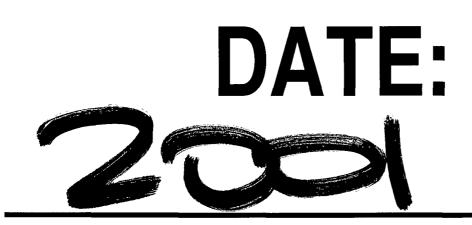
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MONITORING REPORTS



1415 Louisiana, Suite 2500 Houston, TX 77002

Tel: (713) 759-0999 Fax: (713) 308-3886

February 26, 2002

RECEIVED

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MAR 1 H 2002 Mr. Wayne Price Environmental Bureau New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division 2040 South Pacheco Street Santa Fe, New Mexico 87006

Subject: Transmittal of Report December 2001 Quarterly Sampling Event BJ Services Company U.S.A. – Hobbs Facility: GW-072 2708 West County Road Hobbs, New Mexico

Dear Mr. Price:

Enclosed please find the subject report for the BJ Services Company, U.S.A. (BJ Services) facility at Hobbs, New Mexico. During the December 2001 groundwater sampling, event monitor wells MW-3, MW-4, MW-5, MW-11A, MW-12D, MW-13, and MW-14 were sampled after removal of approximately 0.25 gallons of water, rather than being purged to stability, dryness, or removal of three well volumes of water from the well.

Comparison of analytical data from the December 2001 sampling event to historical constituent concentration data on a well-by-well basis (see Tables 4, 5, and 6 of the subject report, as applicable) suggests that the deviation from standard monitor well purging procedures that occurred in December 2001 had minimal effect on chemical analytical data.

Additionally, the surface completion of monitor well MW-10 has been damaged, so that surficial soil materials have entered the well and accumulated to an approximate thickness of 1.6 feet in the bottom of the well. The accumulated sediment in the well and the low water level in the well resulted in production of a minimal quantity of extremely turbid groundwater from monitor well MW-10 during the December 2001 sampling event.

Comparison of the December 2001 analytical results from monitor well MW-10 (see Appendix A of the subject report) to historical constituent concentrations data from the well (see Tables 4 and 6 of the subject report) indicates that the introduction of a substantial quantity foreign materials into monitor well MW-10, in combination with the resultant minimal production of groundwater from the well, has rendered the December 2001 data from monitor well MW-10 invalid.



Environmental Engineering & Consulting

February 26, 2002 Mr. Wayne Price Page 2

During the upcoming March 2002 quarterly sampling event, Brown and Caldwell will collect groundwater samples from all water-producing wells after purging the well to stability, dryness, or removal of three well volumes of water and compare the March 2002 constituent concentration data to corresponding December 2001 data to further substantiate the December 2001 data.

For monitor well MW-10, BJ Services will:

- 1. Repair the surface completion to ensure that it seals adequately to prevent introduction of surficial soil materials into the well; and
- 2. Attempt to remove accumulated sediment from the bottom of the well in order to improve the ability of the well to produce an adequate quantity of low turbidity groundwater.

BJ Services anticipates performing these rehabilitative activities for monitor well MW-10 in late February 2002. The March 2002 quarterly groundwater sampling event will be conducted no sooner than 1 week following completion of these monitor well rehabilitation activities.

If you have any questions regarding the information presented herein, please feel free to contact Mr. Lynn Wright of Brown and Caldwell (713) 759-0999 or Ms. Jo Ann Cobb of BJ Services at (281) 357-2572.

Sincerely,

BROWN AND CALDWELL

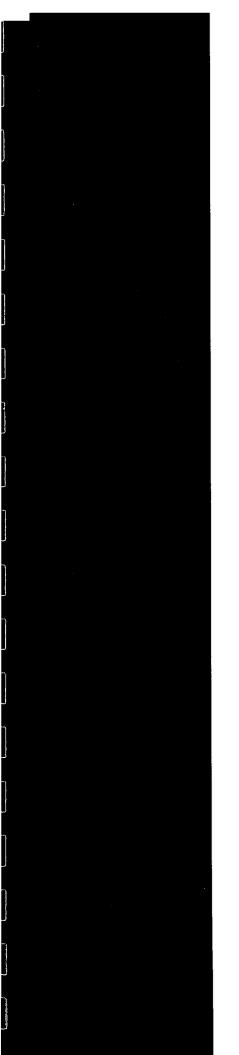
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Richard L. Rexroad, P.G. Project Manager

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Attachments (1)

cc: NMOCD – Hobbs, New Mexico Office Jo Ann Cobb, BJ Services Company, U.S.A. Brown and Caldwell Project File: 12832.02



BROWN AND CALDWELL

DECEMBER 2001 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY

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BJ SERVICES COMPANY, U.S.A.

FEBRUARY 26, 2002

DECEMBER 2001 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: 12832.017

Richard Rexwood

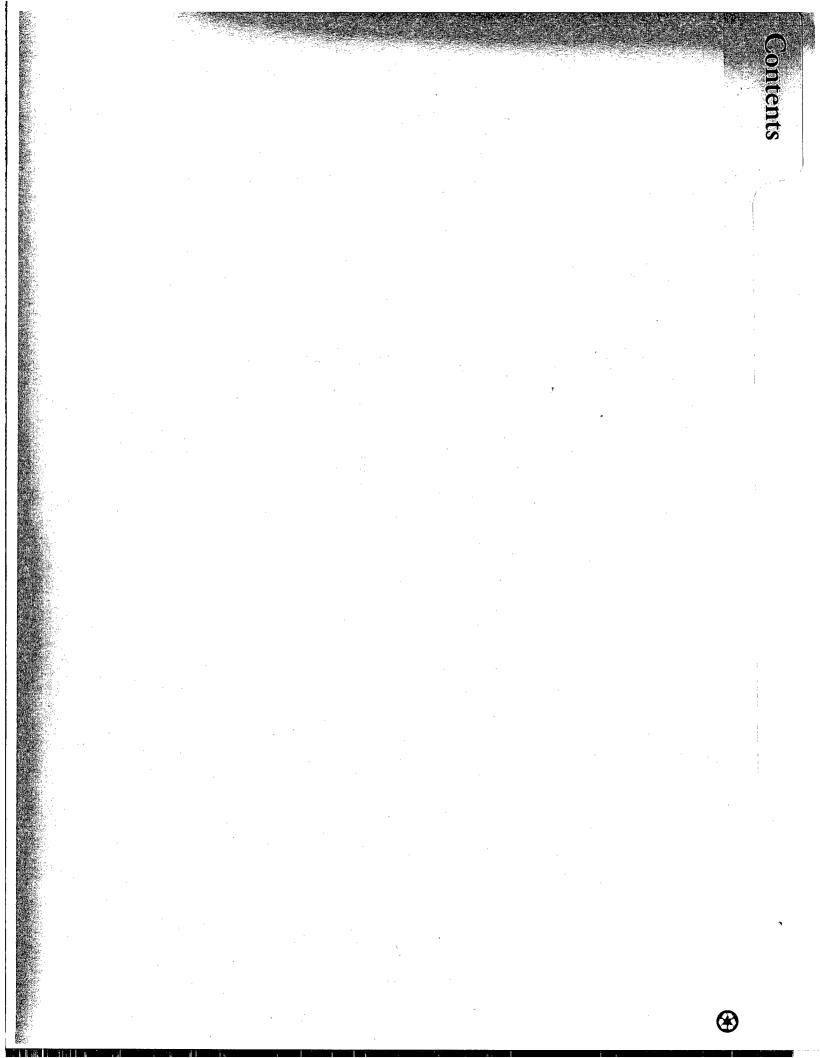
Richard L. Rexroad, P.G. Project Manager

February 26, 2002

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

"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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FIGURES

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- 2 Groundwater Elevation Map for December 6, 2001
- 3 Hydrocarbons Distribution Map for December 6, 2001

TABLES

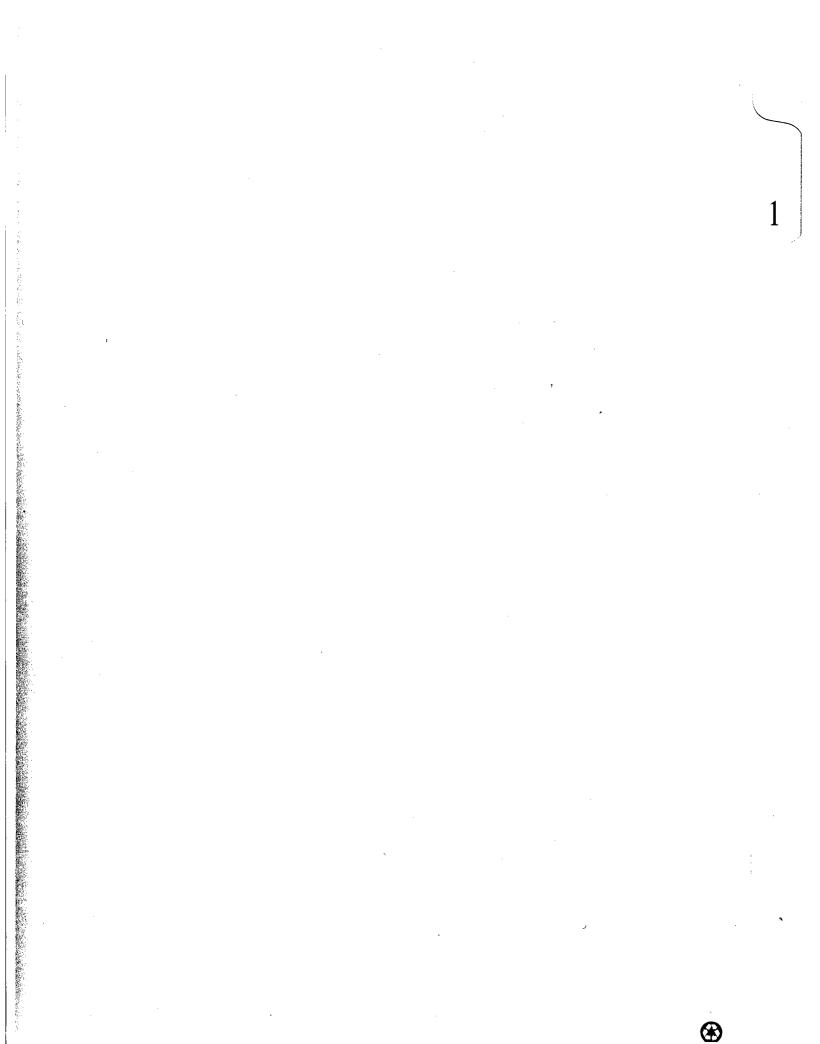
- 1 Site Chronology
- 2 Cumulative Groundwater Elevation Data
- 3 December 6, 2001 Field Screening Results for Groundwater Samples
- 4 Cumulative BTEX and TPH Analytical Results for Groundwater Samples
- 5 Cumulative Results for Chloride Analyses
- 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

APPENDICES

- A Groundwater Sampling Forms
- B Laboratory Analytical Report for Groundwater Samples

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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 December 2001. 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 being applied at the facility. A groundwater potentiometric surface map and a hydrocarbons concentration 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. The December 2001 sampling event is the second groundwater sampling event conducted since the completion of the confirmation soil boring program.

BJ Services removed three field waste tanks at 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.

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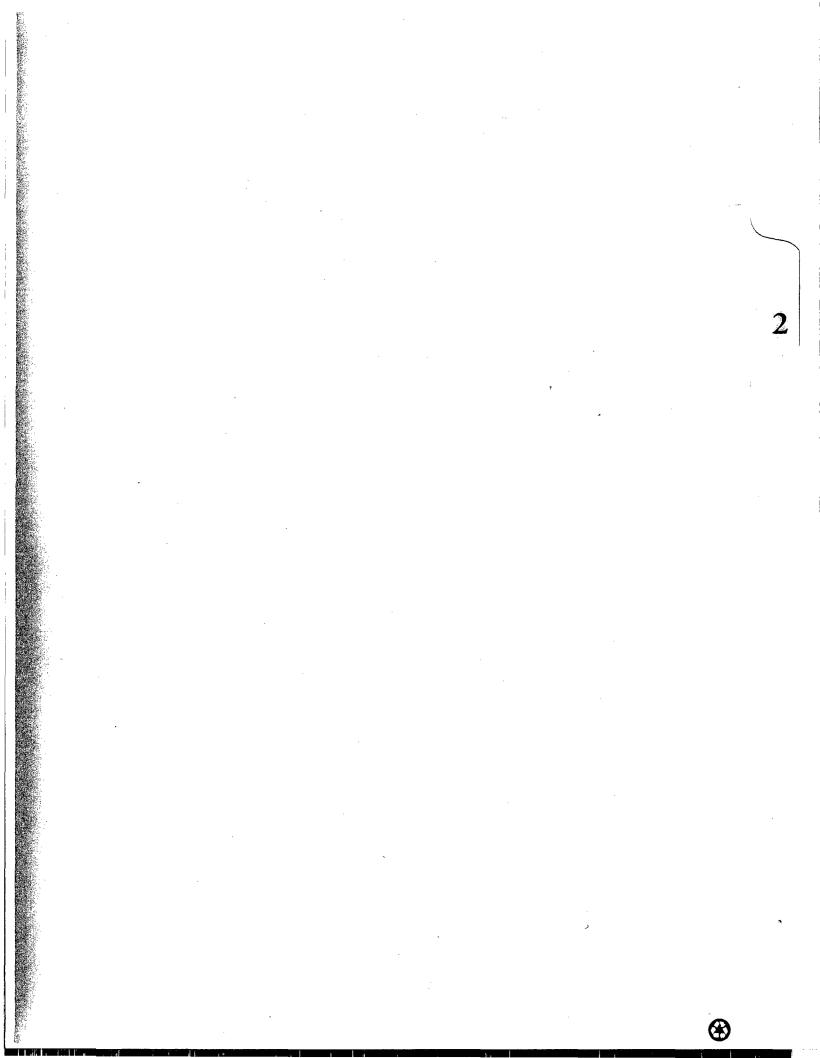
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A site chronology detailing the history of investigations into and remediation of soil and groundwater impacts in the former fueling system and the former field waste tanks areas of the facility is presented in Table 1.

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2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled 10 monitor wells at the facility during the December 2001 groundwater sampling event to determine concentrations of dissolved-phase hydrocarbons in groundwater and to evaluate general groundwater quality in the area of the facility. Monitor well locations are shown in Figure 1. The following subsections describe the field activities conducted by Brown and Caldwell at the facility in December 2001 and present the results of the associated groundwater analyses.

2.1 Groundwater Sampling Activities

Groundwater level measurements were obtained from monitor wells prior to purging and sampling the wells. Groundwater levels were measured to the nearest 0.01 foot with an oil/water interface probe. Current and historic groundwater elevation data are presented in Table 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with a hydraulic gradient of approximately 0.008 foot/foot. A groundwater elevation map for December 6. 2001 is presented in Figure 2. The groundwater elevation data presented in Table 2 indicate that groundwater levels have declined in all monitor wells at the facility since late 1995. Monitor wells MW-12 and OW-4 did not contain sufficient water in December 2001 for collection of groundwater samples. Monitor well MW-12D is located adjacent to monitor well MW-12 and is screened in a deeper portion of the aquifer than is monitor well MW-12. Brown and Caldwell collected a groundwater sample from monitor well MW-12D in lieu of sampling monitor well MW-12. The top of the PVC casing of monitor well MW-10 has been damaged so that the well will not seal correctly. The well is apparently being filled with surficial soil materials that are entering the top of the well from the land surface. A small quantity of highly turbid water was removed from the well during the December 2001 sampling event, but review of chemical analysis of this turbid water, in comparison to the previous data from monitor well MW-10, indicate that the December 2001 chemical analysis of the turbid water recovered from well MW-10 does not provide valid data.

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All wells were purged and sampled with disposable bailers and clean unused nylon string. Wells were typically purged dry or were sampled after removal of 0.25 gallons of water due to limited water columns in certain wells and minimal apparent recharge of groundwater to these wells. The wells were sampled in general order of least impacted to most impacted (based on analytical results from the September 2001 and preceding sampling events) to further mitigate the potential for cross-contamination of wells.

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

Groundwater samples were collected by pouring recovered water from a bailer. Each sample was transferred to 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. Completed chain-of-custody documentation was provided for all samples.

Field measurement equipment was decontaminated prior to and after each usage. Decontamination procedures consisted of washing with fresh water and a non-phosphate detergent, then rinsing with deionized water. Purge water was discharged to an on-site water reclamation system for re-use by BJ Services.

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2.2 Results of Groundwater Analyses

Groundwater samples from monitor wells MW-14 and MW-15 were analyzed for chloride content using Method 325.3. Groundwater samples from the remaining wells sampled in December 2001 were analyzed for gasoline- and diesel-range total petroleum hydrocarbons (TPH-G and TPH-D) using EPA Method 8015B and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021. Selected wells were also sampled for natural attenuation evaluation parameters. The laboratory analytical reports and chain-of-custody documentation for the groundwater samples collected during the December 2001 sampling event are provided in Appendix B.

Current and cumulative analytical results for BTEX, TPH-D, and TPH-G are presented in Table 4. Figure 3 presents a hydrocarbons concentration map for the December 2001 sampling event. No benzene concentrations in excess of the laboratory detection limit were reported in the seven groundwater samples submitted for BTEX analysis during this sampling event. As such, all benzene concentrations were less than the New Mexico Water Quality Control Commission (NMWQCC) standard of 0.01 milligrams per liter (mg/L). Benzene has not been detected in former fuel island source area monitor wells MW-3. MW-4. or MW-13 since June 1999. March 1999. and June 2000. respectively. Adjustments to the biosparging system in July 1999 and March 2000 to increase air flow to the monitor well MW-13 area resulted in decreases in the concentration of benzene in monitor well MW-13 from 1.5 mg/L on July 2. 1999 to the present non-detectable concentration. Benzene has not been detected in monitor well MW-13 since June 2000.

Table 5 presents current and historic results for chloride analyses performed on groundwater samples collected at the facility. The December 2001 chloride concentration of 276 mg/L in down-gradient well MW-14 exceeds the NMWQCC standard of 250 mg/L for chloride. The chloride concentration of well MW-15 in December 2001 was 215 mg/L. Chloride concentrations in monitor well MW-15 have remained essentially constant and less than 250 mg/L from the time of its installation in January 2001 to the present. The chloride concentration in monitor well MW-14 has fluctuated from 368 mg/L to 222 mg/L during this time period.

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Groundwater samples from selected wells were analyzed for nitrate and sulfate by Method 300.0 and dissolved methane by Method RSK-SOP 147/175 to assist in evaluation of natural attenuation processes at the facility. The current and historic 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.

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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 at Hobbs. New Mexico.

3.1 **Biosparging System at the Former Fueling System Area**

Based on the results of previous investigations conducted by Brown and Caldwell and Roberts/Schornick and Associates. Inc., Brown and Caldwell recommended the installation of a biosparging system at the former fueling system area of the facility in the 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 and expanded in April 1997 and February 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in former fueling system area monitor wells MW-1, MW-3, MW-4, MW-9, and MW-13, as documented in the December 2000 groundwater sampling report for the facility.

Based on these favorable trends in hydrocarbon concentrations and in accordance with the recommendations presented in the report for the June 2000 groundwater sampling event, the biosparging system was deactivated on November 1, 2000. The December 2001 sampling event is the fifth sampling event completed since this shut down.

Benzene concentrations in former fueling system source area monitor wells MW-3. MW-4. MW-9. and MW-13 have remained at non-detectable levels since deactivation of the biosparging system. BTEX constituent concentrations in these wells and monitor well MW-1 have now remained below applicable NMWQCC standards for at least seven consecutive quarters.

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 in this area. The analytical results for these soil samples, as P:\Wp\BJSERV\12832\087r.doc 7

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discussed in the report for the June 2001 groundwater sampling event, indicate that remediation goals for soil in this area have successfully been achieved. The December 2001 sampling event is the second groundwater sampling event conducted since the completion of the confirmation soil boring program. Sampling of former fuel island source area wells that have sufficient groundwater and recharge for collection of valid groundwater samples will continue through June 2002. If, in accordance with the requirements specified in the NMOCD-approved RAP, analytical results for groundwater samples collected from these monitor wells do not exceed the groundwater remediation goals specified in the RAP during the 1-year followup quarterly monitoring period, then a biosparging system closure report will be submitted for the former fuel island portion of the facility.

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 hydrocarbon source area is greater than the rate of natural degradation of hydrocarbon shrough 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 the field waste tanks. Sporadic increases in total BTEX concentrations between quarterly sampling events have been observed in monitor wells

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in this area since March 1997, however. These increases may be attributed to sporadic loading rates from the vadose zone in excess of the natural attenuation rate of 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 in the four groundwater sampling events from December 2000 through September 2001. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-10 have undergone similar decreases over this time period. December 2001 chemical data from MW-10 are not considered valid, as previously discussed in Section 2.1.

Benzene concentrations at the monitor well MW-11/11A location have decreased from a maximum of 0.970 mg/L in December 1996 (prior to removal of the field waste tanks) to less than the NMWQCC standard of 0.01 mg/L in the last three groundwater sampling events. There has been only one detection each of toluene, ethylbenzene, and xylenes in monitor well MW-11A groundwater since December 2000.

Concentrations of BTEX constituents at the monitor well MW-12/12D location have displayed decreases similar to those observed at the monitor well MW-11 and MW-11A location since September 1998.

3.2.2 Secondary Evidence

The following lines of geochemical evidence can 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.

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

Although there was minimal hydrocarbon impact detected in former field waste tanks area monitor wells MW-11A and MW-12D in December 2001. dissolved oxygen concentrations in these wells were less than the dissolved oxygen content of background monitor well MW-5, as indicated in Table 3. The decreases in dissolved oxygen concentrations in former field waste tanks area monitor wells MW-11A and MW-12D relative to the background dissolved oxygen concentration are likely due to the residual effects of hydrocarbons at this former source area.

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

Continued use of dissolved oxygen as an electron acceptor during intrinsic bioremediation is likely to occur if residual hydrocarbons are present at the former field waste tanks area.

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 2.38 mg/L in background monitor well MW-5 during the December 2001 sampling event. Although there was minimal to no hydrocarbon impact at former field waste tanks area wells MW-11A and MW-12D in December 2001. nitrate was not detected in either of these wells. The decreased nitrate concentrations observed in December 2001 at former field waste tanks area wells MW-11A and MW-12D relative to the background nitrate concentration at the facility is likely due to residual effects of hydrocarbons.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors 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.

Ferrous iron was not measured in background monitor well MW-5 in December 2001, so the occurrence of natural attenuation of hydrocarbons based on ferrous iron concentrations in monitor wells at the former field waste tanks area can not be evaluated based on December 2001 data.

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- 4. Microbes that utilize sulfate become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through use of sulfate as an electron acceptor. December 2001 sulfate concentrations in former field waste tanks area monitor wells MW-11A and MW-12D are 240 mg/L and 200 mg/L, respectively. The December 2001 sulfate concentrations in background monitor well MW-5 is 120 mg/L. The fact that sulfate concentrations in former source area monitor wells MW-11A and MW-12D are greater than the sulfate concentration in the background 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, and its concentration should therefore increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.

Methane detected in former field waste tanks area monitor well MW-11A at a concentration of 0.0041 mg/L in December 2001, but was not detected in background monitor well MW-5. The elevated methane concentration in monitor well MW-11A at the former field waste tanks area suggests that utilization of carbon dioxide as an electron acceptor. resulting in methanogenesis, has occurred during natural attenuation of hydrocarbons in the vicinity of monitor well MW-11A 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 well MW-5 was measured at 90.6 millivolts (mV) in December 2001. Respective redox potentials of -78.0 mV and -119.3 mV were measured in former field waste tanks area monitor wells MW-11A and MW-12D in December 2001. The negative redox values in former field waste tank area monitor wells MW-11A and MW-12D in MW-11A and MW-12D as compared to the positive redox value in the background well at the facility provide additional evidence that natural attenuation of hydrocarbons is occurring in the area of the former field waste tanks.
- 7. Alkalinity is expected to increase during natural attenuation processes, due to the leaching of carbonates from mineral substrates by microbially produced organic acids. Alkalinity was not measured in background monitor well MW-5 in December 2001, so natural attenuation of hydrocarbons at the former field waste tank area cannot be evaluated based on December 2001 alkalinity data. Previous alkalinity data from the facility have generally been inconclusive regarding the occurrence of natural attenuation.

In conclusion, current and historic dissolved oxygen, nitrate, and methane data suggest that dissolved oxygen, nitrate, and carbon dioxide act as electron acceptors during intrinsic bioremediation processes at former field waste tanks area of the facility. Ferric iron also appears to

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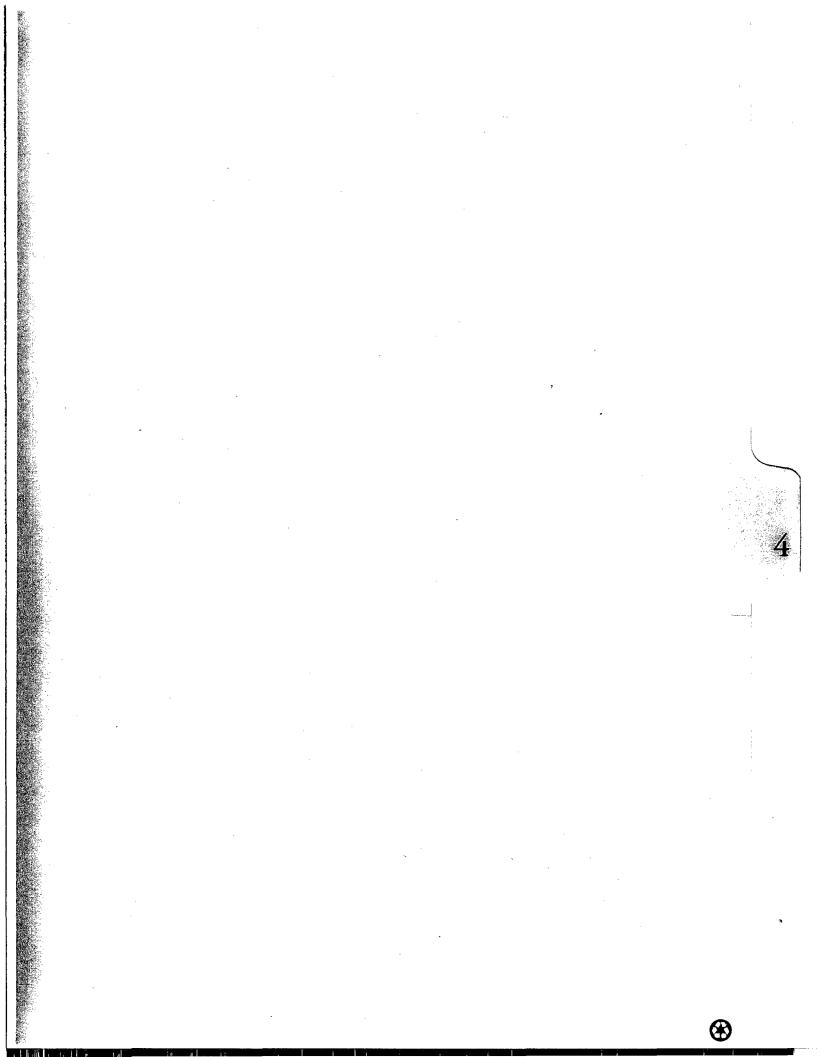
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be serving as an electron acceptor during natural attenuation of hydrocarbons, based on historic ferrous iron data from background wells and monitor wells at the former field waste tanks area. Current redox data provide further evidence that natural attenuation of hydrocarbons is occurring in this area.

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

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4.0 **CONCLUSIONS AND RECOMMENDATIONS**

The following conclusions and recommendations are based on information obtained during the December 2001 groundwater sampling event conducted at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Dissolved benzene and BTEX concentrations in all monitor wells located near the former fueling system area are non-detectable. TPH-D was detected at low concentrations in two wells in this area (MW-4 and MW-7), but was also detected at a comparable concentration in the upgradient background well (MW-5). There were no detections of TPH-G in December 2001 at monitor wells located near the former fueling system area. BTEX and TPH concentrations in these wells have remained below applicable standards for the past seven quarterly groundwater sampling events.
- December 2001 benzene concentrations in former field waste tanks area monitor wells MW-11A and MW-12D are less than the New Mexico WQCC standard of 0.01 mg/L for benzene. Natural attenuation processes appear to be occurring in the vicinity of the former field waste tanks removed in March 1997. based on decreasing hydrocarbon concentrations in local monitor wells over time and as substantiated by geochemical data.
- The current chloride concentration of 276 mg/L in monitor well MW-14 exceeds the NMQCC standard of 250 mg/L. Chloride concentrations have varied between 368 mg/L and 222 mg/L in monitor well MW-14 since its installation in January 2001. Chloride concentrations in monitor well MW-15 have remained essentially constant and less than 250 mg/L since installation of these wells in January 2001.

4.2 Recommendations

- Attempt to rehabilitate former field waste tanks source area monitor well MW-10 by removing accumulated sediment from the bottom of the well. If successful, repair the cracked top of PVC casing, place a sealing well cap on the well, and install a new concrete well pad around this flush-mounted well.
- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-11A. MW-12D, and (if feasible) MW-10. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters.

- Perform quarterly sampling events of monitor wells pertaining to the former fueling system source area in March 2002 and June 2002. If analytical results for groundwater samples continue to not exceed the groundwater remediation goals specified in the RAP during the 1-year monitoring period following collection of confirmation soil samples in July 2001 (as specified in the RAP), then a biosparging system closure report will be submitted for the former fuel island portion of the facility.
- After submittal and approval of the biosparging system closure report by the NMOCD, decommission the biosparging system and P&A the injection wells, extraction wells, and applicable monitor wells.

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December 2001Groundwater Sampling Report BJ Services Company, U.S.A. Hobbs, New Mexico

February 26, 2002

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 Oil Conservation Division, Hobbs District Office
 1625 N. French Dr.
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Attention: Mr. Chris Williams

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Attention: Ms. Jo Ann Cobb

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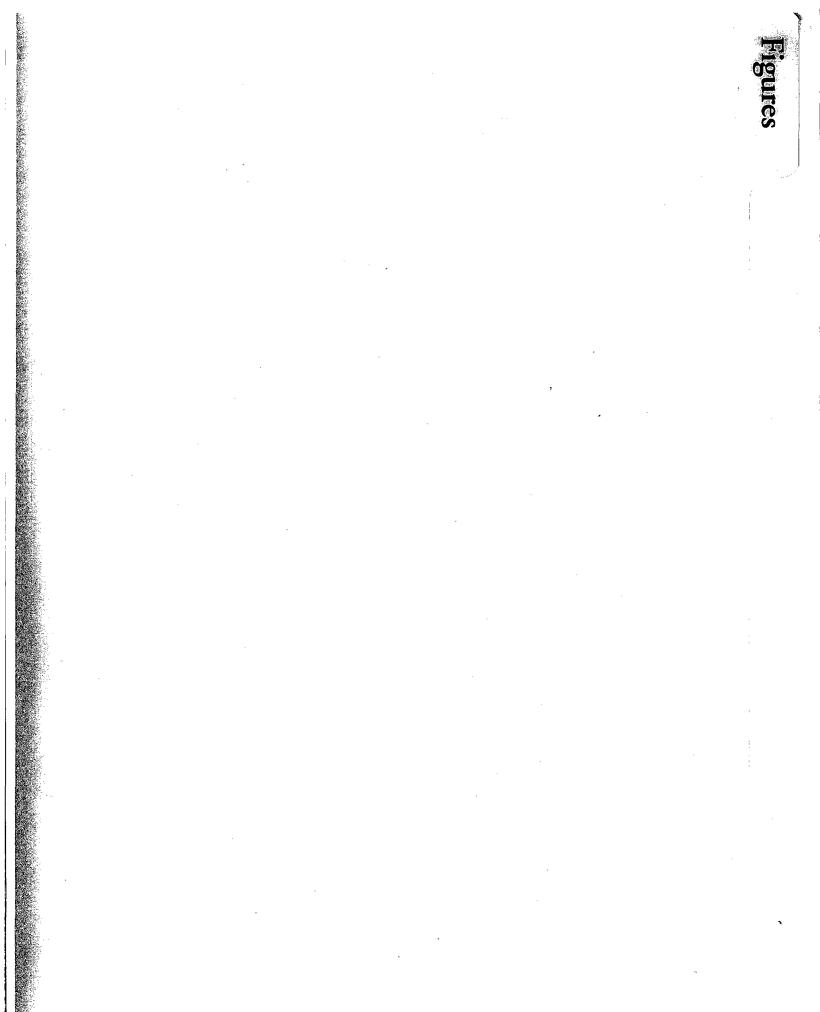
Wight Lynn Wright

Principal Geologist

RLR/uak

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FIGURES

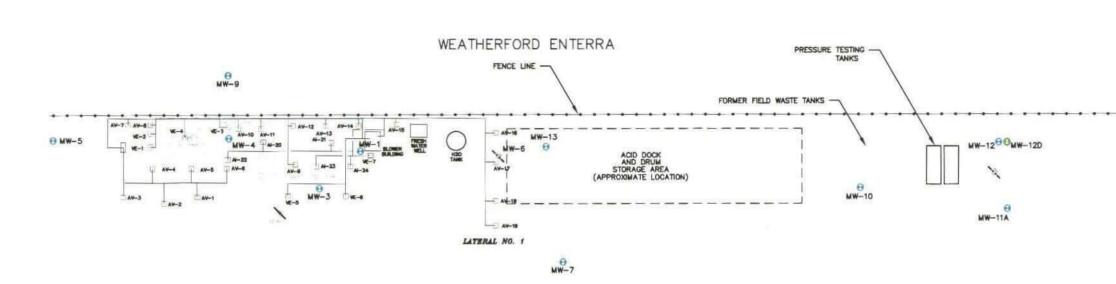
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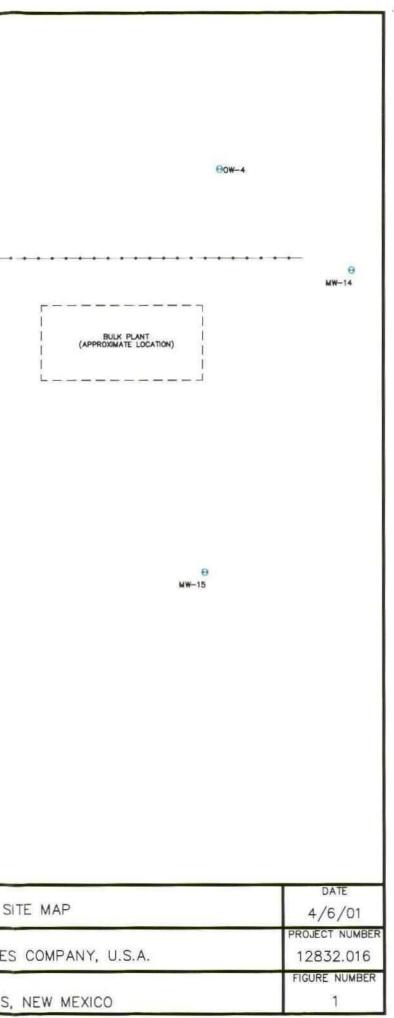
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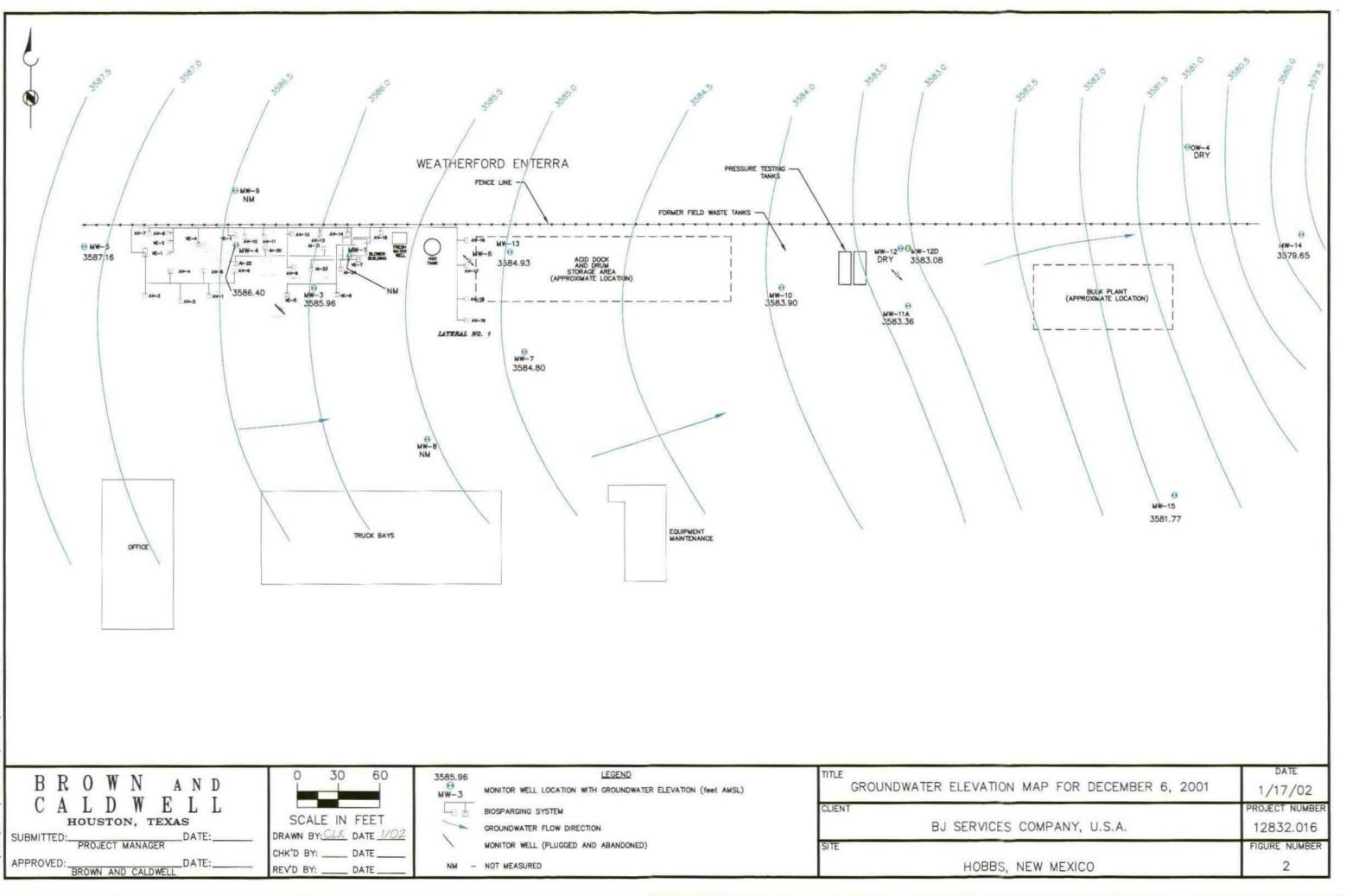
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BROWN AND CALDWELL	0 30 60	MW-3 EXISTING MONITOR WELL LOCATION	TITLE	S
HOUSTON, TEXAS	SCALE IN FEET		CLIENT	BJ SERVICE
SUBMITTED:DATE: APPROVED:DATE: BROWN AND CALDWELL	CHK'D BY: DATE	MW-2 MONITOR WELL (PLUGGED AND ABANDONED	D)	HOBBS

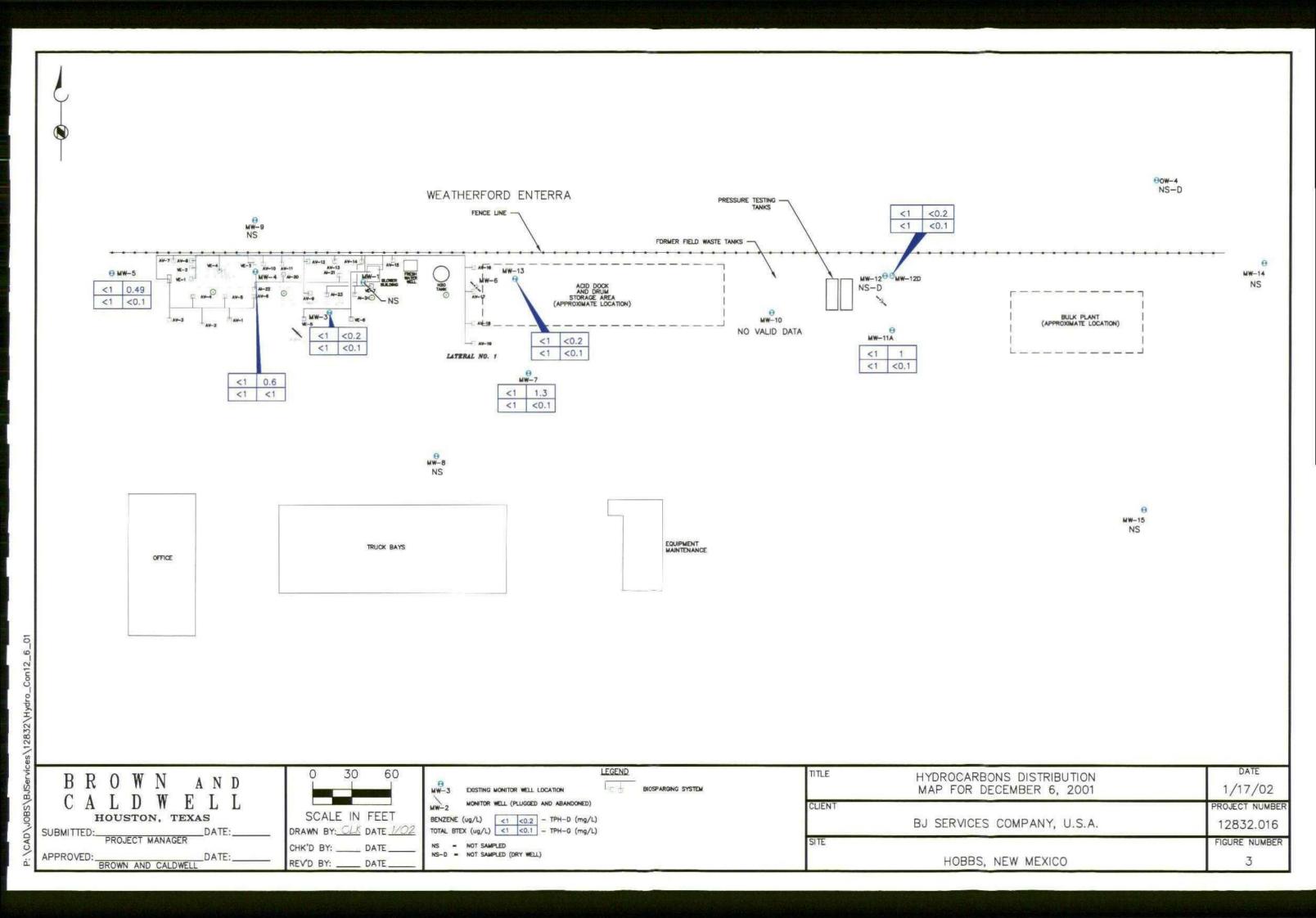


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Tables

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TABLES

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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 -	Brown and Caldwell conducted a soil and groundwater investigation
August 10. 1992	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.

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

Date	Activity
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.
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.

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

Date	Activity
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.
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 Al-20 through Al-24, vapor extraction wells VE-5 though 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 Al-20 through Al-24.
March 10. 1998	Operation of new air injection wells Al-20 through Al-24 and new vapor extraction wells VE-5 though 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.

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

Date	Activity
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.
May 19, 1999	The NMOCD approved the groundwater delineation work plan.
June10. 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 Al-16 and Al-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.

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

Date	Activity
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.
December 6, 2001	Brown and Caldwell conducted the December 2001 groundwater sampling event.

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	0.00	3.592.05	
		6/12/1997	55.08	0.02	3.592.47	
		9/12/1997 12/10/1997	55.64	0.51	3.592.31	DCII Chaom
			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	DCUL Chara
		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	
		6/8/2000	-		-	
		9/13/2000	-	-		
		12/7/2000	•	•		
		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		
MW-2	3.644.84	8/10/1992	52.82	0.00	3.592.02	(1)
		2/9/1993	49.6 0	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	

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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	3.645.00	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				
		9/13/2000	56.66 56.77	0.00	3.588.34	
			1	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	
1411: 4	2 (45 20	12/6/2001	59.04	0.00	3.585.96	. <u></u>
MW-4 3.645.28	5.645.28	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	50.9 0	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	51.05	0.00	3.594.25	
		2/23/1996	51.65	0.01	3.593.64	
		5/31/199n	51.41	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	
	i	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	3.588.25	
		6/21/01				
			58.18	0.00	3.587.10	
1		9/10/01	58.54	0.00	3.586.74	
MW-5	3 6 4 7 7 7	12/6/2001	58.88	0.00	3.586.40	
W W-2	3.647.72	8/10/1992 2/0/1002	52.38	0.00	3.595.34	(1)
		2/9/1993 8/18/1993	52.06 52.16	0.00 0.00	3.595.66	

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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	3.647.72	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	
		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	58.30	0.00	3.589.36	
		12/7/2000	58.71	0.00	3.589.01	
		3/8/2001	59.30	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	60.50	0.00	3.587.16	
MW-0	3.644.74	2/9/1993	50.58	0.00	3.594.16	(1)
	5.07.117	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	3.591.18	
		9/30/1998	54.89	0.00	3.589.85	
		12/9/1998	54.89 54.57		3.590.17	
				0.00		
		3/10/1999 7/2/1999	55.10	0.00	3.589.64	151 (4)
MIL	2 444 64				2 504 02	(5).(6)
MW-7	3.644.55	2/9/1995 8(18(1005	50.53	0.00	3.594.02	(1)
		8/18/1993 1/26/1994	50.74	0.00 0.00	3.593.81 3.593.54	

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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	3.644.55	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	
		1	54.20	0.00		
		9/30/1998 12/9/1998		0.00	3.590.01	
			54.74	0.00	3.589.81	
		3/9/1999	55.15		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	57.4()	0.00	3.587.15	
		12/7/2000	57.7	0.00	3.586.78	
		3/8/2001	58.24	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	
	2 (11 05	12/6/2001	59.75	0.00	3.584.80	
MW-8	3.644.87	2/9/1995	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	
	i	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	-		5.507.1.	(3)
		3/9/2000	56.52	0.00	3.588.35	(3)

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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-8	3.644.87	6/8/2000	•	· · ·		
		9/13/2000	-	-		
		12/7/2000	-	-		
		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	· [
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	PSH Sheen
		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 3.592.10	PSH Sheer
		3/23/1998 6/23/1998	52.68	0.00	3.591.70	PSH Sheet
		9/30/1998	53.08 53.39	0.00	3.591.40	PSH Sheen
		12/9/1998	53.68	0.00	3.591.10	1 of 1 officer
		3/10/1999	54.15	0.00	3.590.65	
		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	
		6/8/2000				
		9/13/2000				
		12/7/2000			-	
		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	'	
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	
]	J	1 1	
		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	
ĺ		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	
		2/12/177/	24.21	0.00	1220000	

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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-10	3.644.47	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	3.585.66	
		3/9/2001	59.31	0.00	3.585.24	
		6/21/01	59.89	0.00	3.584.66	
		9/10/01	61.34	0.00	3.583.21	
		12/6/2001	60.65	0.00	3.583.90	
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	3.590.45	
		11/14/1995	52.9r	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)
4W-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	
ł		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	

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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-11A	3,644.24	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	
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	-	
4W-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	58.50	0.00	3.585.82	
		9/13/2000	-	•	-	
		12/7/2000	•	-	•	
		3/8/2001	•	-	-	
		6/21/01	•	•	-	
		9/10/01	•	-	-	
		12/6/2001	61.30	0.00	3.583.08	
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	59.8 0	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	
MW-14	3.642.45	3/8/2001	61.07	0.00	3.581.38	
	i i	6/21/01	61.71	0.00	3.580.74	

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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-14	3.642.45	9/10/01	62.31	0.00	3.580.14	
		12/6/2001	62.80	0.00	3.579.65	
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	
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	
		12/07/00	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		

⁽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).

¹² • For wells having measurable thickness of tree product the groundwater elevation was calculated as follows: Groundwater Elevation = (TOC elevation)-(depth to proundwater)- [(free product thickness)x(SG of free product)) Note. The specific gravity (SG) of the free product is 0.81.

¹⁷ - Not measured

¹² - Monitor well MW-2 could not be located after January 1994

⁶ - Well plugged and abandoned July 2, 1995

" - Monitor well MW-11 could not be located after September 12, 1997

 $^{\rm C}$ - TOC elevations for MW-11A and MW-12 estimated relative to TOC elevation for MW-10

¹⁰ - TOC elevations for MW-12D and OW-4 estimated telative to TOC elevation for MW-12

⁴⁵¹- TOC elevation for MW-15 estimated relative to TOC elevation for MW-1

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Table 3December 6, 2001 Field Screening Results for Groundwater SamplesHobbs, New Mexico FacilityBJ Services Company, U.S.A.

Monitor Well	Cumulative Gallons Removed	рН	Temperature ("C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous lron (mg/L)	Alkalinity (mg/L)
MW-3	NM ⁽²⁾	7.3	NM	NM	NM	NM	NM	NM	NM
MW-4	0.25	7.26	17.38	1289 0	-51.6	3.61	NM	NM	NM
MW-5	0.25	7.58	17.37	1151	90.6	4.46	NM	NM	NM
M W-7	0.25	6.99	19 ()	787	106.2	2.60	NM	NM	NM
MW-10 ⁽⁵⁾	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-11A	0.25	6.95	17 02	4005	-78 0	1.83	0.0	60	77 0
MW-12D	0.25	74	186	1134	-119.3	0.98	0.4	04	720
MW-13	0.25	7.32	18.31	1643	8.5	0.99	0.4	2.6	NM
MW-14	0.25	7.39	17.18	1819	58.1	1.21	NM	NM	NM
MW-15	0.25	7.20	18.52	1281	111.1	4 71	NM	NM	NM
OW-4 ⁽⁴⁾	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D

⁽¹⁾ NTUs = Nephelometric turbidity units

(2) NM = Not Measured

 $^{(5)}$ No data (ND) collected (due to minimal quantity of water in well)

⁽⁴⁾ Well dry NM-D=Not Measured (well dry)

Monitor well MW-2 not operative after January 1994, P&A'd 7/1/95

Monitor well MW-6 P& A c 7/1/99

Monitor well MW-11 not operative after September 1997, P&A'd 7/1/95

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	ТРН-D	трн-с
Well	Date	Type		microgran	ns per liter, ug/L		milligrams p	er 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	Repular	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	6.
	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	25	21
	12/10/97	Regular	7600.0	12000.0	280 0.0	8200.0	11	71
	3/24/98	Regular	4800.0	7200.0	1200.0	2400.0	4.2	31
	5/24/98 6/23/98	Regular	4800.0	680 ()	580.0	1400.0	14	9.2
	9/30/1998	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/1998	Regular Regular	<1.0	90.0	17.0	110.0	14	0.31
	3/10/1999	•	<1.0	1	8.2		0.60	0.81
	3/10/1999	Repuisi	<1.0	<].()	0 7.9	110.0 110.0		0.84
	6/10/1999 6/10/1999	Duplicate	<1.0 <1.0	<]()			0.66	
	6/10/1999	Repuia:	ļ	1.1	<].()	28.0	0.55	0.55
	9-14-1999	Duplicate	<](1 *	< } ()	4].(0.65	0.71
	12/9 1999	Kepula-	< 1 (i NS	< 1 (* N:	< 1.0 NS	< 2.6 NS	<0.20 NS	<0.10 NS
	3/9/2000	kegula-			<]	91	14	
	6'8'2000	Negola	NS	N	NS	NS	N5	NS
	9 15/2000		N5	N5	NS	NS	NS	NS
	12.7.2000		N!	NS	NS.	NS	NS	NS
	3/8/2001	Regular	2.0	<]	<]	<]	049	0.58
	6/21/2001		NS	NS	NS	NS	N5	NS
	9 10/2001		N5	NS	NS	NS	NS	NS
	12/6/2001		N5	NS	<u>NS</u>	N5	NS	NS
M₩÷	8/10/92	Regular	14.9	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< î	< :	< :	< b	NA	NA
	8/19/93	Regular	100.0	12.0	3.0	13.0	NA	NA
	1/27/94	Regular	<]	1.1	2.0	2.5	NA	NA
MW-F	8.10/92	Regular	304.9	2099.0	6760.0	1586.0	NA	NA
L	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	89 0 (i	1600.0	NA	14
	11/15/95	Regular	250.0	1000.0	180.0	440.0	NA	2.4
	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
	12/2/96	Regular	220.0	1800.0	670.0	1000.0	0.89	74
	3/12/97	Regular	220.0 370.0	2000.0	960.0	1400.0	1.8	!
	6.12/97	Regular Regular	370.0 860.0	2000.0 4800.0	1700.0	2600.0	1.6	11

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Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	трн-с
Well	Date	Туре		microgran	is per liter, ug/L		milligrams p	er liter. mg/L
MW-3	9/11/97	Regular	770.0	3000.0	1600.0	1900.0	1.6]6
	12/10/97	Regular	240.0	740.0	500.0	450.0	0.59	5.5
	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	-	13.0	220.0	160.0	290.0	1.5	0.45
		Regular	3.2	7,4	42.0	32.0	0.2	0.44
	3/10/1999	Regular						0.18
	6/10/1999	Regulat	1.7	3.1	< 1.0	36.0 < 2.0	<0.20	<0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	1	<0.20	
	12/9/1999	Regular	< 1	<]	<]	<]	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	<]	<]	0.32	< 0.1
	6/8/2000 9/13/2000	Regulat	<]	<]	<	<]	<0.21 <0.2	< 0.1
	12/7/2000	Regular Regular	<]		<]	<]	<0.25	< 0.1
	3/8/2001	Regular	<]	< 1	<]	<]	0.42	< 0.1
	6/21/2001	Regular	<]	<]	<]	< 1	<0.22	< 0.1
	9/10/2001	Regular	<]	<]	< 1	<]	<0.2	<0.1
	12/6/2001	Regular	<]	<]	< 1	<]	<0.2	<0.1
MW-4	8/10/92	Regular	2594.0	10360.0	2160.0	6740.0	NA	NA
	2/9/93	Regular	5200.0	15000.0	2200.6	10000 0	NA	NA
	8/19/93	Repula:	3000 0	12000.0	< 2000	7000.0	NA	NA
	1.27/94	Regular	NSP	NSP	NSP	NSP	NA	NSP
	5/3/95	Regula:	NSP	NSP	NSP	NSP	NA	NSF
	8 1/9*	Regulat	5700.0	17000 0	3500.0	13000.0	NA	120
	11.15/95	Kegula-	490 (1600 (510.0	1100.0	NA	47
	2:23:96	Reputa	360.0	2800.0	560.0	2500,6	NA	15
	5/31/96	Regula	84 (830.6	280.0	1100.0	NA	e:
	8 23 '96	Regular	110.0	1400 ()	450 ()	1800.0	NA	91
	12/2/96	Regula	190 (2000.0	1800.0	7200,0	50	4-
	3,12/97	Regular	220 (1500.0	1500.0	4400.0	27	21
	6.12/97	Repula	47 (270.0	360.0	950.0	2.5	6.2
	9.12/97	Regula	92.0	840 (670.0	2100.0	15	71
	12/10/97	Regula:	230.0	750.0	970.0	2300.0	3.5	16
	3/24/98	Regular	150.0	510.0	270.0	620.0	1.7	5.0
	6/23/98	1 -	150.0	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
		Regular				960.0	2.0 9.5	4.3
	12/10/1998	Regular	28.0	70.0	210.0	830.0	9 3.9	4.3
	12/10/1998	Duplicate	26.0	62.0 20.0	180.0	1400.0	3.9 13.0	4.2
	3/10/1999	Regular	8 .0	20.0	250.0	1	0,44	
	6/10/1999	Regular	<1.0	<1.0	12.0	12.0		0.63
	9/14/1999	Regular	< 1.0	< 1.0	3.5	13.1	0.35	0.17
	12/9/1999	Regular	<]	2.5	2.5	20.1	-	0.55
	3/10/2000	Repular	<]	< }	< 1	3.6	2.0	0.15
	6/8/2000	Regular	<]	<]	<]	<]	0.44	0.25
	9/13/2000	Regular	<]	<]	<]	<]	0.61	<(),]
	12/7/2000	Regular	<]	<]	1.3	<]	0.55	0.16
	3/8/2001	Regular	<]	<]	<]	<]	0.45	0.16
	6/21/2001	Regular	<]	<]	<]	<]	<0.2.	<0.1
	9/10/2001	Regulat	<]	<]	<]	<]	<0.2	<0.1
	12/6/2001	Regular	< 1	< 1	<]	<]	9.0	<]

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Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	трн-с
Well	Date	Турс		microgran	as per liter, ug/L		milligrams p	er liter, mg/L
MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< ?	< 2	< î	< 6	NA	NA
	8/10/93	Regular	< 2	< 2	< î	< (1	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	< 0.5	< 0.3	< 0.6	NA	NA
	11/15/95	Regular	< 0.3	1.2	< 0.5	1.5	NA	NA
	2/23/96	Regular	< 0.3	< 0.5	< 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	< 0.5	< 0.3	< 0.t	NA	< 0 1
	12/2/96	Regular	<]	< 1	<]	<]	< 0.1	< 0 1
	3/12/97	Regular	<]	<]	<]	< }	< 0.1	< 0.1
	6/12/97	Regular	<]	< j	<)	< 1	< 0.1	< 0.1
	9/12/97	Regular	<]	<]	< 1	<]	< 0.1	< 0.1
	12/10/97	Regular	< 4	< 4	< 4	< 5	< 0.2	< 0.1
	3/23/98	Regular	<]	<]	< 1	<]	< 0.2	< 0, }
	6/23/98	Regular	< 1	<]	<]	<]	< 0,2	< 0, }
	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	<]_()	< 0.20	< 0.1
	3/9/1999	Regular	<1.0	<1.0	<1.0	<10	<0.20	<0.1
	6/10:1999	Regular	<1.0	<].(r	< 1.0	<]()	<0.20	<01
	9/14/1999	Regula:	<].()	<1()	<] (<2 (.	<0.20	< 0.10
	12/9/1999	Regula:	<)	< ;	<]	< ;	< 0 [< () (
	3/9.2000	Regula:	< 1	< 3	< 1	< 3	0.55	< 0]
	618/2000	Kepula	<]		• ·	< ¹	< 0.5	< ()
	9 13 2000	Reputa	< i	< ·	× 1	< 1	< 01	< 0 ·
	12.7/2000	Regular	< 1	< j	< i	< ;	< 0.24	< () ;
	3/8/2001	Regular	<]	< j	< ;	< j	0.50	<0.3
	6/21/2001	Regular	<)	< j	< 1	<]	0.2¢	<0 3
	9 10/2001	Regular	<]	< j	< 1	<]	<0.1	<0.)
	12/6/2001	Regular	<]	<]	<]	< }	044	<01
MW-r	8/10/90	Regular	NS	N5	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	796 0.0	20200.0	3830.0	6150.0	NA	NA
	5/4/95	Regular	11000.0	17000.0	2900 (1	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	94	7.9	NA	0.46
	12/2/96	Regular	<]	< 1	<]	1.7	5.6	< 0,1
	3/12/97	Regular	12.0	< 4	6.8	18.0	12	< 0.4
	6/12/97	Regular	1900.0	1400.0	410.0	310.0	7.8	74
	9/11/97	Regular	11.0	1.5	3,4	<])	< 0.1
	12/10/97	Regular	3.0	4.2	1.2	3.9	1.7	0.14
	3/23/98	Regular	3.6	<	4.(<]	< 0.2	< (0.1)
	6/23/98	Regular	170.0	4.]	15.0	7.2	3.2	0.51
	9/30/1998	Regular Regular	1000.0	4.) 420.0	140 (270.0	4.(i	3.5

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Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-С
Well	Date	Зуре		microgran	ns per liter. ug/L		milligrams p	er liter, mg/L
 MW-6 ^{_1}	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	<:	< 🤉	< 6	NA	NA
	8/19/93	Regular	< 2	3.0	< 2	< 2	NA	NA
	1/27/94	Regular	1.1	<]	<)	<]	NA	NA
	5/3/95	Regular	52.0	34	0.7	2.8	NA	NA
	8/1/95	Regular	22.0	2.2	0.9	2.8	NA	< 0.)
	11/15/95	Regular	8.4	0.8	< 0.5	9.0	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.5	< 0.5	< 0.6	NA	< 0.1
	2/23/96	Duplicate	< 0.3	< 0.5	< 0.5	< 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	< 0.5	< 0.6	NA	< 0.1
	12/2/96	Regular	<]	<]	<]	<]	< 0.1	< 0.3
	3/12/97	Regular	< }	<]	<]	< 1	< 0.1	< 0.1
	6/12/97	Regular	<]	<]	<]	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< }	<]	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 1	<]	< 1	< 1	< 0.2	< 0.1
	3/23/98	Regular	<]	<]	<]	<]	< 0.2	< 0.1
	6/23/98	Regular	<]	<]	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0		<].()	< 0.20	< 0.1
	12-10-1998	Regula	< 1.0	<] ()	<] ([.]	<] ()	< 0.20	< 0 ;
	3/9/1999	Repuis:	<1.0	<](<](.	<]()	4 7	< 0 1
	610:1999	Regula:	<]()	<](<](<]()	< 0.20	< () -
	9 13, 1999	Repula	<] (<] (<] (< 21	<0.20	<()](
	12.9 1994	Kepula [.]	~ 1		2.0	~ -	1 1	< () *
	3/9/2000	Reputat	< i	< 1	- î	< i	0.61	< 0 1
	6/8/2000	Regular	< 1	<)	< 1	< 1	< 0.21	< 0.1
	9.13/2000	Repular	<]	< 1	<]	< }	< 0.1	< 0 1
	12.7/2000	Regula:	<]	<]	< 1	< j	< 0.24	< 0.1
	3/8/2001	Regulat	< 1	<]	<]	<)	1.2	< 0, 1
	6/21/2001	Repula	3.1	<]	< ĵ	< }	< 0.25	<0.1
	9 10/2001	Regular	<]	<]	<]	<]	< 0.35	<0.1
	12/6/2001	Regular	<]	<]	<]	<]	1.5	<0.1
MW-8	8/10/92	Regular	N5	NS	NS	N5	NA	NS
	2/9/93	Regular	< 2	< î	< 2	< ti	NA	NA
	8/19/93	Regular	< ?	< :	< 2	< ?	NA	NA
	1/27/94	Regular	<]	<]	<]	<]	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	< 0.5	<06	NA	< 0.1
	2/23/96	Regular	< 0.5	< 0.5	< 0.5	< 0.6	NA	< 0.1
	5/31/96	Regular	< 0.5	< 0.5	< 0.3	< 0.0	NA	< 0.1
	8/23/96	Regular	< 0.5	< 0.3	< 0.5	< 0.¢	NA	< 0.1
	12/2/96	Regular	<]	<]	<]	<]	< 0.1	< 0.1
i	3/12/97	Regular	<]	<]	<]	1.8	< 0.1	< 0.1
	6/12/97	Regular	<]	<]	< 1	<]	< 0,1	< 0.1
	9/11/97	Regular	<]	<]	<]	<]	0.1	< 0,1
	12/10/97	Regular	< }	<]	<]	< }	0.3	< 0.1

