont.)	9/16/2002	< 0.03	318	0.006
	1/9/2003	< 0.1	280	0.0024
	3/6/2003	< 0.1	270	0.0031
	8/21/2003	0.21	350	< 0.0012
	10/2/2003	0.11	360	<0.0012
MW-11A	3/23/1998	< 0.05	190	0.14
	6/23/1998	< 0.1	225	0.11
	9/30/1998	0.4	196	0.043
	12/10/1998	0.7	188	0.033
	3/10/1999	< 0.1	164	0.094
		< 0.1 ⁽⁴⁾	227 ⁽³⁾	
	6/10/1999	< 0.1	181	0.0036
	9/13/1999	0.22	250	< 0.0012
	12/9/1999	< 0.1	290	0.0079
	3/9/2000	0.11	270	0.037
	6/8/2000	< 0.1	240	0.0069
	9/13/2000	< 0.1	320	< 0.0012
	12/7/2000	< 0.1	260	0.0096
	3/8/2001	< 0.1	330	0.0028
	6/22/2001	< 0.1	180	0.0074
	9/10/2001	NA	280	< 0.0012
	12/6/2001	< 0.1	240	0.0041
	3/12/2002	< 0.1	350	0.0044
	6/18/2002	< 0.1	560	0.0028
	9/16/2002	0.3	383	< 0.0012
1/9/2003	< 0.5	290	0.0063	
3/6/2003	< 0.1	290	0.0044	
8/21/2003	0.68	340	< 0.0012	
10/2/2003	1.4	350	< 0.0012	
MW-12	3/23/1998	< 0.05	240	< 0.0012
	6/23/1998	< 0.1	240	< 0.0012
	9/30/1998	< 0.1	168	< 0.0012
	12/10/1998	< 0.1	202	< 0.0012
	3/10/1999	< 0.1	137	< 0.0012
		< 0.1 ⁽⁴⁾	193 ⁽³⁾	
	6/10/1999	< 0.1	217	< 0.0012
	9/14/1999	< 0.10	230	< 0.0012
	12/9/1999	< 0.1	180	< 0.0012
3/10/2000	< 0.1	210	< 0.0012	

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-12 (cont.)	6/8/2000	< 0.1	220	< 0.0012
	9/13/2000	< 0.1	240	< 0.0012
	12/7/2000	< 0.1	260	< 0.0012
	3/8/2001	< 0.1	300	< 0.0012
	6/22/2001	< 0.1	360	0.0021
	9/10/2001	Well Dry (Not Sampled) During This and Subsequent Monitoring Events		
MW-12D	9/18/2001	NA	190	< 0.0012
	12/6/2001	< 0.1	200	< 0.0012
	3/12/2002	< 0.1	200	< 0.0012
	6/18/2002	< 0.1	180	0.0012
	9/16/2002	0.06	172	< 0.0012
	1/9/2003	< 0.1	150	0.005
	3/6/2003	0.705	170	0.0038
	6/20/2003	< 0.1	160	< 0.0012
	8/22/2003	< 0.1	160	< 0.0012
	10/2/2003	< 0.1	140	< 0.0012

⁽¹⁾ - By EPA Method 300, except as noted

⁽²⁾ - NA indicates not analyzed

⁽³⁾ - By EPA Method 375.4

⁽⁴⁾ - By EPA Method 353.3

⁽⁵⁾ - NS-D indicates not sampled (well dry)

mg/L = milligrams per liter

BROWN AND
CALDWELL

Appendices

APPENDICES

APPENDIX A
Groundwater Sampling Forms

WELL ID: MW-5

1. PROJECT INFORMATION

Project Number: 12532 Task Number: 019 Date: 10-2-03 Time: 1419
 Client: BJ Services Personnel: P. Banda / R. Royce
 Project Location: Hobbs, NM Weather: clear, 75°

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 64.50 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Historical
 Depth to Static Water: 62.16 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 2.34 feet Well Volume: 3.7 gal Screened Interval (from GS): _____
 Pump intake depth 62.5' (from GS) Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s)
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min
 Lites
 1. Fultz pump
 2. YSI
 3. Turbidity meter

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1419	L	-	°C	mS/cm	mV	mg/L	NTUs	ft	
1421	0.5	6.64	21.77	1.090	94	5.35	↓	—	
1423	1.0	6.67	21.58	1.083	90	5.00	↓	—	
1425	1.5	6.71	21.43	1.076	89	4.95	↓	—	
1427	2.0	6.73	21.64	1.072	88	5.01	↓	62.40	
1429	2.5	6.75	21.83	1.073	85	5.31	↓	62.42	
1431	3.0	6.76	21.91	1.076	84	5.38	↓		

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: 62.42' Field Filtered? Yes No
 Sample ID: MW-5 Sample Time: 1435 # of Containers: 9
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 0.0 mg/L
 DO: 5.6 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

WELL ID: MW-11A

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 013 Date: 10-2-03 Time: 1220
 Client: BS Services Personnel: R. Brada / R. Rexroad
 Project Location: Hobbs, NM Weather: _____

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>63.82</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input checked="" type="checkbox"/> Other: <u>Historical</u>
Depth to Static Water: <u>61.93</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: _____ feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>1.94</u> feet	Well Volume: <u>0.31</u> gal
Pump intake depth <u>NA</u> (from GS)	Screened Interval (from GS): _____
	Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 2" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Equipment Model(s)
 1. N/A
 2. _____
 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
									<u>purged well by removing 3 well volumes (1.0 gallons)</u>

4. SAMPLING DATA

Method(s): Bailer, Size: 2" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: _____ Field Filtered? Yes No

Sample ID: MW-11A Sample Time: 1226 # of Containers: 9

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron:	<u>8.4</u> mg/L
DO:	<u>4.2</u> mg/L
Nitrate:	_____ mg/L
Sulfate:	_____ mg/L
Alkalinity:	_____ mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

WELL ID: MW-120

1. PROJECT INFORMATION

Project Number: 2832 Task Number: 018 Date: 10-2-03 Time: 1120
 Client: BJ Personnel: MTRB
 Project Location: Hobbs Weather: clear, ± 65°, minimal breeze

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 87.58 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 62.05 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 25.53 feet Well Volume: 4.1 gal Screened Interval (from GS): _____
 Pump intake depth 84.5 (from GS) (3' above TD) Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s)
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. YSF
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: 0.2 Liters /min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1103	0 L	-	0C	mS/cm	mV	mg/L	NTU _s	ft.	
1106	0.5	7.00	19.88	1452	44	1.34	NM	62.22	
1108	1	6.99	19.91	1145	57	1.07	↓	62.24	
1110	1.5	6.97	20.05	1.141	43	0.97	↓	62.20	RR 10/2/3
1112	2.0	6.95	20.31	1.139	43	0.77	↓	62.21	HTS - lowered
1115	2.5	6.97	20.44	1.139	39	0.74	↓	62.19	pump ± 1.5'

Start purge

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: 62.19' Field Filtered? Yes No
 Sample ID: MW-120 Sample Time: 1120 # of Containers: 9
 Duplicate Sample Collected? Yes No ID: MW-100

Geochemical Analyses

Ferrous Iron: 1.0 mg/L
 DO: 1.0 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Sampled for BTEX (TPH-G, TPH-D), Methane, alkalinity, NO₃, SO₄, Cl-

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

WELL ID: MW-14

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 014 Date: 10-2-03 Time: _____
 Client: BS Services Personnel: R. Banks / R. Reynolds
 Project Location: Hobbs, NM Weather: _____

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 69.37 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Historical
 Depth to Static Water: 62.73 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 6.64 feet Well Volume: 1.06 gal Screened Interval (from GS): _____
 Pump intake depth: _____ (from GS) 6.64 x 3 = 3.18 gal. Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s) _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. _____
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
									Purged well by removing 3 well volumes (3.18 gallons)

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: _____ Sample Time: _____ # of Containers: _____
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: R. Banks

WELL ID: MW-15

1. PROJECT INFORMATION

Project Number: 12532.018 Task Number: 018 Date: 10-2-03 Time: 1807
 Client: BT Personnel: R. Banda
 Project Location: Hobbs Weather: clear to 70°

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>67.01</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Static Water: <u>61.70</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: <u>65.21</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>5.31</u> feet	Well Volume: <u>0.85</u> gal
Pump intake depth _____ (from GS)	Screened Interval (from GS): _____ <small>Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft</small>
	<u>0.85 x 3 = 2.55</u>

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ **Equipment Model(s)** _____

Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. _____

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____

Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
									Purged well by removing 3 well volumes (2.5 gallons)

4. SAMPLING DATA

Method(s): Bailer, Size: 2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: NM Field Filtered? Yes No

Sample ID: MW-15 Sample Time: 1807 # of Containers: _____

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L

DO: _____ mg/L

Nitrate: _____ mg/L

Sulfate: _____ mg/L

Alkalinity: _____ mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

WELL ID: MW-16

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 018 Date: 10-2-03 Time: 0939
 Client: BJ Personnel: RR/RB
 Project Location: Hobbs Weather: Clear ± 65° minimal freeze

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 66.61 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: _____ feet Well Volume: _____ gal Screened Interval (from GS): _____
 Pump intake depth (from GS) (3' above TD) Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s) _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. YSI
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: 0.25 liters gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
0926	start purge	5.0	9°C	ms/cm	MV	ms/L	NM	ft	
0927	0.5	6.02	17.45	3483	88	6.96	↓	66.98	Clear
0929	1.0	6.10	17.66	3499	89	6.97	↓	66.90	
0930	1.5	6.19	17.41	3483	91	7.05	↓	66.90	
0934	2.0	6.24	17.46	3473	92	7.09	↓	66.90	
0936	2.5	6.28	17.92	3445	93	7.04	↓	66.88	

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: 66.45 Field Filtered? Yes No
 Sample ID: MW-16 Sample Time: 9:39 # of Containers: 1
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

~~Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L~~

5. COMMENTS

chloride analysis

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

B

BROWN AND
CALDWELL

APPENDIX B

Laboratory Analytical Reports



12532.018

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
03100106

Report To: Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886	Project Name: BJ Service/12832.018 Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported:
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The data in this report applies to the analysis of five water samples from the BJ Services site located in Hobbs, New Mexico. SPL received these samples on October 3, 2003, assigned them to SPL Certificate of Analysis No. 03100106, and assigned analyses as specified on Chain-of-Custody No. 189843.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.


Pat Lynch
Senior Project Manager

11/3/2003

Date



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03100106

Report To: Brown & Caldwell
 Rick Rexroad
 1415 Louisiana
 Suite 2509
 Houston
 TX
 77002-
 ph: (713) 759-0999

fax: (713) 308-3886

Project Name: BJ Service/12832.018

Site: Hobbs, NM

Site Address:

PO Number:

State: New Mexico

State Cert. No.:

Date Reported:

Fax To:

Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-12D	03100106-01	Water	10/2/2003 11:20:00 AM	10/3/2003 9:30:00 AM		<input type="checkbox"/>
MW-11A	03100106-02	Water	10/2/2003 12:20:00 PM	10/3/2003 9:30:00 AM	189843	<input type="checkbox"/>
MW-10	03100106-03	Water	10/2/2003 11:40:00 AM	10/3/2003 9:30:00 AM	189843	<input type="checkbox"/>
MW-5	03100106-04	Water	10/2/2003 2:35:00 PM	10/3/2003 9:30:00 AM	189843	<input type="checkbox"/>
MW-100	03100106-05	Water	10/2/2003 12:00:00 PM	10/3/2003 9:30:00 AM	189843	<input type="checkbox"/>

Patricia L. Lynch
 Pat Lynch
 Senior Project Manager

11/3/2003

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-12D

Collected: 10/02/2003 11:20

SPL Sample ID: 03100106-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Bicarbonate	224	2	1		10/15/03 14:00	RA	1910032
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Carbonate	ND	2	1		10/15/03 14:00	RA	1910079
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	99.8	1	1		10/15/03 11:00	RA	1909995
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	1.2	1		10/08/03 4:59	AM	1906947
Surr: n-Pentacosane	62.6	% 18-120	1		10/08/03 4:59	AM	1906947
Prep Method	Prep Date	Prep Initials					
SW3510C	10/03/2003 13:09	K_L					
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		10/14/03 6:52	AE	1906285
Surr: 1,4-Difluorobenzene	99.7	% 74-121	1		10/14/03 6:52	AE	1906285
Surr: 4-Bromofluorobenzene	91.3	% 55-150	1		10/14/03 6:52	AE	1906285
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		10/09/03 15:59	J_F	1900627
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen,Nitrate (As N)	ND	0.1	1		10/03/03 14:28	CV	1903353
Sulfate	170	4	20		10/15/03 20:40	CV	1910577
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		10/14/03 6:52	AE	1906474
Ethylbenzene	ND	1	1		10/14/03 6:52	AE	1906474
Toluene	ND	1	1		10/14/03 6:52	AE	1906474
Xylenes,Total	ND	1	1		10/14/03 6:52	AE	1906474
Surr: 4-Bromofluorobenzene	92.7	% 57-157	1		10/14/03 6:52	AE	1906474
Surr: 1,4-Difluorobenzene	99.3	% 39-163	1		10/14/03 6:52	AE	1906474

Qualifiers:

ND/U - Not Detected at the Reporting Limit
 B - Analyte detected in the associated Method Blank
 * - Surrogate Recovery Outside Advisable QC Limits
 J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)
 D - Surrogate Recovery Unreportable due to Dilution
 MI - Matrix Interference



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-11A Collected: 10/02/2003 12:20 SPL Sample ID: 03100106-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Bicarbonate	381	2	1		10/15/03 14:00	RA	1910033
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Carbonate	ND	2	1		10/15/03 14:00	RA	1910080
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	3240	50	50		10/15/03 11:00	RA	1909996
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	1.2	1		10/08/03 5:38	AM	1906948
Surr: n-Pentacosane	72.5 %	18-120	1		10/08/03 5:38	AM	1906948
<u>Prep Method</u>	<u>Prep Date</u>	<u>Prep Initials</u>					
SW3510C	10/03/2003 13:09	K_L					
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	0.2	0.1	1		10/14/03 7:18	AE	1906286
Surr: 1,4-Difluorobenzene	113 %	74-121	1		10/14/03 7:18	AE	1906286
Surr: 4-Bromofluorobenzene	84.0 %	55-150	1		10/14/03 7:18	AE	1906286
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		10/09/03 16:26	J_F	1900629
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen,Nitrate (As N)	1.4	0.1	1		10/03/03 15:06	CV	1903356
Sulfate	350	20	100		10/15/03 21:18	CV	1910580
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	3.7	1	1		10/14/03 7:18	AE	1906475
Ethylbenzene	ND	1	1		10/14/03 7:18	AE	1906475
Toluene	ND	1	1		10/14/03 7:18	AE	1906475
Xylenes,Total	ND	1	1		10/14/03 7:18	AE	1906475
Surr: 4-Bromofluorobenzene	102 %	57-157	1		10/14/03 7:18	AE	1906475
Surr: 1,4-Difluorobenzene	98.1 %	39-163	1		10/14/03 7:18	AE	1906475

Qualifiers: ND/U - Not Detected at the Reporting Limit
 B - Analyte detected in the associated Method Blank
 * - Surrogate Recovery Outside Advisable QC Limits
 J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)
 D - Surrogate Recovery Unreportable due to Dilution
 MI - Matrix Interference



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-10 Collected: 10/02/2003 11:40 SPL Sample ID: 03100106-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Bicarbonate	364	2	1		10/15/03 14:00	RA	1910034
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Carbonate	ND	2	1		10/15/03 14:00	RA	1910082
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	420	10	10		10/15/03 11:00	RA	1909997
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	1.2	1		10/08/03 6:17	AM	1906949
Surr: n-Pentacosane	67.7 %	18-120	1		10/08/03 6:17	AM	1906949
<u>Prep Method</u>	<u>Prep Date</u>	<u>Prep Initials</u>					
SW3510C	10/03/2003 13:09	K_L					
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		10/14/03 7:44	AE	1906288
Surr: 1,4-Difluorobenzene	98.7 %	74-121	1		10/14/03 7:44	AE	1906288
Surr: 4-Bromofluorobenzene	84.7 %	55-150	1		10/14/03 7:44	AE	1906288
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		10/09/03 16:36	J_F	1900630
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen, Nitrate (As N)	0.11	0.1	1		10/03/03 15:18	CV	1903357
Sulfate	360	20	100		10/15/03 21:56	CV	1910583
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		10/14/03 7:44	AE	1906476
Ethylbenzene	ND	1	1		10/14/03 7:44	AE	1906476
Toluene	ND	1	1		10/14/03 7:44	AE	1906476
Xylenes, Total	ND	1	1		10/14/03 7:44	AE	1906476
Surr: 4-Bromofluorobenzene	99.5 %	57-157	1		10/14/03 7:44	AE	1906476
Surr: 1,4-Difluorobenzene	101 %	39-163	1		10/14/03 7:44	AE	1906476

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-5 Collected: 10/02/2003 14:35 SPL Sample ID: 03100106-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Bicarbonate	194	2	1		10/15/03 14:00	RA	1910036
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Carbonate	5.97	2	1		10/15/03 14:00	RA	1910083
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	116	2	2		10/15/03 11:00	RA	1909998
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	1.1	1		10/08/03 6:57	AM	1906950
Surr: n-Pentacosane	68.0	% 18-120	1		10/08/03 6:57	AM	1906950
Prep Method	Prep Date	Prep Initials					
SW3510C	10/03/2003 13:09	K_L					
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		10/14/03 8:11	AE	1906290
Surr: 1,4-Difluorobenzene	99.0	% 74-121	1		10/14/03 8:11	AE	1906290
Surr: 4-Bromofluorobenzene	89.3	% 55-150	1		10/14/03 8:11	AE	1906290
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		10/09/03 16:51	J_F	1900631
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen, Nitrate (As N)	2.5	0.1	1		10/03/03 15:31	CV	1903358
Sulfate	100	2	10		10/15/03 22:09	CV	1910584
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		10/14/03 8:11	AE	1906477
Ethylbenzene	ND	1	1		10/14/03 8:11	AE	1906477
Toluene	ND	1	1		10/14/03 8:11	AE	1906477
Xylenes, Total	ND	1	1		10/14/03 8:11	AE	1906477
Surr: 4-Bromofluorobenzene	98.4	% 57-157	1		10/14/03 8:11	AE	1906477
Surr: 1,4-Difluorobenzene	101	% 39-163	1		10/14/03 8:11	AE	1906477

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-100 Collected: 10/02/2003 12:00 SPL Sample ID: 03100106-05

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	1	1		10/08/03 7:36 AM		1906951
Surr: n-Pentacosane	64.6	% 18-120	1		10/08/03 7:36 AM		1906951

Prep Method	Prep Date	Prep Initials
SW3510C	10/03/2003 13:09	K_L

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		10/14/03 8:38 AE		1906291
Surr: 1,4-Difluorobenzene	103	% 74-121	1		10/14/03 8:38 AE		1906291
Surr: 4-Bromofluorobenzene	70.7	% 55-150	1		10/14/03 8:38 AE		1906291

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		10/14/03 8:38 AE		1906478
Ethylbenzene	ND	1	1		10/14/03 8:38 AE		1906478
Toluene	ND	1	1		10/14/03 8:38 AE		1906478
Xylenes, Total	ND	1	1		10/14/03 8:38 AE		1906478
Surr: 4-Bromofluorobenzene	98.1	% 57-157	1		10/14/03 8:38 AE		1906478
Surr: 1,4-Difluorobenzene	101	% 39-163	1		10/14/03 8:38 AE		1906478

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL

Quality Control Documentation



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Diesel Range Organics
Method: SW8015B

WorkOrder: 03100106
Lab Batch ID: 32240a

Method Blank

Samples in Analytical Batch:

RunID: HP_V_031013A-1906954 Units: mg/L
Analysis Date: 10/13/2003 14:03 Analyst: AM
Preparation Date: 10/03/2003 13:09 Prep By: K_L Method SW3510C

Lab Sample ID Client Sample ID
03100106-01B MW-12D
03100106-02B MW-11A
03100106-03B MW-10
03100106-04B MW-5
03100106-05B MW-100

Table with 3 columns: Analyte, Result, Rep Limit. Row 1: Diesel Range Organics, ND, 1.0. Row 2: Surr: n-Pentacosane, 82.6, 18-120.

Laboratory Control Sample (LCS)

RunID: HP_V_031013A-1906955 Units: mg/L
Analysis Date: 10/13/2003 14:42 Analyst: AM
Preparation Date: 10/03/2003 13:09 Prep By: K_L Method SW3510C

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row 1: Diesel Range Organics, 2.5, 2.38, 95, 21, 130.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03100083-04
RunID: HP_V_031013A-1906931 Units: mg/L
Analysis Date: 10/08/2003 22:55 Analyst: AM
Preparation Date: 10/03/2003 13:09 Prep By: K_L Method SW3510C

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row 1: Diesel Range Organics, ND, 5, 8.96, 124, 5, 9.99, 145 *, 11.0, 40, 13, 130.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Headspace Gas Analysis
Method: RSK147

WorkOrder: 03100106
Lab Batch ID: R95616

Method Blank

Samples in Analytical Batch:

RunID: VARC_031009B-1900625 Units: mg/L
Analysis Date: 10/09/2003 15:27 Analyst: J_F

Lab Sample ID Client Sample ID
03100106-01C MW-12D
03100106-02C MW-11A
03100106-03C MW-10
03100106-04C MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Row: Methane, ND, 0.0012

Laboratory Control Sample (LCS)

RunID: VARC_031009B-1900626 Units: mg/L
Analysis Date: 10/09/2003 15:47 Analyst: J_F

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Methane, 1000, 904, 90, 70, 130

Sample Duplicate

Original Sample: 03100106-01
RunID: VARC_031009B-1900627 Units: mg/L
Analysis Date: 10/09/2003 15:59 Analyst: J_F

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Rows: Butane, Ethane, Ethylene, Isobutane, Methane, Propane, Propylene

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 03100106
Lab Batch ID: R95846

Method Blank

Samples in Analytical Batch:

RunID: VARD_031013A-1906311 Units: mg/L
Analysis Date: 10/13/2003 20:15 Analyst: AE

Lab Sample ID Client Sample ID

03100106-01A MW-12D
03100106-02A MW-11A
03100106-03A MW-10
03100106-04A MW-5
03100106-05A MW-100

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Gasoline Range Organics, Surr: 1,4-Difluorobenzene, and Surr: 4-Bromofluorobenzene.

Laboratory Control Sample (LCS)

RunID: VARD_031013A-1906269 Units: mg/L
Analysis Date: 10/13/2003 12:05 Analyst: AE

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Gasoline Range Organics.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03100159-01
RunID: VARD_031013A-1906276 Units: mg/L
Analysis Date: 10/13/2003 21:35 Analyst: AE

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Gasoline Range Organics.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 03100106
Lab Batch ID: R95851

Method Blank

Samples in Analytical Batch:

RunID: VARD_031013D-1906457 Units: ug/L
Analysis Date: 10/13/2003 20:15 Analyst: AE

Lab Sample ID Client Sample ID
03100106-01A MW-12D
03100106-02A MW-11A
03100106-03A MW-10
03100106-04A MW-5
03100106-05A MW-100

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, and two surrogate compounds.

Laboratory Control Sample (LCS)

RunID: VARD_031013D-1906456 Units: ug/L
Analysis Date: 10/13/2003 15:59 Analyst: AE

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03100159-01
RunID: VARD_031013D-1906458 Units: ug/L
Analysis Date: 10/13/2003 20:42 Analyst: AE

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03100106
Lab Batch ID: R95724

Method Blank

Samples in Analytical Batch:

RunID: IC1_031003A-1905420 Units: mg/L
Analysis Date: 10/03/2003 13:38 Analyst: CV

Lab Sample ID Client Sample ID
03100106-01D MW-12D
03100106-02D MW-11A
03100106-03D MW-10
03100106-04D MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Row: Nitrogen,Nitrate (As N), ND, 0.10

Laboratory Control Sample (LCS)

RunID: IC1_031003A-1903350 Units: mg/L
Analysis Date: 10/03/2003 13:50 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Nitrogen,Nitrate (As N), 10, 10.4, 104, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03100106-01
RunID: IC1_031003A-1903354 Units: mg/L
Analysis Date: 10/03/2003 14:41 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Nitrogen,Nitrate (As N), ND, 10, 9.98, 99.8, 10, 10, 100, 0.460, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Chloride, Total
Method: E325.3

WorkOrder: 03100106
Lab Batch ID: R95999

Method Blank

Samples in Analytical Batch:

RunID: WET_031015K-1909988 Units: mg/L
Analysis Date: 10/15/2003 11:00 Analyst: RA

Lab Sample ID Client Sample ID
03100106-01D MW-12D
03100106-02D MW-11A
03100106-03D MW-10
03100106-04D MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Row: Chloride, ND, 1.0

Laboratory Control Sample (LCS)

RunID: WET_031015K-1909990 Units: mg/L
Analysis Date: 10/15/2003 11:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Chloride, 78, 78.81, 101, 90, 110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03100106-04
RunID: WET_031015K-1909999 Units: mg/L
Analysis Date: 10/15/2003 11:00 Analyst: RA

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Chloride, 115.6, 100, 210.1, 94.57, 100, 210.1, 94.57, 0, 20, 85, 115

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Alkalinity, Bicarbonate
Method: M2320 B

WorkOrder: 03100106
Lab Batch ID: R96001

Method Blank

Samples in Analytical Batch:

RunID: WET_031015M-1910027 Units: mg/L
Analysis Date: 10/15/2003 14:00 Analyst: RA

Lab Sample ID Client Sample ID
03100106-01D MW-12D
03100106-02D MW-11A
03100106-03D MW-10
03100106-04D MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Row: Alkalinity, Bicarbonate, ND, 2.0

Laboratory Control Sample (LCS)

RunID: WET_031015M-1910031 Units: mg/L
Analysis Date: 10/15/2003 14:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Alkalinity, Bicarbonate, 101, 98.5, 98, 90, 110

Sample Duplicate

Original Sample: 03100106-04
RunID: WET_031015M-1910036 Units: mg/L
Analysis Date: 10/15/2003 14:00 Analyst: RA

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Row: Alkalinity, Bicarbonate, 194, 193, 1, 20

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Alkalinity, Carbonate
Method: M2320 B

WorkOrder: 03100106
Lab Batch ID: R96005

Method Blank

Samples in Analytical Batch:

RunID: WET_031015N-1910075 Units: mg/L
Analysis Date: 10/15/2003 14:00 Analyst: RA

Lab Sample ID Client Sample ID
03100106-01D MW-12D
03100106-02D MW-11A
03100106-03D MW-10
03100106-04D MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Row: Alkalinity, Carbonate, ND, 2.0

Laboratory Control Sample (LCS)

RunID: WET_031015N-1910078 Units: mg/L
Analysis Date: 10/15/2003 14:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Alkalinity, Carbonate, 101, 98.5, 98, 90, 110

Sample Duplicate

Original Sample: 03100106-04
RunID: WET_031015N-1910083 Units: mg/L
Analysis Date: 10/15/2003 14:00 Analyst: RA

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Row: Alkalinity, Carbonate, 5.97, 6.965, 15, 20

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03100106
Lab Batch ID: R96026A

Method Blank

Samples in Analytical Batch:

RunID: IC1_031015A-1910565 Units: mg/L
Analysis Date: 10/15/2003 17:56 Analyst: CV

Lab Sample ID Client Sample ID
03100106-01D MW-12D
03100106-02D MW-11A
03100106-03D MW-10
03100106-04D MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Row: Sulfate, ND, 0.20

Laboratory Control Sample (LCS)

RunID: IC1_031015A-1910566 Units: mg/L
Analysis Date: 10/15/2003 18:09 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Sulfate, 10, 10.5, 105, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03100106-02
RunID: IC1_031015A-1910581 Units: mg/L
Analysis Date: 10/15/2003 21:31 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Sulfate, 348, 1000, 1430, 108, 1000, 1430, 108, 0.0950, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

*Sample Receipt Checklist
And
Chain of Custody*



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No: 03/00106

189843

page 1 of 1

Client Name: Brown and Caldwell (713) 751-0449
 Address/Phone: 1415 Louisiana #2500, Houston, TX 77002
 Client Contact: Rick Rexroad / Lynn Wright
 Project Name: BJ Services
 Project Number: 13832.018
 Project Location: Hobbs, N.M.
 Invoice To: Rick Rexroad

SAMPLE ID	DATE	TIME	comp	grab	matrix		bottle	size	pres.	Number of Containers	Requested Analysis				
					W=water	SL=sludge					P=plastic	G=glass	1=HCl	2=HNO3	3=H2SO4
MW-12D	10/2/03	1120		X	W	Vial	Vial	8=8oz	1=HCl	9	X	X	X	X	NO ₃ /SO ₄ /Cl
MW-11A		1220		X						9	X	X	X	X	Alkalinity
MW-10		1140		X						6	X	X	X	X	Methane (PST-147)
MW-5		1435		X						8	X	X	X	X	TPH-D (8015)
MW-100		1200		X						5	X	X	X	X	BTEX/TPH-G (8020/8015)

PUSH

Client/Consultant Remarks: ONLY 1 TPH-D aliquot for MW-5 sample, will send 2nd TPH-D aliquot later

Requested TAT: 24hr 72hr Standard Other

Standard QC: Level 3 QC Level 4 QC

Special Reporting Requirements: Standard QC Raw Data Fax Results

Relinquished by Sampler: Rick Rexroad

Relinquished by: Standard 72hr Other

Relinquished by: 24hr 72hr Standard Other

Special Detection Limits (specify):

Intact? Y N
Temp: 3.70C
PM review (initial): PLL

2. Received by: time 10/2/03 1600
date 10/2/03

4. Received by: time
date

6. Received by Laboratory: time 10/3/03
date 10/3/03



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	03100106	Received By:	R_R
Date and Time Received:	10/3/2003 9:30:00 AM	Carrier name:	FedEx
Temperature:	3.7°C	Chilled by:	Water Ice

1. Shipping container/cooler in good condition? Yes No Not Present
2. Custody seals intact on shipping container/cooler? Yes No Not Present
3. Custody seals intact on sample bottles? Yes No Not Present
4. Chain of custody present? Yes No
5. Chain of custody signed when relinquished and received? Yes No
6. Chain of custody agrees with sample labels? Yes No
7. Samples in proper container/bottle? Yes No
8. Sample containers intact? Yes No
9. Sufficient sample volume for indicated test? Yes No
10. All samples received within holding time? Yes No
11. Container/Temp Blank temperature in compliance? Yes No
12. Water - VOA vials have zero headspace? Yes No Not Applicable
13. Water - pH acceptable upon receipt? Yes No Not Applicable

SPL Representative:

Contact Date & Time:

Client Name Contacted:

Non Conformance Issues:

Client Instructions:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
03100148

Report To: Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886	Project Name: BJ Service/12832.018 Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported:
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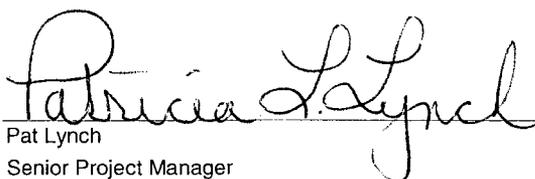
Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.


Pat Lynch
Senior Project Manager

10/21/03

Date



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03100148

Report To: Brown & Caldwell
 Rick Rexroad
 1415 Louisiana
 Suite 2509
 Houston
 TX
 77002-
 ph: (713) 759-0999 fax: (713) 308-3886

Project Name: BJ Service/12832.018
Site: Hobbs, NM
Site Address:

PO Number:
State: New Mexico

State Cert. No.:

Date Reported:

Fax To: Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-16	03100148-01	Water	10/2/03 9:39:00 AM	10/4/03 10:00:00 AM	189852	<input type="checkbox"/>
MW-15	03100148-02	Water	10/2/03 6:07:00 PM	10/4/03 10:00:00 AM	189852	<input type="checkbox"/>
TB-10-2-03	03100148-03	Water	10/2/03	10/4/03 10:00:00 AM	189852	<input type="checkbox"/>
MW-14	03100148-04	Water	10/2/03 7:18:00 PM	10/4/03 10:00:00 AM	189852	<input type="checkbox"/>

Patricia Lynch
 Patricia Lynch
 Senior Project Manager

10/21/03

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-15 Collected: 10/02/2003 18:07 SPL Sample ID: 03100148-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	298	10	10		10/16/03 18:00	RA	1912298

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID TB-10-2-03 Collected: 10/02/2003 0:00 SPL Sample ID: 03100148-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		10/14/03 6:25	AE	1906284
Surr: 1,4-Difluorobenzene	105	% 74-121	1		10/14/03 6:25	AE	1906284
Surr: 4-Bromofluorobenzene	88.3	% 55-150	1		10/14/03 6:25	AE	1906284
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		10/14/03 6:25	AE	1906473
Ethylbenzene	ND	1	1		10/14/03 6:25	AE	1906473
Toluene	ND	1	1		10/14/03 6:25	AE	1906473
Xylenes, Total	ND	1	1		10/14/03 6:25	AE	1906473
Surr: 4-Bromofluorobenzene	91.8	% 57-157	1		10/14/03 6:25	AE	1906473
Surr: 1,4-Difluorobenzene	99.9	% 39-163	1		10/14/03 6:25	AE	1906473

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-14 Collected: 10/02/2003 19:18 SPL Sample ID: 03100148-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	175	5	5		10/16/03 18:00	RA	1912299

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL

Quality Control Documentation



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 03100148
Lab Batch ID: R95846

Method Blank

Samples in Analytical Batch:

RunID: VARD_031013A-1906311 Units: mg/L
Analysis Date: 10/13/2003 20:15 Analyst: AE

Lab Sample ID: 03100148-03A
Client Sample ID: TB-10-2-03

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Gasoline Range Organics (ND, 0.10), Surr: 1,4-Difluorobenzene (91.0, 74-121), and Surr: 4-Bromofluorobenzene (83.7, 55-150).

Laboratory Control Sample (LCS)

RunID: VARD_031013A-1906269 Units: mg/L
Analysis Date: 10/13/2003 12:05 Analyst: AE

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Gasoline Range Organics (Spike: 1, Result: 1.02, Percent Recovery: 102, Lower Limit: 70, Upper Limit: 130).

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03100159-01
RunID: VARD_031013A-1906276 Units: mg/L
Analysis Date: 10/13/2003 21:35 Analyst: AE

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Gasoline Range Organics (Sample Result: 1.72, MS Spike Added: 0.9, MS Result: 1.46, MS % Recovery: -28.3*, MSD Spike Added: 0.9, MSD Result: 1.5, MSD % Recovery: -24.7*, RPD: 2.16, RPD Limit: 36, Low Limit: 36, High Limit: 160).