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Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Nylenes	TPH-D	трн-с
Well	Date	Туре		microgram	ns per liter, ug/L		milligrams p	er liter. mg/L
MW-E	3/23/98	Regular	< 1	<]	<]	<]	< 0.2	< 0.1
	6/23/98	Regular	<]	<]	<]	<]	< 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	<].()	< 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	0.55	< 0.1
	6/8/2000		NS	NS	NS	NS	NS	NS
	9/13/2000		N5	NS	NS	NS	NS	NS
	12/7/2000		NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	<]	<]	<]	<]	1.6	<0.i
	6/21/2001		NS	NS	NS	NS	NS	NS
	9/10/2001		NS	NS	NS	NS	NS	NS
	12/6/2003	-	N5	NS	NS	N5	N5	N5
MW-9	4/22/93	Regular	570.0	380.0	< 50	870.0	NA	NA
	7/15/93	Regular	121.0	7.5	3.0	458.0	NA	NA
	8/19/93	Regular	390.0	290.0	4 0 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 U	120.0	NA	NA
	8/1/95	Regular	660.0	410.0	91.0	310.0	NA	6.2
	11 15/95	Regular	240 (24.6	11.0	140.0	NA	1 f
	11/15/95	Duplicate	170.6	18.0	10 (120.0	NA	1.0
	2.23.96	Regula	170 (18 (2.3	160 (N#	4 }
	5.31/9t	Regula:	120 (-	16 (-	30	200.6	NA	NA
	8/23/96	Regula	82 (13 (61	270.0	NA	4
	8:23:96	Dupircate	76.0	14.0	4 }	250.0	NA	42
	12:2/96	Regular	61.0	< 2:	< 2.4	210.0	2 t	23
	12/2/96	Duplicate	86.0	13.0	2.4	270.0	3.5	25
	3/12/97	Regula:	30.0	48.0	420.0	880.0	8.2	14
	6/12/97	Regular	4.5	2 1	11.0	97 ()	2 r	2.2
	6/12/97	Duplicate	< 4	< 4	6 t	69 ()	5.7	1.5
	9.12/97	Regular	2.1	2.5	2.1	120.0	1.1	1.9
	12/10/97	Regular	4.9	9.0	6.8	62.0	0.86	0.92
	3/24/98	Regular	<]	<]	<]	26.0	0.60	1
		-	2.4			36.0		0.25
	6/23/98 9/30/1998	Regular		22.0	10.0		< 0.2	0.27
		Regular	1.1	5.5	21.0	59 .0	0.27	
	12/10.1998	Regular	< 1.0	1.9	17 ()	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 ()	<0.20	0.43
	9/13/1999	Regular	< 1.0	< 1.0	<] ()	< 2.0	<0.20	<0.10
	12/9:1999	•	NS	NS	NS	NS	NS	NS
	3/9/2000	Repular	< }	<]	<]	64.0	0.66	1.5
	6/8/2000		NS	NS	NS	NS	NS	NS
	9/13/2000	•	NS	N5	NS	NS	N5	N5
	12/7/2000		NS	NS	NS	NS	N5	NS
	3/8/2001	Regular	<]	<]	<]	<]] 4	<0.1
	6/21/2001		NS	NS	NS	NS	NS	NS
	9:10/2001		NS	NS	NS	NS	NS	N5

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Monito	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	трн-D	трн-с
Well	Date	Туре		microgran	ns per liter, ug/1_		milligrams p	er liter, mg/L
MW-9	12/6/2001		N5	NS	NS	NS	NS	NS
MW-10	8/19/95	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	98 0.0	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	Regulat	290 .0	34	6.4	13.0	NA	1.4
	12/2/96	Regular	280.0	1.5	17.0	8.0	0.94	0.97
	3/12/97	Regular	110.0	< <u>*</u>	17.0	< :	0.61	0.57
	6/12/97	Regular	150.0	12.0	30.0	< .4	0.68	< 0.4
	9/12/97	Regular	87.0	2.3	26.0	2.7	0.76	0.35
	9/12/97	Duplicate	87.0	2 4	26 .0	2.8	0.79	0.35
	12/10/97	Regular	41.0	98	12.0	7.7	1.1	0.21
	12/10/97	Duplicate	36.0	8.4	10.0	6.7	1.2	0.24
	3/23/98	Regular	36.0	< :	5.9	< 5	1.¢	< 0.5
	3/23/98	Duplicate	36.0	<)	5.3	1.3	1.7	0.18
	6/23/98	Regular	37.0	< *	< 4	< 5	2.1	< 0.4
	9/30/1998	Regular	84.0	3.2	30.0	2.2	1.4	0.5t
	12/10/1998	Regular	29 .0	10	7.0	1.0	0.86	0.11
	3/9/1999	Regular	28.0	<5(58	<5.0	19.9	<(1 '
	6 10 1999	Regulat	17.0	<](<](<]()	0.30	0.10
	9 14:1999	Reputa	10.0	< 1 (<] (-	< 2.0	<0.20	<() }(
	12/9 1999	Regula:	23 (- 1	< 1	1.1	() 44	6.14
	3 10 2000	Reputat	300.0	4 -	61	43.0	11	0.84
	618/2000	Regula:	78 G	1.	7:	90	0.6*	0.74
	9.15.2000	Regular	23.0	1.5	1.1	2.6	1 t	0.41
	12:7.2000	Regular	7.2	< ;	< ;	<]	1.5	0.15
	3/8/2001	Regular	34	13	< }	< }	3.4	0.1
	6.22/2001	Regular	<]	< 1	< 1	< 1	1.5	<01
	9/10/01 and 9/18/01	Regular	2	<]	<)	<]	2.5	<0.1
	12/6/2001	Regular	78	460	30	239	NA	2.2
MW-11	8/19/93	Regular	< :	< :	< ?	< 2	NA	NA
	1/27/94	Regular	<]	<]	<]	<]	NA	NA
	5/4/95	Regular	< 0.5	< 0.5	< 0.5	< 0.6	NA	NA
	8/1/95	Regular	44.0	29.0	5.5	13.0	NA	0.5
	11/15/95	Regular	19 0.0	2.8	6.2	11.0	NA	0.4
	2/23/96	Regular	49.0	1.1	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	1.1	0.5	4.7	NA	0.2¢
	12/2/96	Regular	97 0.0	< :	6.0	8.1	2	1.5
	3/12/97	Regular	130.0	< <u>+</u>	13.0	5.8	0.41	< 0.5
	3/12/97	Duplicate	100.0	< '	10.0	5.1	0.45	< 0.4
	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.(< :	< :	0.28	0.14
	6/23/98	Regular	9.9	< :	< :	< :	< 0.2	< 0.4
i	9/30/1998	Regular	9.3	3.7	2.2	7.6	<0.20	0.1

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgram	ns per liter, ug/L		milligrams p	er liter, mg/L
MW-11A	12/10/1998	Regular	1.7	<].()	<1.0	<1.0	<0.20	<0.1
	3/10/1999	Regular	<:	<:	<.4	<:	0.5	<0.4
	6/10/1999	Regular	<].()	<]_(<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	< <u>*</u>	< 5	< <u> </u>	< 5	< 0.2	< 0.1
	3/9/2000	Regular	1.2	<]	< 1	< }	0.45	< 0.)
	6/8/2000	Regular	3.6	< i	< 1	< 1	0.37	< 0.1
	9/13/2000	Regular] 4	<]	< }	<]	0.36	< 0.1
	12/7/00	Regular	26	<]	<]	3.3	0.5	0.12
	3/8/01	Regular	12	<*	< 5	<5	2.2	<0.4
	6/22/2001	Regular	1.5	< 1	< }	<]	1	<0.1
	9/10/2001	Regular	7.9	< }	<]	<]	1.1	<0.)
	12/6/2001	Regular	<]	<]	<]	<]	1	<0.1
MW-12	3/24/98	Regular	100.0	11.0	6.0	8.0	0.25	0.41
	6/23/98	Regular	88.0	< 4	< <u>*</u>	< 5	< 0.2	< 0.4
	6/23/98	Duplicate	89.0	< 4	< 4	< 5	0.31	< 0.4
	9/30/1998	Regular	260.0	3.0	1.2	7.9	<0.20	0.60
	12/10/1998	Regular	160.0	<].()	<1.0	1.2	0.21	0.56
	3/10/1999	Regular	160.0	1.1	<]()	2.9	0.38	0.4.5
	6/10/1999	Regular	49,0] 4	<10	<].()	0.22	0.15
	9/14/1999	Regular	75.0	<] (< 1.(< 2.0	<0.20	0.23
	12/9/1999	Regular	64 ()	< }	<]	<]	< 0 :	0.21
	3 10/2000	Regular	95 ti	< î	<]	<)	< 0 [0.21
	3 10/2000	Duplicate	99 (r	<)	< }	<)	0.21	0.21
	61812000	Regula	62 (< '	< ',	< 1	< 6 :	< ()
1	9 13 2000	Regular	34.6		۰.	< ;	0.25	< ()
	12/7:2000	Repuis:	-	<	2.5	1.4	<0 2:	< ()
	3/8/2001	Regular	14	< j	< 1	< 1	2.	0.5
	6/22/2001	Regular	1.	< 1	< 1	<]	0.51	0.11
	9:10/2001	Regular	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	12/6.2001	Repular	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
MW-12D	7/2/1999	Regula:	< <u>*</u>	< :	< :	< :	<0.20	<0.10
	914.1999	Regular	<] ()	< 1.0	<] ()	< 2.0	<0.20	<0.10
	12/9.1999	Regular	< 1	<)	<]	< }	< 0.2	< 0.1
	3/9/2000	Regular	<]	<)	<]	<]	0.24	< 0.)
	6/8/2000	Regular	<]	< }	< }	<]	< 0.1	< 0. i
	9/13/2000	-	NS	NS	N5	NS NS	NS NS	NS
	12/7/2000	-	N5	N5	NS NS	NS	NS	N5
	3/8/2001	-	NS	NS	NS	NS NS	NS	N5
	6.22.2001		NS	NS	NS	NS	NS	NS
	9/18/2001	Regular	<]	<]	<]	<]	<0.1	<0 1
	12/6/2001	Regular	<]	<]	<]	<]	<0.2	<0.1
MW-13	7/2:1999	Regular	1500.0	25.0	750.()	58.0	2.2	5.1
	914/1999	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 ()	2.8	200.0	1.5	1.9	0.99
	6/8/2000	Regular	6.0	< }	63.0	3.3	1.1	0.91
	9/13/2000	Regular	<].()	<1.0	34	<].()	0.44	0.12
	12/7/2000	Regular	<]	<]	<]	<]	0.45	<0.1
	3/8/2001	Regular	<]	<]	1.2	<]	:	<0.1

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Monitor	Sample	Sample	Benzene	Tolvene	Ethylbenzene	Nylenes	трн-д	трн-с
Well	Date	3 урс		microgram	ns per liter, ug/L		milligrams p	er liter, mg/L
MW-13	6/22/2001	Regular	<]	<]	<]	<]	0.31	<0.1
	9/10/2001	Regular	<]	< }	<]	<]	0.5	<0.1
	12/6/2001	Regular	<]	<]	< }	<]	<0.2	<0.1
MW-14	1/14/2001	Regular	<]	<]	<]	<]	<0.1	<0.]
	6/21/2001		NS	NS	NS	NS	NS	NS
	9/10/2001	•	NS	NS	NS	NS	NS	NS
	12/6/2001		NS	NS	N5	NS	NS	NS
MW-15	1/14/2001	Regular	<]	<1	<]	<]	<0.2	<0.1
	6/21/2001	-	NS	NS	NS	NS	NS	N5
	9/10/2001		N5	NS	NS	NS	NS	N5
	12/6/2001	-	NS	NS	NS	NS	N5	N5
OW-4	6/10/1999	Regular	<1.0	<1.0	<1.0	4.4	<0.1	<0.10
	9/14/1999	Regular	< 1.0	< 1.0	<].()	< 2.0	<0.20	<0.10
	12/9/1999	Regular	<1.0	< 1.0	<]()	<1.0	<0.2	<0.1
	3/9/2000	Regular	<1.0	<1.0	<]_()	<1.0	0.25	<0.1
	6/8/2000	Regular	<].()	<1.0	< 1.0	< 1.0	< 0.21	<0.1
	9/13/2000	Regular	<1.0	<] .()	<] ()	<1.0	<0.1	<0.1
1	12/7/2000	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	3/8/2001	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	6/21/2001	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	9/10/2001		NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	12/6/2001		NS-D	NS-D	NS-D	NS-D	NS-D	NS-D

' Well plugged and abandoned 7/1/94

NA=Not Analyzec NS=Not Samplec NS-D=Not Sampled because well was Drv NS-P=Not Sampled due to Phaseseparated hydrocarbons in well

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Table 5

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12.1

Cumulative Results⁽¹⁾ for Chloride⁽²⁾ Analyses Hobbs, New Mexico Facility

B.I Services Company, U.S.A.

Sample Date									Monite	Monitor Wells ⁽¹⁾	_						
		NW-3	MW-4	7-WM 8-WW 8-WW 8-WW 1-WW	9-MW	NW-7	MW-8	0-WW	01-MW	11-MW	VIN-0 MM-11-MM 01-MM 6-MM	MW-12	MW-12D MW-13	EL-WM	MW-14	MW-15	OW-4
30/1/8	160	150	ULÉ	UE 1	380	Ult	UST	110	2200	1400	NA ⁽⁴⁾	٧N	٧N	٧N	۲z	۲z	۷N
70/1Z/8	ນປ່	140	100	66	210	25U	טאנ	011	2000	2000	٧N	۲N	٧N	۲Z	۲Z	< Z	۲Z
36/12-22/1	212	206	126	151	183	122	141	ועין	2390	۲z	940	1200	٧N	۲Z	۷Z	٧Z	۲Z
66/01-0/5	íуI	156	142	155	411	218	274	121	1160	۲Z	٨ţ٨	114	٧N	۲N	۲z	۷N	V Z
4/10-7/2/40	ž	۲Z	۲Z	< Z	× z	V N	٧Z	۷N	۷N	< Z	٧N	۷N	195	496	۷N	۷N	266
00/01-0/1	258	ንሶ በ	961	196	۲Z	224	241	111	171	۲z	1290	121	117	276	۷Z	٧N	2.58
1/14/2001	۲ ۲	۲۷	۲Z	< Z	۲N	۷N	٧N	٧N	۲Z	× Z	٧N	۷Z	۷N	۲N	368	519	۲ ۲
10/6-3/1	۲ ۲	الأذ	172	152	۲z	224	2su	127	R 79	۲Z	1720	286	٧N	276	327	۷N	٧N
4/21/2001	۲ ۲	< N	۲Z	۲Z	٧N	۲N	۲N	۷N	٧N	۲Z	٧N	۷N	٧N	٧N	222	222	۲Z
1002/01/6	۲z	۷N	×z	< Z	٧N	۲N	۲N	٧Z	۲N	× Z	٧N	۲N	۲N	۲Z	245	228	۲ Z
9/18/2001	۲Z	۷N	۲ ۲	× z	٧N	۷N	۷N	٧N	۲N	٧N	٧N	۲N	78 R	۲Z	۲N	۷N	۲Z
12/6/2001	۲z	۲N	× z	< Z	۲N	۲ Z	۲z	۲Z	< Z	۲z	٧N	٧N	٧N	٧N	276	215	۷N
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m - in mg/L.

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

⁽¹⁾ - 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.

(4) - NA indicates not analyzed.

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)
	3/23/98	3.87	190	< 0.0012
	3/9/99	<0.1	195	< 0.0012
	6/10/99	4.73	209	< 0.0012
	9/14/99	4.3	210	< 0.0012
	12/9/99	4.2	210	< 0.0012
	3/9/00	5.3	260	< 0.0012
MW-5	6/8/00	4.7	240	< 0.0012
	9/13/00	3.93	200	< 0.0012
	12/7/00	3.27	160	< 0.0012
	3/8/01	3.24	180	< 0.0012
	6/21/01	2.74	150	0.0017
	9/10/01	NA ⁽²⁾	130	< 0.0012
	12/6/01	2.38	120	<0.0012
	3/23/98	0.07	320	0.91
	6/23/98	<0.]	325	0.55
	9/30/98	<0.1	204	0.8]
	12/10/98	<0.]	180	0.091
	3/9/99	<0.)	<u>142</u> 223 ⁽³⁾	0.035
	9/14/99	<0.10	160	0.0049
MW-10	12/9/99	0.49	170	0.0039
	3/10/00	0.1	160	0.0056
ľ	6/8/00	<0.]	150	0.031
	9/13/00	<0.1	160	0.031
ļ t	12/7/00	< 0.1	190	0.17
	3/8/01	<0.1	270	< 0.0012
r r	6/22/01	<0.1	270	0.044
ľ	9/10/01	NA	NA	NA
MW-11A	3/23/98	< 0.05	190	0.14
ľ	6/23/98	<0.1	225	0.11
t the second sec	9/30/98	0.4	196	0.043
ľ	12/10/98	0.7	188	0.033

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-11A	3/10/99	<0.1 <0.1 ⁽⁴⁾	164 227 ⁽³⁾	0.094
ŀ	6/10/99	<0.1	181	0.0036
	9/13/99	0.22	250	< 0.0012
ŀ	12/9/99	<0.1	290	0.0079
F	3/9/00	0.11	270	0.037
Ì	6/8/00	<0.]	240	0.0069
ļ t	9/13/00	<0.1	320	< 0.0012
	12/7/00	<0.1	260	0.0096
	3/8/01	<0.]	330	0.0028
	6/22/01	<0.]	180	0.0074
F	9/10/01	NA	280	< 0.0012
	12/6/01	<0.1	240	0.0041
	3/23/98	< 0.05	240	<0.0012
F	6/23/98	<0.]	240	< 0.0012
F	9/30/98	<0.3	168	<0.0010
	12/10/98	<0.1	202	<0.0012
	2/10/00	<0.]	137	
	3/10/99	< 0.1 (4)	193 (3)	< 0.0012
F	6/10/99	<0.]	217	< 0.0012
t t	9/14/99	< 0.10	230	< 0.0012
MW-12	12/9/99	<0.1	180	< 0.0012
Ţ	3/10/00	<0.]	210	< 0.0012
F	6/8/00	<0.]	220	< 0.0012
, in the second s	9/13/00	<0.1	240	< 0.0012
P I	12/7/00	<0.1	260	< 0.0012
ļ	3/8/01	<0.1	300	< 0.0012
F	6/22/01	<0.1	360	0.0021
ŀ	9/10/01	NS-D ⁽⁵⁾	NS-D	NS-D
ŀ	12/6/01	NS-D	NS-D	NS-D

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-12D ⁽⁶⁾	9/18/01	NA	190	< 0.0012
WW-12D	12/6/01	<0.1	200	< 0.0012

(1) - Analysis by EPA Method 300, except as noted

 $^{(2)}$ - NA = not analyzed

(5) - Analysis by EPA Method 375.4

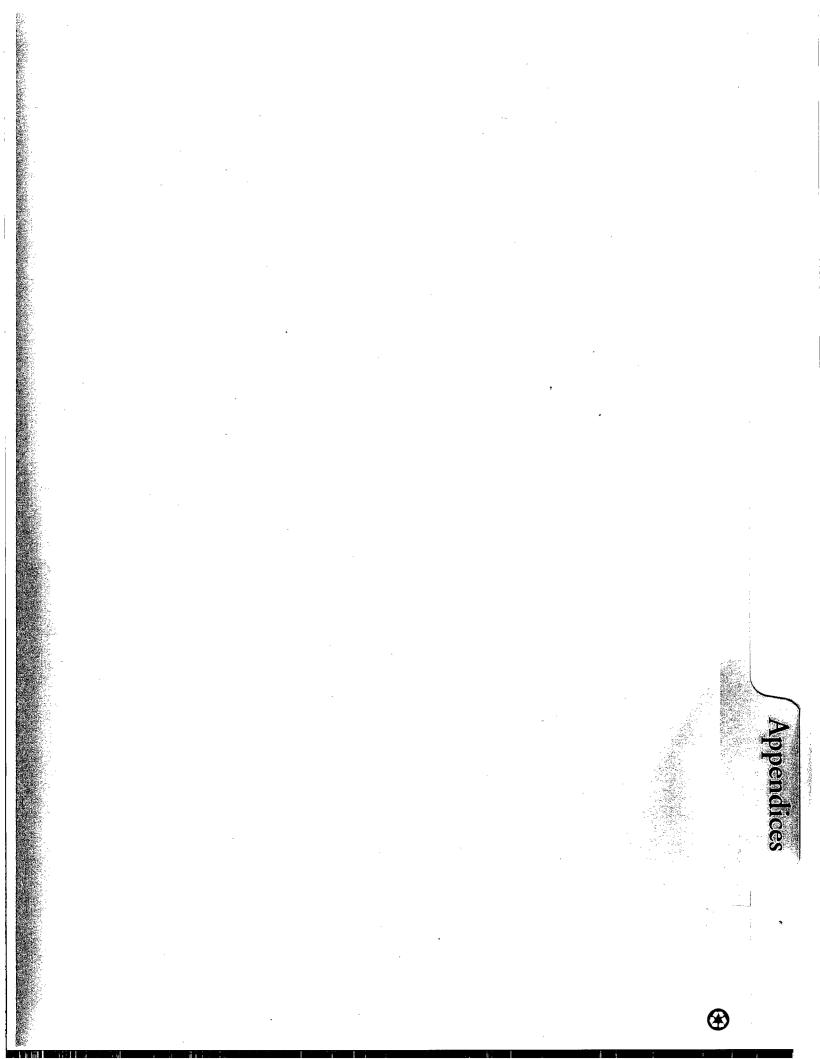
(4) - Analysis by EPA Method 353.3

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

(6) Well MW-12D not sampled for applicable parameters until well MW-12 went dry

mg/L = milligrams per liter

F & Bill



APPENDICES

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総計理論を設ち

APPENDIX A

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Groundwater Sampling Forms

P:\Wp\BJSERV\12832\0871.doc "Use or disclosure of data contained on this sheet is subject to the restriction specified at the beginning of this document."

Materials: Pump/Beile Distainess DPVC Dietacated Dietacat	ECKENFELDI	3 R•	GF	ROUNDW	ATER SA	MPLING	FIELD	DATA SH	HEET
Project Number 12832 Task Number Ø17 Dote 12/6/01 time 154/2 Clent BJ SERVICES Personne: Tesque, Li MOFH A Project lacation Hotelbas MM Weather Clear Clear MOFH A Project lacation Hotelbas MM Weather Clear Clear MoFH A Carsing Dometer 2 inches Hype: Krvc Disones Dometer Omer	BROWN	ND		V	VELL ID:	MW	-3	_	
Carring Diameter 2 Inches March 2 Staties Diames Dinames Diames Diames Diames Diames Diames Diames Diames D	Project Nu Client:	mber: 12 BJ	832 Tosk	Number: <u>Ø</u> 1 LES		Personnel:	Teggue,	L; Mor	· · · · · · · · · · · · · · · · · · ·
Screen Diameter 2 inches IVPC Staties D 600, Steel D felore D	2. WELL D	ATA						· · · · · · · · · · · · · · · · · · ·	
acted Duffields Provide and Construction of the constructin of the construction of the construction of the construct	Casing Die	ometer:		Type: 🗙	VC D Stainle	ss D Gatv. Str	eel Dilefiont	D Other	
Depth to Static Water: \$27.44 teet From: © top of Well Coung (TCC) D top of Protective Caung D Other Depth to Product:	Screen Dir	ometer:		Type: 🖌	PVC D Stainle	ss D Golv. St	eel 🛛 Tefion	D Other:	
Depth to Product.	lotal Dep	ih of Well:_[2. Døeet	From: 🗙	1op of Well Co	sing (IOC)	1 Top of Prote	ective Casing	Dother: Historicsel
Iength of Water Column: 2.96 test Well Volume: 2.19 or Screened Interval (tran GS): 45 - 64 Note: 2-inch well = 0.167 pol/f Heat have a 0.67 pol/f Heat have a 0.67 pol/f 3. PURGE DATA Bioder Pump D Prestellik Pump D 1+ Submensble Pump Equipment Mode Purge Method: D centring of Pump D prestellik Pump D 1+ Submensble Pump Equipment Mode 1 Materials: Good/Tubing D Polyethylene D Polyeopylene D Telone & Other M 10 A 1 YST - C&O Materials: Good/Tubing D Polyethylene D Polyeopylene D Telone & Other M 10 A 2 2 Was well Purge d dry? D vis X No Pumping Rate pol/min 3 Time Com Goldon pH Temp Spec En Dissovec 1 YST - C&O 1558 S T art t Sampling Rate pol/min 3 - - 1558 S T art t Sampling Rate Device of the doce of Dissovec 1 YST - C&O 10 Minute R Accharyk Dry i Allow Minute Rescharyk - - - 1558 S T art t Sampling D Devid Dither Die Devid Connet M Dissovec Dry i Allow Minute Rescharyk - - - 10 Minute R	Depth to :	Static Water	: <u>59.44</u> te	et From: 🕅	1op of Well Ca	sing (IOC)	1 1 op of Prote	ective Casing	D Other:
Note: 24nch well = 0.167 paint 21. PURGE DATA States ster							lop of Prot	ective Cosing	
3. PURGE DATA Purge Method: Ochnings form D Blodder Pump D Statementolie Pump Equipmentolie Pump Materials: Pump/Bail D Bataniess D PVC D Tenore & Other Polycethy Leve 1 Materials: Form/Jubil D Dedicated Direpored Offsite D Tenore & Other Polycethy Leve 1 YST - C.D.D. Materials: Form/Jubil D Dedicated Direpored Offsite D Tenore & Other Polycethy Tene D Tenore & Other Polycethy Tene 1 YST - C.D.D. Materials: Form/Jubil D Dedicated Direpored Offsite D Tenore & Other Polycethy Tene D Tenore & Other Polycethy Tene 1 YST - C.D.D. Materials: Form/Jubil D Dedicated Direpored Offsite D Tenore & Other Polycethy Tene D Tenore & Other Polycethy Tene 1 Tener No Materials: Form/Jubil D Polycethy Tener D Tenore & Other D Tenore & Other Polycethy Tene	length of	Water Colu	mn: 2.96	teet Well Volu	me: <u>0, 1</u>				
Method(s): Boiler, Size: Bolder Pump D 2° Submersible Pump D 4° Submersible Pump Ferrous Iron: mg/ Materials: Pump/Ealler Stainless DPVC D lettons & Other. Polyethylene D DO: mg Materials: Pump/Ealler Dolyethylene D Polypropylene D lettons & Other Nylon Nitrate: mg Materials: Tubing/I (DP) Dolyethylene D Polypropylene D lettons & Other Nylon Nitrate: mg Materials: Tubing/I (DP) Dedicated D Prepared Off. Site D Field Cleaned & Disposable Nitrate: mg Depth to Water at Time of Sampling. <u>DNM</u> Field Filtered? D Yes & No Sample ID: <u>MW-3</u> Somple Time: <u>1545</u> # of Containers: <u>5</u> Alkalinity: mg 5. COMMENTS Replaced Well Cap Old Cap dumaged Replace C 1eck with 2dd1 series, Non - Traditional well vault Centribut iny to dumage to well cap - May need to keelece liault Note include comments (ch as well condition. abov, presence of NAPL or diner items not in themeia data sheel Materials: Condition. abov, presence of NAPL or diner items not in themeia data sheel	Materials: Materials: Was well Time 15 HS 1 558	Pump/Boile Pump/Boile Pump/Boile Purged dry? Cum. Gallons Removed Q. 4 Staf 10 m	ritugal Pump Stainless Dedicater Polyethyle Dedicate Polyethyle Polyethyle Dedicate PH 10 7.3 1 C	Peristattic Pump PVC I Tetic d I Prepared Off Prepared Of Prepared Of No Pum emp Spec. Cond Pum Ged Annoling Acchait	Dinertial Lift I on® & Other: Site Different Field C ping Rate: Eh Eh	Dissolved Oxygen	EMC Disposable Disposable I/min Turbidity	1. YS 2 3 Other. If m.nu	Comments Recharge
Materials: Pump/Eailer Bistolinless DPVC Ditetions & Other: <u>Polyethylene</u> Dedicated Drepared Off-Site Diteld Cleaned & Disposable Materials: Jubing/Fore Delyethylene Delypropylene Ditetions & Other <u>Mylon</u> Nitrote: <u>materials</u> : Jubing/Fore Dedicated Drepared Off-Site Diteld Cleaned & Disposable Depth to Water at time of Sampling: <u>DNM</u> Field Filtered? Dies & No Sample ID: <u>MW-3</u> Sample Time: <u>1545</u> # of Containers: <u>5</u> Duplicate Sample Collected? Dies & No ID: <u>Standard</u> Under <u>Auma and Crephale</u> <u>Containers</u> <u>5</u> 5. COMMENTS <u>Replaced</u> Well Cap <u>Old</u> Cap <u>duma and Crephale</u> <u>Container</u> <u>1000</u> <u>1000</u> <u>10</u>	4. SAMP		TA				ļ	Geo	ochemical Analyses
Icck with 2001 series, Non - Traditional well vault contributing to damage to well cap - May need to keplace liault Note include comments och as well condition, obor, presence of NAPL or diher items not on the meta data sheet Note include comments och as well condition, obor, presence of NAPL or diher items not on the meta data sheet Note include comments of the second street	Materials Moterials Depth to Sample I	:: Pump/Eaile s: Tubing/For Water at Tir D: <u>M</u> W3	Dedicate Dedicate Dedicate Dedicate Dedicate Dedicate Score	PVC 1 1 eff ed D Prepared O lene D Polyprop ed D Prepared O ng: DNM pmple Time: 1	on® Ø-Other: It-Site D Field ylene D Tetic Dtf-Site D Fiel Field Filte 5 4 5	Paly RT Cleaned X no X Other d Cleaned X red? D Yes	Disposable Nyion Disposable Nyion Disposable	— Nitr Sult	ate: mg/L
Der Trijen AD	lock	with	1 200	1 seives,	Non -	Inadit	ional i	-di var	17
Korne (M. 2) (See 448 (See 448))	CONTY Note Include	comments	ch as well con	Ange to	WEIL C	ap - N	lay ne	id data sheel	eplace lian 1
		/D=:					X	Lije	n AD

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CKENFELDE	R •	G	ROUNDW	ATER SA	MPLING	9 FIELD	DATA SH	EET
IN INTEGRAL PANT BROWNAN CALDWEL	Ð			WELL ID:	MW.	- 4	_	
		MATION	J					
	mber: 128 37 54		k Number: 91		Dote: 12	•	- ;	me: 1645
	cotion: He		м		Personnel: Weather:		, L', Mo	<u>r+1_A</u>
2. WELL D		/						
Casing Dia		2 inches	Type:	RVC D Stainle	ess D Galv St	eel Diefion	8 🖬 Other:	
Screen Did		Z Inches		XPVC D Stainle		··		
Total Dept	n of Well: 6	.3¢ teet	From: 1	Top of Well Ca	ising (10C)	D Top of Prot	ective Casing 📕	Other: 1113torics
Depth to S	static Water:	58.88 te	eet From:)	top of Well Co	ising (10C)	D Top of Prot	ective Casing D	Other
Depth to F	Product:	feet	From:	D Top of Well Co	osing (IOC)	D Top of Prot	ective Casing	0ther:
Length of	Water Colur	nn: 2.42	feet Well Vo	iume: <i>¢.40</i>			nterval (from GS veli = 0.167 gai/ft	
Materials: Materials: Was well (Pump/Boile Repertubing purged dry?	D Stainless D Dedicati	DPVC Die ed DPrepared C lene DPolypro ed DPrepared	D 2° Submersibl np D Inertial Lift flon® Ø Other Dtf-Site D Field pylene D Field off-Site D Field mping Rate:	Polyeth Cleaned X 10 \$ Other 1 Cleaned \$	<u>len</u> & Disposable <u>Ny Ion</u> (Disposable	6 .	Equipment Model(s)
Hme	um. Galions Removed	рн	lemp Spec	1 +h	Dissolved Oxygen	Turbidity	Other	Comments
1648	\$1.2.5	7.261	7,38 128	i -51.6	3.61	~		
16-19	q.4¢	Well	Purger	1 Near	IL D	ry		
	Allo	r Re	harne	0	STOXIM	111	1 minut	£
						1-1-		
						+		
4. SAMPI	ING DA	IA .					Geor	chemical Analyses
Method(s): D Peristalti	re: <u> </u>	ladder Pump 🖸 erfial Lift Pump 🕻	2" Submersible P 3 Other:	°ump □ 4° Sı	ibmersible Pui	np Ferro	us Iron: mg/L
Materials	:Pump/Baile			eflon® Xother: Off-Site D Field	Polyet	helen e	DO:	mg/L
				Off-Site D Field opylene D 1efic d Off-Site D Fiel				
					-			re: mg/L
	Water at Tim D:			Field Filte			Sulta	te: mg/L
				650	# of Cont	ioiners: <u>></u>	- Alkol	inity: mg/L
Duplicati	e sample Co	niected? D	Ves No 1	ט:				
5. COM		Tubin	4 has	yella	souder	on i	+ - "we"	+" portion
07 +	ubing 1	nas ye	How tin	Water	"Llear	" but	has blas	t "organic"
Sludge Note Include	<u>e</u> comments su	h as well co	ndilion, odor, pri	esence of NAPL	Oh U U	not on the lie	F builty	when pulled up
						X	Je. Ik	1
FORM GW-2	(Rev 6/8/99-	wah)				Signature	z mar	

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ECKENFELI	DER•	G	ROU	NDWA.	TER SAN	MPLING	FIELD	DATA SH	IEET
an intebral pa B R O W N C A L D W E	AND			W	ell ID: <u>-</u>	Mw-5		-	
Project N Cllent:	CT INFOR iumber: 129 BJ Ser ocation: He	32 In vices	osk Numb	er: Ø17	F	Date: <u>12/</u> Personnel: Weather:	Teague	Lj Mor Clear	ime:U tA
2. WELL	DATA								
		Zinchi	es 1		C D Stoinles	s D Gaty St	eel 🛛 lefion	8 D. Other:	
Screen [Diameter:	2 inch	es 1	YPE: PPV	C Q Stainle	ss 🛛 Golv. Sh	eel Dilefion	@ D Other:	
lotal De	pth of Well:	4.5 Øree	et ¥ F		p of Well Cas	ing (10C) [1 Top of Prot	ective Casing G	Komer Historica
	Static Water			rom: 🖬 to	p of Well Co	ing (10C)] Top of Prot	ective Casing () Other:
Depth to	Product:	teet			p of Well Ca	sing (10C)	D Top of Prot	lective Casing 1	D Other:
Length o	of Water Colu	mn: 3,54	L teet	Well Volum	e:\$.66				5: <u>45.5-59.5</u>
		<u></u>				۱ موجود المح	Note: 2-inch v	veli = 0.167 gai/fi	4-inch weil = 0.667 (
Materia	Is: Pump/Eole Is: Rope/Tubin Il purged dry? Cum. Gallon: Removed	¹¹ Dedicc 19 Devivett 19 Devictor 10 Yes	oted D Pre nylene D oted D Pr	Polypropyler Polypropyler repared Off-1	b QCother te D Fleid C ne D Teflan Site D Fleid ng Rate: Eh	Cleaned DI	Disposoble Ny lor Disposoble	1. <u>75</u> 2 3 Other.	T ~ 6 00 Comments
1045	9.25	7.58	17.37	11.51	99.6	4.46	Well	nearly	dry
	Alley	10	rec	harge	appr	Exima	rely	5 mins	e s
(0	llected	Ser	nple	as V	velle	entiny	e 10	rechard	C
		1 2 1	1						
	slow	<u> '`)</u>				+			
	PLING DA	1							chemical Analyses
	d(s): HBailer, S Peristall							mp Feirc	ous Iron: mg
Materia	sis: Pump/Bail	er D Stainle	ess D PV(® 🗶 Other:_ Site 🖸 Field	polyet he	<u>elen</u> (DO:	m
1	als: Tubing/R6			epareo om	ane anea	Ciecciec y	Uisposoble	Niite a	
						•		Nitro	ote: m
	o Water at Ti							Sulto	ote:m
	10: <u>MW</u>					# of Cont	oiners:		alinity: mg
Duplico	ote Sample C	ollected?	Ves 🗴	No ID:		-			
5. CON	AMENTS	Yellow	">owd	lei " on	OUTSIC	le ef	Tr bind	E inside	of well!
we	11 was								ugter
Inter	face pr	obe-by	HUY (our j H	ad jo re	measur	e DT	W @ 114	
	de comment su						not on the fie	eld data sheet	
							X	Ster 1	Ł
FORM GW	-2 (Rev 6/8/99	· wah)					Signature		. <u> </u>

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B

AN INTEBRAL PAI B R O W N C A L D W E	A N D			Ŵ	ELL ID:	Mu-	7			
1. PROJE	CT INFOR	MATIO	N							
Project N	lumber: 128	32 10	sk Numb	er: ¢1	2	Dote: ! 2/	6/41		Time:_	124¢
Client:	BJ Serv	ices				/ _Personnel:_	Teague,	LM	A Itra	
Project L	ocation: <u>He</u>	ths, NM	1				Warmy			
2. WELL										
	Diameter:2	- inche	1		/C D Stainle	ss DiGortv.	iteel Diletion	nother:		
	Diameter: 2		+				Steel D leftor			
	pth of Well:									Br: 14 STOPICE
	Static Water:						Top of Pro			
	Product:						D Top of Pro			
	of Water Colum		leet 1	Nell Volun	ne: C.29	gal	Screened I	interval (fro	m GS): 4	55-695
-							Note: 2-inch	weli = 0.167 g	gal/fi 4	Inch well = 0.667
	l purged dry?	`)gX Yes ∣			Ing Pate	-		_		
142¥ 153€		6.99 well cf cn	1emp 19.4 1 Dry cns Amics	Spec. Cond. 787 - All Amber (13	- Well cf_seu	Dissolved Oxygen 2.6 Dry	1 Turbidity - Gre C SOmi A Jjaw	Recha	eliau F.11 V. rye	Comments Timt - CAS - Dr Recharge
1215 1427 1536 1747	Removed 209.2 Fill 34 Fill 14. Fill 14.	6.99 well cf cr f sec	1emp 19.4 1 Dry cns Amics	Spec. Cond. 787 - All Amber (13	Eh 106.2 - Well cf seu	Dissolved Oxygen 2.6 Dry	1 Turbidity - Gre C SOmi A Jjaw	Rechy Dry in	ellow Fill Vi rye 4110	Tint - Dr Recharge
1215 1427 1536 1747 4. SAMF	Removed 2:0.2 F:11 3/4 F:11 1/4 F:11 1/4 F:11 7/3 c PLING DA 12 Boilter, Siz	6.99 well cf and f secont	Temp 19.9 10-7 Cone Ambre End Ambre Bladder P	Spec. <u>Cond.</u> 787 - All Amber (13) Mber (13) Mber (23)	Eh 106.2 -Well cf_seu Well	Dissolved Oxygen 2.6 Dry Dry 2nd Am Dry	1 Turbidity - Gre C SOmi A Jjaw	Rechy Dry in	ellow Fill Vi Yye Allow Geochem	Tint - Dr Recharge nical Analyses
1215 1427 1536 1747	Removed 2:0.2 F:11 3/4 F:11 1/4 F:11 1/4 F:11 7/3 c PLING DA 12 Boilter, Siz	G.99 Well CF CF CF CF CF CF CF CPUMP DI CF CPUMP DI	1emp 19.9 Dry Crie Ambrie Drd A Bladder P nertial Litt	Spec. <u>Cond</u> <u>787</u> <u>- All</u> <u>Ambér</u> <u>(13</u>) <u>Mbér</u> <u>Pump</u> 0 2° 5	Eh 106.2 -Well cf_seu Well well	Dissolved Oxygen 2.6 Dry Dry 2nd Am Dry	1 Turbidity - Great Comparison A Jow Hori Well Submersible Pu	Rechy Dry in	ellow Fill Vi Yye Allow Geochem	Tint - Dr - Dr Recharge
1215 1427 1536 1747 4. SAMF Method	Removed 2:0.2 F:11 3/4 F:11 1/4 F:11 1/4 F:11 7/3 c PLING DA 12 Boilter, Siz	$ \begin{array}{c} $	Iemp 1999 Dry Cris Amicis Pind A Biodder P nertiol Lift ss DPVC oted DP	Spec. <u>Cond.</u> <u>787</u> <u>- All</u> <u>Amber</u> <u>(13</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u> <u>(13)</u>	Eh 10/6.2 -Well cf seu $Wellwell$	Dissolved Oxygen 2.6 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	1 Turbidity - Gre Comp A Jian A Jian A Jian bai Well Submersible Pu elene Disposable	Rechy Dry in	ellow Fill Vi Yye Allow Geochem	Tint - Dr Dr Dr Dr Dr Dr Dr Dr Dr Dr
1215 1427 1538 1747 4. SAMF Method Materia	Removed $\frac{2}{2}$ $\frac{1}{9}$, $\frac{1}{2}$ F_{111} $\frac{1}{14}$ F_{111} $\frac{1}{14}$ F_{111} $\frac{1}{14}$ F_{111} $\frac{1}{13}$ c PLING DA $a(s)$: $\frac{a}{9}$ Boilter, Siz a Peristalitie	6.99 cf cf f f f f f f f	Temp 19 9 Dry Crie Ambrie Ambrie Biodder P nertiol Lift ss DPVC oted DPr nylene	Spec. Cond. 787 -A11 Ambér 4mbér 4mbér 9000000000000000000000000000000000000	Eh $1 \notin (c, 2)$ $- \psi e f (c$	Dissolved Oxygen 2.6 Dry Dry 2nd Am Dry 2nd Am Dry 10 Part Am Dry 10 Part Am Dry 10 Part Am Dry 10 Part Am Dry 10 Part Am	$\frac{1}{2} \frac{1}{2} \frac{1}$	Rechy Dry in	elia w Fill V ry Hilow Geochem	Tint $cA \le Dr$ iRe Liergent nical Analyses on:m
1215 1427 1538 1747 4. SAMF Method Materia	Removed $\frac{5}{2}$ \vec{q} , 2 \vec{F}_{11} \vec{J}_{4} \vec{F}_{11} \vec{J}_{12} \vec{F}_{11} \vec{F}_{11} \vec{J}_{4} \vec{F}_{11} \vec{F}_{11} \vec{F}_{1	$ \begin{array}{c} $	Temp 1999 1079 Conic Ambric Ambric Ambric Conic Ambric A	Spec. Cond. 787 -A11 Ambér 4mbér 4mbér 1/3 ump 22 Pump 20 Pump 20 C 1eflo epared Off- 1 Polypropyl Prepared Off-	Eh $1 \oint (c, 2)$ - We [] $cf \le cu$ we [] we []	Dissolved Oxygen 2.6 Dry Dry 2nd Am Dry 2nd Am Dry 2nd Am Dry 10 an 10 a	1 Turbidity - Gre C 30 mi A 1100 bar: Well bar: Well C 015posable P 015posable M y 1011 D 015posable	Rechy Dry in	<u>elia</u> Fili V Fili V Geochem Ferrous lic DO:	$\frac{Tim T}{CA} = DT$ $\frac{Re - Lis rge}{Re - Lis rge}$
1215 1427 1536 1747 4. SAMF Method Moteric Depth t	Removed $\frac{5}{2}$ \dot{q} , 2 $F_1 1 - \frac{5}{4}$ $F_1 1 - \frac{5}{4}$ $F_2 1 - \frac{5}{4}$ $F_1 1 - \frac{5}{4}$	$ \begin{array}{c} $	Temp 1999 1999 1000 100 1000 1	Spec. Cond. 787 - All Amber (13 - All Maber (13 - All Maber (13 - All Amber (13 - All (13 - All All (13 - All (13 - All	Eh 10/6.2 -Well cf seu $Wellwell$	Dissolved Oxygen 2.6 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	$\frac{1}{2} \frac{1}{2} \frac{1}$	Rechy Dry in	<u>e</u> <u>j</u> d <u>w</u> <u>F</u> i <u>j</u> <u>j</u> <u>F</u> errous lic DO: DO: Nitrate: Sullate:	$\frac{Tim T}{CAS} = DT$ $\frac{Re Lising is}{Re Lising is}$
1215 1427 1536 1536 1747 4. SAMF Method Materia Depth t Somple	Removed $\frac{1}{2}$ \dot{q} , \dot{z} $F_1 1 - \frac{5}{4}$ $F_1 1 - \frac{5}$	$ \begin{array}{c} $	Temp 19 10 10 10 10 10 10 10 10 10 10 10 10 10 11 11 12 12 13 14 14 14 15 14 15 15 16 16 17 16 17 16 17 16 16 17 16 16 17 16 16 17 16 17 17 18 17 18 18 18 18 18 18 18 <td>Spec. Cond. 787 -A11 Amber 1787 1787 173</td> <td>Eh $1 \not b \not b c$. 2 $- \psi c H$ c f s c u $\psi c H$ c f s c u $\psi c H$ b c f s c u $\phi c f s c u$ $\phi c u$</td> <td>Dissolved Oxygen 2.6 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry</td> <td>$\frac{1}{2} \frac{1}{2} \frac{1}$</td> <td>Rechy Dry in</td> <td><u>elia</u> <u>Filia</u> <u>Filia</u> <u>Filia</u> <u>Geochem</u> Ferrous ko DO: Nitrate:</td> <td>$\frac{Tim T}{CAS} = DT$ $\frac{Re Lising is}{Re Lising is}$ $\frac{Re Lising is}{Re Lising is}$</td>	Spec. Cond. 787 -A11 Amber 1787 1787 173	Eh $1 \not b \not b c$. 2 $- \psi c H$ c f s c u $\psi c H$ c f s c u $\psi c H$ b c f s c u $\phi c f s c u$ $\phi c u$	Dissolved Oxygen 2.6 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	$\frac{1}{2} \frac{1}{2} \frac{1}$	Rechy Dry in	<u>elia</u> <u>Filia</u> <u>Filia</u> <u>Filia</u> <u>Geochem</u> Ferrous ko DO: Nitrate:	$\frac{Tim T}{CAS} = DT$ $\frac{Re Lising is}{Re Lising is}$
1215 1427 1536 1747 4. SAMF Method Moteric Depth t Somole Duplicd 5. CON	Removed $\frac{1}{2}$ \vec{q} , \vec{z} $F_1 \frac{1}{2}$ $F_1 \frac{1}{2}$ $F_1 \frac{1}{2}$ $F_1 \frac{1}{2}$ $F_1 \frac{1}{2}$ $F_1 \frac{1}{2}$ $F_1 \frac{1}{2}$ $F_1 \frac{1}{2}$ $F_1 \frac{1}{2}$ $F_2 \frac{1}$	(-99) -29	Temp	Spec. Cond. 787 -A11 A m ber A m ber 1787	Eh 10/6.2 -Well -Well Gf seu $WellWel$	Dissolved Oxygen 2.6 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	$\frac{1}{2} \frac{1}{2} \frac{1}$	Rechy Dry j /	<u>e</u> <u>j</u> d <u>u</u> <u>F</u> i <u>j</u> <u>j</u> <u>F</u> i <u>j</u> <u>j</u> <u>j</u> <u>F</u> i <u>j</u> <u>j</u> <u>j</u> <u>j</u> <u>F</u> i <u>j</u> <u>j</u> <u>j</u> <u>j</u>	Tint Dr Dr Dr Dr Dr Dr Dr Dr Dr Dr
1215 1427 1536 1747 4. SAMF Method Moteric Depth t Somole Duplicd 5. CON	Removed $\frac{12}{9}$, 2 $F_1 1 - \frac{5}{4}$ $F_1 1 - \frac{5}{4}$ PLING DA DA PLING DA DA DIS: PUMP/EOILE DIS: Pump/Eoil	(-99) -29	Temp	Spec. Cond. 787 -A11 A m ber A m ber 1787	Eh 10/6.2 -Well -Well Gf seu $WellWel$	Dissolved Oxygen Z.E Dry Dry and Am Dry and Am Dry Pump D4 ⁴ Pelicethed one pcothe d Cleaned red? D Ye # of Cor	$\frac{1}{2} \frac{1}{2} \frac{1}$	Rechy Dry j /	<u>e</u> <u>j</u> d <u>u</u> <u>F</u> i <u>j</u> <u>j</u> <u>F</u> i <u>j</u> <u>j</u> <u>j</u> <u>F</u> i <u>j</u> <u>j</u> <u>j</u> <u>j</u> <u>F</u> i <u>j</u> <u>j</u> <u>j</u> <u>j</u>	$\frac{1}{1} \frac{1}{1} \frac{1}$

CKENFEL	DER	GF	SON	NDWA	IER SAI	MPLING	FIELD	DATA SI	HEET
IN INTEBNAL PA BROWN CALDWI	A N D			W	ell ID:	Mw-	ι¥	_	
I. PROJ	ECT INFOR Number: 128		-	di T		Dote: 12 /	lilai		Time: 16.41
-	RT Servi			ber: <u>411</u>					
	Location: Ha			··			(oc)	L Mor	<u> </u>
_									
2. WELL			t.						
	Diometer:2	Inches	+				· · · · · · · · · · · · · · · · · · ·		
		Inches					·····		
	epth of Well:								Aomer: Historica
Depth t	o Static Water:	<u>66.65</u> te							Xomer. Braten
	o Product:			· · · · · · · · · · · · · · · · · · ·				tective Cosing	
Length	of Water Colun	nn: C.65	feet	Well Volum	e: <u>0,1</u>			nterval (trom (well = 0.167 gal/i	35): <u>Not Repair</u> ed # 4-Inch well = 0.667 pol/
	SE DATA								
	Method: Boiler	O Stainless O Dedicate		D Teflone epoted Off-Si) (21. Other <u>.)</u> 18 : D) Fleid (lieghed X	LENC Disposoble	Pump	Equipment Model(s
	als: Rope/Jubing	^d D Dedicate	ed DP		ne Ditetion Site DiField Ng Rate:	Cleaned) Disposable	2	· · · · · · · · · · · · · · · · ·
Time	Cum. Gallons Removed	pH 1	emp	Spec. Cond	Eh	Dissolved Oxygen	lurbidity	Other	Comments
	well	Sump	<u>led</u>	Dry	- 5 ₁₄₁	1_5.	pling	Mu= 4	f Raturn
	Warer	has	14	Ge GI	neunt	s of	Veyer	ative f	insect
	mut	er	Con	tent					
	t t	X	Se	1	Vote	×	X X	Ŧ	
1 5010	PLING DA				1010	<u> </u>		Ge	ochemical Analyses
	d(s): Deristation	i	ladder f	Pump 🖬 2" Si	ubmersible P	ump 🖸 4' Su	Ibmersible Pu		
								⊦en	ious Iron: <u>A 1º1</u> mg/L
Materi	ols: Pump Boile	D Stainless	ed D P	C D Teflor Prepared Off-5	18 🕅 Other: Site 🖸 Field	Cieaned D	<u>(Disposable</u>	DO	: mg/L
	als: Tubing/Rop							Nitı	ate: mg/l
	to Water at Tin e ID:M&						- /	7 :	lote: mg/l
1				-	•	# OF CON	oiners:		alinity: mg/L
Duplic	ote Sample Co		Yes X	NO ID:		-			
5. COI	MMENTS	Manina	y D.	smac al	-TO	i i k	oroten -	Well Lu	y will not
seal	well .	sittin	y y	p Frism	_cont	เพาสสาว	ts ! W		Le destroyed
Note Inclu	Mich Way	not ch as well coi	ndition	ODDI, DIESEN	CE OT NAPL	or other items	not on the M	eldiaata sheet	
h									The second secon
FORM GV	V-2 (Rev 6/8/99-	wah)					Signature	/hu	NL
							orginaraie		

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ECKENFELI	DER•	Ċ	GROU	NDWA	TER SAI	MPLING	s field	DATA S	HEET
an integnal pai B R O W N C A L D W E	N D			W	ELL ID:	MWI	<u>A</u>		
Project N	CT INFOR	32 1	ask Num	ber: \$17		Date: 12	1		Time: 1712
	<u>BJ Servic</u> ocation: <u>He</u>						•	A, Teagu	•
2. WELL									
Casing D		2 incl	nes	Type: XPV	C D Stainle	ss D Gotv. St	eel Diefion	D Other:	
Screen D)lameter:	2Incl	nes		C D Stainle	ss 🛛 Golv. St	eel Dilefion	🖲 🛛 Other:	
Total De	pth of Well:_L	<u>2.3</u> te	et	From: Sto	p of Well Ca	ing (IOC) (Top of Prot	ective Casing	Romer Historice
Depth to	Static Water:	64.88	teet	From: A To	op of Well Ca	sing (10C)	1op of Prot	ective Casing	Other
Depth to	Product:	fee	at	From: D To	op of Well Ca	sing (IOC)	D Top of Prot	tective Cosing	D Other:
Length o	of Water Colur	nn: <u>2,4</u> ;	2_ feet	Well Volum	1e:42:44			nterval (from 1 veli = 0.167 gal/	$GS): \frac{5^{2}}{4} - 6.5$
Materia Materia	lethod: Bailed s: Pump Bailed s: Rope/1ubin ll purged dry?	D Stainle D Dedic D Polyet D Dedic	ess DPV0 :oted DPi thylene D	C D lefion(repared Off-Si D Polypropyle Prepared Off-	Bà Other <u>f</u> Ite Difield C ne Difield C	Cleaned Cleaned Cleaned	ine Disposoble Ny lon	1. YS	Equipment Mod
Time	Cum. Gallons Removed	рН	temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other	Comments
1721	0.25	6.95	17.¢2	4495	-75.4	1.55			
	Well	È.	ue d	neurl	dr	a di	5 9010	411.	5 minut
	n				۲		Jan	and the second	
	Kei	herry &		g mple.	well		·		
						1		<u> </u>	
L					1	1	<u> </u>		
4. SAME	PLING DA	í							ochemical Analyses
Method	i(s): D Peristalti	c Pump 🛛	i Inertial Lif	Pump	her:	<u> </u>		mp Fer	rous Iron: <u>6.4</u> m
Moterio	ils: Pump/Baile	i Dedi	coted D f	/C D Teflor Prepared Off-	ivor yai Utther: Site Di Field	Ciedned X	Disposoble	DC	\mathcal{Q}
Moteric	Is: Tubing/) De Deci	ethylene	D Polypropyli Prepared Off	ene Diletio	n® A Other.	Nylen		rote:
	o Water at Tir	0000					`		<u> </u>
1	1D: 10: 11				,		4		ltote:r
							uniers. <u></u>	— Ali	kolinity: 774 r
	ote Sample Co		u ves y			-			
5. CON	MMENTS	N;).	ech a	on well	1 (242	fout	of lo	its-	
N	leed 1			IN EXF					
					r 	0			
Note: Includ	te comments su	ch as well	condition,	odor, presen	CE OF NAPL C	or other items	s not on the fie	eld data sheet	
							X	Y	HE.
FORM GW	-2 (Rev 6/8/99	wah)					Stanature	- d lana	+

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3. PURGE DATA 3. PURGE DATA 90 Poiler, Size:	CKENFEL	DER	0	GROU	NDWA	TER SA	MPLING	G FIELD	DATA SH	EET	
I. PROJECT INFORMATION Project Number: [2:53] Task Number: [2:7] Dote [72/[2/[2]] Project Location: [12:53] Task Number: [2:7] Perionnet: [2:4/[2]] Project Location: [12:53] Project Location: [12:53] Perionnet: [2:4/[2]] Project Location: [12:53] Project Location: [12:53] Perionnet: [2:4/[2]] Project Location: [12:53] Project Location: [12:53] Perionnet: [2:4/[2]] Z. WELL DATA Wedther: [2:4:17] Carag Dometer: [2:4:57] Inches 2. WELL DATA [10:57] Depth to Project Well Column: [10:10 of Well Cong (IOC) [10:00 Project Well Column: [10:00 Project Well Cong (IOC) [10:00 Project Well Column: [10:00 Project Well Cong (IOC) [10:00 Project Well Column: [10:00 Project Well Cong (IOC) [10:00 Project Well Column: [10:00 Project Well Cong (IOC) [10:00 Project Well Column: [10:00 Project Well Cong (IOC) [10:00 Project Well Column: [10:00 Project Well Cong (IOC) [10:00 Project Well Column: [BROWN	AND			W	ELL ID:	MU	v-12	-		
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Depth to Static Water: (d, S) teet From: © top of Weil Coung (TOC) D top of Protective Coung D other:	R 0 Y N AKB WELL ID:	CKENFEL	DER	G	ROU	NDWA	TER SAN	MPLING	FIELD	DATA SH	IEET
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2. WELL DATA Cang Diameter 2 Screen Diameter 2 Indra Depth of Well(S, 2, gf, teel From: g top of Well Cang (TOC) g top of Protective Casing (Gometer, Lessouries, Depth to Static Water (G, S), teel From: g top of Well Cang (TOC) g top of Protective Casing (Gometer, Lessouries, Depth to Note: (G, S), teel Depth to Noduct:											
Correg Diameter: 2 Inches Type: Avv Disortes	Camp Dometer: 2 Inches Type: Diver Diver Diver Screen Dometer: 2 Inches Type: Diver Diver Diver Diver Total Depth of Welk(S): 2.4 feet From: Dip of Welk Caing (DC) Dip of Protective Caing (DC) Dip of Protective Caing (DC) Dip of Protective Caing (DC) Depth to Static Water: from: Dip of Wel Caing (DC) Dip of Protective Caing (DC) Dip of Protective Caing (DC) Depth to Product: feet from: Dip of Wel Caing (DC) Dip of Protective Caing (DC) Dip of Protective Caing (DC) Length of Water Column: 1.61 teet Well Volume: Ø 72, od Screened Interval from cols. S.1C.C. NUBBERSE: Dibloder Pump (DC) Disorder Pump (DC) Disorder Pump Laulpment Modeli Materials: Water Column: Disorder Pump (DC) Disorder Pump Disorder Pump Laulpment Modeli Materials: Water Column: Disorder Disorder Pump Disorder Pump Disorder Pump Laulpment Modeli Materials: Water Column: Disorder Disorder Pump Disorder Pump Disorder Pump Laulpment Mot	Project I	Location: <u>Aet</u>	bs, NM	1			Veather:	warm	Clear	
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Note: Include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet	Note: Include comments such as well condition, odor, presence of NAPL or other items not on the lield data sheet										
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WELL ID: Multy WELL ID: Multy INFORMATION Project INFORMATION Project Number: 12/832 Task Number: \$17 Date: 12/6/¢1 Time: 18/7 Client: BJ Scruttes Personnet: Trugter, L. Martild Project Location: Helder, NM Weather: Call Darth Caing Diameter: 2 Inches 2. WELL DATA Caing Diameter: 2 Inches Colspan="2">On Weil: Colspan="2">Caing Diameter: 2 Inches VPC Distailes Diavise D	<u>.u</u> l
1. PROJECT INFORMATION Project Number: 12.832 Task Number: 17 Date: 12/6/4 Time: 18/7 Client: RJ Scrutces Personnet: Tarque, L, Merril A Project Location: Helds, NM Weather: Cell Durch. 2. WELL DATA Screen Diameter: 2 Inches Screen Diameter: 2 Inches Type: 0xPVC Stainless Galv Steel Tetlon® Other:	<u>.u</u> l
Project Number: 12.832 Task Number: 12.7 Date: 12/6/41 Time: 18/7 Client: BJScrvices Personnet: Targue, L. Marril, A Project Location: Hatte, NM Weather: Cell Dark 2. WELL DATA Casing Diameter: 2 inches Type: 20PVC D Stainless D Galv Steel D Teffon® D Other:	<u>.ul</u>
Client: BJ Scruites Personnet: Truck, L, Mary J, A Project Location: Helde, NM Weather: Durt: 2. WELL DATA Weather: Durt: Durt: 2. WELL DATA Inches Type: Dr/PVC Stainless D Galv. Steel D enter: Screen Diameter: Tinches Type: Dr/PVC Stainless D Galv. Steel D enter:	<u>.ul</u>
Project Location: Hebs: NM Weather: Casing Diameter: Dent: 2. WELL DATA Casing Diameter: 2 inches Type: Drive: Dent:	5
2. WELL DATA Casing Diameter: 2 inches Type: \$\$\from\$ PVC Distainless D Galv Steel Diefion® D Other:	5
Screen Diameter: 2 Inches Type: QCPVC Distainless D Galv. Steel Definition D Other: Total Depth of Well: 2.7 teet From: GLop of Well Casing (TOC) D top of Protective Casing D Other: D Other: Depth to Static Water: 2.5 teet From: D Top of Well Casing (TOC) D top of Protective Casing D Other: Depth to Product:	5
Total Depth of Well: <u>69, 2</u> teet From: <u>9</u> Top of Well Casing (TOC) Dop of Protective Casing <u>1000000000000000000000000000000000000</u>	5
Total Depth of Well: <u>69, 2</u> teet From: <u>9.</u> Top of Well Casing (TOC) Dop of Protective Casing <u>100 Other: <u>Historic</u> Depth to Static Water: <u>62, 5</u> teet From: D Top of Well Casing (TOC) D Top of Protective Casing D Other: Depth to Static Water: <u>62, 5</u> teet From: D Top of Well Casing (TOC) D Top of Protective Casing D Other: Depth to Product:</u>	5
Depth to Product:	
Length of Water Column: 6.907 teet Well Volume: 1.07 gol Screened Interval (from GS): 54.5-69. Note: 2-inch well = 0.167 gol/ft 4-inch well = 0.67 3. PURGE DATA 1 Purge Method: 0 Centrifugal Pump 0 Proge Method: 0 Stainless PVC Dedicated 0 Other: 1 Proge Method: 0 Stainless PVC Dedicated 0 Prepared Off-Site 0 Proge Method: 0 Dedicated 0 Proge Method: 0 Dedicated 0 Dedicated 0 Proge Method: 0 Dedicated 0 Proge Method: 0 Dedicated 0 Proge Method: 0 Dedicated 0	
Note: 2-inch weil = 0.167 gal/ft 4-inch weil = 0.67 3. PURGE DATA 1 Baller, Size:	
3. PURGE DATA 1 0 Bladder Pump 0 2° Submersible Pump 0 4° Submersible Pump Purge Method: 0 Centrifugal Pump 0 Peristattic Pump 0 Inertial Lift Pump 0 Other:	567 gai/i
Baller, Size: Bladder Pump 2* Submersible Pump 04* Submersible Pump Purge Method: Centrifugal Pump Peristattic Pump Inertial Lift Pump Other:	
Materials: Pump/Baller D Stainless D PVC D Tetion® D Other: $\frac{Palyetheleve}{}{Palyetheleve} = \frac{Palyetheleve}{}{Palyetheleve} = Palyethele$	
	odel(s)
Materials: If Ope/Tubing Dedicated Delepared Off-Site Deled Cleaned Disposable 2	
Was well burged dry? D. Yes Th. No	
Cum Golions Spec. Dissolved Other	
Removed Cond. Oxygen Oxygen	15
1807 20,25 7.39 17.18 1819 58.1 1.21 Keinebed 3 Aprilee	
First the have full referer; 3 buller has to 1/2 recovery	
Devide to Sturt simpling after allowing 5 minute sectorys	
& collect one symple container	
	*
4. SAMPLING DATA Geochemical Analyse	
	-
Method(s): D'Bailer, Size: 1 D Bladder Pump D 2° Submersible Pump D 4° Submersible Pump Ferrous Iron: n	mg/L
Materials: Pump/Bailer D Stainless D PVC D Teflan® B Other: <u>Privet Lefen</u> D Dedicated D Prepared Ott-Site D Field Cleaned & Disposable DO:	_ mg/l
Materials: Tubing/Rope D Polyethylene D Polypropylene D Tetion® OXOther <u>Ny Dr.</u> Nitrate:	mali
	_
Depth to Water at Time of Sampling: UNM Field Filtered? Yes No Suitate: Sample ID: Multit Sample Time: 1807	mg/l
Duplicate Sample Collected? D Yes X No ID:	mg/l
5. COMMENTS	
Note: Include comments such as well condition, odor, presence of NAPL or other items not on the tield data sheet	
FORM GW-2 (Rev 6/8/99 · wah) Signature	

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GROUNDWATER SAMPLING FIELD DATA SHEET GROUNDWATER SAMPLING FIELD DATA SHEET GROUNDWATER SAMPLING FIELD DATA SHEET WELL ID:										
		MATIO	N							
Second NUMATER SAMPLING FIELD DATA SHEET SAMPLING FIELD DATA SHEET WEILINT: WEILINT: WEILINT: WEILINT: WEILINT: WEILINT: WEILINT: Note: Note:										
		it								
Project I	ocation H	otte	NM							-
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		6								
				<i>iii</i>		······································			m. 0m /4 . c +	er 1
							······			
CRUTH AT ALL CRUTH AT LEX SAMPLING FIELD DATA SHEET WITH AT ALL WITH AT ALL										
	\sim	D Polyett	nylene 🛛	Polypropyler	ne 🛛 leflor	n® D Other		1. <u>}</u>	J-60C	. 1
Waswe	ll purged dry?							د ، ع	·····	
Time		рн	lemp	Spec.		Dissolved	<u></u>	·	Com	nents
B R 0 K N LKB WELL ID: MW-15 CALDW BLL I.PROJECT INFORMATION Project Number: Task Number: Project Number: Task Number: Project Number: Task Number: Project Contine: Action Weather: Weather: Project Contine: Action Weather: Weather: Comp Dometer: Increase Comp Dometer: Increase Comp Dometer: Increase Toto Depth of Weath C.T.C. Teer From: Depth to Monter: Lead Weat Comp (DC) Date of Potective Comp (DC) Depth to Monter: Coll Teer of Potective: Comp (DC) Date of Potective: Comp (DC) Depth to Monter: Coll Teer of Potective: Comp (DC) Date of Potective: Comp (DC) Depth to Monter: Coll Teer of Potective: Comp (DC) Date of Potective: Comp (DC) Iong th ot Water Column: S.S. teer Wel Volume: C. 92. got Screened Interval (Increase) Screened Interval (Increase) Date of Potective: Comp (DC) Jender Steering D Potective: Depth to Monter Column: Screened Interval (Increase) Screened Interval (Increase) Screened Interval (Increase)										
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	Scim	ple	CVITY	I JET_	<u> </u>		ļ	 		
				ļ	ļ		1			
	1									
4. SAM	PLING DA	TA						Ge	ochemical And	lyses
Methor	25-Boiler, Sl	ze:	Bladder F	Pump 2 2 Si	ubmersible F	Pump 🖸 4° Su	ibmersible Pu	mp Lor		
	Peristalti	c Pump D	inertial Litt		ner: 68.107.∩ther	RI. pt	heles	ren		-
Materia	sts: Pump/Baile									m(
Moteric	als: Tubing/Rep	Dedk	ihylene i ated D	Polypropyle Prepared Off	one ⊡1etic -Site □fie	on® (2: Other: Id Cleaned	Ny /On Disposable	Niti	ote:	m(
									fote:	mo
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						-				
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<u></u>	el co	× f								
		1								
Note Inclui	je comments su	ch as well d	ondition,	odor, present	CEOINAPL	or other items	not on the tie	eia dala sheet		
							A	L	$\frac{1}{2}$	
FORM GW	-2 (Rev 6/8/99	wah)					Signature			

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CKENFELI	DER•	G	ROU	NDWA	IER SA	MPLING	FIELD	DATA SH	EET
N INTEBRAL PA	AT OF			\\/		<i>D</i> 1.1	. 4		
ROWN	AND			VV		Ow-		-	
ALDWE	LL								
. PROJ	CT INFOR	MATION	N				1		12.0.6
Project N	lumber: 12	<u>832</u> 105	sk Numb	per: <u>\$1</u>	Z 1	Date: 12	16/4/	Ti	me: 1345
Client:		VILES			1	Personnel:	Teague	, L, M	
Project L	ocation:	3665 1	NM		-	Weather:	Saring ;	We one	
2. WELL									
Casing [Diameter:	inche:	5		C D Stainle	ss D Gatv. St	eel Dilefion@	D Other:	
Screen [Diameter:	1_ Inches	5	lype: DPV	C D Stainle	ess D Golv. St	eel Dieflond	0 D Other:	
lotal De	pth of Well: 6	<u>SD</u> teet	1	From: D to	p of Well Ca	sing (iOC)	D Top of Prote	ective Casing	Other: Dr.
	Static Water:			From: D 1o	p of Well Ca	sing (10C)	lop of Prote	ective Casing D	0 Other
Depth te	Product:	feet		From: D lo	p of Well Co	using (TOC)	Top of Prote	ective Casing C) Other:
length o	ot Water Colum	חר:	teel	Well Volum	e:			terval (from G eli = 0.167 gal/ft	
3 PURG	E DATA							·	
		Size:	D Perist	ar Pump (1) 2 tattic Pump (1)	* Submersible	Pump D Othe	Soomersible F	Pump	Equipment Model(s
	ls: Pump/Bailer	D Stainless		Teflone	Other_			_	
				epaied Off-Si I Polypropylei				1	<u> </u>
Materia	is: Rope/Iubing		led QP	repared Off-	Site DiFletd	Cleaned C	Disposable	2	
Was we	l purged dry?	D Yes I	D No	Pumpi	ng Rate:	pc	ol/min	3	
Time	Cum. Galions Removed	рн	lemp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other.	Comments
		1							
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		·					/		
	/			h	<i>⊢_/</i>	<u> </u>	4		
		74							
4 SAM	PLING DAT	A			1			Geo	chemical Analyses
Metho	D Boiler, Siz	e: O (Jomersjole Pur		s /
Mento	u(s). D Peristattic							Felic	bus lion: mg/L
Materia	ols: Pump/Baile			C D Teflor Prepared Off-) Disposoble	DO:	
Materi	als: Tubing/Rop	e D Polyett	nyiene oted D	D Polypropyli Repored Off	ene Diletio I-Site DiFiel	on® 🛛 Other Id Cleaned	Disposable	Nitro	nte: X mg/
Depth	to Water at Tim	ne of Som	pling:	\sum	Field Filte	red? D Yes	D No	Sulto	
	e ID:						loiners:	A.11	
Duplic	ate Sample Co	iliected? c) Yes C	No ID:_		-		Aiko	whity: mg/L
L			110						
	VIIVIEINIS	well	-Dm	<u>- ^</u>	loist -	- Silty	- Sand	gt ber	tim based
C.V.1	ingo	Styc	t is	1 int	ertai	e_pin	be		
	<u> </u>					i			
Ninta Ind	do commonte ····	-h ar# -	andition	ndor proces	CO OLNIADI	Or other the	not on the P-	a data theat	
Note: Inclu	de comments suc	ch as well c	ondition,	odor, presen	CE OF NAPL	oi othei item	s not on the tie	ld dota sheet	·

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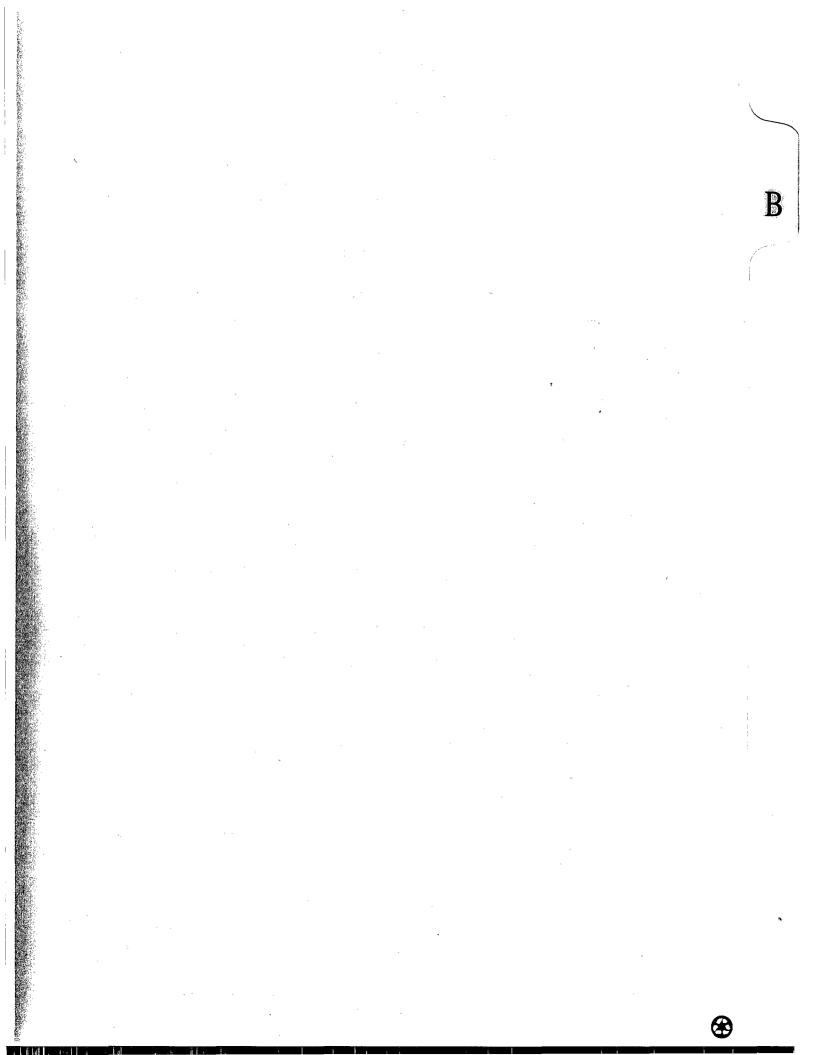
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APPENDIX B

THE R. LEWIS CO.

Laboratory Analytical Report for Groundwater Samples

P·Wp/BJSERV/12832/0871.doc "Use or disclosure of data contained on this sheet is subject to the restriction specified at the beginning of this document."



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HOUSTON LABORATORY 8080 INTERCHANGE DRIVE HOUSTON. TEXAS 77054 (713) 660-0901

Brown & Caldwell

	Certific	cate of Analy 011202	ysis Number: 267		
Report To:			Project Name:	BJ Service, Hobbs, NM #12832	
Brown & Caldwe	II		<u>Site:</u>	Houston TX.	
Rick Rexroad		1	Site Address:		
1415 Louisiana					
Suite 2509 Houston			PO Number:		
ТХ			State:	New Mexico	
77002-			State Cert. No.:		
ph: (713) 759-09	99 tax: (713) 308-3886		Date Reported:	12/24/01	

This Report Contains A Total Of 30 Pages

Excluding This Page

And

Chain Of Custody

12/24/01



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE

> HOUSTON, TX 77054 (713) 660-0901

Case Narrative for:

Brown & Caldwell

Certificate of Analysis Number:

01120267

Re	eport To:			Project Name:	BJ Service, Hobbs, NM #12832	-
	Brown & Caldwell			Site:	Houston TX.	
1	Rick Rexroad			Site Address:		
	1415 Louisiana					
:	Suite 2509		1			
:	Houston			PO Number:		
•	тх			State:	New Mexico	
1	77002-			State Cert. No.:		
	ph: (713) 759-0999	fax: (713) 308-3886		Date Reported:	12/24/01	

A plastic unpreserved container and a set of unpreserved vials were received for your sample ID *MW13* (SPL ID: 01120267-05). Also a set of unpreserved vials were received for both sample ID's *MW3 and MW4* (SPL ID's: 01120267-6 and 01120267-07). No analyses were requested on the chain of custody for these containers. Per your request, via phone conversation, on December 12, 2001, no analyses were performed on the additional containers received. SPL analyzed the samples according to the analyses requested on the chain of custody.

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.

mala Ula A Sonia West Senior/Project Manager

12/24/01



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TX 77054 (713) 660-0901

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12/24/01

State Cert. No .:

Date Reported:

Brown & Caldwell Certificate of Analysis Number: 01120267 Report To: **Brown & Caldwell** Project Name: BJ Service, Hobbs, NM #12832 **Rick Rexroad** Site: Houston TX. 1415 Louisiana Site Address: Suite 2509 Houston ΤХ PO Number: 77002-**New Mexico** State:

Fax To:

Brown & Caldwell Bick Bexroad

ph: (713) 759-0999

Rick Rexroad tax : (713) 308-3886

fax: (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
W-5	01120267-01	Water	12/6/01 10:45:00 AM	12/7/01 1:00:00 PM	100213	
MW-7	01120267-02	Water	12/6/01 12:15:00 PM	12/7/01 1:00:00 PM	100213	
MW-15	01120267-03	Water	12/6/01 1:10:00 PM	12/7/01 1:00:00 PM	100213	
W-12D	01120267-04	Water	12/6/01 2:45:00 PM	12/7/01 1:00:00 PM	100213	
W-13	01120267-05	Water	12/6/01 3:15:00 PM	12/7/01 1:00:00 PM	100213	
MW-13	01120267-05	Water	12/6/01 3:15:00 PM	12/7/01 1:00:00 PM	100214	
W-3	01120267-06	Water	12/6/01 3:45:00 PM	12/7/01 1:00:00 PM	100213	V
W-3	01120267-06	Water	12/6/01 3:45:00 PM	12/7/01 1:00:00 PM	100214	
MW-4	01120267-07	Water	12/6/01 4:50:00 PM	12/7/01 1:00:00 PM	100213	V
M4W-4	01120267-07	Water	12/6/01 4:50:00 PM	12/7/01 1:00:00 PM	100214	
W-10	01120267-0E	Water	12/6/01 5:00:00 PM	12/7/01 1:00:00 PM	100214	
W-11A	01120267-09	Water	12/6/01 5:20:00 PM	12/7/01 1:00:00 PM	100214	
MW-14	01120267-10	Water	12/6/01 6:07:00 PM	12/7/01 1:00:00 PM	100214	
ip Blank 1	01120267-11	Water	12/6/01	12/7/01 1:00:00 PM	100214	
ip Blank 2	01120267-12	Water	12/6/01	12/7/01 1:00:00 PM	100214	
Trip Blank 3	01120267-13	Water	12/6/01	12/7/01 1:00:00 PM	100214	1

eundio Mps aia West Senior Project Manager

12/24/01

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



HOUSTON LABORATORY

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8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Client Sample ID: M	W-5			Coll	ected:	12/6/01 10:45:00	SPL Sample ID): 0112	0267-01
				Site	Но	uston TX.			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE OR	GANICS				MCL	SW8015B	Units: mg	g/L	
Diesel Range Organic	:5	0.49	_	0.2		1	12/14/01 10:23	AR	95590
Surr: n-Pentacosan	ie	70.0	%	18-120		1	12/14/01 10:23	AR	95590
Prep Method	Prep Date			Prep Initials					
SW3510B	12/11/2001 1	2:08		KL					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: mg	g/L	
Gasoline Range Orga	nics	ND		0.1		1	12/18/01 2:04	D_R	95248
Surr: 1,4-Difluorobe	enzene	99.3	%	74-121		1	12/18/01 2:04	D_R	95248
Surr: 4-Bromofluoro	obenzene	97.0	%	55-150		1	12/18/01 2:04	D_R	95248
HEADSPACE GAS A	NALYSIS				MCL	RSK147	Units: m	g/L	
Ethane		ND		0.0025		1	12/18/01 17:25	ER	95416
Ethylene		ND		0.0032		1	12/18/01 17:25	ER	95416
Methane		ND		0.0012		1	12/18/01 17:25	ER	95416
NITROGEN, NITRAT	E (AS N)				MCL	E300	Units: m	g/L	
Nitrogen, Nitrate (As I	N)	2.38		0.1		1	12/08/01 8:00	ES	95175
PURGEABLE AROM	ATICS				MCL	SW8021B	Units: ug	/L	_
Benzene		ND		1		1	12/18/01 2:49	D_R	95243
Ethylbenzene		ND		7		1	12/18/01 2:49	D_R	95243
Toluene		ND		1		1	12/18/01 2:49	D_R	95243
Xylenes. Total		ND		1		1	12/18/01 2:49	D_R	95243
Surr: 4-Bromofluoro	obenzene	97.1	%	48-156		1	12/18/01 2:49	D_R	95243
Surr: 1,4-Difluorobe	enzene	98.4	%	72-137		1	12/18/01 2:49	D_R	952434
SULFATE					MCL	E300	Units: m	g/L	
Sultate		120		4		20	12/08/01 8:00	ES	952008

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable OC 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-7 Collected: 12/6/01 12:15:00 SPL Sample ID: 01120267-02 Site: Houston TX. Analyses/Method Result **Rep.Limit** Dil. Factor QUAL Date Analyzed Analyst Seq. # **DIESEL RANGE ORGANICS** MCL SW8015B Units: mg/L 1.3 0.2 **Diesel Range Organics** 12/14/01 11:01 AR 955904 1 Surr: n-Pentacosane 162 MI % 18-120 1 12/14/01 11:01 AR 955904 Prep Method Prep Date Prep Initials SW3510B 12/11/2001 12:08 KL **GASOLINE RANGE ORGANICS** MCL SW8015B Units: mg/L **Gasoline Range Organics** ND 0.1 12/18/01 3:01 D_R 952490 1 Surr: 1,4-Difluorobenzene 99.0 74-121 1 12/18/01 3:01 D R 952490 % 55-150 Surr: 4-Bromofluorobenzene 100 12/18/01 3:01 D_R % 1 952490 ____ **PURGEABLE AROMATICS** MCL SW8021B Units: ug/L Benzene ND 952435 1 12/18/01 3:19 D_R 1 Ethylbenzene ND 12/18/01 3:19 D_R 1 1 952435 Toluene ND 1 12/18/01 3:19 D_R 952435 1 Xylenes,Total ND 12/18/01 3:19 D_R 952435 1 1 Surr: 4-Bromofluorobenzene 98.8 48-156 % 1 12/18/01 3:19 D_R 952435 Surr: 1,4-Difluorobenzene 99.5 % 72-137 1 12/18/01 3:19 D_R 952435

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-15		Col	lected:	12/6/01 1:	10:00	SPL Sample I	D : 0112	0267-03
		Site	: Ho	uston TX.				
Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E	325.3	Units: m	g/L	
Chloride	215	5		5		12/19/01 14:30	CV	955557

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

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HOUSTON, TX 77054

(713) 660-0901

Client Sample ID: MW	/-12D			Colle	ected:	12/6/01 2:45:00	SPL Sample ID	: 0112	0267-04
				Site	Но	uston TX.			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORG	ANICS				MCL	SW8015B	Units: mg	/L	
Diesel Range Organics		ND		0.2		1	12/14/01 18:58	AR	95594
Surr: n-Pentacosane		83.2	%	18-120		1	12/14/01 18:58	AR	95594
Prep Method	Prep Date			Prep Initials					
SW3510B	12/11/2001 1	2:08		KL					
GASOLINE RANGE C	RGANICS				MCL	SW8015B	Units: mg	/L	
Gasoline Range Organ	ics	ND	-	0.1		1	12/18/01 5:01	D_R	95249
Surr: 1,4-Difluorober	izene	99.3	%	74-121		1	12/18/01 5:01	D_R	95249
Surr: 4-Bromofluorot	oenzene	99.0	%	55-150		1	12/18/01 5:01	D_R	95249
HEADSPACE GAS A	NALYSIS				MCL	RSK147	Units: mg	/L	
Ethane		ND		0.0025		1	12/18/01 18:00	ER	95416
Ethylene		ND		0.0032		1	12/18/01 18:00	ER	95416
Methane		ND		0.0012		1	12/18/01 18:00	ER	95416
NITROGEN, NITRATE	(AS N)				MCL	E300	Units: mg	/L	
Nitrogen, Nitrate (As N)	ND		0.1		1	12/08/01 8:00	ES	95175
PURGEABLE AROMA	ATICS				MCL	SW8021B	Units: ug	/L	
Benzene		ND		1		1	12/18/01 5:16	D_R	95243
Ethylbenzene		ND		1		1	12/18/01 5:16	D_R	95243
Toluene		ND		1		1	12/18/01 5:16	D_R	95243
Xylenes.1 otal		ND		1		1	12/18/01 5:16	D_R	95243
Surr: 4-Bromofluorot	penzene	98.9	%	48-156		1	12/18/01 5:16	D_R	95243
Surr: 1.4-Difluorober	izene	99.7	%	72-137		1	12/18/01 5:16	D_R	95243
SULFATE					MCL	E300	Units: mg	٧L	
Sultate		200		4		20	12/08/01 8:00	ES	95201

Qualifiers:

11121

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	IW-13			Coll	ected:	12/6/01 3:15:00	SPL Sample II	D : 0112	0267-05
				Site	Но	uston TX.			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE OR	GANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organi	CS	ND		0.2	····	1	12/14/01 19:36	AR	95590
Surr: n-Pentacosa	ne	37.8	%	18-120		1	12/14/01 19:36	AR	95590
Prep Method	Prep Date			Prep Initials					
SW3510B	12/11/2001	12:08		KL					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Orga	anics	ND		0.1		1	12/18/01 5:04	D_R	95249
Surr: 1,4-Difluorob	enzene	99.7	%	74-121		1	12/18/01 5:04	D_R	95249
Surr: 4-Bromofluor	obenzene	99.0	%	55-150		1	12/18/01 5:04	D_R	95249
PURGEABLE ARON	MATICS		-		MCL	SW8021B	Units: uç	y/L	
Benzene		ND		1		1	12/18/01 5:46	D_R	95244
Ethylbenzene		ND		1		1	12/18/01 5:46	D_R	95244
Toluene		ND		1		1	12/18/01 5:46	D_R	95244
Xylenes, Total		ND		1	· · • • • • •	1	12/18/01 5:46	D_R	95244
Surr: 4-Bromofluor	obenzene	97.3	%	48-156		1	12/18/01 5:46	D_R	95244
Surr: 1,4-Difluorob	enzene	98.0	%	72-137		1	12/18/01 5:46	D_R	95244

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	N-3			Coll	ected:	12/6/01 3:45:00	SPL Sample II	D: 0112	0267-06
				Site	: Hoi	uston TX.			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE OR	GANICS			······································	MCL	SW8015B	Units: m	g/L	
Diesel Range Organic	5	ND		0.2		1	12/14/01 20:14	AR	95590
Surr: n-Pentacosan	e	85.4	%	18-120		1	12/14/01 20:14	AR	95590
Prep Method	Prep Date			Prep Initials					
SW3510B	12/11/2001 1	2:08		KL					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Orga	nics	ŃD		0.1		1	12/18/01 6:01	D_R	95249
Surr: 1,4-Difluorobe	enzene	99.0	%	74-121		1	12/18/01 6:01	D_R	95249
Surr: 4-Bromofluoro	obenzene	97.7	%	55-150		1	12/18/01 6:01	D_R	95249
PURGEABLE AROM	ATICS				MCL	SW8021B	Units: ug	⊋∕L	
Benzene		ND		1		1	12/18/01 6:15	D_R	95244
Ethylbenzene		ND		1		1	12/18/01 6:15	D_R	95244
Toluene		ND		1		1	12/18/01 6:15	D_R	95244
Xylenes,Total		ND		1		1	12/18/01 6:15	D_R	95244
Surr: 4-Bromofluoro	benzene	97.3	%	48-156		1	12/18/01 6:15	D_FI	95244
Surr: 1,4-Difluorobe	nzene	97.0	%	72-137		1	12/18/01 6:15	D_R	95244

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

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8880 INTERCHANGE DRIVE

HOUSTON, TX 77054

(713) 660-0901

Client Sample ID: MW	-4			Colle	cted:	12/6/01 4:50:00	SPL Sample II	D: 0112	0267-07
				Site:	Но	uston TX.			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORG	ANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organics		0.6		0.2		1	12/14/01 20:51	AR	955909
Surr: n-Pentacosane	······································	63.8	%	18-120		1	12/14/01 20:51	AR	955909
Prep Method	Prep Date			Prep Initials					
SW3510B	12/11/2001	12:08		KL					
GASOLINE RANGE O	RGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Organi	CS	ND		1		10	12/18/01 6:04	D_R	952494
Surr: 1,4-Difluoroben	zene	106	%	74-121		10	12/18/01 6:04	D_R	952494
Surr: 4-Bromofluorob	enzene	101	%	55-150		10	12/18/01 6:04	D_R	952494
PURGEABLE AROMA	TICS				MCL	SW8021B	Units: u	3/L	
Benzene		ND		1		1	12/18/01 16:53	D_R	954173
Ethylbenzene		ND	~	1		1	12/18/01 16:53	D_R	954173
Toluene		ND		1		1	12/18/01 16:53	D_R	954173
Xylenes,Total		ND		1		1	12/18/01 16:53	D_R	954173
Surr: 4-Bromofluorob	enzene	77.3	%	48-156		1	12/18/01 16:53	D_R	954173
Surr: 1,4-Difluoroben	zene	92.6	%	72-137		1	12/18/01 16:53	D_R	954173

Qualitiers:

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 POL

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

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HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Client Sample ID: MW-10			Col	lected:	12/6/01 5:00:00	SPL Sample I	D : 0 ⁻	1120267-08
			Site	e: Hoi	uston TX.			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUA	L Date Analyzed	Analy	st Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8015E	Units: m	g/L	
Gasoline Range Organics	2.2		0.5		5	12/19/01 13:03	D_R	956076
Surr: 1,4-Difluorobenzene	122MI	%	74-121		5 *	12/19/01 13:03	D_R	956076
Surr: 4-Bromofluorobenzene	91.2	%	55-150		5	12/19/01 13:03	D_R	956076
HEADSPACE GAS ANALYSIS	· · · · · · · · · · · · · · · · · · ·			MCL	RSK147	' Units: m	g/L	
Ethane	ND		0.025		10	12/18/01 18:35	ER	954166
Ethylene	ND		0.032		10	12/18/01 18:35	ER	954166
Methane	0.53		0.012		10	12/18/01 18:35	ER	954166
PURGEABLE AROMATICS		-	····	MCL	SW8021E	Units: u	g/L	
Benzene	78		5		5	12/19/01 13:30	D_R	955232
Ethylbenzene	32		5		5	12/19/01 13:30	D_R	955232
Toluene	460		5		5	12/19/01 13:30	D_R	955232
Xylenes,Total	239		5	•••••	5	12/19/01 13:30	D_R	955232
Surr: 4-Bromofluorobenzene	90.4	%	48-156		5	12/19/01 13:30	D_R	955232
Surr: 1,4-Difluorobenzene	105	%	72-137		5	12/19/01 13:30	D_R	955232

Qualifiers:

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- 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 POL

>MCL - Result Over Maximum Contamination Limit(MCL)

- D Surrogate Recovery Unreportable due to Dilution
- MI Matrix Interference



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HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Client Sample ID: M	W-11A			Colle	ected:	12/6/01 5:20:00	SPL Sample II	D: 0112	0267-09
				Site	Ho	uston TX.			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE OR	GANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organic	05	1		0.2		2	12/14/01 20:14	AR	95589
Surr: n-Pentacosar	Je	57.6	%	55-155		2	12/14/01 20:14	AR	95589
Prep Method	Prep Date			Prep Initials					
SW3510B	12/11/2001 1	2:08		KL					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Orga	nics	ND		0.1		1	12/19/01 13:00	D_R	95607
Surr: 1,4-Difluorobe	enzene	104	%	74-121		1	12/19/01 13:00	D_R	95607
Surr: 4-Bromofluore	obenzene	90.0	%	55-150		1	12/19/01 13:00	D_R	95607
HEADSPACE GAS A	ANALYSIS				MCL	RSK147	Units: m	g/L	
Ethane	_	ND		0.0025		1	12/18/01 18:47	ER	95416
Ethylene		ND		0.0032		1	12/18/01 18:47	ER	95416
Methane		0.0041		0.0012		1	12/18/01 18:47	ER	95416
NITROGEN, NITRAT	E (AS N)				MCL	E300	Units: m	g/L	
Nitrogen, Nitrate (As f	N)	ND		0.1		1	12/08/01 8:00	ES	95175
PURGEABLE AROM	ATICS		•		MCL	SW8021B	Units: u	g/L	
Benzene		ND		1		1	12/19/01 13:04	D_R	95523
Ethylbenzene		ND		1		1	12/19/01 13:04	D_R	95523
7 oluen t		ND		1		1	12/19/01 13:04	D_R	95523
Xylenes.Total		ND		11		1	12/19/01 13:04		95523
Surr: 4-Bromotiuoro	obenzene	73.8	%	48-156		1	12/19/01 13:04	D_R	95523
Surr: 1,4-Difluorobe	enzene	80.9	%	72-137		1	12/19/01 13:04	D_R	95523
SULFATE					MCL	E300	Units: m	g/L	
Sultate		240		4		20	12/08/01 8:00	ES	95201

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-14		Col	lected:	12/6/01 6:07	:00	SPL Sample II	D: 0112	0267-10
		Site	e: Ho	uston TX.				
Analyses/Method	Result	Rep.Limit		Dil. Factor C	JUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E3	25.3	Units: m	g/L	
Chloride	276	5		5		12/19/01 14:30	CV	955560

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 POL

>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 1			Col	ected:	12/6/01		SPL Sample II	D: 0112	0267-11
			Site	: Hoi	uston TX.				
Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8	015B	Units: m	g/L	
Gasoline Range Organics	ND		0.1		1		12/18/01 2:02	D_R	952488
Surr: 1,4-Difluorobenzene	99.3	%	74-121		1		12/18/01 2:02	D_R	952488
Surr: 4-Bromofluorobenzene	97.7	%	55-150		1		12/18/01 2:02	D_R	952488
PURGEABLE AROMATICS				MCL	SW8	021B	Units: ug	/L	
Benzene	ND		1		1		12/18/01 2:20	D_R	952433
Ethylbenzene	ND		1		1		12/18/01 2:20	D_R	952433
Toluene	ND		1		1		12/18/01 2:20	D_R	952433
Xylenes,Total	ND		1		1		12/18/01 2:20	D_R	952433
Surr: 4-Bromofluorobenzene	97.9	%	48-156		1		12/18/01 2:20	D_R	952433
Surr: 1,4-Difluorobenzene	98.7	%	72-137		1		12/18/01 2:20	D_R	952433

Qualifiers:

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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 POL

>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 2			Col	lected:	12/6/01	SPL Sample I	D : 0112	0267-12
			Site	: Hoi	uston TX.			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	. Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Organics	ND		0.1		1	12/19/01 12:01	D_R	956070
Surr: 1,4-Difluorobenzene	104	%	74-121	~-	1	12/19/01 12:01	D_R	956070
Surr: 4-Bromofluorobenzene	94.3	%	55-150		1	12/19/01 12:01	D_R	956070
PURGEABLE AROMATICS				MCL	SW8021B	Units: u	g/L	
Benzene	ND		1		1	12/19/01 12:13	D_R	955229
Ethylbenzene	ND		1		1	12/19/01 12:13	D_R	955229
Toluene	ND		1.		1	12/19/01 12:13	D_R	955229
Xylenes,Total	ND		1		1	12/19/01 12:13	D_R	955229
Surr: 4-Bromofluorobenzene	71.9	%	48-156		1	12/19/01 12:13	D_R	955229
Surr: 1,4-Difluorobenzene	81.6	%	72-137		1	12/19/01 12:13	D_R	955229

Qualifiers:

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- 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 POL

>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

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(713) 660-0901

Client Sample ID: Trip Blank 3			Col	lected:	12/6/01	SPL Sample II) : 011	20267-13
			Site	e: Hoi	uston TX.			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS		n		MCL	SW8015B	Units: m	g/L	
Gasoline Range Organics	ND		0.1		1	12/21/01 13:01	DL	958960
Surr: 1,4-Difluorobenzene	104	%	74-121		1	12/21/01 13:01	DL	958960
Surr: 4-Bromofluorobenzene	95.0	%	55-150		1	12/21/01 13:01	DL	958960
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug	۲L	
Benzene	ND		1		1	12/21/01 13:13	DL	958887
Ethylbenzene	ND		1		1	12/21/01 13:13	DL	958887
Toluene	ND		1		1	12/21/01 13:13	DL	958887
Xylenes,Total	ND		1		1	12/21/01 13:13	DL	958887
Surr: 4-Bromofluorobenzene	72.3	%	48-156		1	12/21/01 13:13	DL	958887
Surr: 1,4-Difluorobenzene	84.7	%	72-137		1	12/21/01 13:13	DL	958887

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

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12/24/01 12:08:54 PM



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

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Brown & Caldwell

BJ Service, Hobbs, NM #12832

				BJ Se	rvice, Hobbs,	NM #128	32						
nalysis: ethod:		esel Range Organi /8015B	ics						«Order: Batch ID:	0112 1676	20267 50A		
	<u> </u>	Meth	od Blank		<u>-</u>	Samp	oles in Analy	tical Batc	h:				
unID:	HP	V_011214C-955894	Units:	mg/L		l ah G	Sample ID		Client Sar	nnie ID			
halysis Date	. 12	14/2001 11:01	Analyst:	-			0267-01B		MW-5				
eparation D		11/2001 12:08	Prep By:		d SW3510B		0267-02B		MW-7				
	-		F - J				0267-04B		MW-12D				
		Analida		Desute Des	1 : 14	01120	0267-05B		MW-13				
) T	Diesel Ban	Analyte ge Organics		Result Rep	0.10	01120	0267-06B		MW-3				
_ 4		entacosane			8-120	01120	0267-07B		MW-4				
						01120	0267-09B		MW-11A				
<u> </u>		<u> </u>		Labora	tory Control	Sample (L	CS)			<u> </u>			
		RunID:		HP_V_011214C	-955892 Ur	nits: m	ng/L						
l i		Analysi	s Date:	12/14/2001 10): 2 3 Ar	nalyst: A	R						
		Prepara	ation Date:	12/11/2001 12	2:08 Pr	ер Ву: К	L Method	SW3510E	5				
		, <u> </u>	Analy	1 c	Spike Added	Result	Percent Recovery	Lower Limit	Upper				
_		Diesel Ba	nge Organic	<u>د</u>	2.5	2.4	98	21	175				
		L	<u> </u>	<u> </u>									
			Matrix	Spike (MS) / N	Matrix Spike I	Duplicate	(MSD)			<u> </u>			
		Samp	le Spiked	01120267-0	1								
		Runi£):	HP_V_011214	IC-955897 1	Jnits	mg/L						
		Analy	sis Date:	12/14/2001		2	AR						
		Prepa	ration Date:	12/11/2001	12:08 F	Prep By:	KL Metho	d SW3510)E				
	Analyte		Sample	MS M	S Result	MS %	MSD MS	D Result	MSD %	APD	RPDIL	ow	High
			Result	Spike Added	; R		Spike Added		Recovery		Limit	imit	Limi
esel Range	Organics		N	D 5	4.5	80.2	5	4.6	82.2	2.43	39	13	13
1													
3													
1													
ualifiers:			at the Deve			Motiv 1-	todocono						
	NL	/U - Not Detected	at the Hepot	-		-	terterence		:1. Alam				
painters:	r		n the	inand kasal - shi - shi 🗖									
paimers:		Analyte detected i Estimated value bi				•	Unreportabl						



Brown & Caldwell

BJ Service, Hobbs, NM #12832

Analysis: ethod:	Headspace Gas Analy RSK147	sis					WorkOrder: Lab Batch ID:	01120267 R50095
	Metho	d Blank				Samples in Analytic	al Batch:	
BunID:	VARC_011219A-954129	Units:	mg/L			Lab Sample ID	Client Sar	nple ID
halysis Date	e: 12/18/2001 11:44	Analyst:	ER			01120267-01C	MW-5	
						01120267-04C	MW-12D	
						01120267-08C	MW-10	
	Analyte		Result	Rep L	imit	01120267-09C	MW-11A	
	Ethane		ND		0025			
	Ethylene		ND		0032			
	Methane		ND	0.0	012			

Sample Duplicate

Original Sample:	01120267-09		
RunID:	VARC_011219A-954167	Units:	mg/L
Analysis Date:	12/18/2001 18:47	Analyst:	ER

	Result		Limit
ND	ND	0	50
ND	ND	0	50
ND	ND	0	50
ND	ND	0	50
0.0041	0.0044	6	50
ND	ND	0	50
ND	ND	0	50
	ND ND 0.0041 ND	ND ND ND ND ND ND ND ND 0.0041 0.0044 ND ND	ND ND 0 ND ND 0 ND ND 0 ND ND 0 0.0041 0.0044 6 ND ND 0

ND/U - Not Detected at the Reporting Limit

ualifiers:

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

- J Estimated value between MDL and PQL
- D Recovery Unreportable due to Dilution
- * Recovery Outside Advisable OC Limits

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.

12/24/01 12 DE:58 PM



Brown & Caldwell

BJ Service, Hobbs, NM #12832

				J Service									
Analysis:	-	le Aromatics							Order:		20267		
lethod:	SW8021	B		···				Lab E	Batch ID:	R49	9984		
		Method Blank				Samp	oles in Ar	nalytical Batcl	n:				
iunID:	HP_0_01	1217A-952419 Units:	ug/L			Lab S	Sample II	2	Client Sar	nple i[)		
nalysis Da	te: 12/17/20	01 17:02 Analys	t: D_R			_	0267-01A		 MW-5		-		
						01120	0267-02A	1	MW-7				
1						0112	0267-04A	i -	MW-12D				
	·······	Analyte	Bocult	Rep Limit		0112	0267-05A	i	MW-13				
	Benzene	Andryte	ND		_	01120	0267-06A	ı	MW-3				
	Ethylbenzene		ND			01120	0267-11A		Trip Blank	1			
	Toluene		ND										
	Xylenes, Total Surr. 1,4-Difluor	rohenzene	ND 99.4										
	Surr. 4-Bromotil		98.9										
L													
			La	boratory	Contro	I Sample (L	<u>.CS</u>)						
•		RunID:	HP_0_01	1217A-9524	418	Units: u	ıg/L						
		Analysis Date:	12/17/20	01 16:03	1		Ď_R						
							-						
)													
_		Anal	vie		Spike	Result	Percen	t Lower	Upper				
			,		Added		Recove		Limit				
}		Benzene		· · · · · · · · · · · · · · · · · · ·	5	50 50	· ·	101 70	130				
		Ethylbenzene			5	50 50		100 70	130				
		1 oluen c			5	50 51	•	102 70	130				
		Xylenes. Total			15	50 151	-	101 70	130				
												···	
		Rê mên î	v Snike (M	S) / Matri									
		<u>watri</u>	C Opine (III	<u></u>	X Spike	e Duplicate	[1030]						
					IX Spike	e Duplicate	(11150)						
		Sample Spiked:	011202	267-01									
		Sample Spiked: RunID:	011202 HP_O_C	267-01 011217A-95	5 243 0	Units:	ug/L						
		Sample Spiked:	011202 HP_O_C	267-01	5 243 0	Units:							
		Sample Spiked: RunID:	011202 HP_O_C	267-01 011217A-95	5 243 0	Units:	ug/L						
	Analyte	Sample Spiked: RunID: Analysis Date:	011202 HP_O_C 12/17/2	267-01 011217A-95 2001 23:53	524 3 0 3	Units: Analyst:	ug/L D_R		MSD %	BPD	BPD		High
 	Analyie	Sample Spiked: RunID: Analysis Date: Sample	011202 HP_O_C 12/17/2 MS	267-01 011217A-95	52430 3 esult	Units: Analyst: MS %	ug/L D_R MSD	MSD Result	MSD % Recovery		RPD		
	Analyte	Sample Spiked: RunID: Analysis Date:	011202 HP_O_C 12/17/2	267-01 011217A-95 2001 23:53	52430 3 esult	Units: Analyst: MS % Recovery	ug/L D_R MSD	MSD Result	Recovery	I			
	Analyte	Sample Spiked: RunID: Analysis Date: Sample Result	011202 HP_O_C 12/17/2 MS Spike Added	267-01 011217A-95 2001 23:55 MS Re	52430 3 esult	Units: Analyst: MS % Recovery	ug/L D_R MSD Spike Added		Recovery	 	Limit	Limit	Limi
inzene nylbenzen		Sample Spiked: RunID: Analysis Date: Sample Result	011202 HP_0_C 12/17/2 MS Spike Added	267-01 011217A-95 2001 23:55 MS Re	52430 3 25ult 24	Units: Analyst: MS % Recovery 122	ug/L D_R MSD Spike Added 20	25	Recovery 123	0.641	Limit	Limit	Limi 16
mylbenzen		Sample Spiked: RunID: Analysis Date: Sample Result	011202 HP_0_0 12/17/2 MS Spike Added ND 20 ND 20	267-01 011217A-95 2001 23:55 MS Re	52430 3 esult 24 24	Units: Analyst: MS % Recovery 122 122	ug/L D_R MSD Spike Added 20 20	25 24	Recovery 123 122	0.641	Limit 21 2 19	Limit 32 52	Limi 16
inzene hylbenzen oluene lenes, Tota	e	Sample Spiked: RunID: Analysis Date: Sample Result	011202 HP_0_0 12/17/2 MS Spike Added VD 20 VD 20	267-01 011217A-95 2001 23:53 MS Re	52430 3 25ult 24	Units: Analyst: MS % Recovery 122	ug/L D_R MSD Spike Added 20	25	Recovery 123 122	0.641	Limit 21 2 19 3 20	Limit 32 52 38	16 14 15

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

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



Brown & Caldwell

BJ Service, Hobbs, NM #12832

					o del vice,	, 1100	bs, NM #128	JJ#								
Analysis: Method:	Gasoline f SW8015B	Range Orga	nics								Order: Batch ID:		12026 49987	7		
		Metho	d Blank				Sam	ples in	Analudi	cal Batci						_ <u></u>
							Sam	pies in i	мпатун	cal Batci	n:					
RunID:	HP_O_0112	170-952543	Units:	mg/L			Lab	Sample	ID		Client Sa	mple	ID			
Analysis Date:	12/17/2001	17:00	Analyst:	D_R			0112	0267-01	A		MW-5					
t i i i i i i i i i i i i i i i i i i i							0112	0267-02	A		MW-7					
							0112	0267-04	A		MW-12D					
	A	nalyte		Result	Rep Limit	ł	0112	0267-05	A		MW-13					
Ga	soline Range Org			ND	0.10	2	0112	0267-06	6A		MW-3					
	Surr. 1,4-Difluorot	penzene		99.7	74-121	_	0112	20267-07	Ά		MW-4					
	Surr. 4-Bromofluo	robenzene	i	99.0	55-150		0112	0267-11	A		Trip Blan	k 1				
	<u></u>			Lat	poratory (Contr	ol Sample (LCS)		····						<u> </u>
ł		RunID:		HP_O_011	1217C-9525	42	Units: r	ng/L								
		Analysis	Date:	12/17/200	01 16:03		Analyst: I	D_R								
,																
			Analy		<u> </u>	Spike	Result	Perce	ant	Lower	Upper					
		:	Analy	ie	,	Adde		Reco	1	Limit	Limit					
		Gasoline F	ange Orga	nics			1 1	1	104	70	130					
		RunID. Analys	is Date:		11217C-952 001 0:05	2486	Units: Analyst:	mg/i D_ R								
ľ	Analyte		Sample Result	MS Spike Added	MS Res	sult	MS % Recovery	MSD Spike Added	MSD	Result	MSD % Recovery		D i RPi Lim		ow imit	-
Gasoline Range	·			Spike Added	MS Res	sult 1	Recovery	Spike		Result	Recovery		Lim		1	Lim
Sasoline Range	Organics		Result NI	Spike Added D 0.9	MS Res	1	Recovery	Spike Added 0.9			Recovery		Lim	hit I L	imit	-
	Organics ND/U - Not	t Detected a	Result NI	Spike Added D 0.9		1	Necovery 115	Spike Added 0.9	се	0.97	Recovery 10		Lim	hit I L	imit	Lim
aasoline Range	Organics ND/U - Not B - Analyte	t Detected a e detected in ed value be	Result NI t the Report t the associ	Spike Added D 0.9		1	Recovery	Spike Added 0.9 0.9	nce	0.97 due to Di	Recovery 10		Lim	hit L	imit	Lim

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

12/24/01 12:08:59 PM



Brown & Caldwell

nalysis: lethod:	Purgeable Aromatics SW8021B						WorkOrder: Lab Batch ID:	01120267 R50043
	Metho	d Blank			San	ples in Analyt	ical Batch:	
BunID:	HP_U_011218A-953437	Units:	ug/L		Lab	Sample ID	Client Sar	nple ID
nalysis Date	n 12/18/2001 14:40	Analyst:	D_R		011	20267-07A	MW-4	
-	Benzene Ethylbenzene		ND ND ND	1.0 1.0 1.0				
R i	Toluene							
R i	Toluene Xylenes,Total Surr. 1,4-Difluorobenzene		ND 81.9	1.0 72-130				
R i	Toluene Xylenes,Total		ND	1.0				
R i	Toluene Xylenes,Total Surr. 1,4-Difluorobenzene		ND 81.9 81.3	1.0 72-130	trol Sample	LCS)		
R i	Toluene Xylenes,Total Surr. 1,4-Difluorobenzene		ND 81.9 81.3 Lab	1.0 72-130 70-130	trol Sample	(<u>LCS)</u> ug/L		

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	53	105	70	130
Ethylbenzene	50	52	104	70	130
Toluene	50	50	99	70	130
Xylenes, Total	150	163	109	70	130

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

Sample Spiked:	01120508-12		
RunID:	HP_U_011218A-954181	Units:	ug/L
Analysis Date:	12/18/2001 20:41	Analyst:	D_R

Analyie	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery		RPD Limit		
nzene	ND	20	19	93.0	20	20	98.0	5.27	21	32	164
mylbenzene	ND	20	18	89.3	20	18	90.4	1.22	19	52	142
oluene	ND	20	15	77.3	20	16	80.4	3.95	20	38	159
enes.Total	ND	60	58	96.7	60	61	102	5.04	18	53	144

ualifiers:

- 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 POL
- * Recovery Outside Advisable OC Limits

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



Brown & Caldwell

BJ Service, Hobbs, NM #12832

Ben Ethy Tolu Xyte S	12/19/200	Analyte	ug/L D_R Result ND	Rep Limit		<u>Lab S</u> 01120	Sample ID 0267-08A 0267-09A	alytical Batch	h: <u>Client San</u> MW-10 MW-11A	nple ID	?		
nalysis Date: Ben Ethy Tolu Xyte S	12/19/200 A zene Abenzene iene ines,Total urr. 1,4-Difluoro	1 6:50 Analyst: Analyte	D_R Result	Rep Limit		01120 01120	0267-08A 0267-09A	2	MW-10	nple ID)		
Ethy Tolu Xyle S	/ zene /benzene iene ines,7 otal urr. 1,4-Difluoro	Analyte	D_R Result	Rep Limit		01120 01120	0267-08A 0267-09A	2	MW-10		2		
Ben Ethy Tolu Xyte S	/ zene /benzene iene ines,7 otal urr. 1,4-Difluoro	Analyte	Result	Rep Limit		01120	0267-09A						
Ethy Tolu Xyle S	zene Abenzene iene ines,Total urr. 1,4-Difluoro		ND	Rep Limit									
Ethy Tolu Xyle S	zene Abenzene iene ines,Total urr. 1,4-Difluoro		ND	Rep Limit		01.12.	JUN7-19A		Trip Blank	2			
Ethy Tolu Xyle S	zene Abenzene iene ines,Total urr. 1,4-Difluoro		ND	Rep Limit						•			
Ethy Tolu Xyle S	/ibenzene iene ines,Total urr. 1,4-Difluoro												
Tolu Xyle S	iene ines,Total urr. 1,4-Difluoro												
S	urr. 1,4-Difluoro		ND										
			ND	1.0									
<u></u>			87.4	·····									
		nobenzene	86.5	70-130									
•		<u> </u>	La	boratory Cont	rol Sam	ple (L	.CS)						
		RunID:	HP U 011	1219A-955224	Units:	u	ıg/L						
		Analysis Date:	12/19/20		Analys)_R						
		, and your parts.		0, 0.00	,								
•		Analyt	<u> </u>	Spil		esult	Percent	t Lower	Linner				
		Analyi	E	Add		5500	Recover		Upper Limit				
}		Benzene			50	51	<u></u>	102 70	130				
		Ethylbenzene			50	50		100 70	130				
		Toluene			50	47		94 70	130				
		Xylenes, Total			150	151		01 70	130				
-				· · · · · · · · · · · · · · · · · · ·									
l		Matrix	Spike (M	S) / Matrix Sp	ike Dup	licate	(MSD)						
		Sample Spiked:	011203	26-01									
		RunID:		11219A-955752	Unite	5:	ug/L						
		Analysis Date:		001 19:01	Anat		D_R						
		-,				,							
A	nalyte	Sample	MS	MS Result	MS	%	MSD I	MSD Result	MSD %	BPD	RPD	low	High
-	j	Result	Spike		Reco			i	Recovery			Limit	Limit
1			Added				Added		-				
enzene		ND	20	1	9	97.1	20	21	105	8.12	21	32	164
thylbenzene	<u></u>	NE	20	1	9	95.6	20	20		4.41	19	52	
oluene		NC	20	1	7	84.0	20	18	88.2	4.92	20	38	159
vlenes, Total		NE	60	6	3	105	60	66	110	4.65	18	53	

J - Estimated value between MDL and PQL

1.

il i

* - Recovery Outside Advisable QC Limits

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.

12/24/01 12:09:00 PM



Brown & Caldwell

BJ Service, Hobbs, NM #12832

Method Blank 219C-956085 Units: D1 15:03 Analyst Analyte rganics obenzene Jorobenzene RunID: Analysis Date: Anal	Result F ND 106.7 75.3		<u>Lab 5</u> 01120 01120 01120 01120 01120	Sample ID 0267-08A 0267-09A 0267-12A 0267-12A	alytical Batch	n: <u>Client San</u> MW-10 MW-11A Trip Blank				
01 15:03 Analyst Analyte rganics obenzene porobenzene RunID: Analysis Date:	D_R Result F ND 106.7 75.3 HP_U_0112	0.10 74-121 55-150 oratory Contro	0112 0112 0112 0112	0267-08A 0267-09A 0267-12A 0267-12A		MW-10 MW-11A				
rganics obenzene jorobenzene RunID: Analysis Date:	ND 106.7 75.3 Lab	0.10 74-121 55-150 oratory Contro	Units: n	ng/L						
Analysis Date:	HP_U_0112	oratory Contro 219C-956080	Units: n	ng/L				<u></u>		
Analysis Date:	HP_U_0112	219C-956080	Units: n	ng/L						-
Anal)_R						
		Spike Addeo		Percent Recover		Upper Limit				
Gasoline Range Org	anics		1 0.99). 	99 70	130				
Mətrix	Spike (MS	5) / Matrix Spik	e Duplicate	(MSD)					·	
Sample Spiked RunID: Analysis Date	HP_U_01	1219C-956083	Units Analyst:	mg/L D_R						
Sample Result	MS Spike Added	MS Result		Spike	ISD Result	MSD % Recovery				
N	ID 0.9	0.58	63.9	0.9	0.58	64.3	0.503	36	36	1€
	<u>Matrix</u> Sample Spiked RunID: Analysis Date Sample Result	Matrix Spike (MS)Sample Spiked0112032RunID:HP_U_01Analysis Date12/19/20SampleMSResultSpikeAdded	Matrix Spike (MS) / Matrix Spik Sample Spiked 01120326-02 RunID: HP_U_011219C-956083 Analysis Date 12/19/2001 21:02 Sample MS Result Spike Added MS Result	Matrix Spike (MS) / Matrix Spike Duplicate Sample Spiked 01120326-02 RunID: HP_U_011219C-956083 Units Analysis Date 12/19/2001 21:02 Analyst: Sample MS MS Result MS % Result Spike Added Recovery	Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Sample Spiked 01120326-02 RunID: HP_U_011219C-956083 Units: mg/L Analysis Date 12/19/2001 21:02 Analyst: D_R Sample MS MS Result MS % MSD N Result Spike Added Added Added Added	Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Sample Spiked 01120326-02 RunID: HP_U_011219C-956083 Units mg/L Analysis Date 12/19/2001 21:02 Analyst: D_R Sample MS MS Result MS % MSD MSD Result Result Spike Added Added Added Added	Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Sample Spiked 01120326-02 RunID: HP_U_011219C-956083 Analysis Date 12/19/2001 21:02 Sample MS Result MS Result Spike Added	Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Sample Spiked 01120326-02 RunID: HP_U_011219C-956083 Units: mg/L Analysis Date 12/19/2001 21:02 Analyst: D_R Sample MS MS Result MS % MSD MSD Result MSD % RPD Result Spike Added Added Added Added	Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Sample Spiked 01120326-02 RunID: HP_U_011219C-956083 Units: mg/L Analysis Date 12/19/2001 21:02 Analyst: D_R Sample MS MS Result MS % MSD MSD Result MSD % RPD RPD RPD Besult Spike MS Result MS % MSD MSD Result MSD % RPD RPD RPD Added Added Added Added Added Recovery Spike	Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Sample Spiked 01120326-02 RunID: HP_U_011219C-956083 Units: mg/L Analysis Date 12/19/2001 21:02 Analyst: D_R Sample MS MS Result MS % MSD MSD Result MSD % RPD RPD Low Result Spike Recovery Spike Recovery Limit Limit Limit

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



Brown & Caldwell

BJ Service, Hobbs, NM #12832

Analysis: Method:	Purgeable Aromatics SW8021B				WorkOrder: Lab Batch ID:	01120267 R50338
	Metho	d Blank	<u>, , , , , , , , , , , , , , , , , , , </u>	Samples in Analytica	al Batch:	
RunID:	HP_U_011221A-958886	Units:	ug/L	Lab Sample ID	Client Sa	mple ID
Analysis Date:	12/21/2001 12:47	Analyst:	DL	01120267-13A	Trip Blank	3
Analysis Date:	12/21/2001 12:47	Analyst:	DL	01120267-13A	Trip Blank	3

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr. 1,4-Difluorobenzene	85.3	72-130
Surr. 4-Bromofluorobenzene	84.1	70-130

	Laboratory	Control	Sample	(LCS)
--	------------	---------	--------	-------

RunID:	
Analysis	Date:

HP_U_011221A-958885 12/21/2001 11:57

Units: ug/L DL Analyst:

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	53	107	70	130
Ethylbenzene	50	52	105	70	130
Toluene	50	50	99	70	130
Xylenes, Total	150	163	109	70	130

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

Sample Spiked:	01120601-03		
RunID:	HP_U_011221A-961312	Units:	ug/L
Analysis Date:	12/21/2001 15:49	Analyst:	DL

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
enzene	ND	20	21	103	20	21	106	3.07	21	32	164
Ethylbenzene	ND	20	18	89.8	20	19	93.7	4.24	19	52	142
Ioluene	ND	20	17	82.7	20	17	86.2	4.13	20	38	159
ylenes,Total	ND	60	54	9 0.0	60	56	93.3	3.64	18	53	144

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

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 Re		HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901								
				Brown	& Caldwell							
			B	J Service, H	obbs, NM #128	332						
nalysis: lethod:	Gasoline Range O SW8015B	rganics						Order: Batch ID:	0112 R50	20267 344		
		thod Blank			Sam	ples in A	Analytical Batc					
uniD:	HP_U_011221C-9589	59 Units:	mg/L		Lab	Sample	ID	Client Sa	mple ID)		
nalysis Date:	12/21/2001 12:04	Analyst:	DL			0267-13		Trip Blank				
	Analyte		Result	Rep Limit								
	soline Range Organics Surr. 1.4-Difluorobenzene		ND 105.0	0.10 74-121								
	Surr. 4-Bromofluorobenzen	e	70.3									
		· · · · · · · · · · · · · · · · · · ·	Lat	ooratory Co	ntrol Sample (I	LCS)						
	Runi	D:	HP_U_011	221C-958958	Units: I	mg/L						
	Anal	vsis Date:	12/21/20	01 12:02	Analyst: I	DL						
		Analyt	e		oike Result	Perce		Upper				
	Gasolin	e Range Orgar		AC	1 0.89	Recov	ery Limit 89 70	Limit 130				
		e nunge organ										
		Matrix	Spike (M	S) / Matrix S	pike Duplicate	(MSD)						
	Sa	nple Spiked	011206									
	Ru			11221C-96133	07 Units:	mg/L						
	Ana	alysis Date:	12/21/2	001 16:04	Analyst:	DL						
	Analyte	Sample	MS	MS Resul		MSD	MSD Result	MSD %		RPD		High
		Result	Spike Added		Recovery	Spike Added	 	Recovery		Limit		Limit
asoline Range	Organics	ND	0.9	0	.41 45.2	0.9	0.36	39.6	5 13.2	36	36	160
Qualifiers:	ND/U - Not Detecte	d at the Report	ling Limit		MI - Matrix Ir	nterferen	ce					
	B - Analyte detecte			iod Blank		-	rtable due to D					
	J - Estimated value overies for QC sample				•		Advisable QC	Limits				



Brown & Caldwell

BJ Service, Hobbs, NM #12832

Analysis: Aethod:	Nitrogen, Nitrate (A E300	s N)						Order: Batch ID:		20267 944		
	Met	hod Blank			Samp	ples in Ar	alytical Batch				<u> </u>	·
iunID: analysis Date:	WET_011208G-951738	Units: Analyst:	mg/L ES		01120 01120	Sample IC 0267-01D 0267-04D 0267-09D	_	<u>Client San</u> MW-5 MW-12D MW-11A	npie I <u>[</u>	2		
	Analyte Nitrogen, Nitrate (As N)		Result Re ND	p Limit 0.10								
			Labora	atory Control S	ample (L	.CS)						
	RunłC Analy:	: iis Date:	WE7_011208(12/08/2001 8			ng/L S						
		Analy	le	Spike Added	Result	Percen Recove		Upper Limit				
ł	Nitrogen	Nitrate (As M	1)	10	9.2	······································	92 90	110				
	Anal Analyte	ysis Date Sample Result	12/08/2001 MS N Spike Added	AS Result 1	nalyst: AS % covery		MSD Result	MSD % Recovery	APD	RPD Limit		High Limi
trogen, Nitra	ate (As N)	0.2	3 10	9.93	96.5	10	9.82	95.4	1.17	20	76	12

J - Estimated value between MDL and PQL

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

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Brown & Caldwell

BJ Service, Hobbs, NM #12832

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

Sample Receipt Checklist

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Custody seals intact on sample bottles?	Yes 🗌	No 🗌	Not Present	
Chain of custody present?	Yes 🗹	No 🗌		
Chain of custody signed when relinquished and received?	Yes 🗹	No 🗔		
Chain of custody agrees with sample labels? 1.Received 1-plastic unpreserved & vial unpreserved for ID#MW- 13 not written on COC. Also received 2-sets of vials unpreserved ID#MW-3 and MW-4 (for headspace)Login on hold.		No 🗹		
Samples in proper container/bottle?	Yes 🗹	No		
Sample containers intact?	Yes 🗹	No		
Sufficient sample volume for indicated test?	Yes 🗹	No 📃		
All samples received within holding time?	Yes 🗹			
Container/Temp Blank temperature in compliance?	Yes 🗹	No 🗔		
Water - VOA vials have zero headspace?	Yes 🗹	No 🗌	Not Applicable	
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BROWN AND CALDWELL

Suite 2500, 1415 Louisiana, Houston, TX 77002 (713) 759-0999 • (713) 308-3886

TRANSMITTAL MEMORANDUM

To: M	1r. Wayne Price	Date: November 12, 2001	Job No: 12832-016				
Eı	nergy, Minerals, and Natural Resources Dept.	Subject: Hobbs, New Mexico Gro	undwater Report				
0	il Conservation Division	Certified Mail No.:					
20	040 South Pacheco Street,	Equipment No:					
St	tate Land Office Building	Spec. Ref:					
S	anta Fe, New Mexico 87505	Submittal No:					

WE ARE SENDING:	Attached	Under separate cover via US mail the following items:
Shop Drawings	Prints	Plans Samples
Copy of letter	Change Order	Other: Final Groundwater Sampling Report

THESE ARE TRANSMITTED AS CHECKED BELOW:

- Second submittal
 For your use
 As requested
 For review and comment
 - With submittal review action noted

SUBMITTAL REVIEW ACTIONS:

No exceptions taken
Make revisions
Amend and resubmit
Rejectedsee Remarks
None

Copies	Date	No.	Description
1	10/26/01		Final Groundwater Sampling Report, BJ Services Company, USA, Hobbs, New Mexico

REMARKS:

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Environmental Burgay. Oil Conservation Division

cc: Mr. Chris Williams, State of New Mexico Ms. Jo Ann Cobb, BJ Services Brown and Caldwell Project File

- Chult Lynn Wright

Principal Geologist If enclosures are not as noted, kindly notify us at once

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DEC 1 2 2001 Environmental Bureau Oil Conservation Division

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Environmental Bureau Of Conservation Division

MARCH 2001 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY

BJ SERVICES COMPANY, U.S.A.

OCTOBER 26, 2001

MARCH 2001 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: 12832.016

Richard Rexroad

Project Manager

October 26, 2001

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

"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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- 2 Groundwater Elevation Map for March 8-9, 2001
- 3 Benzene Isoconcentration and Total BTEX Distribution Map for March 8-9, 2001
- 4 Total Petroleum Hydrocarbons Distribution Map for March 8-9, 2001

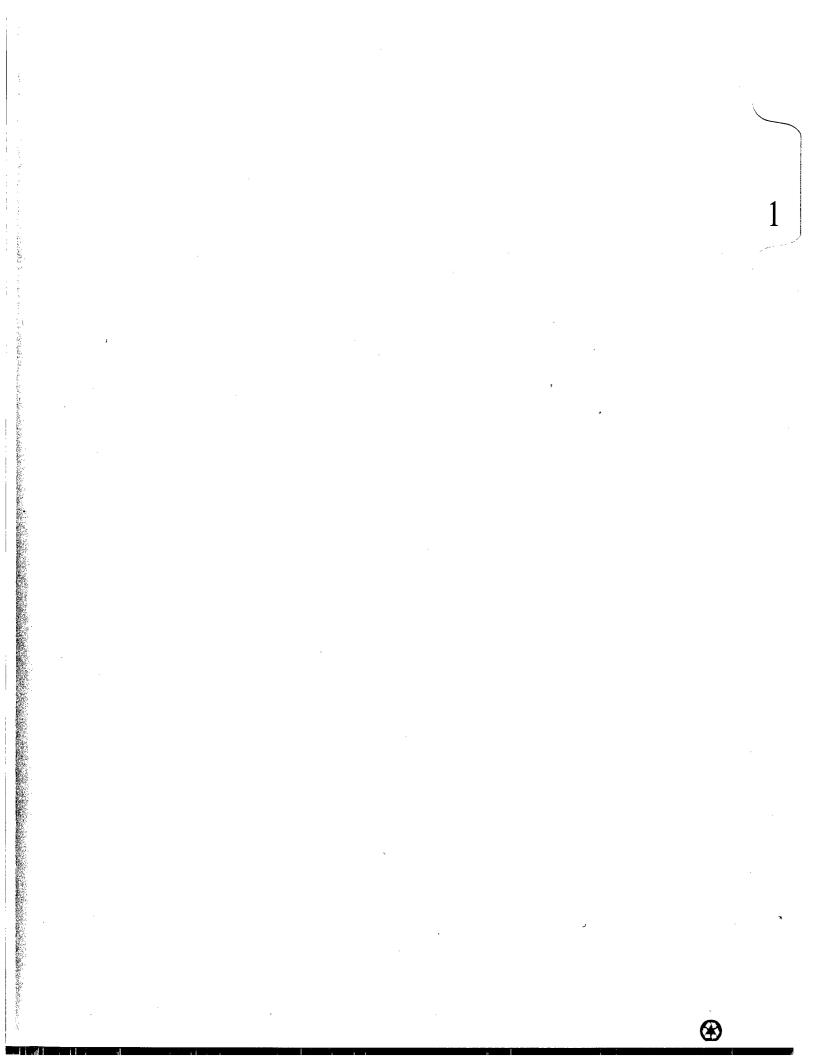
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- 1 Site Chronology
- 2 Summary of Detected Analytical for PAHs, Metals, SVOCs, and Groundwater Quality Parameters
- 3 Cumulative Groundwater Elevation Data
- 4 March 8-9, 2001 Field Screening Results for Groundwater Samples
- 5 Cumulative BTEX and TPH Analytical Results for Groundwater Samples
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APPENDICES

- A Boring Logs
- B Laboratory Analytical Reports for Groundwater Samples
- C Groundwater Sampling Forms

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1.0 INTRODUCTION

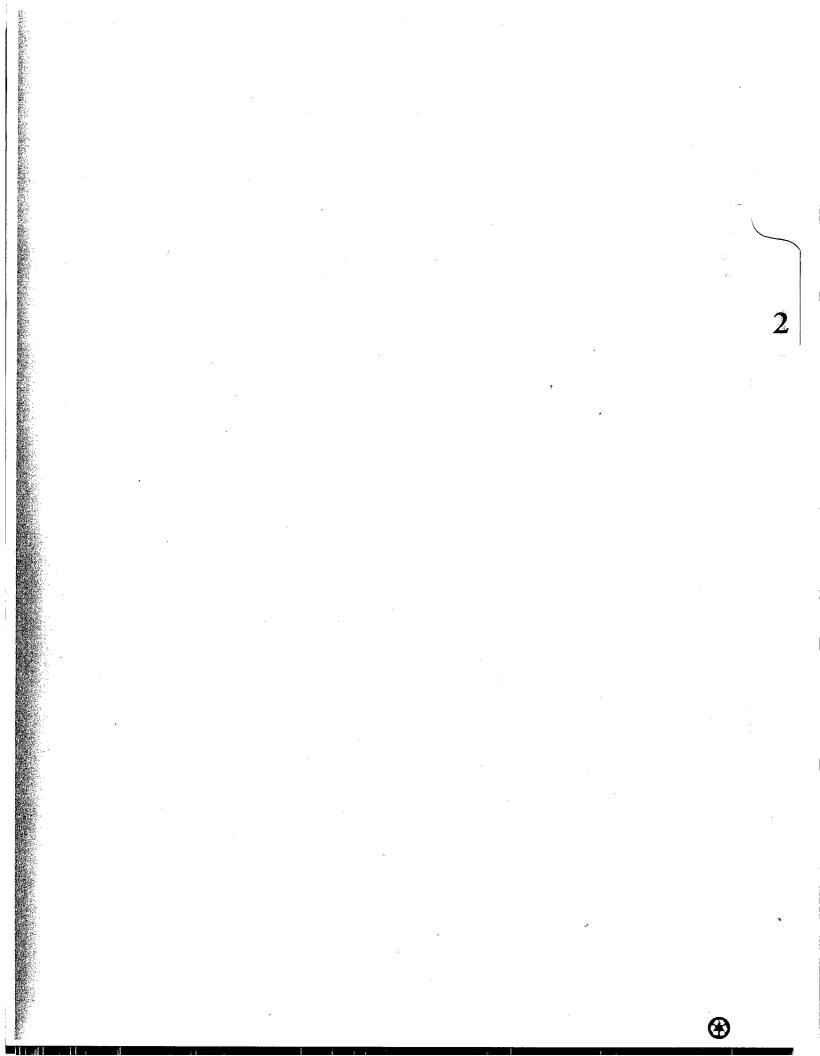
Brown and Caldwell conducted field activities associated with the March 2001 quarterly groundwater sampling event at the BJ Services Company, U.S.A. (BJ Services) facility located at 2708 West County Road in Hobbs, New Mexico on March 8-9, 2001. The March 2001 sampling event included collection of groundwater samples from monitor wells MW-14 and MW-15, which were installed in January 2001. Groundwater samples were analyzed for gasoline and diesel range total petroleum hydrocarbons (TPH-G and TPH-D), benzene, toluene, ethylbenzene, and total xylenes (BTEX), polynuclear aromatic hydrocarbons (PAHs), carbonate, bicarbonate, major anions, major cations, total hardness, dissolved methane/ethylene/ethane, sulfates, and nitrates, as specified by the New Mexico Oil Conservation Division (NMOCD) in NMOCD Permit GW-072. This report presents a description of the groundwater sampling field activities, a summary of the analytical results, and an evaluation of remedial technologies being applied at the facility. A groundwater potentiometric surface map, a benzene concentration map, and a hydrocarbon distribution map are included.