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 03100148
Lab Batch ID: R95851

Method Blank

Samples in Analytical Batch:

RunID: VARD_031013D-1906457 Units: ug/L
Analysis Date: 10/13/2003 20:15 Analyst: AE

Lab Sample ID: 03100148-03A
Client Sample ID: TB-10-2-03

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, and two surrogate compounds.

Laboratory Control Sample (LCS)

RunID: VARD_031013D-1906456 Units: ug/L
Analysis Date: 10/13/2003 15:59 Analyst: AE

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03100159-01
RunID: VARD_031013D-1906458 Units: ug/L
Analysis Date: 10/13/2003 20:42 Analyst: AE

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service/12832.018

Analysis: Chloride, Total
Method: E325.3

WorkOrder: 03100148
Lab Batch ID: R96089

Method Blank

Samples in Analytical Batch:

RunID: WET_031016D-1912294 Units: mg/L
Analysis Date: 10/16/2003 18:00 Analyst: RA

Lab Sample ID Client Sample ID
03100148-01A MW-16
03100148-02A MW-15
03100148-04A MW-14

Table with 3 columns: Analyte, Result, Rep Limit. Row: Chloride, ND, 1.0

Laboratory Control Sample (LCS)

RunID: WET_031016D-1912296 Units: mg/L
Analysis Date: 10/16/2003 18:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Chloride, 78, 78.81, 101, 90, 110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03100579-01
RunID: WET_031016D-1912301 Units: mg/L
Analysis Date: 10/16/2003 18:00 Analyst: RA

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Chloride, 33.27, 50, 84.06, 101.6, 50, 84.06, 101.6, 0, 20, 85, 115

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

*Sample Receipt Checklist
And
Chain of Custody*



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	03100148	Received By:	R_R
Date and Time Received:	10/4/03 10:00:00 AM	Carrier name:	FedEx
Temperature:	4.1°C	Chilled by:	Water Ice

1. Shipping container/cooler in good condition? Yes No Not Present
2. Custody seals intact on shipping container/cooler? Yes No Not Present
3. Custody seals intact on sample bottles? Yes No Not Present
4. Chain of custody present? Yes No
5. Chain of custody signed when relinquished and received? Yes No
6. Chain of custody agrees with sample labels? Yes No
7. Samples in proper container/bottle? Yes No
8. Sample containers intact? Yes No
9. Sufficient sample volume for indicated test? Yes No
10. All samples received within holding time? Yes No
11. Container/Temp Blank temperature in compliance? Yes No
12. Water - VOA vials have zero headspace? Yes No Not Applicable
13. Water - pH acceptable upon receipt? Yes No Not Applicable

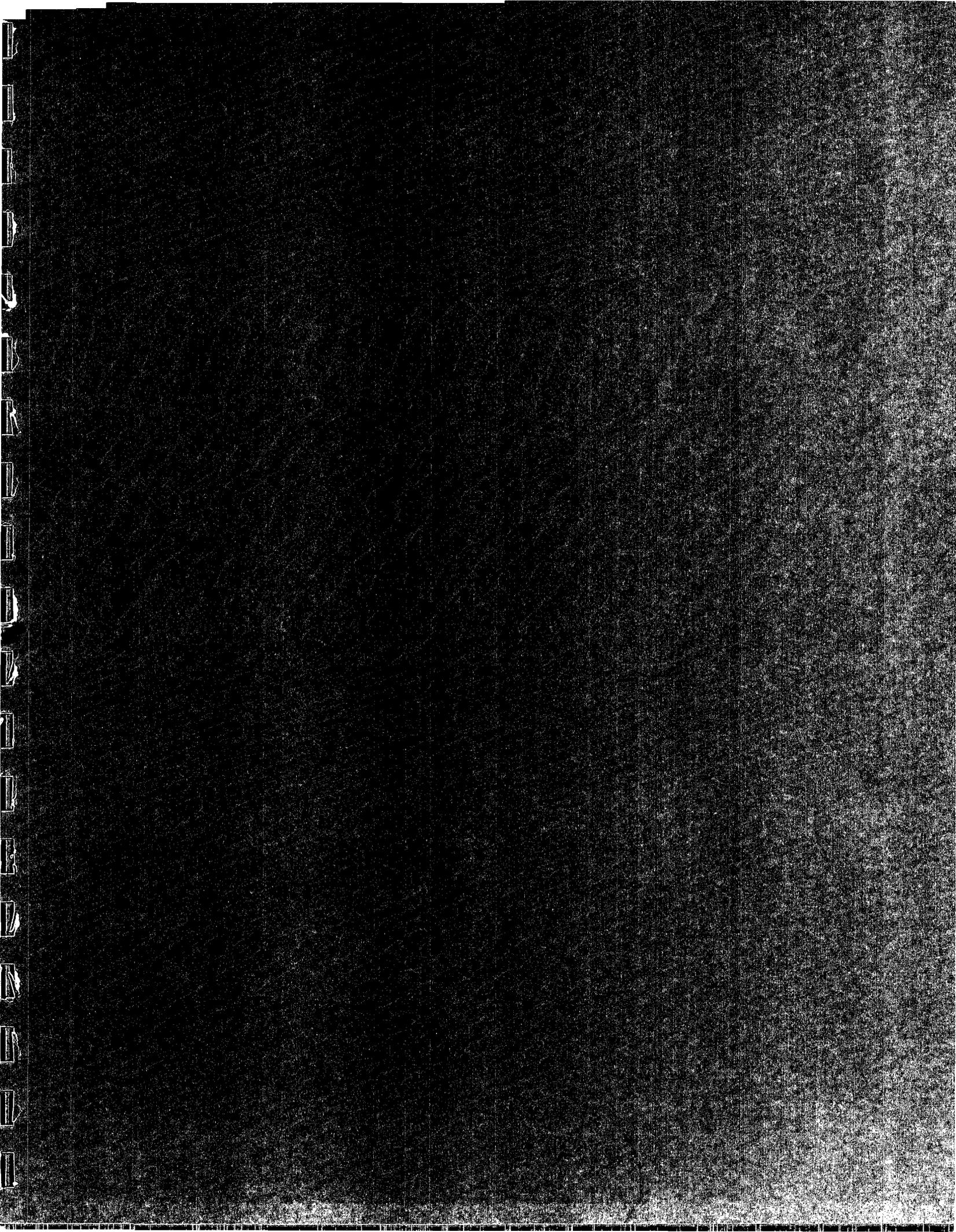
SPL Representative:

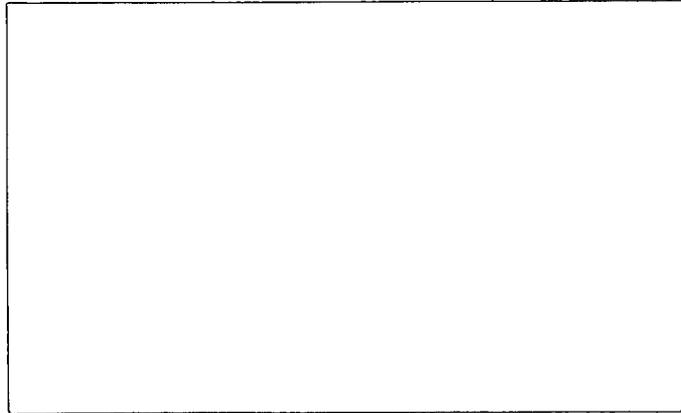
Contact Date & Time:

Client Name Contacted:

Non Conformance Issues:

Client Instructions:





BROWN AND
CALDWELL

Environmental Engineers & Consultants

**JUNE/AUGUST 2003 GROUNDWATER
SAMPLING REPORT
HOBBS, NEW MEXICO FACILITY**

BJ SERVICES COMPANY, U.S.A.

JULY 16, 2004

**JUNE/AUGUST 2003 GROUNDWATER SAMPLING REPORT
HOBBS, NEW MEXICO FACILITY
BJ SERVICES COMPANY, U.S.A.**

Prepared for

BJ Services Company, U.S.A.
11211 FM 2920
Tomball, Texas 77375

BC Project Number: 12832.018



Richard L. Rexroad, P.G.
Project Manager

July 16, 2004

Brown and Caldwell
1415 Louisiana, Suite 2500
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"This report was prepared in accordance with the standards of the environmental consulting industry at the time it was prepared. It should not be relied upon by parties other than those for whom it was prepared, and then only to the extent of the scope of work which was authorized. This report does not guarantee that no additional environmental contamination beyond that described in this report exists at this site."

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DISTRIBUTION AND QA/QC REVIEWER'S SIGNATURE

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- A Boring Log and Well Construction Diagram for Monitor Well MW-16
- B Groundwater Sampling Forms
- C Laboratory Analytical Reports

1.0 INTRODUCTION

Brown and Caldwell conducted a quarterly groundwater sampling event at the BJ Services Company, U.S.A. (BJ Services) facility located at 2708 West County Road in Hobbs, New Mexico in June 2003 and August 2003. The groundwater sampling event was initiated on June 19, 2003, but could not be completed on that date because the analytical laboratory had not supplied an adequate number of sample containers. The groundwater sampling event was completed on August 21-22, 2003. This report presents a description of the groundwater sampling field activities, a summary and evaluation of the analytical results, and an evaluation of remedial technologies applied at the facility. A groundwater potentiometric surface map and a hydrocarbon distribution map are included.

A layout of the facility is shown in Figure 1. The facility formerly operated an on-site fueling system. Subsurface impact near the former diesel fueling system was detected by the New Mexico Oil Conservation Division (NMOCD) during an on-site inspection on February 7, 1991. The fueling system was taken out of operation in July 1995. The NMOCD has required a quarterly groundwater monitoring program to assess the concentration of hydrocarbon constituents in groundwater as a result of the diesel fuel release.

A biosparging system was activated in November 1995 and expanded in March/April 1997 and February/March 1998 to remediate soil and groundwater at the former fuel island area of the facility. The biosparging system was deactivated on November 1, 2000 after achieving cleanup goals for groundwater. The confirmation soil sampling program specified in the NMOCD-approved Remedial Action Plan (RAP) for the facility was conducted in July 2001. The results of the confirmation soil sampling program were presented to NMOCD in the report for the June 2001 groundwater sampling event. In accordance with the RAP for the facility, four additional groundwater sampling events were conducted following the confirmation soil sampling event. Hydrocarbon concentrations in groundwater samples from applicable monitor wells remained below the target concentrations specified in the RAP during each of these sampling events, so a

request to decommission the biosparging system was submitted to NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report for the facility.

BJ Services removed three field waste tanks from the facility on March 6-7, 1997. The ongoing groundwater monitoring program was expanded to address both the former fuel island and the former field waste tanks areas of the facility, as directed by NMOCD in correspondence dated January 21, 1999.

Table 1 presents a site chronology detailing the history of investigations into and the remediation of soil and groundwater impacts in the areas of the former fueling system and the former field waste tanks at the facility.

2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled seven monitor wells (MW-5, MW-10, MW-11A, MW-12D, MW-14, MW-15, and MW-16) at the facility on June 19, 2003 and August 21-22, 2003 to determine the concentrations of dissolved-phase hydrocarbons and/or chloride in groundwater and to evaluate general groundwater quality in the area of the facility. The monitor well locations are shown in Figure 1. In the March 2002 Groundwater Sampling Report for the facility, Brown and Caldwell recommended installation of a new monitor well (MW-16) to replace monitor well OW-4, which has gone dry. Brown and Caldwell completed installation of monitor well MW-16 on May 13, 2003, after obtaining approval by the NMOCD and access privileges from the off-site landowner. A boring log and well construction diagram for monitor well MW-16 are presented in Appendix A. The top-of-casing (TOC) elevation of monitor well MW-16 was surveyed relative to the TOC elevation of existing monitor well MW-15. Monitor well MW-16 was sampled for the first time on June 19, 2003. The following subsections describe the field activities conducted by Brown and Caldwell during the current groundwater sampling event and present the results from the associated groundwater analyses.

2.1 Groundwater Sampling Activities

Groundwater level measurements were obtained from all accessible monitor wells at the facility on June 19, 2003 prior to purging and sampling the subset of wells listed above. Groundwater levels were measured to the nearest 0.01 foot with a water-level indicator. Current and historical groundwater elevation data for each well are presented in Table 2. The groundwater elevation data presented in Table 2 indicate that groundwater levels have continued to decline in monitor wells at the facility since late 1995. A groundwater elevation map for June 19, 2003 is presented in Figure 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with hydraulic gradient ranging from 0.005 foot/foot (ft/ft) in the western portion of the facility to 0.0085 ft/ft in the eastern portion of the groundwater monitoring area.

The monitor wells were purged and sampled with decontaminated or previously unused disposable bailers and clean, previously unused nylon string. Three well volumes were purged from monitor wells MW-5, MW-12D, and MW-16. Monitor wells MW-10, MW-11A, MW-14, and MW-15 were purged dry after removal of volumes of groundwater ranging from 0.2 gallons to 3.5 gallons (see Table 3).

Field parameter measurements for pH, specific conductivity, oxidation-reduction (redox) potential, dissolved oxygen content, and temperature were collected during and upon completion of well purging. Ferrous iron and dissolved oxygen were measured in monitor wells MW-5, MW-10, MW-11A, and MW-15 upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix B. Field parameter readings for each well sampled during the June/August 2003 event are summarized in Table 3.

Groundwater samples were collected by pouring recovered water from a bailer into laboratory-prepared, clean glass or plastic containers, sealed with Teflon[®]-lined lids, labeled, and placed on ice in an insulated cooler for delivery to Southern Petroleum Laboratory in Houston, Texas for analysis using standard chain-of-custody procedures.

Field measurement equipment was decontaminated prior to and following each use. Decontamination procedures consisted of washing with distilled water and a non-phosphate detergent, then rinsing with distilled water. Purge and decontamination waters were discharged to an on-site water reclamation system at the BJ Services facility.

2.2 Results of Groundwater Analyses

Groundwater samples from monitor wells MW-12D, MW-14, MW-15, and MW-16 were analyzed for chloride content using Method E325.3. Table 4 presents current and cumulative results for chloride analyses performed on groundwater samples collected at the facility. Current chloride concentrations in monitor wells MW-12D and MW-14 remained less than the New Mexico Water Quality Control Commission (NMWQCC) chloride standard of 250 milligrams per liter (mg/L).

The chloride concentration of 280 mg/L in monitor well MW-15 exceeds the NMWQCC chloride standard. A chloride concentration of 983 mg/L was measured in the groundwater sample collected from monitor well MW-16 on June 19, 2003. This measurement was confirmed in August 2003, when chloride was detected at 841 mg/L in the monitor well MW-16 groundwater sample.

Groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12D were analyzed for diesel- and gasoline-range total petroleum hydrocarbons (TPH-D and TPH-G) using EPA Method SW-8015B and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method SW-8021B. Current and cumulative analytical results for BTEX constituents, TPH-D, and TPH-G are presented in Table 5. Figure 3 presents a hydrocarbon distribution map for August 21-22, 2003. All BTEX concentrations measured in groundwater during the current sampling event were less than applicable NMWQCC standards.

Analysis of groundwater from monitor wells MW-5, MW-10, MW-11A, and MW-12D for nitrate and sulfate (Method E300.0), dissolved methane (Method RSK 147), and alkalinity (Method E310.1) was performed to evaluate the potential for natural attenuation of hydrocarbons at the facility. The current and historical results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12, and MW-12D are presented in Table 6.

Monitor well MW-16 was analyzed for the full suite of NMWQCC parameters because this was the first sampling event of this well. These parameters are as follows:

- Polynuclear aromatic hydrocarbons (PAHs, by Method 8310);
- Volatile organic compounds (VOCs, by Method 8260);
- RCRA metals and calcium, magnesium, potassium, and sodium (by Methods 6010B and 7470A);
- Carbonate and bicarbonate alkalinity (by Method M2320B);
- Nitrate and sulfate (by Method E300.0); and
- Dissolved methane (by Method RSK 147).

Additional sampling for NMWQCC constituents was performed during the current sampling event for analyses that could not be performed during the March 2003 annual sampling event for NMWQCC parameters due to insufficient groundwater production from various wells at the facility at that time. These parameters included the following:

- Hardness in monitor wells MW-10, MW-14, and MW-15;
- Methane in monitor wells MW-14 and MW-15;
- RCRA metals, calcium, magnesium, potassium, and sodium in monitor wells MW-10, MW-14, and MW-15; and
- PAHs in monitor wells MW-5, MW-10, MW-14, and MW-15.

Table 7 presents the cumulative analytical results for annual sampling and analysis of applicable wells for NMWQCC constituents. The 2003 analytical results for geochemical parameters (i.e., carbonate, bicarbonate, hardness, fluoride, nitrate, sulfate, and cations) and RCRA metals are generally comparable to historic data for these parameters on a well-by-well basis.

With exception of the previously noted chloride concentration and an elevated concentration of sodium, the groundwater geochemistry of monitor well MW-16 is generally similar to that of the other downgradient monitor wells at the facility, MW-14 and MW-15, as indicated in Table 7.

The laboratory analytical reports and chain-of-custody documentation for the groundwater samples collected during the current sampling event are provided in Appendix C.

3.0 EVALUATION OF REMEDIAL TECHNOLOGIES

The following subsections present evaluations of the remedial technologies applied at the former fueling system and former field waste tanks areas of the BJ Services facility in Hobbs, New Mexico.

3.1 Biosparging System at the Former Fueling System Area

Brown and Caldwell recommended installation of a biosparging system at the former fueling system area of the facility in the Remedial Action Plan (RAP) submitted to the NMOCD in May 1994. The NMOCD approved the RAP on August 11, 1994. The biosparging system was installed in August 1995, with expansions completed in April 1997 and March 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in applicable former fueling system area monitor wells. In accordance with the RAP, confirmation soil sampling activities were conducted at the former fueling system area in July 2001 to verify the effectiveness of the biosparging system in remediating vadose zone soils. The analytical results for these soil samples, as discussed in the report for the June 2001 groundwater sampling event, indicated that remediation goals for soil in this area had been achieved.

Following the confirmation soil sampling activities, hydrocarbon concentrations in groundwater remained below target cleanup goals for four successive quarters. In accordance with the RAP for the facility, a request to decommission the biosparging system was submitted to the NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report.

3.2 Natural Attenuation at the Former Field Waste Tanks Area

Natural attenuation is the primary remediation mechanism for the dissolved-phase hydrocarbon plume located in the area of the former field waste tanks (see Figure 1).

Plume behavior is the primary evidence of natural attenuation. Secondary evidence of natural attenuation can be obtained by the collection and evaluation of data relating to the concentrations of indigenous electron acceptors such as dissolved oxygen, nitrate, sulfate, and carbon dioxide. A plume is shrinking when the rate of hydrocarbon loading from a source area is less than the rate of natural degradation of hydrocarbons. Plume shrinkage in the absence of aggressive remediation is indicative of the occurrence of natural attenuation processes. Conversely, a plume is expanding if the rate of hydrocarbon loading from a source area is greater than the rate of natural degradation of hydrocarbons through natural attenuation processes.

The former field waste tanks in the eastern portion of the facility were removed in March 1997. Concentrations of total BTEX in monitor wells in the area of the former field waste tanks have been generally stable or declining subsequent to removal of these tanks. Sporadic increases in total BTEX concentrations between quarterly sampling events have been observed in monitor wells in this area since March 1997, however. These increases may be attributed to sporadic loading rates from the vadose zone in excess of the rate of natural attenuation in the area. The following subsections present primary and secondary evidence of natural attenuation of hydrocarbons in groundwater at the former field waste tanks area of the facility.

3.2.1 Primary Evidence

The benzene concentration in monitor well MW-10 has decreased from a maximum of 1.3 mg/L in August 1995 (prior to removal of the field waste tanks) to less than the NMWQCC standard of 0.01 mg/L for BTEX in the 10 applicable groundwater sampling events between December 2000 and June/August 2003. Benzene has not been detected in monitor well MW-10 since September 2001. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-10 were non-detect during the current sampling event and have generally been non-detect since December 2000.

Benzene concentrations at the monitor well MW-11/11A location have generally decreased from a maximum of 0.970 mg/L in December 1996 (prior to removal of the field waste tanks). The current benzene concentration of 0.0037 mg/L in monitor well MW-11A is less than the NMWQCC

standard for benzene. Benzene concentrations in MW-11A have been less than the NMWQCC standard for benzene during eight of the nine groundwater sampling events conducted since June 2001.

Concentrations of each BTEX constituent at the monitor well MW-12/12D location have been below analytical detection limits for the past nine sampling events.

3.2.2 Secondary Evidence

The following lines of geochemical evidence can also be used to suggest that intrinsic bioremediation (an important natural attenuation mechanism) of dissolved-phase hydrocarbons is occurring in the area of the former field waste tanks.

1. Dissolved oxygen may be utilized as an electron acceptor during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

Groundwater samples were collected using bailers during the current sampling event due to low water levels in the wells. Measured dissolved oxygen concentrations in most wells at the facility were therefore artificially elevated. The use of bailers may cause groundwater samples to become oxygenated, thus precluding a meaningful comparison of dissolved oxygen data.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility when down-hole pumps were utilized has indicated that dissolved oxygen concentrations were typically depressed in hydrocarbon-impacted monitor wells relative to non-impacted wells at the facility (see the June 2001 Groundwater Sampling Report for BJ Services Hobbs, New Mexico Facility, for example).

2. Nitrate may be utilized as an electron acceptor during intrinsic bioremediation after dissolved oxygen is depleted. Therefore, nitrate concentrations may be depressed in areas where intrinsic bioremediation is occurring.

Nitrate was detected at a concentration of 2.4 mg/L in background monitor well MW-5 during the current sampling event. Although minimal to no hydrocarbon impact was detected at former field waste tanks area wells MW-10, MW-11A, and MW-12D during the current sampling event (see Table 5), nitrate was detected in monitor wells MW-10 and MW-11A at respective concentrations of 0.21 mg/L and 0.68 mg/L; nitrate was not detected in monitor well MW-12D. The depressed to non-detectable nitrate concentrations observed

during the current sampling event at former field waste tanks area wells MW-10, MW-11A, and MW-12D relative to the background nitrate concentration at the facility are likely due to residual effects of hydrocarbons in these areas.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors may become active. Ferrous iron is the reduction product of ferric iron, a common electron acceptor. Therefore, ferrous iron concentrations should increase in areas where intrinsic bioremediation is occurring.

The elevated ferrous iron concentrations in monitor wells MW-10 and MW-11A relative to background well MW-5 suggest that ferric iron has been used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area of the facility.

4. Microbes that utilize sulfate may become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through the use of sulfate as an electron acceptor.

During the current sampling event, sulfate concentrations in the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D ranged from 160 mg/L to 350 mg/L, whereas the sulfate concentration in background monitor well MW-5 was measured at 100 mg/L. The fact that sulfate concentrations in the former source area monitor wells are greater than the sulfate concentration in the background monitor well suggests that sulfate is not being utilized as an electron acceptor in the former field waste tanks area.

5. Methane is a reaction product generated during utilization of carbon dioxide as an electron acceptor, so its concentration may increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.

Dissolved methane was not detected in background monitor well MW-5 or in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D during the current groundwater sampling event. These data indicate that carbon dioxide is no longer being utilized as an electron acceptor at the former field waste tanks area of the facility.

6. Redox potential is a measure of chemical energy in groundwater. The redox potential of groundwater from background monitor well MW-5 was measured at 114 mV in August 2003. The redox potential of -16 mV measured in the former field waste tanks area monitor well MW-11A as compared to the positive redox value in the background well at the facility provides additional evidence that natural attenuation of hydrocarbons has occurred at the former field waste tanks area of the facility.

In conclusion, current nitrate and historic dissolved oxygen data suggest that these electron acceptors have been utilized during intrinsic bioremediation processes in the vicinity of the former field waste tanks area of the facility. Data for ferrous iron also indicates that utilization of ferric iron as an electron acceptor has occurred in this area of the facility. Current redox data provide further evidence that natural attenuation of hydrocarbons has occurred in this area.

It is recommended that monitoring for natural attenuation evaluation parameters continue in the former field waste tank area monitor wells MW-10, MW-11A, and MW-12D and in the background well, MW-5. Redox potential, dissolved oxygen content, ferrous iron content, and alkalinity serve as good indicators of the occurrence of intrinsic bioremediation of hydrocarbons, so testing for these parameters in all wells to be sampled during upcoming groundwater monitoring events is recommended.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the current groundwater sampling event at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Current benzene concentrations in all former field waste tanks area monitor wells are less than the NMWQCC standard of 0.01 mg/L for benzene. Based on generally decreasing hydrocarbon concentrations in these monitor wells over time and as substantiated by geochemical data, natural attenuation processes appear to be occurring in the vicinity of the former field waste tanks that were removed in March 1997.
- The chloride concentration measured in downgradient monitor well MW-14 during the current 2003 groundwater sampling event remains less than the NMWQCC standard of 250 mg/L. The chloride concentrations in monitor wells MW-15 and MW-16 exceed the NMWQCC chloride standard, however.

4.2 Recommendations

- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-10, MW-11A, and MW-12D. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters.
- Upon approval from the NMOCD, decommission the biosparging system at the former fuel island area.

DISTRIBUTION

June/August 2003 Groundwater Sampling Report
BJ Services Company, U.S.A.
Hobbs, New Mexico

July 16, 2004

Final Distribution as follows:

1 copy to: State of New Mexico
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2708 West County Road
Hobbs, New Mexico 88240

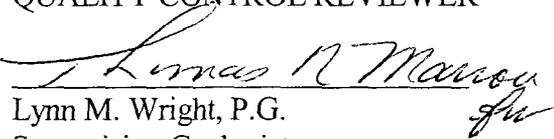
Attention: John Adcock

1 copy to: BJ Services Company, U.S.A.
11211 FM 2920
Tomball, Texas 77375

Attention: Ms. Jo Ann Cobb

1 copy to: Brown and Caldwell Project File

QUALITY CONTROL REVIEWER


Lynn M. Wright, P.G.
Supervising Geologist

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13

"Use or disclosure of data contained on this sheet is subject to the restriction specified at the beginning of this document."

Figures

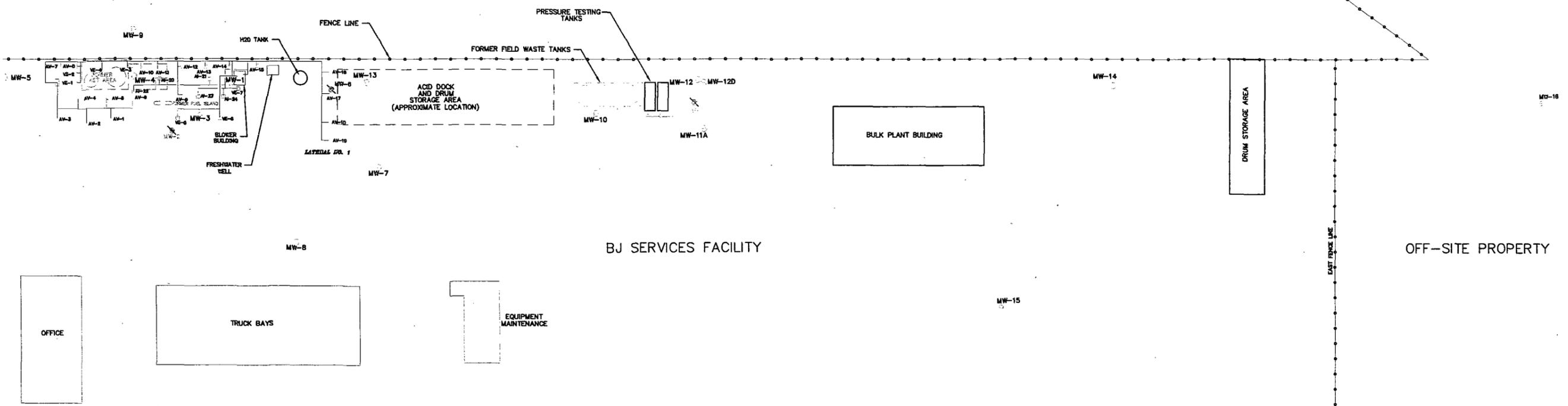
BROWN AND
CALDWELL

FIGURES



WEATHERFORD ENTERRA

DW-4
(APPROXIMATE LOCATION)

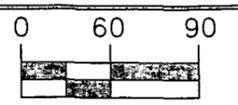


BJ SERVICES FACILITY

OFF-SITE PROPERTY

BROWN AND CALDWELL
HOUSTON, TEXAS

SUBMITTED: _____ DATE: _____
PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL



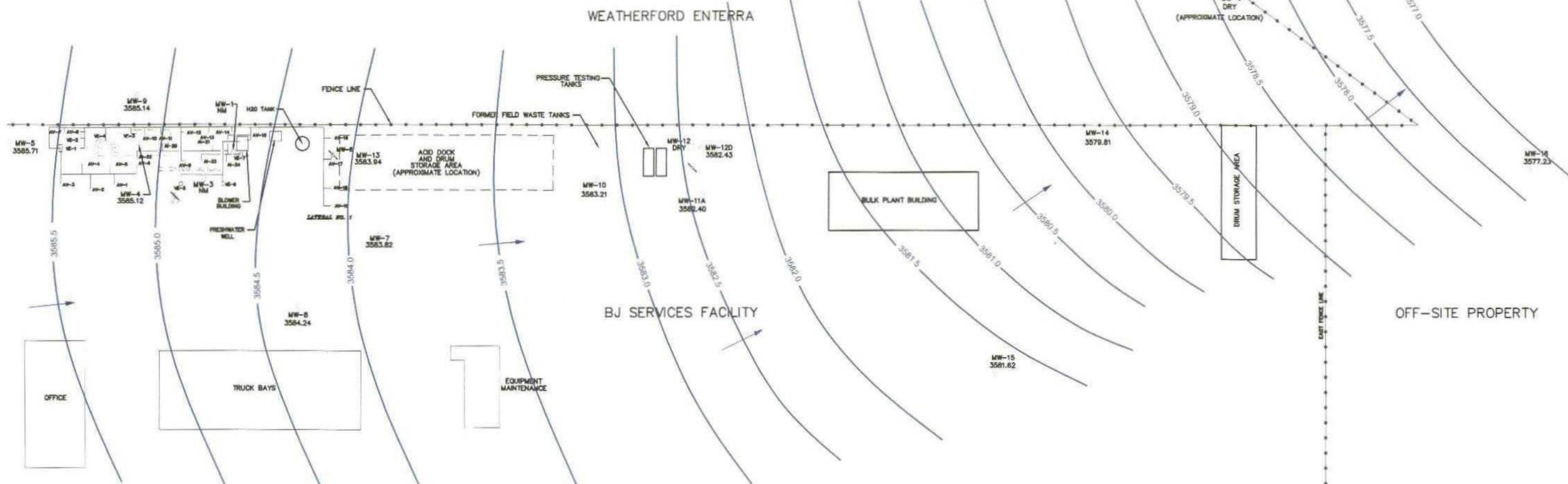
SCALE: 1" = 90'
DRAWN BY: _____ DATE: _____
CHK'D BY: _____ DATE: _____
APPROVED: _____ DATE: _____

LEGEND

- MW-3 EXISTING MONITOR WELL LOCATION
-  BIOSPARGING SYSTEM
- MW-2 MONITOR WELL (PLUGGED AND ABANDONED)

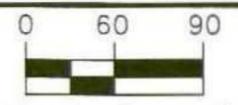
TITLE	SITE MAP	DATE	9/11/00
CLIENT	BJ SERVICES COMPANY, U.S.A.	PROJECT NUMBER	12832.018
SITE	HOBBS, NEW MEXICO	FIGURE NUMBER	1

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BROWN AND CALDWELL
HOUSTON, TEXAS

SUBMITTED: _____ DATE: _____
PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL



SCALE: 1" = 90'
DRAWN BY: _____ DATE: _____
CHK'D BY: _____ DATE: _____
APPROVED: _____ DATE: _____

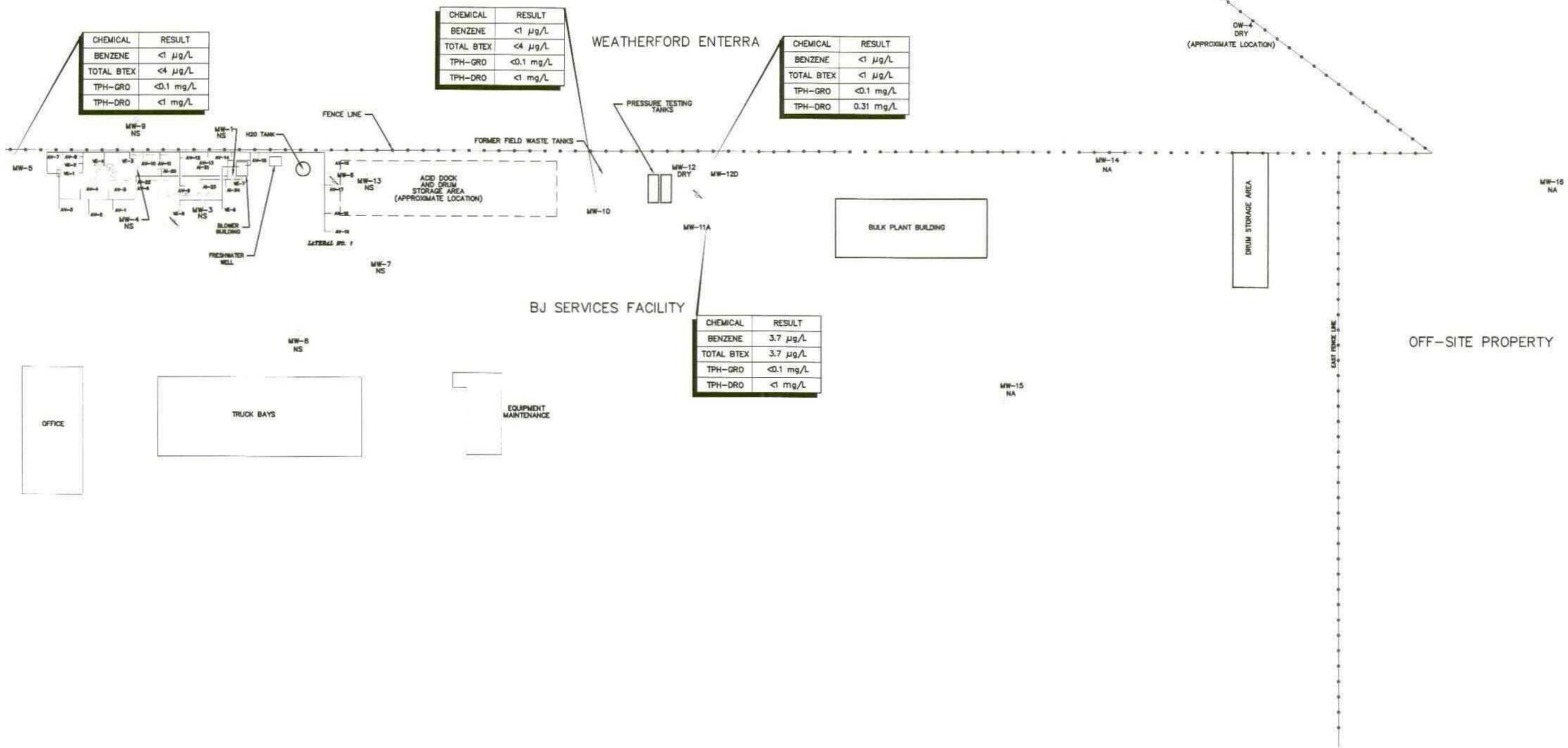
- 3585.12 **LEGEND**
- MW-4 EXISTING MONITOR WELL LOCATION WITH GROUNDWATER ELEVATION (FEET AMSL)
 - BIOSPARING SYSTEM
 - MW-2 MONITOR WELL (PLUGGED AND ABANDONED)
 - GROUNDWATER FLOW DIRECTION