A layout of the facility is shown in Figure 1. The facility formerly operated an above-grade on-site fueling system. Subsurface impact near the former diesel fueling system was first detected by the 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. BJ Services removed three field waste tanks at 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.

A biosparging system was activated in November 1995 to remediate soil and groundwater at the former fuel island area of the facility. The biosparging system was expanded in March/April 1997 and February/March 1998. Flow adjustments were made to the biosparging system during the June/July 1999 and March 2000 sampling events to intensify remedial pressure in the area of P:\Wp\BJSERV\12832\077r.doc 1

monitor well MW-13. On November 1, 2000, the biosparging system was turned off. A site chronology detailing the history of the former fueling system and the former field waste tanks area, the soil and groundwater remediation system, and previous sampling events is presented in Table 1.

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2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled 13 groundwater monitor wells at and adjacent to the BJ Services Hobbs facility on March 8-9, 2001 to determine concentrations of dissolved-phase hydrocarbons in groundwater and to evaluate general groundwater quality in the area. The locations of the monitor wells at the facility are shown in Figure 1. The following subsections describe the field activities conducted by Brown and Caldwell at the facility in January 2001 and March 2001. The results of the associated groundwater analyses are also presented.

2.1 January 2001 Monitor Well Installation and Sampling Activities

Monitor wells MW-14 and MW-15 were installed and developed in accordance with the workplan dated September 9, 2000, as subsequently approved by NMOCD. Boring logs and completion diagrams are presented in Appendix A. The monitor wells were sampled in January 2001 for the New Mexico Water Quality Control Commission (NMWQCC) parameters, including chloride, in accordance with the purging and sample collection procedures described in Section 2.2. The results of the January 2001 sampling event are presented in Table 2. The complete analytical report is provided in Appendix B. Monitor well MW-14 was re-sampled for chloride during the March 2001 sampling event. Chloride impact above the NMWQCC standard of 250 milligrams per liter (mg/L) was measured in monitor well MW-14.

2.2 March 2001 Groundwater Measurements and Sampling

Groundwater level measurements were obtained from monitor wells prior to purging and sampling the wells. Groundwater levels were measured to the nearest 0.01 foot with an oil/water interface probe. A cumulative table of groundwater elevation data is presented in Table 3. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with a hydraulic gradient of approximately 0.008 foot/foot (ft/ft). A groundwater elevation map for March 8-9, 2001 is presented in Figure 2. The groundwater elevation data presented in Table 3 indicate that

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groundwater levels have declined in all monitor wells at the facility since late 1995. Monitor well OW-4 did not contain sufficient water for collection of a groundwater sample in March 2001.

The monitor wells were purged and sampled using disposable bailers. Field parameter measurements for pH, conductivity, oxidation-reduction (redox) potential, dissolved oxygen, and temperature were collected during and upon completion of well purging. Ferrous iron and alkalinity were measured in selected wells upon conclusion of purging activities to further assist in assessment of natural attenuation potential. Turbidity of groundwater was typically measured upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix C. Field readings for the groundwater sampling event are summarized in Table 4.

Groundwater samples were collected after completion of purging operations using disposable PVC bailers. Each sample was transferred to laboratory-prepared, clean glass or plastic containers sealed with Teflon[®]-lined lids, labeled, and placed on ice in an insulated cooler for shipment via overnight courier to the analytical laboratory. Each cooler was accompanied by completed chain-of-custody documentation.

Field measurement equipment was decontaminated prior to and after each usage. Decontamination procedures consisted of washing with fresh water and a non-phosphate detergent, then rinsing with deionized water. Purge water was discharged to an on-site water reclamation system for re-use by BJ Services.

2.3 Results of Groundwater Analyses

Groundwater samples collected from all wells during this sampling event except monitor wells MW-14 and MW-15 were analyzed for TPH-D and TPH-G by EPA Method 8015B, BTEX by EPA Method 8021B, PAHs by EPA Method 8310, the eight RCRA metals by the EPA 6010B Series, and the NMWQCC groundwater quality parameters, including major anions (chloride,

[&]quot;Use or disclosure of data contained on this sheet is subject to the restriction specified at the beginning of this document."

fluoride, nitrate, and sulfate), major cations (calcium, magnesium, potassium, and sodium), hardness, carbonate, and bicarbonate. Groundwater from monitor wells MW-14 and MW-15 was analyzed for BTEX, Method 8260 volatile organic compounds (VOCs), and chloride only, having previously been analyzed for BTEX, PAHs, RCRA metals, and NMWQCC groundwater quality parameters in January 2001. Groundwater samples from selected wells were analyzed for dissolved methane to assist in evaluation of natural attenuation processes at the facility. The laboratory analytical reports and chain-of-custody documentation for the groundwater samples collected during the March 2001 sampling event are provided in Appendix B.

Current and cumulative analytical results for BTEX, TPH-D, and TPH-G are presented in Table 5. Current and cumulative analytical results for groundwater quality parameters as well as PAHs and RCRA metals detected in one or more wells in one or more sampling events since August 1995 are presented in Table 2, along with a listing of VOCs detected in monitor wells MW-14 and MW-15. The results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12 to evaluate natural attenuation processes are presented in Table 6.

Benzene concentrations in excess of applicable laboratory detection limits were reported in four of the 13 groundwater samples collected during this sampling event. Benzene concentrations were below the NMWQCC standard of 0.01 mg/L in all wells except monitor wells MW-11A and MW-12. Figure 3 presents a benzene concentration and total BTEX distribution map for the March 2001 sampling event. A total petroleum hydrocarbon distribution map for the March 2001 sampling event is presented in Figure 4.

Benzene concentrations in monitor wells located near the former fuel island source area remained below the NMWQCC standard of 0.01 mg/L in March 2001. Benzene was detected at a concentration of 2 micrograms per liter (μ g/L) in monitor well MW-1. Benzene was not detected in monitor wells MW-3, MW-4, MW-9, or MW-13. Benzene has not been detected in monitor wells MW-3, MW-4, or MW-9 since June 1999, March 1999, and September 1998, respectively.

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Benzene has not been detected in monitor well MW-13 since June 2000. Adjustments to the biosparging system in July 1999 and March to increase air flow to the monitor well MW-13 area resulted in decreases in the concentration of benzene in monitor well MW-13 from 1.5 mg/L on July 2, 1999 to the present non-detectable levels, as documented in previous quarterly groundwater sampling reports for the facility.

2.4 Natural Attenuation Evaluation

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

The primary evidence of natural attenuation is plume behavior. 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 the field waste 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 natural attenuation rate of the area.

Benzene and total BTEX concentrations measured in former field waste tanks area monitor wells MW-10 and MW-12 in March 2001 are lower than at any time during the monitoring history of these wells, providing primary evidence that natural attenuation of hydrocarbons is occurring in these areas.

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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. The following lines of geochemical evidence 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 during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

March 2001 dissolved oxygen data for the facility are inconclusive because oxygen is typically added to groundwater when a bailer is used for well purging and sampling. However, historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility has indicated that dissolved oxygen concentrations are typically depressed in hydrocarbon impacted monitor wells relative to non-impacted monitor wells at the facility, suggesting that natural attenuation of hydrocarbons is occurring at the facility.

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 concentrations were measured at less than 0.10 mg/L in monitor wells MW-10, MW-11A, and MW-12 during the March 2001 sampling event. These concentrations are less than the background nitrate concentration of 3.24 mg/L measured in monitor well MW-5 (see Table 6). The low nitrate concentrations in monitor wells MW-10, MW-11A, and MW-12 suggest that nitrate is serving as an electron acceptor during natural attenuation of hydrocarbons in the former field waste tanks area of the facility.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors 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.

Ferrous iron was measured at concentrations ranging from 2.5 mg/L to 4.0 mg/L in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12, as shown in Table 4. The detections of ferrous iron in monitor wells MW-10, MW-11A, and MW-12 suggest that

ferric iron is being used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area.

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

Sulfate concentrations in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 exceed the concentration of sulfate in background monitor well, however (see Table 6). These data indicate 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, and its concentration should therefore increase in areas where depletion of electron acceptors such as dissolved oxygen and nitrate has occurred.

Methane was detected only in monitor well MW-11A, which displays benzene and BTEX impact (see Tables 5 and 6). The presence of methane in monitor well MW-11A suggests the utilization of carbon dioxide as an electron acceptor, resulting in methanogenesis, is occurring during natural attenuation of hydrocarbons in the vicinity of monitor well MW-11A.

- 6. Redox is a measure of chemical energy in groundwater. Redox in background well MW-5 was measured at 174.0 millivolts (mV), as shown in Table 3. Redox values in the vicinity of former field waste tanks area wells MW-10, MW-11A, and MW-12 ranged from -87 mV to -117 mV. Redox values are positive in all non-impacted wells except MW-13. The negative redox values in the former field waste tank area monitor wells suggest that electron acceptors other than dissolved oxygen and nitrate (e.g., carbon dioxide) are being utilized in this area.
- 7. Alkalinity is expected to increase during natural attenuation processes, due to the leaching of carbonates from mineral substrates by microbially produced organic acids.

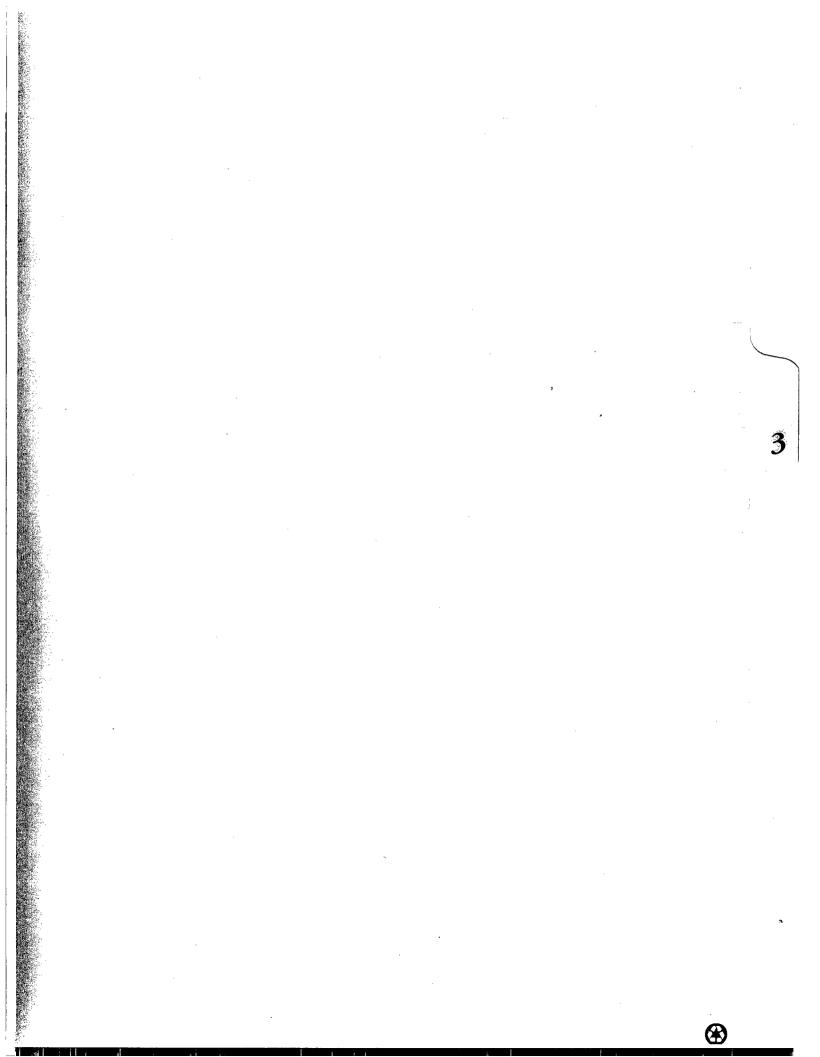
Bicarbonate alkalinity in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 ranged from 475 mg/L to 646 mg/L, as compared to a value of 222 mg/L in the upgradient monitor well MW-5 (see Table 2). These data provide further evidence that natural attenuation of hydrocarbons is occurring in the area of the former field waste tanks area.

In conclusion, dissolved oxygen and nitrate data from this and previous groundwater sampling events suggest that these constituents are acting as electron acceptors during intrinsic bioremediation processes that are ongoing at former field waste tanks area of the facility. Redox P:\Wp\BJSERV\12832\077r.doc 8

and alkalinity data provide further evidence that natural attenuation of hydrocarbons is occurring in this area. The detection of methane in former field waste tanks area monitor well MW-11A suggests that carbon dioxide is also serving locally as an electron acceptor during intrinsic bioremediation of hydrocarbons in this area.

It is recommended that monitoring for natural attenuation evaluation parameters continue in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 and upgradient well MW-5. Redox, dissolved oxygen content, and alkalinity are good indicators of the occurrence of aerobic bioremediation of hydrocarbons, so it is also recommended that field testing for these parameters be performed in all wells to be sampled during upcoming groundwater monitoring events.

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3.0 REMEDIATION SYSTEM

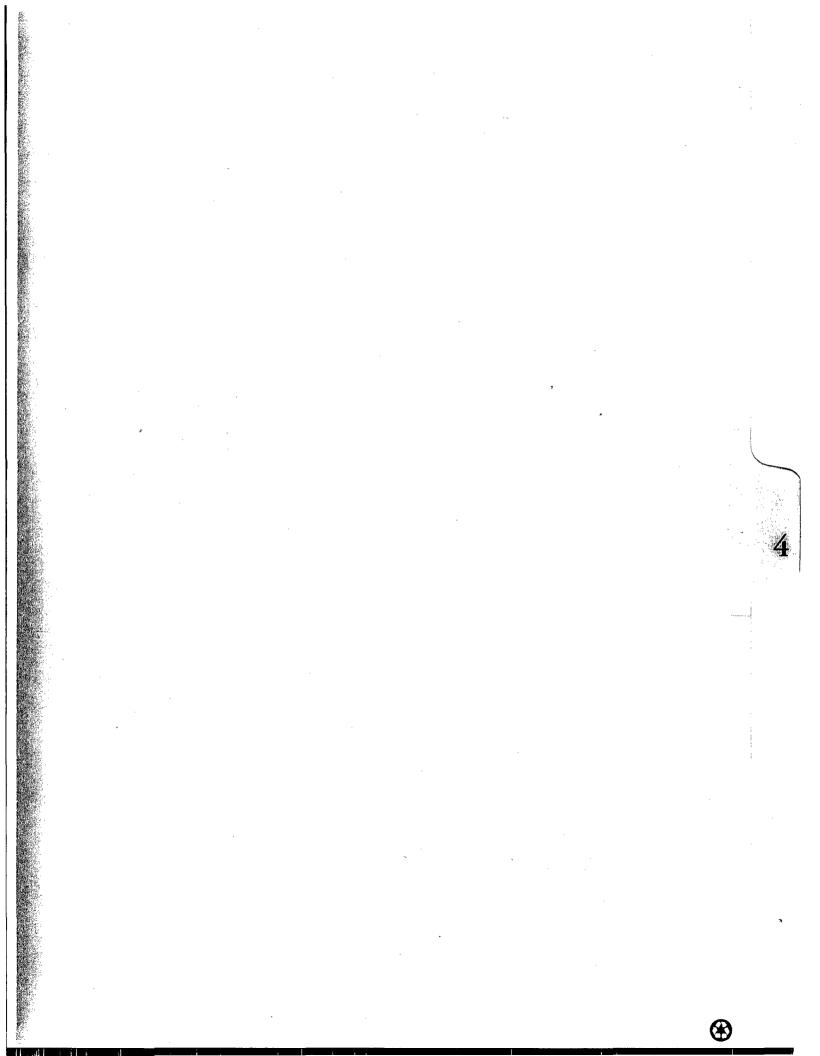
Based on the results of previous investigations conducted by Brown and Caldwell and Roberts/Schornick and Associates, Inc., Brown and Caldwell recommended the installation of a biosparging system in a Remedial Action Plan (RAP) submitted to the NMOCD in May 1994. The NMOCD approved the RAP on August 11, 1994. The biosparging system was installed in August 1995 and expanded in April 1997 and February 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in the former fuel island source area monitor wells MW-1, MW-3, MW-4, MW-9, and MW-13, as documented in the December 2000 report for the facility.

Based on these favorable trends in hydrocarbon concentrations and in accordance with the recommendations presented in the report for the June 2000 groundwater sampling event, the biosparging system was shut down completely on November 1, 2000. The March 2001 sampling event is the second sampling event since this shut down.

Benzene concentrations in former fuel island source area monitor wells MW-3, MW-4, MW-9, and MW-13 have remained at non-detectable levels since shut down of the biosparging system, as previously discussed in Section 2.3. BTEX constituent concentrations in these wells and monitor well MW-1 have now remained below applicable NMWQCC standards for four consecutive quarters. It is therefore recommended that the post-remediation confirmation sampling specified in the NMOCD-approved RAP for the former fuel island area of the facility be performed in conjunction with a quarterly monitoring event for all wells at the facility in June 2001. The proposed locations of the confirmation soil borings are indicated in Figures 3 and 4.

If this confirmation sampling confirms that the remediation goals for the facility have been met, then a biosparging system closure report for the former fuel island area of the facility will be prepared and submitted to NMOCD.

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4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the March 2001 groundwater sampling event at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Dissolved benzene, BTEX, and TPH concentrations in all monitor wells located near the former fueling system source area are non-detectable or below applicable standards and have remained at these levels for the past four quarterly groundwater sampling events..
- Benzene concentrations in all monitor wells at the facility except MW-11A and MW-12 are less than the New Mexico WQCC standard of 0.01 mg/L for benzene.
- Benzene and total BTEX concentrations measured in former field waste tanks area monitor wells MW-10 and MW-12 in March 2001 are lower than at any time during the monitoring history of these wells.
- Natural attenuation processes appear to be occurring in the vicinity of the former field waste tanks removed in March 1997.
- The chloride concentration in monitor well MW-14 exceeds the NMQCC standard of 250.0 mg/L.

4.2 **Recommendations**

- Perform an additional quarterly groundwater monitoring event for the former fuel island area monitor wells in June 2001. Perform confirmation sampling in this area as specified in the RAP in conjunction with this groundwater monitoring event.
- Submit a closure report for the biosparging system at the former fuel island area, if warranted based on the results of the June 2001 sampling activities.
- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-10, MW-11A, and MW-12. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters.

DISTRIBUTION

March 2001Groundwater Sampling Report BJ Services Company, U.S.A. Hobbs, New Mexico

October 26, 2001

Distribution as follows:

 1 copy to: State of New Mexico Energy, Minerals, and Natural Resources Dept. Oil Conservation Division 2040 South Pacheco Street, State Land Office Building Santa Fe, New Mexico 87505

Attention: Mr. Wayne Price

1 copy to: State of New Mexico
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. 11211 FM 2920 Tomball, Texas 77375

Attention: Ms. Jo Ann Cobb

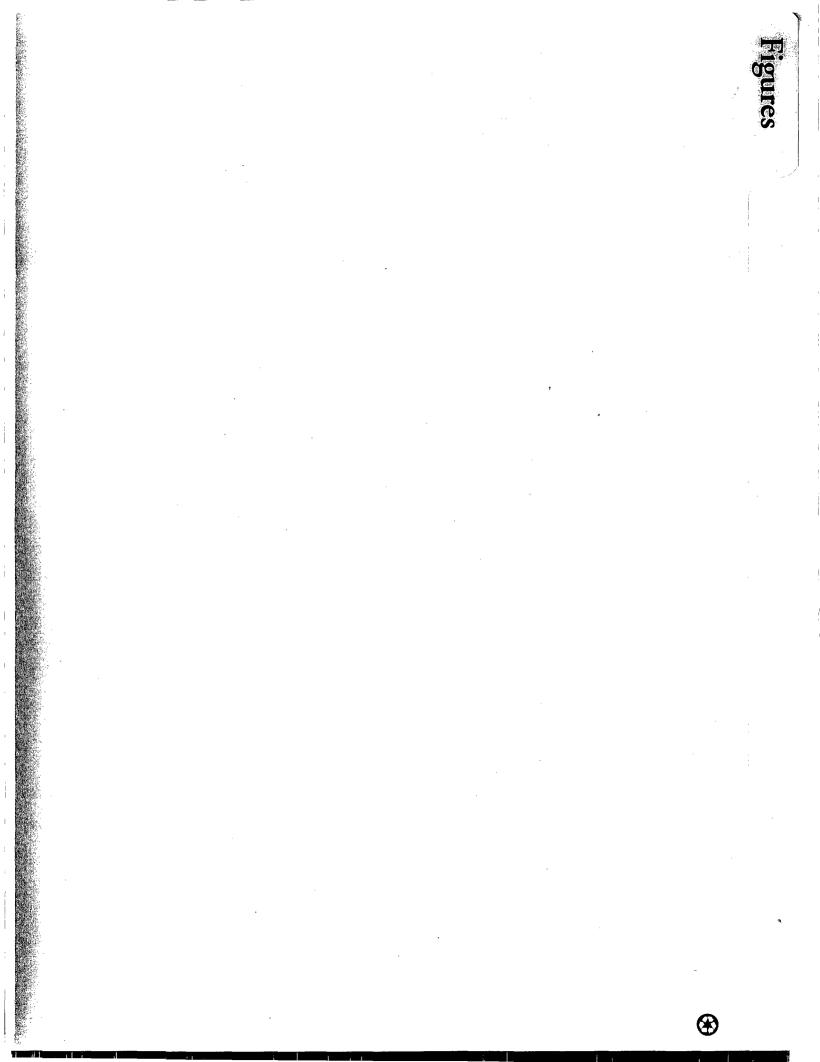
1 copy to: Brown and Caldwell, Project File

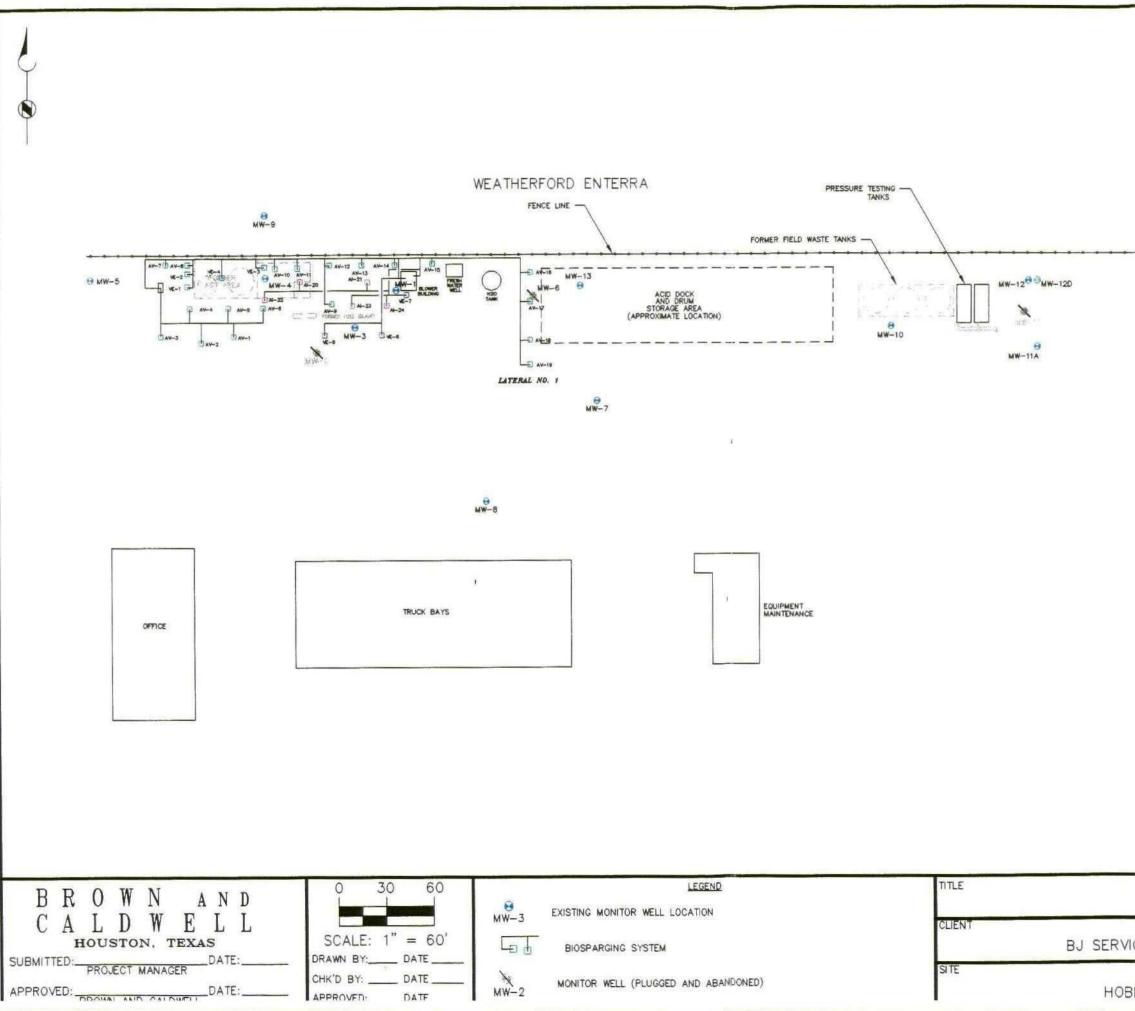
QUALITY CONTROL REVIEWER

Lynn Wright Principal Geologist

RLR/uak

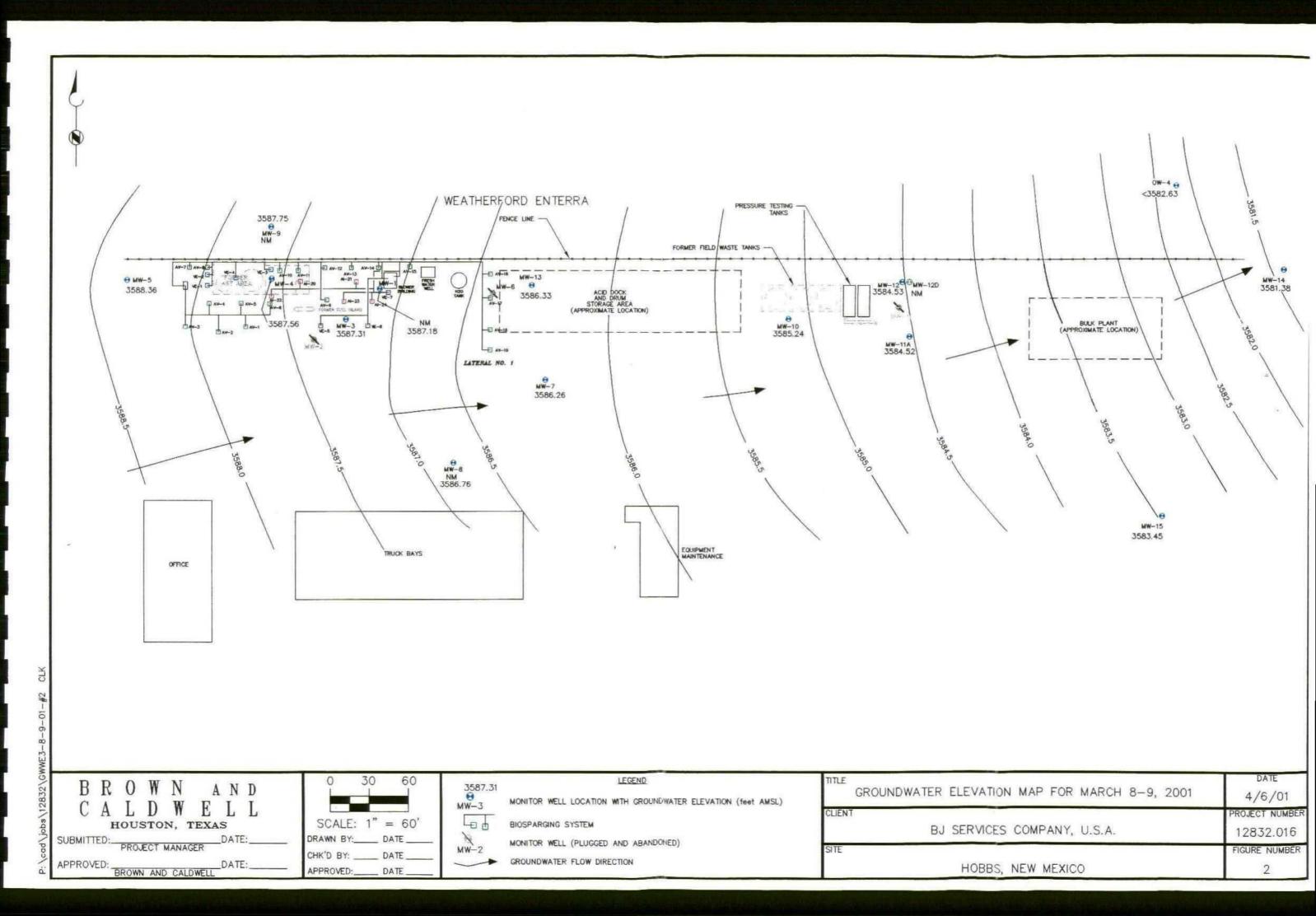
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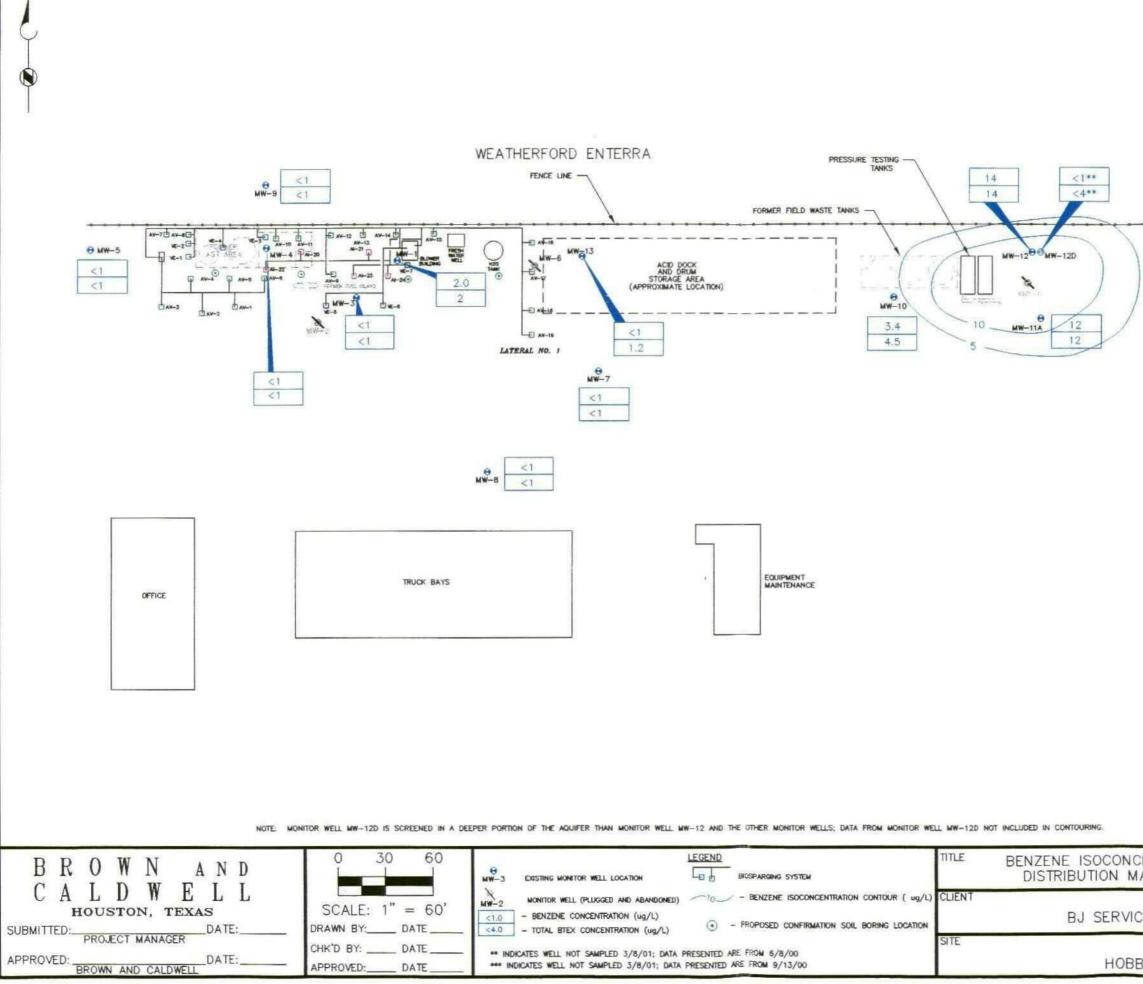




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6 MW-15	
SITE MAP VICES COMPANY, U.S.A.	DATE 4/6/01 PROJECT NUMBER 12832.016
BBS, NEW MEXICO	FIGURE NUMBER





*** INDICATES WELL NOT SAMPLED 3/8/01; DATA PRESENTED ARE FROM 9/13/00

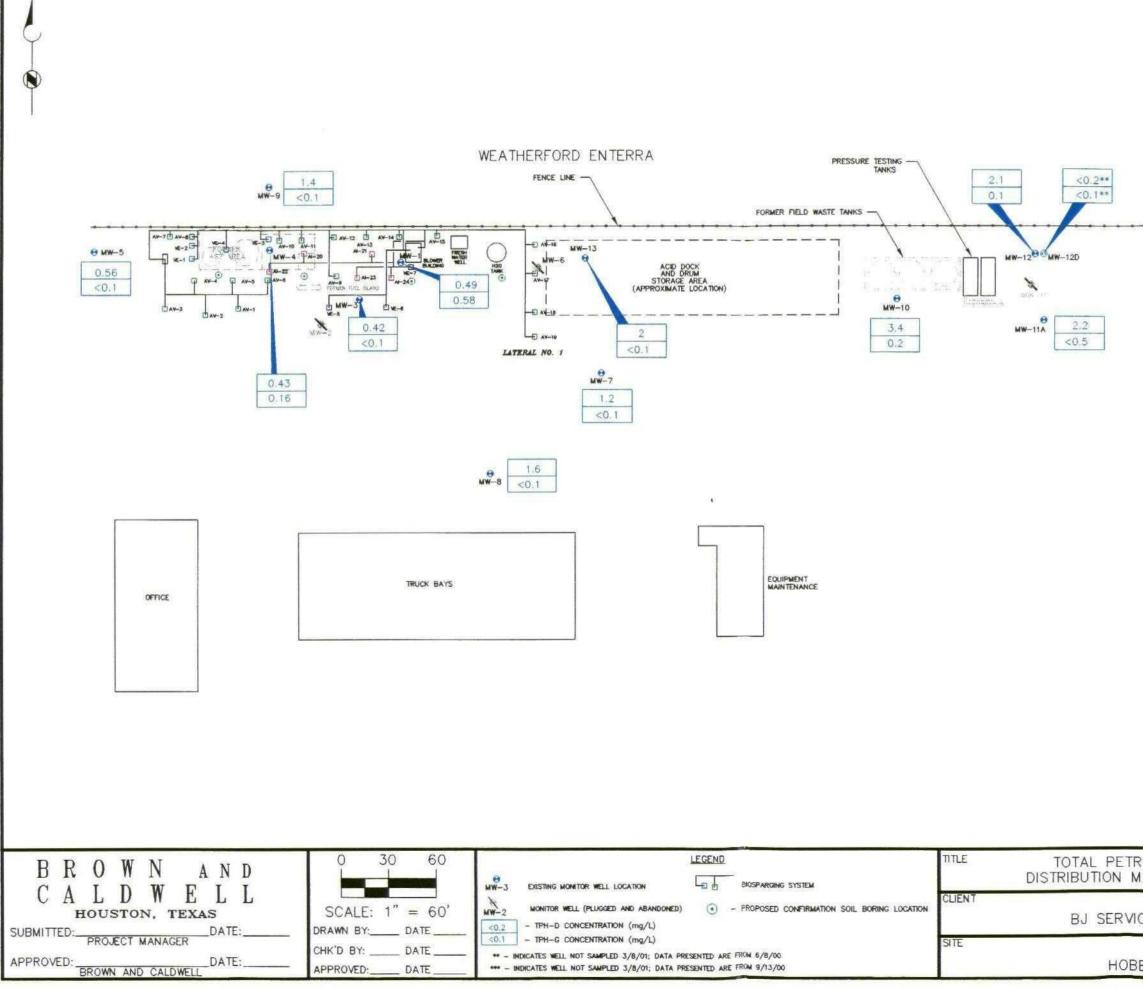
APPROVED:_

DATE

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OCONCENTRATION AND TOTAL BTEX ON MAP FOR MARCH 8-9, 2001	DATE 4/6/01
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HOBBS, NEW MEXICO	J

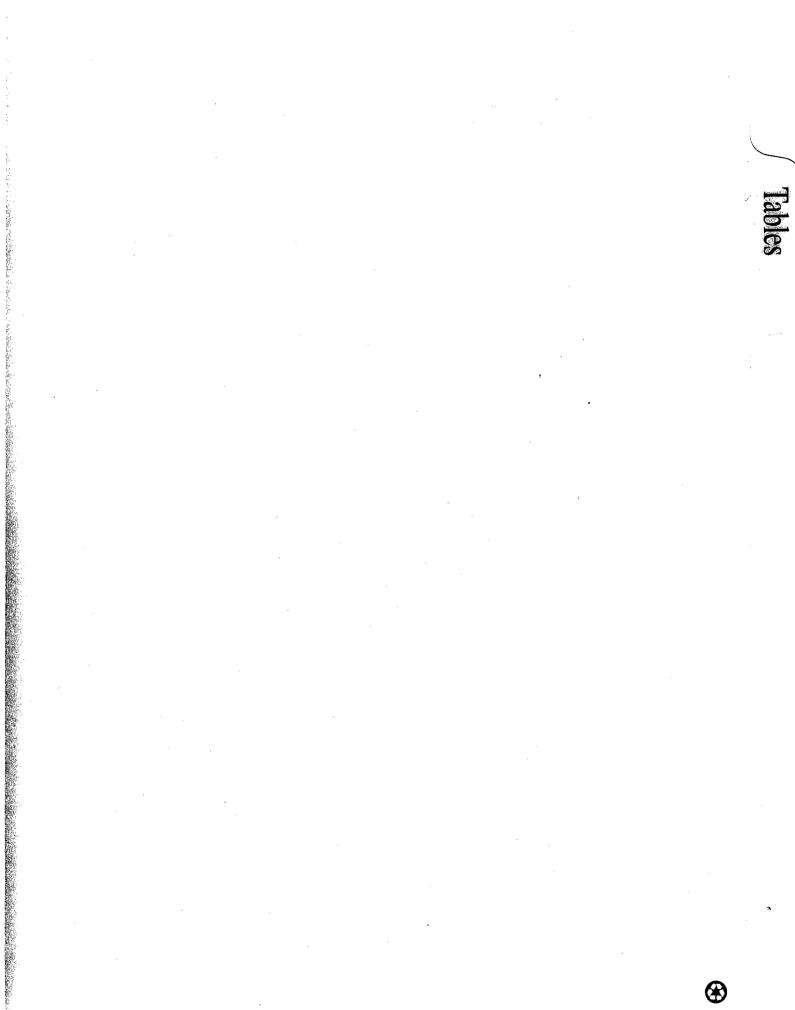


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Table 1 Site Chronology BJ Services Company, U.S.A. Hobbs, New Mexico

Date	Activity
February 7, 1991	The State of New Mexico Oil Conservation Division (OCD) conducted an on-site inspection, including sampling of the on-site fresh water well.
August 6, 1991	OCD 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 OCD.
November 15, 1991	The OCD approved Technical Work Plan submitted by RSA.
December 16, 1991	RSA sampled the fresh water well. Analytical results were submitted to the OCD.
February 21, 1992	Western sampled the fresh water well. Analytical results were submitted to the OCD.
July 29 - August 10, 1992	Brown and Caldwell conducted a soil and groundwater investigation according to the approved Technical Work Plan. Investigation included drilling and sampling 9 soil borings, sampling 6 hand- augured soil borings, the installation and sampling of 5 monitoring wells and the sampling of the fresh water well.
October 12, 1992	Brown and Caldwell submitted Soil and Groundwater Investigation Report to the OCD.
December 2, 1992	The OCD requested the installation and sampling of 4 additional monitoring wells, including a monitoring well on an adjacent property.
April 13, 1993	Brown and Caldwell conducted a vapor extraction pilot test on existing groundwater monitoring wells.
April 15, 1993	Brown and Caldwell installed off-site monitoring well.
April 22, 1993	Brown and Caldwell sampled off-site monitoring well.
May 27, 1993	Brown and Caldwell submitted a letter report documenting the installation and sampling of the off-site monitoring well to the OCD.
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.

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

Date	Activity
June 21, 1993	ENSR Consulting and Engineering (ENSR), the environmental consultant of the adjacent property owner on which the off-site well is located, submitted a request to sample the off-site monitoring well.
July 15, 1993	ENSR split one groundwater sample, collected from the off-site monitoring well, with Brown and Caldwell.
July 30, 1993	USTank Management, Inc. submitted the 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 monitoring wells. Brown and Caldwell sampled each of the existing monitoring and the newly installed monitoring wells.
January 26, 1994	Brown and Caldwell performed groundwater monitoring event; existing monitoring wells and the fresh water well were purged and sampled. Groundwater samples were analyzed for BTEX.
May 6, 1994	Remedial Action Plan (RAP) submitted to the OCD.
August 11, 1994	RAP approved by the OCD.
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 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) began construction of the biosparging system.
September 19, 1995	Began operation of the extraction portion of the biosparging system.
November 13, 1995	Began operation of the injection portion of the biosparging system.
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.

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

Date	Activity
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.
March 6-7, 1997	BJ Services removed three field waste tank 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 installed.
April 1997	Vapor extraction well VE-4 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 though VE-7 and monitor wells MW-11A and MW-12 were installed.
February 19, 1998	Operation of previously existing injection wells 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 though 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.

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

Date	Activity
January 21, 1999	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 on January 22, 1999 to NMOCD.
May 19, 1999	NMOCD approved the groundwater delineation work plan.
June10, 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 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 potion 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 shut down the biosparging system.
December 7, 2000	Brown and Caldwell conducted the December 2000 groundwater sampling event.

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

Date	Activity
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.

Table 2 Summary of Detected Analytes for PAHs, Metals, VOCs, SVOCs and Groundwater Quality Parameters Hobbs, New Mexico Facility BJ Services Company, U.S.A.

	r				<u></u>					Monitor V	Vells					
Analyte (units)	Sample Date	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
Bicarbonate, as CaCO3 (mg/L)	8/1/95	380	430	490	290	670	440	360	570	520	560	NA	NA	NA	NA	NA
	8/23/96	310	310	210	270	120	400	280	390	520	430	NA	NA	NA	NA	NA
	3/23-24/98	286	214	175	247	180	309	260	306	557	NA	319	451	NA	NA	NA
	3/9-10/99	92	309	186	283	286	358	317	333	278	NA	335	386	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	200	520	NA
l	3/9-10/00	89,1	248	160	253	NA	301	362	279	455	NA	703	402	244	240	NA
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	374
	3/8-9/01	90.9	242	232	222	NA	283	252	252	586	NA	646	475	NA	131	NA
Carbonate, as CaCO3 (mg/L)	8/1/95	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	10	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NA	NA	NA	NA	NA
	3/23-24/98	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	<1	<1	NA	NA	NA
	3/9-10/99 6/10-7/2/99	<1	<1 NA	<i NA</i 	<1 NA	<] NA	< 1 NA	< 1 NA	< 1	<1	NA	<]	< 1 NA	NA <1	NA <1	NA
	3/9-10/00	NA <2		NA <2	NA <2	NA NA	NA <2	NA <2	NA <2	NA <2	NA	NA <2	NA ⊲2	<1 <2		NA
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA NA	NA	NA NA	NA	NA	NA <2
	3/8-9/01	<2	<2	<2	<2	NA	<2	<2	<2	<2	NA	<2	<	NA	<2	NA
Hardness-Total, as CaCO ₁ (mg/L)	3/23-24/98	430	430	275	342	440	670	740	510	1450	NA NA	1000	1600	NA	NA	NA
	3/9-10/99	250	440	310	340	640	780	680	370	720	NA	1150	460	NA	NA	NA
	3/9-10/00	600	450	500	1200	NA	660	760	430	760	NA	880	700	260	540	NA
	3/8-9/01	310	470	610	440	NA	590	590	1000	1300	NA	1900	1300	NA	670	NA
Hydroxide (mg/L)	8/1/95	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NA	NA	NA	NA	NA
Methane (mg/L)	3/23-24/98	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	0.039	< 0.0012	0.91	NA	0.14	< 0.0012	NA	NA	NA
	3/9-10/99	NA	NA	NA	<0.0012	NA	NA	NA	NA	0.035	NA	0.094	<0.0012	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0015	0.0017	NA
	3/9-10/00	< 0.0012	< 0.0012	< 0.0012	< 0.0012	NA	< 0.0012	0.13	< 0.0012	0.0056	NA	0.037	< 0.0012	<0.0012	<0.0012	NA
	3/8-9/01	<0.0012	<0.0012	<0.0012	<0.0012	NA	<0.0012	<0.0012	<0.0012	<0.0012	NA	0.0028	<0.0012	NA	< 0.0012	NA
Anions (mg/L)																
Chloride	8/1/95	160	150	310	130	380	310	350	110	2200	3400	NA	NA	NA	NA	NA
	8/23/96	130	140	100	99	210	250	360	140	2000	2900	NA	NA	NA	NA	NA
	3/23-24/98	212	206	126	151	183	223	364	164	2390	NA	940	1200	NA	NA	NA
	3/9-10/99	163	156	142	155	411	238	274	123	1160	NA	834	314	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	195	496	NA
	3/9-10/00	258	196	196	196	NA	224	241	131	474	NA	1290	327	117	276	NA
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	368
	3/8-9/01	NA	165	172	152	NA	224	250	127	879	ŇĂ	1720-7	586	NA	276	327
Fluoride	3/23-24/98	0.9	1.2	1.2	0.6	1.1	0.8	0. 9	1.3	6.1	NA	2.9	4.2	NA	NA	NA
	3/9-10/99	1.54	1.46	1.5	1.38	1.79	1.56	1.44	1.84	4.93	NA	3.08	3.13	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.83	2.22	NA
	3/9-10/00	1.7	1.1	1.1	1.1	NA	0.75	0 69	1.5	1	NA	<0.1	1.7	1.3	1.7	NA
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.5
	3/8-9/01	1.3	0.77	0.63	0.86	NA	0.69	0.66	0.92	1.2	NA	1.1	1.9	NA	1.6	NA
Nitrate (Nitrogen as N)	8/1/95	4.7	5.6	15	28	1.3	9.2	11	38	< 0.1	5.5	NA	NA	NA	NA	NA NA
	8/23/96	11	7.6	7.6	12	< 0.5	10	8.6	24	< 5	11	NA	NA	NA	NA	NA
	3/23-24/98	1.78	3.07	2.59	3.87	0.69	3.92	1.84	4.27	0.07	NA	< 0.05	< 0.05	NA	NA	NA
	3/9-10/99	0.7	2.1	2.6	NA	<0.1	3.3	0.7	3.7	NA NA	NA	<0.1	<0.1	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA 0.25	NA	i NA	NA	NA	NA	2.1	2.4	NA
	3/9-10/00	0.33	2.9	3.7	5.3	NA	3.6	0.35	7.2	0.1	NA	0.11	<0.1	0,14	<0.1	NA
	1/14/01-3/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.5
ilfate	3/8-9/01	4.31	2.56	4.75	3.24	NA	2.82	0.664	7.9	<0.1	NA	<0.1	<0.1	NA	<0.1	NA
		150	150	210	230	6.7	180	160	150	130	230	NA	NA	NA	NA	NA
Sulfate	8/1/95			1				160	180	120	130	NA	NA	' NA	NA	, NA
Sulfate	8/23/96	130	150	150	140	85	80			i			1			1
Sulfate	8/23/96 3/23-24/98	130 130	180	160	190	230	310	230	230	320	NA	190	240	NA	NA	NA
Sulfate	8/23/96 3/23-24/98 3/9-10/99	130 130 196	180 162	160 178	190 195	230 72	310 246	230 240	230 146	320 223	NA NA	190 227	240 193	NA NA	NA NA	NA
Sulfate	8/23/96 3/23-24/98 3/9-10/99 6/10-7/2/99	130 130 196 NA	180 162 NA	160 178 NA	190 195 NA	230 72 NA	310 246 NA	230 240 NA	230 146 NA	320 223 NA	NA NA NA	190 227 NA	240 193 NA	NA NA 249	NA NA 334	NA NA
Sulfate	8/23/96 3/23-24/98 3/9-10/99 6/10-7/2/99 3/9-10/00	130 130 196 NA 530	180 162 NA 190	160 178 NA 250	190 195 NA 260	230 72 NA NA	310 246 NA 280	230 240 NA 260	230 146 NA 170	320 223 NA 160	NA NA NA NA	190 227 NA 270	240 193 NA 210	NA NA 249 200	NA NA 334 170	NA NA NA
Sulfate	8/23/96 3/23-24/98 3/9-10/99 6/10-7/2/99	130 130 196 NA	180 162 NA	160 178 NA	190 195 NA	230 72 NA	310 246 NA	230 240 NA	230 146 NA	320 223 NA	NA NA NA	190 227 NA	240 193 NA	NA NA 249	NA NA 334	NA NA

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	NA	NA
	NA	3.96
	NA	3.6
	4.88	NA
	NA	192
	NA	200
	130	NA
_	NA	NA

Table 2 Summary of Detected Analytes for PAHs, Metals, VOCs, SVOCs and Groundwater Quality Parameters Hobbs, New Mexico Facility BJ Services Company, U.S.A.

		<u></u>							<u> میں بہ میں میں میں میں م</u>	Monitor V	Vells				<u> </u>			
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10		MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
															<u> </u>	<u> </u>		
Cations (mg/L)	8/1/95	120	120	220	160	320	300	300	180	610	490	NA	NA	NA	NA	NA	NA	NA
	8/23/96	120	130	89	110	62	270	230	190	390	440	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	129	122	79	109	94	208	215	142	417	NA	259	388	NA	NA	NA	NA	NA
	3/9-10/99	80.2	129	90.8	116	141	233	197	122	214	NA	308	148	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	113	389	NA	NA	141
	3/9-10/00	155	119	147	387	NA	167	215	110	177	NA	229	180	78.1	122	NA	NA	882
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	179	150	NA
	3/8-9/01	86.8	148	214	157	NA	172	183	381	331	NA	466	338	NA	198	NA	NA	NA
Magnesium	8/1/95	34	36	58	27	72	42	49	43	130	130	NA	NA	NA	NA	NA	NA	NA
	8/23/96	120	32	21	18	28	40	48	44	84	120	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	36	30	18	20	42	47	52	36	130	NA	96	108	NA	NA	NA	NA	NA
	3/9-10/99	19.7	31.5	20.4	21.6	62.2	54.4	47.7	28.5	43	NA	101	32.1	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.6	83.9	NA	NA	44.3
	3/9-10/00	41.3 NA	27.5 NA	26.3 NA	29.2 NA	NA NA	44.3 NA	39.1 NA	26.2	61 NA	NA	47.7 NA	30.6 NA	7.25 NA	38.8 NA	NA 87,5	NA 28.3	74.5 NA
	3/8-9/01	20.7	24.9	NA 25.9	16.6	NA NA	41.1	NA 37.4	NA 28.2	95.1	NA NA	93.4	95.3	NA NA	52.3	87.5 NA	28.3 NA	NA
Potassium	8/1/95	2.4	2.6	3.5	4.2	3	3.4	5	4,1	35	46	NA	95.5 NA	NA		NA	NA	NA NA
	8/23/96	2.4	3	2.2	3.1	2.4	3.7	3.9	2.6	41	53	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	20	NA	30	70	NA	NA	NA	NA	NA
	3/9-10/99	3	4	3	4	4	9	4	3	15	NA	21	101	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	66	6	NA	NA	3
	3/9-10/00	4.01	4.11	3.95	5.61	NA	6.98	4.53	4.08	18.3	NA	18.6	104	70.6	2.84	NA	NA	10.7
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.59	4.59	NA
·	3/8-9/01	<2	2.56	2.76	2.25	NA	5.15	2.94	3.84	19.5	NA	33.5	47.2	NA	2.26	NA	NA	NA
Sodium	8/1/95	100	93	140	110	130	95	94	98	660	2000	NA	NA	NA	NA	NA	NA	NA
	8/23/96	100	110	88	120	120	96	100	83	960	2600	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	113	126	109	130	100	92	101	118	1090	NA	312	381	NA	NA	NA	NA	NA
	3/9-10/99 6/10-7/2/99	126	135 NA	124 NA	155 NA	141 NA	110 NA	115	122	856	NA	225	180	NA	NA	NA	NA	NA
	3/9-10/00	NA 123	112	115	123	NA	95.1	NA 95.4	NA 99.1	NA 181	NA NA	NA. 608	NA 129	121	165	NA NA	NA NA	103 97.3
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	144	108	NA
	3/8-9/01	141	124	135	147	NA	121	118	119	410	NA	801	185	NA	142	NA	NA	NA
		·					··		L			<u></u>	·			·	~ 	
Metals (mg/L)	8/1/95	0.0074	0.0043	< 0.002	0.0059	0.028	0.0022	0.000.4	0.0055	0.016	0.000.0	<u> </u>						
Arsenic	8/23/96	0.0076	0.0043	0.002	0.0059	0.028	0.0033	0.0034 0.0033	0.0055	0.015	0.0086	NA NA	NA NA	NA NA	NA	NA NA	NA NA	NA NA
	3/23-24/98	0.0078	0,007	0.0033	0.007	0.013	< 0.005	< 0.005	0.0044	0.028	i NA	0.019	0.013	NA	NA NA	NA	NA	NA
	3/9-10/99	0.013	0.009	0.012	0.005	0.02	0.006	0.005	0,005	0.035	NA	0.015	0.066	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.022	0.008	NA	NA	<0.005
	3/9-10/00	0.0178	0.00817	0.0178	0.0173	NA	0.00849	0.00953	0.00757	0.0474	NA	0.108	0.0948	0.0143	<0.005	NA	NA	0.034
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00511	<0.005	NA
	3/8-9/01	0.0205	0.0094	0.0386	0.00974	NA	0.00694	NA	0.013	0.133	NA	0.08	0.0445	NA	0.00673	NA	NA	NA
Barium	8/1/95	0.069	0.38	0.34	0.049	1.1	0.069	0.075	0.089	0.37	0.2	NA	NA	NA	NA	NA	NA	NA
	8/23/96	0.064	0.24	0.069	0.038	0.29	0.061	0.066	0.089	0.26	0.2	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	0.11	0.182	0.044	0.044	0.208	0.059	0.074	0.066	0.287	NA	0.163	0.157	NA	NA	NA	NA	NA
	3/9-10/99	0.058	0.059	0.045	0.054	0.555	0.076	0.052	0.043	0.17	NA	0.174	0.144	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.155	0.333	NA	NA	0.062
	3/9-10/00	0.0917	0.108	0.0694	0.184	NA	0.046	0.236	0.0419	0.281	NA	0.872	0.245	0.0962	0.113	NA	NA	1.49
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0833	0.073	NA
	3/8-9/01	0.044	0.119	0.0978	0.0055	NA	0.043	0 0512	0.111	0.23	NA	0.401	0,603	NA	0,171	NA	NA	NA
Cadmium	8/1/95	< 0.001	< 0.001	0.0052	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	NA	< 0.005	< 0.005	NA	NA	NA	NA	NA
	3/9-10/99	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	NA	<0.005	<0.005	NA	NA NA	NA	NA	NA
	6/10-7/2/99	NA	NA	, NA	NA	NA	NA .	NA	NA	NA <0.005	NA	NA < 0.005	NA CO DO F	<0.005	<0.005	NA	NA	<0.005
	3/9-10/00	<0.005	< 0.005	0.0178	<0.005	NA	<0.005	<0.005	<0.005	<0.005	NA	< 0.005	<0.005	<0.005	<0.005		NA ≪0.005	<0.005
	1/14/01 3/8-9/01	NA <0.005	NA <0.005	0.0121	NA <0.005	NA NA	NA <0.005	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA NA
	3/8-9/01	<0.005	-v.005	0.0121	~0.003	INA	~0.005	<6.005	<0.005	<0.005	NA	<0.005	<0.005	NA	, <0.005	NA	NA	NA

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 Table 2

 Summary of Detected Analytes for PAHs, Metals, VOCs, SVOCs and Groundwater Quality Parameters

 Hobbs, New Mexico Facility

 BJ Services Company, U.S.A.

					<u> </u>			الانتابيزي عدا :		Monitor V	Vells							7
Analyte (units)	Sample Date	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	0W-4
Chromium	8/1/95	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 0.01	< 0.01	< 0.01	< 0.01	0.049	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	NA	< 0.01	< 0.01	NA	NA	NA	NA	NA
	3/9-10/99	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.01	NA	NA	NA	NA	· NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02	0.02	NA	NA	<0.01
	3/9-10/00	<0.01	<0.01	<0.01	0.0248	NA	< 0.01	< 0.01	< 0.01	0.031	NA	0.0342	0.0124	<0.01	<0.01	NA	NA	0.105
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01	<0.01	NA
	3/8-9/01	<0.01	<0.01	0.0104	0.0101	NA	<0.01	<0.01	0.013	0.0109	NA	0.0392	0.0469	NA	0.0104	NA	NA	NA
Lead	8/1/95	< 0.002	< 0.002	0.0044	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.0025	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0,002	< 0.002	< 0.002	< 0.002	NA	NA	NA	NA	! NA	NA	NA
	3/23-24/98	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	NA	< 0.005	< 0.005	NA	NA	NA	NA	NA
	3/9-10/99	<0.005	<0.005	<0.005	< 0.005	0.013	< 0.005	< 0.005	< 0.005	< 0.005	NA	0.009	<0.005	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA	NA	< 0.005
	3/9-10/00	<0.005	<0.005	<0.005	0.00565	NA	< 0.005	< 0.005	< 0.005	0.00661	NA	0.00595	< 0.005	<0.005	<0.005	NA	NA	0.0355
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA
Mercury	3/8-9/01 8/1/95	<0.005	<0.005 < 0.0002	0.00602	<0.005	NA < 0.0002	<0.005 0.0005	< 0.005	0.00597	0.0222	NA	0.0119	0.00627	NA	<0.005	NA	NA	NA
	8/1/95	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0005	< 0.0002	< 0.0002	< 0.0002	< 0.0002	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002 < 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	NA	NA	NA	NA	NA	· NA	NA
	3/23-24/98	< 0.0002	< 0.0002	< 0.0002	< 0.0002 <0.0002	< 0.0002	< 0.0002 <0.0002	0,0003 <0,0002	< 0.0002 <0.0002	< 0.0002 <0.0002	NA	< 0.0002 <0,0002	< 0.0002	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	<0.0002 NA	<0.0002 NA	<0.0002 NA	<0.0002 NA	<0.0002 NA	<0.0002 NA	NA NA		<0.0002 NA	NA <0.0002	NA	NA	NA	NA 1 0000
	3/9-10/00	0.000695	<0.0002	<0.0002	<0.0002	NA	<0.0002	<0.0002	NA <0.0002	<0.0002	NA NA	NA <0.0002	NA <0.0002	<0.0002	<0.0002 <0.0002	NA NA	NA NA	<0.0002 <0.0002
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<0.0002	<0.0002 NA
	3/8-9/01	<0.0002	<0.0002	<0.0002	<0.0002	NA	<0.0002	<0.0002	<0.0002	<0.0002	NA	<0.0002	<0.0002	NA	<0.0002	NA	NA	NA
Selenium	8/1/95	<0.004	<0.004	<0.004	<0.004	<0.004	NA	NA	NA	NA	NĂ	NA	NA	NA	NA	NA	NA	NA
	8/23/96 3/23-24/98	<0.004 <0.005	<0.004 <0.005	<0.004 <0.005	<0.004 <0.005	<0.004 <0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/9-10/99	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	NA NA	<0.005 <0.005	<0.005 <0.005	NA NA	NA NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA NA	NA NA	NA NA
	3/9-10/00	<0.005	<0.005	<0.005	<0.005	NA	0.00926	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	NA	NA	<0.005
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	0.00523	NA
	3/8-9/01	<0.005	0.00702	0.00508	0.00587	NA	0.00617	<0.005	0.0054	<0.005	NA	<0,005	<0.005	NA	<0.005	NA	NA	NA
PAHs (µg/L)																		
Acenaphthene	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96 3/23-24/98	< 10 < 10	< 10 <0.3	< 30 <0.3	< 5 <0.3	< 30 <0.3	< 5 <0.3	< 5 <0.3	< 5 <0.3	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	3/9-10/99	< 0.1	< 0.1	<0.3 <2.0	< 0.1	<0.3	<0.3	<0.3	< 0.3	<0.3 < 0.1	NA NA	<0.3 < 0.1	<0.3 < 0.1	NA NA	NA NA	NA NA	NA NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	< 1.0	NA	NA	NA <0.1
	3/9-10/00	0.28	< 0.1	< 0. i	<0.1	NA	<0.1	<0.1	<0.1	< 0.1	NA	<0.1	<0.1	<0.1	<0.1	NA	NA	<0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	NA
Acenaphthylene	3/8-9/01 8/1/95	<0.12 < 50	<0.13 < 10	<0.12	<0.1 < 5	NA < 30	<0.13 < 5	<0.12	<0.12	<0.15	NA	<0.13	<0.13	NA	<0.12	NA	NA	NA
Acenaphiliyiene	8/23/96	< 10	< 10	< 300	< 5	< 30	< 5	< 5	< 5 < 5	< 5 < 5	< 5 < 5	NA NA	NA NA	NA NA	NA NA	NA	NA	NA
	3/23-24/98	< 10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA NA	NA NA	NA NA
	3/9-10/99	< 0.1	< 0.1	< 0.1	< 0.1	<2.0	<0.1	<0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	< 1.0	NA	NA	<0.1
	3/9-10/00	0.91	< 0.1	< 0.1	<0.1	NA	<0.1	<0.1	<0.1	0,4	NA	<0.1	<0.1	<0.1	1.8	NA	NA	<0.1
	1/14/01 3/8-9/01	NA <0.12	NA <0.13	NA <0.12	NA <0.1	NA NA	NA <0.13	NA <0.12	NA <0.12	NA 0,71	NA NA	NA 0.35	NA <0.13	NA NA	NA	<0.1	<0.1	NA NA
Anthracene	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	NA < 5	0.35 NA	<0.13 NA	NA NA	<0.12 NA	NA NA	NA NA	NA NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA	NA
	3/9-10/99	< 0.1	< 0.1	< 0.1	< 0.1	<2.0	<0.1	<0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA	. NA
	6/10-7/2/99 3/9-10/00	NA 0.12	NA	NA	NA	NA	NA	NA <c 1<="" td=""><td>NA</td><td>NA</td><td> NA</td><td>NA</td><td>NA</td><td><0.1</td><td>< 1.0</td><td>NA</td><td>NA</td><td><0.1</td></c>	NA	NA	NA	NA	NA	<0.1	< 1.0	NA	NA	<0.1
	3/9-10/00	0.12 NA	< 0.1 NA	< 0.1 NA	<0.1 NA	NA NA	<0.1 NA	<c. l<br="">NA</c.>	<0.1 NA	< 0.1 NA	NA NA	<0.1	<0.1	<0.1	<0.1	NA CO L	NA	<0.1
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0.13	<0.12	<0.12	NA <0.15	NA NA	NA <0.13	NA <0.13	NA NA	NA <0.12	<0.1 NA	<0.1 NA	NA NA
Benzo(a)anthracene	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA NA	NA	NA	NA NA	NA NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	, < 5	NA	NA NA	NA	NA	NA	NA	NA NA
	3/23-24/98	< 10	<0.1	<0.1	<0. l	<0.1	<0.1	<0,1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA	NA
	3/9-10/99	< 0.1	< 0.1	0.2	< 0.1	<2.0	<0.1	<0.1	¹ < 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA <0.1	NA	NA	NA	NA	NA	<0.1	< 1.0	NA	NA	<0.1
	3/9-10/00 1/14/01	0.18 NA	< 0.1 NA	< 0.1 NA	<0.1 NA		<0.1 NA	`_<0.1 NA	<0.1 NA	< 0.1	NA	<0.1	<0.1	<0.1	<0.1	NA	NA	<0.1
	3/8-9/01	NA <0.12	! NA 1 <0,13	iNA i <0.12	NA <0,1	NA NA	NA <0.13	NA <0.12	NA <0.12	NA <0,15	NA NA	NA <0.13	NA _ <0.13	NA NA	NA <0.12	<0.1 NA	<0.1 I NA I	NA
		1		L		1		an 3 of 5		L	1							NA

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Table 2 Summary of Detected Analytes for PAHs, Metals, VOCs, SVOCs and Groundwater Quality Parameters Hobbs, New Mexico Facility BJ Services Company, U.S.A.

										Monitor W	Vells							
Analyte (units)	Sample Date	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	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NĂ	NA	NA	NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA	NA
	3/9-10/99 6/10-7/2/99	< 0.1 NA	< 0.1 NA	0.2 NA	< 0.1 NA	<2.0 NA	<0.1 NA	<0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA	NA
	3/9-10/00	< 0.1	< 0,1	< 0.1	< 0.1	× 0,1	< 0.1	NA < 0.1	NA < 0.1	NA < 0.1	NA < 0.1	NA < 0.1	NA < 0.1	<0.1 < 0.1	< 1.0 < 0.1	NA NA	NA	< 0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	NA <0.1	< 0.1 NA
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0.13	<0.12	<0.12	<0.15	NA	<0.13	<0.13	NA	<0.12	NA	NA	NA
Benzo(a)pyrene	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	<5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA	NA
	3/9-10/99 6/10-7/2/99	< 0.1 NA	< 0.1 NA	0.2 NA	< 0.1 NA	<2.0 NA	<0.1 NA	<0.1 NA	< 0.1 NA	< 0.1 NA	NA NA	< 0.1 NA	< 0.1 NA	NA <0.1	NA	NA	NA	NA
	3/9-10/00	< 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	< 1.0 < 0.1	NA NA	NA NA	<0.1 < 0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	NA
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0.13	<0.12	<0.12	<0.15	NA	<0.13	<0.13	NA	<0.12	NA	NA	NA
Fluorene	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	<5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 10	<0.3 < 0,1	<0.3	< 0.3	<0.3	<0.3	<0.3	<0.3	<0.3	NA	<0.3	<0.3	NA	NA	NA	NA	NA
	3/9-10/99 6/10-7/2/99	< 0.1 NA	< 0.1 NA	<2.0 NA	< 0.1 NA	<2.0 NA	<0.1 NA	<0.1 NA	< 0.1 NA	< 0,1 NA	NA NA	< 0.1 NA	< 0.1 NA	NA <0.1	NA < 1.0	NA NA	NA	NA
	3/9-10/00	25	< 0.1	0.36	<0.1	NA	<0.1	<0.1	1.5	<0.1	NA	<0.1	<0.1	<0.1	1.6	NA NA	NA NA	<0.1 <0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	NA
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0,13	<0.12	<0.12	<0.15	NA	<0.13	<0.13	NA	<0.12	NA	NA	NA
Naphthalene	8/1/95	< 5	210	1700	< 5	470	< 5	< 5	15	92	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	230	110	440	< 5	< 30	< 5	< 5	< 84	< 76	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	130	23	< 0.1	< 0.1	< 0.1	< 0.1	< 0,1	4	8	NA	0.8	11	NA	NA	NA	NA	NA
	3/9-10/99	10	8	170	0.1	160	<0.1	<0.1	<0.1	6	NA	<0.1	19	NA	NA	NA	NA	NA
Naphthalene	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0,6	34	NA	NA	<0.1
	3/9-10/00	2.4	<0, i	0.44	<0.1	NA	<0.1	<0.1	0.42	1.5	NA	0.12	0.26	<0.1	56	NA	NA	<0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	NA
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0.13	<0.12	<0.12	0.15	NA	0.21	<0.13	NA	<0.12	NA	NA	NA
Phenanthrene	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA	NA
	3/9-10/99	< 0.1	< 0.1	2	< 0.1	<2.0	<0.1	<0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 1.0	NA	NA	<0.1
	3/9-10/00	0.65	<0.1	< 0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	0.22	NA	NA	<0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	NA
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0.13	<0.12	<0.12	<0.15	NA	<0.13	<0.13	NA	<0.12	NA	NA	NA
Pyrene	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA	NA
	3/9-10/99	< 0.1	< 0.1	0.4	< 0.1	<2.0	<0.1	<0.1	< 0.1	< 0.1	NA	< 0,1	< 0.1	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 1.0	NA	NA	<0.1
	3/9-10/00	< 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	NA	NA	< 0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	NA
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0.13	<0.12	<0.12	<0.15	NA	<0.13	<0.13	NA	<0.12	NA	NA	NA
VOCs (µg/L)														<u> </u>		` <u>-</u> <u>-</u>	·	
Acetone	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<100	<100	NIA	NIA	NIA	NIA	N
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA NA	1				NA 120	NA	NA		NA
	3/8-9/01	NA NA	NA NA	NA NA	NA			í		NA	NA	NA	NA	130	<100	NA	NA	<100
sec-Butylbenzene			÷			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<100	<100	NA
set-Butyloenzene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5	5	NA	NA	< 5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA

調査におります。

Table 2 Summary of Detected Analytes for PAHs, Metals, VOCs, SVOCs and Groundwater Quality Parameters Hobbs, New Mexico Facility BJ Services Company, U.S.A.

		<u>, </u>						<u> </u>		Monitor W	Vells	<u></u>			<u></u>		<u> </u>]
Analyte (units)	Sample Date	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	0W-4
lsopropylbenzene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5	31	NA	NA	< 5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
Naphthalene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5	190	NA	NA	< 5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
n-Propylbenzene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5	68	NA	NA	< 5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
1,2,4-Trimethylbenzene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
· · · · ·	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5	93	NA	NA	< 5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA -	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
1,3,5-Trimethylbenzene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5	93	NA	NA	< 5
	3/8-9/01	NA	NA	NA	NA	NA	• NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
МТВЕ	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 10	25	NA	NA	< 10
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
			<u></u>		4				1			1			<u> </u>			
SVOCs (µg/L)																		
2,4-Dimethylphenol	8/1/95	< 50	97	< 500	< 5	42	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	MA	NA	NA	NA	NA	NA	< 5	56	NA	NA	<5
2-Methylnaphthalene	8/1/95	280	62	1500	< 5	150	< 5	< 5	36	23	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5	29	NA	NA	<5
2-Methylphenol	8/1/95	< 50	56	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5	< 5	NA	NA	<5
4-Methylphenol	8/1/95	< 80	< 20	< 800	< 8	150	< 8	< 8	< 8	< 8	< 8	NA	NA	NA	NA	NA	NA	NA
· · ·	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	ŇA	NA	NA	NA	NA	NA	< 5	< 5	NA	NA	<
Bis(2-ethylhexyl)phthalate	8/1/95	750	< 20	10000	40	< 40	< 7	< 7	< 7	< 7	< 7	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5	< 5	NA	NA	<5
Phenol	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	8.2	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	6	NA	NA	<5

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.

NA= Not Analyzed.

PAHs = Polynuclear Aromatic Hydrocarbons.

Table 3
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-I	3,647.53	08/10/92	53.22	0.00	3,594.31	(1)
		02/09/93	53.03	0.00	3,594.50	• • •
		08/18/93	53.10	0.00	3,594.43	
		01/26/94	53.31	0.00	3,594.22	
		05/03/95	54.64	0.20	3,593.05	(2)
		07/31/95	54.14	0.00	3,593.39	(-)
		11/14/95	53.69	0.00	3,593.84	
		02/23/96	54.32	0.00	3,593.21	
		05/31/96	54.14	0.00	3,593.39	
		08/23/96	56.17	0.00	3,591.36	
		12/02/96	55.27	0.00	3,592.26	
		03/12/97	55.70	0.27	3,592.05	
		06/12/97	55.08	0.02	3,592.47	
		09/12/97	55.64	0.51	3,592.31	
		12/10/97	55.46	0.00	3,592.07	PSH Sheen
		03/24/98	55.81	0.00	3,591.72	PSH Sheen
		06/23/98	56.38	0.06	3,591.20	
		09/30/98	56.82	0.00	3,590.71	PSH Sheen
		12/09/98	57.05	0.00	3,590.48	
		03/10/99	57.45	0.00	3,590.08	
		06/10/99	58.02	0.00	3,589.51	
		07/02/99	57.90	0.00	3,589.63	
		09/14/99	58.14	0.00	3,589.39	
		12/09/99	-	-	-	(3)
	[03/09/00	58.99	0.00	3,588.54	(-)
		06/00	-		-	
		09/00	-	-	-	
		12/7/00	-	-	-	
		03/08/01	60.35	0.00	3587.18	
MW-2	3,644.84	08/10/92	52.82	0.00	3,592.02	(1)
		02/09/93	49.60	0.00	3,595.24	~ /
		08/18/93	49.71	0.00	3,595.13	
		01/26/94	49.97	0.00	3,594.87	
		05/03/95		-	-	(4),(5)
MW-3	3,645.00	08/10/92	52.99	0.00	3,592.01	(<u>)</u>
		02/09/93	52.72	0.00	3,592.28	
		08/18/93	52.82	0.00	3,592.18	
		01/26/94	53.05	0.00	3,591.95	
		05/03/95	54.31	0.00	3,590.69	
	, i	07/31/95	51.24	0.00	3,593.76	
		11/14/95	51.10	0.00	3,593.90	
		02/23/96	51.68	0.00	3,593.32	
		05/31/96	51.45	0.00	3,593.55	
		08/23/96	51.55	0.00	3,593.45	
		12/02/96	52.23	0.00	3,592.77	
		03/12/97	52.67	0.00	3,592.33	
		06/12/97	52.68	0.00	3,592.32	
		09/11/97	52.71	0.00	3,592.29	
		12/10/97	52.89	0.00	3,592.11	
		03/23/98	53.22	0.00	3,591.78	
		06/23/98	53.66	0.00	3,591.78	
		09/30/98				
			54.06	0.00	3,590.94	、 、
		12/09/98	54.36	0.00	3,590.64	
		03/10/99	54.72	0.00	3,590.28	
		06/10/99	55.17	0.00	3,589.83	
	1	07/02/99	55.15	0.00	3,589.85	

Table 3 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		09/14/99	55.42	0.00	3,589.58	
		12/09/99	55.78	0.00	3,589.22	
		03/09/00	56.23	0.00	3,588.77	
		06/08/00	56.66	0.00	3,588.34	
		09/13/00	56.77	0.00	3,588.23	
		12/07/00	57.15	0.00	3,587.85	
		03/08/01	57.69	0.00	3,587.31	
MW-4	3,645.28	08/10/92	50.55	0.00	3,594.73	(1)
TAT #44	3,043.20	02/09/93	50.26	0.00	3,595.02	(1)
		08/18/93	50.38	0.00	3,594.90	
		01/26/94	50.90	0.30		
					3,594.63	
		05/03/95	51.51	0.45	3,594.14	
		07/31/95	51.74	0.26	3,593.75	
		11/14/95	51.03	0.00	3,594.25	
		02/23/96	51.65	0.01	3,593.64	
		05/31/96	51.48	0.00	3,593.80	
		08/23/96	53.49	0.00	3,591.79	
		12/02/96	52.32	0.00	3,592.96	
		03/12/97	52.74	0.05	3,592.58	
		06/12/97	53.08	0.44	3,592.56	
		09/12/97	52.60	0.15	3,592.80	
		12/10/97	52.89	0.00	3,592.39	PSH Sheen
		03/24/98	53.20	0.25	3,592.29	
		06/23/98	53.82	0.22	3,591.64	
		09/30/98	53.96	0.00	3,591.32	200 ml PSH
		12/09/98	54.27	0.00	3,591.01	
		03/10/99	54.69	0.04	3,590.62	
		06/10/99	55.07	0.00	3,590.21	
		07/02/99	55.10	0.00	3,590.18	
		09/14/99	55.33	0.00	3,589.95	
		12/09/99	55.79	0.00	3,589.49	
		03/10/00	56.12	0.00	3,589.16	
		06/08/00	56.67	0.00	3,588.61	
		09/13/00	56.65	0.00	3,588.63	
		12/07/00	57.05	0.00	3,588.23	
		03/08/01	57.72	0.00	3,587.56	
MW-5	3,647.72	08/10/92	52.38	0.00	3,595.34	(1)
		02/09/93	52.06	0.00	3,595.66	~ /
		08/18/93	52.16	0.00	3,595.56	
		01/26/94	52.50	0.00	3,595.22	
		05/03/95	53.57	0.00	3,594.15	
		07/31/95	53.27	0.00	3,594.45	
		11/14/95	52.83	0.00	3,594.89	
		02/23/96	53.57	0.00	3,594.15	
		05/31/96	53.16	0.00	3,594.56	
		08/23/96	53.41	0.00	3,594.30	
	l	12/02/96	53.98	0.00		
		03/12/97	54.44		3,593.74	
				0.00	3,593.28	
		06/12/97	54.48	0.00	3,593.24	
		09/12/97	54.29	0.00	3,593.43	
		12/10/97	54.66	0.00	3,593.06	
		03/23/98	55.05	0.00	3,592.67	
	ļ	06/23/98	55.44	0.00	3,592.28	
		09/30/98	55.65	0.00	3,592.07	
		12/09/98	56.00	0.00	3,591.72	
	1	03/09/99	56.45	0.00	3,591.27	

Table 3 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		06/10/99	56.91	0.00	3,590.81	
		07/02/99	56.93	0.00	3,590.79	
		09/14/99	57.12	0.00	3,590.60	
		12/09/99	57.41	0.00	3,590.31	
		03/09/00	57.92	0.00	3,589.80	
		06/08/00	58.32	0.00	3,589.40	
		09/13/00	58.36	0.00	3,589.36	
		12/07/00	58.71	0.00	3,589.01	
		03/08/01	59.36	0.00	3,588.36	
MW-6	3,644.74	02/09/93	50.58	0.00	3,594.16	(1)
101 10 0	5,014.74	08/18/93	50.78	0.00	3,593.96	(1)
		01/26/94	51.00	0.00	3,593.74	
		05/03/95	52.63	0.00	3,592.11	
		07/31/95	51.90	0.00	3,592.84	
		11/14/95	51.19	0.00	3,593.55	
		02/23/96	52.10	0.00	3,592.64	
		05/31/96	51.76	0.00	3,592.98	
		08/23/96	51.63	0.00	3,593.11	
		12/02/96	52.85	0.00	3,591.89	
	ļ	03/12/97	53.55	0.00	3,591.19	
		06/12/97	52.08	0.00	3,592.66	
		09/11/97	53.72	0.00	3,591.02	
		12/10/97	53.27	0.00	3,591.47	
		03/23/98	53.56	0.00	3,591.18	
		06/23/98	52.88	0.00	3,591.86	
		09/30/98	54.89	0.00	3,589.85	
		12/09/98	54.57	0.00	3,590.17	
		03/10/99	55.10	0.00	3,589.64	
		07/02/99		0.00	5,507.01	(5),(6)
MW-7	3,644.55	02/09/93	50.53	0.00	3,594.02	(1)
	,	08/18/93	50.74	0.00	3,593.81	(-)
		01/26/94	51.01	0.00	3,593.54	
		05/03/95	52.25	0.00	3,592.30	
		07/31/95	51.92	0.00	3,592.63	
		11/14/95	51.48	0.00	3,593.07	
		02/23/96	52.15	0.00	3,592.40	
		05/31/96	51.78	0.00	3,592.77	
		08/23/96	52.02	0.00	3,592.53	
		12/02/96	52.52	0.00	3,592.03	
		03/12/97	52.99	0.00	3,591.56	
		06/12/97	53.08	0.00	3,591.47	
		09/11/97	53.00	0.00	3,591.55	
		12/10/97	53.28	0.00	3,591.27	
		03/23/98	53.59	0.00	3,590.96	
	ł	06/23/98	54.20	0.00	3,590.35	
		09/30/98	54.54	0.00	3,590.01	
		12/09/98	54.74	0.00	3,589.81	
		03/09/99	55.15	0.00	3,589.40	
		06/10/99	55.66	0.00	3,588.89	
		07/02/99	55.73	0.00	3,588.82	
		09/13/99	55.94	0.00		
		12/09/99	56.38		3,588.61	
		1		0.00	3,588.17	
		03/09/00	56.74	0.00	3,587.81	
•		06/08/00	57.17	0.00	3,587.38	
		09/13/00	57.40	0.00	3,587.15	
	1	12/07/00	57.77	0.00	3,586.78	

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Table 3
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		03/08/01	58.29	0.00	3,586.26	
MW-8	3,644.87	02/09/93	50.48	0.00	3,594.39	(1)
	-,	08/18/93	50.67	0.00	3,594.20	(1)
		01/26/94	50.96	0.00	3,593.91	
		05/03/95	52.15	0.00	3,592.72	
		07/31/95	51.77	0.00	3,593.10	
		11/14/95	51.37	0.00	3,593.50	
		02/23/96	52.17	0.00	3,592.70	
		05/31/96	51.55	0.00	3,593.32	
		08/23/96	51.92	0.00	3,592.95	
		12/02/96	52.43	0.00	3,592.44	
	ļ	03/12/97	52.93	0.00	3,591.94	
		06/12/97	53.96	0.00	3,590.91	
		09/11/97	52.73	0.00	3,592.14	
		12/10/97	53.15	0.00	3,591.72	
		03/23/98	53.51	0.00	3,591.72	
	1	06/23/98	54.01	0.00		
		09/30/98	54.35	0.00	3,590.86	
		12/09/98	54.60	0.00	3,590.52 3,590.27	
		03/09/99	55.00	0.00	3,589.87	
		06/10/99	55.56	0.00	3,589.31	
		07/02/99	55.57	0.00	3,589.30	
		09/13/99	55.72	0.00	3,589.15	
		12/09/99	JJ.12	0.00	3,307.15	(3)
		03/09/00	56.52	0.00	3,588.35	(5)
		06/00	50.52	0.00	3,366.33	
	4	09/00			-	
		12/00		-	-	
	l	03/08/01	58.11	0.00	3586.76	
MW-9	3,644.78	04/22/93	49.73	0.00	3,595.05	(1)
	-,	07/15/93	49.65	0.00	3,595.13	(1)
		08/18/93	49.85	0.00	3,594.93	
		01/26/94	50.02	0.00	3,594.76	
		05/03/95	51.35	0.00	3,593.43	
		07/31/95	50.97	0.00	3,593.81	
		11/14/95	50.43	0.00	3,594.35	
	}	02/23/96	51.12	0.00	3,593.66	
		05/31/96	50.89	0.00	3,593.89	
		08/23/96	50.98	0.00	3,593.89	
		12/02/96	51.58	0.00	3,593.20	
		03/12/97	52.21	0.05	3,592.61	
		06/12/97	52.10	0.03	3,592.68	PSH Sheer
		09/12/97	51.95	0.00	3,592.88	PSH Sheer
	ł	12/10/97	52.37	0.00	3,592.83	PSH Sheer
	1	03/23/98	52.68	0.00		PSH Sheer
		06/23/98	53.08	0.00	3,592.10	
		09/30/98	53.08		3,591.70	PSH Sheer
				0.01	3,591.40	PSH Sheer
	ļ	12/09/98	53.68	0.00	3,591.10	
	[03/10/99	54.15	0.00	3,590.63	
		06/10/99	54.68	0.00	3,590.10	
		07/02/99	54.71	0.00	3,590.07	
		09/13/99	54.71	0.00	3,590.07	
	}	12/09/99	-	-	-	(3)
	i i	03/09/00	55.69	0.00	3,589.09	
	}	06/00	-	-		
	1	09/00	1	1		

Table 3
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		12/00			-	
		03/08/01	57.03	0.00	3,587.75	
MW-10	3,644.47	08/18/93	51.54	0.00	3,592.93	(1)
		01/26/94	51.90	0.00	3,592.57	
		05/03/95	52.97	0.00	3,591.50	
		07/31/95	52.87	0.00	3,591.60	
		11/14/95	52.51	0.00	3,591.96	
		02/23/96	53.05	0.00	3,591.42	
		05/31/96	52.79	0.00	3,591.68	
		08/23/96	53.03	0.00	3,591.44	
		12/02/96	53.41	0.00	3,591.06	
		03/12/97	54.21	0.00	3,590.26	
		06/12/97	53.99	0.00	3,590.48	
		09/12/97	53.94	0.00	3,590.53	
		12/10/97	54.12	0.00	3,590.35	
		03/23/98	54.51	0.00	3,589.96	
		06/23/98	55.12	0.00	3,589.35	
		09/30/98	55.61	0.00	3,588.86	
		12/09/98	55.80	0.00	3,588.67	
		03/09/99	56.09	0.00	3,588.38	
		06/10/99	56.60	0.00	3,587.87	
		07/02/99	56.64	0.00	3,587.83	
		09/14/99	56.91	0.00	3,587.56	
		12/09/99	57.37	0.00	3,587.10	
		03/10/00	57.71	0.00	3,586.76	
		06/08/00	58.08	0.00	3,586.39	
		09/13/00	58.44	0.00	3,586.03	
		12/07/00	58.89	0.00	3,585.66	
		03/09/01	59.31	0.00	3,585.24	
MW-11	3,643.78	08/18/93	51.92	0.00	3,591.86	(1)
		01/26/94	52.32	0.00	3,591.46	
		05/03/95	53.38	0.00	3,590.40	
		07/31/95	53.35	0.00	3,590.43	
		11/14/95	52.96	0.00	3,590.82	
		02/23/96	53.50	0.00	3,590.28	
		05/31/96	53.25	0.00	3,590.53	
		08/23/96	53.49	0.00	3,590.29	
		12/02/96	53.79	0.00	3,589.99	
		03/12/97	53.81	0.00	3,589.97	
		06/12/97	53.96	0.00	3,589.82	
		09/12/97	52.93	0.00	3,590.85	
		12/10/97				(5),(6)

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Table 3 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	3,644.24	03/23/98	54.79	0.00	3,589.45	(7)
	, , , , , , , , , , , , , , , , , , ,	06/23/98	55.43	0.00	3,588.81	
		09/30/98	55.96	0.00	3,588.28	
i		12/09/98	56.13	0.00	3,588.11	
		03/10/99	56.43	0.00	3,587.81	
i		06/10/99	56.94	0.00	3,587.30	
		07/02/99	57.01	0.00	3,587.23	
		09/14/99	57.36	0.00	3,586.88	
		12/09/99	57.72	0.00	3,586.52	
		03/09/00	58.01	0.00	3,586.23	
		06/08/00	58.40	0.00	3,585.84	
		09/13/00	58.84	0.00	3,585.40	
		12/07/00	59.29	0.00	3,584.95	
		03/08/01	59.72	0.00	3,584.52	
MW-12	3,644.29	03/23/98	54.72	0.00	3,589.57	(7)
		06/23/98	55.48	0.00	3,588.81	
		09/30/98	56.02	0.00	3,588.27	
		12/09/98	56.17	0.00	3,588.12	
		03/10/99	56.45	0.00	3,587.84	
		06/10/99	56.97	0.00	3,587.32	
		07/02/99	56.99	0.00	3,587.30	
		09/14/99	57.41	0.00	3,586.88	
		12/09/99	57.76	0.00	3,586.53	
		03/10/00	58.08	0.00	3,586.21	
		06/08/00	58.42	0.00	3,585.87	
		09/13/00	58.85	0.00	3,585.44	
		12/07/00	59.31	0.00	3,584.98	
		03/08/01	59.76	0.00	3,584.53	
MW-12D	3,644.38	07/02/99	57.13	0.00	3,587.25	(8)
		09/14/99	57.74	0.00	3,586.64	
		12/09/99	57.86	0.00	3,586.52	
	1	03/09/00	58.24	0.00	3,586.14	
	l	06/08/00	58.56	0.00	3,585.82	
		09/00	-	-	-	
		12/00	-	-	-	
		03/08/01				
MW-13	3,645.52	07/02/99	56.60	0.00	3,588.92	(9)
	t	09/14/99	56.92	0.00	3,588.60	
		12/09/99	57.28	0.00	3,588.24	
		03/10/00	57.68	0.00	3,587.84	
		06/08/00	58.04	0.00	3,587.48	
		09/13/00	58.29	0.00	3,587.23	
	ł	12/07/00	58.68	0.00	3,586.84	
		03/08/01	59.19	0.00	3,586.33	
MW-14	3,642.45	03/08/01	61.07	0.00	3,581.38	

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Table 3 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	3,643.24	03/08/01	59.79	0.00	3,583.45	<u></u>
OW-4	3,644.06	07/02/99	58.18	0.00	3,585.88	(8)
		09/14/99	58.63	0.00	3,585.43	
		12/09/99	58.92	0.00	3,585.14	
		03/09/00	59.19	0.00	3,584.87	
		06/08/00	59.56	0.00	3,584.50	
		09/13/00	60.16	0.00	3,583.90	
	l	12/07/00	61.15	0.00	3,582.91	
		03/08/01	61.43	0.00	3,582.63	(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.

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Table 4 March 8-9, 2001 Field Screening Results for Groundwater Samples Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Į	Monitor Well	Cumulative Liters Removed	рН	Temperature (°C)	Conductivity (umkos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)	Alkalinity (mg/L)	Turbidity NTUs ⁽¹⁾
ĥ	MW-1	1.0	8.27	17.1	99.4	86	6,58	NM	NM	NM	59.5
	MW-3	1.0	7.80	15.8	0.136	137	5.56	NM	NM	NM	7.8
T	MW-4	1.0	7.81	16.5	0.138	94	6.94	NM	NM	NM	58.2
	MW-5	1.0	7.67	16.7	0.133	174	6.98	NM	NM	NM	17.1
	MW-7	1.0	7.14	15.9	0.174	164	5.06	NM	NM	NM	26.6
T	MW-8	1.0	7.52	15.5	0.169	166	5.50	NM	NM	NM	21.8
h	MW-9	1.0	7.90	16.2	0.1	153	4.89	NM	NM	NM	NM
	MW-10	1.0	7.23	16.1	0.2	-117	4.71	4.0	2.5	770	195
	MW-11A	1.0	7.16	15.3	0.634	-87	1.51	1.0	4.0	770	895
đ	MW-12	1.0	7.22	16.3	0.22	-110	4.50	4.0	2.5	770	88
	MW-13	1.0	7.80	17.2	0,178	-47	6.47	NM	NM	NM	37.5
	MW-14	1.0	7.23	16	0.203	270	6.62	NM	NM	NM	20,4
Ó	MW-15	1.0	7.31	16.7	0,149	214	5.79	NM	NM	NM	18
ų	OW-4 ⁽²⁾	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

NTUs = Nephelometric turbidity units

 $^{\prime}$ N I Us = N Well dry

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

Ionitor well MW-6 P&A'd 7/1/99. Ionitor well MW-11 not operative after September 1997; P&A'd 7/1/99. NM=Not Measured

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

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgran	ns per liter, ug/L		milligrams pe	er liter, mg/I
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
	9/30/98	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/98	Regular	<1.0	1.5	17.0	110.0	1.4	0.31
	3/10/99	Regular	<1.0	<1.0	8.2	110.0	0.62	0.85
	3/10/99	Duplicate	<1.0	<1.0	7.9	110.0	0.66	0.84
	6/10/99	Regular	<1.0	1.1	<1.0	28.0	0.53	0.55
	6/10/99	Duplicate	<1.0	1.8	<1.0	41.0	0.69	0.76
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	-	NS	NS	NS	NS	NS	NS
	3/9/00	Regular	< 1	< 1	< 1	9.1	14	1.3
	6/8/00	-	NS	NS	NS	NS	NS	NS
	9/13/00	-	NS	NS	NS	NS	NS	NS
	12/7/00	-	NS	NS	NS	NS	NS	NS
	3/8/01	Regular	2.0	<1	<1	<1	0.49	0.58
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
	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	
	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	1.9	16
	12/10/97	1 -	240.0	740.0	1	1		1
	1	Regular	1	1	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
	9/30/98	Regular	42.0	470.0	450.0	530.0	1.0	3.8

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

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	трн-д	TPH-G
Well	Date	Туре		microgran	ns per liter, ug/L		milligrams pe	er liter, mg/L
MW-3	12/10/98	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/99	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/99	Regular	1.7	3.1	<1.0	36.0	<0.20	0.18
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	< 1	< i	< 1	<1	< 0.2	< 0.1
	3/9/00	Regular	< 1	< 1	< 1	<1	0.32	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	<1	<0.22	< 0.1
	9/13/00	Regular	< 1	< 1	< 1	<1	<0.2	< 0.1
	12/7/00	Regular	< 1	< 1	< 1	<1	<0.25	< 0.1
	3/8/01	Regular	< 1	< 1	< 1	< 1	0.42	<0.1
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
	9/30/98	Regular	80.0	180.0	370.0	840.0	2.0	3.9
	12/10/98	Regular	28.0	70.0	210.0	960.0	9.3	4.3
	12/10/98	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
	3/10/99	Regular	8.0	20.0	250.0	1400.0	13.0	13
	6/10/99	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63
	9/14/99	Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17
	12/9/99	Regular	< 1	2.5	2.3	20.1	2	0.53
	3/10/00	Regular	<1	<1	< 1	3.6	2.6	0.15
	6/8/00	Regular	< 1	<1	< 1	< 1	0.44	0.23
	9/13/00	Regular	<1	<1	< 1	< 1	0.61	<0.1
	12/7/00	Regular	< 1	< 1	1.3	< 1	0.53	0.16
	3/8/01	Regular	< 1	< 1	< 1	<1	0.43	0.16
MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA	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	_	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
		Regular		1				1
	5/31/96	Regular	31.0	86.0 ≤ 0.7	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

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

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgram	ns per liter, ug/L	•		er liter, mg/L
MW-5	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	<]	< 0.2	< 0.1
	6/23/98	Regular	<1	<1	< 1	< 1	< 0.2	< 0.1
	9/30/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
l	12/10/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/99	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	<0.1
	6/10/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
	9/14/99	Regular	<1.0	<1.0	<1.0	<2.0	<0.20	<0.1
	12/9/99	Regular	< 1	<1	<1	<1	< 0.2	< 0.1
	3/9/00	Regular	< 1	<1	< 1	<]	0.55	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	<1	< 0.2	< 0.1
	9/13/00	Regular	<1	<1	<1	<1	< 0.2	< 0.1
	12/7/00	Regular	< 1	<1	< 1	<1	< 0.25	< 0.1
	3/8/01	Regular	< 1	<1	< 1	< 1	0.56	< 0.1
MW-6 ^T	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	7000.0	19000.0	3100.0	7200.0	NA	NB 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	0.57
	8/23/96	Regular	31.0	28.0	9.4	7.9	NA	0.32
	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	< 0.1
	6/12/97	Regular	1900.0	1400.0	410.0	310,0	7.8	< 0.3 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	< 0.14
	6/23/98	Regular	170.0	4.1	15.0	7.2	1.2)
	9/30/98	Regular	1000.0	420.0	140.0	270,0	4.0	0.51
	12/10/98	Regular	7.6	6.6	1.7	5.8	2.0	3.3
	3/10/99	Regular	2500.0	930.0	590.0	1400.0		< 0.1
MW-7	8/10/92	Regular	NS	NS	NS	NS	11.0 NA	13
	2/9/93	Regular	< 2	< 2	< 2		NA	NS
	8/19/93	Regular	< 2	3.0	< 2	< 6 < 2	NA	NA
	1/27/94	Regular	1.1	<1	< 1		NA	NA
	5/3/95	Regular	52.0	3.4	0.7	< 1	NA	NA
	8/1/95	Regular	22.0	2.2		2.8	NA	NA
	11/15/95	-			0.9	2.8	NA	< 0.1
	2/23/96	Regular Regular	8.4 < 0.3	0.8	< 0.3	0.9	NA	< 0.1
		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	< 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

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

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgram	ns per liter, ug/L		milligrams p	er liter, mg/L
MW-7	3/23/98	Regular	< 1	< 1	< 1	<]	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	<1	< 0.2	< 0.1
	9/30/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/99	Regular	<1.0	<1.0	<1.0	<1.0	4.7	< 0.1
:	6/10/99	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	9/13/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	< 5	< 5	< 5	< 5	1.8	< 0.5
	3/9/00	Regular	< 1	< 1	< 1	<1	0.66	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	< 1	< 0.21	< 0.1
	9/13/00	Regular	< 1	< 1	< 1	<1	< 0.2	< 0.1
	12/7/00	Regular	< 1	< 1	< 1	<1	< 0.29	< 0.1
	3/8/01	Regular	< 1	< 1	< 1	<1	1.2	< 0.1
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).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	< 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
	9/30/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/99	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	6/10/99	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	<0.1
	9/13/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	1
	12/9/99		NS	NS	NS	< 2.0 NS	<0.20 NS	<0.10 NS
	3/9/00	Regular	<1	<1	<1	<1	0.55	<0.1
	6/8/00		NS	NS	NS	NS	NS	NS
	9/13/00	-	NS	NS	NS	NS	NS	NS
	12/7/00	-	NS	NS	NS	NS	NS	NS
	3/8/01	Regular	< 1	< 1	< 1	<1	1.6	<0.1
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 NA	1
ľ	11/15/95	Duplicate	170.0	18.0	10.0			1.5
	2/23/96	Regular	170.0	18.0	2.3	120.0	NA	1.9
	5/31/96	<u>~</u>	1	1	1	160.0	NA	4.3
	5/5//90	Regular	120.0	16.0	3.0	200.0	NA	NA

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

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgran	is per liter, ug/L		milligrams p	er liter, mg/L
MW-9	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
	9/30/98	Regular	1.1	5.5	21.0	59.0	0.27	0.25
	12/10/98	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
	3/10/99	Regular	<1.0	<1.0	5.7	68.0	<0.2	0.23
	6/10/99	Regular	<1.0 <1.0	1.8	1.8	71.0	<0.2 <0.20	0.22
	9/13/99	-	< 1.0	1.8 < 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	< 1.0 NS	< 1.0 NS	NS NS	< 2.0 NS	<0.20 NS	<0.10 NS
	3/9/00	Pagular	NS <1	NS <1	NS < 1	64.0	NS 0.66	1.3
	•	Regular			i i i i i i i i i i i i i i i i i i i	1		1
	6/8/00	-	NS NS	NS	NS	NS	NS	NS
	9/13/00	1 -		NS	NS	NS	NS	NS
	12/7/00	· ·	NS	NS	NS	NS	NS	NS
	3/8/01	Regular	< 1	<1	< 1	<1	1.4	<0.1
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
	6/23/98	Regular	37.0	< 5	< 5	< 5	2.1	< 0.5
	9/30/98	Regular	84.0	3.2	30.0	2.2	1.4	0.36
	12/10/98	Regular	29.0	1.0	7.0	1.0	0.86	0.18
	3/9/99	Regular	28.0	<5.0	5.8	<5.0	0.92	<0.5
	6/10/99	Regular	17.0	<1.0	<1.0	<1.0	0.30	0,16
	9/14/99	Regular	10.0	< 1.0	< 1.0	< 2.0	<0.20	< 0.10
	12/9/99	Regular	23.0	<1	<1	1.2	0.44	0.16
	3/10/00	Regular	300.0	4.3	6.6	43.2	1.2	0.10
	6/8/00	-	78.0					1
		Regular	1	1.7	7.2	9.0	0.67	0.74
	9/13/00	Regular	23.0	1.5	1.1	2.9	1.6	0.41
	12/7/00	Regular	7.2	<1	<1	<1	1.5	0.15
	3/8/01	Regular	3.4	1.1	<1	<1	3.4	0.2

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Table 5Cumulative BTEX and TPH Analytical Results for Groundwater SamplesHobbs, New Mexico FacilityBJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene Ethylbenzene		Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgran	s per liter, ug/L		milligrams pe	r liter, mg/L
MW-11	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA
Ì	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
ĺ	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	0.35
MW-11A	3/24/98	Regular	24.0	5.0	< 5	< 5	0.28	0.14
MINFILM	6/23/98	Regular	9.9	< 5	< 5	< 5	< 0.2	< 0.5
	9/30/98	Regular	9.3	3.7	2.2	7.0	< 0.2	0.1
	12/10/98	Regular	9.5 1.7	3.7 <1.0	<1.0	<1.0 <1.0	<0.20 <0.20	<0.1
	3/10/98	Regular	<5	<5	<5	<5	0.3	<0.1
	6/10/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.10
	9/13/99	-	< 1.0	< 1.0	< 1.0	< 2.0	<0.20 <0.20	<0.10 <0.10
	12/9/99	Regular	< 5	< 1.0	< 5	< 2.0	< 0.20	< 0.10
	3/9/00	Regular	1.2	<1	<1	<1		< 0.1 < 0.1
		Regular	3.6				0.43 0.37	
	6/8/00	Regular		< 1	<1	<1		< 0.1
	9/13/00	Regular	1.4	<1	<1	<1	0.36	< 0.1
	12/7/00	Regular	26 12	<1	<1	3.3	0.3	0.12
2 444 12	3/8/01	Regular		<5	<5	<5	2.2	<0.5
MW-12	3/24/98	Regular	100.0 88.0	11.0 < 5	6.0 < 5	8.0	0.29 < 0.2	0.41 < 0.5
	6/23/98 6/23/98	Regular Duplicate	88.0 89.0	< 5	< 5	< 5	0.31	< 0.5
	9/30/98	Regular	260.0	3.0	1.2	7.9	<0.20	0.62
	12/10/98	Regular	160.0	<1.0	<1.0	1.2	0.21	0.36
	3/10/99	Regular	160.0	1.1	<1.0	2.9	0.38	0.45
	6/10/99	Regular	49.0	1.4	<1.0	<1.0	0.22	0.13
	9/14/99	Regular	75.0	< 1.0	< 1.0	< 2.0	<0.20	0.23
	12/9/99	Regular	64.0	<1	<1	<1	< 0.2	0.21
	3/10/00	Regular	93.0	<1	<1	<1	< 0.2	0.21
	3/10/00	Duplicate	99.0	<1	<1	1	0.22	0.21
		1 -	1	1		<1	1	1
	6/8/00	Regular	62.0	<1	< 1	<1	< 0.2	< 0.1
	9/13/00	Regular	34.0	<1	< 1	<1	0.23	< 0.1
	12/7/00	Regular	27	<1	2,9	1.9	<0.25	<0.1
	3/8/01	Regular	14	<1	<1	<1	2.1	0.1
MW-12D	7/2/99	Regular	< 5	< 5	< 5	< 5	<0.20	<0.10
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	<1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/00	Regular	< 1	< 1	< 1	< 1	0.24	< 0.1
	6/8/00	Regular	· <1	< 1	< 1	<]	< 0.2	< 0.1
	9/13/00			NS	NS	NS	NS	NS
	12/7/00	-	NS	NS	NS	NS	NS	NS
MW-13	7/2/99	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/99	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/99	Regular	430.0	16.0	410.0	40.9	0.46	3.2
	3/10/00	Regular	88.0	2.8	200.0	1.3	1.9	0.99

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

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G	
Well	Date	Туре		microgran	18 per liter, ug/L		milligrams per liter, mg/L		
MW-13	6/8/00	Regular	6.0	< 1	63.0	3.3	1,1	0.91	
	9/13/00	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12	
	12/7/00	Regular	<1	<1	<1	<1	0.43	<0,1	
	3/8/01	Regular	<1	<1	1.2	<1	2	<0.1	
MW-14	1/14/01	Regular	<1	<1	<1	<1	<0.2	<0,1	
MW-15	1/14/01	Regular	<1	<1	<1	<1	<0.2	<0.1	
OW-4	6/10/99	Regular	<1.0	<1.0	<1.0	4.4	<0.2	<0.10	
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10	
	12/9/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.2	<0.1	
	3/9/00	Regular	<1.0	<1.0	<1.0	<1.0	0.25	<0.1	
	6/8/00	Regular	<1.0	<1.0	<1.0	<1.0	<0.21	<0.1	
	9/13/00	Regular	<1.0	<1.0	<1.0	<1.0	<0.2	<0.1	
	12/7/00		NS-D	NS-D	NS-D	NS-D	NS-D	NS-D	

¹ Well plugged and abandoned 7/1/99

NA=Not Analyzed

Section 2

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NS-D=Not Sampled because well was dry

NSP=Not Sampled due to Phase Separated Hydrocarbons

NS=Not Sampled

Table 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, and MW-12 Hobbs, New Mexico

BJ Services Company, U.S.A.

Well	Date	Nitrate ¹ (mg/L)	Sulfate ¹ (mg/L)	Methane (mg/L)	
wen				(mg/L)	
	3/23/98	3.87	190	<0.0012	
	3/9/99	<0.1	195	< 0.0012	
	6/10/99	4.73	209	< 0.0012	
	9/14/99	4.3	210	< 0.0012	
MW-5	12/9/99	4.2	210	< 0.0012	
	3/9/00	5.3	260	<0.0012	
	6/8/00	4.7	240	< 0.0012	
	9/13/00	3.93	200	< 0.0012	
	12/7/00	3.27	160	< 0.0012	
	3/8/01	3.24	180	< 0.0012	
	3/23/98	0.07	320	0.91	
	6/23/98	<0.1	325	0.55	
[9/30/98	<0.1	204	0.81	
	12/10/98	<0.1	180	0.091	
1	3/9/99	<0.1	142	0.035	
MW-10	3/9/99	<0.1	223 ³	0.035	
1VI W-10	9/14/99	< 0.10	160	0.0049	
	12/9/99	0.49	170	0.0039	
	3/10/00	0.1	160	0.0056	
	6/8/00	<0.1	150	0.031	
	9/13/00	<0.1	160	0.031	
	12/7/00	<0.1	190	0.17	
	3/8/01	<0.1	270	< 0.0012	
	3/23/98	< 0.05	190	0.14	
	6/23/98	< 0.1	225	0.11	
	9/30/98	0.4	196	0.043	
	12/10/98	0.7	188	0.033	
	- 44 0 40 0	<0.1	164		
	3/10/99	< 0.1 ²	227 ³	0.094	
MW-11A	6/10/99	<0.1	181	0.0036	
	9/13/99	0.22	250	< 0.0012	
	12/9/99	<0.1	290	0.0079	
	3/9/00	0.11	270	0.037	
	6/8/00	<0.1	240	0.0069	
	9/13/00	<0.1	320	< 0.0012	
	12/7/00	<0.1	260	0.0096	

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Table 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, and MW-12 Hobbs, New Mexico

BJ Services Company, U.S.A.

				Methane
Well	Date	Nitrate ¹ (mg/L)	Sulfate ¹ (mg/L)	(mg/L)
MW-11A	3/8/01	<0.1	330	0.0028
	3/23/98	< 0.05	240	< 0.0012
	6/23/98	<0.1	240	< 0.0012
	9/30/98	<0.1	168	< 0.0012
	12/10/98	<0.1	202	< 0.0012
	3/10/99	<0.1	137	< 0.0012
	5/10/99	< 0.1 ²	< 0.1 ² 193 ³	
MW-12	6/10/99	<0.1	217	< 0.0012
	9/14/99	<0.10	230	< 0.0012
	12/9/99	<0.1	180	< 0.0012
	3/10/00	<0.1	210	< 0.0012
	6/8/00	<0.1	220	< 0.0012
	9/13/00	<0.1	240	< 0.0012
	12/7/00	<0.1	260	< 0.0012
	3/8/01	<0.1	300	<0.0012

1=By EPA Method 300, except as noted

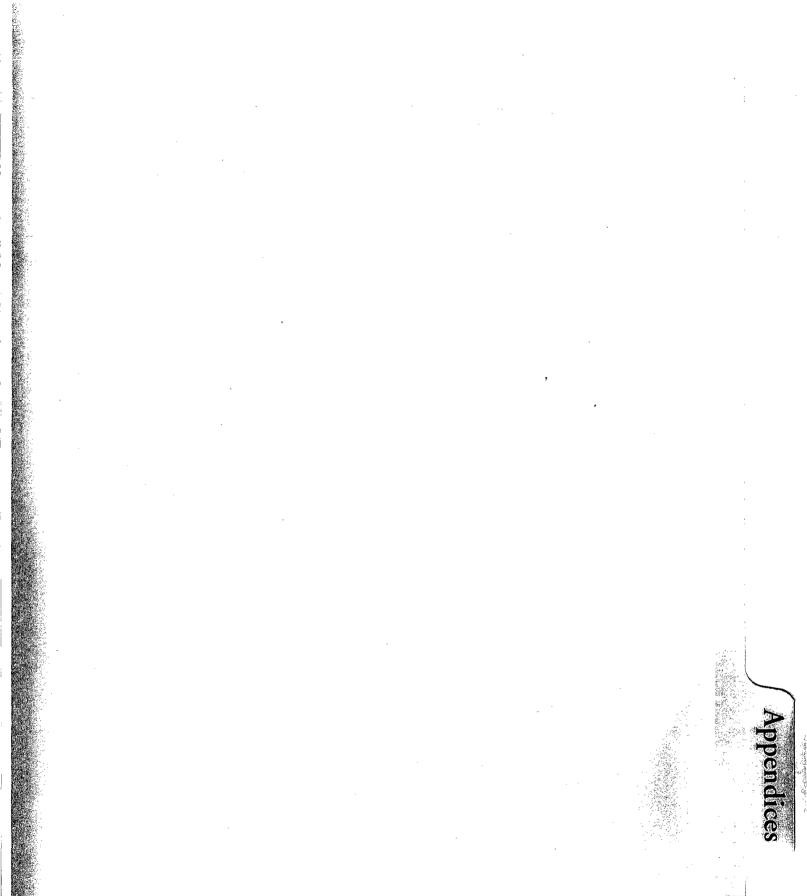
2=By EPA Method 353.3

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3=By EPA Method 375.4

mg/L = milligrams per liter



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APPENDIX A

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Boring Logs

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MW-14

Proje	roject Name Chloride Investigation								ject Num	ber: 1283	2.022	Sheet <u>1</u> of <u>2</u>	
Ргоје	ct Lo	ocatio	n: F	lobbs, New Mexico		_		L	ogged By	: S. Lesikar	,	Approved:	
Drilli	ng C	ontra	ctor:	Pro - Sonic					Date Starte			Date Finished: 1/14/01	
Drilli	ng E	quipr	nent:	Mobile B-61	Driller: Rene Sc	osa			otal Bori Depth: (fe	ng et) 69.5		Depth to Static Water: (feet) 60.0	
Drilli	ng N	1etho	i :	Air Rotary/HSA	Borehole Diameter:	6 7/	8''		OC Elev			Ground Elevation:	
Samp	oling			Split Spoon					Diameter a	and Type asing: 2 "	Sch	edule 40 PVC	
	Comments: Drilled with air rotary from 3' to 69.5'.								Slot Size: 0.01 Filter Material: 20/40 Sand Development Method: Bailer				
Depth (feet)	Depth to Water	USC Soil Type	Lithology	an and a second		Readings							
2-		SW		SILTY SAND (SW); Very fine, dry.				2					
$\begin{array}{c} 4 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$				SANDSTONE; Medium brown, interbedded layer (2'-3' thick) o very fine sand.	very fine, dry with of slightly cemented							Start Air Rotary at 3'	

<u>MW-14</u>

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Depth (feet)	Deput tect) USC Soil Type Lithology					Sampled Interval	Recovery (feet)	Sample ID	Remarks
				SAA					Cement/Bentonite grout
48									41.3 27.4 2.5' Hydrated bentonite chips
-	Ţ	SW		SAND (SW); Softer, very fine, brown, uncemented, wet.					20-40 Silica sand 2" Diameter Schedule 40 Well Screen 0.01" Slot.
62									68.0 69.5 TD 69.5 ft.

MW-15

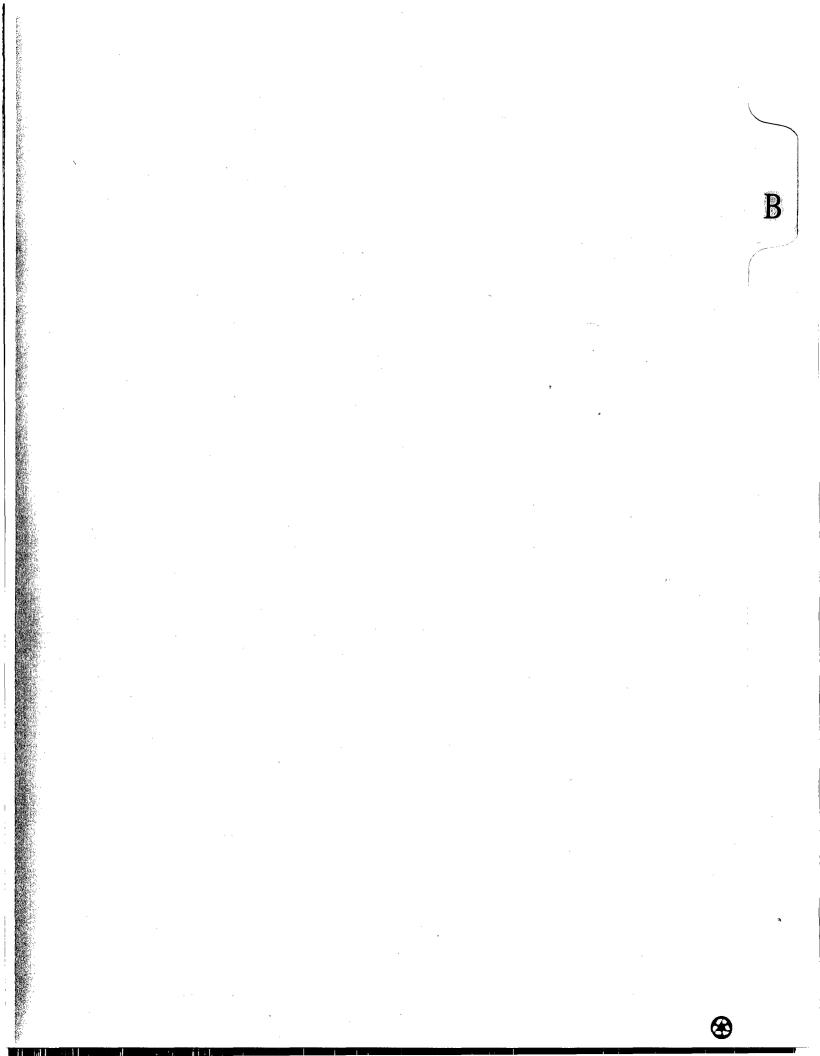
Proje	oject Name: Chloride Investigation								ect Nurr	nber:128	832.0	22 Sheet	of
Proje	ect Lo	ocatio	n: H	lobbs, New Mexico				L	ogged B	y: S. Lesik	ar	Approved:	
Drilli	ing C	Contra	ctor:	Pro - Sonic					ate Star				3/01
Drilli	ing E	Quip	nent:	Mobile B-61	Driller: Rene Sos	sa		Total BoringDepth to StaticDepth: (feet)75.0Water: (feet)60.0					
Drilli	ing N	/ietho	d: .	Air Rotary/HSA	Borehole Diameter:	2''			OC Elev			Ground Elevation:	
Sam	pling	Meth	od:	Split Spoon					Diameter and Type of Well Casing: 2" Schedule 40 PVC				
Com	Comments: Drilled with air rotary from 13' to 75'.								Slot Size: 0.01 Filter Material: 20/40 Sand Development Method: Bailer				
Depth (feet)	Depth (feet) Depth to Water USC Soil Type Lithology Readings Sampled Interval								Sample ID	state of a street management of the street o			
$ \begin{array}{c} 2 \\ - \\ 2 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$		SW ML		SILTY SAND (SW); Clayey, dar damp. CLAYEY SILT (ML); Slightly s with pebbles and calcareous no SANDSTONE; Medium brown, interbedded with layers (2'-3' t comented very fine sand.	andy, very light brown odules very dry.			2 2 2 2 2 1 Recovery (feet)				Drill initial auger to 5' fo casing At 13' start air rotary, to split spoon	
14				interbedded with layers (2'-3' t comented very fine sand.	very fine grained, dry, hick) of slightly								C

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Chloride Investigation 12832.022 Sheet 2 of 2Project Name: Project Number: Sampled Interval Readings Depth to Water USC Soil Type Recovery (feet) Depth (feet) Lithology Sample ID Description Remarks 34 -SAA 36-Cement/Bentonite grout 38 -40 -42 -44 -46 -47.5 48 -Hydrated bentonite chips 50.0 50-52 -20-40 Silica sand 54 -56-SP SAND (SP); Softer, very fine, uncemented, wet. 15'-2" Diameter Schedule 40 PVC 58 -Screen 0.01" Slot. Ţ 60 -62 -64 --66 -67.0_ 1.5' sump 68 -68.5 70 -SAA TD 75 ft, hole caved in to 68.5 ft. -72 —

MW-15



APPENDIX B

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Laboratory Analytical Reports for Groundwater Samples

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<u> </u>		HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 (713) 660-0901									
Brown & Caldwell											
	Certificate of Analysis Number: 01010371										
Report To:	Project Name:	BJ Service #12832-022									
Brown & Caldwell	<u>Site:</u>	Hobbs, NM									
Rick Rexroad	Site Address:										
1415 Louisiana											
Suite 2500	PO Number:										
Houston TX	State:	New Mexico									
77002-	State Cert. No.:										
ph: (713) 759-0999 fax: (713) 308-3886	Date Reported:	1/29/01									

This Report Contains A Total Of 32 Pages

Excluding This Page

And

Chain Of Custody



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

Case Narrative for: Brown & Caldwell

Certificate of Analysis Number: 01010371

Report To:	Project Name: BJ Service #12832-022
Brown & Caldwell	<u>Site:</u> Hobbs, NM
Rick Rexroad	Site Address:
1415 Louisiana	
Suite 2500	PO Number:
Houston	
тх	State: New Mexico
77002-	State Cert. No.:
ph: (713) 759-0999 fax: (713) 308-3886	Date Reported: 1/29/01

A trip blank was received with the samples but was not written on the chain of custody [SPL ID: 01010371-04). Per our telephone conversation on January 17, 2001, SPL analyzed the trip blank for BTEX/ TPH-GRO by SW846 methods 8021/8015.

As per your request on January 17, 2001, the laboratory analyzed your sample "Soil Cuttings, MW-14, MW-15" for Gasoline Range Organics, Diesel Range Organics, and RCRA Metals.