NM = NOT MEASURED

TITLE	GROUNDWATER ELEVATION MAP FOR JUNE 19, 2003
CLIENT	BJ SERVICES COMPANY, U.S.A.
SITE	HOBBS, NEW MEXICO

DATE	10/15/03
PROJECT NUMBER	12832.018
FIGURE NUMBER	2

P:\Cad\JOBS\BJServices\12832\2003\018\GWE-June19,2003.dwg



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BROWN AND CALDWELL
HOUSTON, TEXAS

0 60 90
SCALE: 1" = 90'
DRAWN BY: _____ DATE: _____
CHK'D BY: _____ DATE: _____
APPROVED: _____ DATE: _____

LEGEND

- MW-3 EXISTING MONITOR WELL LOCATION
- BIOSPARGING SYSTEM
- MONITOR WELL (PLUGGED AND ABANDONED)
- GROUNDWATER FLOW DIRECTION

TITLE	HYDROCARBON DISTRIBUTION MAP FOR AUGUST 21-22, 2003	DATE	9/11/00	
CLIENT	BJ SERVICES COMPANY, U.S.A.		PROJECT NUMBER	12832.018
SITE	HOBBS, NEW MEXICO		FIGURE NUMBER	3

Tables

TABLES

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
February 7, 1991	The New Mexico Oil Conservation Division (NMOCD) conducted an on-site inspection, including sampling of the on-site fresh water well.
August 6, 1991	The NMOCD requested submittal of an investigation work plan.
September 5, 1991	Roberts/Schornick and Associates, Inc. (RSA) submitted Technical Work Plan for soil and groundwater investigation to the NMOCD.
November 15, 1991	The NMOCD approved the Technical Work Plan submitted by RSA.
December 16, 1991	RSA sampled the fresh water well. The analytical results were submitted to the NMOCD.
February 21, 1992	Western sampled the fresh water well. The analytical results were submitted to the NMOCD.
July 29 - August 10, 1992	Brown and Caldwell conducted a soil and groundwater investigation according to the approved Technical Work Plan. The investigation included drilling and sampling nine soil borings, sampling six hand-augured soil borings, installation and sampling of five monitor wells, and sampling of the fresh water well.
October 12, 1992	Brown and Caldwell submitted a Soil and Groundwater Investigation Report to the NMOCD.
December 2, 1992	The NMOCD requested the installation and sampling of four additional monitor wells, including a monitor well on an adjacent property.
April 13, 1993	Brown and Caldwell conducted a vapor extraction pilot test on the existing monitor wells.
April 15, 1993	Brown and Caldwell installed off-site monitor well MW-9.
April 22, 1993	Brown and Caldwell sampled off-site monitor well MW-9.
May 27, 1993	Brown and Caldwell submitted a letter report documenting the installation and sampling of off-site monitor well MW-9 to the NMOCD.
June 2, 1993	Brown and Caldwell conducted a short-term aquifer test using the fresh water well at the facility.
June 8, 1993	USTank Management, Inc. conducted a non-volumetric tank system tightness test on the diesel and unleaded gasoline aboveground storage tanks at the facility.
June 21, 1993	ENSR Consulting and Engineering (ENSR), the environmental consultant for the adjacent property owner on which off-site well MW-9 is located, submitted a request to sample monitor well MW-9.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

July 15, 1993	ENSR split a groundwater sample collected from monitor well MW-9 with Brown and Caldwell.
July 30, 1993	USTank Management, Inc. submitted a tank tightness test report to Brown and Caldwell. The report indicated that both tanks and their associated piping passed.
August 16-19, 1993	Brown and Caldwell installed two additional downgradient monitor wells. Brown and Caldwell sampled each of the existing and newly installed monitor wells.
January 26, 1994	Brown and Caldwell performed a groundwater monitoring event; the existing monitor wells and the fresh water well were purged and sampled. The groundwater samples were analyzed for BTEX.
May 6, 1994	A Remedial Action Plan (RAP) was submitted to the NMOCD.
August 11, 1994	The RAP was approved by the NMOCD.
May 3, 1995	Brown and Caldwell conducted the May 1995 groundwater sampling event.
July 31, 1995	Brown and Caldwell conducted the July 1995 groundwater sampling event.
August 2-9, 1995	Installation of the biosparging system was initiated. Nineteen combined injection/extraction wells and three vacuum extraction wells were installed.
August 14-26, 1995	Remedial Construction Services, Inc. (RCS) constructed the initial design of the biosparging system.
September 19, 1995	Operation of the extraction portion of the biosparging system commenced.
November 13, 1995	Operation of the injection portion of the biosparging system commenced.
November 14, 1995	Brown and Caldwell conducted the November 1995 groundwater sampling event.
February 23, 1996	Brown and Caldwell conducted the February 1996 groundwater sampling event.
May 31, 1996	Brown and Caldwell conducted the May 1996 groundwater sampling event.
August 23, 1996	Brown and Caldwell conducted the August 1996 groundwater sampling event.
December 2, 1996	Brown and Caldwell conducted the December 1996 groundwater sampling event.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

March 6-7, 1997	BJ Services removed three field waste tanks and associated hydrocarbon-impacted soil.
March 12, 1997	Brown and Caldwell conducted the March 1997 groundwater sampling event.
March 14, 1997	Vapor extraction well VE-4 was installed.
April 1997	Vapor extraction well VE-4 was connected to the vapor extraction system.
June 12, 1997	Brown and Caldwell conducted the June 1997 groundwater sampling event.
September 11-12, 1997	Brown and Caldwell conducted the September 1997 groundwater sampling event.
December 10, 1997	Brown and Caldwell conducted the December 1997 groundwater sampling event.
February 3-14, 1998	Air injection wells AI-20 through AI-24, vapor extraction wells VE-5 through VE-7, and monitor wells MW-11A and MW-12 were installed.
February 19, 1998	Operation of previously existing injection wells was suspended in preparation for start-up of new injection wells AI-20 through AI-24.
March 10, 1998	Operation of new air injection wells AI-20 through AI-24 and new vapor extraction wells VE-5 through VE-7 commenced.
March 23-24, 1998	Brown and Caldwell conducted the March 1998 groundwater sampling event.
March 24, 1998	Operation of previously existing injection wells and vapor extraction wells resumed.
June 23, 1998	Brown and Caldwell conducted the June 1998 groundwater sampling event.
September 30, 1998	Brown and Caldwell conducted the September 1998 groundwater sampling event.
December 9-10, 1998	Brown and Caldwell conducted the December 1998 groundwater sampling event.
January 21, 1999	The NMOCD requested submittal of a work plan by March 22, 1999 to perform additional groundwater delineation in the area of the former field waste tanks and the former AST/MW-6 area.
March 9-10, 1999	Brown and Caldwell conducted the March 1999 groundwater sampling event.
March 19, 1999	Brown and Caldwell submitted the work plan for groundwater delineation activities that was requested by the NMOCD.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

May 19, 1999	The NMOCD approved the groundwater delineation work plan.
June 10, 1999	Brown and Caldwell performed sampling of existing monitor wells for the June /July 1999 groundwater sampling event.
July 2, 1999	Brown and Caldwell completed plugging and abandonment of monitor wells MW-2, MW-6, and MW-11; installed and developed monitor wells MW-12D and MW-13; and sampled monitor wells MW-12D and MW-13 to complete the June/July 1999 groundwater sampling event.
July 14, 1999	Brown and Caldwell redirected air discharge from the shallow injection well injection system to Lateral No. 1 and optimized air flow to injection wells AI-16 and AI-17 to apply increased remedial pressure to the eastern portion of the west plume.
September 13-14, 1999	Brown and Caldwell conducted the September 1999 groundwater sampling event.
December 9, 1999	Brown and Caldwell conducted the December 1999 groundwater sampling event.
March 9-10, 2000	Brown and Caldwell conducted the March 2000 groundwater sampling event and shut off air flow to biosparging system Lateral Nos. 4S, 5S, 6S, and 7S.
June 8, 2000	Brown and Caldwell conducted the June 2000 groundwater sampling event.
September 13, 2000	Brown and Caldwell conducted the September 2000 groundwater sampling event.
November 1, 2000	Brown and Caldwell deactivated the biosparging system.
December 7, 2000	Brown and Caldwell conducted the December 2000 groundwater sampling event.
January 2001	Brown and Caldwell installed and sampled monitor wells MW-14 and MW-15.
March 8-9, 2001	Brown and Caldwell conducted the March 2001 groundwater sampling event.
June 21-22, 2001	Brown and Caldwell conducted the June 2001 groundwater sampling event.
July 23, 2001	Brown and Caldwell collected soil samples from four soil borings installed at the former fueling system area of the facility to confirm the effectiveness of the biosparging system in remediating hydrocarbon impact to soil, as specified in the NMOCD-approved RAP.
September 10, 2001	Brown and Caldwell conducted the September 2001 groundwater sampling event.

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

December 6, 2001	Brown and Caldwell conducted the December 2001 groundwater sampling event.
February 26, 2002	Brown and Caldwell repaired the crushed well completion on monitor well MW-10.
February 28, 2002	NMOCD requested an evaluation of chloride content of groundwater at the facility.
March 11-12, 2002	Brown and Caldwell conducted the March 2002 groundwater sampling event. Groundwater samples from all water-producing wells at the facility were analyzed for chloride content.
May 21, 2002	Brown and Caldwell submitted the report for the March 2002 groundwater sampling event, including an evaluation of chloride content of groundwater at the facility and a recommendation for installation of a downgradient off-site well (MW-16) to replace off-site well OW-4, which has gone dry.
June 17-18, 2002	Brown and Caldwell conducted the June 2002 groundwater sampling event.
September 16, 2002	Brown and Caldwell conducted the September 2002 groundwater sampling event.
November 11, 2002	Brown and Caldwell submitted the June 2002 Groundwater Sampling Report and Biosparging System Closure Report.
January 9, 2003	Brown and Caldwell conducted the January 2003 groundwater sampling event.
March 6, 2003	Brown and Caldwell conducted the March 2003 groundwater sampling event.
May 13, 2003	Brown and Caldwell installed monitor well MW-16 at a location to the west of the facility.
June 19, 2003	Brown and Caldwell initiated the June 2003 groundwater sampling event.
August 22, 2003	Brown and Caldwell completed the June 2003 groundwater sampling event.

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-1	3,647.53	8/10/1992	53.22	0.00	3,594.31	(1)
		2/9/1993	53.03	0.00	3,594.50	
		8/18/1993	53.10	0.00	3,594.43	
		1/26/1994	53.31	0.00	3,594.22	
		5/3/1995	54.64	0.20	3,593.05	(2)
		7/31/1995	54.14	0.00	3,593.39	
		11/14/1995	53.69	0.00	3,593.84	
		2/23/1996	54.32	0.00	3,593.21	
		5/31/1996	54.14	0.00	3,593.39	
		8/23/1996	56.17	0.00	3,591.36	
		12/2/1996	55.27	0.00	3,592.26	
		3/12/1997	55.70	0.27	3,592.05	
		6/12/1997	55.08	0.02	3,592.47	
		9/12/1997	55.64	0.51	3,592.31	
		12/10/1997	55.46	0.00	3,592.07	
		3/24/1998	55.81	0.00	3,591.72	PSH Sheen
		6/23/1998	56.38	0.06	3,591.20	PSH Sheen
		9/30/1998	56.82	0.00	3,590.71	PSH Sheen
		12/9/1998	57.05	0.00	3,590.48	
		3/10/1999	57.45	0.00	3,590.08	
		6/10/1999	58.02	0.00	3,589.51	
		7/2/1999	57.90	0.00	3,589.63	
		9/14/1999	58.14	0.00	3,589.39	
		12/9/1999	-	-	-	(3)
		3/9/2000	58.99	0.00	3,588.54	
		06/00	-	-	-	
		09/00	-	-	-	
		12/7/00	-	-	-	
		3/8/2001	60.35	0.00	3,587.18	
		6/21/01	60.99	0.00	3,586.54	
		9/10/01	61.17	0.00	3,586.36	
		12/6/2001	not measured	not measured	not measured	
		03/11/02	62.11	0.00	3,585.42	
6/17/02	62.53	0.00	3,585.00			
9/16/2002	62.43	0.00	3,585.10			
1/9/2003	62.61	0.00	3,584.92			
3/6/2003	62.72	0.00	3,584.81			
6/19/2003	-	-	-	(3) - well not located		
MW-2	3,644.84	8/10/1992	52.82	0.00	3,592.02	(1)
		2/9/1993	49.60	0.00	3,595.24	
		8/18/1993	49.71	0.00	3,595.13	
		1/26/1994	49.97	0.00	3,594.87	
		5/3/1995	-	-	-	(4),(5)
MW-3	3,645.00	8/10/1992	52.99	0.00	3,592.01	(1)
		2/9/1993	52.72	0.00	3,592.28	
		8/18/1993	52.82	0.00	3,592.18	
		1/26/1994	53.05	0.00	3,591.95	
		5/3/1995	54.31	0.00	3,590.69	
		7/31/1995	51.24	0.00	3,593.76	
		11/14/1995	51.10	0.00	3,593.90	
		2/23/1996	51.68	0.00	3,593.32	
		5/31/1996	51.45	0.00	3,593.55	
		8/23/1996	51.55	0.00	3,593.45	
		12/2/1996	52.23	0.00	3,592.77	
		3/12/1997	52.67	0.00	3,592.33	
		6/12/1997	52.68	0.00	3,592.32	
		9/11/1997	52.71	0.00	3,592.29	
		12/10/1997	52.89	0.00	3,592.11	
		3/23/1998	53.22	0.00	3,591.78	
		6/23/1998	53.66	0.00	3,591.34	
		9/30/1998	54.06	0.00	3,590.94	
		12/9/1998	54.36	0.00	3,590.64	
		3/10/1999	54.72	0.00	3,590.28	
		6/10/1999	55.17	0.00	3,589.83	
7/2/1999	55.15	0.00	3,589.85			
9/14/1999	55.42	0.00	3,589.58			
12/9/1999	55.78	0.00	3,589.22			
3/9/2000	56.23	0.00	3,588.77			
6/8/2000	56.66	0.00	3,588.34			

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-3 cont.	3,645.00	9/13/2000	56.77	0.00	3,588.23	
		12/7/2000	57.15	0.00	3,587.85	
		3/8/2001	57.69	0.00	3,587.31	
		6/21/01	58.34	0.00	3,586.66	
		9/10/01	58.54	0.00	3,586.46	
		12/6/2001	59.04	0.00	3,585.96	
		3/11/2002	59.50	0.00	3,585.50	
		6/17/02	59.83	0.00	3,585.17	
		9/16/2002	59.80	0.00	3,585.20	
		1/9/2003	60.01	0.00	3,584.99	
3/6/2003	60.10	0.00	3,584.90			
		6/19/2003	-	-	-	(3) - well not located
MW-4	3,645.28	8/10/1992	50.55	0.00	3,594.73	(1)
		2/9/1993	50.26	0.00	3,595.02	
		8/18/1993	50.38	0.00	3,594.90	
		1/26/1994	50.90	0.30	3,594.63	
		5/3/1995	51.51	0.45	3,594.14	
		7/31/1995	51.74	0.26	3,593.75	
		11/14/1995	51.03	0.00	3,594.25	
		2/23/1996	51.65	0.01	3,593.64	
		5/31/1996	51.48	0.00	3,593.80	
		8/23/1996	53.49	0.00	3,591.79	
		12/2/1996	52.32	0.00	3,592.96	
		3/12/1997	52.74	0.05	3,592.58	
		6/12/1997	53.08	0.44	3,592.56	
		9/12/1997	52.60	0.15	3,592.80	
		12/10/1997	52.89	0.00	3,592.39	PSH Sheen
		3/24/1998	53.20	0.25	3,592.29	
		6/23/1998	53.82	0.22	3,591.64	
		9/30/1998	53.96	0.00	3,591.32	200 ml PSH
		12/9/1998	54.27	0.00	3,591.01	
		3/10/1999	54.69	0.04	3,590.62	
		6/10/1999	55.07	0.00	3,590.21	
		7/2/1999	55.10	0.00	3,590.18	
		9/14/1999	55.33	0.00	3,589.95	
		12/9/1999	55.79	0.00	3,589.49	
		3/10/2000	56.12	0.00	3,589.16	
		6/8/2000	56.67	0.00	3,588.61	
		9/13/2000	56.65	0.00	3,588.63	
		12/7/2000	57.05	0.00	3,588.23	
		3/8/2001	57.72	0.00	3,587.56	
		6/21/01	58.18	0.00	3,587.10	
9/10/01	58.54	0.00	3,586.74			
12/6/2001	58.88	0.00	3,586.40			
3/11/2002	59.41	0.00	3,585.87			
6/17/02	59.67	0.00	3,585.61			
9/16/2002	59.71	0.00	3,585.57			
1/9/2003	59.91	0.00	3,585.37			
3/6/2003	60.03	0.00	3,585.25			
6/19/2003	60.16	0.00	3,585.12			
MW-5	3,647.72	8/10/1992	52.38	0.00	3,595.34	(1)
		2/9/1993	52.06	0.00	3,595.66	
		8/18/1993	52.16	0.00	3,595.56	
		1/26/1994	52.50	0.00	3,595.22	
		5/3/1995	53.57	0.00	3,594.15	
		7/31/1995	53.27	0.00	3,594.45	
		11/14/1995	52.83	0.00	3,594.89	
		2/23/1996	53.57	0.00	3,594.15	
		5/31/1996	53.16	0.00	3,594.56	
		8/23/1996	53.41	0.00	3,594.31	
		12/2/1996	53.98	0.00	3,593.74	
		3/12/1997	54.44	0.00	3,593.28	
		6/12/1997	54.48	0.00	3,593.24	
		9/12/1997	54.29	0.00	3,593.43	
		12/10/1997	54.66	0.00	3,593.06	
		3/23/1998	55.05	0.00	3,592.67	
		6/23/1998	55.44	0.00	3,592.28	
9/30/1998	55.65	0.00	3,592.07			

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-5 cont.	3,647.72	12/9/1998	56.00	0.00	3,591.72	
		3/9/1999	56.45	0.00	3,591.27	
		6/10/1999	56.91	0.00	3,590.81	
		7/2/1999	56.93	0.00	3,590.79	
		9/14/1999	57.12	0.00	3,590.60	
		12/9/1999	57.41	0.00	3,590.31	
		3/9/2000	57.92	0.00	3,589.80	
		6/8/2000	58.32	0.00	3,589.40	
		9/13/2000	58.36	0.00	3,589.36	
		12/7/2000	58.71	0.00	3,589.01	
		3/8/2001	59.36	0.00	3,588.36	
		6/21/01	59.94	0.00	3,587.78	
		9/10/01	59.85	0.00	3,587.87	
		12/6/2001	60.56	0.00	3,587.16	
		3/11/02	61.12	0.00	3,586.60	
		6/17/02	61.43	0.00	3,586.29	
		9/16/2002	61.52	0.00	3,586.20	
		1/9/2003	61.75	0.00	3,585.97	
		3/6/2003	61.90	0.00	3,585.82	
		6/19/2003	62.01	0.00	3,585.71	
MW-6	3,644.74	2/9/1993	50.58	0.00	3,594.16	(1)
		8/18/1993	50.78	0.00	3,593.96	
		1/26/1994	51.00	0.00	3,593.74	
		5/3/1995	52.63	0.00	3,592.11	
		7/31/1995	51.90	0.00	3,592.84	
		11/14/1995	51.19	0.00	3,593.55	
		2/23/1996	52.10	0.00	3,592.64	
		5/31/1996	51.76	0.00	3,592.98	
		8/23/1996	51.63	0.00	3,593.11	
		12/2/1996	52.85	0.00	3,591.89	
		3/12/1997	53.55	0.00	3,591.19	
		6/12/1997	52.08	0.00	3,592.66	
		9/11/1997	53.72	0.00	3,591.02	
		12/10/1997	53.27	0.00	3,591.47	
		3/23/1998	53.56	0.00	3,591.18	
		6/23/1998	52.88	0.00	3,591.86	
		9/30/1998	54.89	0.00	3,589.85	
		12/9/1998	54.57	0.00	3,590.17	
		3/10/1999	55.10	0.00	3,589.64	
		7/2/1999				(5),(6)
MW-7	3,644.55	2/9/1993	50.53	0.00	3,594.02	(1)
		8/18/1993	50.74	0.00	3,593.81	
		1/26/1994	51.01	0.00	3,593.54	
		5/3/1995	52.25	0.00	3,592.30	
		7/31/1995	51.92	0.00	3,592.63	
		11/14/1995	51.48	0.00	3,593.07	
		2/23/1996	52.15	0.00	3,592.40	
		5/31/1996	51.78	0.00	3,592.77	
		8/23/1996	52.02	0.00	3,592.53	
		12/2/1996	52.52	0.00	3,592.03	
		3/12/1997	52.99	0.00	3,591.56	
		6/12/1997	53.08	0.00	3,591.47	
		9/11/1997	53.00	0.00	3,591.55	
		12/10/1997	53.28	0.00	3,591.27	
		3/23/1998	53.59	0.00	3,590.96	
		6/23/1998	54.20	0.00	3,590.35	
		9/30/1998	54.54	0.00	3,590.01	
		12/9/1998	54.74	0.00	3,589.81	
		3/9/1999	55.15	0.00	3,589.40	
		6/10/1999	55.66	0.00	3,588.89	
		7/2/1999	55.73	0.00	3,588.82	
		9/13/1999	55.94	0.00	3,588.61	
		12/9/1999	56.38	0.00	3,588.17	
		3/9/2000	56.74	0.00	3,587.81	
		6/8/2000	57.17	0.00	3,587.38	
		9/13/2000	57.40	0.00	3,587.15	
		12/7/2000	57.77	0.00	3,586.78	
		3/8/2001	58.29	0.00	3,586.26	
		6/21/01	58.91	0.00	3,585.64	
9/10/01	59.25	0.00	3,585.30			

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-7 cont.	3,644.55	12/6/2001	59.75	0.00	3,584.80	
		3/11/2002	60.03	0.00	3,584.52	
		6/17/02	60.39	0.00	3,584.16	
		9/16/2002	60.39	0.00	3,584.16	
		1/9/2003	60.53	0.00	3,584.02	
		3/6/2003	60.61	0.00	3,583.94	
		6/19/2003	60.73	0.00	3,583.82	
		2/9/1993	50.48	0.00	3,594.39	(1)
MW-8	3,644.87	8/18/1993	50.67	0.00	3,594.20	
		1/26/1994	50.96	0.00	3,593.91	
		5/3/1995	52.15	0.00	3,592.72	
		7/31/1995	51.77	0.00	3,593.10	
		11/14/1995	51.37	0.00	3,593.50	
		2/23/1996	52.17	0.00	3,592.70	
		5/31/1996	51.55	0.00	3,593.32	
		8/23/1996	51.92	0.00	3,592.95	
		12/2/1996	52.43	0.00	3,592.44	
		3/12/1997	52.93	0.00	3,591.94	
		6/12/1997	53.96	0.00	3,590.91	
		9/11/1997	52.73	0.00	3,592.14	
		12/10/1997	53.15	0.00	3,591.72	
		3/23/1998	53.51	0.00	3,591.36	
		6/23/1998	54.01	0.00	3,590.86	
		9/30/1998	54.35	0.00	3,590.52	
		12/9/1998	54.60	0.00	3,590.27	
		3/9/1999	55.00	0.00	3,589.87	
		6/10/1999	55.56	0.00	3,589.31	
		7/2/1999	55.57	0.00	3,589.30	
		9/13/1999	55.72	0.00	3,589.15	
		12/9/1999	-	-	-	(3)
		3/9/2000	56.52	0.00	3,588.35	
		06/00	-	-	-	
		09/00	-	-	-	
		12/00	-	-	-	
		3/8/2001	58.11	0.00	3,586.76	
		6/21/01	58.72	0.00	3,586.15	
		9/10/01	58.94	0.00	3,585.93	
		12/6/2001	not measured	not measured	not measured	
		3/11/2002	59.94	0.00	3,584.93	
		6/17/02	60.22	0.00	3,584.65	
		9/16/2002	60.24	0.00	3,584.63	
1/9/2003	60.42	0.00	3,584.45			
3/6/2003	60.52	0.00	3,584.35			
6/19/2003	60.63	0.00	3,584.24			
MW-9	3,644.78	4/22/1993	49.73	0.00	3,595.05	(1)
		7/15/1993	49.65	0.00	3,595.13	
		8/18/1993	49.85	0.00	3,594.93	
		1/26/1994	50.02	0.00	3,594.76	
		5/3/1995	51.35	0.00	3,593.43	
		7/31/1995	50.97	0.00	3,593.81	
		11/14/1995	50.43	0.00	3,594.35	
		2/23/1996	51.12	0.00	3,593.66	
		5/31/1996	50.89	0.00	3,593.89	
		8/23/1996	50.98	0.00	3,593.80	
		12/2/1996	51.58	0.00	3,593.20	
		3/12/1997	52.21	0.05	3,592.61	
		6/12/1997	52.10	0.00	3,592.68	PSH Sheen
		9/12/1997	51.95	0.00	3,592.83	PSH Sheen
		12/10/1997	52.37	0.00	3,592.41	PSH Sheen
		3/23/1998	52.68	0.00	3,592.10	PSH Sheen
		6/23/1998	53.08	0.00	3,591.70	PSH Sheen
		9/30/1998	53.39	0.01	3,591.40	PSH Sheen
		12/9/1998	53.68	0.00	3,591.10	
		3/10/1999	54.15	0.00	3,590.63	
		6/10/1999	54.68	0.00	3,590.10	
		7/2/1999	54.71	0.00	3,590.07	
		9/13/1999	54.71	0.00	3,590.07	
12/9/1999	-	-	-	(3)		
3/9/2000	55.69	0.00	3,589.09			
06/00	-	-	-			

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-9 cont.	3,644.78	09/00	-	-	-	
		12/00	-	-	-	
		3/8/2001	57.03	0.00	3,587.75	
		6/21/01	57.91	0.00	3,586.87	
		9/10/01	57.95	0.00	3,586.83	
		12/6/2001	not measured	not measured	not measured	
		3/11/2002	58.96	0.00	3,585.82	
		6/17/02	59.14	0.00	3,585.64	
		9/16/2002	not measured	not measured	not measured	
		1/9/2003	59.34	0.00	3,585.44	
		3/6/2003	59.48	0.00	3,585.30	
		6/19/2003	59.64	0.00	3,585.14	
		MW-10	3,644.47	8/18/1993	51.54	0.00
1/26/1994	51.90			0.00	3,592.57	
5/3/1995	52.97			0.00	3,591.50	
7/31/1995	52.87			0.00	3,591.60	
11/14/1995	52.51			0.00	3,591.96	
2/23/1996	53.05			0.00	3,591.42	
5/31/1996	52.79			0.00	3,591.68	
8/23/1996	53.03			0.00	3,591.44	
12/2/1996	53.41			0.00	3,591.06	
3/12/1997	54.21			0.00	3,590.26	
6/12/1997	53.99			0.00	3,590.48	
9/12/1997	53.94			0.00	3,590.53	
12/10/1997	54.12			0.00	3,590.35	
3/23/1998	54.51			0.00	3,589.96	
6/23/1998	55.12			0.00	3,589.35	
9/30/1998	55.61			0.00	3,588.86	
12/9/1998	55.80			0.00	3,588.67	
3/9/1999	56.09			0.00	3,588.38	
6/10/1999	56.60			0.00	3,587.87	
7/2/1999	56.64			0.00	3,587.83	
9/14/1999	56.91			0.00	3,587.56	
12/9/1999	57.37			0.00	3,587.10	
3/10/2000	57.71			0.00	3,586.76	
6/8/2000	58.08			0.00	3,586.39	
9/13/2000	58.44			0.00	3,586.03	
12/7/2000	58.89			0.00	3,585.58	
3/9/2001	59.31			0.00	3,585.16	
6/21/01	59.89			0.00	3,584.58	
9/10/01	61.34			0.00	3,583.13	
12/6/2001	60.65			0.00	3,583.82	
3/11/2002	60.69			0.00	3,583.78	
6/17/02	60.98			0.00	3,583.49	
9/16/2002	61.00			0.00	3,583.47	
1/9/2003	61.07	0.00	3,583.40			
3/6/2003	61.19	0.00	3,583.28			
6/19/2003	61.26	0.00	3,583.21			
MW-11	3,643.78	8/18/1993	51.92	0.00	3,591.86	(1)
		1/26/1994	52.32	0.00	3,591.46	
		5/3/1995	53.38	0.00	3,590.40	
		7/31/1995	53.35	0.00	3,590.43	
		11/14/1995	52.96	0.00	3,590.82	
		2/23/1996	53.50	0.00	3,590.28	
		5/31/1996	53.25	0.00	3,590.53	
		8/23/1996	53.49	0.00	3,590.29	
		12/2/1996	53.79	0.00	3,589.99	
		3/12/1997	53.81	0.00	3,589.97	
		6/12/1997	53.96	0.00	3,589.82	
		9/12/1997	52.93	0.00	3,590.85	
		12/10/1997				(5),(6)
MW-11A	3,644.24	3/23/1998	54.79	0.00	3,589.45	(7)
		6/23/1998	55.43	0.00	3,588.81	
		9/30/1998	55.96	0.00	3,588.28	
		12/9/1998	56.13	0.00	3,588.11	
		3/10/1999	56.43	0.00	3,587.81	
		6/10/1999	56.94	0.00	3,587.30	
		7/2/1999	57.01	0.00	3,587.23	
		9/14/1999	57.36	0.00	3,586.88	
		12/9/1999	57.72	0.00	3,586.52	

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-11A cont.	3,644.24	3/9/2000	58.01	0.00	3,586.23	
		6/8/2000	58.40	0.00	3,585.84	
		9/13/2000	58.84	0.00	3,585.40	
		12/7/2000	59.29	0.00	3,584.95	
		3/8/2001	59.72	0.00	3,584.52	
		6/21/01	60.28	0.00	3,583.96	
		9/10/01	60.69	0.00	3,583.55	
		12/6/2001	60.88	0.00	3,583.36	
		3/11/2002	61.42	0.00	3,582.82	
		6/17/02	61.55	0.00	3,582.69	
		9/16/2002	61.59	0.00	3,582.65	
		1/9/2003	61.67	0.00	3,582.57	
		3/6/2003	61.70	0.00	3,582.54	
		6/19/2003	61.84	0.00	3,582.40	
		MW-12	3,644.29	3/23/1998	54.72	0.00
6/23/1998	55.48			0.00	3,588.81	
9/30/1998	56.02			0.00	3,588.27	
12/9/1998	56.17			0.00	3,588.12	
3/10/1999	56.45			0.00	3,587.84	
6/10/1999	56.97			0.00	3,587.32	
7/2/1999	56.99			0.00	3,587.30	
9/14/1999	57.41			0.00	3,586.88	
12/9/1999	57.76			0.00	3,586.53	
3/10/2000	58.08			0.00	3,586.21	
6/8/2000	58.42			0.00	3,585.87	
9/13/2000	58.85			0.00	3,585.44	
12/7/2000	59.31			0.00	3,584.98	
3/8/2001	59.76			0.00	3,584.53	
6/21/01	60.29			0.00	3,584.00	
9/10/01	60.79	0.00	3,583.50			
well dry during this and subsequent monitoring events						
MW-12D	3,644.38	7/2/1999	57.13	0.00	3,587.25	(8)
		9/14/1999	57.74	0.00	3,586.64	
		12/9/1999	57.86	0.00	3,586.52	
		3/9/2000	58.24	0.00	3,586.14	
		6/8/2000	58.56	0.00	3,585.82	
		09/00	-	-	-	
		12/00	-	-	-	
		3/8/2001	-	-	-	
		6/21/01	-	-	-	
		9/10/01	-	-	-	
		12/6/2001	61.30	0.00	3,583.08	
		3/11/2002	61.61	0.00	3,582.77	
		6/17/02	61.71	0.00	3,582.67	
		9/16/2002	61.75	0.00	3,582.63	
		1/9/2003	61.86	0.00	3,582.52	
3/6/2003	61.91	0.00	3,582.47			
6/19/2003	61.95	0.00	3,582.43			
MW-13	3,645.52	7/2/1999	56.60	0.00	3,588.92	(9)
		9/14/1999	56.92	0.00	3,588.60	
		12/9/1999	57.28	0.00	3,588.24	
		3/10/2000	57.68	0.00	3,587.84	
		6/8/2000	58.04	0.00	3,587.48	
		9/13/2000	58.29	0.00	3,587.23	
		12/7/2000	58.68	0.00	3,586.84	
		3/8/2001	59.19	0.00	3,586.33	
		6/21/01	59.80	0.00	3,585.72	
		9/10/01	60.03	0.00	3,585.49	
		12/6/2001	60.59	0.00	3,584.93	
		3/11/2002	60.94	0.00	3,584.58	
		6/17/02	61.28	0.00	3,584.24	
		9/16/2002	61.23	0.00	3,584.29	
		1/9/2003	61.38	0.00	3,584.14	
3/6/2003	61.45	0.00	3,584.07			
6/19/2003	61.58	0.00	3,583.94			
MW-14	3,642.45	3/8/2001	61.07	0.00	3,581.38	
		6/21/01	61.71	0.00	3,580.74	
		9/10/01	62.31	0.00	3,580.14	
		12/6/2001	62.80	0.00	3,579.65	
		3/11/2002	62.70	0.00	3,579.75	

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-14 cont.	3,642.45	6/17/02	62.65	0.00	3,579.80	
		9/16/2002	62.55	0.00	3,579.90	
		1/9/2003	62.59	0.00	3,579.86	
		3/6/2003	62.64	0.00	3,579.81	
		6/19/2003	62.64	0.00	3,579.81	
MW-15	3,643.24	3/8/2001	59.79	0.00	3,583.45	
		6/21/01	60.49	0.00	3,582.75	
		9/10/01	61.02	0.00	3,582.22	
		12/6/2001	61.47	0.00	3,581.77	
		3/11/2002	61.65	0.00	3,581.59	
		6/17/02	61.68	0.00	3,581.56	
		9/16/2002	61.47	0.00	3,581.77	
		1/9/2003	61.59	0.00	3,581.65	
		3/6/2003	61.63	0.00	3,581.61	
		6/19/2003	61.62	0.00	3,581.62	
		MW-16	3,643.73	6/19/2003	66.5	0.00
OW-4	3,644.06	7/2/1999	58.18	0.00	3,585.88	(8)
		9/14/1999	58.63	0.00	3,585.43	
		12/9/1999	58.92	0.00	3,585.14	
		3/9/2000	59.19	0.00	3,584.87	
		6/8/2000	59.56	0.00	3,584.50	
		9/13/2000	60.16	0.00	3,583.90	
		12/7/2000	61.15	0.00	3,582.91	
		3/8/2001	61.43	0.00	3,582.63	
		6/21/01	61.48	0.00	3,582.58	
		9/10/01	61.53	0.00	3,582.53	
		12/6/2001	well dry during this and subsequent monitoring events			(10)

- (1) - Top of casing elevations and groundwater elevations of all monitor wells were relative to an arbitrary datum of 100.00 feet prior to March 1997 and have been converted to Mean Sea Level (MSL).
- (2) - For wells having measurable thickness of free product, the groundwater elevation was calculated as follows:
Groundwater Elevation = (TOC elevation)-(depth to groundwater)+[(free product thickness)x(SG of free product)]
Note: The specific gravity (SG) of the free product is 0.82.
- (3) - Not measured.
- (4) - Monitor well MW-2 could not be located after January 1994.
- (5) - Well plugged and abandoned July 2, 1999.
- (6) - Monitor well MW-11 could not be located after September 12, 1997.
- (7) - TOC elevations for MW-11A and MW-12 estimated relative to TOC elevation for MW-10.
- (8) - TOC elevations for MW-12D and OW-4 estimated relative to TOC elevation for MW-12.
- (9) - TOC elevation for MW-13 estimated relative to TOC elevation for MW-7.
- (10) - Well dry (measured depth to water is below base of screen); true groundwater elevation is less than listed groundwater elevation.

Table 3
June/August 2003 Field Screening Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Date	Cumulative Gallons Removed	pH	Temperature (°C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)
MW-5	8/21/03	1	7.45	19.48	1,051	114	9.64 ⁽¹⁾	6.2	8.0
MW-10	8/21/03	0.2*	6.29	20.70	2,187	70	NV ⁽²⁾	7.4	> 10
MW-11A	8/21/03	1.25*	6.61	19.98	8,640	-16	6.80 ⁽¹⁾	1.0	> 10
MW-12D	6/20/03	4.25	7.45	20.99	1,141	-79.2	1.25	1.0	0.6
	8/22/03	12.0	7.89	19.15	1,110	52	9.25 ⁽¹⁾	6.8	3.5
MW-14	8/21/03	2.0*	7.42	19.60	1,537	85	0.26	1.6	NM ⁽³⁾
MW-15	8/21/03	3.5*	7.14	19.93	1,584	94	0.43	2.0	5.6
MW-16	6/20/03	5.5	7.12	19.44	3,658	186.4	11.64 ⁽¹⁾	7.0	0
	8/22/03	5.0	7.67	18.59	3,462	60	2.53	14.0	NM ⁽³⁾

Monitor wells MW-1, MW-4, MW-7, MW-8, MW-9, and MW-13 not sampled.

Monitor well MW-2 not operative after January 1994; P&A'd 7/1/99.

Monitor well MW-6 P&A'd 7/1/99.

Monitor well MW-11 not operative after September 1997; P&A'd 7/1/99.

Monitor wells MW-12 and OW-4 were dry.

⁽¹⁾ - Elevated reading indicates possible instrument error.

⁽²⁾ - NV = Not valid (instrument error).

⁽³⁾ - NM = Not measured

* Well was purged dry using bailing techniques.

Table 4
Cumulative Results⁽¹⁾ for Chloride⁽²⁾ Analyses
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Sample Date	Monitor Wells ⁽³⁾																	
	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
8/1/95	160	150	310	130	380	310	350	110	2,200	3,400	NP	NP	NP	NP	NP	NP	NP	NS
8/23/96	130	140	100	99	210	250	360	140	2,000	2,900	NP	NP	NP	NP	NP	NP	NP	NS
3/23-24/98	212	206	126	151	183	223	364	164	2,390	NS	940	1,200	NP	NP	NP	NP	NP	NS
3/9-10/99	163	156	142	155	411	238	274	123	1,160	NS	834	314	NP	NP	NP	NP	NP	NS
6/10-7/2/99	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NA	195	496	NP	NP	NP	266
3/9-10/00	258	196	196	196	NP	224	241	131	474	NP	1,290	327	117	276	NP	NP	NP	258
1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NS	368	219	NP	NS
3/8-9/01	NA	165	172	152	NP	224	250	127	879	NP	1,720	586	NS	276	327	NA	NP	NS-D
6/21/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NA	NS	NA	222	222	NP	NS-D
9/10/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	NA	NA	245	228	NP	NS-D
9/18/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	79	NA	NA	NA	NP	NS-D
12/6/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NS-D	NA	NA	276	215	NP	NS-D
3/11-12/02	177	172	183	127	NP	188	241	110	861	NP	1,230	NS-D	76	207	284	224	NP	NS-D
6/18/2002	NS	NA	NA	NA	NP	NA	NS	NS	NA	NP	NA	NS-D	NA	145	258	233	NP	NS-D
9/16/2002	NS	NS	NS	121	NP	NS	NS	NS	1,030	NP	1,550	NS-D	86	NS	293	246	NP	NS-D
1/9/2003	NS	NS	NS	123	NP	NS	NS	NS	525	NP	3,150	NS-D	95	NS	179	228	NP	NS-D
3/6/2003	NS	NS	NS	116	NP	NS	NS	NS	363	NP	2,900	NS-D	102	NS	163	272	NP	NS-D
6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS-D	89.3	NS	NS	NS	983	NS-D
8/22/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS-D	NS	NS	182	280	841	NS-D

⁽¹⁾ - in mg/L.

⁽²⁾ - NMWQC standard for chloride is 250 mg/L.

⁽³⁾ - MW-2 not operative after May 3, 1995; P&A'd 7/1/99.

MW-6 P&A'd 7/1/99.

MW-11 P&A'd 7/1/99.

MW-11A installed February 1998.

MW-12 installed February 1998.

MW-12D installed June 1999.

MW-13 installed June 1999.

MW-14 installed January 2001.

MW-15 installed January 2001.

MW-16 installed May 2003.

NP = not present at time of sampling event.

NS = not sampled during applicable sampling event.

NA = not analyzed for chloride during applicable sampling event.

NS-D = not sampled because well was dry during applicable sampling event.

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-1	8/10/92	Regular	5550.0	12090.0	2160.0	7370.0	NA	NA
	2/9/93	Regular	2100.0	6500.0	1300.0	7400.0	NA	NA
	8/19/93	Regular	3200.0	7300.0	1200.0	3700.0	NA	NA
	1/27/94	Regular	1930.0	4580.0	672.0	2390.0	NA	NA
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	390.0	1300.0	230.0	800.0	NA	5.7
	11/15/95	Regular	880.0	1800.0	300.0	970.0	NA	6.8
	2/23/96	Regular	1500.0	3700.0	620.0	2200.0	NA	21
	5/31/96	Regular	1100.0	1700.0	380.0	990.0	NA	7.5
	8/23/96	Regular	1800.0	3300.0	570.0	2100.0	NA	17
	12/2/96	Regular	5600.0	9600.0	2100.0	9600.0	100	64
	3/12/97	Regular	5500.0	9700.0	2600.0	8200.0	22	62
	6/12/97	Regular	5300.0	34000.0	7500.0	27000.0	180	160
	9/12/97	Regular	1800.0	4400.0	1000.0	3000.0	23	21
	12/10/97	Regular	7600.0	12000.0	2800.0	8200.0	11	71
	3/24/98	Regular	4800.0	7200.0	1200.0	2400.0	4.2	38
	6/23/98	Regular	53.0	680.0	580.0	1400.0	1.4	9.2
	9/30/1998	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/1998	Regular	< 1.0	1.5	17.0	110.0	1.4	0.31
	3/10/1999	Regular	< 1.0	< 1.0	8.2	110.0	0.62	0.85
	3/10/1999	Duplicate	< 1.0	< 1.0	7.9	110.0	0.66	0.84
	6/10/1999	Regular	< 1.0	1.1	< 1.0	28.0	0.53	0.55
	6/10/1999	Duplicate	< 1.0	1.8	< 1.0	41.0	0.69	0.76
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	9.1	14	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	2.0	< 1	< 1	< 1	0.49	0.58
6/21/2001	-	NS	NS	NS	NS	NS	NS	
9/10/2001	-	NS	NS	NS	NS	NS	NS	
12/6/2001	-	NS	NS	NS	NS	NS	NS	
3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
6/18/2002	-	NS	NS	NS	NS	NS	NS	
through	-	NS	NS	NS	NS	NS	NS	
June 2003	-	NS	NS	NS	NS	NS	NS	
MW-2	8/10/92	Regular	14.9	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	100.0	12.0	3.0	13.0	NA	NA
	1/27/94	Regular	< 1	1.2	2.0	2.5	NA	NA
MW-3	8/10/92	Regular	304.9	2099.0	6760.0	1586.0	NA	NA
	2/9/93	Regular	130.0	< 10	< 10	190.0	NA	NA
	8/19/93	Regular	560.0	3100.0	630.0	1900.0	NA	NA
	1/27/94	Regular	1070.0	5380.0	510.0	3120.0	NA	NA
	5/4/95	Regular	770.0	3300.0	470.0	1800.0	NA	NA
	8/1/95	Regular	490.0	2900.0	890.0	1600.0	NA	14
	11/15/95	Regular	250.0	1000.0	180.0	440.0	NA	2.9
	2/23/96	Regular	120.0	810.0	170.0	560.0	NA	4
	5/31/96	Regular	670.0	3900.0	1200.0	2300.0	NA	15
	8/23/96	Regular	330.0	2200.0	590.0	1500.0	NA	12

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-3 (cont.)	12/2/96	Regular	220.0	1800.0	670.0	1000.0	0.89	7.4
	3/12/97	Regular	370.0	2000.0	960.0	1400.0	1.8	11
	6/12/97	Regular	860.0	4800.0	1700.0	2600.0	1.9	20
	9/11/97	Regular	770.0	3000.0	1600.0	1900.0	1.6	16
	12/10/97	Regular	240.0	740.0	500.0	450.0	0.59	5.3
	3/24/98	Regular	140.0	630.0	360.0	310.0	0.56	3.9
	6/23/98	Regular	100.0	720.0	350.0	490.0	0.40	4.9
	9/30/1998	Regular	42.0	470.0	450.0	530.0	1.0	3.8
	12/10/1998	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/1999	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/1999	Regular	1.7	3.1	<1.0	36.0	<0.20	0.18
	9/14/1999	Regular	<1.0	<1.0	<1.0	<2.0	<0.20	<0.10
	12/9/1999	Regular	<1	<1	<1	<1	<0.2	<0.1
	3/9/2000	Regular	<1	<1	<1	<1	0.32	<0.1
	6/8/2000	Regular	<1	<1	<1	<1	<0.22	<0.1
	9/13/2000	Regular	<1	<1	<1	<1	<0.2	<0.1
	12/7/2000	Regular	<1	<1	<1	<1	<0.25	<0.1
	3/8/2001	Regular	<1	<1	<1	<1	0.42	<0.1
	6/21/2001	Regular	<1	<1	<1	<1	<0.22	<0.1
	9/10/2001	Regular	<1	<1	<1	<1	<0.2	<0.1
	12/6/2001	Regular	<1	<1	<1	<1	<0.2	<0.1
	3/12/2002	Regular	<1	<1	<1	<1	<0.2	<0.1
	6/18/2002	Regular	<1	<1	<1	<1	<0.2	<0.1
9/16/2002 through June 2003	- - -	- - -	NS NS NS	NS NS NS	NS NS NS	NS NS NS	NS NS NS	NS NS NS
MW-4	8/10/92	Regular	2594.0	10360.0	2160.0	6740.0	NA	NA
	2/9/93	Regular	5200.0	15000.0	2200.0	10000.0	NA	NA
	8/19/93	Regular	3000.0	12000.0	<2000	7000.0	NA	NA
	1/27/94	Regular	NSP	NSP	NSP	NSP	NA	NSP
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	5700.0	17000.0	3500.0	13000.0	NA	120
	11/15/95	Regular	490.0	1600.0	310.0	1100.0	NA	5.2
	2/23/96	Regular	360.0	2800.0	560.0	2500.0	NA	18
	5/31/96	Regular	84.0	830.0	280.0	1100.0	NA	6.2
	8/23/96	Regular	110.0	1400.0	430.0	1800.0	NA	9.8
	12/2/96	Regular	190.0	2000.0	1800.0	7200.0	56	43
	3/12/97	Regular	220.0	1500.0	1500.0	4400.0	27	27
	6/12/97	Regular	47.0	270.0	360.0	950.0	2.5	6.2
	9/12/97	Regular	92.0	840.0	670.0	2100.0	15	7.6
	12/10/97	Regular	230.0	750.0	970.0	2300.0	3.7	16
	3/24/98	Regular	150.0	510.0	270.0	620.0	1.2	5.6
	6/23/98	Regular	160.0	890.0	590.0	1600.0	0.69	10
	9/30/1998	Regular	80.0	180.0	370.0	840.0	2.0	3.9
	12/10/1998	Regular	28.0	70.0	210.0	960.0	9.3	4.3
	12/10/1998	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
3/10/1999	Regular	8.0	20.0	250.0	1400.0	13.0	13	
6/10/1999	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63	
9/14/1999	Regular	<1.0	<1.0	3.3	13.1	0.35	0.17	
12/9/1999	Regular	<1	2.5	2.3	20.1	2	0.53	
3/10/2000	Regular	<1	<1	<1	3.6	2.6	0.15	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-4 (cont.)	6/8/2000	Regular	< 1	< 1	< 1	< 1	0.44	0.23
	9/13/2000	Regular	< 1	< 1	< 1	< 1	0.61	< 0.1
	12/7/2000	Regular	< 1	< 1	1.3	< 1	0.53	0.16
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.43	0.16
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	0.6	< 1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002 through June 2003	-	NS	NS	NS	NS	NS	NS
	MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA
2/9/93		Regular	< 2	< 2	< 2	< 6	NA	NA
8/10/93		Regular	< 2	< 2	< 2	< 6	NA	NA
1/27/94		Regular	8.7	29.9	4.0	11.3	NA	NA
5/3/95		Regular	3.7	5.3	0.9	4.6	NA	NA
8/1/95		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
11/15/95		Regular	< 0.3	1.2	< 0.3	1.5	NA	NA
2/23/96		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
5/31/96		Regular	31.0	86.0	10.0	20.0	NA	NA
8/23/96		Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
12/2/96		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
3/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
6/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
9/12/97		Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
12/10/97		Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
3/23/98		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
6/23/98		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
9/30/1998		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
12/10/1998		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
3/9/1999		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
6/10/1999		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
9/14/1999		Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
12/9/1999		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
3/9/2000		Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
6/8/2000		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
9/13/2000		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/7/2000		Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
3/8/2001		Regular	< 1	< 1	< 1	< 1	0.56	< 0.1
6/21/2001		Regular	< 1	< 1	< 1	< 1	0.26	< 0.1
9/10/2001		Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/6/2001	Regular	< 1	< 1	< 1	< 1	0.49	< 0.1	
3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.24	< 0.1	
6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.3 J	< 0.05	
1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1	
3/6/2003	Regular	< 1	< 1	< 1	< 1	NA	< 0.1	
8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1	
MW-6 ¹	8/10/92	Regular	NS	NS	NS	NS	NA	NS

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-6 (cont.)	2/9/93	Regular	7000.0	19000.0	3100.0	7200.0	NA	NA
	8/19/93	Regular	8100.0	19000.0	3500.0	6400.0	NA	NA
	1/27/94	Regular	7960.0	20200.0	3830.0	6150.0	NA	NA
	5/4/95	Regular	11000.0	17000.0	2900.0	6000.0	NA	NA
	8/1/95	Regular	8300.0	12000.0	2500.0	5100.0	NA	60
	11/15/95	Regular	8900.0	17000.0	2900.0	5500.0	NA	57
	2/23/96	Regular	8100.0	10000.0	2300.0	4000.0	NA	58
	5/31/96	Regular	83.0	150.0	15.0	51.0	NA	0.57
	5/31/96	Duplicate	87.0	160.0	13.0	47.0	NA	0.52
	8/23/96	Regular	31.0	28.0	9.4	7.9	NA	0.46
	12/2/96	Regular	< 1	< 1	< 1	1.7	5.6	< 0.1
	3/12/97	Regular	12.0	< 5	6.8	18.0	12	< 0.5
	6/12/97	Regular	1900.0	1400.0	410.0	310.0	7.8	7.4
	9/11/97	Regular	11.0	1.3	3.4	< 1	1	< 0.1
	12/10/97	Regular	3.0	4.2	1.2	3.9	1.7	0.14
	3/23/98	Regular	3.6	< 1	4.0	< 1	< 0.2	< 0.1
	6/23/98	Regular	170.0	4.1	15.0	7.2	1.2	0.51
	9/30/1998	Regular	1000.0	420.0	140.0	270.0	4.0	3.3
12/10/1998	Regular	7.6	6.6	1.7	5.8	2.0	< 0.1	
3/10/1999	Regular	2500.0	930.0	590.0	1400.0	11.0	13	
MW-7	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	3.0	< 2	< 2	NA	NA
	1/27/94	Regular	1.1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	52.0	3.4	0.7	2.8	NA	NA
	8/1/95	Regular	22.0	2.2	0.9	2.8	NA	< 0.1
	11/15/95	Regular	8.4	0.8	< 0.3	0.9	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Duplicate	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	29.0	83.0	10.0	21.0	NA	0.25
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	4.7	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 5	< 5	< 5	< 5	1.8	< 0.5
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.66	< 0.1
6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.21	< 0.1	
9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.29	< 0.1	
3/8/2001	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1	
6/21/2001	Regular	3.1	< 1	< 1	< 1	< 0.22	< 0.1	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-7 (cont.)	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.33	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	1.3	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	NA	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002 through June 2003	-	NS	NS	NS	NS	NS	NS
	MW-8	8/10/92	Regular	NS	NS	NS	NS	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	3.0	4.9	0.8	3.7	NA	NA
	8/1/95	Regular	3.1	1.2	0.5	1.6	NA	< 0.001
	8/1/95	Duplicate	3.6	1.5	0.5	1.5	NA	< 0.1
	11/15/95	Regular	< 0.3	0.5	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	1.8	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.6	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.38	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
	9/16/2002 through June 2003	-	NS	NS	NS	NS	NS	NS
MW-9	4/22/93	Regular	570.0	380.0	< 50	870.0	NA	NA
	7/15/93	Regular	121.0	7.3	3.0	458.0	NA	NA
	8/19/93	Regular	390.0	290.0	40.0	250.0	NA	NA
	1/27/94	Regular	327.0	357.0	51.1	293.0	NA	NA
	5/3/95	Regular	380.0	110.0	19.0	120.0	NA	NA
	8/1/95	Regular	660.0	410.0	91.0	310.0	NA	6.2
	11/15/95	Regular	240.0	24.0	11.0	140.0	NA	1.5

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-9 (cont.)	11/15/95	Duplicate	170.0	18.0	10.0	120.0	NA	1.9
	2/23/96	Regular	170.0	18.0	2.3	160.0	NA	4.3
	5/31/96	Regular	120.0	16.0	3.0	200.0	NA	NA
	8/23/96	Regular	82.0	13.0	6.0	270.0	NA	4
	8/23/96	Duplicate	76.0	14.0	4.8	250.0	NA	4.4
	12/2/96	Regular	61.0	< 25	< 25	210.0	2.6	2.8
	12/2/96	Duplicate	86.0	13.0	2.4	270.0	3.7	2.9
	3/12/97	Regular	30.0	48.0	420.0	880.0	8.2	19
	6/12/97	Regular	4.7	2.1	11.0	97.0	2.6	2.2
	6/12/97	Duplicate	< 5	< 5	6.6	69.0	5.2	1.9
	9/12/97	Regular	2.1	2.3	2.1	120.0	1.2	1.9
	12/10/97	Regular	4.9	9.0	6.8	62.0	0.86	0.92
	3/24/98	Regular	< 1	< 1	< 1	26.0	0.9	1
	6/23/98	Regular	2.4	22.0	10.0	36.0	< 0.2	0.25
	9/30/1998	Regular	1.1	5.5	21.0	59.0	0.27	0.27
	12/10/1998	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
	3/10/1999	Regular	< 1.0	< 1.0	5.7	68.0	< 0.2	0.22
	6/10/1999	Regular	< 1.0	1.8	1.8	71.0	< 0.20	0.43
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	64.0	0.66	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.4	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	1	< 1	< 1	< 1	0.37	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
9/16/2002 through June 2003	-	NS	NS	NS	NS	NS	NS	
MW-10	8/19/93	Regular	190.0	460.0	< 200	240.0	NA	NA
	1/27/94	Regular	13.4	4.0	5.5	33.6	NA	NA
	5/4/95	Regular	980.0	15.0	11.0	84.0	NA	NA
	8/1/95	Regular	1300.0	32.0	32.0	100.0	NA	3.6
	11/15/95	Regular	1000.0	24.0	15.0	36.0	NA	1.7
	2/23/96	Regular	810.0	23.0	27.0	44.0	NA	2.4
	5/31/96	Regular	700.0	24.0	34.0	28.0	NA	2
	8/23/96	Regular	290.0	3.4	6.4	13.0	NA	1.4
	12/2/96	Regular	280.0	1.3	17.0	8.0	0.94	0.97
	3/12/97	Regular	110.0	< 5	17.0	< 5	0.61	0.57
	6/12/97	Regular	150.0	12.0	30.0	< 5	0.68	< 0.5
	9/12/97	Regular	87.0	2.3	26.0	2.7	0.76	0.33
	9/12/97	Duplicate	87.0	2.4	26.0	2.8	0.79	0.33
	12/10/97	Regular	41.0	9.8	12.0	7.7	1.1	0.28
	12/10/97	Duplicate	36.0	8.5	10.0	6.7	1.2	0.24
	3/23/98	Regular	36.0	< 5	5.9	< 5	1.6	< 0.5
	3/23/98	Duplicate	36.0	< 1	5.3	1.3	1.7	0.18

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G		
			micrograms per liter, ug/L				milligrams per liter, mg/L			
MW-10 (cont.)	6/23/98	Regular	37.0	< 5	< 5	< 5	2.1	< 0.5		
	9/30/1998	Regular	84.0	3.2	30.0	2.2	1.4	0.36		
	12/10/1998	Regular	29.0	1.0	7.0	1.0	0.86	0.18		
	3/9/1999	Regular	28.0	<5.0	5.8	<5.0	0.92	<0.5		
	6/10/1999	Regular	17.0	<1.0	<1.0	<1.0	0.30	0.16		
	9/14/1999	Regular	10.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10		
	12/9/1999	Regular	23.0	< 1	< 1	1.2	0.44	0.16		
	3/10/2000	Regular	300.0	4.3	6.6	43.2	1.2	0.85		
	6/8/2000	Regular	78.0	1.7	7.2	9.0	0.67	0.74		
	9/13/2000	Regular	23.0	1.5	1.1	2.9	1.6	0.41		
	12/7/2000	Regular	7.2	< 1	< 1	< 1	1.5	0.15		
	3/8/2001	Regular	3.4	1.1	< 1	< 1	3.4	0.2		
	6/22/2001	Regular	< 1	< 1	< 1	< 1	1.2	<0.1		
	9/10/01 and 9/18/01	Regular	2	< 1	< 1	< 1	2.3	<0.1		
	12/6/2001	Regular	No Valid Data							
	3/12/2002	Regular	< 1	< 1	< 1	< 1	3.2	< 0.1		
	6/18/2002	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1		
	9/16/2002	Regular	< 0.074	< 0.11	0.1	<0.082	3 J	< 0.05		
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1		
	3/6/2003	Regular	< 1	< 1	18	< 1	NA	< 0.1		
8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1			
MW-11 ¹	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA		
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA		
	5/4/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA		
	8/1/95	Regular	44.0	29.0	5.5	13.0	NA	0.2		
	11/15/95	Regular	190.0	2.8	6.2	11.0	NA	0.4		
	2/23/96	Regular	49.0	1.2	0.5	4.0	NA	0.25		
	5/31/96	Regular	300.0	83.0	12.0	28.0	NA	0.8		
	8/23/96	Regular	100.0	1.2	0.3	4.7	NA	0.26		
	12/2/96	Regular	970.0	< 5	6.0	8.1	2	1.3		
	3/12/97	Regular	130.0	< 5	13.0	5.8	0.42	< 0.5		
	3/12/97	Duplicate	100.0	< 5	10.0	5.1	0.43	< 0.5		
6/12/97	Regular	150.0	23.0	19.0	< 5	1.1	0.55			
9/12/97	Regular	220.0	15.0	27.0	13.0	1	0.46			
MW-11A	3/24/98	Regular	24.0	5.0	< 5	< 5	0.28	0.14		
	6/23/98	Regular	9.9	< 5	< 5	< 5	< 0.2	< 0.5		
	9/30/1998	Regular	9.3	3.7	2.2	7.0	<0.20	0.1		
	12/10/1998	Regular	1.7	<1.0	<1.0	<1.0	<0.20	<0.1		
	3/10/1999	Regular	<5	< 5	< 5	< 5	0.3	<0.5		
	6/10/1999	Regular	<1.0	< 1.0	< 1.0	< 1.0	<0.20	<0.10		
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10		
	12/9/1999	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1		
	3/9/2000	Regular	1.2	< 1	< 1	< 1	0.43	< 0.1		
	6/8/2000	Regular	3.6	< 1	< 1	< 1	0.37	< 0.1		
	9/13/2000	Regular	1.4	< 1	< 1	< 1	0.36	< 0.1		
	12/7/00	Regular	26	< 1	< 1	3.3	0.3	0.12		
	3/8/01	Regular	12	< 5	< 5	< 5	2.2	< 0.5		
	6/22/2001	Regular	1.5	< 1	< 1	< 1	1	< 0.1		
9/10/2001	Regular	7.9	< 1	< 1	< 1	1.1	< 0.1			

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-11A (cont.)	12/6/2001	Regular	<1	<1	<1	<1	1	<0.1
	3/12/2002	Regular	1.8	<1	<1	1	1.6	<0.1
	6/18/2002	Regular	2.9	<0.1	1.3	<1	0.91	<0.1
	9/16/2002	Regular	9	<0.11	41	<0.082	1J	0.2
	1/9/2003	Regular	12	<1	<1	1.2	<1.0	0.4
	3/6/2003	Regular	3.2	<1	<1	1.2	<1	0.13
	8/21/2003	Regular	3.7	<1	<1	<1	<1	<0.1
MW-12	3/24/98	Regular	100.0	11.0	6.0	8.0	0.29	0.41
	6/23/98	Regular	88.0	<5	<5	<5	<0.2	<0.5
	6/23/98	Duplicate	89.0	<5	<5	<5	0.31	<0.5
	9/30/1998	Regular	260.0	3.0	1.2	7.9	<0.20	0.62
	12/10/1998	Regular	160.0	<1.0	<1.0	1.2	0.21	0.36
	3/10/1999	Regular	160.0	1.1	<1.0	2.9	0.38	0.45
	6/10/1999	Regular	49.0	1.4	<1.0	<1.0	0.22	0.13
	9/14/1999	Regular	75.0	<1.0	<1.0	<2.0	<0.20	0.23
	12/9/1999	Regular	64.0	<1	<1	<1	<0.2	0.21
	3/10/2000	Regular	93.0	<1	<1	<1	<0.2	0.21
	3/10/2000	Duplicate	99.0	<1	<1	<1	0.22	0.22
	6/8/2000	Regular	62.0	<1	<1	<1	<0.2	<0.1
	9/13/2000	Regular	34.0	<1	<1	<1	0.23	<0.1
	12/7/2000	Regular	27	<1	2.9	1.9	<0.25	<0.1
	3/8/2001	Regular	14	<1	<1	<1	2.1	0.1
	6/22/2001	Regular	12	<1	<1	<1	0.51	0.11
	9/10/2001	Well Dry (Not Sampled) During This and Subsequent Monitoring Events						
MW-12D	7/2/1999	Regular	<5	<5	<5	<5	<0.20	<0.10
	9/14/1999	Regular	<1.0	<1.0	<1.0	<2.0	<0.20	<0.10
	12/9/1999	Regular	<1	<1	<1	<1	<0.2	<0.1
	3/9/2000	Regular	<1	<1	<1	<1	0.24	<0.1
	6/8/2000	Regular	<1	<1	<1	<1	<0.2	<0.1
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	-	NS	NS	NS	NS	NS	NS
	6/22/2001	-	NS	NS	NS	NS	NS	NS
	9/18/2001	Regular	<1	<1	<1	<1	<0.2	<0.1
	12/6/2001	Regular	<1	<1	<1	<1	<0.2	<0.1
	3/12/2002	Regular	<1	<1	<1	<1	0.44	<0.1
	6/18/2002	Regular	<1	<1	<1	<1	<0.2	<0.1
	9/16/2002	Regular	<0.074	<0.11	<0.068	<0.082	0.2J	<0.05
	1/9/2003	Regular	<1	<1	<1	<1	<1	<0.1
3/6/2003	Regular	<1	<1	<1	<1	<1	<0.1	
6/20/2003	Regular	<1	<1	<1	<1	<1	<0.1	
8/21/2003	Regular	<1	<1	<1	<1	<1	<0.1	
MW-13	7/2/1999	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/1999	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/1999	Regular	430.0	16.0	410.0	40.9	0.46	3.2
	3/10/2000	Regular	88.0	2.8	200.0	1.3	1.9	0.99
	6/8/2000	Regular	6.0	<1	63.0	3.3	1.1	0.91
	9/13/2000	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/2000	Regular	<1	<1	<1	<1	0.43	<0.1
3/8/2001	Regular	<1	<1	1.2	<1	2	<0.1	

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-13 (cont.)	6/22/2001	Regular	< 1	< 1	< 1	< 1	0.31	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.84	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	9/16/2002 through June 2003	-	NS	NS	NS	NS	NS	NS
MW-14	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
MW-15	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
MW-16	6/20/2003	Regular	<5	<5	<5	<5	NA	NA
OW-4	6/10/1999	Regular	<1.0	<1.0	<1.0	4.4	< 0.2	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	3/9/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	0.25	< 0.1
	6/8/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.21	< 0.1
	9/13/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	12/7/2000	Well Dry (Not Sampled) During This and Subsequent Monitoring Events						

¹ Well plugged and abandoned 7/1/99

NA = Not Analyzed

NS = Not Sampled

NS-D = Not Sampled because well was dry

NSP = Not Sampled due to Phase-Separated Hydrocarbons

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-5	3/23/1998	3.87	190	< 0.0012
	3/9/1999	< 0.1	195	< 0.0012
	6/10/1999	4.73	209	< 0.0012
	9/14/1999	4.3	210	< 0.0012
	12/9/1999	4.2	210	< 0.0012
	3/9/2000	5.3	260	< 0.0012
	6/8/2000	4.7	240	< 0.0012
	9/13/2000	3.93	200	< 0.0012
	12/7/2000	3.27	160	< 0.0012
	3/8/2001	3.24	180	< 0.0012
	6/21/2001	2.74	150	0.0017
	9/10/2001	NA ⁽²⁾	130	< 0.0012
	12/6/2001	2.38	120	< 0.0012
	3/12/2002	2.98	120	< 0.0012
	6/18/2002	2.56	110	0.002
	9/16/2002	2.4	105	0.002
	1/9/2003	2.1	97	0.004
	3/6/2003	2.75	110	< 0.0012
8/21/2003	2.4	100	< 0.0012	
MW-10	3/23/1998	0.07	320	0.91
	6/23/1998	< 0.1	325	0.55
	9/30/1998	< 0.1	204	0.81
	12/10/1998	< 0.1	180	0.091
	3/9/1999	< 0.1	142	0.035
			223 ⁽³⁾	
	9/14/1999	< 0.10	160	0.0049
	12/9/1999	0.49	170	0.0039
	3/10/2000	0.1	160	0.0056
	6/8/2000	< 0.1	150	0.031
	9/13/2000	< 0.1	160	0.031
	12/7/2000	< 0.1	190	0.17
	3/8/2001	< 0.1	270	< 0.0012
	6/22/2001	< 0.1	270	0.044
	9/10/2001	NA	NA	NA
3/12/2002	< 0.1	230	NA	
6/18/2002	< 0.1	240	0.007	