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 Samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Your sample ID "MW-15" (SPL ID: 01010371-01) was randomly selected for use in SPL's quality control program for the Total Metals analysis by SW846 Method 6010B. The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries were outside of the advisable quality control limits for Cadmium and Chromium (Batch ID: 9679) due to matrix interference. A Post Digestion Spike (PDS) and Post Digestion Spike Duplicate (PDSD) was performed and all recoveries were within quality control limits. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

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.

alest West Sonia

Senior Project Manager

1/30/01



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

Brown & Caldwell

Certificate of Analysis Number:

01010371

Report To:	Brown & Caldwell			Project Name:	BJ Service #12832-022	
	Rick Rexroad			Site:	Hobbs, NM	
	1415 Louisiana					
	Suite 2500			Site Address:		
	Houston					
-	ТХ			PO Number:		
	77002-				New Merice	
	ph: (713) 759-0999	fax: (713) 308-3886	State:		New Mexico	
	,,			State Cert. No.:		
Fax To:	Brown & Caldwell			Date Reported:	1/29/01	
	Rick Rexroad	fax : (713) 308-3886				
	· · · · · · · · · · · · · · · · ·		l			

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD	
W-15	01010371-01	Water	1/14/01 2:00:00 PM	1/16/01 10:00:00 AM	085943		
W-14	01010371-02	Water	1/14/01 4:00:00 PM	1/16/01 10:00:00 AM	085942		
4W-14	01010371-02	Water	1/14/01 4:00:00 PM	1/16/01 10:00:00 AM	085943		
pil Cuttings, MW-14, MW-15	01010371-03	Solid	1/14/01 3:00:00 PM	1/16/01 10:00:00 AM	085943		
rip Blank 1/4/01	01010371-04	Water	1/14/01	1/16/01 10:00:00 AM	085943		

Vest, Sonia Senior

Senior Project Manager

1/29/01

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



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

Client Sample ID MW	/-15	Col	lected:	1/14/01 2:00:00	SPL Sample ID: 01	010371-01
		Site	e: Hob	obs, NM		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analys	st Seq.
ALKALINITY, BICARE Alkalinity, Bicarbonate	BONATE 250	2	MCL	M2320 B	Units: mg/L 01/17/01 12:00 SN	53355
ALKALINITY, CARBO Alkalinity, Carbonate	NATE	2	MCL	M2320 B 1	Units: mg/L 01/17/01 12:00 SN	53357
CHLORIDE, TOTAL Chloride	219	5	MCL	E325.3 5	Units: mg/L 01/18/01 14:30 CV	53614
DIESEL RANGE ORG Diesel Range Organics Surr: n-Pentacosane	ND 76.4 Prep Date	0.2 % 18-120 <u>Prep Initials</u>	MCL	SW8015B 1 1	Units: mg/L 01/20/01 6:55 AM 01/20/01 6:55 AM	53806 53806
SW3510B	01/17/2001 13:27	KL	.;			
FLUORIDE-IC Fluoride	1.2	0.1	MCL	E300	Units: mg/L 01/16/01 11:23 KM	53252
GASOLINE RANGE C	RGANICS		MCL	SW8015B	Units: mg/L	
Gasoline Range Organ				1	01/25/01 3:42 D_R	54137
Surr: 1,4-Difluorober				1	01/25/01 3:42 D_R	54137
Surr: 4-Bromofluorot	benzene 103	% 55-150		1	01/25/01 3:42 D_R	54137
MERCURY, TOTAL			MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002		1	01/23/01 11:11 R_T	53918
Prep Method	Prep Date	Prep Initials				
SW7470A	01/23/2001 9:00	R_T				
METALS BY METHO	D 6010B, TOTAL		MCL	SW6010B	Units: mg/L	
Arsenic	ND	0.005		1	01/20/01 1:36 EG	53700
Lead	ND			1	01/20/01 1:36 EG	53700
Selenium	0.00523	- · · ·		1	01/20/01 1:36 EG	53700
Barium	0.073			1	01/17/01 19:40 E_B	53440
Cadmium	ND	0.005		1	01/17/01 19:40 E_B	53440
Calcium	150			1	01/17/01 19:40 E_B	53440
Chromium	ND	0.01		1	01/17/01 19:40 E_B	53440
Magnesium	28.3	0.1		1	01/17/01 19:40 E_B	53440
Potassium	4.59	2		1	01/17/01 19:40 E_B	53440
Silver	ND	0.01		1	01/17/01 19:40 E_B	53440
Sodium	108	0.5		1	01/17/01 19:40 E_B	5344
Prep Method SW3010A	Prep Date 01/19/2001 9:55	Prep Initials R_T	<u>.</u>			

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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



Client Sample ID MW-15

Collected: 1/14/01 2:00:00 SPL Sample ID: 01010371-01

Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq. #
-					• • •	
NITROGEN, NITRATE (AS N)	4.00	0.1	MCL	E300	Units: mg/L	520540
Nitrogen, Nitrate (As N)	4.88	0.1		1	01/16/01 11:23 KM	532518
POLYNUCLEAR AROMATIC HY	ROCARBO	NS	MCL	SW8310	Units: ug/L	
Acenaphthene	ND	0.1	-	1	01/23/01 17:31 KA	545133
Acenaphthylene	ND	0.1		1	01/23/01 17:31 KA	545133
Anthracene	ND	0.1		1	01/23/01 17:31 KA	545133
Benz(a)anthracene	ND	0.1		1	01/23/01 17:31 KA	545133
Benzo(a)pyrene	ND	0.1		1	01/23/01 17:31 KA	545133
Benzo(b)fluoranthene	ND	0.1	.,	1	01/23/01 17:31 KA	545133
Benzo(g,h,i)perylene	ND	0.1		1	01/23/01 17:31 KA	545133
Benzo(k)fluoranthene	ND	0.1		1	01/23/01 17:31 KA	545133
Chrysene	ND	0.1		1	01/23/01 17:31 KA	545133
Dibenzo(a,h)anthracene	ND	0.1		1	01/23/01 17:31 KA	545133
Fluoranthene	ND	0.1		1	01/23/01 17:31 KA	545133
Fluorene	ND	0.1		1	01/23/01 17:31 KA	545133
Indeno(1,2,3-cd)pyrene	ND	0.1		1	01/23/01 17:31 KA	545133
Naphthalene	ND	0.1		Ť	01/23/01 17:31 KA	545133
Phenanthrene	ND	0.1		1	01/23/01 17:31 KA	545133
Pyrene	ND	0.1		1	01/23/01 17:31 KA	545133
Surr: 1-Fluoronaphthalene	51.1	% 15-96		1	01/23/01 17:31 KA	545133
Surr: Phenanthrene-d10	66.8	% 33-108		1	01/23/01 17:31 KA	545133
Prep Method Prep Date SW3510B 01/18/200	13:00	Prep Initials	1			
PURGEABLE AROMATICS		· · · · · · · · · · · · · · · · · · ·	MCL	SW8021B	Units: ug/L	
Benzene	ND	1		1	01/25/01 3:42 D R	541306
Ethylbenzene	ND	1		1	01/25/01 3:42 D R	541306
Toluene	ND	1		1	01/25/01 3:42 D R	541306
Xylenes,Total	ND	1		1	01/25/01 3:42 D R	541306
Surr: 1,4-Difluorobenzene	96.5	% 72-137		1	01/25/01 3:42 D R	541306
Surr: 4-Bromofluorobenzene	93.8	% 48-156		1	01/25/01 3:42 D_R	541306
SULFATE			MCL	E300	Units: mg/L	
Sulfate	130	4		20	01/16/01 11:23 KM	532538

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	/- 4		Colle	ected:	1/14/01 4:00:00	SPL Sample ID: 01	010371-02
			Site:	Hob	bs, NM		
Analyses/Method	Resu	lt	Rep.Limit	_	Dil. Factor QUAL	Date Analyzed Analy	•
ALKALINITY, BICARE Alkalinity, Bicarbonate	BONATE 37	74	2	MCL	M2320 B 1	Units: mg/L 01/17/01 12:00 SN	533558
ALKALINITY, CARBO Alkalinity, Carbonate		D	2	MCL	M2320 B 1	Units: mg/L 01/17/01 12:00 SN	53358
CHLORIDE, TOTAL Chloride	36		5	MCL	E325.3 5	Units: mg/L 01/18/01 14:30 CV	53614
DIESEL RANGE ORG Diesel Range Organics Surr: n-Pentacosane	ANICS	D	0.2 18-120	MCL	SW8015B 1 1	Units: mg/L 01/20/01 10:48 AM 01/20/01 10:48 AM	53806 53806
Prep Method SW3510B	Prep Date 01/17/2001 13:27		Prep Initials KL				
FLUORIDE-IC				MCL	E300	Units: mg/L	
Fluoride	3	.5	0.1		1	01/16/01 11:23 KM	53253
GASOLINE RANGE C	RGANICS			MCL	SW8015B	Units: mg/L	· · · · · ·
Gasoline Range Organ		ID	0.1		1	01/25/01 4:09 D_R	54137
Surr: 1,4-Difluorober	izene 96	.3 %	74-121		1	01/25/01 4:09 D_R	54137
Surr: 4-Bromofluorot	penzene 10	02 %	55-150		1	01/25/01 4:09 D_R	54137
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	N	ID	0.0002		1	01/23/01 11:11 R_T	53918
Prep Method	Prep Date		Prep Initials				
SW7470A	01/23/2001 9:00		R_T				
METALS BY METHO	D 6010B. TOTAL			MCL	SW6010B	Units: mg/L	
Arsenic	0.005	11	0.005		1	01/20/01 1:42 EG	53700
Lead	N	1D	0.005		1	01/20/01 1:42 EG	53700
Selenium	Ν	1D	0.005		1	01/20/01 1:42 EG	53700
Barium	0.08	33	0.005		1	01/17/01 20:05 E_B	53440
Cadmium	N	١D	0.005		1	01/17/01 20:05 E_B	53440
Calcium	1	79	0.1		1	01/17/01 20:05 E_B	53440
Chromium	١	١D	0.01		1	01/17/01 20:05 E_B	53440
Magnesium	87	7.5	0.1	- · ·	1	01/17/01 20:05 E_B	53440
Potassium	3.	59	2	-	1	01/17/01 20:05 E_B	53440
Silver	٨	D	0.01		1	01/17/01 20:05 E_B	53440
Sodium	1	44	0.5		1	01/17/01 20:05 E_B	53440
Prep Method	Prep Date		Prep Initials				
SW3010A	01/19/2001 9:55		R_T				
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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



Client Sample ID MW-14

Collected: 1/14/01 4:00:00 SPL Sample ID: 01010371-02

		Site	Hot	obs, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq. /
NITROGEN, NITRATE (AS N)			MCL	E300	Units: mg/L	
Nitrogen, Nitrate (As N)	4.5	0.1		1	01/16/01 11:23 KM	532521
POLYNUCLEAR AROMATIC HY	ROCARBO	NS	MCL	SW8310	Units: ug/L	· · · ·
Acenaphthene	ND	0.1		1	01/23/01 19:23 KA	545136
Acenaphthylene	ND	0.1		1	01/23/01 19:23 KA	545136
Anthracene	ND	0.1		1	01/23/01 19:23 KA	545136
Benz(a)anthracene	ND	0.1		1	01/23/01 19:23 KA	545136
Benzo(a)pyrene	ND	0.1		1	01/23/01 19:23 KA	545136
Benzo(b)fluoranthene	ND	0.1		1	01/23/01 19:23 KA	545136
Benzo(g,h,i)perylene	ND	0.1		1	01/23/01 19:23 KA	545136
Benzo(k)fluoranthene	ND	0.1		1	01/23/01 19:23 KA	545136
Chrysene	ND	0.1		1	01/23/01 19:23 KA	545136
Dibenzo(a,h)anthracene	ND	0.1		1	01/23/01 19:23 KA	545136
Fluoranthene	ND	0.1		1	01/23/01 19:23 KA	545136
Fluorene	ND	0.1		1	01/23/01 19:23 KA	545136
Indeno(1,2,3-cd)pyrene	ND	0.1		1	01/23/01 19:23 KA	545136
Naphthalene	ND	0.1		1	01/23/01 19:23 KA	545136
Phenanthrene	ND	0.1		1	01/23/01 19:23 KA	545136
Pyrene	ND	0.1		1	01/23/01 19:23 KA	545136
Surr: 1-Fluoronaphthalene	41.7	% 15-96		1	01/23/01 19:23 KA	545136
Surr: Phenanthrene-d10	61.1	% 33-108		1	01/23/01 19:23 KA	545136
Prep MethodPrep DateSW3510B01/18/2001	13:00	Prep Initials KL				
PURGEABLE AROMATICS		· .	MCL	SW8021B	Units: ug/L	
Benzene	ND	1		1	01/25/01 4:09 D_R	541307
Ethylbenzene	ND	1		· ·· · · · · · · · · · · · · · · · · ·	01/25/01 4:09 D R	541307
Toluene	ND	1		1	01/25/01 4:09 D R	541307
Xylenes,Total	ND	1		1	01/25/01 4:09 D R	541307
Surr: 1,4-Difluorobenzene	94.6	% 72-137		1	01/25/01 4:09 D_R	541307
Surr: 4-Bromofluorobenzene	88.3	% 48-156		1	01/25/01 4:09 D_R	541307
SULFATE			MCL	E300	Units: mg/L	
Sulfate	180	4		20	01/16/01 11:23 KM	532541

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



Client Sample ID Soi	I Cuttings, MW-14,	, MW-1	5 Colle	ected:	1/14/01 3:00:00	SPL Sample ID	: 01010	0371-03
			Site:	Hob	bs, NM			
Analyses/Method	Re	esuit	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq.
DIESEL RANGE ORG	ANICS		<u> </u>	MCL	SW8100M	Units: mg	/Kg	
Diesel Range Organics	i	ND	5.0		1	01/20/01 17:54		536479
Surr: n-Pentacosane	•	91.8	% 20-154		1	01/20/01 17:54	AM	536479
Prep Method	Prep Date		Prep Initials					
SW3550B	01/18/2001 12:35		J_L					
GASOLINE RANGE	RGANICS			MCL	SW8015B	Units: mg	g/Kg	
Gasoline Range Organ	ics	ND	0.10		1	01/19/01 20:02	TM	536256
Surr: 1,4-Difluorober	nzene	101	% 63-122		1	01/19/01 20:02	TM	536256
Surr: 4-Bromofluorot	penzene	105	% 39-150		1	01/19/01 20:02	ТМ	536256
MERCURY, TOTAL				MCL	SW7471A	Units: mg	g/Kg	
Mercury		ND	0.0330		1	01/22/01 13:17	R_T	538517
Prep Method	Prep Date		Prep Initials					
SW7471A	01/22/2001 8:45		R_T					
METALS BY METHO	D 6010B, TOTAL			MCL	SW6010B	Units: m	g/Kg	
Arsenic		1.26	0.500		1	01/18/01 18:33	EG	536357
Lead		1.69	0.500		1	01/18/01 18:33	EG	536357
Selenium		ND	0.500		1	01/18/01 18:33	EG	536357
Barium		108	0.5		1	01/18/01 18:23	E_B	535207
Cadmium		ND	0.5		1	01/18/01 18:23	E_B	535207
Chromium		11.2	1		1	01/18/01 18:23	E_B	535207
Silver		ND	1		1	01/18/01 18:23	E_B	535207
Prep Method	Prep Date		Prep Initials					
SW3050B	01/18/2001 9:30		R_T					

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 1/4/01			Col	lected:	1/14/01	SPL Sample ID	0371-04	
			Site	: Hot	obs, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg	I/L	
Gasoline Range Organics	ND		0.1		1	01/24/01 18:26	D_R	541368
Surr: 1,4-Difluorobenzene	96.0	%	74-121		1	01/24/01 18:26	D_R	541368
Surr: 4-Bromofluorobenzene	101	%	55-150		1	01/24/01 18:26	D_R	541368
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug	/L	
Benzene	ND	·	1		1	01/24/01 18:26	D_R	541296
Ethylbenzene	ND		1		1	01/24/01 18:26	D_R	541296
Toluene	ND		1		1	01/24/01 18:26	D_R	541296
Xylenes,Total	ND	•	<u> </u>		1	01/24/01 18:26	D_R	541296
Surr: 1,4-Difluorobenzene	96.7	%	72-137		1	01/24/01 18:26	D_R	541296
Surr: 4-Bromofluorobenzene	91.8	%	48-156		1	01/24/01 18:26	D_R	541296

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



1/29/01 12:43:54 PM



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

Quality Control Report

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Brown & Caldwell

		BJ Se	ervice #12832-022		
nalysis: ethod:	Diesel Range Orgar SW8015B	nics		WorkOrder: Lab Batch ID:	01010371 9680
		nod Blank	Comulas in Analytic		3000
unID: palysis Date: reparation Date:	HP_V_010119D-538054 01/19/2001 17:24 01/17/2001 13:27		Samples in Analytic <u>Lab Sample ID</u> 01010371-01C W3510B 01010371-02C	<u>Client Sar</u> MW-15 MW-14	<u>mpie ID</u>
	Analyte Range Organics r: n-Pentacosane	Result Rep Lin ND 0.3 90.2 18-13	20		
		Laborator	Control Sample (LCS)		
		HP_V_010119D-53 sis Date: 01/19/2001 18:02 ration Date: 01/17/2001 13:27	Analyst: AM	W3510B	
l	Diesel R	Analyte ange Organics		Lower Upper Limit Limit 21 175	
		Matrix Spika (NS) / Mat	rix Spike Duplicate (MSD)		
	Run Anal	ple Spiked: 01010389-03 ID: HP_V_010119D- ysis Date: 01/19/2001 20: variation Date: 01/17/2001 13:	37 Analyst: AM	SW3510B	
- Ar	nalyte	Sample MS MS F Result Spike Added	Result MS % MSD MSD Recovery Spike Added	Result MSD % Recovery	RPD RPD Low High Limit Limit Limit
esel Range Orga	anics	ND 5	2.7 46.0 5	2.5 43.0	0 6.92 39 13 13
Qualifiers:	B - Analyte detecte	d at the Reporting Limit d in the associated Method Blan between MDL and PQL	MI - Matrix Interference D - Recovery Unreportable * - Recovery Outside Advisa		
		s are correct as reported. Due t from the displayed RPD values			1/29/01 12:43:56

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

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Quality Control Report

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Brown & Caldwell BJ Service #12832-022

-			1	BJ Service #	12832-022							
nalysis: ethod:	Diesel Range Organic SW8100M	5						Order: latch ID:	0101 9700	10371)		
······································	Metho	d Blank			Sam	oles in An	alytical Batch	1:				
unID: palysis Date: reparation Date:	HP_V_010120A-536477 01/20/2001 16:37 01/18/2001 12:35	Analyst:	ng/Kg AM J_L Meti	hod SW3550	0101	<u>Sample IC</u> 0371-03B	-	Client Sam Soil Cutting			W-15	
	Analyte I Range Organics r: n-Pentacosane	F	Result Re ND 95.4	5.0 20-154								
			Labo	ratory Contro	ol Sample (L	<u>.CS)</u>		·····				
	RunID: Analysis Preparat	Date: 01	P_V_01012 I/20/2001 I/18/2001		Analyst: A	ng/Kg AM I_L Meth	od SW3550B					
	Diesel Ran	Analyte ge Organics		Spike Adde		Percen Recove		Upper Limit 150				
	<u> </u>	Matrix S	oike (MS)	/ Matrix Spli	ke Duplicate	(MSD)						<u> </u>
	RunID: Analys	is Date:	01010371 HP_V_010 01/20/200 01/18/200	120A-536480)1 18:33	Units: Analyst: Prep By:	mg/Kg AM J_L Me	ethod SW3550	в				
Ar	nalyte		MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
iesel Range Orga	anics	ND	83	7	92.0	83	76	88.7	3.63	50	21	17:
Qualifiers:	ND/U - Not Detected		-		MI - Matrix							
 	B - Analyte detected i J - Estimated value be	etween MDL a	and PQL		* - Recover	y Outside	rtable due to D Advisable QC					
	overies for QC samples a ported RPD may differ fro										1/29/01	12:43:5



Quality Control Report

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Brown & Caldwell BJ Service #12832-022

nalysis: lethod:	Gasoline Range Org SW8015B	anics			WorkOrder: Lab Batch ID:	01010371 R27993
	Meth	od Blank	Sa	mples in Analytica	Batch:	
unID: nalysis Date:	VARE_010119A-536254 01/19/2001 17:43	Units: mg/Kg Analyst: TM		ub Sample ID 010371-03A	<u>Client San</u> Soil Cutting	n <u>ple ID</u> gs, MW-14, MW-15
S	Analyte soline Range Organics gurr: 1,4-Difluorobenzene surr: 4-Bromofluorobenzene	Result ND 1 <u>00.7</u> 109.3	Rep Limit 0.10 63-122 39-150			
	<u> </u>	Lab	oratory Control Sample	e (LCS)		
	RuniD: Analys	VARE_010 is Date: 01/19/200	119A-536251 Units: 11 16:20 Analyst;	mg/Kg TM		
	Gasoline	Analyte Range Organics	Spike Res Added 1 C	1 1	wer Upper imit Limit 70 130	
<u> </u>		Matrix Spike (M	5) / Matrix Spike Duplic	ate (MSD)		
	Runi		77-01 10119A-536252 Units: 001 16:48 Analys	mg/Kg-dry t: TM		
	Analyte	Sample MS Result Spike Added	MS Result MS % Recove	ery Spike Added	Recovery	RPD RPD Low High Limit Limit Limit
Gasoline Range	organics	ND 475	, 450 9	4.7 475	510 108	12.7 <u>50</u> 26 14
J						
	ND/U - Not Detected	d at the Reporting Limit	MI - Mati	rix Interference		
Qualifiers:						
	B - Analyte detected J - Estimated value coveries for QC samples	between MDL and PQI	* - Recov	overy Unreportable di very Outside Advisat		



Quality Control Report

Brown & Caldwell BJ Service #12832-022

ethod:	SW8021B								R283			
	Metho	d Blank			Samp	les in A	nalytical Batch	:				
unID: nalysis Date:	HP_S_010124A-541294 01/24/2001 17:34	Units: Analyst:	ug/L D_R		01010 01010	ample II 0371-01A 0371-02A 0371-04A	 \	<u>Client Sam</u> MW-15 MW-14 Trip Blank				
Ethy Tolu Xyle S	Analyte zene lbenzene ene nes,Total urr: 1,4-Difluorobenzene urr: 4-Bromofluorobenzene	· · · · · · · · · · · · · · · · · · ·	Result F ND ND ND 94.8 90.3	Rep Limit 1.0 <u>1.0</u> <u>1.0</u> <u>1.0</u> 72-137 <u>48-156</u>								
			Lab	oratory Contro	ol Sample (L	CS)		- 				
-	RunID: Analysis		HP_S_010 ⁺ 01/24/200	124A-541293 1 16:15		g/L 0R						
	-			·· r ··			م المحتري					
	Benzene Ethylbenze Toluene Xylenes,To		· · · · ·			+ ·		Upper Limit 130 130 130 130				
	Ethylbenzo Toluene	ene		Adde	d 50 52 50 53 50 53 50 53 50 163	Recove	ery Limit 105 70 106 70 107 70	Limit 130 130 130				
	Ethylbenzo Toluene Xylenes,To Samp RunID	one Dtal <u>Matrix S</u> e Spiked:	<mark>Spike (MS</mark> 010106 ⁷ HP_S_01	Adde 1 5) / Matrix Spil	d 50 52 50 53 50 53 50 53 50 163	Recove	ery Limit 105 70 106 70 107 70	Limit 130 130 130				
	Ethylbenzo Toluene Xylenes,To Samp RunID	ene <u>Matrix S</u> e Spiked:	<mark>Spike (MS</mark> 010106 ⁷ HP_S_01	Adde 1 5) / Matrix Spil 10-02 0124A-541297	d 50 52 50 53 50 53 50 163 ce Duplicate Units:	(MSD) ug/L	ery Limit 105 70 106 70 107 70	Limit 130 130 130	RPD	RPD Limit	Low Limit	High Limi
enzene	Ethylbenzo Toluene Xylenes,To Samp RunID Analy:	ene <u>Matrix S</u> e Spiked: sis Date: Sample Result	Spike (MS 010106 HP_S_01 01/24/20 MS Spike Added 20	Adde 1 1) / Matrix Spil 10-02 0124A-541297 001 18:52 MS Result 22	d 50 52 50 53 50 163 50 163 6 Duplicate Units: Analyst: MS % Recovery 2 112	(MSD) ug/L D_R MSD Spike Added	Ery Limit 105 70 106 70 107 70 109 70 MSD Result 21	Limit 130 130 130 130 130 80 80 80 80 80 80 80 80 80 80 80 80 80	6.59	Limit 21	Limit 32	Limi 16
	Ethylbenzo Toluene Xylenes,To Samp RunID Analy:	ene <u>Matrix S</u> e Spiked: ; sis Date: Sample Result	Spike (MS 010106 HP_S_01 01/24/20 MS Spike Added 20 20	Adde 1 1 1 1 1 1 1 1 1 1 1 1 1	d 50 52 50 53 50 163 50 163 6e Duplicate Units: Analyst: MS % Recovery 2 112 1 105	(MSD) ug/L D_R MSD Spike	Ery Limit 105 70 106 70 107 70 109 70 MSD Result 21 20	Limit 130 130 130 130 130 80 80 80 80 80 80 80 80 80 80 80 80 80	6.59 5.70	Limit 21 19	Limit 32 52	High Limit 16: 14:

Qualifiers:

ND/U - Not Detected at the Reporting Limit

sinted Mathed Displa

- B Analyte detected in the associated Method Blank J - Estimated value between MDL and PQL
- MI Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



Quality Control Report

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Brown & Caldwell BJ Service #12832-022

Analysis: /iethod:	Gasoline Range Or SW8015B	ganics			WorkOrder: Lab Batch ID:	01010371 R28313
·····	Met	hod Blank		Samples in Analytic	cal Batch:	
RunID:	HP_S_010124D-54136	7 Units: mg/L		Lab Sample ID	Client Sar	nnie ID
nalysis Date:	01/24/2001 17:34	Analyst: D_R		01010371-01A	MW-15	
				01010371-02A	MW-14	
				01010371-04A	Trip Blank	1/4/01
Si	Analyte bline Range Organics Irr: 1,4-Difluorobenzene Irr: 4-Bromofluorobenzene	95				
····		<u> </u>	aboratory Contr	ol Sample (LCS)	<u> </u>	
1	RuniC): HP_S_	010124D-541366	Units: mg/L		
I	Analy	sis Date: 01/24/	2001 16:41	Analyst: D_R		
ľ		Analyte	Spike	e Result Percent	Lower Upper	
		Analyte	Adde		Limit Limit	
_	Gasoline	e Range Organics		1 1.1 106	70 130	
		Matrix Spike	MS) / Matrix Spil	ke Duplicate (MSD)		
	San		0610-03			
	Run		_010124D-541369	Units: mg/L		
_	Ana	lysis Date: 01/24	\$/2001 19:45	Analyst: D_R		
	1.4					
A B	nalyte	Sample MS Result Spike	MS Result	MS % MSD MSD Recovery Spike	Result MSD % Recovery	RPD RPD Low High Limit Limit Limi
		Adde		Added		
Gasoline Range (Drganics	0.90 (0.9 1.4	4 56.2 0.9	1.5 65.0	14.4 36 36 16
		· · · ·	· .	········	· -· · · · · ·	the transformed and a
-						
s						

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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.

1/29/01 12:43:59 PM



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

Quality Control Report

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Brown & Caldwell BJ Service #12832-022

nalysis: lethod:	Polynuclear Aromati SW8310	c Hydrocarbon	5					Order: latch ID:	01010371 9703	
	Meth	od Blank			Sampl	les in Analyt	ical Batch):	·	
unID:	2_010123A-545131		ıg/L			ample ID		Client San	nple ID	
nalysis Date:	01/23/2001 16:17	•	(A			371-01B		MW-15		
reparation Date:	01/18/2001 13:00	Prep By: K	KL Method SV	V3510B	01010	371-02B		MW-14		
)	Analyte	R	esult Rep Limi	tİ						
Acena	aphthene		ND 0.10	-1						
	aphthylene		ND 0.10							
Anthr	acene (a)anthracene	· · · · · · · · · · · ·	ND 0.10 ND 0.10	*						
Benzo	o(a)pyrene		ND 0.10	<u>כ</u>						
	o(b)fluoranthene o(g,h,i)perylene		ND 0.10							
	o(k)fluoranthene	··· · · · · · · · · · · · · · · · · ·	ND 0.10	-						
Chrys			ND 0.10							
	zo(a,h)anthracene		ND 0.10 ND 0.10							
Fluore	ene		ND 0.10	2						
	o(1,2,3-cd)pyrene thalene		ND 0.10 ND 0.10	-1						
	anthrene	······································	ND 0.10							
Pyren			ND 0.10							
	rr: 1-Fluoronaphthalene rr: Phenanthrene-d10	• • •	62.9 15-9 66.3 33-10							
•										
		<u></u>	Laboratory	Control S	ample (L(CS)				
	RunID:	2_1	Laboratory 010123A-545132	Control S Un		<u>CS)</u> g/L				
				Un		g/L				
	Analysi	s Date: 01	010123A-545132	Un An	its: ug	g/L A	SW3510B			
	Analysi	s Date: 01	010123A-545132 /23/2001 16:54	Un An Pre	its: ug alyst: K	g/L A L Method : Percent	Lower	Upper		
	Analysi Prepara	s Date: 01 ation Date: 01 Analyte	010123A-545132 /23/2001 16:54	Un An Pre Spike Added	its: uç alyst: K p By: K Result	g/L A L Method	1	Upper Limit		
 	Analysi Prepara Acenapht	s Date: 01 ation Date: 01 Analyte hene	010123A-545132 /23/2001 16:54	Un An Pre Spike Added 0.5	its: ug alyst: K. p By: Ki Result 0.35	g/L A L Method Percent Recovery 71	Lower Limit 23			
	Analysi Prepara Acenapht Acenapht	s Date: 01 ation Date: 01 Analyte hene hylene	010123A-545132 /23/2001 16:54	Un An Pre Spike Added 0.5 0.5	its: ug alyst: K p By: K Result 0.35 0.41	g/L A L Method Percent Recovery 71 81	Lower Limit 23 29	Limit 99 104		
	Analysi Prepara Acenapht Acenapht Anthracer	s Date: 01 ation Date: 01 Analyte hene hylene ne	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5	its: ug alyst: K p By: K Result 0.35 0.41 0.33	g/L A L Method Percent Recovery 71 81 67	Lower Limit 23 29 28	Limit 99 104 126		
	Analysi Prepara Acenapht Acenapht Anthracer Benz(a)ar	s Date: 01 ation Date: 01 Analyte hene hylene ne nthracene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5	its: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39	g/L A L Method Recovery 71 81 67 79	Lower Limit 23 29 28 52	Limit 99 104 126 101		
	Analysi Prepara Acenapht Acenapht Anthracer Benz(a)ar Benzo(a)a	s Date: 01 ation Date: 01 Analyte hene hylene ne nthracene pyrene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5 0.5	its: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.39	g/L A L Method Recovery 71 81 67 79 78	Lower Limit 23 29 28 52 62	Limit 99 104 126 101 97		
	Analysi Prepara Acenapht Acenapht Anthracer Benz(a)ar Benzo(a)g Benzo(b)	s Date: 01 ation Date: 01 Analyte hene hylene ne nthracene pyrene fluoranthene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5	its: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.39 0.41	g/L A L Method Recovery 71 81 67 79 78 83	Lower Limit 23 29 28 52 62 65	Limit 99 104 126 101 97 101		
	Analysi Prepara Acenapht Acenapht Anthracer Benzo(a) Benzo(a) Benzo(b)t Benzo(g,t	s Date: 01 ation Date: 01 Analyte hene hylene ne nthracene pyrene fluoranthene n,i)perylene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	its: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.39 0.41 0.41	g/L A L Method Recovery 71 81 67 79 78 83 83 81	Lower Limit 23 29 28 52 62 65 36	Limit 99 104 126 101 97 101 117		
	Analysi Prepara Acenapht Acenapht Anthracer Benz(a)ar Benzo(a) Benzo(b)f Benzo(b)f Benzo(k)f	s Date: 01 ation Date: 01 Analyte hene hylene ne hthracene pyrene fluoranthene h,i)perylene fluoranthene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	its: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.39 0.39 0.41 0.41 0.41	g/L A L Method S Recovery 71 81 67 79 78 83 83 81 82	Lower Limit 23 29 28 52 62 62 65 36 64	Limit 99 104 126 101 97 101 117 104		
	Analysi Prepara Acenapht Acenapht Anthracer Benzo(a) Benzo(b) Benzo(b) Benzo(k) Chrysene	s Date: 01 ation Date: 01 Analyte hene hylene ne hthracene pyrene fluoranthene h,i)perylene fluoranthene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	tts: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.39 0.39 0.41 0.41 0.41 0.43	g/L A L Method 3 Percent Recovery 71 81 67 79 78 83 83 83 81 82 86	Lower Limit 23 29 28 52 62 65 36 64 64	Limit 99 104 126 101 97 101 117 104 124		
	Analysi Prepara Acenapht Acenapht Anthracer Benzo(a)a Benzo(b)f Benzo(b)f Benzo(k)f Chrysene Dibenzo(a)	s Date: 01 ation Date: 01 Analyte hene hylene ne hylene nuoranthene huoranthene huoranthene a,h)anthracene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	its: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.39 0.39 0.41 0.41 0.41 0.43 0.38	g/L A L Method 3 Percent Recovery 71 81 67 79 78 83 83 83 83 81 82 86 76	Lower Limit 23 29 28 52 62 65 36 64 64 33	Limit 99 104 126 101 97 101 117 104 124 111		
	Analysi Prepara Acenapht Acenapht Anthracer Benzo(a)a Benzo(b)f Benzo(b)f Benzo(k)f Chrysene Dibenzo(a Fluoranth	s Date: 01 ation Date: 01 Analyte hene hylene ne hylene nuoranthene huoranthene huoranthene a,h)anthracene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	tts: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.39 0.41 0.41 0.41 0.43 0.38 0.39	g/L A L Method Recovery 71 81 67 79 78 83 83 81 82 86 76 78	Lower Limit 23 29 28 52 62 65 36 64 64 64 33 51	Limit 99 104 126 101 97 101 117 104 124 111 100		
	Analysi Prepara Acenapht Acenapht Anthracer Benzo(a) Benzo(b) Benzo(c) Benzo(c) Benzo(k) Chrysene Dibenzo(a Fluoranth Fluorene	s Date: 01 ation Date: 01 Analyte hene hylene ne hylene ne huoranthene huoranthene huoranthene huoranthene a,h)anthracene ene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	tts: ug alyst: K p By: K Result 0.35 0.41 0.39 0.39 0.41 0.41 0.41 0.43 0.38 0.39 0.39 0.39	g/L A L Method Recovery 71 81 67 79 78 83 83 83 81 82 86 76 78 78 78	Lower Limit 23 29 28 52 62 65 36 64 64 64 33 51 20	Limit 99 104 126 101 97 101 117 104 124 111 100 105		
	Analysi Prepara Acenapht Acenapht Anthracer Benzo(a) Benzo(b) Benzo(c) Benzo(c) Chrysene Dibenzo(c) Fluorenth Fluorene Indeno(1,	s Date: 01 ation Date: 01 Analyte hene hylene ne hthracene pyrene fluoranthene huoranthene huoranthene a,h)anthracene ene 2,3-cd)pyrene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	tts: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.39 0.41 0.41 0.41 0.43 0.38 0.39 0.39 0.39 0.39 0.39	g/L A L Method Recovery 71 81 67 79 78 83 83 81 82 86 76 78 78 86 78 86 86	Lower Limit 23 29 28 52 62 65 36 64 64 64 33 51 20 57	Limit 99 104 126 101 97 101 117 104 124 111 100 105 115		
	Analysi Prepara Acenapht Acenapht Anthracer Benzo(a) Benzo(b) Benzo(c) Benzo(c) Benzo(k) Chrysene Dibenzo(a Fluoranth Fluorene	s Date: 01 ation Date: 01 Analyte hene hylene ne hylene ne huoranthene h,i)perylene huoranthene a,h)anthracene ene 2,3-cd)pyrene ene	010123A-545132 /23/2001 16:54	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	tts: ug alyst: K p By: K Result 0.35 0.41 0.39 0.39 0.41 0.41 0.41 0.43 0.38 0.39 0.39 0.39	g/L A L Method S Percent Recovery 71 81 67 79 78 83 83 81 82 86 76 78 86 76 78 86 68	Lower Limit 23 29 28 52 62 65 36 64 64 64 33 51 20	Limit 99 104 126 101 97 101 117 104 124 111 100 105 115 95		
	Analysi Prepara Acenapht Acenapht Anthracer Benzo(a) Benzo(b) Benzo(b) Benzo(c) Benzo(c) Fluoranth Fluorene Indeno(1, Naphthali Phenanth	s Date: 01 ation Date: 01 Analyte hene hylene ne hylene huoranthene hilperylene huoranthene a,h)anthracene ene 2,3-cd)pyrene ene irene	010123A-545132 /23/2001 16:54 /18/2001 13:00	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	tts: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.41 0.41 0.41 0.43 0.38 0.39 0.43 0.39 0.43 0.39	g/L A L Method Recovery 71 81 67 79 78 83 83 81 82 86 76 78 78 86 76 78 78 86 76 78 78	Lower Limit 23 29 28 52 62 65 36 64 64 33 51 20 57 19	Limit 99 104 126 101 97 101 117 104 124 111 100 105 115 95		
Qualifiers:	Analysi Prepara Acenapht Acenapht Anthracer Benzo(a)a Benzo(a)a Benzo(a)a Benzo(b)f Benzo(b)f Benzo(c) Benzo(k)f Chrysene Dibenzo(a Fluoranth Fluorene Indeno(1, Naphthala Phenanth	s Date: 01 ation Date: 01 Analyte hene hylene ne nthracene pyrene fluoranthene huoranthene a,h)anthracene ene 2,3-cd)pyrene ene irene	010123A-545132 /23/2001 16:54 /18/2001 13:00	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	tts: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.41 0.41 0.41 0.43 0.38 0.39 0.43 0.39 0.43 0.38 0.39 0.43 0.34 0.38	g/L A L Method Recovery 71 81 67 79 78 83 83 81 82 86 76 78 78 86 76 78 78 86 76 78 78 78	Lower Limit 23 29 28 52 62 65 36 64 64 33 51 20 57 19 29	Limit 99 104 126 101 97 101 117 104 124 111 100 105 115 95 105		
Qualifiers:	Analysi Prepara Acenapht Acenapht Anthracer Benzo(a) Benzo(b) Benzo(b) Benzo(c) Benzo(c) Fluoranth Fluorene Indeno(1, Naphthali Phenanth	s Date: 01 ation Date: 01 Analyte hene hylene ne hylene he huoranthene h,i)perylene huoranthene a,h)anthracene ene 2,3-cd)pyrene ene irene	g Limit ed Method Blanl	Un An Pre Added 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	tts: ug alyst: K p By: K Result 0.35 0.41 0.33 0.39 0.41 0.41 0.41 0.41 0.43 0.38 0.39 0.39 0.39 0.39 0.39 0.39 0.39 0.39	g/L A L Method Recovery 71 81 67 79 78 83 83 81 82 86 76 78 78 86 76 78 78 86 76 78 78	Lower Limit 23 29 28 52 62 65 36 64 64 64 33 51 20 57 19 29 29	Limit 99 104 126 101 97 101 117 104 124 111 100 105 115 95 105		



Quality Control Report

Brown & Caldwell BJ Service #12832-022

nalysis: **Polynuclear Aromatic Hydrocarbons** WorkOrder: 01010371 ethod: SW8310 Lab Batch ID: 9703 Laboratory Control Sample (LCS) 2_010123A-545132 RunID: Units: ug/L Analysis Date: 01/23/2001 16:54 Analyst: KA Preparation Date: 01/18/2001 13:00 Prep By: KL Method SW3510B Analyte Spike Result Percent Lower Upper Added Recovery Limit Limit Pyrene 0.5 0.38 75 55 105 Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Sample Spiked: 01010371-01 RunID: 2_010123A-545134 Units: ug/L 01/23/2001 18:08 Analysis Date: Analyst: KA Preparation Date: 01/18/2001 13:00 Prep By: Method MS MS Result MS % MSD Analyte Sample MSD Result MSD % RPD RPD Low High Result Spike Recovery Spike Recovery Limit Limit | Limit Added Added ND 0.5 0.19 37.2 0.5 0.21 30 Acenaphthene 41.8 11.5 97 1 ND 0.5 0.19 37.1 0.5 0.2 39.5 6.09 30 penaphthylene 1 122 hthracene ND 0.5 0.19 37.8 0.5 0.22 44.6 16.7 30 1 106 Benz(a)anthracene ND 0.5 0.28 56.5 0.5 0.36 717 23.9 30 12 119 ND 0.5 0.26 52.6 0.5 0.34 67.2 24.3 30 Benzo(a)pyrene 105 1 ND 0.5 0.29 57.6 0.5 0.36 72.9 23.4 30 6 enzo(b)fluoranthene 127 enzo(g,h,i)perylene 0.5 0.27 0.5 ND 53.4 0.32 64.2 18.4 30 107 1 ND 0.5 0.28 56.4 0.5 0.36 30 Benzo(k)fluoranthene 71.2 23.2 5 119 0.5 0.3 hrysene ND 60.5 0.5 0.38 75.9 22.7 30 1 144 0.24 56.8 ND 0.5 47.9 0.5 0.28 17.0 30 benzo(a,h)anthracene 1 114 Fluoranthene ND 0.5 0.34 67.7 0.5 0.4 79.8 16.4 30 14 126 ND 0.5 0.25 43.8 0.5 0.27 48.9 30 1 Eluorene 11.0 107 ND 0.5 0.29 57.7 0.5 0.36 72.5 22.8 30 deno(1,2,3-cd)pyrene 1 109 37.9 0.2 0.5 0.19 ND 0.5 30 aphthalene 40.2 5.84 1 90 Phenanthrene ND 0.5 0.35 51.3 0.5 0.38 57.2 10.8 30 1 128 ND 0.5 0.35 70.6 0.5 0.44 88.9 23.0 30 /rene 1 135

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



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Quality Control Report

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Brown & Caldwell B.I. Sarvice #12832-022

-			BJS	Service #12	832-022							
nalysis: lethod:	Metals by Method 60 SW6010B	10B, Total						Order: latch ID:	0101 9679			
	Meth	od Blank	······	<u> </u>	Samp	les in Anal	ytical Batch	:			<u> </u>	
unID:	TJA_010117B-534400	Units:	mg/L		Lab S	Sample ID		Client Sam	nole ID			
nalysis Date:	01/17/2001 19:31	Analyst:	E_B			0371-01D		MW-15				
Preparation Date:	01/17/2001 9:00	Prep By:	R_T Method	SW3010A		0371-02D		MW-14				
Bariu <u>Calci</u> u Chror Magn Potas Silver Soliu	nium nium esium silum		ND 0. ND ND 0 ND 0 ND	imit 005 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.5								
<u> </u>			Laborato	ry Control	Sample (L	CS)	. u ^{t.t}					
	RunID:		TJA_010117B-53	4401 U	nits: n	ng/L						
	Analys	is Date:	01/17/2001 19:3	35 Ar		E_B						
	Prepar	ation Date:	01/17/2001 9:00) Pr	rep By: F	R_T Metho	d SW3010A					
		n im n	e on Spike (PDS	Spike Added 2 20 20 20 20 20 20 20 20 20 20 20 20 2	2 2.35 2 2.39 2 2.39 2 2.6 2 2.01 2 2.01 2 2.01	5 11 10 11 10 11 10 10 10 10 10	0 80 7 80 4 80 9 80 4 80 0 80 0 80 1 80	Upper Limit 120 120 120 120 120 120 120 120				
ample Spiked: JunID:	01010371-01 TJA 010117B-534406	Units:	mg/L									
Analysis Date:	01/17/2001 19:57	Analyst:	E_B									
reparation Date:		Prep By:	 Method	I								
A	nalyte	Sample Result	PDS PDS Spike Added		PDS % Recovery	PDSD PI Spike Added	DSD Result	PDSD % Recovery	RPD	RPD Limit	Low Limit	High Lími
Cadmium		NE) <u>1</u>	1.05	105	1	1.07	107	1.4	20	75	12
Chromium		NE	-h	1.05	105	1	1.07		1.7	20		
		Matrix	Spike (MS) / M	atrix Spike	Duplicate	(MSD)		· <u> </u>	<u> </u>	<u> </u>	L	
	ND/U - Not Detected	d at the Repor	ting Limit	M	I - Matrix I	nterference					-	
Qualifiers:			-	ank D	- Recover	y Unreporta	ble due to D	ilution				
Qualifiers:	B - Analyte detected											
Qualifiers:	B - Analyte detected J - Estimated value		and PQL	*.	- Recovery	Outside Ad	dvisable QC	Limits				
The percent rec		between MDL are correct a	s reported. Due	to significa	nt figures a	and	dvisable QC	Limits				



Quality Control Report

Brown & Caldwell BJ Service #12832-022

nalysis: lethod:	Metals by Me SW6010B	thod 6010B, Total						Order: Batch ID:	0101 9679	10371 9		
		Sample Spiked: RunID: Analysis Date: Preparation Date:	-	117B-534403 001 19:44	Units: Analyst: Prep By:	mg/L E_B M	ethod					
	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit		High Limit
arium		0.073		1.05	98.2	1	1.06	99.0	0.887	20	75	125
admium	··· ·	ND	1	1.32	132 *	1	1	100	26.9 *	20	75	12
Calcium		150	10	162	120	10	162	118	1.04	20	75	12
hromium	. ,	ND	[^{**} 1]	1.31	131 *	1	1	100	26.9 *	20	75	125
agnesium		28	10	39.4	111	10	39	107	3.60	20	75	129
otassium		4.6		14	93.7	10	14.4	98.5	4.94	20	75	12
Silver		ND	1	0.979	97.9	1	0.99	99.0	1.08	20	75	125
bdium		110	10	121	123		120	120	2.35		75	12

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



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Quality Control Report

Brown & Caldwell BJ Service #12832-022

ethod: SW601 UnID: TJA_010 nalysis Date: 01/18/2 reparation Date: 01/18/2 Barium Cadmium Chromium Silver ample Spiked: 010103 UnID: TJA_01 nalysis Date: 01/18/2	Meth 0118A-535193 2001 17:07 2001 9:30 Analyte RunID: Analysi Prepara Barium Cadmium Chromium Silver	od Blank Units: Analyst: Prep By: is Date: ation Date: Analyt	Result F ND ND ND TJA_01011 01/18/200 01/18/200 te	0.5 0.5 1 1 0ratory Con 18A-535194 11 17:11 11 9:30 Sp Ac	D50B Introl Samp Units: Analyst Prep By Idded 177 64 143 90	<u>ab Sam</u> 0101037 0101037 mg/k :: E_B y: R_T sult F R 156 55.3 124 80.1	1-03B Kg Method S Percent Recovery N/A N/A N/A	Lab B ical Batch SW3050B Lower Limit 137 49.2 114 67	Order: Batch ID: Client Sar Soil Cuttin Soil Cuttin Upper Limit 218 78.7 171 113	9704 nple ID		W-15	
ample Spiked: 01/18/2 unito: 01/18/2	0118A-535193 2001 17:07 2001 9:30 Analyte RunID: Analysi Prepara Barium Cadmium Chromium Silver	Units: Analyst: Prep By: is Date: ation Date: Analyt	E_B R_T Me ND ND ND TJA_01011 01/18/200 01/18/200	Rep Limit 0.5 0.5 1 1 0 0 1 1 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	D50B Introl Samp Units: Analyst Prep By Idded 177 64 143 90	<u>ab Sam</u> 0101037 0101037 mg/k :: E_B y: R_T sult F R 156 55.3 124 80.1	hple ID 1-03B 1-03B Kg Method S Percent Recovery N/A N/A N/A	SW3050B Lower Limit 137 49.2 114 67	Client San Soil Cuttin Upper Limit 218 78.7 171			W-15	
ample Spiked: 01/18/2 unito: 01/18/2	2001 17:07 2001 9:30 Analyte RunID: Analysi Prepara Barium Cadmium Chromium Silver	Analyst: Prep By: is Date: ation Date: Analyt n Post Digesti Units:	E_B R_T Me ND ND ND TJA_01011 01/18/200 01/18/200	Rep Limit 0.5 0.5 1 1 0 0 1 1 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	0 050B Units: Analyst Prep By dded 177 64 143 90	bile (LCS mg/ł :: E_B y: R_T sult F 156 55.3 124 80.1	1-03B Kg Method S Percent Recovery N/A N/A N/A	Lower Limit 137 49.2 114 67	Upper Limit 218 78.7 171			W-15	
ample Spiked: 01/18/2 Diver Di	2001 9:30 Analyte RunID: Analysi Prepara Barium Cadmium Chromium Silver	Prep By: is Date: ation Date: Analyt n Post Digesti Units:	R_T Me Result F ND ND ND TJA_01011 01/18/200 01/18/200 te ion Spike mg/Kg	Rep Limit 0.5 0.5 1 1 0 0 1 1 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	0 050B Units: Analyst Prep By dded 177 64 143 90	bile (LCS mg/ł :: E_B y: R_T sult F 156 55.3 124 80.1	1-03B Kg Method S Percent Recovery N/A N/A N/A	Lower Limit 137 49.2 114 67	Upper Limit 218 78.7 171			<i>N</i> -15	
Barium Cadmium Chromium Silver Silver ample Spiked: 010103 unID: TJA_01 unalysis Date: 01/18/2 reparation Date: 01/18/2 Analyte	Analyte RunID: Analysi Prepara Barium Cadmium Chromium Silver	is Date: ation Date: Analyt n <u>Post Digesti</u> Units:	Result F ND ND ND TJA_01011 01/18/200 01/18/200 te	Rep Limit 0.5 0.5 1 1 0 0 1 1 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	ntrol Samp Units: Analyst Prep By dded 177 64 143 90	mg/k :: E_B y: R_T sult F 156 55.3 124 80.1	Kg Method S Percent Recovery N/A N/A N/A N/A	Lower Limit 137 49.2 114 67	Limit 218 78.7 171				
Cadmium Chromium Silver ample Spiked: 010103 unID: TJA_01 unalysis Date: 01/18/2 reparation Date: 01/18/2 Analyte	RunID: Analysi Prepara Barium Cadmium Chromium Silver 843-03 0118A-535199	is Date: ation Date: Analyt n <u>Post Digesti</u> Units:	ND ND ND TJA_01011 01/18/200 01/18/200 te	0.5 0.5 1 1 0ratory Con 18A-535194 11 17:11 11 9:30 Sp Ac	Units: Analyst Prep By dded 177 64 143 90	mg/k :: E_B y: R_T sult F 156 55.3 124 80.1	Kg Method S Percent Recovery N/A N/A N/A N/A	Lower Limit 137 49.2 114 67	Limit 218 78.7 171				
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	Analysi Prepara Barium Cadmium Chromium Silver 343-03 0118A-535199	is Date: ation Date: Analyt n <u>Post Digesti</u> Units:	TJA_01011 01/18/200 01/18/200 te ion Spike mg/Kg	8A-535194 11 17:11 11 9:30 St Ac	Units: Analyst Prep By dded 177 64 143 90	mg/k :: E_B y: R_T sult F 156 55.3 124 80.1	Kg Method S Percent Recovery N/A N/A N/A N/A	Lower Limit 137 49.2 114 67	Limit 218 78.7 171				
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	Analysi Prepara Barium Cadmium Chromium Silver 343-03 0118A-535199	is Date: ation Date: Analyt n <u>Post Digesti</u> Units:	01/18/200 01/18/200 le <u>ion Spike</u> mg/Kg	11 17:11 11 9:30 Ac	Analyst Prep By dded 177 64 143 90	:: E_B y: R_T sult F 156 55.3 124 80.1	Method S Percent Recovery N/A N/A N/A	Lower Limit 137 49.2 114 67	Limit 218 78.7 171				
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	Prepara Barium Cadmium Chromium Silver 943-03 0118A-535199	ation Date: Analyt n <u>Post Digesti</u> Units:	01/18/200 le ion Spike f	91 9:30	Prep By pike dded 177 64 143 90	y: R_T sult F 156 55.3 124 80.1	Method S Percent Recovery N/A N/A N/A	Lower Limit 137 49.2 114 67	Limit 218 78.7 171				
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	Barium Cadmium Chromium Silver 943-03 0118A-535199	Analyt n <u>Post Digesti</u> Units:	ie ion Spike mg/Kg	Sr Ac	pike dded 177 64 143 90	sult F 156 55.3 124 80.1	Percent Recovery N/A N/A N/A	Lower Limit 137 49.2 114 67	Limit 218 78.7 171				
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	Cadmium Chromium Silver 943-03 0118A-535199	n <u>Post Digesti</u> Units:	ion Spike		dded 177 64 143 90	156 55.3 124 80.1	Recovery N/A N/A N/A N/A	Limit 137 49.2 114 67	Limit 218 78.7 171				
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	Cadmium Chromium Silver 943-03 0118A-535199	n <u>Post Digesti</u> Units:	mg/Kg		177 64 143 90	156 55.3 124 80.1	N/A N/A N/A N/A	137 49.2 114 67	218 78.7 171				
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	Cadmium Chromium Silver 943-03 0118A-535199	n <u>Post Digesti</u> Units:	mg/Kg	(PDS) / Pos	64 143 90	55.3 124 80.1	N/A N/A N/A	49.2 114 67	78.7 171				
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	Chromium Silver 343-03 0118A-535199	n <u>Post Digesti</u> Units:	mg/Kg	(PDS) / Pos	143 90	124 80.1	N/A N/A	114 67	171				
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	Silver 343-03 0118A-535199	<u>Post Digesti</u> Units:	mg/Kg	(PDS) / Pos	90	80.1	N/A	67	. [
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	343-03 0118A-535199	Units:	mg/Kg	(PDS) / Pos		l .	· · · ·						
unID: TJA_01 nalysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	343-03 0118A-535199	Units:	mg/Kg	<u>(FD3) / F03</u>	<u>st Digestion</u>	1 Spike	Dupiicate	(PUSU)					
unID: TJA_01 malysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium	0118A-535199												
nalysis Date: 01/18/2 reparation Date: 01/18/2 Analyte sarium													
Analyte	-001 17.00	/ analyst.											
arium	2001 9:30	Prep By:	E_B M	ethod									
and the second		Sample Result	PDS Spike Added	PDS Resu	ult PDS Recov	/ery Sp	DSD PDS bike dded	D Result	PDSD % Recovery	RPD	RPD Limit		High Limi
and the second		90.0	6 100		179 8	38.6	100	179	88.4	0.25	20	75	12
		N	ل	8	38.6 8	38.6	100	92.1	92.1	+	20	75	12
		Matrix	Spike (MS	<u>S) / Matrix S</u>	Spike Dupli	icate (M	<u>ISD)</u>						
		ple Spiked:	010104		_								
	Runil)118A-535196			g/Kg						
	-	ysis Date:		001 17:20	Analy		_B		_				
_	Prepa	aration Date:	01/18/2	001 9:30	Prep	BA: K	_T Metho	a SW3050	IR .				
Qualifiers: ND/U	Net Deter	at the Repo	rting Limit		MI - Ma	Itrix Inter	rference						
	- NOT Detected	•	•				Inreportable	e due to Di	ilution				
	 Not Detected alyte detected 						•						
The percent recoveries for		between MDI	L and PQL		* - Reco	overy OL	utside Advi	sable QC I					



Quality Control Report

Brown & Caldwell BJ Service #12832-022

nalysis: lethod:	Metals by Metho SW6010B	d 6010B, Total						Order: Batch ID:	010 ⁻ 970-	10371 4		
	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		91	100	164	73.1 *	100	168	77.4	5.73	20	75	125
Cadmium		ND	100	75.6	75.6	100	72.7	72.7 *	4.02	20	75	125
hromium		6.2	100	91.9	85.7	100	87.2	81.0	5.63	20	75	125
ilver		ND	100	79.1	79.1	100	75.4	75.4	4.79	20		125

Qualifiers:

ND/U - Not Detected at the Reporting Limit

- B Analyte detected in the associated Method Blank
- J Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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

1/29/01 12:44:02 PM



Quality Control Report

Brown & Caldwell BJ Service #12832-022

nalysis: ethod:	Metals by Metho SW6010B	d 6010B, Total						Order: atch ID:	0101037 9704-T	1	
	Ň	lethod Blank			Samp	les in Anal	ytical Batch	:			
unID:	TJAT_010118A-536	i347 Units:	mg/Kg		Lab S	ample ID		Client Sam	ole ID		
nalysis Date:	01/18/2001 17:35	Analyst:	EG			0371-03B		Soil Cutting		MW-15	
Preparation Date:	01/18/2001 9:30	Prep By:	R_T Method	SW3050B							
Ârsen	Analyte		Result Rep Li ND	mit 0.5							
Lead Selen	·······			0.5 0.5							
I			Laborato	ry Control	Sample (L	CS)					
	Ru	nID:	TJAT_010118A-5	36348 U	nits: n	ng/Kg					
	An	alysis Date:	01/18/2001 17:4	41 A	nalyst: E	G					
1	Pre	eparation Date:	01/18/2001 9:30) P	rep By: F	LT Method	1 SW3050B				
		Analy	.e	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit			
l	Arser	nic		185	169	N/.	A 138	233			
	Lead Seler			119 150				148 188			
		Matrix	Spike (MS) / Ma	atrix Spike	Duplicate	(MSD)					
	c	Sample Spiked:	01010434-03								
		RunID:	TJAT_010118A	-536352	Units:	mg/Kg					
I		Analysis Date:	01/18/2001 17		Analyst:	EG					
1		Preparation Date:	01/18/2001 9:	30	Prep By:	R_T Meth	od SW3050	В			
Ar	alyte	Sample Result	MS MS Spike Added	Result	MS % Recovery	MSD M Spike Added	SD Result	MSD % Recovery	RPD RP		Hig Lin
rsenic	· · - · · · · · · · · · · · · · · ·	2.	6 200	167	82.2	200	163	80.4	2.30	20 75	1: 1:
ead		7.	9 100	90.6	82.7	100	86.5	78.5	5.15	20 75	1
elenium		N	D 200	170	84.8	200	164	81.9	3.44	20 75	1:

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



Quality Control Report

Brown & Caldwell BJ Service #12832-022

nalysis: ethod:	Metals by Metals SW6010B	ethod 601	0B, Total						Order: atch ID:	0101 9723	0371 -T		
·		Metho	d Blank			Samp	les in A	nalytical Batch	:				
unID:	TJAT_0101190	C-536995	Units:	mg/L) ah S	iample II	י ר	Client Sam	nia in			
halysis Date:	01/20/2001 0	:43	Analyst:	EG			0371-01D		MW-15				
•	01/19/2001 9	:55	Prep By:	R_T Me	thod SW3010A		0371-020		MW-14				
		alyte		Result R	· - 1								
Arsenio Lead	;				0.005								
Seleni	m		· i	ND	0.005								
	······			Labo	ratory Control	Sample (L	CSI		<u></u>	···			
1		RunID:		TJAT_0101			1g/L						
		Analysis		01/20/2001			'g, c :G						
•		-		01/19/2001		-		hod SW3010A					
1		•				. ,	-						
	[Analyte	Э	Spike	Result	Percer	nt Lower	Upper				
•					Added		Recove	ery Limit	Limit				
•	A	Arsenic				4 4.01	ĺ	100 80	120				
	L	ead				2 2.02		101 80	120				
	is is	Selenium				4 4.14		103 80	120				
•													
	<u> </u>		Matrix	Spike (MS	/ Matrix Spike	Duplicate	(MSD)			<u> </u>			
		• •											
		Sample RunID:	e Spiked:	0101047	2-01 119C-536998	Units:	ma/l						
			is Date:	01/20/20		Analyst:	mg/L EG						
		-	ation Date:	01/19/20		Prep By:		ethod SW3010.	Δ				
		, ropu	2000 0000	01110/20	010.00	1 iop DJ.	··· · ···		~				
An	alyte		Sample	MS	MS Result	MS %	MSD	MSD Result	MSD %	RPD	RPD	Low	Hig
	•		Result	Spike		Recovery	Spike		Recovery		Limit	Limit	Lin
				Added			Added					ł	
			ND	2	2.01	101	2	2.02	101	0.380	20	75	1
senic			-		0.000	00.0	1	0.989		0.404	20	75	
senic			NE) 1	0.988	98.8	I?	0.505	90.9	0.101	20	15	12

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

	FL/®	7	· ·	6860	TON LABORATORY INTERCHANGE DRIVE ISTON, TEXAS 77054 (713) 660-0901
		Quality	Control Report		
			n & Caldwell		
nalysis:	Mercury, Total	BJ Ser	vice #12832-022	WorkOrder:	01010371
ethod:	SW7471A			Lab Batch ID:	9778A
<u> </u>	Method	d Biank	Samples in Analyti	cal Batch:	
unID:	HGL_010122A-538490	Units: mg/Kg	Lab Sample ID	Client Sa	
nalysis Date: eparation Date:	01/22/2001 13:17 01/22/2001 8:45	Analyst: R_T Prep By: Method	01010371-03B	Soil Cuttin	ıgs, MW-14, MW-15
Merc	Analyte	Result Rep Limit	1		
<u></u>		Laboratory	Control Sample (LCS)		
	RunID:	HGL_010122A-53849	• •		
	Analysis Preparati	Date: 01/22/2001 13:17 ion Date: 01/22/2001 8:45	Analyst: R_T Prep By: R_T Method S	SW7471A	
	Mercury	Analyte	Spike AddedResult RecoveryPercent Recovery3.132.8N/A	Lower Upper Limit Limit 1.83 4.44	
		<u> Matrix Spike (MS) / Matri</u>	x Spike Duplicate (MSD)		
	Sample	e Spiked: 01010222-12			
	RuniD: Analysi	HGL_010122A-538 is Date: 01/22/2001 13:17			
		ation Date: 01/22/2001 8:45	Prep By: R_T Method	SW7471A	
f f	Inalyte	Sample MS MS Re Result Spike Added	sult MS % MSD MSD Recovery Spike Added	Result MSD % Recovery	RPD RPD Low High Limit Limit Lim
ercury		0.12 0.33	0.498 114 0.33	0.422 91.	222.3* 20 75 12
1					
1					
•					
Qualifiers:	ND/U - Not Detected a		MI - Matrix Interference		
	B - Analyte detected in	n the associated Method Blank	D - Recovery Unreportable	e due to Dilution	
	J - Estimated value be		* - Recovery Outside Advis		

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HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 {713} 680-0901

Quality Control Report

Brown & Caldwell BJ Service #12832-022

-		BJ S	ervice #12832-022		
nalysis: ethod:	Mercury, Total SW7470A			WorkOrder: Lab Batch ID:	01010371 9794A
	Met	nod Blank	Samples in Analytic	cal Batch:	
unID: halysis Date: Preparation Date:	_010123B-539251 01/23/2001 11:11 01/23/2001 9:00	Units: mg/L Analyst: R_T Prep By: R_T Method S	<u>Lab Sample ID</u> 01010371-01D SW7470A 01010371-02D	<u>Client San</u> MW-15 MW-14	nple ID
Merc	Analyte	Result Rep Lin ND 0.00	1		
		Laborator	y Control Sample (LCS)		
		sis Date: 01/23/2001 11:1 ration Date: 01/23/2001 9:00	Prep By: R_T Method S		
	Mercury	Analyte	SpikeResultPercentAddedRecovery0.0020.0019798	Lower Upper Limit Limit 85 115	
		Matrix Spike (MS) / Ma	trix Spike Duplicate (MSD)		
-	Som				
1	Run	• •	2 Units: mg/L		
		ysis Date: 01/23/2001 11:	•		
4		paration Date: 01/23/2001 9:0		SW7470A	
A	nalyte	Sample MS MS I Result Spike Added	Result MS % MSD MSD Recovery Spike Added	Result MSD % Recovery	RPD RPD Low High Limit Limit Limit
ercury		ND 0.002	0.00188 93.8 0.002	0.00188 93.8	0 20 85 115
Qualifiers:	B - Analyte detecte	d at the Reporting Limit d in the associated Method Bla between MDL and PQL	MI - Matrix Interference nk D - Recovery Unreportable * - Recovery Outside Advis		



Quality Control Report

Brown & Caldwell BJ Service #12832-022

nalysis: ethod:	Nitrogen, Nitrate (As E300	N)				WorkOrder: Lab Batch ID:	01010371 R27758
	Metho	d Blank		•··· · ································	Samples in Anal	ytical Batch:	
uniD:	WET_010116F-532516	Units:	mg/L		Lab Sample ID	<u>Client Sa</u>	mple (D
nalysis Date:	01/16/2001 11:23	Analyst:	KM		01010371-01E	MW-15	
					01010371-02E	MW-14	
Nitr	Analyte ogen, Nitrate (As N)	- · I	Result Rep Li ND 0	mit 10			
	<u></u>		Laborator	y Control S	ample (LCS)		
	RunID:		WET_010116F-53	2517 Ur	its: mg/L		
	Analysis	Date:	01/16/2001 11:2	3 An	alyst: KM		
	r I	Analy	e	Spike Added	Result Percent Recovery	Lower Upper Limit Limit	
	Nitrogen N	Nitrate (As N	n	10	9.37 9		
			·····				
		Matrix	Spike (MS) / Ma	trix Spike [Duplicate (MSD)		
	Samp	e Spiked:	01010371-01				
	RunID		WET_010116F-	532519 (Jnits: mg/L		
	Analys	sis Date:	01/16/2001 11	:23 /	Analyst: KM		
,	Analyte	Sample			MS % MSD M	SD Result MSD %	RPD RPD Low High
		Result	Spike Added	R	ecovery Spike Added	Recovery	
itrogen, Nitrate	(As N)	4.	9 10	14.7	98.7 10	14.7 98	70.0405 20 76 12
			. : .		i a a a a da d		

Qualifiers:

ND/U - Not Detected at the Reporting Limit

- B Analyte detected in the associated Method Blank
- J Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



Quality Control Report

Brown & Caldwell BJ Service #12832-022

nalysis: ethod:	Fluoride-IC E300			WorkOrder: Lab Batch ID:	01010371 R27759
<u></u>	Metho	od Blank	Samples	n Analytical Batch:	
unID: nalysis Date:	WET_010116G-532526 01/16/2001 11:23	Units: mg/L Analyst: KM	<u>Lab Samp</u> 01010371 01010371	-01E MW-15	<u>mple ID</u>
Fluc	Analyte	Result Rep	Limit 0.10		
		Labora	tory Control Sample (LCS)		
	RunID: Analysis	WET_0101160 Date: 01/16/2001 1			
	Fluoride	Analyte		ercent Lower Upper covery Limit Limit 97 90 110	
		Matrix Spike (MS) /	Matrix Spike Duplicate (MS	<u>D)</u>	
	RuniD	e Spiked: 01010371 : WET_01011 sis Date: 01/16/2001	6G-532529 Units: mg/	L	
} ,	Analyte	Sample MS M Result Spike Added	IS Result MS % MS Recovery Spil Add	ke Recovery	RPD RPD Low High Limit Limit Limit
uoride	.	1.2 10	10 93.1	10 11 95.	2 2.19 20 80 120
1					

Qualifiers:

ND/U - Not Detected at the Reporting Limit

- B Analyte detected in the associated Method Blank
- J Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



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

Quality Control Report

Brown & Caldwell BJ Service #12832-022

-			BJ Service	#12832-022		
nalysis: .ethod:	Sulfate E300				WorkOrder: Lab Batch ID:	01010371 R27760
	Metho	d Blank		Samples in Analy	tical Batch:	······································
unlD:	WET_010116H-532536	Units: mg)/L	Lab Sample ID	Client San	nple ID
halysis Date:	01/16/2001 11:23	Analyst: KN	1	01010371-01E 01010371-02E	MW-15 MW-14	
Sulf	Analyte	Res	ND 0.20			
		<u></u>	Laboratory Cont	rol Sample (LCS)		
	RunID: Analysis		_010116H-532537 6/2001 11:23	Units: mg/L Analyst: KM		
	Sulfate	Analyte	Spil Add		Lower Upper Limit Limit 90 110	
		Matrix Spil	(e (MS) / Matrix Sp	ike Duplicate (MSD)	<u></u>	
_	Sampl	e Spiked: 01	010371-01			
	RunID		ET_010116H-532539	Units: mg/L		
	Analys	sis Date: 01	/16/2001 11:23	Analyst: KM		
	Analyte		1S MS Result		D Result MSD %	RPD RPD Low High
			bike Ided	Recovery Spike Added	Recovery	Limit Limit Limit
lfate		ND	200 33	30 97.8 200	330 98.4	0.649 20 80 120
						
Qualifiers:	ND/U - Not Detected			MI - Matrix Interference		
	B - Analyte detected J - Estimated value b			D - Recovery Unreportab		
	J - Estimated value b coveries for QC samples			* - Recovery Outside Adv		

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Quality Control Report

Brown & Caldwell BJ Service #12832-022

Lnalysis: 1ethod:	Alkalinity, Bicarbonat M2320 B	e		WorkOrder: Lab Batch ID:	01010371 R27812
	Metho	od Blank	Samples in Analyti	cal Batch:	
iunłD: inalysis Date:	WET_010117B-533553 01/17/2001 12:00	Units: mg/L Analyst: SN	<u>Lab Sample ID</u> 01010371-01F 01010371-02F	<u>Client Sar</u> MW-15 MW-14	<u>nple ID</u>
Alka	Analyte alinity, Bicarbonate	Result Rep Lin	mit 2.0		
	<u></u>	Laborator	y Control Sample (LCS)	····	
-	RunID: Analysis	WET_010117B-53 Date: 01/17/2001 12:0	•		
	Alkalinity	Analyte Bicarbonate	Spike Result Percent Added Recovery 23.4 24.2 104	Lower Upper Limit Limit 90 110	
	/		Sample Duplicate	30 110	
	, ,	D: WET_010117t ysis Date: 01/17/2001 1 Analyte	•	D RPD Limit 0 20j	
Qualifiers:		at the Reporting Limit	MI - Matrix Interference		
	J - Estimated value b	in the associated Method Bla etween MDL and PQL are correct as reported. Due	* - Recovery Outside Advis		

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.