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-10 (cont.)	9/16/2002	< 0.03	318	0.006
	1/9/2003	< 0.1	280	0.0024
	3/6/2003	< 0.1	270	0.0031
	8/21/2003	0.21	350	< 0.0012
MW-11A	3/23/1998	< 0.05	190	0.14
	6/23/1998	< 0.1	225	0.11
	9/30/1998	0.4	196	0.043
	12/10/1998	0.7	188	0.033
	3/10/1999	< 0.1	164	0.094
		< 0.1 ⁽⁴⁾	227 ⁽³⁾	
	6/10/1999	< 0.1	181	0.0036
	9/13/1999	0.22	250	< 0.0012
	12/9/1999	< 0.1	290	0.0079
	3/9/2000	0.11	270	0.037
	6/8/2000	< 0.1	240	0.0069
	9/13/2000	< 0.1	320	< 0.0012
	12/7/2000	< 0.1	260	0.0096
	3/8/2001	< 0.1	330	0.0028
	6/22/2001	< 0.1	180	0.0074
	9/10/2001	NA	280	< 0.0012
	12/6/2001	< 0.1	240	0.0041
	3/12/2002	< 0.1	350	0.0044
	6/18/2002	< 0.1	560	0.0028
	9/16/2002	0.3	383	< 0.0012
1/9/2003	< 0.5	290	0.0063	
3/6/2003	< 0.1	290	0.0044	
8/21/2003	0.68	340	< 0.0012	
MW-12	3/23/1998	< 0.05	240	< 0.0012
	6/23/1998	< 0.1	240	< 0.0012
	9/30/1998	< 0.1	168	< 0.0012
	12/10/1998	< 0.1	202	< 0.0012
	3/10/1999	< 0.1	137	< 0.0012
		< 0.1 ⁽⁴⁾	193 ⁽³⁾	
	6/10/1999	< 0.1	217	< 0.0012
	9/14/1999	< 0.10	230	< 0.0012
	12/9/1999	< 0.1	180	< 0.0012
	3/10/2000	< 0.1	210	< 0.0012

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5,
MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-12 (cont.)	6/8/2000	< 0.1	220	< 0.0012
	9/13/2000	< 0.1	240	< 0.0012
	12/7/2000	< 0.1	260	< 0.0012
	3/8/2001	< 0.1	300	< 0.0012
	6/22/2001	< 0.1	360	0.0021
	9/10/2001	Well Dry (Not Sampled) During This and Subsequent Monitoring Events		
MW-12D	9/18/2001	NA	190	< 0.0012
	12/6/2001	< 0.1	200	< 0.0012
	3/12/2002	< 0.1	200	< 0.0012
	6/18/2002	< 0.1	180	0.0012
	9/16/2002	0.06	172	< 0.0012
	1/9/2003	< 0.1	150	0.005
	3/6/2003	0.705	170	0.0038
	6/20/2003	< 0.1	160	< 0.0012
8/22/2003	< 0.1	160	< 0.0012	

⁽¹⁾ - By EPA Method 300, except as noted

⁽²⁾ - NA indicates not analyzed

⁽³⁾ - By EPA Method 375.4

⁽⁴⁾ - By EPA Method 353.3

mg/L = milligrams per liter

Table 7
 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Monitor Wells ⁽¹⁾																		
	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4	
Bicarbonate, as CaCO ₃ (mg/L)	8/1/1995	380	430	490	290	670	440	360	570	520	560	NP ⁽²⁾	NP	NP	NP	NP	NP	NP	NS ⁽³⁾
	8/23/1996	310	310	210	270	120	400	280	390	520	430	NP	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	286	214	175	247	180	309	260	306	557	NS	319	451	NP	NP	NP	NP	NP	NS
	3/9-10/1999	92	309	186	247	286	358	317	333	278	NS	335	386	NP	NP	NP	NP	NP	NS
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	200	520	NP	NP	NP	316
	3/9-10/2000	89.1	248	160	253	NP	301	362	279	455	NP	703	402	244	240	NP	NP	NP	1020
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	374	250	NP	NP	NS
	3/8-9/2001	90.9	242	232	222	NP	283	252	252	586	NP	646	475	NS	131	NS	NP	NP	NS-D ⁽⁴⁾
	3/11-12/2002	230	230	210	260	NP	260	340	260	784	NP	520	NS-D	260	164	NS	NP	NP	NS-D
	3/6/2003	NS	NS	NS	NS	NP	NS	NS	NS	273	NP	401	NS-D	241	NS	NS-D	231	NS	NS-D
6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	NA	NP	NA	NS-D	232	NS	NA	163	NS	NS-D	
Carbonate, as CaCO ₃ (mg/L)	8/1/1995	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NP	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NP	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	NS
	3/9-10/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	NS
	6/10/1999-7/2/1999	< 2	< 2	< 2	< 2	NP	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 4
	3/9-10/2000	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	< 2	< 2	< 2	< 2	NS
	1/14/2001	< 2	< 2	< 2	< 2	NP	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	NS-D
	3/8-9/2001	< 2	< 2	< 2	< 2	NP	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	NS-D
	3/11-12/2002	NS	NS	NS	NS	NP	NS	NS	NS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	NS-D
	3/6/2003	NS	NS	NS	NS	NP	NS	NS	NS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	NS-D
6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	NS-D	
3/23-24/1998	430	430	275	342	440	670	740	510	1,450	NP	1,000	1,600	NP	NP	NP	NP	NP	NS	
3/9-10/1999	250	440	310	340	640	780	680	370	720	NS	1,150	460	NP	NP	NP	NP	NP	NS	
3/9-10/2000	600	450	500	1,200	NP	660	760	430	800	NP	880	700	260	540	NP	NP	NP	3,000	
3/8-9/2001	310	470	610	440	NP	590	590	1,000	1,300	NP	1,900	1,300	670	NA	NS	NP	NP	NS-D	
3/11-12/2002	420	420	450	420	NP	ND ⁽⁶⁾	ND	ND	1,200	NP	1,400	NS-D	330	750	NP	NP	NP	NS-D	
3/6/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	1,500	NS-D	360	NS	NA	NP	NP	NS-D	
8/21-22/2003	NS	NS	NS	NS	NP	NS	NS	NS	790	NP	NA	NS-D	NA	NS	NA	660	NS	NS-D	
8/1/1995	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NP	NP	NP	NP	NP	NP	NS	
8/23/1996	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NP	NP	NP	NP	NP	NP	NS	
3/23-24/1998	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	0.039	< 0.0012	0.91	NS	0.14	< 0.0012	NP	NP	NP	NP	NP	NS	
3/9-10/1999	NS	NS	NS	NS	NP	NS	NS	NS	0.035	NS	0.094	< 0.0012	NP	NP	NP	NP	NP	NS	
6/10/1999-7/2/1999	< 0.0012	< 0.0012	< 0.0012	< 0.0012	NP	< 0.0012	< 0.0012	< 0.0012	0.0056	NP	0.037	< 0.0012	< 0.0012	0.0017	NP	NP	NP	< 0.0012	
3/9-10/2000	< 0.0012	< 0.0012	< 0.0012	< 0.0012	NP	< 0.0012	0.13	< 0.0012	< 0.0012	NP	0.028	< 0.0012	< 0.0012	< 0.0012	NS	NS	NP	< 0.0012	
3/8-9/2001	< 0.0012	< 0.0012	< 0.0012	< 0.0012	NP	< 0.0012	< 0.0012	< 0.0012	< 0.0012	NP	0.0044	< 0.0012	< 0.0012	< 0.0012	NS	NS	NP	NS-D	
3/11-12/2002	0.007	< 0.0012	0.0024	< 0.0012	NP	ND	ND	ND	ND	NP	0.0044	NS-D	< 0.0012	< 0.0012	NS	NS	NP	NS-D	
3/6/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	0.0044	NS-D	0.0038	NS	NA	NP	NP	NS-D	
6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS-D	< 0.0012	NS	NA	NP	NP	NS-D	
8/21-22/2003	NS	NS	NS	NS	NP	NS	NS	NS	< 0.0012	NP	< 0.0012	NS-D	< 0.0012	NS	NA	NP	NP	NS-D	
Sec Table 4																			
Chloride Fluoride	3/23-24/1998	0.9	1.2	1.2	0.6	1.1	0.8	0.9	1.3	6.1	NS	2.9	4.2	NP	NP	NP	NP	NP	NS
	3/9-10/1999	1.54	1.46	1.5	1.38	1.79	1.56	1.44	1.84	4.93	NS	3.08	3.13	NP	NP	NP	NP	NP	NS
	6/10/1999-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	< 0.1	1.83	2.22	NP	NP	NP	NP	NS
	3/9-10/2000	1.7	1.1	1.1	0.75	NP	0.75	0.69	1.5	1	1	< 0.1	1.3	1.7	NP	NP	NP	NP	3.8
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NS	NP	NP	NP	NP	NS
3/8-9/2001	1.3	0.77	0.63	0.86	NP	0.69	0.66	0.92	1.2	NP	1.1	1.9	NS	NS	NA	NP	NP	NS-D	
3/11-12/2002	1.2	1.4	1.2	1.4	NP	1.3	1.1	1.5	1.8	NP	2.1	NS-D	1.4	2.3	NS	NS	NP	NS-D	

Table 7
 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells ⁽¹⁾																					
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4				
Fluoride (continued)	3/6/2003	NS	NS	NS	NS	NS	NS	NS	NS	1.6	NA	NP	NP	4.1	NS-D	NA	NS	2.3	0.91	NP	NA	NS-D	
	6/xx/2003	NS	NS	NS	NS	NS	NS	NS	NS	<0.1	NA	NP	NP	NS-D	NA	NS	2.3	0.91	NP	NA	NS-D		
	8/1/1995	4.7	5.6	15	28	1.3	9.2	11	38	<0.1	5.5	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	11	7.6	7.6	12	<0.5	10	8.6	24	<5	11	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	1.78	3.07	2.59	3.37	0.69	3.92	1.84	4.27	0.07	0.07	NP	NP	<0.05	NP	NP	NP	NP	NP	NP	NP	NP	NS
	3/9-10/1999	0.7	2.1	2.6	NA	<0.1	3.3	0.7	3.7	NA	NA	NP	NP	<0.1	NP	NP	NP	NP	NP	NP	NP	NP	NS
	6/10/1999-7/21/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NP	NP	NS	NP	NP	NP	NP	NP	NP	NP	NP	NS
	3/9-10/2000	0.33	2.9	3.7	5.3	NP	3.6	0.35	7.2	0.1	0.1	NP	NP	0.11	<0.1	0.14	<0.1	NP	NP	NP	NP	NP	3.6
	1/14/2001	NS	NS	NS	NS	NP	NP	NP	NS	NS	NS	NP	NP	<0.1	NS	NS	NS	4.5	4.88	NP	NP	NP	NS-D
	3/8-9/2001	4.31	2.56	4.75	3.24	NP	2.82	0.664	7.9	<0.1	<0.1	NP	NP	<0.1	NS-D	<0.1	NS	NA	NS	NP	NP	NP	NS-D
3/11-12/2002	5.7	3.86	8.55	2.98	NP	3.23	0.607	6.34	<0.1	<0.1	NP	NP	<0.1	NS-D	<0.1	NS	NA	NS	NP	NP	NP	NS-D	
3/6/2003	NS	NS	NS	2.75	NP	NS	NS	NS	<0.1	<0.1	NP	NP	<0.1	NS-D	0.705	NS	5.82	3.67	NP	NP	NP	NS-D	
6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NP	NP	NS	NS-D	<0.1	NS	NS	NS	NS	NS	NS	NS-D	
8/21/2003	NS	NS	NS	2.4	NP	NS	NS	NS	NS	NA	NP	NP	NA	NS-D	<0.1	NS	NA	NA	NS	NS	NS	NS-D	
Sulfate	8/1/1995	150	150	210	230	6.7	180	160	150	130	230	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	130	150	150	140	85	80	160	180	120	130	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	130	180	160	190	230	310	250	230	320	NS	NS	190	240	NP	NP	NP	NP	NP	NP	NP	NP	NS
	3/9-10/1999	196	162	178	195	72	246	240	146	223	NP	NP	227	193	NP	NP	NP	NP	NP	NP	NP	NP	NS
	6/10/1999-7/21/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NP	NP	NS	NP	NP	NP	NP	NP	NP	NP	NP	192
	3/9-10/2000	530	190	250	260	NP	280	260	170	160	160	NP	NP	270	210	200	170	NP	NP	NP	NP	NP	200
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NP	NP	NS	NP	NS	NS	180	130	NP	NP	NP	NS-D
	3/8-9/2001	210	170	180	180	NP	260	240	150	270	NP	NP	330	300	NP	NS	380	NA	NS	NP	NP	NP	NS-D
	3/11-12/2002	190	150	160	120	NP	240	250	130	230	230	NP	NP	NS-D	200	380	NS	NS	NS	NP	NP	NP	NS-D
	3/6/2003	NS	NS	NS	110	NP	NS	NS	NS	270	270	NP	NP	290	NS-D	170	NS	150	150	NP	NP	NP	NS-D
6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NP	NP	NS	NS-D	160	NS	NS	NS	NS	NS	NS	NS-D	
8/21/2003	NS	NS	NS	100	NP	NS	NS	NS	NS	NA	NP	NP	NA	NS-D	160	NS	NA	NA	NS	NS	NS	NS-D	
Calcium	8/1/1995	120	120	220	160	320	300	300	180	610	490	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	120	130	89	110	62	270	230	190	390	440	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	129	122	79	109	94	208	215	142	417	NS	259	388	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	3/9-10/1999	80.2	129	90.8	116	141	233	197	122	214	NP	308	148	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	6/10/1999-7/21/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NP	NS	NS	NP	NP	NP	NP	NP	NP	NP	NP	141
	3/9-10/2000	155	119	147	387	NP	167	215	110	177	177	NP	229	180	NP	122	NP	179	150	NP	NP	NP	882
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/8-9/2001	86.8	148	214	157	NP	172	183	381	331	331	NP	466	338	NP	198	NA	NA	NS	NP	NP	NP	NS-D
	3/11-12/2002	112	121	130	143	NP	ND	ND	ND	ND	303	NP	330	NS-D	120	225	NS	NS	NS	NP	NP	NP	NS-D
	3/6/2003	NS	NS	NS	288	NP	NS	NS	NS	NS	NA	NP	470	NS-D	135	NS	NA	NA	NA	NS	NS	NS	NS-D
6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NP	NS	NS-D	NA	NS	NS	NS	NS	NS	NS	NS	NS-D	
8/21-22/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	108	NP	NA	NS-D	NA	NS	NS	62.2	107	NS	NS	NS	NS-D	
Magnesium	8/1/1995	34	36	58	27	72	42	49	43	130	130	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	120	32	21	18	28	40	48	44	84	120	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	3/23-24/1998	36	30	18	20	42	47	52	36	130	NS	96	108	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	3/9-10/1999	19.7	31.5	20.4	21.6	62.2	54.4	47.7	28.5	43	NP	101	32.1	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	6/10/1999-7/21/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NP	NP	NP	NP	NP	NP	NP	NP	44.3
	3/9-10/2000	41.3	27.5	26.3	29.2	NP	44.3	39.1	26.2	61	NP	NP	47.7	30.6	16.6	7.25	38.8	87.5	28.3	NP	NP	NP	74.5
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NP	NS
	3/8-9/2001	20.7	24.9	25.9	16.6	NP	41.1	37.4	28.2	95.1	NP	NP	93.4	95.3	NS	52.3	NA	NA	NS	NS	NS	NP	NS-D
	3/11-12/2002	27.3	20.7	20.7	13	NP	ND	ND	ND	ND	ND	NP	103	NS-D	6.06	44.7	NS	NS	NS	NS	NS	NP	NS-D
	3/6/2003	NS	NS	NS	19.6	NP	NS	NS	NS	NS	NA	NP	160	NS-D	6.74	NS	NA	NA	NA	NS	NS	NP	NS-D

Table 7
 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells ⁽¹⁾																	
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
Selenium	8/1/1995	<0.004	<0.004	<0.004	<0.004	<0.004	NS	NS	NS	NS	NS	NS	NS	NP	NP	NP	NP	NP	NS
	8/23/1996	<0.004	<0.004	<0.004	<0.004	<0.004	NS	NS	NS	NS	NS	NP	NS						
	3/23-24/1998	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NS
	3/9-10/1999	0.005	0.006	0.006	0.006	0.005	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/10/1999-7/21/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/9-10/2000	<0.005	<0.005	<0.005	<0.005	NP	0.00926	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/8-9/2001	<0.005	0.00702	0.00508	0.00587	NP	0.00617	<0.005	0.0054	<0.005	<0.005	<0.005	<0.005	NS	NS	NS	NS	NS	NS
	3/11-12/2002	0.00549	0.00625	<0.005	0.00558	NP	ND	ND	ND	<0.005	<0.005	<0.005	NS-D	<0.005	<0.005	NS	NS	NS	NS
	3/6/2003	NS	NS	NS	<0.005	NP	NS	NS	NS	NS	NS	<0.005	NS-D	<0.005	NS	NS	NS	NS	NS
	6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NS	NS	NS
	8/21-22/2003	NS	NS	NS	<0.1	NP	NS	NS	NS	<0.005	NS	NS	NS-D	NA	NS	<0.005	<0.005	<0.005	NS
	PAHs (ug/L)	8/1/1995	<50	<10	<500	<5	<30	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
8/23/1996		<10	<10	<30	<5	<30	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NS
3/23-24/1998		<10	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	NS
3/9-10/1999		<1	<1	<2.0	<1	<2.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
6/10/1999-7/21/1999		NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	<0.1	<1.0	<1.0	<1.0	<1.0	<1.0
3/9-10/2000		0.28	<1	<1	<1	NP	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1/14/2001		NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
3/8-9/2001		<0.12	<0.13	<0.12	<0.1	NP	<0.13	<0.12	<0.12	<0.15	<0.13	<0.13	<0.13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3/11-12/2002		<1	<0.11	<1	<1	NP	ND	ND	ND	ND	NS-D	NS-D	NS-D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3/6/2003		NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
6/20/2003		NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
8/21-22/2003		NS	NS	NS	<0.1	NP	NS	NS	NS	<0.1	NS	NS	NS-D	NA	NS	<0.1	<0.1	<0.1	NS
Acenaphthylene		8/1/1995	<50	<10	<500	<5	<30	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	8/23/1996	<10	<10	<30	<5	<30	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NS
	3/23-24/1998	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NS
	3/9-10/1999	<1	<1	<1	<1	<2.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	6/10/1999-7/21/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	<0.1	<1.0	<1.0	<1.0	<1.0	<1.0
	3/9-10/2000	0.91	<1	<1	<1	NP	<1	<1	<1	0.4	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1/14/2001	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/8-9/2001	<0.12	<0.13	<0.12	<0.1	NP	<0.13	<0.12	<0.12	0.71	<0.13	<0.13	<0.13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	3/11-12/2002	<1	<0.11	<1	<1	NP	ND	ND	ND	ND	1.1	NS-D	NS-D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	3/6/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/20/2003	NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/21-22/2003	NS	NS	NS	<0.1	NP	NS	NS	NS	<0.1	NS	NS	NS-D	NA	NS	<0.1	<0.1	<0.1	NS
	Anthracene	8/1/1995	<50	<10	<500	<5	<30	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
8/23/1996		<10	<10	<30	<5	<30	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NS
3/23-24/1998		<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
3/9-10/1999		<1	<1	<1	<1	<2.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
6/10/1999-7/21/1999		NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	<0.1	<1.0	<1.0	<1.0	<1.0	<1.0
3/9-10/2000		0.12	<1	<1	<1	NP	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1/14/2001		NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
3/8-9/2001		<0.12	<0.13	<0.12	<0.1	NP	<0.13	<0.12	<0.12	<0.15	<0.13	<0.13	<0.13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3/11-12/2002		<1	<0.11	<1	<1	NP	ND	ND	ND	ND	NS-D	NS-D	NS-D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3/6/2003		NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
6/20/2003		NS	NS	NS	NS	NP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
8/21-22/2003		NS	NS	NS	<0.1	NP	NS	NS	NS	<0.1	NS	NS	NS-D	NA	NS	<0.1	<0.1	<0.1	NS

Table 7
 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells ⁽¹⁾																			
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4		
Isopropylbenzene	3/23-24/1998	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	6/10-7/2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	6/10-7/2/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	3/9-10/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	3/11-12/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS-D	NA	NS	NS	NS	NA	NA	NA	NS-D
	3/6/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NS-D
n-Propylbenzene	6/20/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/10-7/2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/10-7/2/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/9-10/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/11-12/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS-D	NA	NS	NS	NS	NA	NA	NA	NS-D
1,2,4-Trimechylbenzene	3/6/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D
	6/20/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/10-7/2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/10-7/2/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/9-10/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimechylbenzene	3/11-12/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS-D	NA	NS	NS	NS	NS	NA	NA	NA	NS-D
	3/6/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D
	6/20/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/10-7/2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/10-7/2/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MTBE	3/9-10/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS-D	NA	NS	NS	NS	NS	NA	NA	NA	NS-D
	3/11-12/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS-D	NA	NS	NS	NS	NS	NA	NA	NA	NS-D
	3/6/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D
	6/20/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D
	3/23-24/1998	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/10-7/2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SVOCs (µg/L)	6/10-7/2/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/9-10/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS-D	NA	NS	NS	NS	NS	NA	NA	NA	NS-D
	3/11-12/2002	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D
	3/6/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D
	6/20/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D
	8/1/1995	< 50	97	< 500	< 5	42	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,4-Dimethylphenol	8/23/1996	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/10-7/2/1999	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/9-10/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS-D	NA	NS	NS	NS	NS	NA	NA	NA	NS-D
	3/11-12/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS-D	NA	NS	NS	NA	NA	NA	NA	NA	NS-D

Table 7
 Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells ⁽¹⁾																		
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4	
2,4-Dimethylphenol (continued) 2-Methylnaphthalene	6/20/2003	NS	NS	NS	NA	NP	NS	NS	NA	NP	NS	NS	NS	NA	NS	NA	NA	NA	NS-D	NS
	8/1/1995	280	NS	1500	<5	150	<5	36	23	<5	NP	NP	NP	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NP	NS
	6/10-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	<5	29	NP	NP	NP	NP	<5
	3/9-10/2000	NA	NA	NA	NA	NP	NA	NA	NA	NA	NP	NA	NA	NA	NA	NA	NS	NS	NP	NS
2-Methylphenol	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NS-D	NA	NA	NS	NS	NA	NS-D	NS-D
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NA	NP	NA	NS-D	NA	NA	NS	NA	NA	NA	NS-D	NS-D
	6/20/2003	NS	NS	NS	NA	NP	NS	NS	NA	NP	NA	NS-D	NA	NA	NS	NA	NA	NA	NS-D	NS-D
	8/1/1995	<50	56	<500	<5	<30	<5	<5	<5	<5	<5	<5	<5	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NP	NP	NP	NP	NP	NP	NS
4-Methylphenol	6/10-7/2/1999	NS	NS	NS	NA	NP	NS	NS	NA	NP	NA	NA	NS	<5	NP	NP	NP	NP	NP	NS
	3/9-10/2000	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NA	NA	NA	NA	NP	<5
	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NS-D	NA	NA	NA	NS	NS	NP	NP	NS
	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NA	NP	NA	NS-D	NA	NA	NS	NA	NA	NP	NP	NS-D
	6/20/2003	NS	NS	NS	NA	NP	NS	NS	NA	NP	NA	NS-D	NA	NA	NS	NA	NA	NP	NP	NS-D
Bis(2-ethylhexyl)-phthalate	8/1/1995	<80	<20	<800	<8	150	<8	<8	<8	<8	<8	<8	<8	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NP	NP	NP	NP	NP	NP	NS
	6/10-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	<5	<5	NP	NP	NP	NP	<5
	3/9-10/2000	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NA	NA	NA	NA	NP	NP	NP	NP	NS
	3/11-12/2002	NA	NA	NA	NA	NP	NA	NA	NA	NP	NA	NS-D	NA	NA	NA	NS	NS	NP	NP	NS-D
Phenol	3/6/2003	NS	NS	NS	NA	NP	NS	NS	NA	NP	NA	NS-D	NA	NA	NS	NA	NA	NP	NP	NS-D
	6/20/2003	NS	NS	NS	NA	NP	NS	NS	NA	NP	NA	NS-D	NA	NA	NS	NA	NA	NP	NP	NS-D
	8/1/1995	<50	<10	<500	<5	<30	<5	<5	8.2	<5	<5	<5	<5	NP	NP	NP	NP	NP	NP	NS
	8/23/1996	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NP	NP	NP	NP	NP	NP	NS
	6/10-7/2/1999	NS	NS	NS	NS	NP	NS	NS	NS	NS	NP	NS	NS	NP	NP	NP	NP	NP	NP	<5

⁽¹⁾ - MW-2 not operative after May 3, 1995; MW-11 not operative after September 1997; MW-2, MW-6, and MW-11 P&AD 7/1/99.

⁽²⁾ - NP = Well not present at time of sampling event.

⁽³⁾ - NS = Well not sampled.

⁽⁴⁾ - NA = Not Analyzed.

⁽⁵⁾ - NS-D = Well not sampled (dry well).

⁽⁶⁾ - ND = No data - sample aliquot not collected due to insufficient well yield.

BROWN AND
CALDWELL

Appendices

APPENDICES

A

BROWN AND
CALDWELL

APPENDIX A

Boring Log and Well Construction Diagram for Monitor Well MW-16

Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	PID Readings	Sampled Interval	Recovery (feet)	Sample ID	Monitoring Well Remarks
34		SP		Brown medium to fine grained sand, dry					
36		SP		Light brown medium to fine sand, dry.					
38									Hydrated bentonite seal.
40									
42				Medium brown sandstone, 0.5" to 1.0" nodules of very fine lithified sandstone, slightly moist.					
44							44.0		20/40 Silica sand filter pack.
46									
48				SAA, slightly moist.					
50				SAA, slightly moist.					
52									
54									
56	▼	SW		Medium brown medium to fine grained sand, moist					0.01-inch slotted well screen.
58		SW		Light brown fine grained sand, moist.					
60		SW		SAA, wet.					
62									
64									
66		SW		SAA, wet.					
68									
70				Medium brown medium to fine grained sandstone, wet.					
72									
74	▽			Light pinkish brown fine grained lithified sandstone, dry. (Aquitard)			73.0 73.3		Bottom cap.

Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	PID Readings	Sampled Interval	Recovery (feet)	Sample ID	Monitoring Well Remarks
76									
78				Total depth=78 feet.					78.0

B

BROWN AND
CALDWELL

APPENDIX B
Groundwater Sampling Forms

WELL ID: MW-5

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 018 Date: 8-21-03 Time: 1040
 Client: B.J. Services Personnel: R. Banks
 Project Location: Hobbs, NM Weather: 90°F

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 64.50 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 62.22 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 2.24 feet Well Volume: .36 gal Screened Interval (from GS): 45-60
 Pump intake depth _____ (from GS) 1.09 = 3 well volumes Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s) _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. VSI
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1047	gal	-	90	µS/cm	mV	mg/L	NTU	feet	
1057	0.5	7.37	19.66	1065	103	7.82	-	-	
1106	1.0	7.45	19.48	1057	111	9.04	-	-	

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: 62.5 Field Filtered? Yes No
 Sample ID: MW-5 Sample Time: 1120 # of Containers: 10
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 8.0 mg/L
 DO: 6.2 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Sampled for BTEX, TPH-G, TPH-D, methane, NO3, SO4, PAHs
 Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

WELL ID: MW-10

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 018 Date: 3-21-03 Time: 1300
 Client: BS Services Personnel: R. Bando
 Project Location: Hobbs, NM Weather: 90°

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>63.51</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input checked="" type="checkbox"/> Other: <u>Historical</u>
Depth to Static Water: <u>61.12</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: _____ feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>2.09</u> feet	Well Volume: <u>0.33</u> gal
Pump intake depth: _____ (from GS)	Screened Interval (from GS): _____

Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Equipment Model(s)
 1. VSI
 2. _____
 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
<u>1320</u>	<u>0.2</u>	<u>7.29</u>	<u>20.70</u>	<u>216</u>	<u>70</u>	<u>21.60</u>	<u>-</u>	<u>-</u>	<u>odor</u>
<u>well purged bailed dry</u>									

4. SAMPLING DATA

Method(s): Bailer, Size: 2" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: * Field Filtered? Yes No

Sample ID: MW-10 Sample Time: 1400 # of Containers: 12

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: >10 mg/L

DO: 7.4 mg/L

Nitrate: _____ mg/L

Sulfate: _____ mg/L

Alkalinity: _____ mg/L

5. COMMENTS

Sampled for BTEX, TPH-G, TPH-D, methane, NO3, SO4, hardness, Cu, Mg, Na, K, PCRA metals, PAHs
* well bailed dry; well sampled as recovery
 Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

WELL ID: MW-11A

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 019 Date: 8-21-03 Time: 1340
 Client: B3-Hobbs Personnel: R. Beck
 Project Location: Hobbs, NM Weather: 98° / winds from south

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 63.82 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Historical
 Depth to Static Water: 61.98 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 1.84 feet Well Volume: 0.29 gal Screened Interval (from GS): 50-65
 Pump intake depth _____ (from GS) 0.9 = 3 well vol. Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min
 Equipment Model(s): YSE

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1245	0.1	6.57	20.70	9291	-13	2.92	—	—	—
1350	0.75	6.59	20.40	8678	-9	4.68	—	—	turbid.
1354	1.0	6.61	19.98	8640	-16	6.80	—	—	turbid
Dry at 1.25 gal									

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: * Field Filtered? Yes No
 Sample ID: MW-11A Sample Time: 1415 # of Containers: 2
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: >10 mg/L
 DO: 1.0 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

* well bailed dry; well sampled as it recovers.
Sampled for BTEX, TPH-G, TPH-D, methane, NO₃, SO₄.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

WELL ID: MW-12D

1. PROJECT INFORMATION

Project Number: 12532 Task Number: 014 Date: 8-22-09 Time: 8:30
 Client: BS - Hobbs Personnel: R. Brady
 Project Location: Hobbs NM Weather: 98° F./winds from South

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 87.58 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: HISTORICAL
 Depth to Static Water: 62.07 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 25.51 feet Well Volume: 4.08 gal Screened Interval (from GS): 77.5-87.5
 Pump intake depth _____ (from GS) 12.2 gal = 3 well vol. Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 2" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s) _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. VSE
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
0845	1.0	7.77	19.42	1092	84	2.97	—	—	clear
0855	2.0	8.02	19.09	1107	72	9.45	—	—	clear
0903	3.0	7.95	19.21	1103	74	7.27	—	—	clear
0910	4.0	7.95	19.25	1110	60 60	8.17	—	—	clear
0917	5.0	7.94	19.19	1110	58	10.13	—	—	clear
0922	6.0	7.88	19.17	1123	57	9.07	—	—	clear
0925	7.0	7.86	19.15	1105	50	9.00	—	—	clear
0932	8.0	7.89	19.16	1130	50	9.36	—	—	clear
0939	9.0	7.89	19.15	1110	50	9.24	—	—	clear

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-12D Sample Time: 1005 # of Containers: _____
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 3.5 mg/L
 DO: 6.0 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Sampled for BTEX, TPH-G, TPH-D, NO₃, SO₄, methane

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Back

Time	Cum. Volume	pH	Temp	Spec. Cond	Ek	DO	Turb.	DTW	Comments
0945	10.0	7.89	19.15	1118	50	9.26	—	—	clear
0953	11.0	7.89	19.16	1130	50	9.38	—	—	clear
1000	12.0	7.89	19.15	1110	52	9.25	—	—	clear

WELL ID: MW-1514

1. PROJECT INFORMATION

Project Number: 12432 Task Number: 014 Date: 8-21-03 Time: 1910
 Client: ST-11/bbs Personnel: R bands
 Project Location: Hobbs NM Weather: 98°F / winds from south

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 67.01 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Historical
 Depth to Static Water: 61.76 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: --- feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 5.25 feet Well Volume: 0.94 gal Screened Interval (from GS): 55 - 69.5
 Pump intake depth N/A (from GS) 2.52 gal = 3 well vol. Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s) _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. VSF
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1920	0.2	7.15	19.50	1923	91	1.86	---	---	clear
1932	1.0	7.26	19.10	1905	88	0.69	---	---	"
1950	2.0	7.42	19.60	1537	55	0.26	---	---	purged dry
<u>2.5</u>		<u>Dry</u>							

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW 15 Sample Time: 0100 # of Containers: _____
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: _____ mg/L
 DO: 1.6 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Sampled for

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-15

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 18 Date: 8-21-03 Time: 1800
 Client: BJ-Hobbs Personnel: R. Banda
 Project Location: Hobbs, NM Weather: 98° / winds from South

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 69.37 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Historical
 Depth to Static Water: 62.73 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 6.64 feet Well Volume: 1.06 gal Screened Interval (from GS): 52 - 67
 Pump intake depth: _____ (from GS) 3.18 gal = 3 well Vol Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s): _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. Y5J
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1815	0.1	6.92	19.91	1640	112	9.80	—	—	clear
1825	0.75	7.10	19.93	1605	105	4.03	—	—	clear
1840	1.5	7.14	20.04	1599	95	1.40	—	—	clear clear
1900	3.0	7.14	19.93	1584	94	0.43	—	—	clear clear
purged 3.5 gal — Dry									

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-14 Sample Time: 1900 # of Containers: _____
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 5.6 mg/L
 DO: 2.0 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Sampled for

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

WELL ID: MW-12A

1. PROJECT INFORMATION

Project Number: 12632 Task Number: 014 Date: 6-20-03 Time: 0930
 Client: BJS Services USA Personnel: R. Bana / K. Kilson
 Project Location: Hobbs, NM Weather: Raining / Cloudy / 80°F

2. WELL DATA

Casing Diameter: 2 Inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 Inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 57.5 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 61.95 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 25.55 feet Well Volume: 4.09 gal Screened Interval (from GS): 77.5 - 87.5
 Pump intake depth _____ (from GS) Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s)
 Materials: Pump/Bailer: Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing: Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min
 1. Fultz Pump
 2. YSI 650 MDS
 3. H.I. Turbiditymeter

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1000	0.0	-	°C	ms/cm	mV	mg/L	NTUs	ft.	
1004	0.25	7.48	19.50	1.150	-83.2	1.70	128	63.45	
1010	1.25	7.45	19.69	1.137	-89.1	1.29	110	62.24	
1014	1.75	7.44	19.65	1.142	-84.5	1.30	109	62.00	
1018	2.25	7.40	19.74	1.138	-86.7	1.22	97	62.00	
1022	2.75	7.45	19.76	1.134	-83.0	1.20	110	62.24	
1026	3.25	7.45	19.82	1.134	-81.6	1.17	87	62.25	
1030	4.00	7.45	19.85	1.134	-81.9	1.23	74	62.00	
1034	4.25	7.45	20.09	1.141	-79.2	1.24	75	62.10	

4. SAMPLING DATA

Method(s): Bailer, Size: 2" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer: Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope: Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: 62.10 Field Filtered? Yes No
 Sample ID: MW-12A Sample Time: 1040 # of Containers: 9
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 0.6 mg/L
 DO: 1.0 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Sampled for BTEX/GRO, Methane, DRG, Anions.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

WELL ID: MW-16

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 18 Date: 6-20-03 Time: 0700
 Client: B.J Services USA Personnel: R. Banda / K. Kibon
 Project Location: Hobbs NM Weather: Sunny / cool breeze from the south / 70°F

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 77 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 66.50 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 10.5 feet Well Volume: _____ gal Screened Interval (from GS): _____
 Pump intake depth 70 (from GS) Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Baller, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s): _____
 Materials: Pump/Baller Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. Fultz pump
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____ 2. YSI 650 MDS
 Dedicated Prepared Off-Site Field Cleaned Disposable 3. Hanna Instruments Turbidity meter
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
0730	gal	-	°C	ms/cm	mV	mg/L	NTU ₉₀₀	ft.	PVC shavings in water.
0734	0.25	7.07	18.28	3.652	181.9	11.06	804	66.90	
0740	1.00	7.09	18.92	3.629	160.0	11.99	554	66.84	
0744	1.50	7.10	18.99	3.644	157.1	11.67	391	66.74	
0748	2.00	7.10	19.10	3.646	156.4	11.09	301	66.70	
0752	2.50	7.11	18.88	3.655	156.8	11.49	193	66.70	
0756	3.00	7.11	19.47	3.651	164.2	11.62	116	66.70	
0800	3.50	7.11	19.54	3.659	170.3	11.35	104	66.70	
0806	4.00	7.12	19.18	3.660	164.9	11.65	76	66.70	

Seach purging

4. SAMPLING DATA

Method(s): Baller, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Baller Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: 66.70 Field Filtered? Yes No
 Sample ID: MW-16 Sample Time: 0820 # of Containers: 10
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 0 mg/L
 DO: 7.0 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Sampled for VOC, SVOC, Anions, Hardness, Methane, Cations, RCRA Metals.

Note: Include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet.

RUBC

over

Time	cum. gallons removed	pH	Temp.	Spec. cond.	EH	DO	Turbidity	DTW	Comments
0810	4.5	7.12	19.33	3.658	179.8	11.22	60	66.72	
0814	5.0	7.12	19.42	3.658	183.0	11.47	50	66.70	
0818	5.5	7.12	19.44	3.658	186.4	11.64	42.36	66.70	

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-16

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 18 Date: 8-22-09 Time: 1030
 Client: B.S. Services Personnel: R. Bando
 Project Location: Hobbs, NM Weather: 95°F

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 78 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 66.62 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Product: — feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Length of Water Column: 11.38 feet Well Volume: 1.82 gal Screened Interval (from GS): _____
 Pump intake depth — (from GS) 5.5 = 3 well volumes Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s) _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. YSI
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1036	0.1	7.08	18.92	3477	85	1.38	—	—	clear
1043	1.0	7.68	18.60	3522	73	11.67	—	—	cloudy
1050	2.0	7.67	18.56	3465	63	11.80	—	—	cloudy
1058	3.0	7.67	18.54	3487	62	2.64	—	—	clear
1105	4.0	7.68	18.59	3582	63	2.82	—	—	clear
1112	5.0	7.67	18.59	3462	60	2.53	—	—	clear

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-16 Sample Time: 1115 # of Containers: _____
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: 4.0 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

C

BROWN AND
CALDWELL

APPENDIX C

Laboratory Analytical Reports



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
03060895

Report To: Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886	Project Name: BJ Service, Hobbs, NM Site: Hobbs, New Mexico Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported:
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The data in this report applies to the analysis of two water samples plus a trip blank from the BJ Services site located in Hobbs, New Mexico. These samples were received on June 21, 2003, assigned to SPL Certificate of Analysis No. 03060895, and analyzed for the parameters as specified on chain-of-custody 169802.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Sample MW-12R was analyzed as a matrix spike/ matrix spike duplicate for BTEX, and the RPD's for ethylbenzene and xylenes were high. All percent recoveries and all other RPD's were acceptable.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Pat Lynch
Senior Project Manager

8/12/2003

Date



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03060895

Report To: Brown & Caldwell
 Rick Rexroad
 1415 Louisiana
 Suite 2509
 Houston
 TX
 77002-
 ph: (713) 759-0999 fax: (713) 308-3886

Project Name: BJ Service, Hobbs, NM
Site: Hobbs, New Mexico
Site Address:

PO Number:
State: New Mexico

State Cert. No.:

Date Reported:

Fax To: Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
W-1G	03060895-01	Water	6/20/2003 8:20:00 AM	6/21/2003 10:00:00 AM	169802	<input type="checkbox"/>
-12R	03060895-02	Water	6/20/2003 10:40:00 AM	6/21/2003 10:00:00 AM	169802	<input type="checkbox"/>
Trip Blank	03060895-03	Water	6/20/2003	6/21/2003 10:00:00 AM	169802	<input type="checkbox"/>

Fabricea L. Lynch
 Fabricea L. Lynch
 Senior Project Manager

8/12/2003

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID: MW-1G Collected: 06/20/2003 8:20 SPL Sample ID: 03060895-01

Site: Hobbs, New Mexico

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Bicarbonate	163	2	1		06/25/03 13:00	RA	1738530
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/L		
Alkalinity, Carbonate	ND	2	1		06/25/03 13:00	RA	1738602
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L		
Chloride	983	10	10		06/26/03 10:00	RA	1740423
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		06/24/03 15:57	J_F	1736628
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen,Nitrate (As N)	4.4	0.1	1		06/21/03 14:10	CV	1732728
Sulfate	200	10	50		06/21/03 16:41	CV	1732739
MERCURY, TOTAL			MCL	SW7470A	Units: mg/L		
Mercury	ND	0.0002	1		06/25/03 17:48	R_T	1739841

Prep Method	Prep Date	Prep Initials
SW7470A	06/25/2003 11:00	R_T

METALS BY METHOD 6010B, TOTAL			MCL	SW6010B	Units: mg/L		
Arsenic	0.00674	0.005		1	07/05/03 17:38	NS	1756665
Lead	ND	0.005		1	07/05/03 17:38	NS	1756665
Selenium	ND	0.005		1	07/05/03 17:38	NS	1756665
Barium	0.0728	0.005		1	07/08/03 2:18	MW	1756042
Cadmium	ND	0.005		1	07/08/03 2:18	MW	1756042
Calcium	219	0.1		1	07/08/03 2:18	MW	1756042
Chromium	ND	0.01		1	07/08/03 2:18	MW	1756042
Magnesium	45.4	0.1		1	07/08/03 2:18	MW	1756042
Potassium	4.78	2		1	07/08/03 2:18	MW	1756042
Silver	ND	0.01		1	07/08/03 2:18	MW	1756042
Sodium	436	0.5		1	07/08/03 2:18	MW	1756042

Prep Method	Prep Date	Prep Initials
SW3010A	06/26/2003 13:15	MED

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: MW-1G

Collected: 06/20/2003 8:20

SPL Sample ID: 03060895-01

Site: Hobbs, New Mexico

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
SEMIVOLATILE ORGANICS BY METHOD 8270C			MCL	SW8270C	Units: ug/L		
1,2,4-Trichlorobenzene	ND	5	1		07/15/03 14:57	GQ	1769381
1,2-Dichlorobenzene	ND	5	1		07/15/03 14:57	GQ	1769381
1,2-Diphenylhydrazine	ND	5	1		07/15/03 14:57	GQ	1769381
1,3-Dichlorobenzene	ND	5	1		07/15/03 14:57	GQ	1769381
1,4-Dichlorobenzene	ND	5	1		07/15/03 14:57	GQ	1769381
2,4,5-Trichlorophenol	ND	10	1		07/15/03 14:57	GQ	1769381
2,4,6-Trichlorophenol	ND	5	1		07/15/03 14:57	GQ	1769381
2,4-Dichlorophenol	ND	5	1		07/15/03 14:57	GQ	1769381
2,4-Dimethylphenol	ND	5	1		07/15/03 14:57	GQ	1769381
2,4-Dinitrophenol	ND	25	1		07/15/03 14:57	GQ	1769381
2,4-Dinitrotoluene	ND	5	1		07/15/03 14:57	GQ	1769381
2,6-Dinitrotoluene	ND	5	1		07/15/03 14:57	GQ	1769381
2-Chloronaphthalene	ND	5	1		07/15/03 14:57	GQ	1769381
2-Chlorophenol	ND	5	1		07/15/03 14:57	GQ	1769381
2-Methylnaphthalene	ND	5	1		07/15/03 14:57	GQ	1769381
2-Nitroaniline	ND	25	1		07/15/03 14:57	GQ	1769381
2-Nitrophenol	ND	5	1		07/15/03 14:57	GQ	1769381
3,3'-Dichlorobenzidine	ND	10	1		07/15/03 14:57	GQ	1769381
3-Nitroaniline	ND	25	1		07/15/03 14:57	GQ	1769381
4,6-Dinitro-2-methylphenol	ND	25	1		07/15/03 14:57	GQ	1769381
4-Bromophenyl phenyl ether	ND	5	1		07/15/03 14:57	GQ	1769381
4-Chloro-3-methylphenol	ND	5	1		07/15/03 14:57	GQ	1769381
4-Chloroaniline	ND	5	1		07/15/03 14:57	GQ	1769381
4-Chlorophenyl phenyl ether	ND	5	1		07/15/03 14:57	GQ	1769381
4-Nitroaniline	ND	25	1		07/15/03 14:57	GQ	1769381
4-Nitrophenol	ND	25	1		07/15/03 14:57	GQ	1769381
Acenaphthene	ND	5	1		07/15/03 14:57	GQ	1769381
Acenaphthylene	ND	5	1		07/15/03 14:57	GQ	1769381
Aniline	ND	5	1		07/15/03 14:57	GQ	1769381
Anthracene	ND	5	1		07/15/03 14:57	GQ	1769381
Benz(a)anthracene	ND	5	1		07/15/03 14:57	GQ	1769381
Benzo(a)pyrene	ND	5	1		07/15/03 14:57	GQ	1769381
Benzo(b)fluoranthene	ND	5	1		07/15/03 14:57	GQ	1769381
Benzo(g,h,i)perylene	ND	5	1		07/15/03 14:57	GQ	1769381
Benzo(k)fluoranthene	ND	5	1		07/15/03 14:57	GQ	1769381
Benzoic acid	ND	25	1		07/15/03 14:57	GQ	1769381
Benzyl alcohol	ND	5	1		07/15/03 14:57	GQ	1769381
Bis(2-chloroethoxy)methane	ND	5	1		07/15/03 14:57	GQ	1769381
Bis(2-chloroethyl)ether	ND	5	1		07/15/03 14:57	GQ	1769381
Bis(2-chloroisopropyl)ether	ND	5	1		07/15/03 14:57	GQ	1769381

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID: MW-1G

Collected: 06/20/2003 8:20

SPL Sample ID: 03060895-01

Site: Hobbs, New Mexico

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Bis(2-ethylhexyl)phthalate	ND	5	1		07/15/03 14:57	GQ	1769381
Butyl benzyl phthalate	ND	5	1		07/15/03 14:57	GQ	1769381
Carbazole	ND	5	1		07/15/03 14:57	GQ	1769381
Chrysene	ND	5	1		07/15/03 14:57	GQ	1769381
Di-n-butyl phthalate	ND	5	1		07/15/03 14:57	GQ	1769381
Di-n-octyl phthalate	ND	5	1		07/15/03 14:57	GQ	1769381
Dibenz(a,h)anthracene	ND	5	1		07/15/03 14:57	GQ	1769381
Dibenzofuran	ND	5	1		07/15/03 14:57	GQ	1769381
Diethyl phthalate	ND	5	1		07/15/03 14:57	GQ	1769381
Dimethyl phthalate	ND	5	1		07/15/03 14:57	GQ	1769381
Fluoranthene	ND	5	1		07/15/03 14:57	GQ	1769381
Fluorene	ND	5	1		07/15/03 14:57	GQ	1769381
Hexachlorobenzene	ND	5	1		07/15/03 14:57	GQ	1769381
Hexachlorobutadiene	ND	5	1		07/15/03 14:57	GQ	1769381
Hexachlorocyclopentadiene	ND	5	1		07/15/03 14:57	GQ	1769381
Hexachloroethane	ND	5	1		07/15/03 14:57	GQ	1769381
Indeno(1,2,3-cd)pyrene	ND	5	1		07/15/03 14:57	GQ	1769381
Isophorone	ND	5	1		07/15/03 14:57	GQ	1769381
N-Nitrosodi-n-propylamine	ND	5	1		07/15/03 14:57	GQ	1769381
N-Nitrosodiphenylamine	ND	5	1		07/15/03 14:57	GQ	1769381
Naphthalene	ND	5	1		07/15/03 14:57	GQ	1769381
Nitrobenzene	ND	5	1		07/15/03 14:57	GQ	1769381
Pentachlorophenol	ND	25	1		07/15/03 14:57	GQ	1769381
Phenanthrene	ND	5	1		07/15/03 14:57	GQ	1769381
Phenol	ND	5	1		07/15/03 14:57	GQ	1769381
Pyrene	ND	5	1		07/15/03 14:57	GQ	1769381
Pyridine	ND	5	1		07/15/03 14:57	GQ	1769381
2-Methylphenol	ND	5	1		07/15/03 14:57	GQ	1769381
3 & 4-Methylphenol	ND	5	1		07/15/03 14:57	GQ	1769381
Surr: 2,4,6-Tribromophenol	107	% 10-123	1		07/15/03 14:57	GQ	1769381
Surr: 2-Fluorobiphenyl	80.0	% 43-116	1		07/15/03 14:57	GQ	1769381
Surr: 2-Fluorophenol	49.3	% 21-110	1		07/15/03 14:57	GQ	1769381
Surr: Nitrobenzene-d5	80.0	% 35-114	1		07/15/03 14:57	GQ	1769381
Surr: Phenol-d5	37.3	% 10-110	1		07/15/03 14:57	GQ	1769381
Surr: Terphenyl-d14	78.0	% 33-141	1		07/15/03 14:57	GQ	1769381

Prep Method	Prep Date	Prep Initials
SW3510C	06/24/2003 10:38	KL

Qualifiers:
 ND/U - Not Detected at the Reporting Limit
 B - Analyte detected in the associated Method Blank
 * - Surrogate Recovery Outside Advisable QC Limits
 J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)
 D - Surrogate Recovery Unreportable due to Dilution
 MI - Matrix Interference



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: MW-1G

Collected: 06/20/2003 8:20

SPL Sample ID: 03060895-01

Site: Hobbs, New Mexico

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			MCL	SW8260B	Units: ug/L		
1,1,1,2-Tetrachloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,1,1-Trichloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,1,2,2-Tetrachloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,1,2-Trichloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,1-Dichloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,1-Dichloroethene	ND	5	1		06/24/03 15:33	JC	1737138
1,1-Dichloropropene	ND	5	1		06/24/03 15:33	JC	1737138
1,2,3-Trichlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,2,3-Trichloropropane	ND	5	1		06/24/03 15:33	JC	1737138
1,2,4-Trichlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,2,4-Trimethylbenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dibromo-3-chloropropane	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dibromoethane	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dichlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dichloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dichloropropane	ND	5	1		06/24/03 15:33	JC	1737138
1,3,5-Trimethylbenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,3-Dichlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,3-Dichloropropane	ND	5	1		06/24/03 15:33	JC	1737138
1,4-Dichlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
2,2-Dichloropropane	ND	5	1		06/24/03 15:33	JC	1737138
2-Butanone	ND	20	1		06/24/03 15:33	JC	1737138
2-Chloroethyl vinyl ether	ND	10	1		06/24/03 15:33	JC	1737138
2-Chlorotoluene	ND	5	1		06/24/03 15:33	JC	1737138
2-Hexanone	ND	10	1		06/24/03 15:33	JC	1737138
4-Chlorotoluene	ND	5	1		06/24/03 15:33	JC	1737138
4-Isopropyltoluene	ND	5	1		06/24/03 15:33	JC	1737138
4-Methyl-2-pentanone	ND	10	1		06/24/03 15:33	JC	1737138
Acetone	ND	100	1		06/24/03 15:33	JC	1737138
Acrylonitrile	ND	50	1		06/24/03 15:33	JC	1737138
Benzene	ND	5	1		06/24/03 15:33	JC	1737138
Bromobenzene	ND	5	1		06/24/03 15:33	JC	1737138
Bromochloromethane	ND	5	1		06/24/03 15:33	JC	1737138
Bromodichloromethane	ND	5	1		06/24/03 15:33	JC	1737138
Bromoform	ND	5	1		06/24/03 15:33	JC	1737138
Bromomethane	ND	10	1		06/24/03 15:33	JC	1737138
Carbon disulfide	ND	5	1		06/24/03 15:33	JC	1737138
Carbon tetrachloride	ND	5	1		06/24/03 15:33	JC	1737138
Chlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
Chloroethane	ND	10	1		06/24/03 15:33	JC	1737138

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: MW-1G

Collected: 06/20/2003 8:20

SPL Sample ID: 03060895-01

Site: Hobbs, New Mexico

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Chloroform	ND	5	1		06/24/03 15:33	JC	1737138
Chloromethane	ND	10	1		06/24/03 15:33	JC	1737138
Dibromochloromethane	ND	5	1		06/24/03 15:33	JC	1737138
Dibromomethane	ND	5	1		06/24/03 15:33	JC	1737138
Dichlorodifluoromethane	ND	10	1		06/24/03 15:33	JC	1737138
Ethylbenzene	ND	5	1		06/24/03 15:33	JC	1737138
Hexachlorobutadiene	ND	5	1		06/24/03 15:33	JC	1737138
Isopropylbenzene	ND	5	1		06/24/03 15:33	JC	1737138
Methyl tert-butyl ether	ND	5	1		06/24/03 15:33	JC	1737138
Methylene chloride	ND	5	1		06/24/03 15:33	JC	1737138
n-Butylbenzene	ND	5	1		06/24/03 15:33	JC	1737138
n-Propylbenzene	ND	5	1		06/24/03 15:33	JC	1737138
Naphthalene	ND	5	1		06/24/03 15:33	JC	1737138
sec-Butylbenzene	ND	5	1		06/24/03 15:33	JC	1737138
Styrene	ND	5	1		06/24/03 15:33	JC	1737138
tert-Butylbenzene	ND	5	1		06/24/03 15:33	JC	1737138
Tetrachloroethene	ND	5	1		06/24/03 15:33	JC	1737138
Toluene	ND	5	1		06/24/03 15:33	JC	1737138
Trichloroethene	ND	5	1		06/24/03 15:33	JC	1737138
Trichlorofluoromethane	ND	5	1		06/24/03 15:33	JC	1737138
Vinyl acetate	ND	10	1		06/24/03 15:33	JC	1737138
Vinyl chloride	ND	10	1		06/24/03 15:33	JC	1737138
cis-1,2-Dichloroethene	ND	5	1		06/24/03 15:33	JC	1737138
cis-1,3-Dichloropropene	ND	5	1		06/24/03 15:33	JC	1737138
m,p-Xylene	ND	5	1		06/24/03 15:33	JC	1737138
o-Xylene	ND	5	1		06/24/03 15:33	JC	1737138
trans-1,2-Dichloroethene	ND	5	1		06/24/03 15:33	JC	1737138
trans-1,3-Dichloropropene	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dichloroethene (total)	ND	5	1		06/24/03 15:33	JC	1737138
Xylenes, Total	ND	5	1		06/24/03 15:33	JC	1737138
Surr: 1,2-Dichloroethane-d4	108	% 62-130	1		06/24/03 15:33	JC	1737138
Surr: 4-Bromofluorobenzene	88.0	% 70-130	1		06/24/03 15:33	JC	1737138
Surr: Toluene-d8	94.0	% 74-122	1		06/24/03 15:33	JC	1737138

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID: M-12R

Collected: 06/20/2003 10:40

SPL Sample ID: 03060895-02

Site: Hobbs, New Mexico

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	232	2	1		06/25/03 13:00	RA	1738531
ALKALINITY, CARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2	1		06/25/03 13:00	RA	1738603
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	89.3	2	2		06/26/03 10:00	RA	1740424
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	ND	1	1		07/05/03 18:02	AM	1754590
Surr: n-Pentacosane	60.2	% 18-120	1		07/05/03 18:02	AM	1754590

Prep Method	Prep Date	Prep Initials
SW3510C	06/22/2003 16:42	KL

GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND	0.1	1		07/01/03 21:33	D_R	1748087
Surr: 1,4-Difluorobenzene	102	% 74-121	1		07/01/03 21:33	D_R	1748087
Surr: 4-Bromofluorobenzene	105	% 55-150	1		07/01/03 21:33	D_R	1748087

HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg/L	
Methane	ND	0.0012	1		06/24/03 16:22	J_F	1736629

ION CHROMATOGRAPHY				MCL	E300.0	Units: mg/L	
Nitrogen,Nitrate (As N)	ND	0.1	1		06/21/03 14:48	CV	1732731
Sulfate	160	4	20		06/21/03 17:19	CV	1732742

PURGEABLE AROMATICS				MCL	SW8021B	Units: ug/L	
Benzene	ND	1	1		07/01/03 21:33	D_R	1748040
Ethylbenzene	ND	1	1		07/01/03 21:33	D_R	1748040
Toluene	ND	1	1		07/01/03 21:33	D_R	1748040
Xylenes, Total	ND	1	1		07/01/03 21:33	D_R	1748040
Surr: 4-Bromofluorobenzene	104	% 56-158	1		07/01/03 21:33	D_R	1748040
Surr: 1,4-Difluorobenzene	104	% 46-160	1		07/01/03 21:33	D_R	1748040

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: Trip Blank

Collected: 06/20/2003 0:00

SPL Sample ID: 03060895-03

Site: Hobbs, New Mexico

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B							
			MCL	SW8260B	Units: ug/L		
1,1,1,2-Tetrachloroethane	ND	5	1		06/24/03 15:08	JC	1737137
1,1,1-Trichloroethane	ND	5	1		06/24/03 15:08	JC	1737137
1,1,2,2-Tetrachloroethane	ND	5	1		06/24/03 15:08	JC	1737137
1,1,2-Trichloroethane	ND	5	1		06/24/03 15:08	JC	1737137
1,1-Dichloroethane	ND	5	1		06/24/03 15:08	JC	1737137
1,1-Dichloroethene	ND	5	1		06/24/03 15:08	JC	1737137
1,1-Dichloropropene	ND	5	1		06/24/03 15:08	JC	1737137
1,2,3-Trichlorobenzene	ND	5	1		06/24/03 15:08	JC	1737137
1,2,3-Trichloropropane	ND	5	1		06/24/03 15:08	JC	1737137
1,2,4-Trichlorobenzene	ND	5	1		06/24/03 15:08	JC	1737137
1,2,4-Trimethylbenzene	ND	5	1		06/24/03 15:08	JC	1737137
1,2-Dibromo-3-chloropropane	ND	5	1		06/24/03 15:08	JC	1737137
1,2-Dibromoethane	ND	5	1		06/24/03 15:08	JC	1737137
1,2-Dichlorobenzene	ND	5	1		06/24/03 15:08	JC	1737137
1,2-Dichloroethane	ND	5	1		06/24/03 15:08	JC	1737137
1,2-Dichloropropane	ND	5	1		06/24/03 15:08	JC	1737137
1,3,5-Trimethylbenzene	ND	5	1		06/24/03 15:08	JC	1737137
1,3-Dichlorobenzene	ND	5	1		06/24/03 15:08	JC	1737137
1,3-Dichloropropane	ND	5	1		06/24/03 15:08	JC	1737137
1,4-Dichlorobenzene	ND	5	1		06/24/03 15:08	JC	1737137
2,2-Dichloropropane	ND	5	1		06/24/03 15:08	JC	1737137
2-Butanone	ND	20	1		06/24/03 15:08	JC	1737137
2-Chloroethyl vinyl ether	ND	10	1		06/24/03 15:08	JC	1737137
2-Chlorotoluene	ND	5	1		06/24/03 15:08	JC	1737137
2-Hexanone	ND	10	1		06/24/03 15:08	JC	1737137
4-Chlorotoluene	ND	5	1		06/24/03 15:08	JC	1737137
4-Isopropyltoluene	ND	5	1		06/24/03 15:08	JC	1737137
4-Methyl-2-pentanone	ND	10	1		06/24/03 15:08	JC	1737137
Acetone	ND	100	1		06/24/03 15:08	JC	1737137
Acrylonitrile	ND	50	1		06/24/03 15:08	JC	1737137
Benzene	ND	5	1		06/24/03 15:08	JC	1737137
Bromobenzene	ND	5	1		06/24/03 15:08	JC	1737137
Bromochloromethane	ND	5	1		06/24/03 15:08	JC	1737137
Bromodichloromethane	ND	5	1		06/24/03 15:08	JC	1737137
Bromoform	ND	5	1		06/24/03 15:08	JC	1737137
Bromomethane	ND	10	1		06/24/03 15:08	JC	1737137
Carbon disulfide	ND	5	1		06/24/03 15:08	JC	1737137
Carbon tetrachloride	ND	5	1		06/24/03 15:08	JC	1737137
Chlorobenzene	ND	5	1		06/24/03 15:08	JC	1737137
Chloroethane	ND	10	1		06/24/03 15:08	JC	1737137

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: Trip Blank

Collected: 06/20/2003 0:00

SPL Sample ID: 03060895-03

Site: Hobbs, New Mexico

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Chloroform	ND	5	1		06/24/03 15:08	JC	1737137
Chloromethane	ND	10	1		06/24/03 15:08	JC	1737137
Dibromochloromethane	ND	5	1		06/24/03 15:08	JC	1737137
Dibromomethane	ND	5	1		06/24/03 15:08	JC	1737137
Dichlorodifluoromethane	ND	10	1		06/24/03 15:08	JC	1737137
Ethylbenzene	ND	5	1		06/24/03 15:08	JC	1737137
Hexachlorobutadiene	ND	5	1		06/24/03 15:08	JC	1737137
Isopropylbenzene	ND	5	1		06/24/03 15:08	JC	1737137
Methyl tert-butyl ether	ND	5	1		06/24/03 15:08	JC	1737137
Methylene chloride	ND	5	1		06/24/03 15:08	JC	1737137
n-Butylbenzene	ND	5	1		06/24/03 15:08	JC	1737137
n-Propylbenzene	ND	5	1		06/24/03 15:08	JC	1737137
Naphthalene	ND	5	1		06/24/03 15:08	JC	1737137
sec-Butylbenzene	ND	5	1		06/24/03 15:08	JC	1737137
Styrene	ND	5	1		06/24/03 15:08	JC	1737137
tert-Butylbenzene	ND	5	1		06/24/03 15:08	JC	1737137
Tetrachloroethene	ND	5	1		06/24/03 15:08	JC	1737137
Toluene	ND	5	1		06/24/03 15:08	JC	1737137
Trichloroethene	ND	5	1		06/24/03 15:08	JC	1737137
Trichlorofluoromethane	ND	5	1		06/24/03 15:08	JC	1737137
Vinyl acetate	ND	10	1		06/24/03 15:08	JC	1737137
Vinyl chloride	ND	10	1		06/24/03 15:08	JC	1737137
cis-1,2-Dichloroethene	ND	5	1		06/24/03 15:08	JC	1737137
cis-1,3-Dichloropropene	ND	5	1		06/24/03 15:08	JC	1737137
m,p-Xylene	ND	5	1		06/24/03 15:08	JC	1737137
o-Xylene	ND	5	1		06/24/03 15:08	JC	1737137
trans-1,2-Dichloroethene	ND	5	1		06/24/03 15:08	JC	1737137
trans-1,3-Dichloropropene	ND	5	1		06/24/03 15:08	JC	1737137
1,2-Dichloroethene (total)	ND	5	1		06/24/03 15:08	JC	1737137
Xylenes, Total	ND	5	1		06/24/03 15:08	JC	1737137
Surr: 1,2-Dichloroethane-d4	104	% 62-130	1		06/24/03 15:08	JC	1737137
Surr: 4-Bromofluorobenzene	88.0	% 70-130	1		06/24/03 15:08	JC	1737137
Surr: Toluene-d8	92.0	% 74-122	1		06/24/03 15:08	JC	1737137

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

Quality Control Documentation



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Diesel Range Organics
Method: SW8015B

WorkOrder: 03060895
Lab Batch ID: 29532c

Method Blank

Samples in Analytical Batch:

RunID: HP_V_030703C-1754583 Units: mg/L
Analysis Date: 07/03/2003 23:13 Analyst: AM
Preparation Date: 06/22/2003 16:42 Prep By: KL Method SW3510C

Lab Sample ID: 03060895-02B
Client Sample ID: M-12R

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Diesel Range Organics (ND, 1.0) and Surr: n-Pentacosane (76.8, 18-120).

Laboratory Control Sample (LCS)

RunID: HP_V_030703C-1754584 Units: mg/L
Analysis Date: 07/03/2003 23:52 Analyst: AM
Preparation Date: 06/22/2003 16:42 Prep By: KL Method SW3510C

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Diesel Range Organics shows 2.5 spike, 1.62 result, 65% recovery, 21 lower limit, 130 upper limit.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03060804-01
RunID: HP_V_030703C-1754586 Units: mg/L
Analysis Date: 07/04/2003 1:10 Analyst: AM
Preparation Date: 06/22/2003 16:42 Prep By: KL Method SW3510C

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Diesel Range Organics shows ND sample result, 5 MS spike, 2.65 MS result, 52.3% MS recovery, 5 MSD spike, 3.33 MSD result, 65.9% MSD recovery, 22.7 RPD, 39 RPD limit, 13 low limit, 130 high limit.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
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BJ Service, Hobbs, NM

Analysis: Headspace Gas Analysis
Method: RSK147

WorkOrder: 03060895
Lab Batch ID: R87953

Method Blank

Samples in Analytical Batch:

RunID: VARC_030624A-1736623 Units: mg/L
Analysis Date: 06/24/2003 11:17 Analyst: J_F

Lab Sample ID Client Sample ID
03060895-01E MW-1G
03060895-02D M-12R

Table with 3 columns: Analyte, Result, Rep Limit. Row: Methane, ND, 0.0012

Laboratory Control Sample (LCS)

RunID: VARC_030624A-1736624 Units: mg/L
Analysis Date: 06/24/2003 11:46 Analyst: J_F

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Methane, 1000, 1010, 101, 70, 130

Sample Duplicate

Original Sample: 03060769-01
RunID: VARC_030624A-1736625 Units: mg/L
Analysis Date: 06/24/2003 14:59 Analyst: J_F

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Rows: Butane, Ethane, Ethylene, Isobutane, Methane, Propane, Propylene

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 03060895
Lab Batch ID: R88495

Method Blank

Samples in Analytical Batch:

RunID: HP_J_030701A-1748039 Units: ug/L
Analysis Date: 07/01/2003 21:07 Analyst: D_R

Lab Sample ID: 03060895-02A
Client Sample ID: M-12R

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, and two surrogate compounds.

Laboratory Control Sample (LCS)

RunID: HP_J_030701A-1748036 Units: ug/L
Analysis Date: 07/01/2003 17:15 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03060895-02
RunID: HP_J_030701A-1748037 Units: ug/L
Analysis Date: 07/01/2003 19:22 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 03060895
Lab Batch ID: R88499

Method Blank

Samples in Analytical Batch:

RunID: HP_J_030701C-1748086 Units: mg/L
Analysis Date: 07/01/2003 21:07 Analyst: D_R

Lab Sample ID: 03060895-02A
Client Sample ID: M-12R

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Gasoline Range Organics (ND, 0.10), Surr: 1,4-Difluorobenzene (102.3, 74-121), and Surr: 4-Bromofluorobenzene (103.7, 55-150).

Laboratory Control Sample (LCS)

RunID: HP_J_030701C-1748083 Units: mg/L
Analysis Date: 07/01/2003 17:41 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Gasoline Range Organics shows 1 spike added, result 0.963, 96% recovery, and limits of 70-130.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03060895-02
RunID: HP_J_030701C-1748084 Units: mg/L
Analysis Date: 07/01/2003 20:14 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Gasoline Range Organics shows ND sample result, 0.9 MS spike, 1.2 MS result, 133% MS recovery, 0.9 MSD spike, 1.24 MSD result, 137% MSD recovery, RPD 2.88, RPD limit 36, and high limit 160.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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8880 INTERCHANGE DRIVE
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(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Mercury, Total
Method: SW7470A

WorkOrder: 03060895
Lab Batch ID: 29624

Method Blank

Samples in Analytical Batch:

RunID: HGLD_030625A-1739832 Units: mg/L
Analysis Date: 06/25/2003 17:23 Analyst: R_T
Preparation Date: 06/25/2003 11:00 Prep By: R_T Method SW7470A

Lab Sample ID Client Sample ID
03060895-01D MW-1G

Table with 3 columns: Analyte, Result, Rep Limit. Row: Mercury, ND, 0.0002

Laboratory Control Sample (LCS)

RunID: HGLD_030625A-1739833 Units: mg/L
Analysis Date: 06/25/2003 17:27 Analyst: R_T
Preparation Date: 06/25/2003 11:00 Prep By: R_T Method SW7470A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Mercury, 0.002, 0.001991, 100, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03060943-01
RunID: HGLD_030625A-1739837 Units: mg/L
Analysis Date: 06/25/2003 17:37 Analyst: R_T
Preparation Date: 06/25/2003 11:00 Prep By: R_T Method SW7470A

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Mercury, ND, 0.002, 0.001827, 91.36, 0.002, 0.001804, 90.20, 1.270, 20, 75, 125

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
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Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03060895
Lab Batch ID: 29666

Method Blank

Samples in Analytical Batch:

RunID: TJA_030707B-1756029 Units: mg/L
Analysis Date: 07/08/2003 1:19 Analyst: MW
Preparation Date: 06/26/2003 13:15 Prep By: MED Method SW3010A

Lab Sample ID: 03060895-01D
Client Sample ID: MW-1G

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Barium, Cadmium, Calcium, Chromium, Magnesium, Potassium, Silver, Sodium.

Laboratory Control Sample (LCS)

RunID: TJA_030707B-1756030 Units: mg/L
Analysis Date: 07/08/2003 1:24 Analyst: MW
Preparation Date: 06/26/2003 13:15 Prep By: MED Method SW3010A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Barium, Cadmium, Calcium, Chromium, Magnesium, Potassium, Silver, Sodium.