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Quality Control Report

Brown & Caldwell BJ Service #12832-022

	DJ 56	14106 #12032-022		
nalysis: ethod:	Alkalinity, Carbonate M2320 B		WorkOrder: Lab Batch ID:	01010371 R27814
	Method Blank	Samples in Analytica		N27014
unID:	WET_010117C-533576 Units: mg/L	-		
nalysis Date:	01/17/2001 12:00 Analyst: SN	<u>Lab Sample ID</u> 01010371-01F 01010371-02F	<u>Client Sar</u> MW-15 MW-14	<u>nple ID</u>
Alka	Analyte Result Rep Lim linity, Carbonate ND 2.			
	Laboratory	Control Sample (LCS)	<u> </u>	
•	RunID: WET_010117C-533	578 Units: mg/L		
	Analysis Date: 01/17/2001 12:00	Analyst: SN		
i				
ł	Analyte		imit Limit	
	Alkalinity, Carbonate	23.4 24.2 104	90 110	
	Sa	imple Duplicate		
	Original Sample: 01010371-01			
	RunID: WET_010117C-	533579 Units: mg/L		
	Analysis Date: 01/17/2001 12			
	Analyte	Sample DUP RPD Result Result	RPD Limit	
	Alkalinity, Carbonate	ND ND	0 20	
-				
•				
1				
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1				
-				
8				
Qualifiers:	ND/U - Not Detected at the Reporting Limit	MI - Matrix Interference		
8	B - Analyte detected in the associated Method Blan		ue to Dilution	
-	J - Estimated value between MDL and PQL	* - Recovery Outside Advisal		
The percent re	coveries for QC samples are correct as reported. Due to			



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

Quality Control Report

Brown & Caldwell BJ Service #12832-022

nalysis: ethod:	Chloride, Total E325.3							Order: latch ID:	01010371 R27983	
	Metho	d Blank			Samples in Analytical Batch:					
unID: nalysis Date:	WET_010118L-536138 01/18/2001 14:30		mg/L CV		01010	ample ID 0371-01E 0371-02E		<u>Client Sam</u> MW-15 MW-14	ple_ID	
Chi	Analyte	F	Result Rep Limi ND 1.0	1						
	······································		Laboratory	Control	Sample (L	CS)	<u> </u>			
	RunID: Analysis		/ET_010118L-5361 1/18/2001 14:30	-		ng/L V				
ł	Chloride	Analyte		Spike Added 10	Result 9 112	Percen Recove		Upper Limit 110		
······································		Matrix S	pike (MS) / Matr	x Spike	Duplicate	(MSD)	······			
	RunID	:	01010371-01 WET_010118L-53 01/18/2001 14:3		Units: Analyst:	mg/L CV				
-	Analyte		MS MS Ro Spike Added		MS % Recovery	Spike Added	MSD Result	MSD % Recovery	RPD RPD Low High Limit Limit Limit	
nloride		ND	250	473	102	250	473	102	0 20 85 115	

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

Sample Receipt Checklist And Chain of Custody



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

Sample Receipt Checklist

1 - 1 - L

	Workorder:	01010371			Received by:		Stelly, D'Anna
-	Date and Time Received:	1/16/01 10:00:00 AM			Carrier name:		•
	Temperature:	3			Camer name:		FedEx
	i emperatore.	5					
	Shipping container/cooler in g	ood condition?	Yes	\checkmark	No 🗌	Not Present	
	Custody seals intact on shipp	ping container/cooler?	Yes		No 🗔	Not Present	
	Custody seals intact on sample	le bottles?	Yes		No 🗌	Not Present	V
	Chain of custody present?		Yes		No 🗔		
_	Chain of custody signed when	relinquished and received?	Yes		No 🗔		
	Chain of custody agrees with	sample labels?	Yes		No 🖌		
-	Samples in proper container/b	oottle?	Yes		No 🗔		
	Sample containers intact?		Yes		No 🗔		
	Sufficient sample volume for it	ndicated test?	Yes	\checkmark	No 🗔		
	All samples received within ho	olding time?	Yes	\checkmark	Νο		
	Container/Temp Blank temper	ature in compliance?	Yes	\checkmark	No 🗌		
-	Water - VOA vials have zero h	neadspace?	Yes		No 🗍	Not Present	
	Water - pH acceptable upon re	eceipt?	Yes	✓	No 🗌		

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Case Narrative for: Brown & Caldwell

Certificate of Analysis Number: 01020760								
Report To:	Project Name: BJ Service, Hobbs, NM							
Brown & Caldwell	Site: Hobbs, NM							
Rick Rexroad	Site Address:							
1415 Louisiana								
Suite 2509 Houston	PO Number:							
тх	State: New Mexico							
77002-	State Cert. No.:							
ph: (713) 759-0999 fax: (713) 308-3886	Date Reported:							

Upon receipt of you samples it was found that sample was not received on March 9, 2001 for your sample "MW-7". Also, sample was received on March 9, 2001 for Trip Blank but was not listed on the chain of custody. On March 10, 2001, sample was not received for Trip Blank and sample was received for "MW-7". Tim Jenkins was notified of all non-conformance issues on March 9, 2001.

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 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.

ni lleit Sonia

Senior Project Manager



Brown & Caldwell

Certificate of Analysis Number:

01020760										
Report To:	Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX		Project Name: <u>Site:</u> Site Address: PO Number:	BJ Service, Hobbs, NM Hobbs, NM						
	77002- ph: (713) 759-0999	fax: (713) 308-3886	<u>State:</u> State Cert. No.:	New Mexico						
Fax To:	Brown & Caldwell Rick Rexroad	fax: (713) 308-3886	Date Reported:							
CI	ient Sample ID	Lab Sample ID Matrix	Date Collected	Date Received	COC ID	HOLD				

/W-1	01020760-01	Water	3/8/01 12:40:00 PM	3/9/01 09:30:00 AM	100825
AW-3	01020760-02	Water	3/8/01 11:20:00 AM	3/9/01 09:30:00 AM	100825
W-4	01020760-03	Water	3/8/01 01:45:00 PM	3/9/01 09:30:00 AM	100825
W-5	01020760-04	Water	3/8/01 10:15:00 AM	3/9/01 09:30:00 AM	100825
/W-5	01020760-04	Water	3/8/01 10:15:00 AM	3/10/01 10:00:00 AM	100825
W-7	01020760-05	Water	3/8/01 10:50:00 AM	3/10/01 10:00:00 AM	100821
W-8	01020760-06	Water	3/9/01 09:10:00 AM	3/9/01 09:30:00 AM	100821
W-8	01020760-06	Water	3/9/01 09:10:00 AM	3/10/01 10:00:00 AM	100821
<u>4</u> W-9	01020760-07	Water	3/8/01 11:50:00 AM	3/9/01 09:30:00 AM	100825
W-10	01020760-08	Water	3/9/01 09:30:00 AM	3/10/01 10:00:00 AM	100821
W-11A	01020760-09	Water	3/8/01 03:15:00 PM	3/9/01 09:30:00 AM	100826
MW-12	01020760-10	Water	3/8/01 04:10:00 PM	3/9/01 09:30:00 AM	100825
W-13	01020760-11	Water	3/8/01 02:30:00 PM	3/9/01 09:30:00 AM	100825
W- 14	01020760-12	Water	3/8/01 09:30:00 AM	3/9/01 09:30:00 AM	100825
MW-15	01020760-13	Water	3/8/01 09:45:00 AM	3/9/01 09:30:00 AM	100825
uplicate	01020760-15	Water	3/9/01	3/10/01 10:00:00 AM	100821
ip Blank 2/28/01	01020760-16	Water	3/9/01	3/10/01 10:00:00 AM	100821
ww-7	01020760-17	Water	3/9/01 09:50:00 AM	3/10/01 10:00:00 AM	100821

Jinia West

West, Sonia Senior Project Manager 3/30/01

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



Client Sample ID MW-1

Collected: 3/8/01 12:40:00 SPL Sample ID: 01020760-01

			Site	: Hobb	3, INIVI		
Analyses/Method		Result	Rep.Limit	[Dil. Factor QUAL	Date Analyzed Analyst	Seq.
ALKALINITY, BICAR	RBONATE		· · · · · · · · · · · · · ·	MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate		90.9	2		1	03/12/01 10:15 SN	597232
ALKALINITY, CARB	ONATE			MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	• •	ND	2		1	03/12/01 10:15 SN	597332
CHLORIDE, TOTAL	· · ·		·· · · · · · ·	MCL	E325.3	Units: mg/L	
Chloride		181	5		5	03/20/01 11:30 CV	610204
DIESEL RANGE OR	GANICS			MCL	SW8015B	Units: mg/L	
Diesel Range Organics		0.49	0.25		1	03/20/01 18:38 AM	609585
Surr: n-Pentacosane		116	% 18-120		1	03/20/01 18:38 AM	609585
Prep Method	Prep Date		Prep Initials				
SW3510B	03/10/2001 7	:52	KL				
FLUORIDE-IC				MCL	E300	Units: mg/L	
Fluoride		1.3	0.1		1	03/09/01 11:53 KM	594811
GASOLINE RANGE	ORGANICS			MCL	SW8015B	Units: mg/L	
Gasoline Range Organics 0.58			0.1		1	03/18/01 19:36 D_R	605444
Surr: 1,4-Difluorobenzene 90.		90.7	% 74-121		1	03/18/01 19:36 D_R	605444
Surr: 4-Bromofluor	obenzene	94.7	% 55-150		1	03/18/01 19:36 D_R	605444
HARDNESS, TOTAL	(TITRIMETRIC	C, EDTA)		MCL	E130.2	Units: mg/L	
Hardness (As CaCO3	3)	310	. 50		10	03/21/01 13:30 CV	612340
HEADSPACE GAS	ANALYSIS			MCL	RSK147	Units: mg/L	
Ethane		ND	0.0025	· · ·	1	03/23/01 10:48 A_A	612655
Ethylene		ND	0.0032		1	03/23/01 10:48 A_A	612655
Methane		ND	0.0012		1	03/23/01 10:48 A_A	612655
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury		ND	0.0002		1	03/21/01 16:24 R_T	610975
Prep Method	Prep Date		Prep Initials]			
SW7470A	03/21/2001 1	3:40	R_T				
METALS BY METHO	DD 6010B, TO1	AL	· · · · · · · · · · · · · · · · · · ·	MCL	SW6010B	Units: mg/L	
Arsenic	· · · · · · · · · · · · · · · · · · ·	0.0205	0.005		1	03/15/01 21:52 NS	602623
Lead		ND	0.005		1	03/15/01 21:52 NS	602623
Selenium		ND	0.005		1	03/15/01 21:52 NS	602623
Barium		0.044	0.005		1	03/17/01 2:47 E_B	605387
Cadmium		ND	0.005		1	03/17/01 2:47 E_B	605387
			- ·			—	

Qualifiers:

Calcium

Chromium

- ND/U Not Detected at the Reporting Limit
- B Analyte detected in the associated Method Blank

86.8

ND

0.1

0.01

* - 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

.

03/17/01 2:47 E_B

03/17/01 2:47 E_B

605387



Client Sample ID MW-1			Colle	ected:	3/8/01 12:40:00	SPL Sample ID: 01020760-01		
			Site:	Hob	bs, NM			
Analyses/Method		Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq.	
Magnesium		20.7	0.1		1	03/17/01 2:47 E_B	605387	
Potassium		ND	2		1	03/17/01 2:47 E_B	605387	
Silver		ND	0.01		1	03/17/01 2:47 E_B	605387	
Sodium		141	0.5		1	03/17/01 2:47 E_B	605387	
Prep Method	Prep Date		Prep Initials					
SW3010A	03/12/2001 15	:00	MME					
NITROGEN, NITRAT	E (AS N)			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N		4.31	0.1		1	03/09/01 11:53 KM	594832	
POLYNUCLEAR ARC	MATIC HYDR	CARBO	NS	MCL	SW8310	Units: ug/L		
Acenaphthene		ND	0.12	MOL	1	03/14/01 22:12 KA	606022	
Acenaphthylene	· · · · · · · · · · · · · · · · · · ·	ND	0.12	· ··	1	03/14/01 22:12 KA	606022	
Anthracene		ND	0.12		1	03/14/01 22:12 KA	606022	
Benz(a)anthracene		ND	0.12		1	03/14/01 22:12 KA	606022	
Benzo(a)pyrene		ND	0.12		1	03/14/01 22:12 KA	606022	
Benzo(b)fluoranthene		ND	0.12		1	03/14/01 22:12 KA	606022	
Benzo(g,h,i)perylene		ND	0.12		1	03/14/01 22:12 KA	606022	
Benzo(k)fluoranthene		ND	0.12		1	03/14/01 22:12 KA	606022	
Chrysene		ND	0.12		1	03/14/01 22:12 KA	606022	
Dibenzo(a,h)anthracer	ne	ND	0.12		1	03/14/01 22:12 KA	606022	
Fluoranthene		ND	0.12		1	03/14/01 22:12 KA	606022	
Fluorene		ND	0.12		1	03/14/01 22:12 KA	606022	
Indeno(1,2,3-cd)pyren	e	ND	0.12		1	03/14/01 22:12 KA	606022	
Naphthalene		ND	0.12		1	03/14/01 22:12 KA	606022	
Phenanthrene		ND	0.12		1	03/14/01 22:12 KA	606022	
Pyrene		ND	0.12		1	03/14/01 22:12 KA	606022	
Surr: 1-Fluoronapht	halene	40.2	% 15-96		1	03/14/01 22:12 KA	606022	
Surr: Phenanthrene	-d10	61.1	% 33-108		1	03/14/01 22:12 KA	606022	
Prep Method	Prep Date		Prep Initials					
SW3510B	03/10/2001 8:	00	KL					
PURGEABLE AROM	IATICS			MCL	SW8021B	Units: ug/L		
Benzene		2	1		1	03/27/01 16:33 D_R	617963	
Ethylbenzene		ND	1		1	03/27/01 16:33 D_R	617963	
Toluene		ND	1		1	03/27/01 16:33 D_R	61796	
Xylenes,Total		ND	1		1	03/27/01 16:33 D_R	61796	
Surr: 1,4-Difluorobe	enzene	108	% 72-137		1	03/27/01 16:33 D_R	61796	
Surr: 4-Bromofluoro	benzene	82.9	% 48-156		1	03/27/01 16:33 D_R	61796:	
			·····					

 SULFATE
 MCL
 E300
 Units: mg/L

 Sulfate
 210
 4
 20
 03/09/01 11:53
 KM
 594874

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

Client Sample ID MW-3	} 	Coll	ected:	3/8/01 11:20:00	SPL Sample ID: 0	1020760-02
		Site	: Hot	obs, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Anal	yst Seq.
ALKALINITY, BICARBO	NATE		MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	242	2		1	03/12/01 10:15 SN	597235
ALKALINITY, CARBON	ATF		MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2		1	03/12/01 10:15 SN	597335
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L	
Chloride	165	2	MOL	2	03/20/01 11:30 CV	610207
DIESEL RANGE ORGA	NICS		MCL	SW8015B	Units: mg/L	
Diesel Range Organics	0.42	0.25		1	03/20/01 20:34 AM	609594
Surr: n-Pentacosane	121MI	% 18-120		1 *	03/20/01 20:34 AM	609594
Prep Method	Prep Date	Prep Initials				
and the second	03/10/2001 7:52	KL				
FLUORIDE-IC			MCL	E300	Units: mg/L	
Fluoride	0.77	0.1		1	03/09/01 11:53 KM	594814
GASOLINE RANGE OR	GANICS		MCL	SW8015B	Units: mg/L	····
Gasoline Range Organics	0.1		1	03/17/01 4:48 D_R	604417	
Gasoline Range Organics ND Surr: 1,4-Difluorobenzene 91.7		% 74-121		1	03/17/01 4:48 D R	604417
Surr: 4-Bromofluorober	nzene 96.0	% 55-150		1	03/17/01 4:48 D_R	604417
HARDNESS, TOTAL (T	ITRIMETRIC, EDTA)		MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	470	25		5	03/21/01 13:30 CV	612345
HEADSPACE GAS ANA			MCL	RSK147	Units: mg/L	
Ethane	ND	0.0025		1	03/23/01 11:26 A_A	612861
Ethylene	ND	0.0032		1	03/23/01 11:26 A_A	612861
Methane	ND	0.0012		1	03/23/01 11:26 A_A	612861
MERCURY, TOTAL			MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002		1	03/21/01 16:24 R_T	610986
Prep Method	Prep Date	Prep Initials]			
SW7470A	03/21/2001 13:40	R_T				
METALS BY METHOD	6010B, TOTAL		MCL	SW6010B	Units: mg/L	
Arsenic	0.0094	0.005		1	03/15/01 22:13 NS	602626
Lead	ND	0.005		1	03/15/01 22:13 NS	602626
Selenium	0.00702	0.005		1	03/21/01 13:49 NS	610670
Barium	0.119	0.005		1	03/17/01 2:51 E_B	60538
Cadmium	ND	0.005		1	03/17/01 2:51 E_B	60538
Calcium	148	0.1		1	03/17/01 2:51 E_B	605388
Chromium	ND	0.01		1	03/17/01 2:51 E_B	605388

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



Client Sample ID MW-	3	Coli	ected:	3/8/01 11:20:00	SPL Sample ID: 010	20760-02
		Site	: Hob	bs, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq.
Magnesium	24.9	0.1		1	03/17/01 2:51 E_B	605388
Potassium	2.56	2		1	03/17/01 2:51 E_B	605388
Silver	ND	0.01		1	03/17/01 2:51 E_B	605388
Sodium	124	0.5		1	03/17/01 2:51 E_B	605388
Prep Method	Prep Date	Prep Initials				
SW3010A	03/20/2001 12:35	MME				
SW3010A	03/12/2001 15:00	MME				
NITROGEN, NITRATE	(AS N)		MCL	E300	Units: mg/L	
Nitrogen, Nitrate (As N)	2.56	0.1		1	03/09/01 11:53 KM	594835
POLYNUCLEAR ARON	ATIC HYDROCARBO	DNS	MCL	SW8310	Units: ug/L	
Acenaphthene	ND	0.13		1	03/15/01 5:00 KA	611375
Acenaphthylene	ND	0.13		1	03/15/01 5:00 KA	611375
Anthracene	ND	0.13		1	03/15/01 5:00 KA	611375
Benz(a)anthracene	ND	0.13		11	03/15/01 5:00 KA	611375
Benzo(a)pyrene	ND	0.13		11	03/15/01 5:00 KA	611375
Benzo(b)fluoranthene	ND	0.13		1	03/15/01 5:00 KA	611375
Benzo(g,h,i)perylene	ND	0.13		1	03/15/01 5:00 KA	611375
Benzo(k)fluoranthene	ND	0.13		1	03/15/01 5:00 KA	611375
Chrysene	ND	0.13		1	03/15/01 5:00 KA	611375
Dibenzo(a,h)anthracene	ND	0.13		1	03/15/01 5:00 KA	611375
Fluoranthene	ND	0.13		1	03/15/01 5:00 KA	611375
Fluorene	ND	0.13		1	03/15/01 5:00 KA	611375
Indeno(1,2,3-cd)pyrene	ND	0.13		1	03/15/01 5:00 KA	611375
Naphthalene	ND	0.13		1	03/15/01 5:00 KA	611375
Phenanthrene	ND	0.13		1	03/15/01 5:00 KA	611375
Pyrene	ND	0.13		1	03/15/01 5:00 KA	611375
Surr: 1-Fluoronaphtha	lene 30.9	% 15-96		1	03/15/01 5:00 KA	611375
Surr: Phenanthrene-d	10 54.4	% 33-108		1	03/15/01 5:00 KA	611375

Prep Method	Prep Date Prep Initials	
SW3510B	03/10/2001 8:00 KL	

URGEABLE AROMATICS			MCL	SW8021B	Units: ug/l	Units: ug/L		
Benzene	ND		1		1	03/17/01 4:48 D	R.	604380
Ethylbenzene	ND		1		1	03/17/01 4:48	P_R	604380
Toluene	ND		1		1	03/17/01 4:48 D)_R	604380
Xylenes,Total	ND		1		1	03/17/01 4:48 C	_R	604380
Surr: 1,4-Difluorobenzene	94.8	%	72-137		1	03/17/01 4:48 E	D_R	604380
Surr: 4-Bromofluorobenzene	94.4	%	48-156		1	03/17/01 4:48	_R	604380

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



Collected: 3/8/01 11:20:00

SPL Sample ID: 01020760-02

		Sit	te: Hobbs, NM				
Analyses/Method	Result	Rep.Limit		tor QUAL	Date Analyzed	Analyst	Seq. #
SULFATE			MCL		Units: m	g/L	· ····································
Sulfate	170	2	1		03/09/01 11:53	KM	594878

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

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* - 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-	4	Colle	ected: 3	3/8/01 1:45:00 P	SPL Sample ID: 0102	20760-03
		Site:	Hob	os, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq.
ALKALINITY, BICARBO Alkalinity, Bicarbonate	ONATE 232	2	MCL	M2320 B 1	Units: mg/L 03/12/01 10:15 SN	597236
ALKALINITY, CARBON Alkalinity, Carbonate	NATE	2	MCL	M2320 B 1	Units: mg/L 03/12/01 10:15 SN	597336
CHLORIDE, TOTAL Chloride	172	2	MCL	E325.3	Units: mg/L 03/20/01 11:30 CV	610208
	172				03/20/01 11:30 CV	010200
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L	
Diesel Range Organics Surr: n-Pentacosane	0.43 85.2	0.27 % 18-120		11	03/20/01 21:12 AM 03/20/01 21:12 AM	609595 609595
Prep Method SW3510B	Prep Date 03/10/2001 7:52	Prep Initials KL				
FLUORIDE-IC			MCL	E300	Units: mg/L	
Fluoride	0.63	0.1		1	03/09/01 11:53 KM	594815
GASOLINE RANGE OF	RGANICS		MCL	SW8015B	Units: mg/L	
Gasoline Range Organic	s 0.16	0.1		1	03/17/01 5:15 D_R	604418
Surr: 1,4-Difluorobenz	ene 90.3	% 74-121		1	03/17/01 5:15 D_R	604418
Surr: 4-Bromofluorobe	enzene 95.3	% 55-150		1	03/17/01 5:15 D_R	604418
HARDNESS, TOTAL (1	TITRIMETRIC, EDTA)		MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	610	50		10	03/21/01 13:30 CV	612346
HEADSPACE GAS AN	ALYSIS		MCL	RSK147	Units: mg/L	
Ethane	ND	0.0025		1	03/23/01 11:39 A_A	612863
Ethylene	ND	0.0032		1	03/23/01 11:39 A_A	612863
Methane	ND	0.0012		1	03/23/01 11:39 A_A	612863
MERCURY, TOTAL			MCL	SW7470A	Units: mg/L	······································
Mercury	ND	0.0002		1	03/21/01 16:24 R_T	610987
Prep Method SW7470A	Prep Date 03/21/2001 13:40	Prep Initials R_T				
METALS BY METHOD	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	MCL	SW6010B	Units: mg/L	· ·
Arsenic	0.0386	0.005		1	03/15/01 22:18 NS	602627
Lead	0.00602	0.005		1	03/15/01 22:18 NS	60262
Selenium	0.00508	0.005		1	03/15/01 22:18 NS	60262
Barium	0.0978	0.005	·	1	03/17/01 2:55 E_B	60538
Cadmium	0.0121	0.005		1	03/17/01 2:55 E_B	60538
Calcium	214	0.1		1	03/17/01 2:55 E_B	60538
Chromium	0.0104	0.01			03/17/01 2:55 E_B	60538

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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



Client Sample ID MW-4		Colle	ected:	3/8/01 1:45:00 P	SPL Sample ID: 0102	20760-03
		Site:	Hob	bs, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq.
Magnesium	25.9	0.1		1	03/17/01 2:55 E_B	605389
Potassium	2.76	2		1	03/17/01 2:55 E_B	605389
Silver	ND	0.01		1	03/17/01 2:55 E_B	605389
Sodium	135	0.5	• ••	1	03/17/01 2:55 E_B	605389
	Prep Date)3/12/2001 15:00	Prep Initials MME				
NITROGEN, NITRATE (A			MCL	E300	Units: mg/L	
Nitrogen, Nitrate (As N)	4.75	0.1		1	03/09/01 11:53 KM	594836
POLYNUCLEAR AROM	ATIC HYDROCARBO	NS	MCL	SW8310	Units: ug/L	
Acenaphthene	ND	0.12		1	03/15/01 5:37 KA	611376
Acenaphthylene	ND	0.12		1	03/15/01 5:37 KA	611376
Anthracene	ND	0.12		1	03/15/01 5:37 KA	611376
Benz(a)anthracene	ND	0.12		1	03/15/01 5:37 KA	611376
Benzo(a)pyrene	ND	0.12		1	03/15/01 5:37 KA	611376
Benzo(b)fluoranthene	ND	0.12		1	03/15/01 5:37 KA	61137
Benzo(g,h,i)perylene	ND	0.12		1	03/15/01 5:37 KA	611376
Benzo(k)fluoranthene	ND	0.12		1	03/15/01 5:37 KA	611376
Chrysene	ND	0.12		1	03/15/01 5:37 KA	611376
Dibenzo(a,h)anthracene	ND	0.12		1	03/15/01 5:37 KA	61137
Fluoranthene	ND	0.12		1	03/15/01 5:37 KA	61137
Fluorene	ND	0.12		1	03/15/01 5:37 KA	61137
Indeno(1,2,3-cd)pyrene	ND	0.12		1	03/15/01 5:37 KA	611376
Naphthalene	ND	0.12		1	03/15/01 5:37 KA	611376
Phenanthrene	ND	0.12	• • • • • •	1	03/15/01 5:37 KA	611376
Pyrene	ND	0.12		1	03/15/01 5:37 KA	61137
Surr: 1-Fluoronaphthale	ene 40.7	% 15-96		1	03/15/01 5:37 KA	611376
Surr: Phenanthrene-d10	80.3	% 33-108		1	03/15/01 5:37 KA	611376
Prep Method	Prep Date	Prep Initials				
SW3510B	03/10/2001 8:00	KL				
PURGEABLE AROMAT	ICS		MCL	SW8021B	Units: ug/L	
Benzene	ND	1		1	03/17/01 5:15 D_R	60438
Ethylbenzene	ND	1		1	03/17/01 5:15 D_R	60438
Toluene	ND	1		1	03/17/01 5:15 D_R	60438
Xylenes,Total	ND	1		1	03/17/01 5:15 D_R	60438
Surr: 1,4-Difluorobenze		% 72-137		1	03/17/01 5:15 D_R	60438
Surr: 4-Bromofluorober		% 48-156		1	03/17/01 5:15 D_R	60438
SULFATE			MCL	E300	Units: mg/L	
Sulfate	180	2		10	03/09/01 11:53 KM	59488

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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	/-5			Col	ected:	3/8/01 10:15:00	SPL Sample ID: 0	1020760-04
<u></u>				Site	: Hob	bs, NM		<u> </u>
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed Anal	
ALKALINITY, BICARBONATE Alkalinity, Bicarbonate		222		2	MCL	M2320 B 1	Units: mg/L 03/12/01 10:15 SN	59723
ALKALINITY, CARBONATE Alkalinity, Carbonate		ND		2	MCL	M2320 B	Units: mg/L 03/12/01 10:15 SN	59733
CHLORIDE, TOTAL Chloride		152		2	MCL	E325.3 2	Units: mg/L 03/20/01 11:30 CV	61020
DIESEL RANGE ORGANICS					MCL	SW8015B	Units: mg/L	
Diesel Range Organics Surr: n-Pentacosane	and the second	0.56 95.6	0/	0.22		1	03/20/01 21:51 AM 03/20/01 21:51 AM	60959 60959
Sun. IFrenacosane		95.0	/0	10-120		I	03/20/01 21.51 AIVI	00939
Prep Method SW3510B	Prep Date 03/10/2001 7:52			Prep Initials KL				
FLUORIDE-IC					MCL	E300	Units: mg/L	
Fluoride		0.86	• •	0.1		1	03/09/01 11:53 KM	59481
GASOLINE RANGE C	RGANICS			······································	MCL	SW8015B	Units: mg/L	
Gasoline Range Organ	and the second sec	ND		0.1		1	03/17/01 5:42 D_R	60441
Surr: 1,4-Difluorober		91.3	%	74-121		1	03/17/01 5:42 D_R	60441
Surr: 4-Bromofluorot	benzene	94.0	%	55-150		1	03/17/01 5:42 D_R	60441
HARDNESS, TOTAL	(TITRIMETRIC,	EDTA)			MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)		440		25		5	03/21/01 13:30 CV	61234
HEADSPACE GAS A	NALYSIS				MCL	RSK147	Units: mg/L	
Ethane		ND		0.0025		1	03/23/01 11:51 A_A	61286
Ethylene		ND		0.0032		1	03/23/01 11:51 A_A	61286
Methane		ND		0.0012		1	03/23/01 11:51 A_A	61286
MERCURY, TOTAL					MCL	SW7470A	Units: mg/L	
Mercury	· ····	ND		0.0002		1	03/21/01 16:24 R_T	61098
Prep Method SW7470A	Prep Date 03/21/2001 13:4	40		Prep Initials R_T				
METALS BY METHO					MCL	SW6010B	Units: mg/L	····· · · · · · · · · · · · · · · · ·
Arsenic	e a la transmission de la servición de la servi	.00974		0.005		1	03/15/01 22:24 NS	60262
Lead		ND		0.005		1	03/15/01 22:24 NS	60262
Selenium	(0.00587		0.005		1	03/15/01 22:24 NS	60262
Barium		0.055		0.005		1	03/17/01 2:59 E_B	6053
Cadmium		ND		0.005		1	03/17/01 2:59 E_B	6053
Calcium		157		0.1		1	03/17/01 2:59 E_B	6053
Chromium		0.0101		0.01		4	03/17/01 2:59 E_B	60539

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



Client Sample ID MW-	5	Colle	cted:	3/8/01 10:15:00	SPL Sample ID: 0102	20760-04
		Site:	Hobl	os, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq.
Magnesium	16.6	0.1		1	03/17/01 2:59 E_B	605390
Potassium	2.25	2		1	03/17/01 2:59 E_B	605390
Silver	ND	0.01		1	03/17/01 2:59 E B	605390
Sodium	147	0.5		1	03/17/01 2:59 E_B	605390
The second s	Prep Date 03/12/2001 15:00	Prep Initials MME				
NITROGEN, NITRATE (AS N)		MCL	E300	Units: mg/L	
Nitrogen, Nitrate (As N)	3.24	0.1		1	03/09/01 11:53 KM	594837
POLYNUCLEAR ARON	IATIC HYDROCARBO	NS	MCL	SW8310	Units: ug/L	
Acenaphthene	ND	0.1		1	03/15/01 6:14 KA	611377
Acenaphthylene	ND	0.1		1	03/15/01 6:14 KA	611377
Anthracene	ND	0.1		1	03/15/01 6:14 KA	611377
Benz(a)anthracene	ND	0.1		1	03/15/01 6:14 KA	611377
Benzo(a)pyrene	ND	0.1		1	03/15/01 6:14 KA	611377
Benzo(b)fluoranthene	ND	0.1		1	03/15/01 6:14 KA	611377
Benzo(g,h,i)perylene	ND	0.1		1	03/15/01 6:14 KA	611377
Benzo(k)fluoranthene	ND	0.1		1	03/15/01 6:14 KA	611377
Chrysene	ND	0.1		1	03/15/01 6:14 KA	611377
Dibenzo(a,h)anthracene	ND	0.1		1	03/15/01 6:14 KA	611377
Fluoranthene	ND	0.1		1	03/15/01 6:14 KA	611377
Fluorene	ND	0.1		1	03/15/01 6:14 KA	611377
Indeno(1,2,3-cd)pyrene	ND	0.1		1	03/15/01 6:14 KA	611377
Naphthalene	ND	0.1		1	03/15/01 6:14 KA	611377
Phenanthrene	ND	0.1		1	03/15/01 6:14 KA	611377
Pyrene	ND	0.1	· · · · · · · · · · · · · · · · · · ·	1	03/15/01 6:14 KA	611377
Surr: 1-Fluoronaphtha	lene 51.4	% 15-96	·• · ·	1	03/15/01 6:14 KA	611377
Surr: Phenanthrene-d	10 77.3	% 33-108		1	03/15/01 6:14 KA	611377
Prep Method SW3510B	Prep Date 03/10/2001 8:00	Prep Initials KL				
PURGEABLE AROMA			MCL	SW8021B	Units: ug/L	
Benzene	ND	1	mol	1	03/17/01 5:42 D R	604384
Ethylbenzene	ND	1		1	03/17/01 5:42 D_R	604384
Toluene	ND	1		1	03/17/01 5:42 D_R	604384
Xylenes,Total	ND	1	· •	1	03/17/01 5:42 D R	604384
Ayieries, rolar					00/17/01 0.42 D_R	004304

ILFATE				MCL	E300	Units: mg/L
Surr: 4-Bromofluorobenzene	90.4	%	48-156		1	03/17/01 5:42 D_R
Surr: 1,4-Difluorobenzene	94.3	%	72-137		1	03/17/01 5:42 D_R
(ylenes,Total	ND		1		1	03/17/01 5:42 D_R
			· · · · · · · · · · · · · · · · · · ·		1	03/17/01 5.42 D_K

SULFATE		MCL
Sulfate	180 2	10

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

03/09/01 11:53 KM

MI - Matrix Interference

604384

604384

594881



Client Sample ID MW-7			Col	lected:	3/8/01 10:50:00	SPL Sample ID): 01020	760-05
			Site	e: Hob	obs, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg	3/L.	
Gasoline Range Organics	ND		0.1		1	03/17/01 6:09	D_R	604420
Surr: 1,4-Difluorobenzene	91.3	%	74-121		1	03/17/01 6:09	D_R	604420
Surr: 4-Bromofluorobenzene	99.0	%	55-150		1	03/17/01 6:09	D_R	604420
HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg	g/L	
Ethane	ND		0.0025		1	03/23/01 12:06	A_A	612869
Ethylene	ND		0.0032		1	03/23/01 12:06	A_A	612869
Methane	ND		0.0012		1	03/23/01 12:06	A_A	612869
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug	/L	
Benzene	ND		1		1	03/17/01 6:09		604385
Ethylbenzene	ND		1		1	03/17/01 6:09	D_R	604385
Toluene	ND		1		1	03/17/01 6:09	D_R	604385
Xylenes,Total	ND		1	*** * * * * * * *	1	03/17/01 6:09	D_R	604385
Surr: 1,4-Difluorobenzene	93.1	%	72-137		1	03/17/01 6:09	D_R	604385
Surr: 4-Bromofluorobenzene	90.1	%	48-156		1	03/17/01 6:09	DR	604385

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

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* - 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	/-8		сС	ollected	: 3/9/01 9:10:00 /	A SPL Sample ID: 010	20760-06
			S	ite: H	obbs, NM		
Analyses/Method	Result		Rep.Limit		Dil. Factor QUA	L Date Analyzed Analys	t Seq.
ALKALINITY, BICARE Alkalinity, Bicarbonate	BONATE 252		2	МС	L M2320 I	3 Units: mg/L 03/12/01 10:15 SN	597239
ALKALINITY, CARBO Alkalinity, Carbonate	ND		2	MC	L M2320 I 1	3 Units: mg/L 03/12/01 10:15 SN	597339
CHLORIDE, TOTAL Chloride	250		5	MC	L E325. 5	3 Units: mg/L 03/20/01 11:30 CV	610210
DIESEL RANGE ORG	ANICS			MC	L SW8015	3 Units: mg/L	
Diesel Range Organics	1.6		0.29		1	03/20/01 22:29 AM	609600
Surr: n-Pentacosane	108	%	6 18-120		1	03/20/01 22:29 AM	609600
Prep Method SW3510B	Prep Date 03/10/2001 7:52		Prep Initia KL	ls			
FLUORIDE-IC				MC	E E30	0 Units: mg/L	
Fluoride	0.66	j	0.1		1	03/10/01 15:14 KM	594896
GASOLINE RANGE O	DRGANICS			MC	L SW8015	B Units: mg/L	
Gasoline Range Organi)	0.1		1	03/17/01 6:36 D_R	604421
Surr: 1,4-Difluoroben	zene 92.3	9	6 74-121		1	03/17/01 6:36 D_R	604421
Surr: 4-Bromofluorob	penzene 95.7	9	6 55-150		1	03/17/01 6:36 D_R	604421
HARDNESS, TOTAL	(TITRIMETRIC, EDTA)		MC	L E130.	2 Units: mg/L	
Hardness (As CaCO3)	590)	50		10	03/21/01 13:30 CV	612349
HEADSPACE GAS AN	NALYSIS			MC	L RSK14	7 Units: mg/L	
Ethane	NE)	0.0025		1	03/23/01 13:02 A_A	612877
Ethylene	NE)	0.0032		1	03/23/01 13:02 A_A	612877
Methane	NC)	0.0012		1	03/23/01 13:02 A_A	612877
MERCURY, TOTAL	······			MC	CL SW7470	A Units: mg/L	
Mercury	NC)	0.0002		1	03/21/01 16:24 R_T	610989
Prep Method	Prep Date		Prep Initi	als			
SW7470A	03/21/2001 13:40		R_T				
METALS BY METHO	D 6010B, TOTAL			M	CL SW6010	B Units: mg/L	
Arsenic	0.006	1	0.005		1	03/15/01 22:29 NS	602629
Lead	N)	0.005		1	03/15/01 22:29 NS	602629
Selenium	N)	0.005		1	03/15/01 22:29 NS	602629
Barium	0.051	2	0.005		1	03/17/01 3:04 E_B	60539
Cadmium	N	2	0.005		1	03/17/01 3:04 E_B	60539
Calcium	18	3	0.1		1	03/17/01 3:04 E_B	60539
Chromium	N)	0.01	• • •	1	03/17/01 3:04 E_B	60539

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



Client Sample ID MW	/-8		<u></u>	Colle	cted:	3/9/01 9:10):00 A	SPL Sample ID:	01020	760-06
		<u> </u>		Site:	Hob	bs, NM				
Analyses/Method		Result	R	ep.Limit		Dil. Factor	QUAL	Date Analyzed A	nalyst	Seq.
Magnesium		37.4		0.1		1		03/17/01 3:04 E_	В	605391
Potassium		2.94		2		1		03/17/01 3:04 E_	В	605391
Silver	¥ 10 1	ND		0.01		1		03/17/01 3:04 E_	В	605391
Sodium		118		0.5		1		03/17/01 3:04 E_	В	605391
Prep Method	Prep Date		P	rep Initials						
SW3010A	03/12/2001 15	:00	N	IME						
NITROGEN, NITRATE	(AS N)				MCL		E300	Units: mg/L		
Nitrogen, Nitrate (As N)		0.664		0.1		1		03/10/01 15:14 KM		594956
POLYNUCLEAR ARO	MATIC HYDR	OCARBO	NS		MCL	SV	V8310	Units: ug/L		<u> </u>
Acenaphthene		ND		0.12		1		03/15/01 6:51 K/	A	611378
Acenaphthylene		ND		0.12		1		03/15/01 6:51 K	A	611378
Anthracene		ND		0.12		1		03/15/01 6:51 K	A	611378
Benz(a)anthracene		ND		0.12		1		03/15/01 6:51 K	A	611378
Benzo(a)pyrene		ND		0.12		1		03/15/01 6:51 K	A	611378
Benzo(b)fluoranthene		ND		0.12		1		03/15/01 6:51 K	A	611378
Benzo(g,h,i)perylene		ND		0.12		1		03/15/01 6:51 K	A	611378
Benzo(k)fluoranthene		ND		0.12		1		03/15/01 6:51 K	A	611378
Chrysene		ND		0.12		1		03/15/01 6:51 K	A	611378
Dibenzo(a,h)anthracen	e	ND		0.12		1		03/15/01 6:51 K	A	611378
Fluoranthene		ND		0.12		1		03/15/01 6:51 K	A	611378
Fluorene		ND		0.12		1		03/15/01 6:51 K	A	611378
Indeno(1,2,3-cd)pyrene	1	ND		0.12		1		03/15/01 6:51 K	A	611378
Naphthalene		ND		0.12		1		03/15/01 6:51 K	A	611378
Phenanthrene		ND		0.12		1		03/15/01 6:51 K	A	611378
Pyrene		ND		0.12		1		03/15/01 6:51 K	A	611378
Surr: 1-Fluoronaphth	alene	43.5	%	15-96	••••	1		03/15/01 6:51 K	Α	611378
Surr: Phenanthrene-	d10	70.0	%	33-108	=	1		03/15/01 6:51 K	A	611378
Prep Method	Prep Date		E	Prep Initials						
SW3510B	03/10/2001 8	00	ł	<l td="" <=""><td></td><td></td><td></td><td></td><td></td><td></td></l>						
PURGEABLE AROM	ATICS				MCL	SW	8021B	Units: ug/L	•	
Benzene		NĎ		1	·	1		03/17/01 6:36 D	R	604386
Ethylbenzene		ND		1		1		03/17/01 6:36 D	_R	604386
Toluene		ND		1		1		03/17/01 6:36 D	R	604386
Xylenes,Total		ND		1		1		03/17/01 6:36 D	R	60438
Surr: 1,4-Difluorober	nzene	92.1	%	72-137		1		03/17/01 6:36 D		60438
Surr: 4-Bromofluorol		90.6		48-156		1		03/17/01 6:36 D	-	60438
SULFATE					MCL	-	E300	Units: mg/l		
Sulfate		240		4		20		03/12/01 9:30 K		596734

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



`				Site	: Hob	bs, NM			
Analyses/Method	Re	sult		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq.
ALKALINITY, BICARE	BONATE				MCL	M2320 B	Units: mg		
Alkalinity, Bicarbonate		252		2		1	03/12/01 10:15		597240
ALKALINITY, CARBO					MCL	M2320 B	Units: mg	н. Л	····
Alkalinity, Carbonate		ND	÷	2	WUCL	1	03/12/01 10:15		597340
						· · · · · · · · · · · · · · · · · · ·			
CHLORIDE, TOTAL					MCL	E325.3	Units: mg		
Chloride		127		2		2	03/20/01 11:30	CV	610211
DIESEL RANGE ORG	ANICS				MCL	SW8015B	Units: mg	/L	
Diesel Range Organics	A REAL PROPERTY AND A REAL	1.4		0.24		1	03/20/01 23:07		609602
Surr: n-Pentacosane		107	%	18-120		1	03/20/01 23:07	AM	609602
<u> </u>					}				
Prep Method	Prep Date	8-23X		Prep Initials					
SW3510B	03/10/2001 7:52			KL					
FLUORIDE-IC					MCL	E300	Units: mg		
Fluoride		0.92		0.1		1	03/09/01 11:53	KM	594817
GASOLINE RANGE C	RGANICS				MCL	SW8015B	Units: mg		
Gasoline Range Organ		ND		0.1		1	03/17/01 7:03		604422
Surr: 1,4-Difluoroben		93.0	%	74-121		1	03/17/01 7:03	_	604422
Surr: 4-Bromofluorob	penzene	96.0	%	55-150		1	03/17/01 7:03	 D_R	604422
HARDNESS, TOTAL		ואדר	<u> </u>		MCL	E130.2	linita, na	./1	
Hardness (As CaCO3)	· · · · · · · · · · · · · · · · · · ·	1000		50	MUL	10	Units: mg 03/21/01 13:30		612351
HEADSPACE GAS AN					MCL	RSK147	llnite, ma		
Ethane		ND		0.0025	IVICE	1	Units: mg 03/23/01 13:12		612882
		ND		0.0032		1	03/23/01 13:12		612882
									012002
Ethylene		ND		0.0012		1	03/23/01 13:12	AA	612882
Ethylene Methane		ND		0.0012		1	03/23/01 13:12	A_A	612882
Ethylene Methane MERCURY, TOTAL					MCL	1 SW7470A	Units: mg	/L	612882
Ethylene Methane		ND		0.0012	MCL	1 		/L	
Ethylene Methane MERCURY, TOTAL Mercury	Pren Date			0.0002			Units: mg	/L	
Ethylene Methane MERCURY, TOTAL	Prep Date 03/21/2001 13:40			0.0002 Prep Initials			Units: mg	/L	
Ethylene Methane MERCURY, TOTAL Mercury Prep Method SW7470A	03/21/2001 13:40			0.0002		1	Units: mg 03/21/01 16:24	- R_T	
Ethylene Methane MERCURY, TOTAL Mercury Prep Method SW7470A METALS BY METHOI	03/21/2001 13:40 D 6010B, TOTAL	ND		0.0002 Prep Initials R_T		1 SW6010B	Units: mg 03/21/01 16:24 Units: mg	/L R_T	610990
Ethylene Methane MERCURY, TOTAL Mercury Prep Method SW7470A METALS BY METHOM Arsenic	03/21/2001 13:40 D 6010B, TOTAL 0	ND .013		0.0002 Prep Initials R_T 0.005		1 <u>SW6010B</u> 1	Units: mg 03/21/01 16:24 Units: mg 03/15/01 22:35	/L R_T J/L NS	61099(60263(
Ethylene Methane MERCURY, TOTAL Mercury Prep Method SW7470A METALS BY METHOM Arsenic Lead	03/21/2001 13:40 D 6010B, TOTAL 0 0.00	ND 0.013 0597		0.0002 Prep Initials R_T 0.005 0.005		1 SW6010B	Units: mg 03/21/01 16:24 Units: mg 03/15/01 22:35 03/15/01 22:35	/L R_T //L NS_ NS	61099(60263) 60263
Ethylene Methane MERCURY, TOTAL Mercury Prep Method SW7470A METALS BY METHO Arsenic Lead Selenium	03/21/2001 13:40 D 6010B, TOTAL 0 0.00 0.00	ND 0.013 0597 0054		0.0002 Prep Initials R_T 0.005 0.005 0.005		1 <u>SW6010B</u> 1	Units: mg 03/21/01 16:24 Units: mg 03/15/01 22:35 03/15/01 22:35 03/15/01 22:35	J/L R_T NS NS NS	61099(60263) 60263(60263)
Ethylene Methane MERCURY, TOTAL Mercury <u>Prep Method</u> SW1470A METALS BY METHO Arsenic Lead Selenium Barium	03/21/2001 13:40 D 6010B, TOTAL 0 0.00 0.00	ND 0.013 0597 0054 0.111		0.0002 Prep Initials R_T 0.005 0.005 0.005 0.005		1 <u>SW6010B</u> 1	Units: mg 03/21/01 16:24 Units: mg 03/15/01 22:35 03/15/01 22:35 03/15/01 22:35 03/17/01 3:08	/L R_T NS NS NS E_B	610990 602630 602630 602630 602630
Ethylene Methane MERCURY, TOTAL Mercury Prep Method SW7470A METALS BY METHO Arsenic Lead Selenium	03/21/2001 13:40 D 6010B, TOTAL 0 0.00 0.00	ND 0.013 0597 0054		0.0002 Prep Initials R_T 0.005 0.005 0.005		1 <u>SW6010B</u> 1	Units: mg 03/21/01 16:24 Units: mg 03/15/01 22:35 03/15/01 22:35 03/15/01 22:35	J/L R_T NS NS NS E_B E_B E_B	612882 610990 602630 602630 602630 605392 605392 605392

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

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Client Sample ID MV	N-9			Calle	ected:	3/8/01 11:50:00	SPL Sample ID:	01020	760-07
				Site:	Hob	obs, NM			
Analyses/Method	R	esult		Rep.Limit		Dil. Factor QUAL	Date Analyzed A	nalyst	Seq.
Magnesium		28.2		0.1		1	03/17/01 3:08 E	В	605392
Potassium		3.84		2		1	03/17/01 3:08 E	В	605392
Silver		ND		0.01		1	03/17/01 3:08 E	В	605392
Sodium		119		0.5		1	03/17/01 3:08 E_	В	605392
Prep Method	Prep Date			Prep Initials					
SW3010A	03/12/2001 15:00			MME					
NITROGEN, NITRAT	E (AS N)				MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N	1)	7.9		0.1		1	03/09/01 11:53 KI	M	594838
POLYNUCLEAR ARC	OMATIC HYDROC	ARBO	NS		MCL	SW8310	Units: ug/L		
Acenaphthene		ND		0.12		1	03/15/01 7:28 K	A	611379
Acenaphthylene		ND		0.12		1	03/15/01 7:28 K	A	611379
Anthracene		ND		0.12		1	03/15/01 7:28 K	A	611379
Benz(a)anthracene		ND		0.12		1	03/15/01 7:28 K	A	611379
Benzo(a)pyrene		ND		0.12		1	03/15/01 7:28 K	A	611379
Benzo(b)fluoranthene		ND		0.12		1	03/15/01 7:28 K	Α	611379
Benzo(g,h,i)perylene		ND		0.12		1	03/15/01 7:28 K	A	611379
Benzo(k)fluoranthene		ND		0.12		1	03/15/01 7:28 K	A	611379
Chrysene		ND		0.12		11	03/15/01 7:28 K	A	611379
Dibenzo(a,h)anthrace	ne	ND		0.12		1	03/15/01 7:28 K	A	611379
Fluoranthene		ND		0.12		1	03/15/01 7:28 K	A	61137
Fluorene		ND		0.12		11	03/15/01 7:28 K	A	61137
Indeno(1,2,3-cd)pyren	ie	ND		0.12		1	03/15/01 7:28 K	A	611379
Naphthalene		ND		0.12		1	03/15/01 7:28 K	A	611379
Phenanthrene		ND		0.12		1	03/15/01 7:28 K	A	611379
Pyrene		ND		0.12		1	03/15/01 7:28 K	A	61137
Surr: 1-Fluoronapht	halene	32.3	%	15-96		1	03/15/01 7:28 K	A	611379
Surr: Phenanthrene	e-d10	50.2	%	33-108		1	03/15/017:28 K	A	611379
Prep Method	Prep Date		·	Prep Initials					
SW3510B	03/10/2001 8:00			KL					
PURGEABLE AROM	IATICS				MCL	SW8021B	Units: ug/L	•	
Benzene		ND		1		1	03/17/01 7:03 D	R	60438
Ethylbenzene		ND		1		1	03/17/01 7:03 D	_R	60438
Toluene		ND		1		1	03/17/01 7:03 D	_R	60438
Xylenes,Total		ND		1		1	03/17/01 7:03 D	R	60438
Surr: 1,4-Difluorobe	enzene	92.8	%	72-137		1	03/17/01 7:03 D	R	60438
Surr: 4-Bromofluoro	obenzene	90.7	%	48-156		1	03/17/01 7:03 D	-	60438
SULFATE					MCL	E300	Units: mg/	 L	
Sulfate		150		- · · · · · · · · · · ·			02/00/01 11:52		50400

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SULFATE Sulfate

Qualifiers:

ND/U - Not Detected at the Reporting Limit

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B - Analyte detected in the associated Method Blank

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- * 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

03/09/01 11:53 KM

10

594882



Client Sample ID MW-10

Collected: 3/9/01 9:30:00 A SPL Sample ID: 01020760-08

	Banistá		lon Limit	Hobb	Dil. Factor	01141	Data Analysis		
Analyses/Method	Result	۲ 	Rep.Limit		JII. Factor	QUAL	Date Analyzed	Analyst	Seq.
ALKALINITY, BICARB	ONATE			MCL	M23	20 B	Units: m		
Alkalinity, Bicarbonate	566		2		1		03/12/01 10:15	SN	597241
ALKALINITY, CARBON	NATE			MCL	M23	20 B	Units: m	u/L.	
Alkalinity, Carbonate	ND		2		1		03/12/01 10:15		597341
CHLORIDE, TOTAL				MCL	E3	25.3	Units: m	a/L	·····
Chloride	879	-	10		10		03/20/01 11:30	E	610212
DIESEL RANGE ORGA	ANICS	- • • • •		MCL	SW80	015B	Units: m	a/L.	
Diesel Range Organics	3.4		0.26		1		03/20/01 21:51	Correct on and a	609623
Surr: n-Pentacosane	131MI	%	18-120		1		03/20/01 21:51	AM	609623
Prep Method	Prep Date		Prep Initials						
SW3510B	03/10/2001 7:52	فإست المراجع	KL						
FLUORIDE-IC				MCL		E300	Units: m	g/L	
Fluoride	1.2		0.1		1		03/10/01 15:14	KM	594899
GASOLINE RANGE O	RGANICS			MCL	SW8	015B	Units: m	g/L	
Gasoline Range Organic	s 0.2		0.1		1		03/19/01 1:50		605448
Surr: 1,4-Difluorobenz	zene 91.7	%	74-121		1		03/19/01 1:50	D_R	605448
Surr: 4-Bromofluorobe	enzene 97.7	%	55-150		1		03/19/01 1:50	D_R	605448
HARDNESS, TOTAL (TITRIMETRIC, EDTA)			MCL	E	130.2	Units: m	a/L	
Hardness (As CaCO3)	1300		120		25		03/21/01 13:30	No.	612352
HEADSPACE GAS AN	ALYSIS			MCL	RS	K147	Units: m	a/L	
Ethane	ND		0.0025		1		03/23/01 13:24		612888
Ethylene	ND		0.0032		1		03/23/01 13:24	A_A	612888
Methane	ND		0.0012		1		03/23/01 13:24	 AA	612888
MERCURY, TOTAL				MCL	SW7	470A	Units: m	α/L	
Mercury	ND		0.0002		1		03/21/01 16:24		610991
Prep Method	Prep Date	······ · ·	Prep Initials						
SW7470A	03/21/2001 13:40	·	R_T						
METALS BY METHOD	6010B TOTAL			MCL	SW6	010B	Units: m		
Arsenic	0.133		0.005		1		03/15/01 22:40	NS	602631
Lead	0.0222		0.005				03/15/01 22:40	NS	602631
Selenium	ND		0.005		1		03/15/01 22:40	NS	602631
Barium	0.23		0.005		1		03/17/01 3:12	• • • • • •	605393
	· · · · · · · · · · · · · · · · · · ·								
Cadmium	NN		0.005		1		03/17/01 3:12	FB	h(15.30)
Cadmium Calcium	ND 331		0.005 0.1		1		03/17/01 3:12		605393 605393

Qualifiers:

- ND/U Not Detected at the Reporting Limit
- B Analyte detected in the associated Method Blank
- * Surrogate Recovery Outside Advisable QC Limits

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J - Estimated Value between MDL and PQL

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



Client Sample ID MW-	-10		Colle	cted:	3/9/01 9:30:00 A	SPL Sample ID: 0102	0760-08
			Site:	Hob	bs, NM		
Analyses/Method	Re	sult	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq.
Magnesium	ļ	95.1	0.1		1	03/17/01 3:12 E_B	605393
Potassium		19.5	2		1	03/17/01 3:12 E_B	605393
Silver		ND	0.01	• • •	1	03/17/01 3:12 E_B	605393
Sodium		410	0.5		1	03/17/01 3:12 E_B	605393
Prep Method	Prep Date		Prep Initials				
SW3010A	03/12/2001 15:00		MME	·			
NITROGEN, NITRATE	(AS N)			MCL	E300	Units: mg/L	
Nitrogen, Nitrate (As N)		ND	0.1		1	03/10/01 15:14 KM	594962
POLYNUCLEAR ARON	MATIC HYDROCA		S	MCL	SW8310	Units: ug/L	
Acenaphthene		ND	0.15		1	03/15/01 8:05 KA	611380
Acenaphthylene		0.71	0.15		1	03/15/01 8:05 KA	611380
Anthracene		ND	0.15		1	03/15/01 8:05 KA	611380
Benz(a)anthracene		ND	0.15		1	03/15/01 8:05 KA	611380
Benzo(a)pyrene		ND	0.15		1	03/15/01 8:05 KA	611380
Benzo(b)fluoranthene		ND	0.15		1	03/15/01 8:05 KA	611380
Benzo(g,h,i)perylene	· · · · · · · · · · · · · · · · · · ·	ND	0.15		1	03/15/01 8:05 KA	611380
Benzo(k)fluoranthene		ND	0.15		1	03/15/01 8:05 KA	611380
Chrysene		ND	0.15		1	03/15/01 8:05 KA	611380
Dibenzo(a,h)anthracene	• • • • • • • • • • • • • • • • • • •	ND	0.15		1	03/15/01 8:05 KA	611380
Fluoranthene		ND	0.15		1	03/15/01 8:05 KA	611380
Fluorene		ND	0.15		1	03/15/01 8:05 KA	611380
Indeno(1,2,3-cd)pyrene		ND	0.15		1	03/15/01 8:05 KA	611380
Naphthalene		0.15	0.15		1	03/15/01 8:05 KA	611380
Phenanthrene		ND	0.15		1	03/15/01 8:05 KA	611380
Pyrene		ND	0.15		1	03/15/01 8:05 KA	611380
Surr: 1-Fluoronaphtha	alene	38.4	% 15-96		1	03/15/01 8:05 KA	611380
Surr: Phenanthrene-d	10	67.8	% 33-108		1	03/15/01 8:05 KA	611380
Prep Method	Prep Date		Prep Initials				
SW3510B	03/10/2001 8:00		KL				
PURGEABLE AROMA	TICS			MCL	SW8021B	Units: ug/L	
Benzene		3.4	1	,	1	03/19/01 17:25 D_R	606725
Ethylbenzene		ND	1		1	03/19/01 17:25 D_R	606725
Toluene		1.1	1		1	03/19/01 17:25 D_R	606725
Xylenes,Total	····· · · · · · · · · · · · · · · · ·	ND	1			03/19/01 17:25 D R	60672
Surr: 1,4-Difluoroben	zene		% 72-137		1	03/19/01 17:25 D R	60672
Surr: 4-Bromofluorob			% 48-156		1	03/19/01 17:25 D_R	606725
SULFATE				MCL	E300	Units: mg/L	- • •
Sulfate	•• •	270			20	03/12/01 9:30 KM	596738

Qualifiers:

ND/U - Not Detected at the Reporting Limit

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B - Analyte detected in the associated Method Blank

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- * 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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					SPL Sample ID: 0	1020760-09
		S	lite: Hol	obs, NM		
Analyses/Method	Result	Rep.Limit	:	Dil. Factor QUAL	Date Analyzed Anal	•
ALKALINITY, BICARBONAT Alkalinity, Bicarbonate	E 646	2	MCL	M2320 B 1	Units: mg/L 03/12/01 10:15 SN	597243
ALKALINITY, CARBONATE Alkalinity, Carbonate	ND	2	MCL	M2320 B 1	Units: mg/L 03/12/01 10:15 SN	597343
CHLORIDE, TOTAL Chloride	1720	25	MCL	E325.3 25	Units: mg/L 03/20/01 11:30 CV	610214
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L	· · · · · · · ·
Diesel Range Organics	2.2	0.25		1	03/20/01 21:12 AM	609622
Surr: n-Pentacosane	108	% 18-120		1	03/20/01 21:12 AM	609622
Prep Method Prep 1 SW3510B 03/10	<u>Date</u> /2001 7:52	<u>Prep Initi</u> KL	als			
FLUORIDE-IC		•	MCL	E300	Units: mg/L	
Fluoride	1.1	0.1		1	03/09/01 11:53 KM	594818
GASOLINE RANGE ORGAN	ICS		MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND	0.5		5	03/19/01 2:17 D_R	605449
Surr: 1,4-Difluorobenzene	90.1	% 74-121		5	03/19/01 2:17 D_R	605449
Surr: 4-Bromofluorobenzene	91.3	% 55-150		5	03/19/01 2:17 D_R	605449
HARDNESS, TOTAL (TITRIN	METRIC, EDTA)		MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	1900	120		25	03/21/01 13:30 CV	612354
HEADSPACE GAS ANALYS	IS		MCL	RSK147	Units: mg/L	
Ethane	ND	0.0025	·	1	03/23/01 13:35 A_A	612893
Ethylene	ND	0.0032	·	1	03/23/01 13:35 A_A	612893
Methane	0.0028	0.0012		1	03/23/01 13:35 A_A	612893
MERCURY, TOTAL			MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002		1	03/21/01 16:24 R_T	610992
Prep Method Prep SW7470A 03/21	<u>Date</u> /2001 13:40	Prep Init R_T	ials			
METALS BY METHOD 6010	B, TOTAL		MCL	SW6010B	Units: mg/L	
Arsenic	0.08	0.005		1	03/15/01 22:45 NS	602632
Lead	0.0119	0.005		1	03/15/01 22:45 NS	602632
Selenium	ND	0.005		1	03/15/01 22:45 NS	602632
Barium	0.401	0.005		1	03/17/01 3:16 E_B	605394
Cadmium	ND	0.005		1	03/17/01 3:16 E B	605394
Calcium	466	0.5		5	03/20/01 15:59 E B	608949
Chromium	0.0392	0.01		1	03/17/01 3:16 E B	605394

Qualifiers:

- ND/U Not Detected at the Reporting Limit
- B Analyte detected in the associated Method Blank

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- * 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-	11A		Colle	cted:	3/8/01 3:15:00 P	SPL Sample ID:	01020	0760-09
			Site:	Hob	bs, NM	<u> </u>	······	
Analyses/Method		Result	Rep.Limit		Dil. Factor QUA	Date Analyzed A	nalyst	Seq.
Magnesium		93.4	0.1		1	03/17/01 3:16 E	B	605394
Potassium		33.5	2	· · · · <u></u> ···	1	03/17/01 3:16 E	B	605394
Silver		ND	0.01		1	03/17/01 3:16 E	B	605394
Sodium		801	2.5		5	03/19/01 20:24 E	В	606984
Prep Method SW3010A	Prep Date 03/12/2001 15 03/12/2001 15		Prep Initials MME					
NITROGEN, NITRATE	(AS N)			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N)	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ND	0.1		1	03/09/01 11:53 Ki		594839
POLYNUCLEAR ARO! Acenaphthene	MATIC HYDRO	DCARBO	NS 0.13	MCL	SW8310 1	Units: ug/L 03/15/01 8:42 K	Δ	611381
Acenaphthylene		0.35	0.13		1	03/15/01 8:42 K		611381
Anthracene		ND	0.13		1	03/15/01 8:42 K		611381
Benz(a)anthracene		ND	0.13		1	03/15/01 8:42 K		611381
Benzo(a)pyrene		ND	0.13		1	03/15/01 8:42 K		611381
Benzo(b)fluoranthene		ND	0.13		1	03/15/01 8:42 K		611381
Benzo(g,h,i)perylene		ND	0.13		1	03/15/01 8:42 K		611381
Benzo(k)fluoranthene		ND	0.13		1	03/15/01 8:42 K	A	611381
Chrysene		ND	0.13		1	03/15/01 8:42 K	Α	611381
Dibenzo(a,h)anthracene	•	ND	0.13		1	03/15/01 8:42 K	A	611381
Fluoranthene		ND	0.13		1	03/15/01 8:42 K	Ā	611381
Fluorene		ND	0.13		1	03/15/01 8:42 K	A	611381
Indeno(1,2,3-cd)pyrene		ND	0.13		1	03/15/01 8:42 K	A	611381
Naphthalene		0.21	0.13		1	03/15/01 8:42 K	A	611381
Phenanthrene		ND	0.13		1	03/15/01 8:42 K	A	611381
Pyrene		ND	0.13		1	03/15/01 8:42 K	A	611381
Surr: 1-Fluoronaphtha	alene	57.9	% 15-96		1	03/15/01 8:42 K	A	611381
Surr: Phenanthrene-c	110	69.2	% 33-108		1	03/15/01 8:42 K	Ā	611381
Prep Method	Prep Date		Prep Initials					
SW3510B	03/10/2001 8:0	00	KL					

URGEABLE AROMATICS				MCL	SW8021B	Units: ug	J/L	
Benzene	12		5		5	03/19/01 19:39	D_R	606730
Ethylbenzene	ND		5		5	03/19/01 19:39	D_R	606730
Toluene	ND		5		5	03/19/01 19:39	D_R	606730
Xylenes,Total	ND		5		5	03/19/01 19:39	D_R	606730
Surr: 1,4-Difluorobenzene	92.5	%	72-137		5	03/19/01 19:39	D_R	606730
Surr: 4-Bromofluorobenzene	90.2	%	48-156		5	03/19/01 19:39	D_R	606730

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



Client Sample ID MW-11A

Collected: 3/8/01 3:15:00 P SPL Sample ID: 01020760-09

		Site	: Hob	bs, NM				
Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
SULFATE			MCL		E300	Units: m		
Sulfate	330	4		20		03/09/01 11:53	KM	594883

Qualifiers:

1.11

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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