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 03060923-04
RunID: TJA_030707B-1756035 Units: mg/L
Analysis Date: 07/08/2003 1:46 Analyst: MW
Preparation Date: 06/26/2003 13:15 Prep By: Method

Table with 12 columns: Analyte, Sample Result, PDS Spike Added, PDS Result, PDS % Recovery, PDSD Spike Added, PDSD Result, PDSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Calcium, Sodium.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03060895
Lab Batch ID: 29666

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03060923-04
RunID: TJA_030707B-1756032 Units: mg/L
Analysis Date: 07/08/2003 1:33 Analyst: MW
Preparation Date: 06/26/2003 13:15 Prep By: MED Method SW3010A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Barium	0.1145	1	1.126	101.1	1	1.142	102.7	1.385	20	75	125
Cadmium	ND	1	1.027	102.7	1	1.019	101.9	0.8515	20	75	125
Calcium	38.21	1	38.96	N/C	1	39.29	N/C	N/C	20	75	125
Chromium	ND	1	1.007	100.7	1	0.9825	98.25	2.461	20	75	125
Magnesium	4.040	1	5.006	N/C	1	5.087	N/C	N/C	20	75	125
Potassium	28.66	10	38.42	97.58	10	39.89	112.3	3.762	20	75	125
Mercury	ND	1	1.03	103.0	1	1.022	102.2	0.7086	20	75	125
Sodium	146.0	1	144.9	N/C	1	155.5	N/C	N/C	20	75	125

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03060895
Lab Batch ID: 29666-T

Method Blank

Samples in Analytical Batch:

RunID: TJAT_030705D-1756657 Units: mg/L
Analysis Date: 07/05/2003 16:51 Analyst: NS
Preparation Date: 06/26/2003 13:15 Prep By: MED Method SW3010A

Lab Sample ID 03060895-01D
Client Sample ID MW-1G

Table with 3 columns: Analyte, Result, Rep Limit. Rows for Arsenic, Lead, Selenium.

Laboratory Control Sample (LCS)

RunID: TJAT_030705D-1756658 Units: mg/L
Analysis Date: 07/05/2003 16:56 Analyst: NS
Preparation Date: 06/26/2003 13:15 Prep By: MED Method SW3010A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows for Arsenic, Lead, Selenium.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03060923-04
RunID: TJAT_030705D-1756660 Units: mg/L
Analysis Date: 07/05/2003 17:09 Analyst: NS
Preparation Date: 06/26/2003 13:15 Prep By: Method

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows for Arsenic, Lead, Selenium.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Semivolatile Organics by Method 8270C
Method: SW8270C

WorkOrder: 03060895
Lab Batch ID: 29591

Method Blank

Samples in Analytical Batch:

RunID: P_030714A-1768442 Units: ug/L
Analysis Date: 07/14/2003 21:05 Analyst: GQ
Preparation Date: 06/24/2003 10:38 Prep By: KL Method SW3510C

Lab Sample ID Client Sample ID
03060895-01B MW-1G

Table with 3 columns: Analyte, Result, Rep Limit. Lists various chemical compounds and their detection results (mostly ND) and reporting limits.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Semivolatile Organics by Method 8270C
Method: SW8270C

WorkOrder: 03060895
Lab Batch ID: 29591

Method Blank

RunID: P_030714A-1768442 Units: ug/L
Analysis Date: 07/14/2003 21:05 Analyst: GQ
Preparation Date: 06/24/2003 10:38 Prep By: KL Method SW3510C

Table with 3 columns: Analyte, Result, Rep Limit. Lists various chemical compounds and their detection results (ND) and reporting limits.

Laboratory Control Sample (LCS)

RunID: P_030714A-1768443 Units: ug/L
Analysis Date: 07/14/2003 21:36 Analyst: GQ
Preparation Date: 06/24/2003 10:38 Prep By: KL Method SW3510C

Table with 7 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Shows recovery data for various spiked analytes.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Semivolatile Organics by Method 8270C
Method: SW8270C

WorkOrder: 03060895
Lab Batch ID: 29591

Laboratory Control Sample (LCS)

RunID: P_030714A-1768443 Units: ug/L
Analysis Date: 07/14/2003 21:36 Analyst: GQ
Preparation Date: 06/24/2003 10:38 Prep By: KL Method SW3510C

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include N-Nitrosodi-n-propylamine, Pentachlorophenol, Phenol, Pyrene.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03060844-01
RunID: P_030714A-1768445 Units: ug/L
Analysis Date: 07/14/2003 22:39 Analyst: GQ
Preparation Date: 06/24/2003 10:38 Prep By: KL Method SW3510C

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include 2,4-Trichlorobenzene, 1,4-Dichlorobenzene, 2,4-Dinitrotoluene, 2,4-Dichlorophenol, 4-Chloro-3-methylphenol, Nitrophenol, Acenaphthene, N-Nitrosodi-n-propylamine, Pentachlorophenol, Phenol, Pyrene.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 03060895
Lab Batch ID: R87982

Method Blank

Samples in Analytical Batch:

Sample ID: N_030624A-1737131 Units: ug/L
Analysis Date: 06/24/2003 11:01 Analyst: JC

Lab Sample ID Client Sample ID
03060895-01A MW-1G
03060895-03A Trip Blank

Table with 3 columns: Analyte, Result, Rep Limit. Lists various chemical compounds and their detection results (ND) and reporting limits (e.g., 5.0, 10, 20, 100).

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 03060895
Lab Batch ID: R87982

Method Blank

RunID: N_030624A-1737131 Units: ug/L
Analysis Date: 06/24/2003 11:01 Analyst: JC

Table with 3 columns: Analyte, Result, Rep Limit. Lists various organic compounds and their detection results (ND) and reporting limits.

Laboratory Control Sample (LCS)

RunID: N_030624A-1737130 Units: ug/L
Analysis Date: 06/24/2003 10:12 Analyst: JC

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Shows recovery data for various analytes.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 03060895
Lab Batch ID: R87982

Sample Spiked: 03060594-04
RunID: N_030624A-1737150 Units: ug/L
Analysis Date: 06/24/2003 19:15 Analyst: JC

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Dichloroethene	ND	2500	2300	92	2500	2400	96.0	4	14	61	145
Benzene	1500	2500	4200	108	2500	4300	112	2	11	76	127
Chlorobenzene	ND	2500	2600	104	2500	2600	104	0	13	70	130
Toluene	ND	2500	2700	108	2500	2700	108	0	13	70	129
Trichloroethene	ND	2500	2600	104	2500	2600	104	0	14	60	140

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
 B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
 J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
 N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03060895
Lab Batch ID: R87753

Method Blank

Samples in Analytical Batch:

RunID: IC1_030621A-1734500 Units: mg/L
Analysis Date: 06/21/2003 13:07 Analyst: CV

Lab Sample ID Client Sample ID
03060895-01C MW-1G
03060895-02C M-12R

Table with 3 columns: Analyte, Result, Rep Limit. Row: Nitrogen, Nitrate (As N), ND, 0.10

Laboratory Control Sample (LCS)

RunID: IC1_030621A-1732725 Units: mg/L
Analysis Date: 06/21/2003 13:32 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Nitrogen, Nitrate (As N), 10, 10.1, 101, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03060895-01
RunID: IC1_030621A-1732729 Units: mg/L
Analysis Date: 06/21/2003 14:22 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Nitrogen, Nitrate (As N), 4.37, 10, 15.4, 110, 10, 15.2, 108, 1.24, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
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Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03060895
Lab Batch ID: R87753B

Method Blank

Samples in Analytical Batch:

RunID: IC1_030621A-1734029 Units: mg/L
Analysis Date: 06/21/2003 13:07 Analyst: CV

Lab Sample ID Client Sample ID
03060895-01C MW-1G
03060895-02C M-12R

Table with 3 columns: Analyte, Result, Rep Limit. Row: Sulfate, ND, 0.20

Laboratory Control Sample (LCS)

RunID: IC1_030621A-1732724 Units: mg/L
Analysis Date: 06/21/2003 13:19 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Sulfate, 10, 9.92, 99, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03060895-01
RunID: IC1_030621A-1732740 Units: mg/L
Analysis Date: 06/21/2003 16:54 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Sulfate, 196, 500, 705, 102, 500, 714, 103, 1.31, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Analysis: Alkalinity, Bicarbonate
Method: M2320 B

WorkOrder: 03060895
Lab Batch ID: R88051

Method Blank

Samples in Analytical Batch:

RunID: WET_030625J-1738522 Units: mg/L
Analysis Date: 06/25/2003 13:00 Analyst: RA

Lab Sample ID Client Sample ID
03060895-01C MW-1G
03060895-02C M-12R

Table with 3 columns: Analyte, Result, Rep Limit. Row: Alkalinity, Bicarbonate, ND, 2.0

Laboratory Control Sample (LCS)

RunID: WET_030625J-1738525 Units: mg/L
Analysis Date: 06/25/2003 13:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Alkalinity, Bicarbonate, 98.9, 96.52, 98, 90, 110

Sample Duplicate

Original Sample: 03060859-01
RunID: WET_030625J-1738526 Units: mg/L
Analysis Date: 06/25/2003 13:00 Analyst: RA

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Row: Alkalinity, Bicarbonate, 424, 423.9, 0, 20

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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Analysis: Alkalinity, Carbonate
Method: M2320 B

WorkOrder: 03060895
Lab Batch ID: R88055

Method Blank

Samples in Analytical Batch:

RunID: WET_030625K-1738592 Units: mg/L
Analysis Date: 06/25/2003 13:00 Analyst: RA

Lab Sample ID Client Sample ID
03060895-01C MW-1G
03060895-02C M-12R

Table with 3 columns: Analyte, Result, Rep Limit. Row: Alkalinity, Carbonate, ND, 2.0

Laboratory Control Sample (LCS)

RunID: WET_030625K-1738595 Units: mg/L
Analysis Date: 06/25/2003 13:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Alkalinity, Carbonate, 98.9, 96.52, 98, 90, 110

Sample Duplicate

Original Sample: 03060859-01
RunID: WET_030625K-1738597 Units: mg/L
Analysis Date: 06/25/2003 13:00 Analyst: RA

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Row: Alkalinity, Carbonate, ND, ND, 0, 20

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

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BJ Service, Hobbs, NM

Analysis: Chloride, Total
Method: E325.3

WorkOrder: 03060895
Lab Batch ID: R88136

Method Blank

Samples in Analytical Batch:

RunID: WET_030626F-1740415 Units: mg/L
Analysis Date: 06/26/2003 10:00 Analyst: RA

Lab Sample ID Client Sample ID
03060895-01C MW-1G
03060895-02C M-12R

Table with 3 columns: Analyte, Result, Rep Limit. Row: Chloride, ND, 1.0

Laboratory Control Sample (LCS)

RunID: WET_030626F-1740417 Units: mg/L
Analysis Date: 06/26/2003 10:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Chloride, 233, 232.7, 100, 90, 110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03060831-06
RunID: WET_030626F-1740432 Units: mg/L
Analysis Date: 06/26/2003 10:00 Analyst: RA

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Chloride, 4109, 2500, 6700, 103.6, 2500, 6700, 103.6, 0, 20, 85, 115

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

*Sample Receipt Checklist
And
Chain of Custody*



HOUSTON LABORATORY
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HOUSTON, TX 77054
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Sample Receipt Checklist

Workorder: 03060895

Received By: R_R

Date and Time Received: 6/21/03 10:00:00 AM

Carrier name: FedEx

Temperature: 3

Chilled by: Water Ice

- | | | | |
|--|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| 2. Custody seals intact on shipping container/cooler? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| 3. Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 4. Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 5. Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 6. Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 7. Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 8. Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 9. Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 10. All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 11. Container/Temp Blank temperature in compliance? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 12. Water - VOA vials have zero headspace? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Applicable <input type="checkbox"/> |
| 13. Water - pH acceptable upon receipt? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Applicable <input type="checkbox"/> |

SPL Representative:

Contact Date & Time:

Client Name Contacted:

Non Conformance Issues:

Client Instructions:



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03080815

Report To: Brown & Caldwell
 Rick Rexroad
 1415 Louisiana
 Suite 2509
 Houston
 TX
 77002-
 ph: (713) 759-0999

fax: (713) 308-3886

Project Name: BJ Service, Hobbs, NM

Site: Hobbs, NM

Site Address:

PO Number:

State: New Mexico

State Cert. No.:

Date Reported:

Fax To: Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
V-10	03080815-01	Water	8/21/03 2:00:00 PM	8/23/03 9:30:00 AM	183199	<input type="checkbox"/>
MW-11A	03080815-02	Water	8/21/03 2:15:00 PM	8/23/03 9:30:00 AM	183199	<input type="checkbox"/>
MW-12D	03080815-03	Water	8/22/03 10:05:00 AM	8/23/03 9:30:00 AM	183199	<input type="checkbox"/>
V-14	03080815-04	Water	8/22/03 1:00:00 AM	8/23/03 9:30:00 AM	183199	<input type="checkbox"/>
V-15	03080815-05	Water	8/21/03 11:50:00 AM	8/23/03 9:30:00 AM	183199	<input type="checkbox"/>
MW-16	03080815-06	Water	8/22/03 11:15:00 AM	8/23/03 9:30:00 AM	183199	<input type="checkbox"/>

Patricia Lynch
 Patricia Lynch
 Senior Project Manager

9/8/03

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
03080815

Report To: Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886	Project Name: BJ Service, Hobbs, NM Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported:
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The data in this report applies to the analysis of six water samples from the BJ Services site located in Hobbs, New Mexico. SPL received these samples on August 23, 2003, assigned them to SPL Certificate of Analysis No. 03080815, and analyzed them for the parameters as listed on COC No. 183199. A trip blank was listed on the chain-of-custody. However, SPL did not receive the trip blank.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.


Pat Lynch
Senior Project Manager

9/9/2003

Date



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-10

Collected: 08/21/2003 14:00 SPL Sample ID: 03080815-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	1	1		08/27/03 23:39	AM	1842115
Surr: n-Pentacosane	72.4	% 18-120	1		08/27/03 23:39	AM	1842115

Prep Method	Prep Date	Prep Initials
SW3510C	08/24/2003 19:30	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		09/04/03 2:48	D_R	1850137
Surr: 1,4-Difluorobenzene	101	% 74-121	1		09/04/03 2:48	D_R	1850137
Surr: 4-Bromofluorobenzene	105	% 55-150	1		09/04/03 2:48	D_R	1850137

HARDNESS, TOTAL (TITRIMETRIC, EDTA)			MCL	E130.2	Units: mg/L		
Hardness (As CaCO3)	790	50	10		09/02/03 18:00	CV	1847622

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		08/26/03 15:01	J_F	1840899

MERCURY, TOTAL			MCL	SW7470A	Units: mg/L		
Mercury	ND	0.0002	1		08/26/03 14:34	MED	1840092

Prep Method	Prep Date	Prep Initials
SW7470A	08/26/2003 9:44	MED

METALS BY METHOD 6010B, TOTAL			MCL	SW6010B	Units: mg/L		
Arsenic	0.0598	0.005	1		09/04/03 19:54	NS	1851097
Lead	ND	0.005	1		09/04/03 19:54	NS	1851097
Selenium	ND	0.005	1		09/04/03 19:54	NS	1851097
Barium	0.04	0.005	1		08/27/03 17:02	MW	1842436
Cadmium	ND	0.005	1		08/27/03 17:02	MW	1842436
Calcium	108	0.1	1		08/27/03 17:02	MW	1842436
Chromium	ND	0.01	1		08/27/03 17:02	MW	1842436
Magnesium	41.1	0.1	1		08/27/03 17:02	MW	1842436
Potassium	4.61	2	1		09/04/03 17:32	MW	1851436
Silver	ND	0.01	1		08/27/03 17:02	MW	1842436
Sodium	170	0.5	1		09/04/03 17:32	MW	1851436

Prep Method	Prep Date	Prep Initials
SW3010A	09/04/2003 9:25	SE
SW3010A	08/25/2003 13:22	SE

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-10

Collected: 08/21/2003 14:00

SPL Sample ID: 03080815-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
POLYNUCLEAR AROMATIC HYDROCARBONS			MCL	SW8310	Units: ug/L		
Acenaphthene	ND	0.1	1		08/31/03 8:01	DL	1850245
Acenaphthylene	ND	0.1	1		08/31/03 8:01	DL	1850245
Anthracene	ND	0.1	1		08/31/03 8:01	DL	1850245
Benz(a)anthracene	ND	0.1	1		08/31/03 8:01	DL	1850245
Benzo(a)pyrene	ND	0.1	1		08/31/03 8:01	DL	1850245
Benzo(b)fluoranthene	ND	0.1	1		08/31/03 8:01	DL	1850245
Benzo(g,h,i)perylene	ND	0.1	1		08/31/03 8:01	DL	1850245
Benzo(k)fluoranthene	ND	0.1	1		08/31/03 8:01	DL	1850245
Chrysene	ND	0.1	1		08/31/03 8:01	DL	1850245
Dibenzo(a,h)anthracene	ND	0.1	1		08/31/03 8:01	DL	1850245
Fluoranthene	ND	0.1	1		08/31/03 8:01	DL	1850245
Fluorene	ND	0.1	1		08/31/03 8:01	DL	1850245
Indeno(1,2,3-cd)pyrene	ND	0.1	1		08/31/03 8:01	DL	1850245
Naphthalene	0.14	0.1	1		08/31/03 8:01	DL	1850245
Phenanthrene	ND	0.1	1		08/31/03 8:01	DL	1850245
Pyrene	ND	0.1	1		08/31/03 8:01	DL	1850245
Surr: 1-Fluoronaphthalene	25.7	% 18-130	1		08/31/03 8:01	DL	1850245
Surr: Phenanthrene-d10	29.3	% 21-111	1		08/31/03 8:01	DL	1850245

Prep Method	Prep Date	Prep Initials
SW3510C	08/24/2003 19:31	KL

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		09/02/03 20:00	D_R	1848022
Ethylbenzene	ND	1	1		09/02/03 20:00	D_R	1848022
Toluene	ND	1	1		09/02/03 20:00	D_R	1848022
Xylenes, Total	ND	1	1		09/02/03 20:00	D_R	1848022
Surr: 4-Bromofluorobenzene	101	% 57-157	1		09/02/03 20:00	D_R	1848022
Surr: 1,4-Difluorobenzene	95.5	% 39-163	1		09/02/03 20:00	D_R	1848022

Qualifiers:

ND/U - Not Detected at the Reporting Limit	>MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank	D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits	MI - Matrix Interference
J - Estimated Value between MDL and PQL	



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-11A Collected: 08/21/2003 14:15 SPL Sample ID: 03080815-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	1	1		08/28/03 0:18 AM		1842116
Surr: n-Pentacosane	62.2 %	18-120	1		08/28/03 0:18 AM		1842116

Prep Method	Prep Date	Prep Initials
SW3510C	08/24/2003 19:30	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	0.24	0.1	1		09/04/03 3:15 D_R		1850138
Surr: 1,4-Difluorobenzene	101 %	74-121	1		09/04/03 3:15 D_R		1850138
Surr: 4-Bromofluorobenzene	109 %	55-150	1		09/04/03 3:15 D_R		1850138

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		08/26/03 15:31 J_F		1840904

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	3.7	1	1		09/02/03 20:25 D_R		1848023
Ethylbenzene	ND	1	1		09/02/03 20:25 D_R		1848023
Toluene	ND	1	1		09/02/03 20:25 D_R		1848023
Xylenes, Total	ND	1	1		09/02/03 20:25 D_R		1848023
Surr: 4-Bromofluorobenzene	101 %	57-157	1		09/02/03 20:25 D_R		1848023
Surr: 1,4-Difluorobenzene	103 %	39-163	1		09/02/03 20:25 D_R		1848023

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-12D Collected: 08/22/2003 10:05 SPL Sample ID: 03080815-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	1	1		08/28/03 0:58 AM		1842117
Surr: n-Pentacosane	50.2	% 18-120	1		08/28/03 0:58 AM		1842117

Prep Method	Prep Date	Prep Initials
SW3510C	08/24/2003 19:30	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		09/04/03 3:41 D_R		1850139
Surr: 1,4-Difluorobenzene	102	% 74-121	1		09/04/03 3:41 D_R		1850139
Surr: 4-Bromofluorobenzene	97.3	% 55-150	1		09/04/03 3:41 D_R		1850139

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		08/26/03 15:44 J_F		1840905

ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen, Nitrate (As N)	ND	0.1	1		08/23/03 15:58 CV		1837670
Sulfate	160	4	20		08/26/03 16:46 CV		1843566

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		09/02/03 20:52 D_R		1848024
Ethylbenzene	ND	1	1		09/02/03 20:52 D_R		1848024
Toluene	ND	1	1		09/02/03 20:52 D_R		1848024
Xylenes, Total	ND	1	1		09/02/03 20:52 D_R		1848024
Surr: 4-Bromofluorobenzene	97.8	% 57-157	1		09/02/03 20:52 D_R		1848024
Surr: 1,4-Difluorobenzene	104	% 39-163	1		09/02/03 20:52 D_R		1848024

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-14

Collected: 08/22/2003 1:00

SPL Sample ID: 03080815-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	182	2	2		08/25/03 11:00	RA	1838041
HARDNESS, TOTAL (TITRIMETRIC, EDTA)				MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	600	50	10		09/02/03 18:00	CV	1847623
HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg/L	
Methane	ND	0.0012	1		08/26/03 15:58	J_F	1840906
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002	1		08/26/03 14:36	MED	1840093

Prep Method	Prep Date	Prep Initials
SW7470A	08/26/2003 9:44	MED

METALS BY METHOD 6010B, TOTAL			MCL	SW6010B	Units: mg/L		
Arsenic	ND	0.005		1	09/04/03 20:00	NS	1851098
Lead	ND	0.005		1	09/04/03 20:00	NS	1851098
Selenium	ND	0.005		1	09/04/03 20:00	NS	1851098
Barium	0.0262	0.005		1	08/27/03 17:07	MW	1842438
Cadmium	ND	0.005		1	08/27/03 17:07	MW	1842438
Calcium	62.2	0.1		1	08/27/03 17:07	MW	1842438
Chromium	ND	0.01		1	08/27/03 17:07	MW	1842438
Magnesium	35.5	0.1		1	08/27/03 17:07	MW	1842438
Potassium	ND	2		1	09/04/03 17:37	MW	1851437
Silver	ND	0.01		1	08/27/03 17:07	MW	1842438
Sodium	53.3	0.5		1	09/04/03 17:37	MW	1851437

Prep Method	Prep Date	Prep Initials
SW3010A	09/04/2003 9:25	SE
SW3010A	08/25/2003 13:22	SE

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-14

Collected: 08/22/2003 1:00

SPL Sample ID: 03080815-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
POLYNUCLEAR AROMATIC HYDROCARBONS			MCL	SW8310	Units: ug/L		
Acenaphthene	ND	0.1	1		09/02/03 14:13	DL	1850248
Acenaphthylene	ND	0.1	1		09/02/03 14:13	DL	1850248
Anthracene	ND	0.1	1		09/02/03 14:13	DL	1850248
Benz(a)anthracene	ND	0.1	1		09/02/03 14:13	DL	1850248
Benzo(a)pyrene	ND	0.1	1		09/02/03 14:13	DL	1850248
Benzo(b)fluoranthene	ND	0.1	1		09/02/03 14:13	DL	1850248
Benzo(g,h,i)perylene	ND	0.1	1		09/02/03 14:13	DL	1850248
Benzo(k)fluoranthene	ND	0.1	1		09/02/03 14:13	DL	1850248
Chrysene	ND	0.1	1		09/02/03 14:13	DL	1850248
Dibenzo(a,h)anthracene	ND	0.1	1		09/02/03 14:13	DL	1850248
Fluoranthene	ND	0.1	1		09/02/03 14:13	DL	1850248
Fluorene	ND	0.1	1		09/02/03 14:13	DL	1850248
Indeno(1,2,3-cd)pyrene	ND	0.1	1		09/02/03 14:13	DL	1850248
Naphthalene	ND	0.1	1		09/02/03 14:13	DL	1850248
Phenanthrene	ND	0.1	1		09/02/03 14:13	DL	1850248
Pyrene	ND	0.1	1		09/02/03 14:13	DL	1850248
Surr: 1-Fluoronaphthalene	41.8	% 18-130	1		09/02/03 14:13	DL	1850248
Surr: Phenanthrene-d10	52.3	% 21-111	1		09/02/03 14:13	DL	1850248

Prep Method	Prep Date	Prep Initials
SW3510C	08/24/2003 19:31	KL

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID MW-15

Collected: 08/21/2003 11:50

SPL Sample ID: 03080815-05

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	280	10	10		08/25/03 11:00	RA	1838042
HARDNESS, TOTAL (TITRIMETRIC, EDTA)				MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	660	50	10		09/02/03 18:00	CV	1847624
HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg/L	
Methane	ND	0.0012	1		08/26/03 16:50	J_F	1840907
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002	1		08/26/03 14:38	MED	1840094

Prep Method	Prep Date	Prep Initials
SW7470A	08/26/2003 9:44	MED

METALS BY METHOD 6010B, TOTAL			MCL	SW6010B	Units: mg/L		
Arsenic	ND	0.005		1	09/04/03 20:19	NS	1851101
Lead	ND	0.005		1	09/04/03 20:19	NS	1851101
Selenium	ND	0.005		1	09/04/03 20:19	NS	1851101
Barium	0.0326	0.005		1	08/27/03 17:11	MW	1842440
Cadmium	ND	0.005		1	08/27/03 17:11	MW	1842440
Calcium	107	0.1		1	08/27/03 17:11	MW	1842440
Chromium	ND	0.01		1	08/27/03 17:11	MW	1842440
Magnesium	17.3	0.1		1	08/27/03 17:11	MW	1842440
Potassium	3.98	2		1	09/04/03 17:41	MW	1851438
Silver	ND	0.01		1	08/27/03 17:11	MW	1842440
Sodium	63.8	0.5		1	09/04/03 17:41	MW	1851438

Prep Method	Prep Date	Prep Initials
SW3010A	09/04/2003 9:25	SE
SW3010A	08/25/2003 13:22	SE

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-15

Collected: 08/21/2003 11:50 SPL Sample ID: 03080815-05

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
POLYNUCLEAR AROMATIC HYDROCARBONS			MCL	SW8310	Units: ug/L		
Acenaphthene	ND	0.1	1		08/31/03 9:14	DL	1850246
Acenaphthylene	ND	0.1	1		08/31/03 9:14	DL	1850246
Anthracene	ND	0.1	1		08/31/03 9:14	DL	1850246
Benz(a)anthracene	ND	0.1	1		08/31/03 9:14	DL	1850246
Benzo(a)pyrene	ND	0.1	1		08/31/03 9:14	DL	1850246
Benzo(b)fluoranthene	ND	0.1	1		08/31/03 9:14	DL	1850246
Benzo(g,h,i)perylene	ND	0.1	1		08/31/03 9:14	DL	1850246
Benzo(k)fluoranthene	ND	0.1	1		08/31/03 9:14	DL	1850246
Chrysene	ND	0.1	1		08/31/03 9:14	DL	1850246
Dibenzo(a,h)anthracene	ND	0.1	1		08/31/03 9:14	DL	1850246
Fluoranthene	ND	0.1	1		08/31/03 9:14	DL	1850246
Fluorene	ND	0.1	1		08/31/03 9:14	DL	1850246
Indeno(1,2,3-cd)pyrene	ND	0.1	1		08/31/03 9:14	DL	1850246
Naphthalene	ND	0.1	1		08/31/03 9:14	DL	1850246
Phenanthrene	ND	0.1	1		08/31/03 9:14	DL	1850246
Pyrene	ND	0.1	1		08/31/03 9:14	DL	1850246
Surr: 1-Fluoronaphthalene	42.2	% 18-130	1		08/31/03 9:14	DL	1850246
Surr: Phenanthrene-d10	52.1	% 21-111	1		08/31/03 9:14	DL	1850246

Prep Method	Prep Date	Prep Initials
SW3510C	08/24/2003 19:31	KL

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-16 Collected: 08/22/2003 11:15 SPL Sample ID: 03080815-06

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	841	10	10		08/25/03 11:00	RA	1838044

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL

Quality Control Documentation



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Diesel Range Organics
Method: SW8015B

WorkOrder: 03080815
Lab Batch ID: 31269

Method Blank

Samples in Analytical Batch:

RunID: HP_V_030827A-1842112 Units: mg/L
Analysis Date: 08/27/2003 21:40 Analyst: AM
Preparation Date: 08/24/2003 19:30 Prep By: KL Method SW3510C

Lab Sample ID Client Sample ID
03080815-01C MW-10
03080815-02C MW-11A
03080815-03C MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Diesel Range Organics (ND, 1.0) and Surr: n-Pentacosane (78.8, 18-120).

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: HP_V_030827A-1842114 Units: mg/L
Analysis Date: 08/27/2003 22:59 Analyst: AM
Preparation Date: 08/24/2003 19:30 Prep By: KL Method SW3510C

Table with 11 columns: Analyte, LCS Spike Added, LCS Result, LCS Percent Recovery, LCSD Spike Added, LCSD Result, LCSD Percent Recovery, RPD, RPD Limit, Lower Limit, Upper Limit. Row for Diesel Range Organics shows values: 2.5, 1.82, 73, 2.5, 1.92, 77, 5.4, 20, 21, 130.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Headspace Gas Analysis
Method: RSK147

WorkOrder: 03080815
Lab Batch ID: R92615

Method Blank

Samples in Analytical Batch:

RunID: VARC_030826B-1840894 Units: mg/L
Analysis Date: 08/26/2003 14:09 Analyst: J_F

Lab Sample ID Client Sample ID
03080815-01D MW-10
03080815-02D MW-11A
03080815-03D MW-12D
03080815-04D MW-14
03080815-05D MW-15

Table with 3 columns: Analyte, Result, Rep Limit. Row: Methane, ND, 0.0012

Laboratory Control Sample (LCS)

RunID: VARC_030826B-1840896 Units: mg/L
Analysis Date: 08/26/2003 14:35 Analyst: J_F

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Methane, 1000, 951, 95, 70, 130

Sample Duplicate

Original Sample: 03080815-01
RunID: VARC_030826B-1840899 Units: mg/L
Analysis Date: 08/26/2003 15:01 Analyst: J_F

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Rows: Butane, Ethane, Ethylene, Isobutane, Methane, Propane, Propylene

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 03080815
Lab Batch ID: R92990

Method Blank

Samples in Analytical Batch:

RunID: HP_U_030902A-1848017 Units: ug/L
Analysis Date: 09/02/2003 16:34 Analyst: D_R

Lab Sample ID Client Sample ID
03080815-01B MW-10
03080815-02B MW-11A
03080815-03B MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, and Surr: 1,4-Difluorobenzene.

Laboratory Control Sample (LCS)

RunID: HP_U_030902A-1848016 Units: ug/L
Analysis Date: 09/02/2003 15:42 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03081032-01
RunID: HP_U_030902A-1848018 Units: ug/L
Analysis Date: 09/02/2003 17:00 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 03080815
Lab Batch ID: R93084

Method Blank

Samples in Analytical Batch:

RunID: HP_J_030903C-1850125 Units: mg/L
Analysis Date: 09/03/2003 18:23 Analyst: D_R

Lab Sample ID Client Sample ID
03080815-01B MW-10
03080815-02B MW-11A
03080815-03B MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Gasoline Range Organics (ND, 0.10), Surr: 1,4-Difluorobenzene (100.7, 74-121), and Surr: 4-Bromofluorobenzene (99.7, 55-150).

Laboratory Control Sample (LCS)

RunID: HP_J_030903C-1850124 Units: mg/L
Analysis Date: 09/03/2003 17:56 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Gasoline Range Organics shows 1 spike added, result 0.95, 95% recovery, and limits of 70 and 130.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080999-01
RunID: HP_J_030903C-1850891 Units: mg/L
Analysis Date: 09/04/2003 15:01 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Gasoline Range Organics shows ND sample result, 0.9 MS spike, 0.977 MS result, 109% MS recovery, 0.9 MSD spike, 0.951 MSD result, 106% MSD recovery, RPD 2.70, RPD Limit 36, Low Limit 36, High Limit 160.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Polynuclear Aromatic Hydrocarbons
Method: SW8310

WorkOrder: 03080815
Lab Batch ID: 31270

Method Blank

Samples in Analytical Batch:

RunID: 2_030831A-1850241 Units: ug/L
Analysis Date: 08/31/2003 3:46 Analyst: DL
Preparation Date: 08/24/2003 19:31 Prep By: KL Method SW3510C

Lab Sample ID Client Sample ID
03080815-01A MW-10
03080815-04A MW-14
03080815-05A MW-15

Table with 3 columns: Analyte, Result, Rep Limit. Lists various hydrocarbons and their results (mostly ND) and reporting limits.

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: 2_030831A-1850242 Units: ug/L
Analysis Date: 08/31/2003 4:22 Analyst: DL
Preparation Date: 08/24/2003 19:31 Prep By: KL Method SW3510C

Table with 11 columns: Analyte, LCS Spike Added, LCS Result, LCS Percent Recovery, LCSD Spike Added, LCSD Result, LCSD Percent Recovery, RPD, RPD Limit, Lower Limit, Upper Limit. Contains data for various hydrocarbons and their recovery percentages.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Polynuclear Aromatic Hydrocarbons
Method: SW8310

WorkOrder: 03080815
Lab Batch ID: 31270

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: 2_030831A-1850242 Units: ug/L
Analysis Date: 08/31/2003 4:22 Analyst: DL
Preparation Date: 08/24/2003 19:31 Prep By: KL Method SW3510C

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Naphthalene	0.5	0.304	61	0.5	0.208	42	37.4	30	36	130
Benanthrene	0.5	0.307	61	0.5	0.261	52	16.3	30	38	128
Pyrene	0.5	0.321	64	0.5	0.292	58	9.3	30	39	137

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03080815
Lab Batch ID: 31284A

Method Blank

Samples in Analytical Batch:

RunID: TJA_030904E-1851426 Units: mg/L
Analysis Date: 09/04/2003 15:57 Analyst: MW
Preparation Date: 08/25/2003 13:22 Prep By: SE Method SW3010A

Lab Sample ID Client Sample ID
03080815-01E MW-10
03080815-04E MW-14
03080815-05E MW-15

Table with 3 columns: Analyte, Result, Rep Limit. Rows: Potassium (ND, 2), Sodium (ND, 0.5)

Laboratory Control Sample (LCS)

RunID: TJA_030904E-1851427 Units: mg/L
Analysis Date: 09/04/2003 16:01 Analyst: MW
Preparation Date: 08/25/2003 13:22 Prep By: SE Method SW3010A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows: Potassium (10, 10.25, 102, 80, 120), Sodium (1, 0.9497, 95, 80, 120)

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 03080795-01
RunID: TJA_030904E-1851432 Units: mg/L
Analysis Date: 09/04/2003 16:25 Analyst: MW
Preparation Date: 08/25/2003 13:22 Prep By: Method

Table with 12 columns: Analyte, Sample Result, PDS Spike Added, PDS Result, PDS % Recovery, PDSD Spike Added, PDSD Result, PDSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows: Cadmium, Calcium, Magnesium, Potassium, Silver, Sodium

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080795-01
RunID: TJA_030904E-1851429 Units: mg/L
Analysis Date: 09/04/2003 16:10 Analyst: MW
Preparation Date: 08/25/2003 13:22 Prep By: SE Method SW3010A

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03080815
Lab Batch ID: 31284A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Barium	0.05121	1	1.028	97.66	1	0.9888	93.76	3.868	20	75	125
Cadmium	ND	1	1.153	115.3	1	1.103	110.3	4.399	20	75	125
Calcium	6.029	1	8.432	N/C	1	13.58	N/C	N/C	20	75	125
Chromium	ND	1	0.9194	91.39	1	0.8897	88.43	3.278	20	75	125
Magnesium	3.587	1	5.749	216.2 *	1	11.03	744.0 *	62.92 *	20	75	125
Potassium	81.22	10	95.94	N/C	10	89.94	N/C	N/C	20	75	125
Zinc	ND	1	1.11	111.0	1	1.059	105.9	4.721	20	75	125
Sodium	2750	1	2617	N/C	1	2603	N/C	N/C	20	75	125

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
 B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
 J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
 N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03080815
Lab Batch ID: 31284A

Method Blank

Samples in Analytical Batch:

RunID: TJA_030827D-1842419 Units: mg/L
Analysis Date: 08/27/2003 16:16 Analyst: MW
Preparation Date: 08/25/2003 13:22 Prep By: SE Method SW3010A

Lab Sample ID Client Sample ID
03080815-01E MW-10
03080815-04E MW-14
03080815-05E MW-15

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Barium, Cadmium, Calcium, Chromium, Magnesium, Silver.

Laboratory Control Sample (LCS)

RunID: TJA_030827D-1842421 Units: mg/L
Analysis Date: 08/27/2003 16:21 Analyst: MW
Preparation Date: 08/25/2003 13:22 Prep By: SE Method SW3010A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Barium, Cadmium, Calcium, Chromium, Magnesium, Silver.

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 03080795-01
RunID: TJA_030827D-1842429 Units: mg/L
Analysis Date: 08/27/2003 16:44 Analyst: MW
Preparation Date: 08/25/2003 13:22 Prep By: Method

Table with 12 columns: Analyte, Sample Result, PDS Spike Added, PDS Result, PDS % Recovery, PDSD Spike Added, PDSD Result, PDSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Cadmium, Calcium, Magnesium, Potassium, Silver.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03080815
Lab Batch ID: 31284A

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row 1: Sodium, 3400, 1, 3037, -35880 *, 1, 3121, -27510 *, 2.720, 20, 75, 125

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080795-01
RunID: TJA_030827D-1842425 Units: mg/L
Analysis Date: 08/27/2003 16:30 Analyst: MW
Preparation Date: 08/25/2003 13:22 Prep By: SE Method SW3010A

Main data table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Barium, Cadmium, Calcium, Chromium, Magnesium, Potassium, Silver, Sodium.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Mercury, Total
Method: SW7470A

WorkOrder: 03080815
Lab Batch ID: 31292

Method Blank

Samples in Analytical Batch:

RunID: HGLD_030826B-1840070 Units: mg/L
Analysis Date: 08/26/2003 13:45 Analyst: MED
Preparation Date: 08/26/2003 9:44 Prep By: MED Method SW7470A

Lab Sample ID Client Sample ID
03080815-01E MW-10
03080815-04E MW-14
03080815-05E MW-15

Table with 3 columns: Analyte, Result, Rep Limit. Row: Mercury, ND, 0.0002

Laboratory Control Sample (LCS)

RunID: HGLD_030826B-1840071 Units: mg/L
Analysis Date: 08/26/2003 13:47 Analyst: MED
Preparation Date: 08/26/2003 9:44 Prep By: MED Method SW7470A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Mercury, 0.002, 0.002078, 104, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080790-03
RunID: HGLD_030826B-1840075 Units: mg/L
Analysis Date: 08/26/2003 13:56 Analyst: MED
Preparation Date: 08/26/2003 9:44 Prep By: MED Method SW7470A

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Mercury, ND, 0.002, 0.002061, 103.0, 0.002, 0.002095, 104.8, 1.676, 20, 75, 125

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 03080815
Lab Batch ID: 31477-T

Method Blank

Samples in Analytical Batch:

RunID: TJAT_030904C-1851089 Units: mg/L
Analysis Date: 09/04/2003 19:03 Analyst: NS
Preparation Date: 09/04/2003 9:25 Prep By: SE Method SW3010A

Lab Sample ID Client Sample ID
03080815-01E MW-10
03080815-04E MW-14
03080815-05E MW-15

Table with 3 columns: Analyte, Result, Rep Limit. Rows for Arsenic, Lead, Selenium.

Laboratory Control Sample (LCS)

RunID: TJAT_030904C-1851090 Units: mg/L
Analysis Date: 09/04/2003 19:09 Analyst: NS
Preparation Date: 09/04/2003 9:25 Prep By: SE Method SW3010A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows for Arsenic, Lead, Selenium.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080972-01
RunID: TJAT_030904C-1851092 Units: mg/L
Analysis Date: 09/04/2003 19:22 Analyst: NS
Preparation Date: 09/04/2003 9:25 Prep By: SE Method SW3010A

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows for Arsenic, Lead, Selenium.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03080815
Lab Batch ID: R92458

Method Blank

Samples in Analytical Batch:

RunID: IC1_030823A-1837651 Units: mg/L
Analysis Date: 08/23/2003 11:59 Analyst: CV

Lab Sample ID Client Sample ID
03080815-03E MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Row: Nitrogen,Nitrate (As N), ND, 0.10

Laboratory Control Sample (LCS)

RunID: IC1_030823A-1837652 Units: mg/L
Analysis Date: 08/23/2003 12:11 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Nitrogen,Nitrate (As N), 10, 10.4, 104, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080815-03
RunID: IC1_030823A-1837671 Units: mg/L
Analysis Date: 08/23/2003 16:11 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Nitrogen,Nitrate (As N), ND, 10, 10, 100, 10, 10, 99.7, 0.224, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Chloride, Total
Method: E325.3

WorkOrder: 03080815
Lab Batch ID: R92476

Method Blank

Samples in Analytical Batch:

RunID: WET_030825B-1838037 Units: mg/L
Analysis Date: 08/25/2003 11:00 Analyst: RA

Lab Sample ID Client Sample ID
03080815-04F MW-14
03080815-05F MW-15
03080815-06A MW-16

Table with 3 columns: Analyte, Result, Rep Limit. Row: Chloride, ND, 1.0

Laboratory Control Sample (LCS)

RunID: WET_030825B-1838040 Units: mg/L
Analysis Date: 08/25/2003 11:00 Analyst: RA

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Chloride, 233, 227.7, 98, 90, 110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080815-06
RunID: WET_030825B-1838045 Units: mg/L
Analysis Date: 08/25/2003 11:00 Analyst: RA

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Chloride, 840.6, 500, 1313, 94.57, 500, 1313, 94.57, 0, 20, 85, 115

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03080815
Lab Batch ID: R92752

Method Blank

Samples in Analytical Batch:

RunID: IC1_030826A-1843557 Units: mg/L
Analysis Date: 08/26/2003 14:52 Analyst: CV

Lab Sample ID: 03080815-03E
Client Sample ID: MW-12D

Table with 3 columns: Analyte, Result, Rep Limit. Row: Sulfate, ND, 0.20

Laboratory Control Sample (LCS)

RunID: IC1_030826A-1843558 Units: mg/L
Analysis Date: 08/26/2003 15:05 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Sulfate, 10, 10.2, 102, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080758-03
RunID: IC1_030826A-1843562 Units: mg/L
Analysis Date: 08/26/2003 15:56 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Sulfate, 103, 200, 307, 102, 200, 310, 103, 0.915, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Hardness, Total (Titrimetric, EDTA)
Method: E130.2

WorkOrder: 03080815
Lab Batch ID: R92977

Method Blank

Samples in Analytical Batch:

RunID: WET_030902P-1847616 Units: mg/L
Analysis Date: 09/02/2003 18:00 Analyst: CV

Lab Sample ID Client Sample ID
03080815-01E MW-10
03080815-04E MW-14
03080815-05E MW-15

Table with 3 columns: Analyte, Result, Rep Limit. Row: Hardness (As CaCO3), ND, 5.0

Laboratory Control Sample (LCS)

RunID: WET_030902P-1847618 Units: mg/L
Analysis Date: 09/02/2003 18:00 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Hardness (As CaCO3), 289, 280, 97, 94, 108

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080946-01
RunID: WET_030902P-1847620 Units: mg/L
Analysis Date: 09/02/2003 18:00 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Hardness (As CaCO3), 80.0, 100, 180, 100, 100, 178, 98.0, 1.12, 20, 81, 111

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

*Sample Receipt Checklist
And
Chain of Custody*



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

03080815

183199

page 1 of 1

Client Name: Brown and Caldwell
 Address/Phone: 1415 Louisiana Suite 2500
 Client Contact: Rick Leppard
 Project Name: BJ-Hobbs
 Project Number:
 Project Location: Hobbs, NM
 Invoice To: Same

matrix bottle size pres.
 W=water S=soil SL=silage O=other
 P=plastic A=amber glass V=vial
 G=glass
 1=1 liter 4=4oz 40=vial
 8=8oz 16=16oz
 1=HCl 2=HNO3
 3=H2SO4 O=other

SAMPLE ID	DATE	TIME	comp	grab	Number of Containers	Requested Analysis										
						PAH	BTEX/TPH-G	NO ₃ /SO ₄	TPH-D (2)	Methane	RCRA Metals	Ca/Mg/K/Na	Hardness	Chlorides	VOC	
MW-10	8-21-03	1400		X	10	X	X	X	X	X	X	X	X	X	X	X
MW-11A	8-21-03	1415		X	7	X	X	X	X	X	X	X	X	X	X	X
MW-12D	8-22-03	1005		X	8	X	X	X	X	X	X	X	X	X	X	X
MW-14	8-22-03	0100		X	7	X	X	X	X	X	X	X	X	X	X	X
MW-15	8-24-03	1150		X	7	X	X	X	X	X	X	X	X	X	X	X
MW-16	8-22-03	1115		X	1	X	X	X	X	X	X	X	X	X	X	X
Trip Blank					2											

RUSH

Laboratory remarks:

React? Y N

Temp: 40°

PM review (initial):

Client/Consultant Remarks:
 MW-10 NO₃/SO₄ not in this shipment.

Requested TAT

24hr 72hr
 48hr Standard
 Other

Special Reporting Requirements Fax Results Raw Data
 Standard QC Level 3 QC Level 4 QC

1. Relinquished by Sampler: *Richard Banda RB* date 8-22-03 time 1500
 2. Received by: *RB* date 8-23-03 time 0930
 3. Relinquished by:
 4. Received by:
 5. Relinquished by:



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Sample Receipt Checklist

Workorder:	03080815	Received By:	RT
Date and Time Received:	8/23/03 9:30:00 AM	Carrier name:	FedEx
Temperature:	4°C	Chilled by:	Water Ice

1. Shipping container/cooler in good condition? Yes No Not Present
2. Custody seals intact on shipping container/cooler? Yes No Not Present
3. Custody seals intact on sample bottles? Yes No Not Present
4. Chain of custody present? Yes No
5. Chain of custody signed when relinquished and received? Yes No
6. Chain of custody agrees with sample labels?
Trip Blanks were listed on the chain of custody but were not received. Yes No
7. Samples in proper container/bottle? Yes No
8. Sample containers intact? Yes No
9. Sufficient sample volume for indicated test? Yes No
10. All samples received within holding time? Yes No
11. Container/Temp Blank temperature in compliance? Yes No
12. Water - VOA vials have zero headspace? Yes No Not Applicable
13. Water - pH acceptable upon receipt? Yes No Not Applicable

SPL Representative:

Contact Date & Time:

Client Name Contacted:

Non Conformance Issues:

Client Instructions:



HOUSTON LABORATORY
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Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
03080758

Report To:

Brown & Caldwell
Rick Rexroad
1415 Louisiana
Suite 2509
Houston
TX
77002-
ph: (713) 759-0999 fax: (713) 308-3886

Project Name:

BJ Hobbs/Odessa

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

9/9/03

The data in this report applies to the analysis of three water samples plus a trip blank from the BJ Services site located in Hobbs, New Mexico. SPL received these samples on August 22, 2003, assigned them to SPL Certificate of Analysis No. 03080758, and analyzed them for the parameters as listed on COC No. 171307. Samples MW-4 and MW-13 were listed on the chain-of-custody. However, SPL confirmed with Rick Rexroad of Brown & Caldwell that data for these samples should be reported separately under the BJ Services project for Odessa, Texas.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

9/19/03

Pat Lynch
Senior Project Manager

Date



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03080758

Report To: Brown & Caldwell
 Rick Rexroad
 1415 Louisiana
 Suite 2509
 Houston
 TX
 77002-
 ph: (713) 759-0999 fax: (713) 308-3886

Project Name: BJ Hobbs/Odessa
Site: Hobbs, NM
Site Address:

PO Number:
State: New Mexico
State Cert. No.:

Date Reported: 9/9/03

Fax To: Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-4	03080758-01	Water	8/20/03 5:20:00 PM	8/22/03 9:30:00 AM	171307	<input checked="" type="checkbox"/>
MW-13	03080758-02	Water	8/20/03 7:20:00 PM	8/22/03 9:30:00 AM	171307	<input checked="" type="checkbox"/>
MW-5	03080758-03	Water	8/21/03 11:20:00 AM	8/22/03 9:30:00 AM	171307	<input type="checkbox"/>
MW-10	03080758-04	Water	8/21/03 2:00:00 PM	8/22/03 9:30:00 AM	171307	<input type="checkbox"/>
MW-11A	03080758-05	Water	8/21/03 2:15:00 PM	8/22/03 9:30:00 AM	171307	<input type="checkbox"/>
Trip Blank	03080758-06	Water	8/21/03	8/22/03 9:30:00 AM	171307	<input type="checkbox"/>

9/19/03

Pat Lynch
 Senior Project Manager

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



HOUSTON LABORATORY
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Client Sample ID MW-5 Collected: 08/21/2003 11:20 SPL Sample ID: 03080758-03

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	1	1		08/28/03 18:25	AM	1843909
Surr: n-Pentacosane	71.0 %	18-120	1		08/28/03 18:25	AM	1843909

Prep Method	Prep Date	Prep Initials
SW3510C	08/22/2003 6:24	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		09/04/03 4:08	D_R	1850140
Surr: 1,4-Difluorobenzene	101 %	74-121	1		09/04/03 4:08	D_R	1850140
Surr: 4-Bromofluorobenzene	97.7 %	55-150	1		09/04/03 4:08	D_R	1850140

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Methane	ND	0.0012	1		08/26/03 17:13	J_F	1840908

ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen,Nitrate (As N)	2.4	0.1	1		08/22/03 13:45	CV	1837637
Sulfate	100	4	20		08/26/03 15:43	CV	1843561

POLYNUCLEAR AROMATIC HYDROCARBONS			MCL	SW8310	Units: ug/L		
Acenaphthene	ND	0.1	1		08/28/03 8:39	DL	1842385
Acenaphthylene	ND	0.1	1		08/28/03 8:39	DL	1842385
Anthracene	ND	0.1	1		08/28/03 8:39	DL	1842385
Benz(a)anthracene	ND	0.1	1		08/28/03 8:39	DL	1842385
Benzo(a)pyrene	ND	0.1	1		08/28/03 8:39	DL	1842385
Benzo(b)fluoranthene	ND	0.1	1		08/28/03 8:39	DL	1842385
Benzo(g,h,i)perylene	ND	0.1	1		08/28/03 8:39	DL	1842385
Benzo(k)fluoranthene	ND	0.1	1		08/28/03 8:39	DL	1842385
Chrysene	ND	0.1	1		08/28/03 8:39	DL	1842385
Dibenzo(a,h)anthracene	ND	0.1	1		08/28/03 8:39	DL	1842385
Fluoranthene	ND	0.1	1		08/28/03 8:39	DL	1842385
Fluorene	ND	0.1	1		08/28/03 8:39	DL	1842385
Indeno(1,2,3-cd)pyrene	ND	0.1	1		08/28/03 8:39	DL	1842385
Naphthalene	ND	0.1	1		08/28/03 8:39	DL	1842385
Phenanthrene	ND	0.1	1		08/28/03 8:39	DL	1842385
Pyrene	ND	0.1	1		08/28/03 8:39	DL	1842385
Surr: 1-Fluoronaphthalene	19.2 %	18-130	1		08/28/03 8:39	DL	1842385
Surr: Phenanthrene-d10	28.8 %	21-111	1		08/28/03 8:39	DL	1842385

Prep Method	Prep Date	Prep Initials
SW3510C	08/22/2003 6:25	KL

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
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Client Sample ID MW-5 Collected: 08/21/2003 11:20 SPL Sample ID: 03080758-03

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		09/02/03 21:18	D_R	1848025
Ethylbenzene	ND	1	1		09/02/03 21:18	D_R	1848025
Toluene	ND	1	1		09/02/03 21:18	D_R	1848025
Xylenes,Total	ND	1	1		09/02/03 21:18	D_R	1848025
Surr: 4-Bromofluorobenzene	98.5	% 57-157	1		09/02/03 21:18	D_R	1848025
Surr: 1,4-Difluorobenzene	104	% 39-163	1		09/02/03 21:18	D_R	1848025

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL

9/19/03 12:10:17 PM



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8880 INTERCHANGE DRIVE
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Client Sample ID MW-10 Collected: 08/21/2003 14:00 SPL Sample ID: 03080758-04

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen,Nitrate (As N)	0.21	0.1	1		08/22/03 14:23	CV	1837640
Sulfate	350	0	50		08/26/03 16:21	CV	1843564

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL

9/19/03 12:10:18 PM



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Client Sample ID MW-11A Collected: 08/21/2003 14:15 SPL Sample ID: 03080758-05

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY			MCL	E300.0	Units: mg/L		
Nitrogen,Nitrate (As N)	0.68	0.1	1		08/22/03 14:36	CV	1837642
Sulfate	340	0	50		08/26/03 16:33	CV	1843565

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL



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Client Sample ID Trip Blank

Collected: 08/21/2003 0:00

SPL Sample ID: 03080758-06

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B							
			MCL	SW8260B	Units: ug/L		
1,1,1,2-Tetrachloroethane	ND	5	1		08/25/03 15:44	JC	1840311
1,1,1-Trichloroethane	ND	5	1		08/25/03 15:44	JC	1840311
1,1,2,2-Tetrachloroethane	ND	5	1		08/25/03 15:44	JC	1840311
1,1,2-Trichloroethane	ND	5	1		08/25/03 15:44	JC	1840311
1,1-Dichloroethane	ND	5	1		08/25/03 15:44	JC	1840311
1,1-Dichloroethene	ND	5	1		08/25/03 15:44	JC	1840311
1,1-Dichloropropene	ND	5	1		08/25/03 15:44	JC	1840311
1,2,3-Trichlorobenzene	ND	5	1		08/25/03 15:44	JC	1840311
1,2,3-Trichloropropane	ND	5	1		08/25/03 15:44	JC	1840311
1,2,4-Trichlorobenzene	ND	5	1		08/25/03 15:44	JC	1840311
1,2,4-Trimethylbenzene	ND	5	1		08/25/03 15:44	JC	1840311
1,2-Dibromo-3-chloropropane	ND	5	1		08/25/03 15:44	JC	1840311
1,2-Dibromoethane	ND	5	1		08/25/03 15:44	JC	1840311
1,2-Dichlorobenzene	ND	5	1		08/25/03 15:44	JC	1840311
1,2-Dichloroethane	ND	5	1		08/25/03 15:44	JC	1840311
1,2-Dichloropropane	ND	5	1		08/25/03 15:44	JC	1840311
1,3,5-Trimethylbenzene	ND	5	1		08/25/03 15:44	JC	1840311
1,3-Dichlorobenzene	ND	5	1		08/25/03 15:44	JC	1840311
1,3-Dichloropropane	ND	5	1		08/25/03 15:44	JC	1840311
1,4-Dichlorobenzene	ND	5	1		08/25/03 15:44	JC	1840311
2,2-Dichloropropane	ND	5	1		08/25/03 15:44	JC	1840311
2-Butanone	ND	20	1		08/25/03 15:44	JC	1840311
2-Chloroethyl vinyl ether	ND	10	1		08/25/03 15:44	JC	1840311
2-Chlorotoluene	ND	5	1		08/25/03 15:44	JC	1840311
2-Hexanone	ND	10	1		08/25/03 15:44	JC	1840311
4-Chlorotoluene	ND	5	1		08/25/03 15:44	JC	1840311
4-Isopropyltoluene	ND	5	1		08/25/03 15:44	JC	1840311
4-Methyl-2-pentanone	ND	10	1		08/25/03 15:44	JC	1840311
Acetone	ND	100	1		08/25/03 15:44	JC	1840311
Acrylonitrile	ND	50	1		08/25/03 15:44	JC	1840311
Benzene	ND	5	1		08/25/03 15:44	JC	1840311
Bromobenzene	ND	5	1		08/25/03 15:44	JC	1840311
Bromochloromethane	ND	5	1		08/25/03 15:44	JC	1840311
Bromodichloromethane	ND	5	1		08/25/03 15:44	JC	1840311
Bromoform	ND	5	1		08/25/03 15:44	JC	1840311
Bromomethane	ND	10	1		08/25/03 15:44	JC	1840311
Carbon disulfide	ND	5	1		08/25/03 15:44	JC	1840311
Carbon tetrachloride	ND	5	1		08/25/03 15:44	JC	1840311
Chlorobenzene	ND	5	1		08/25/03 15:44	JC	1840311
Chloroethane	ND	10	1		08/25/03 15:44	JC	1840311

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL

9/19/03 12:10:18 PM



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(713) 660-0901

Client Sample ID Trip Blank Collected: 08/21/2003 0:00 SPL Sample ID: 03080758-06

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Chloroform	ND	5	1		08/25/03 15:44	JC	1840311
Chloromethane	ND	10	1		08/25/03 15:44	JC	1840311
Dibromochloromethane	ND	5	1		08/25/03 15:44	JC	1840311
Dibromomethane	ND	5	1		08/25/03 15:44	JC	1840311
Dichlorodifluoromethane	ND	10	1		08/25/03 15:44	JC	1840311
Ethylbenzene	ND	5	1		08/25/03 15:44	JC	1840311
Hexachlorobutadiene	ND	5	1		08/25/03 15:44	JC	1840311
Isopropylbenzene	ND	5	1		08/25/03 15:44	JC	1840311
Methyl tert-butyl ether	ND	5	1		08/25/03 15:44	JC	1840311
Methylene chloride	ND	5	1		08/25/03 15:44	JC	1840311
n-Butylbenzene	ND	5	1		08/25/03 15:44	JC	1840311
n-Propylbenzene	ND	5	1		08/25/03 15:44	JC	1840311
Naphthalene	ND	5	1		08/25/03 15:44	JC	1840311
sec-Butylbenzene	ND	5	1		08/25/03 15:44	JC	1840311
Styrene	ND	5	1		08/25/03 15:44	JC	1840311
tert-Butylbenzene	ND	5	1		08/25/03 15:44	JC	1840311
Tetrachloroethene	ND	5	1		08/25/03 15:44	JC	1840311
Toluene	ND	5	1		08/25/03 15:44	JC	1840311
Trichloroethene	ND	5	1		08/25/03 15:44	JC	1840311
Trichlorofluoromethane	ND	5	1		08/25/03 15:44	JC	1840311
Vinyl acetate	ND	10	1		08/25/03 15:44	JC	1840311
Vinyl chloride	ND	10	1		08/25/03 15:44	JC	1840311
cis-1,2-Dichloroethene	ND	5	1		08/25/03 15:44	JC	1840311
cis-1,3-Dichloropropene	ND	5	1		08/25/03 15:44	JC	1840311
m,p-Xylene	ND	5	1		08/25/03 15:44	JC	1840311
o-Xylene	ND	5	1		08/25/03 15:44	JC	1840311
trans-1,2-Dichloroethene	ND	5	1		08/25/03 15:44	JC	1840311
trans-1,3-Dichloropropene	ND	5	1		08/25/03 15:44	JC	1840311
1,2-Dichloroethene (total)	ND	5	1		08/25/03 15:44	JC	1840311
Xylenes, Total	ND	5	1		08/25/03 15:44	JC	1840311
Surr: 1,2-Dichloroethane-d4	110	% 62-130	1		08/25/03 15:44	JC	1840311
Surr: 4-Bromofluorobenzene	96.0	% 70-130	1		08/25/03 15:44	JC	1840311
Surr: Toluene-d8	100	% 74-122	1		08/25/03 15:44	JC	1840311

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell

BJ Hobbs/Odessa

Analysis: Diesel Range Organics
Method: SW8015B

WorkOrder: 03080758
Lab Batch ID: 31259A

Method Blank

Samples in Analytical Batch:

RunID: HP_V_030828B-1843906 Units: mg/L
Analysis Date: 08/28/2003 17:06 Analyst: AM
Preparation Date: 08/22/2003 6:24 Prep By: KL Method SW3510C

Lab Sample ID: 03080758-03D
Client Sample ID: MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Row 1: Diesel Range Organics, ND, 1.0. Row 2: Surr: n-Pentacosane, 77.4, 18-120.

Laboratory Control Sample (LCS)

RunID: HP_V_030828B-1843908 Units: mg/L
Analysis Date: 08/28/2003 17:46 Analyst: AM
Preparation Date: 08/24/2003 19:30 Prep By: KL Method SW3510C

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row 1: Diesel Range Organics, 2.5, 1.93, 77, 21, 130.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080782-01
RunID: HP_V_030828B-1843916 Units: mg/L
Analysis Date: 08/28/2003 22:23 Analyst: AM
Preparation Date: 08/22/2003 6:24 Prep By: KL Method SW3510C

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row 1: Diesel Range Organics, ND, 5, 3.37, 66.3, 5, 3.17, 62.3, 6.06, 39, 13, 130.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/Odessa

Analysis: Headspace Gas Analysis
Method: RSK147

WorkOrder: 03080758
Lab Batch ID: R92615

Method Blank

Samples in Analytical Batch:

RunID: VARC_030826B-1840894 Units: mg/L
Analysis Date: 08/26/2003 14:09 Analyst: J_F

Lab Sample ID: 03080758-03F
Client Sample ID: MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Row: Methane, ND, 0.0012

Laboratory Control Sample (LCS)

RunID: VARC_030826B-1840896 Units: mg/L
Analysis Date: 08/26/2003 14:35 Analyst: J_F

Table with 7 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Methane, 1000, 951, 95, 70, 130

Sample Duplicate

Original Sample: 03080815-01
RunID: VARC_030826B-1840899 Units: mg/L
Analysis Date: 08/26/2003 15:01 Analyst: J_F

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Rows: Butane, Ethane, Ethylene, Isobutane, Methane, Propane, Propylene

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/Odessa

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 03080758
Lab Batch ID: R92990

Method Blank

Samples in Analytical Batch:

RunID: HP_U_030902A-1848017 Units: ug/L
Analysis Date: 09/02/2003 16:34 Analyst: D_R

Lab Sample ID: 03080758-03B
Client Sample ID: MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, Surr: 1,4-Difluorobenzene, Surr: 4-Bromofluorobenzene.

Laboratory Control Sample (LCS)

RunID: HP_U_030902A-1848016 Units: ug/L
Analysis Date: 09/02/2003 15:42 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03081032-01
RunID: HP_U_030902A-1848018 Units: ug/L
Analysis Date: 09/02/2003 17:00 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/Odessa

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 03080758
Lab Batch ID: R93084

Method Blank

Samples in Analytical Batch:

RunID: HP_J_030903C-1850125 Units: mg/L
Analysis Date: 09/03/2003 18:23 Analyst: D_R

Lab Sample ID: 03080758-03C
Client Sample ID: MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Gasoline Range Organics, Surr: 1,4-Difluorobenzene, and Surr: 4-Bromofluorobenzene.

Laboratory Control Sample (LCS)

RunID: HP_J_030903C-1850124 Units: mg/L
Analysis Date: 09/03/2003 17:56 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Gasoline Range Organics.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080999-01
RunID: HP_J_030903C-1850891 Units: mg/L
Analysis Date: 09/04/2003 15:01 Analyst: D_R

Table with 11 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Low Limit, RPD High Limit. Row for Gasoline Range Organics.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/Odessa

Analysis: Polynuclear Aromatic Hydrocarbons
Method: SW8310

WorkOrder: 03080758
Lab Batch ID: 31260

Method Blank

Samples in Analytical Batch:

RunID: 2_030827A-1842365 Units: ug/L
Analysis Date: 08/27/2003 6:29 Analyst: DL
Preparation Date: 08/22/2003 6:25 Prep By: KL Method SW3510C

Lab Sample ID 03080758-03A
Client Sample ID MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Lists various polynuclear aromatic hydrocarbons and their results (mostly ND) and reporting limits.

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: 2_030827A-1842367 Units: ug/L
Analysis Date: 08/27/2003 7:06 Analyst: DL
Preparation Date: 08/22/2003 6:25 Prep By: KL Method SW3510C

Table with 11 columns: Analyte, LCS Spike Added, LCS Result, LCS Percent Recovery, LCSD Spike Added, LCSD Result, LCSD Percent Recovery, RPD, RPD Limit, Lower Limit, Upper Limit. Contains data for various analytes and their recovery percentages.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/Odessa

Analysis: Polynuclear Aromatic Hydrocarbons
Method: SW8310

WorkOrder: 03080758
Lab Batch ID: 31260

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: 2_030827A-1842367 Units: ug/L
Analysis Date: 08/27/2003 7:06 Analyst: DL
Preparation Date: 08/22/2003 6:25 Prep By: KL Method SW3510C

Table with 11 columns: Analyte, LCS Spike Added, LCS Result, LCS Percent Recovery, LCSD Spike Added, LCSD Result, LCSD Percent Recovery, RPD, RPD Limit, Lower Limit, Upper Limit. Rows include Naphthalene, Phenanthrene, and Pyrene.

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/Odessa

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 03080758
Lab Batch ID: R92517

Method Blank

Samples in Analytical Batch:

RunID: N_030825B-1838757 Units: ug/L
Analysis Date: 08/25/2003 9:59 Analyst: JC

Lab Sample ID: 03080758-06A
Client Sample ID: Trip Blank

Table with 3 columns: Analyte, Result, Rep Limit. Lists various chemical compounds and their detection results (ND) and reporting limits (e.g., 5.0, 10, 20, 50, 100 ug/L).

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/Odessa

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 03080758
Lab Batch ID: R92517

Method Blank

RunID: N_030825B-1838757 Units: ug/L
Analysis Date: 08/25/2003 9:59 Analyst: JC

Table with 3 columns: Analyte, Result, Rep Limit. Lists various compounds like Methyl tert-butyl ether, Methylene chloride, n-Butylbenzene, etc., with results mostly ND and limits like 5.0, 10, 62-130.

Laboratory Control Sample (LCS)

RunID: N_030825B-1838756 Units: ug/L
Analysis Date: 08/25/2003 9:10 Analyst: JC

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include 1,1-Dichloroethene, Benzene, Chlorobenzene, Toluene, Trichloroethene.

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell

BJ Hobbs/Odessa

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 03080758
Lab Batch ID: R92517

Sample Spiked: 03080775-02
RunID: N_030825B-1840437 Units: ug/L
Analysis Date: 08/25/2003 11:38 Analyst: JC

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
1,1-Dichloroethene	ND	50	50	100	50	51	102	2	14	61	145
Benzene	ND	50	54	108	50	54	108	0	11	76	127
Chlorobenzene	ND	50	52	104	50	50	100	4	13	70	130
Toluene	ND	50	56	112	50	55	110	2	13	70	129
Trichloroethene	ND	50	51	102	50	51	102	0	14	60	140

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
 B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
 J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
 N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/Odessa

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03080758
Lab Batch ID: R92457

Method Blank

Samples in Analytical Batch:

RunID: IC1_030822A-1837632 Units: mg/L
Analysis Date: 08/22/2003 12:55 Analyst: CV

Lab Sample ID Client Sample ID
03080758-03E MW-5
03080758-04A MW-10
03080758-05A MW-11A

Table with 3 columns: Analyte, Result, Rep Limit. Row: Nitrogen,Nitrate (As N), ND, 0.10

Laboratory Control Sample (LCS)

RunID: IC1_030822A-1837633 Units: mg/L
Analysis Date: 08/22/2003 13:07 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Nitrogen,Nitrate (As N), 10, 10.4, 104, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080758-03
RunID: IC1_030822A-1837638 Units: mg/L
Analysis Date: 08/22/2003 13:58 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Nitrogen,Nitrate (As N), 2.44, 10, 13, 105, 10, 12.6, 102, 2.72, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Brown & Caldwell
BJ Hobbs/Odessa

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 03080758
Lab Batch ID: R92752

Method Blank

Samples in Analytical Batch:

RunID: IC1_030826A-1843557 Units: mg/L
Analysis Date: 08/26/2003 14:52 Analyst: CV

Lab Sample ID Client Sample ID
03080758-03E MW-5
03080758-04A MW-10
03080758-05A MW-11A

Table with 3 columns: Analyte, Result, Rep Limit. Row: Sulfate, ND, 0.20

Laboratory Control Sample (LCS)

RunID: IC1_030826A-1843558 Units: mg/L
Analysis Date: 08/26/2003 15:05 Analyst: CV

Table with 7 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Sulfate, 10, 10.2, 102, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 03080758-03
RunID: IC1_030826A-1843562 Units: mg/L
Analysis Date: 08/26/2003 15:56 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Sulfate, 103, 200, 307, 102, 200, 310, 103, 0.915, 20, 80, 120

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

*Sample Receipt Checklist
And
Chain of Custody*

9/19/03 12:10:36 PM



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Sample Receipt Checklist

Workorder:	03080758	Received By:	NB
Date and Time Received:	8/22/03 9:30:00 AM	Carrier name:	FedEx
Temperature:	3°C	Chilled by:	Water Ice

- | | | | |
|--|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| 2. Custody seals intact on shipping container/cooler? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| 3. Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 4. Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 5. Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 6. Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 7. Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 8. Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 9. Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 10. All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 11. Container/Temp Blank temperature in compliance? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 12. Water - VOA vials have zero headspace? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Applicable <input type="checkbox"/> |
| 13. Water - pH acceptable upon receipt? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Applicable <input type="checkbox"/> |

SPL Representative:	<input type="text"/>	Contact Date & Time:	<input type="text"/>
Client Name Contacted:	<input type="text"/>		
Non Conformance Issues:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