Client Sample ID MW-1	12	Colle	ected:	3/8/01 4:10:00 P	SPL Sample ID: 01	020760-10
		Site:	Hob	obs, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analy	st Seq.
ALKALINITY, BICARBO	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	MCL	M2320 B	Units: mg/L	· · · · · · · · · · · · · · · · · · ·
Alkalinity, Bicarbonate	475	2		1	03/12/01 10:15 SN	597245
ALKALINITY, CARBON	ATE		MCL	M2320 B	Units: mg/L	-
Alkalinity, Carbonate	ND	2		1	03/12/01 10:15 SN	597345
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L	
Chloride	586	10		10	03/20/01 11:30 CV	610215
DIESEL RANGE ORGA	NICS		MCL	SW8015B	Units: mg/L	
Diesel Range Organics	2.1	0.27		1	03/20/01 20:34 AM	609621
Surr: n-Pentacosane	127MI	% 18-120		1 *	03/20/01 20:34 AM	609621
Prep Method	Prep Date	Prep Initials				
A CALL STOR AND A CALL STOR AN	03/10/2001 7:52	KL				
FLUORIDE-IC			MCL	E300	Units: mg/L	· · · · · · · · · · · · · · · · · · ·
Fluoride	1.9	0.1		1	03/09/01 11:53 KM	594821
GASOLINE RANGE OR	GANICS		MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	s 0.1	0.1		1	03/19/01 2:44 D_R	605450
Surr: 1,4-Difluorobenze	ene 89.7	% 74-121		1	03/19/01 2:44 D_R	605450
Surr: 4-Bromofluorober	nzene 91.3	% 55-150		1	03/19/01 2:44 D_R	605450
HARDNESS, TOTAL (T	ITRIMETRIC, EDTA)		MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	1300	120		25	03/21/01 13:30 CV	612355
HEADSPACE GAS ANA	ALYSIS		MCL	RSK147	Units: mg/L	
Ethane	ND	0.0025		1	03/23/01 13:46 A_A	612897
Ethylene	ND	0.0032		1	03/23/01 13:46 A_A	612897
Methane	ND	0.0012		1	03/23/01 13:46 A_A	612897
MERCURY, TOTAL			MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002		1	03/21/01 16:24 R_T	610993
Prep Method	Prep Date	Prep Initials				
AND REAL AND A CARD AND A CARD	03/21/2001 13:40	R_T				
METALS BY METHOD	6010B, TOTAL		MCL	SW6010B	Units: mg/L	· · · · · · · · · · · · · · · · · · ·
Arsenic	0.0445	0.005		1	03/15/01 0:21 NS	601645
Lead	0.00627	0.005		1	03/15/01 0:21 NS	601645
Selenium	ND	0.005		1	03/15/01 0:21 NS	601645
Barium	0.603	0.005		1	03/16/01 3:18 E_B	603713
Cadmium	ND	0.005		1	03/16/01 3:18 E_B	603713
Calcium	338	0.1		1	03/16/01 3:18 E_B	603713
Chromium	0.0469	0.01		1	03/16/01 3:18 E_B	603713

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-12		Colle	ected: 3/8/01 4:10:00 P	SPL Sample ID: 0102	20760-10
		Site:	Hobbs, NM		
Analyses/Method	Result	Rep.Limit	Dil. Factor QUAL	Date Analyzed Analyst	Seq.
Magnesium	95.3	0.1	1	03/16/01 3:18 E_B	603713
Potassium	47.2	2	1	03/16/01 3:18 E_B	603713
Silver	ND	0.01	1	03/16/01 3:18 E_B	603713
Sodium	185	0.5	1	03/16/01 3:18 E_B	603713
Prep Method Prep Date	· · · · · · ·	Prep Initials			
SW3010A 03/13/200	1 9:00	MW			
NITROGEN, NITRATE (AS N)		··· _ ·· · · · · · · · · · · · · · · ·	MCL E300	Units: mg/L	
Nitrogen, Nitrate (As N)	ND	0.1	1	03/09/01 11:53 KM	594842
POLYNUCLEAR AROMATIC HY	DROCARBO	NS	MCL SW8310	Units: ug/L	
Acenaphthene	ND	0.13	1	03/15/01 9:20 KA	611382
Acenaphthylene	ND	0.13	······································	03/15/01 9:20 KA	611382
Anthracene	ND	0.13		03/15/01 9:20 KA	611382
Benz(a)anthracene	ND	0.13	····· · · · · · · · · · · · · · · · ·	03/15/01 9:20 KA	611382
Benzo(a)pyrene	ND	0.13	1	03/15/01 9:20 KA	611382
Benzo(b)fluoranthene	ND	0.13	1	03/15/01 9:20 KA	611382
Benzo(g,h,i)perylene	ND	0.13	1	03/15/01 9:20 KA	611382
Benzo(k)fluoranthene	ND	0.13	1	03/15/01 9:20 KA	611382
Chrysene	ND	0.13	1	03/15/01 9:20 KA	611382
Dibenzo(a,h)anthracene	ND	0.13	1	03/15/01 9:20 KA	611382
Fluoranthene	ND	0.13	1	03/15/01 9:20 KA	611382
Fluorene	ND	0.13	1	03/15/01 9:20 KA	611382
Indeno(1,2,3-cd)pyrene	ND	0.13	1	03/15/01 9:20 KA	611382
Naphthalene	ND	0.13	1	03/15/01 9:20 KA	611382
Phenanthrene	ND	0.13	1	03/15/01 9:20 KA	611382
Pyrene	ND	0.13	1	03/15/01 9:20 KA	611382
Surr: 1-Fluoronaphthalene	35.4	% 15-96	1	03/15/01 9:20 KA	611382
Surr: Phenanthrene-d10	63.5	% 33-108	1	03/15/01 9:20 KA	611382
Prep Method Prep Date	<u> </u>	Prep Initials			
SW3510B 03/10/200	1 8:00	KL			
PURGEABLE AROMATICS			MCL SW8021B	Units: ug/L	
Benzene	14	1	1	03/19/01 17:52 D_R	606726
Ethylbenzene	ND	1	1	03/19/01 17:52 D_R	606726
Toluene	ND	1	1	03/19/01 17:52 D_R	606728
Xylenes,Total	ND	1	1	03/19/01 17:52 D_R	606726
Surr: 1,4-Difluorobenzene	102	% 72-137	1	03/19/01 17:52 D_R	606726
Surr: 4-Bromofluorobenzene	104	% 48-156	1	03/19/01 17:52 D_R	606726
SULFATE			MCL E300		
Sulfate	300	4	20	03/09/01 11:53 KM	594886

Qualifiers:

. . __ ND/U - Not Detected at the Reporting Limit

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- 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



Client Sample ID MW-1	3	Coll	ected:	3/8/01 2:30:00 P	SPL Sample ID: 0102	0760-11
		Site	: Hob	bs, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq.
ALKALINITY, BICARBC Alkalinity, Bicarbonate	INATE	2	MCL	M2320 B 1	Units: mg/L 03/12/01 10:15 SN	597246
ALKALINITY, CARBON Alkalinity, Carbonate	ATE ND	2	MCL	M2320 B 1	Units: mg/L 03/12/01 10:15 SN	597346
CHLORIDE, TOTAL Chloride	276	5	MCL	E325.3 5	Units: mg/L 03/20/01 11:30 CV	610216
DIESEL RANGE ORGA Diesel Range Organics	NICS 2	0.24	MCL	SW8015B 1	Units: mg/L 03/20/01 19:55 AM	609620
	152MI Prep Date 03/10/2001 7:52	% 18-120 Prep Initials KL		1 *	03/20/01 19:55 AM	609620
FLUORIDE-IC			MCL	E300	Units: mg/L	
Fluoride	1.6	0.1		1	03/09/01 11:53 KM	594822
GASOLINE RANGE OR Gasoline Range Organics Surr: 1,4-Difluorobenze Surr: 4-Bromofluoroben	s ND ene 89.3	0.1 % 74-121 % 55-150	MCL	SW8015B 1 1 1	Units: mg/L 03/19/01 3:10 D_R 03/19/01 3:10 D_R 03/19/01 3:10 D_R	60545 60545 60545
HARDNESS, TOTAL (T	ITRIMETRIC, EDTA)		MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	670	50		10	03/21/01 13:30 CV	61235
HEADSPACE GAS ANA Ethane Ethylene Methane	ALYSIS ND ND ND	0.0025 0.0032 0.0012	MCL	RSK147 1 1 1	Units: mg/L 03/23/01 13:57 A_A 03/23/01 13:57 A_A 03/23/01 13:57 A_A	61289 61289 61289
				014174704		
MERCURY, TOTAL Mercury	ND	0.0002	MCL	SW7470A 1	Units: mg/L 03/21/01 16:24 R_T	61099
Prep Method SW7470A	Prep Date 03/21/2001 13:40	Prep Initials R_T				
METALS BY METHOD Arsenic	6010B, TOTAL 0.00673	0.005	MCL	SW6010B 1	Units: mg/L 03/15/01 0:27 NS	60164
Lead	ND	0.005		1	03/15/01 0:27 NS	60164
Selenium	ND	0.005		1	03/15/01 0:27 NS	60164
Barium	0.171	0.005		1	03/16/01 3:33 E_B	60372
Cadmium	ND 198	0.005 0.1		1	03/16/01 3:33 E_B 03/16/01 3:33 E B	60372
Calcium	198	11.1		1	13736/13 2224 6 8	60372

Qualifiers:

ND/U - Not Detected at the Reporting Limit

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B - Analyte detected in the associated Method Blank

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- * 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-	13			Colle	cted:	3/8/01 2:30:00 P	SPL Sample ID:	01020760-11
				Site:	Hob	bs, NM		
Analyses/Method	R	esult	1	Rep.Limit		Dil. Factor QUAL	Date Analyzed An	alyst Seq.
Magnesium		52.3		0.1		1	03/16/01 3:33 E_B	603721
Potassium		2.26	• •	2		1	03/16/01 3:33 E_B	603721
Silver		ND		0.01		1	03/16/01 3:33 E_B	60372 ⁻
Sodium		142		0.5		1	03/16/01 3:33 E_B	603721
Prep Method	Prep Date	· · · · · · · · ·		Prep Initials				
SW3010A	03/13/2001 9:00			MW				
NITROGEN, NITRATE	(AS N)				MCL	E300	Units: mg/L	
Nitrogen, Nitrate (As N)		ND		0.1		1	03/09/01 11:53 KM	594843
POLYNUCLEAR ARON	MATIC HYDROC	ARBO	NS		MCL	SW8310	Units: ug/L	
Acenaphthene		ND		0.12		1	03/15/01 9:57 KA	611383
Acenaphthylene		ND	.	0.12		1	03/15/01 9:57 KA	61138:
Anthracene		ND		0.12		1	03/15/01 9:57 KA	61138
Benz(a)anthracene		ND		0.12		1	03/15/01 9:57 KA	61138
Benzo(a)pyrene		ND		0.12		1	03/15/01 9:57 KA	61138
Benzo(b)fluoranthene		ND		0.12		1	03/15/01 9:57 KA	61138
Benzo(g,h,i)perylene		ND		0.12		1	03/15/01 9:57 KA	61138
Benzo(k)fluoranthene		ND		0.12		1	03/15/01 9:57 KA	61138
Chrysene		ND		0.12		1	03/15/01 9:57 KA	61138:
Dibenzo(a,h)anthracene		ND		0.12		1	03/15/01 9:57 KA	61138
Fluoranthene		ND		0.12		1	03/15/01 9:57 KA	61138
Fluorene		ND		0.12		1	03/15/01 9:57 KA	61138
Indeno(1,2,3-cd)pyrene		ND		0.12		1	03/15/01 9:57 KA	61138
Naphthalene		ND		0.12		1	03/15/01 9:57 KA	61138
Phenanthrene		ND		0.12		1	03/15/01 9:57 KA	61138
Pyrene		ND		0.12		1	03/15/01 9:57 KA	61138
Surr: 1-Fluoronaphtha	llene	30.4	%	15-96		1	03/15/01 9:57 KA	61138
Surr: Phenanthrene-d	10	56.2	%	33-108		1	03/15/01 9:57 KA	61138
Prep Method	Prep Date	-· -		Prep Initials				
SW3510B	03/10/2001 8:00			KL				
PURGEABLE AROMA	TICS				MCL	SW8021B	Units: ug/L	
Benzene		ND		1		1	03/19/01 18:19 D_F	R 60672
Ethylbenzene		1.2		1		1	03/19/01 18:19 D_F	R 60672
Toluene		ND		1		1	03/19/01 18:19 D_F	२ 60672
Xylenes,Total		ND		1		1	03/19/01 18:19 D_F	
Surr: 1,4-Difluorobenz	zene	96.1	%	72-137	- · · -	1	03/19/01 18:19 D_F	
Surr: 4-Bromofluorob	enzene	83.6	%	48-156		1	03/19/01 18:19 D_F	
SULFATE					MCL	E300	Units: mg/L	
Sulfate		380		10		50	03/09/01 11:53 KM	59488

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



Client Sample ID MW-14

Collected: 3/8/01 9:30:00 A SPL Sample ID: 01020760-12

		Site	: Hobbs, NM				
Analyses/Method	Result	Rep.Limit		QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL					Units: mg		·····
Chloride	327	10	10		03/20/01 11:30	CV	610217

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



Client Sample ID MW-14

Collected: 3/8/01 9:30:00 A SPL Sample ID: 01020760-12

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. 1
VOLATILE ORGANICS BY MET	HOD 8260B		MCL	SW8	260B	Units: ug	/L	
1,1,1,2-Tetrachloroethane	ND	5.0		1		03/20/01 20:46	LT	609264
1,1,1-Trichloroethane	ND	5.0		1		03/20/01 20:46	LT	609264
1,1,2,2-Tetrachloroethane	ND	5.0		1		03/20/01 20:46	LT	609264
1,1,2-Trichloroethane	ND	5.0		1		03/20/01 20:46	LT	609264
1,1-Dichloroethane	ND	5.0		1		03/20/01 20:46	LT	609264
1,1-Dichloroethene	ND	5.0		1		03/20/01 20:46	LT	609264
1,1-Dichloropropene	ND	5.0		1	·	03/20/01 20:46	LT	609264
1,2,3-Trichlorobenzene	ND	5.0		1		03/20/01 20:46	ĹΤ	609264
1,2,3-Trichloropropane	ND	5.0		1		03/20/01 20:46	LT	609264
1,2,4-Trichlorobenzene	ND	5.0		1		03/20/01 20:46	LT	609264
1,2,4-Trimethylbenzene	ND	5.0		1		03/20/01 20:46	LT	609264
1,2-Dibromo-3-chloropropane	ND	5.0		1	• ••• ••• •••	03/20/01 20:46	LT	609264
1,2-Dibromoethane	ND	5.0		1		03/20/01 20:46	LT	609264
1,2-Dichlorobenzene	ND	5.0		1		03/20/01 20:46	LT	609264
1,2-Dichloroethane	ND	5.0		1	·······	03/20/01 20:46	LT	609264
1,2-Dichloropropane	ND	5.0	• • • • • • • • • • • •	1		03/20/01 20:46	LT	609264
1,3,5-Trimethylbenzene	ND	5.0		1		03/20/01 20:46	LT	609264
1,3-Dichlorobenzene	ND	5.0		1		03/20/01 20:46	LT	609264
1,3-Dichloropropane	ND	5.0		1		03/20/01 20:46	LT	609264
1,4-Dichlorobenzene	ND	5.0		1		03/20/01 20:46	LT	609264
2,2-Dichloropropane	ND	5.0		1		03/20/01 20:46	LT	609264
2-Butanone	ND	20		1		03/20/01 20:46	LT	609264
2-Chloroethyl vinyl ether	ND	10		1		03/20/01 20:46	LT	609264
2-Chlorotoluene	ND	5.0		1		03/20/01 20:46	LT	609264
2-Hexanone	ND	10		1		03/20/01 20:46	LT	609264
4-Chlorotoluene	ND	5.0		1	·····	03/20/01 20:46	LT	609264
4-Isopropyltoluene	ND	5.0		1		03/20/01 20:46	LT	609264
4-Methyl-2-pentanone	ND	10		1		03/20/01 20:46	LT	609264
Acetone	ND	100		1	•• = =	03/20/01 20:46	LT	609264
Acrylonitrile	ND	50		1		03/20/01 20:46	LT	609264
Benzene	ND	5.0	• • • •	1	••••••	03/20/01 20:46	LT	609264
Bromobenzene	ND	5.0				03/20/01 20:46	LT	609264
Bromochloromethane	ND	5.0	• • • •	1		03/20/01 20:46	LT	609264
Bromodichloromethane	ND	5.0		1	· ····	03/20/01 20:46	LT	609264
Bromoform	ND	5.0		1		03/20/01 20:46	LT	609264
Bromomethane	ND	10	·· ·	<u>-</u> <u>-</u>		03/20/01 20:46	LT	609264
Carbon disulfide	ND	5.0		' 1		03/20/01 20:46	LT	609264
Carbon tetrachloride	ND	5.0		1		03/20/01 20:46	LT	609264
Chlorobenzene	ND	5.0		1		03/20/01 20:46	LT	609264
Chloroethane	ND ND	10		<u>-</u>		03/20/01 20:46	LT	609264

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



Client Sample ID MW-14		Colle	ected: 3/8/01 9:30:00 A	SPL Sample ID: 01	020760-12
		Site:	Hobbs, NM		
Analyses/Method	Result	Rep.Limit	Dil. Factor QUAL	Date Analyzed Analys	st Seq.
Chloroform	ND	5.0	1	03/20/01 20:46 LT	609264
Chloromethane	ND	10	1	03/20/01 20:46 LT	609264
cis-1,3-Dichloropropene	ND	5.0	1	03/20/01 20:46 LT	609264
Dibromochloromethane	ND	5.0	1	03/20/01 20:46 LT	609264
Dibromomethane	ND	5,0	1	03/20/01 20:46 LT	609264
Dichlorodifluoromethane	ND	10	1	03/20/01 20:46 LT	609264
Ethylbenzene	ND	5.0	1	03/20/01 20:46 LT	609264
Hexachlorobutadiene	ND	5.0	1	03/20/01 20:46 LT	609264
Isopropylbenzene	ND	5.0	1	03/20/01 20:46 LT	609264
Methyl tert-butyl ether	ND	5.0	1	03/20/01 20:46 LT	609264
Methylene chloride	ND	5.0	1	03/20/01 20:46 LT	609264
n-Butylbenzene	ND	5.0	1	03/20/01 20:46 LT	609264
n-Propylbenzene	ND	5.0	1	03/20/01 20:46 LT	609264
Naphthalene	ND	5.0	<u> </u>	03/20/01 20:46 LT	609264
sec-Butylbenzene	ND	5.0	1	03/20/01 20:46 LT	609264
Styrene	ND	5.0	1	03/20/01 20:46 LT	609264
tert-Butylbenzene	ND	5.0	1	03/20/01 20:46 LT	609264
Tetrachloroethene	ND	5.0	1	03/20/01 20:46 LT	609264
Toluene	ND	5.0	1	03/20/01 20:46 LT	609264
trans-1,3-Dichloropropene	ND	5.0	1	03/20/01 20:46 LT	609264
Trichloroethene	ND	5.0	1	03/20/01 20:46 LT	609264
Trichlorofluoromethane	ND	5.0	1	03/20/01 20:46 LT	609264
Vinyl acetate	ND	10	1	03/20/01 20:46 LT	609264
Vinyl chloride	ND	10	1	03/20/01 20:46 LT	609264
cis-1,2-Dichloroethene	ND	5.0	1	03/20/01 20:46 LT	609264
m,p-Xylene	ND	5.0	1	03/20/01 20:46 LT	609264
o-Xylene	ND	5.0	- 1	03/20/01 20:46 LT	609264
trans-1,2-Dichloroethene	ND	5.0	1	03/20/01 20:46 LT	609264
1,2-Dichloroethene (total)	ND	5.0	1	03/20/01 20:46 LT	609264
Xylenes,Total	ND	5.0	1	03/20/01 20:46 LT	609264
Surr: 1,2-Dichloroethane-d4	100	% 62-119	1	03/20/01 20:46 LT	609264
Surr: 4-Bromofluorobenzene	102	% 78-123	1	03/20/01 20:46 LT	609264
Surr: Toluene-d8	104	% 74-122	· · · · · · · · · · · · · · · · · · ·	03/20/01 20:46 LT	609264

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



Client Sample ID MW-15

Collected: 3/8/01 9:45:00 A SPL Sample ID:

01020760-13

		Site	·····			
analyses/Method	Result	Rep.Limit	Dil. Factor QUAL	Date Analyzed	Analyst	Seq.
OLATILE ORGANICS BY MET	HOD 8260B		MCL SW8260B	Units: ug/	L	
1,1,1,2-Tetrachloroethane	ND	5.0	1	03/20/01 21:14	LT	609265
1,1,1-Trichloroethane	ND	5.0	1	03/20/01 21:14	LT	609265
1,1,2,2-Tetrachloroethane	ND	5.0	1	03/20/01 21:14	LT	609265
1,1,2-Trichloroethane	ND	5.0	1	03/20/01 21:14	LT	609265
1,1-Dichloroethane	ND	5.0	1	03/20/01 21:14	LT	609265
1,1-Dichloroethene	ND	5.0	1	03/20/01 21:14	LT	609265
1,1-Dichloropropene	ND	5.0	1	03/20/01 21:14	LT	609265
1,2,3-Trichlorobenzene	ND	5.0	1	03/20/01 21:14	LT	609265
1,2,3-Trichloropropane	ND	5.0	1	03/20/01 21:14	LT	609265
1,2,4-Trichlorobenzene	ND	5.0	1	03/20/01 21:14	LT	609265
1,2,4-Trimethylbenzene	ND	5.0	1	03/20/01 21:14	LT	609265
1,2-Dibromo-3-chloropropane	ND	5.0	1	03/20/01 21:14	LT	609265
1,2-Dibromoethane	ND	5.0	1	03/20/01 21:14	LT	609265
1,2-Dichlorobenzene	ND	5.0	1	03/20/01 21:14	LT	609265
1,2-Dichloroethane	ND	5.0	1	03/20/01 21:14	LT	609265
1,2-Dichloropropane	ND	5.0	1	03/20/01 21:14	LT	609265
1,3,5-Trimethylbenzene	ND	5.0	1	03/20/01 21:14	LT	609265
1,3-Dichlorobenzene	ND	5.0	1	03/20/01 21:14	LT	609265
1,3-Dichloropropane	ND	5.0	1	03/20/01 21:14	LT	609265
1,4-Dichlorobenzene	ND	5.0	1	03/20/01 21:14	LT	609265
2,2-Dichloropropane	ND	5.0	1	03/20/01 21:14	LT	609265
2-Butanone	ND	20	1	03/20/01 21:14	LT	609265
2-Chloroethyl vinyl ether	ND	10	1	03/20/01 21:14	LT	609265
2-Chlorotoluene	ND	5.0	1	03/20/01 21:14	LT	609265
2-Hexanone	ND	10	1	03/20/01 21:14	LT	609265
4-Chlorotoluene	ND	5.0	1	03/20/01 21:14	LT	609265
4-Isopropyltoluene	ND	5.0	1	03/20/01 21:14	LT	609265
4-Methyl-2-pentanone	ND	10	1	03/20/01 21:14	LT	609265
Acetone	ND	100	1	03/20/01 21:14	LT	609265
Acrylonitrile	ND	50	1	03/20/01 21:14	LT	609265
Benzene	ND	5.0	1	03/20/01 21:14	LT	609265
Bromobenzene	ND	5.0	1	03/20/01 21:14	LT	609265
Bromochloromethane	ND	5.0	····· · · · · · · · · · · · · · · · ·	03/20/01 21:14	LT	609265
Bromodichloromethane	ND	5.0	1	03/20/01 21:14	LT	609265
Bromoform	ND	5.0	1	03/20/01 21:14	LT	609265
Bromomethane	ND	10	<u> </u>	03/20/01 21:14	LT	609265
Carbon disulfide	ND	5.0	' · 1	03/20/01 21:14		609265
Carbon tetrachloride	ND	5.0	····· · · · · · · · · · · · · · · · ·	03/20/01 21:14	LT	609265
Chlorobenzene	ND	5.0	· · · _ · · · · · · · · · · · ·	03/20/01 21:14		609265
Chloroethane	ND	10		03/20/01 21:14	LT	609265

Qualifiers:

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- 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



Client Sample ID MW-15		Colle	ected: 3/8/01 9:45:00 A	SPL Sample ID: (01020760-13
		Site:	Hobbs, NM		
Analyses/Method	Result	Rep.Limit	Dil. Factor QUAL	Date Analyzed Ana	lyst Seq. i
Chloroform	ND	5.0	1	03/20/01 21:14 LT	609265
Chloromethane	ND	10	1	03/20/01 21:14 LT	609265
cis-1,3-Dichloropropene	ND	5.0	1	03/20/01 21:14 LT	609265
Dibromochloromethane	ND	5.0	1	03/20/01 21:14 LT	609265
Dibromomethane	ND	5.0	1	03/20/01 21:14 LT	609265
Dichlorodifluoromethane	ND	10	1	03/20/01 21:14 LT	609265
Ethylbenzene	ND	5.0	1	03/20/01 21:14 LT	609265
Hexachlorobutadiene	ND	5.0	1	03/20/01 21:14 LT	609265
Isopropylbenzene	ND	5.0	1	03/20/01 21:14 LT	609265
Methyl tert-butyl ether	ND	5.0	1	03/20/01 21:14 LT	609265
Methylene chloride	ND	5.0	1	03/20/01 21:14 LT	609265
n-Butylbenzene	ND	5.0	1	03/20/01 21:14 LT	609265
n-Propylbenzene	ND	5.0	1	03/20/01 21:14 LT	609265
Naphthalene	ND	5.0	1	03/20/01 21:14 LT	609265
sec-Butylbenzene	ND	5.0	1	03/20/01 21:14 LT	609265
Styrene	ND	5.0	1	03/20/01 21:14 LT	609265
tert-Butylbenzene	ND	5.0	1	03/20/01 21:14 LT	609265
Tetrachloroethene	ND	5.0	1	03/20/01 21:14 LT	609265
Toluene	ND	5.0	1	03/20/01 21:14 LT	609265
trans-1,3-Dichloropropene	ND	5.0	1	03/20/01 21:14 LT	609265
Trichloroethene	ND	5.0	1	03/20/01 21:14 LT	609265
Trichlorofluoromethane	ND	5.0	1	03/20/01 21:14 LT	609265
Vinyl acetate	ND	10	1	03/20/01 21:14 LT	609265
Vinyl chloride	ND	10	1	03/20/01 21:14 LT	609265
cis-1,2-Dichloroethene	ND	5.0	1	03/20/01 21:14 LT	609265
m,p-Xylene	ND	5.0	1	03/20/01 21:14 LT	609265
o-Xylene	ND	5.0	1	03/20/01 21:14 LT	609265
trans-1,2-Dichloroethene	ND	5.0	1	03/20/01 21:14 LT	609265
1,2-Dichloroethene (total)	ND	5.0	1	03/20/01 21:14 LT	609265
Xylenes,Total	ND	5.0	1	03/20/01 21:14 LT	609265
Surr: 1,2-Dichloroethane-d4	88.0	% 62-119	1	03/20/01 21:14 LT	609265
Surr: 4-Bromofluorobenzene	102	% 78-123	1	03/20/01 21:14 LT	609265
Surr: Toluene-d8	104	% 74-122	1	03/20/01 21:14 LT	609265

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

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* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL



Client Sample ID Du	plicate			Colle	ected:	3/9/01	SPL Sample II): 01020	0760-15
				Site:	Hot	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. /
DIESEL RANGE ORC	SANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organics	5	1.7		0.2		1	03/20/01 19:17	AM	609617
Surr: n-Pentacosane	3	148MI	%	18-120		1 *	03/20/01 19:17	AM	609617
Prep Method	Prep Date 03/10/2001 7	:52	-	Prep Initials					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: m	g/L	<u>.</u>
Gasoline Range Orgar	nics	ND		0.5		5	03/19/01 3:37	D_R	605452
Surr: 1,4-Difluorobe	nzene	92.2	%	74-121		5	03/19/01 3:37	D_R	605452
Surr: 4-Bromofluoro	benzene	92.3	%	55-150		5	03/19/01 3:37	D_R	605452
PURGEABLE AROM	ATICS				MCL	SW8021B	Units: ug	g/L	
Benzene		5.5		5		5	03/19/01 20:06	D_R	606731
Ethylbenzene		ND		5		5	03/19/01 20:06	D_R	606731
Toluene		ND		5		5	03/19/01 20:06	D_R	606731
Xylenes,Total		ND		5		5	03/19/01 20:06	D_R	606731
Surr: 1,4-Difluorobe	nzene	98.0	%	72-137		5	03/19/01 20:06	D_R	606731
Surr: 4-Bromofluoro	benzene	90.8	%	48-156		5	03/19/01 20:06	D_R	606731

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



Client Sample ID Trip Blank 2/28/0)1		Col	lected:	3/9/01	SPL Sample ID: 01020760-16		0760-16		
	Site: Hobbs, NM									
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #		
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg	ј/L			
Gasoline Range Organics	ND		0.1		1	03/18/01 4:29	D_R	605443		
Surr: 1,4-Difluorobenzene	92.0	%	74-121		1	03/18/01 4:29	D_R	605443		
Surr: 4-Bromofluorobenzene	91.0	%	55-150		1	03/18/01 4:29	D_R	605443		
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug	/L	· · · .		
Benzene	ND		1		1	03/18/01 16:29	D_R	605323		
Ethylbenzene	ND		1		1	03/18/01 16:29	D_R	605323		
Toluene	ND		1		1	03/18/01 16:29	D_R	605323		
Xylenes,Total	ND		1		1	03/18/01 16:29	D_R	605323		
Surr: 1,4-Difluorobenzene	90.6	%	72-137		1	03/18/01 16:29	D_R	605323		
Surr: 4-Bromofluorobenzene	87.6	%	48-156		1	03/18/01 16:29	DR	605323		

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



Client Sample ID MW-7	, 	Colle	cted:	3/9/01 9:50:00 A	SPL Sample ID: 0102	0760-17
		Site:	Hob	bs, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq.
ALKALINITY, BICARBO	NATE		MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	283	2		1	03/12/01 10:15 SN	597249
ALKALINITY, CARBON	ATE		MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2		1	03/12/01 10:15 SN	597349
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L	
Chloride	224	5		5	03/20/01 11:30 CV	610223
DIESEL RANGE ORGAI	NICS		MCL	SW8015B	Units: mg/L	
Diesel Range Organics	1.2	0.25		1	03/20/01 18:38 AM	609615
Surr: n-Pentacosane	93.4	% 18-120		1	03/20/01 18:38 AM	609615
Prep Method	Prep Date	Prep Initials				
Contraction of the local distance of the loc	03/10/2001 7:52	KL				
FLUORIDE-IC			MCL	E300	Units: mg/L	
Fluoride	0.69	0.1		1	03/10/01 15:14 KM	594900
HARDNESS, TOTAL (TI	TRIMETRIC, EDTA)		MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	590	120		25	03/21/01 13:30 CV	612357
MERCURY, TOTAL			MCL	SW7470A	Units: mg/L	· · · · · · · · · · · · ·
Mercury	ND	0.0002		1	03/21/01 16:24 R_T	610997
Prep Method	Prep Date	Prep Initials				
	03/21/2001 13:40	R_T				
METALS BY METHOD			MCL	SW6010B	Units: mg/L	
Arsenic	0.00694	0.005	MOL	1	03/15/01 0:48 NS	601649
Lead	ND	0.005		1	03/15/01 0:48 NS	601649
Selenium	0.00617	0.005		1	03/15/01 0:48 NS	601649
Barium	0.043	0.005		1	03/16/01 3:37 E_B	603724
Cadmium	ND	0.005		1	03/16/01 3:37 E_B	603724
Calcium	172	0.1		1	03/16/01 3:37 E_B	603724
Chromium	ND	0.01		1	03/16/01 3:37 E_B	603724
Magnesium	41.1	0.1		1	03/16/01 3:37 E_B	603724
Potassium	5.15	2		1 -	03/16/01 3:37 E_B	603724
Silver	ND	0.01		1	03/16/01 3:37 E_B	603724
Sodium	121	0.5		1	03/16/01 3:37 E_B	603724
Prep Method	Prep Date	Prep Initials				
	03/13/2001 9:00	MW				
NITROGEN, NITRATE ((AS N)		MCL	E300	Units: mg/L	

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-7

Collected: 3/9/01 9:50:00 A SPL Sample ID: 01020760-17

POLYNUCLEAR AROMATIC HYDROCA Acenaphthene Acenaphthylene Anthracene	sult ARBOI	Rep.Limit	DI	I. Factor QUAL	Deta Analyzed		
Acenaphthene Acenaphthylene Anthracene		19			Date Analyzed	Analyst	Seq. #
Acenaphthylene Anthracene	ND		MCL	SW8310	Units: ug	/L	
Anthracene		0.13		1	03/15/01 10:34	KA	611384
	ND	0.13		1	03/15/01 10:34	KA	611384
	ND	0.13		1	03/15/01 10:34	KA	611384
Benz(a)anthracene	ND	0.13		1	03/15/01 10:34	KA	611384
Benzo(a)pyrene	ND	0.13		1	03/15/01 10:34	KA	611384
Benzo(b)fluoranthene	ND	0.13		1	03/15/01 10:34	KA	611384
Benzo(g,h,i)perylene	ND	0.13		1	03/15/01 10:34	KA	611384
Benzo(k)fluoranthene	ND	0.13		1	03/15/01 10:34	KA	611384
Chrysene	ND	0.13		1	03/15/01 10:34	KA	611384
Dibenzo(a,h)anthracene	ND	0.13		1	03/15/01 10:34	KA	611384
Fluoranthene	ND	0.13		1	03/15/01 10:34	KA	611384
Fluorene	ND	0.13		1	03/15/01 10:34	KA	611384
Indeno(1,2,3-cd)pyrene	ND	0.13		1	03/15/01 10:34	KA	611384
Naphthalene	ND	0.13		1	03/15/01 10:34	KA	611384
Phenanthrene	ND	0.13		1	03/15/01 10:34	KA	611384
Pyrene	ND	0.13		1	03/15/01 10:34	KA	611384
Surr: 1-Fluoronaphthalene	36.6	% 15-96		1	03/15/01 10:34	KA	611384
Surr: Phenanthrene-d10	51.6	% 33-108		1	03/15/01 10:34	KA	611384
Prep Method Prep Date SW3510B 03/10/2001 8:00		Prep Initials					
SULFATE			MCL	E300	Units: m		
Sulfate	260	4		20	03/12/01 9:30	KM	596740

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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Quality Control Documentation

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3/30/01 2:29:38 PM



Quality Control Report

Brown & Caldwell

R.I Service, Hobbs, NM

		BJ Service, H	lobbs, NM		
nalysis: ethod:	Diesel Range Organics SW8015B			WorkOrder: Lab Batch ID:	01020760 10779
	Method Blank	<u> </u>	Samples in Analytica	Batch:	
	HP_V_010320D-609578 Units: 03/20/2001 17:21 Analyst: 03/10/2001 7:52 Prep By: Analyte Range Organics r: n-Pentacosane	mg/L AM KL Method SW3510 Result Rep Limit ND 0.20 115.8 18-120	Lab Sample ID 01020760-01B	Client Sam MW-1 MW-3 MW-4 MW-5 MW-8 MW-9 MW-10 MW-10 MW-11A MW-12 MW-13 Duplicate MW-7	1 <u>ple ID</u>
		Laboratory Contr	ol Sample (LCS)		
	RunID: Analysis Date: Preparation Date:	HP_V_010320D-609581 03/20/2001 18:00 03/10/2001 7:52	Units: mg/L Analyst: AM Prep By: KL Method SW	3510B	
l	Analy Diesel Range Organic	Adde		wer Upper imit Limit 21 175	
	Matrix	Spike (MS) / Matrix Spil	ce Duplicate (MSD)		
	Sample Spiked: RunID: Analysis Date: Preparation Date:	01020760-01 HP_V_010320D-609588 03/20/2001 19:17 03/10/2001 7:52	Units: mg/L Analyst: AM Prep By: KL Method S	W3510B	
An esel Range Org	anics 0.4	MS MS Result Spike Added 9 2.78 2.4	MS % MSD MSD R Recovery Spike Added 4 69.0 2.78	Result MSD % Recovery 2.3 64.8	RPD RPD Low High Limit Limit Limit 6.33 39 13 13
Qualifiers:	ND/U - Not Detected at the Repo B - Analyte detected in the asso J - Estimated value between MD	ciated Method Blank	MI - Matrix Interference D - Recovery Unreportable de * - Recovery Outside Advisat		
	overies for QC samples are correct a ported RPD may differ from the disp				3/30/01 2:29:4



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

nalysis:	Headspace Gas Analy	sis				WorkOrder:	01020760			
ethod:	RSK147			Lab Batch ID:	R32043					
	Metho	d Blank	· · · · · · · · · · · · · · · · · · ·		Samples in Analytical Batch:					
unID:	VARC_010323A-612649	Units:	mg/L		Lab Sample ID	<u>Client Sar</u>	nple ID			
malysis Date:	: 03/23/2001 8:33	Analyst:	A_A		01020760-01G	MW-1				
					01020760-02G	MW-3				
					01020760-03G	MW-4				
r.	Analyte Result Rep				01020760-04G	MW-5				
-	Analyte Ethane				01020760-05G	MW-7				
	zmane Ethylene			0.0025	01020760-06G	MW-8				
-	Vethane]	ND	0.0012	01020760-07G	MW-9				
1					01020760-08G	MW-10				
_					01020760-09G	MW-11A				
					01020760-10G	MW-12				
ł					01020760-11G	MW-13				

Sample Duplicate

Original Sample:	01020760-01		
RunID:	VARC_010323A-612655	Units:	mg/L
Analysis Date:	03/23/2001 10:48	Analyst:	A_A

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	ND	ND	0	50
Propane	ND	ND	0	50
Propylene	ND	ND	0	50

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

nalysis: ethod:	Purgeable A SW8021B	romatics							Order: Batch ID:	0102 R31	20760 594		
51100.		Method	Black	··-		Samo	lac in An	alytical Batch					
L						Jamp	ies in An	alytical Bater	1.				
unID:	HP_S_010316	A-604388	Units:	ug/L		Lab S	ample ID	<u>)</u>	<u>Client Sar</u>	nple ID			
halysis Date:	03/16/2001 1	6:13	Analyst:	D_R		01020	760-02A		MW-3				
						01020	0760-03A		MW-4				
							0760-04A		MW-5				
-	An	alyte	F	Result R	ep Limit		0760-05A		MW-7				
E	Benzene	•	· ····································	ND	1.0		0760-06A		MW-8				
	thylbenzene			ND	1.0	01020	0760-07A		MW-9				
	Toluene (ylenes, Total	<i></i>	· · · · · — · · · - · · · - · · · - · · · - · · · - · · · · - ·	ND ND	<u>1.0</u> 1.0								
-	Surr: 1,4-Difluorobe			92.2	72-137								
L L	Surr: 4-Bromofluoro	benzene		102.7	48-156								
				l ahr	oratory Contro	Sample //	<u>(8)</u>	·····					
		RunID:					g/L						
		Analysis	Date: 0	3/16/2001	14:54	Analyst: D	_R						
_													
			Analyte		Spike	Result	Percer	1 1	Upper				
					Added		Recove		Limit				
		Benzene			· · · · · · · · · · · · · · · · · · ·	50 46		92 70	130				
		Ethylbenzer	ne			60 49		98 70	130				
	1.	Foluene				60 48		95 70	130				
-	þ	Kylenes, Tol	al		15	50 144	<u> </u>	96 70	130				
			Matrix S	nike (MS) / Matrix Spike	Dunlicate	(MSD)	······					
-			<u>intatrix o</u>			Dupilouto	111001						
		Sample	Spiked:	0103049	5-03								
		RuniD:		HP_S_01	0316A-604375	Units:	ug/L						
		Analysi	s Date:	03/17/20	01 0:46	Analyst:	D_R						
-													
l i													
	Analyte		Sample	MS	MS Result	MS %	MSD	MSD Result	MSD %	RPD	RPD	Low	High
-			Result	Spike Added		Recovery	Spike Added		Recovery		Limit	Limit	Lim
				vooea			Aaaea		1				
enzene			ND	20	31	155	20	21	10	637.6 *	21	32	16
Ethylbenzene			ND	20	30	151 *	20	21	10	436.9*	19	52	14
pluene			ND	20	31	153	20	21	10-	438.6*	20	38	1

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

- J Estimated value between MDL and PQL
- * Recovery Outside Advisable QC Limits



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

nalysis: ethod:	Gasoline Range (SW8015B	Organics					Work Lab B	Order: Batch ID:	0102 R31	20760 596		
<u> </u>	M	ethod Blank			Samp	les in A	nalytical Batch	n:				
uniD:	HP_S_010316C-604	412 Units:	mg/L		Lab S	Sample I	ם	<u>Client Sa</u>	imnle ID			
halysis Date:	03/16/2001 4:13	Analyst:	D_R			0760-024	_	MW-3		•		
			-		01020	0760-03A	A Contraction of the second seco	MW-4				
)760-04A		MW-5				
i i i		- ····	Result Rep Lir		01020)760-05A	A Contraction of the second seco	MW-7				
G	Analyte asoline Range Organics			.10	01020)760-06A	λ	MW-8				
1	Surr: 1,4-Difluorobenzene Surr: 4-Bromofluorobenze	ne	<u>91.7</u> 74-1 <u>110.7</u> 55-1	21	01020	0760-074	A	MW-9				
			Laborator	y Control	Sample (L	<u>CS)</u>						
	Rur	ID: I	HP_S_010316C-60	04410 U	nits: m	ng/L						
						•						
	Ana 	-	03/16/2001 3:20		nalyst: C Result)_R Perce	nt Lower	Upper				
		Ilysis Date: (Analyte Ine Range Organ	9	Ai Spike Added 1	Result	Perce Recov		Upper Limit 130				
		Analyte	e ics	Spike Added 1	Result	Perce Recov	ery Limit	Limit				
 	Gasol	Analyte ine Range Organ <u>Matrix S</u>	e ics Spike (MS) / Ma	Spike Added 1	Result	Perce Recov	ery Limit	Limit				
	Gasol	Analyte ine Range Organ <u>Matrix S</u> ample Spiked:	e ics Spike (MS) / Ma 01030495-04	Spike Added 1 trix Spike	Result 0.76 Duplicate	Perce Recov	ery Limit	Limit				
	Gasol S R	Analyte Ine Range Organ <u>Matrix S</u> ample Spiked: unID:	3 ics Spike (MS) / Ma 01030495-04 HP_S_010316C	Spike Added 1 trix Spike	Result 0.76 Duplicate Units:	Perce Recov (MSD) mg/L	ery Limit	Limit				
	Gasol S R	Analyte ine Range Organ <u>Matrix S</u> ample Spiked:	e ics Spike (MS) / Ma 01030495-04	Spike Added 1 trix Spike	Result 0.76 Duplicate	Perce Recov	ery Limit	Limit				
 	Gasol S R	Analyte Ine Range Organ <u>Matrix S</u> ample Spiked: unID:	e ics Spike (MS) / Ma 01030495-04 HP_S_010316C 03/17/2001 1:4	Spike Added 1 trix Spike -604414 40 Result	Result 0.76 Duplicate Units:	Perce Recov (MSD) mg/L	ery Limit	Limit	, RPD	RPD Limit	Low Limit	High

Qualifiers:

ND/U - Not Detected at the Reporting Limit

- B Analyte detected in the associated Method Blank
- J Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



Quality Control Report

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Brown & Caldwell BJ Service, Hobbs, NM

nalysis: ethod:	Purgeable Aromatic SW8021B	:5					Work(Lab B	Order: atch ID:	0102 R316			
	Met	hod Blank		<u></u>	Samp	les in A	nalytical Batch	:		<u>-</u>		
unID:	HP_S_010318A-60532	0 Units:	ug/L		l ab S	Sample II	r	<u>Client Sam</u>	nie ID			
halysis Date:	03/18/2001 15:24	Analyst:	D_R)760-08A	-	MW-10	<u>p.o.io</u>			
, ,.		,,	_			0760-09A		MW-11A				
l					01020)760-10A		MW-12				
. _۱	Analyte	ı ·	Result F	Pop Limit	01020)760-11A		MW-13				
B	enzene		ND	1.0	01020	0760-15 A	N N	Duplicate				
E	thylbenzene		ND	1.0	01020	0760-16A	N	Trip Blank 2	2/28/01			
· · · · · · · · · · · · · · · · · · ·	oluene (ylenes,Total		ND ND	1.0 1.0								
	Surr: 1,4-Difluorobenzene		92.6	72-137								
i '	Surr: 4-Bromofluorobenzene		87.0	48-156								
J			Lab	oratory Contro	Sample (L	CS)						
	Runi): +	IP_S_0103	318A-605314	Jnits: u	g/L						
1	Analy	sis Date: 0)3/18/200	1 13:53	Analyst: D)_R						
•												
1		Analyte		Spike	Result	Percei	nt Lower	Upper				
				Added		Recov		Limit				
	Benzene	3		5	0 53		107 70	130				
ľ	Ethylber	zene		5	0 55		110 70	130				
	Toluene				0 54		107 70	130				
	Xylenes	Total		15	0 165	j	110 70	130				
		Matrix S	Spike (MS	6) / Matrix Spike	Duplicate	(MSD)						
6		nple Spiked:	0103043									
	Rur			0318A-606723	Units:	ug/L						
	Ana	lysis Date:	03/19/20	001 16:05	Analyst:	D_R						
· ··	Analyte	Sample	MS	MS Result	MS %	MSD	MSD Result	MSD %	RPD			
-		Result	Spike Added		Recovery	Spike Added		Recovery		Limit	Limit	Limi
enzene		ND	• • • • • • • • • • • • • • • • • • •	21	103		24				32	
Ethylbenzene		ND		22	107	1	24	120			52	
				20	100		23	114				
bluene				64	107	60	72	120	11.8	18	53	14
-		.' _										
bluene		.1 _										
bluene		J _										
bluene		J _										

11 . 8 B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

halysis: ethod:	Gasoline Range Orgai SW8015B	nics			WorkOrder: Lab Batch ID:	01020760 R31641
Method Blank				Samples in Analytic	al Batch:	
unID:	HP_S_010318B-605442	Units: mg/L		Lab Sample ID	Client Sar	nple ID
halysis Date:	03/18/2001 3:24	Analyst: D_R		01020760-01A	MW-1	-
-				01020760-08A	MW-10	
•				01020760-09A	MW-11A	
г	Analyta	Regult	Pop Limit	01020760-10A	MW-12	
	Analyte	ND	Rep Limit 0.10	01020760-11A	MW-13	
	soline Range Organics Surr: 1,4-Difluorobenzene	91.7	74-121	01020760-15A	Duplicate	
	Surr: 4-Bromofluorobenzene	91.3	55-150	01020760-16A	Trip Blank	2/28/01

RunID:	HP_S_010318B-605441	Units:	mg/L
Analysis Date:	03/18/2001 2:20	Analyst:	Ð_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.99	99	70	130

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

Sample Spiked:	01030432-04		
RunID:	HP_S_010318B-605446	Units:	mg/L
Analysis Date:	03/18/2001 23:37	Analyst:	D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Hig Limit Lir	gh mit
Gasoline Range Organics	ND	0.9	0.73	81.3	0.9	0.64	70.7	13.9	36	36	160

Qualifiers:

ND/U - Not Detected at the Reporting Limit

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J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

	P		7		,	,			HOUS	ON LAE ITERCHA STON, TE	NGE DR XAS 770	IVE	
				Qu	uality Conti	rol Repor	t			. ,			
					Brown & C BJ Service, H								
nalysis: ethod:	Purgeable SW8021B	Aromatics	3						Order: Batch ID:	0102 R322			
			<u>od Blank</u>			Samp	les in A	nalytical Batcl	n:				
unID: halysis Date:	HP_R_01032 03/27/2001			ug/L D_R			ample)760-01A		<u>Client Sam</u> MW-1	ple ID			
Ethy Tolu Xyle S	A vibenzene uene enes, Total urr. 1,4-Difluorot urr. 4-Bromofluo			Result Ro ND ND ND 107.3 84.6	ep Limit 1.0 1.0 1.0 72-137 48-156								
					ratory Contro	<u>l Sample (L</u>	<u>CS)</u>		<u></u>				
		RunID: Analysi		IP_R_01032 3/27/2001			g/L)_R						
							r- <u>-</u>	······	(:				
I		1	Analyte	- · · · · · · · · · · · · · · · · · · ·	Spike Added	Result	Perce Recov		Upper Limit				
		Benzene			Added	1 50 46	Recov	ery Limit 93 70	Limit 130				
		Ethylbenz			Added	1 50 46 50 48	Recov	ery Limit 93 70 96 70	Limit 130 130				
			ene		Added	1 50 46	Recov	ery Limit 93 70	Limit 130 130 130				
		Ethylbenz Toluene	otal	 	Addec	1 50 46 50 48 50 48 50 144	Recov	ery Limit 93 70 96 70 95 70	Limit 130 130 130				
		Ethylbenz Toluene	otal	 	Added	1 50 46 50 48 50 48 50 144	Recov	ery Limit 93 70 96 70 95 70	Limit 130 130 130				
		Ethylbenz Toluene Xylenes,T Samp	rene Total <u>Matrix S</u> ple Spiked:	o103077	Addeo	1 50 46 50 48 50 48 50 144 e Duplicate	(MSD)	ery Limit 93 70 96 70 95 70	Limit 130 130 130				
		Ethylbenz Toluene Xylenes,T Samp Runll	iene Total <u>Matrix S</u> ble Spiked: D:	pike (MS) 0103077 HP_R_010	Added 5 5 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	I 46 50 48 50 48 50 144 e Duplicate	(<u>MSD</u>) ug/L	ery Limit 93 70 96 70 95 70	Limit 130 130 130				
		Ethylbenz Toluene Xylenes,T Samp Runll	rene Total <u>Matrix S</u> ple Spiked:	o103077	Added 5 5 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1 50 46 50 48 50 48 50 144 e Duplicate	(MSD)	ery Limit 93 70 96 70 95 70	Limit 130 130 130				
· · · · · · · · · · · · · · · · · · ·	Analyte	Ethylbenz Toluene Xylenes,T Samp Runll	iene Total <u>Matrix S</u> ble Spiked: D:	pike (MS) 0103077 HP_R_010	Added 5 5 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	I 46 50 48 50 48 50 144 e Duplicate	(<u>MSD</u>) ug/L	ery Limit 93 70 96 70 95 70	Limit 130 130 130	RPD			
enzené	Analyte	Ethylbenz Toluene Xylenes,T Samp Runll	rene Total <u>Matrix S</u> ole Spiked: D: /sis Date: Sample	0103077 HP_R_010 03/27/200 MS Spike Added	Added 5 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7	1 50 46 50 48 50 48 50 144 e Duplicate Units: Analyst: MS % Recovery	Recov (<u>MSD</u>) ug/L D_R MSD Spike	ery Limit 93 70 96 70 95 70 96 70	Limit 130 130 130 130 130 Recovery			Limit	Limi
enzene thylbenzene	Analyte	Ethylbenz Toluene Xylenes,T Samp Runll	tene Total <u>Matrix S</u> ole Spiked: D: ysis Date: Sample Result ND ND	0103077 HP_R_010 03/27/200 MS Spike Added 20 20	Added 4 4 4 4 4 4 4 4 4 4 4 4 4	I 60 46 50 48 50 48 50 144 E Duplicate Units: Analyst: MS % Recovery 116 116	Recov (MSD) ug/L D_R MSD Spike Added 20 20	ery Limit 93 70 96 70 95 70 96 70 96 70 96 20 21 21 21	Limit 130 130 130 130 130 130 130 130	11.2 9.04	Limit 21 19	Limit 32 52	Limi 16 14
·····	Analyte	Ethylbenz Toluene Xylenes,T Samp Runll	tene Total <u>Matrix S</u> Dele Spiked: D: /sis Date: Sample Result	Bpike (MS) 0103077 HP_R_010 03/27/200 MS Spike Added 20 20 20 20	Added 4 5 7 7 7 7 7 7 7 7 7 7 7 7 7	I 50 46 50 48 50 48 50 144 E Duplicate Units: Analyst: MS % Recovery 116 116 118	Recov (MSD) ug/L D_R MSD Spike Added 20 20 20	ery Limit 93 70 96 70 95 70 96 70 96 70 96 20 21 21 21 22	Limit 130 130 130 130 130 130 130 130 130 130	11.2 9.04 9.82	Limit 21 19 20	Limit 32 52 38	High Lìmi 16 14 15 14

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

ethod Blank D - Reco

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution * - Recovery Outside Advisable QC Limits

MI - Matrix Interference



Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

				BJ Service, Hobi	55, 19191		
nalysis: lethod:	Polynuclear Aromat SW8310	ic Hydrocarb	ons			WorkOrder: Lab Batch ID:	01020760 10780
· · · · · · · · · · · · · · · · · · ·	Meth	od Blank			Samples in Analytic	cal Batch:	
unlD:	2_010314A-606020	Units:	ug/L		Lab Sample ID	Client Sa	nple ID
Analysis Date:	03/14/2001 20:58	Analyst:	KA		01020760-01D	MW-1	
Preparation Date	: 03/10/2001 8:00	Prep By:	KL N	Aethod SW3510B	01020760-02D	MW-3	
					01020760-03D	MW-4	
					01020760-04D	MW-5	
	Analyte		Result	Rep Limit	01020760-06D	MW-8	
Ace	naphthene		NC	0.10			
Ace	naphthylene		ND	0.10	01020760-07D	MW-9	
Anth	racene		ND		01020760-08D	MW-10	
	z(a)anthracene			- · · · ·····	01020760-09D	MW-11A	
	zo(a)pyrene	• • • ·	NE		01020760-10D	MW-12	
	zo(b)fluoranthene		NE				
	zo(g,h,i)perylene			and a set of the set o	01020760-11D	MW-13	
	zo(k)fluoranthene				01020760-17D	MW-7	
	ysene enzo(a,h)anthracene		NE				
	pranthene		NC	and you in the second sec			
	prene		NE				
Inde	eno(1,2,3-cd)pyrene		NE	0.10			
	hthalene		NC	0.10			
Phe	nanthrene		NE	0.10			
Pyre	ene		ND	0.10			
	urr: 1-Fluoronaphthalene		66.	the second statement and statements and statements			
S	urr: Phenanthrene-d10		72.9	9 33-108			

	Laboratory Con	trol Sample	(LCS)		
RunID:	2_010314A-606067	Units:	ug/L		
Analysis Date:	03/14/2001 21:35	Analyst:	KA		
Preparation Date:	03/10/2001 8:00	Prep By:	KL	Method SW3510B	

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Acenaphthene	0.5	0.33	66	23	99
Acenaphthylene	0.5	0.41	83	29	104
Anthracene	0.5	0.32	63	28	126
Benz(a)anthracene	0.5	0.4	80	52	101
Benzo(a)pyrene	0.5	0.42	84	62	9
Benzo(b)fluoranthene	0.5	0.45	90	65	10
Benzo(g,h,i)perylene	0.5	0.41	82	36	11
Benzo(k)fluoranthene	0.5	0.43	85	64	104
Chrysene	0.5	0.43	87	64	12
Dibenzo(a,h)anthracene	0.5	0.38	76	33	11
Fluoranthene	0.5	0.39	78	51	10
Fluorene	0.5	0.39	78	20	10
Indeno(1,2,3-cd)pyrene	0.5	0.46	91	57	11
Naphthalene	0.5	0.35	71	19	9
Phenanthrene	0.5	0.52	104	29	10

Qualifiers:

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D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

				BJ Service, H	obbs, NM							
nalysis: ethod:	Polynuclear Aron SW8310	natic Hydrocarbo	ons					Order: atch ID:	0102 1078	20760 30		
	<u></u>		Lab	oratory Control	Sample (L	CS)	·······			·····		
	Ana	alysis Date: 0	2_010314A)3/14/200)3/10/200	1 21:35	Analyst: K	ig/L (A (L Met	hod SW3510B					
	Pyren	Analyte e	 	Spike Added 0	Result .5 0.37	Perce Recov		Upper Limit 105				
	<u></u>	Matrix 5	Spike (MS) / Matrix Spike	Duplicate	(MSD)				<u> </u>		
	R	ample Spiked: dunID: .nalysis Date: reparation Date:	_	IA-606023)01 22:49	Units: Analyst: Prep By:	ug/L KA M	ethod					
	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
cenaphthene		ND	0.5	0.086	17.3	0.5	0.085	16.9	2.15	30	1	9
cenaphthylen	e	ND	0.5	0.18	23.8	0.5	0.15	16.7	34.9 *	30	1	122
nthracene		ND	0.5		20.0	0.5						106
Benz(a)anthrac			0.5	0.099	19.8		0.088	17.6	12.1	30	1	
	cene	ND	1 1	0.099 0.12		0.5	0.088 0.1	17.6 20.6		30 30	12	
enzo(a)pyren		1	0.5		19.8	0.5 0.5 0.5	1	20.6		i i		11
enzo(a)pyren enzo(b)fluora	18	ND ND ND	0.5 0.5 0.5	0.12 0.14 0.15	19.8 23.9	0.5 0.5 0.5 0.5	0.1	20.6 16.5 21.4	14.8 50.7 * 35.1 *	30	12	11 10
enzo(b)fluora Benzo(g,h,i)pe	ie Inthene Irylene	ND ND ND ND	0.5 0.5 0.5 0.5	0.12 0.14	19.8 23.9 27.7	0.5 0.5 0.5 0.5	0.1 0.082	20.6 16.5 21.4	14.8 50.7 *	30 30	12 1 6 1	11 10 12
enzo(b)fluora Benzo(g,h,i)pe	ie Inthene Irylene	ND ND ND ND ND	0.5 0.5 0.5 0.5 0.5	0.12 0.14 0.15 0.34 0.14	19.8 23.9 27.7 30.6 67.0 27.7	0.5 0.5 0.5 0.5 0.5 0.5	0.1 0.082 0.11 0.11 0.095	20.6 16.5 21.4 21.5 19.0	14.8 50.7 * 35.1 * 103 * 37.1 *	30 30 30 30 30 30	12 1 6	11 10 12 10
enzo(b)fluora Senzo(g,h,i)pe Jenzo(k)fluora hrysene	ne Inthene Irylene Inthene	ND ND ND ND ND ND	0.5 0.5 0.5 0.5 0.5 0.5	0.12 0.14 0.15 0.34 0.14 0.25	19.8 23.9 27.7 30.6 67.0 27.7 49.7	0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.1 0.082 0.11 0.11	20.6 16.5 21.4 21.5 19.0 39.0	14.8 50.7 * 35.1 * 103 * 37.1 * 24.3	30 30 30 30 30 30 30	12 1 6 1	119 109 127 107 119
enzo(b)fluora Benzo(g,h,i)pe Benzo(k)fluora hrysene Dibenzo(a,h)ar	ne Inthene Irylene Inthene	ND ND ND ND ND ND ND	0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.12 0.14 0.15 0.34 0.14 0.25 0.31	19.8 23.9 27.7 30.6 67.0 27.7 49.7 61.0	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.1 0.082 0.11 0.11 0.095 0.19 0.12	20.6 16.5 21.4 21.5 19.0 39.0 23.3	14.8 50.7 * 35.1 * 103 * 37.1 * 24.3 89.5 *	30 30 30 30 30 30 30 30	12 1 6 1 5 1 1	111 10 12 10 11 14 11
enzo(b)fluora Benzo(g,h,i)pe Benzo(k)fluora hrysene Jibenzo(a,h)ar Fluoranthene	ne Inthene Irylene Inthene	ND ND ND ND ND ND ND	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.12 0.14 0.15 0.34 0.14 0.25 0.31 0.12	19.8 23.9 27.7 30.6 67.0 27.7 49.7 61.0 23.1	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.1 0.082 0.11 0.11 0.095 0.19 0.12 0.097	20.6 16.5 21.4 21.5 19.0 39.0 23.3 19.4	14.8 50.7 * 35.1 * 103 * 37.1 * 24.3 89.5 * 17.6	30 30 30 30 30 30 30 30	12 1 6 1 5 1 1 1 1	111 10 12 10 11 14 14 11 12
enzo(b)fluora Benzo(g,h,i)pe Benzo(k)fluora hrysene Dibenzo(a,h)ar Tuoranthene uorene	e Inthene Inthene Inthene Inthracene	ND ND ND ND ND ND ND ND	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.12 0.14 0.15 0.34 0.14 0.25 0.31 0.12 0.095	19.8 23.9 27.7 30.6 67.0 27.7 49.7 61.0 23.1 19.0	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.1 0.082 0.11 0.095 0.19 0.12 0.097 0.096	20.6 16.5 21.4 21.5 19.0 39.0 23.3 19.4 19.2	14.8 50.7 * 35.1 * 103 * 37.1 * 24.3 89.5 * 17.6 0.967	30 30 30 30 30 30 30 30 30 30	12 1 6 1 5 1 1 1 1 14 1	111 10 12 10 11 11 14 14 11 12
enzo(b)fluora Benzo(g,h,i)pe Penzo(k)fluora hrysene Dibenzo(a,h)ar Fluoranthene uorene deno(1,2,3-c	e Inthene Inthene Inthene Inthracene	ND ND ND ND ND ND ND ND ND ND	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.12 0.14 0.15 0.34 0.14 0.25 0.31 0.12 0.095 0.15	19.8 23.9 27.7 30.6 67.0 27.7 49.7 61.0 23.1 19.0 29.4	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.1 0.082 0.11 0.095 0.19 0.12 0.097 0.096 0.069	20.6 16.5 21.4 21.5 19.0 39.0 23.3 19.4 19.2 13.8	14.8 50.7 * 35.1 * 103 * 37.1 * 24.3 89.5 * 17.6 0.967 72.2 *	30 30 30 30 30 30 30 30 30 30	12 1 6 1 5 1 1 1 1 1 4 1	119 109 127 107 119 144 114 120 109
enzo(b)fluora Benzo(g,h,i)pe Penzo(k)fluora hrysene Dibenzo(a,h)ar Fluoranthene uorene Ideno(1,2,3-c Naphthalene	re Inthene Inthene Inthracene Inthracene	ND ND ND ND ND ND ND ND ND ND ND ND	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.12 0.14 0.15 0.34 0.14 0.25 0.31 0.12 0.095 0.15 0.12	19.8 23.9 27.7 30.6 67.0 27.7 49.7 61.0 23.1 19.0 29.4 13.6	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.1 0.082 0.11 0.095 0.19 0.12 0.097 0.096 0.069 0.13	20.6 16.5 21.4 21.5 19.0 39.0 23.3 19.4 19.2	14.8 50.7 * 35.1 * 103 * 37.1 * 24.3 89.5 * 17.6 0.967 72.2 * 17.5	30 30 30 30 30 30 30 30 30 30 30	12 1 6 1 5 1 1 1 14 1 1 1 1	119 109 127 107 119 144 114 120 109
3enzo(g,h,i)pe 2enzo(k)fluora hrysene Dibenzo(a,h)ar Fluoranthene uorene	re Inthene Inthene Inthracene Inthracene	ND ND ND ND ND ND ND ND ND ND	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.12 0.14 0.15 0.34 0.14 0.25 0.31 0.12 0.095 0.15	19.8 23.9 27.7 30.6 67.0 27.7 49.7 61.0 23.1 19.0 29.4 13.6 28.2	0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.1 0.082 0.11 0.11 0.095 0.19 0.12 0.097 0.096 0.069 0.13 0.12	20.6 16.5 21.4 21.5 19.0 39.0 23.3 19.4 19.2 13.8	14.8 50.7 * 35.1 * 103 * 24.3 89.5 * 17.6 0.967 72.2 * 17.5	30 30 30 30 30 30 30 30 30 30 30 30	12 1 6 1 5 1 1 1 1 4 1 1 1 1	119 109 127 107 119 144 114 120 109

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



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

Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

nalysis: lethod:	Metais by Method 60 SW6010B	10B, Total							Order: latch ID:	0102 1080	20760 19		
	Meth	od Blank		<u></u>	Samp	les in Ar	nalytic	al Batch	n:				<u> </u>
unID:	TJA_010316C-605373	Units:	mg/L		i ah S	ample (C	h		Client San	nie in			
nalysis Date:	03/17/2001 1:47	Analyst:	E_B			760-01E			MW-1				
reparation Date:	03/12/2001 15:00	Prep By:	-	hod SW3010A		760-02E			MW-3				
reputation outor	00, 12,2001, 10,000					760-03E			MW-4				
						0760-04E			MW-5				
	Analyte		Result R			0760-06E			MW-8				
Bariu Cadm			ND -	0.005		0760-07E			MW-9				
Calcit		ĺ	ND ND	0.005		0760-08E			MW-10				
Chror	nium		ND	0.01		0760-09E			MW-11A				
Magn Potas	esium		ND ND	0.1			-						
Silver			ND	0.01									
Sodiu	<u>m</u>		ND	0.5									
			Labo	oratory Control	Sample (L	CS)	- 1 11			u,,		···	
	RunID:		FJA_010316			ng/L							
	-		03/17/2001		-	_В							
	Prepar	ation Date: ()3/12/2001	l 15:00 F	rep By: N	1ME Met	hod S	W3010A					
	· ·	Analyte		Spike	Result	Percer	nt 1	Lower	Upper				
			•	Added	Result	Recove		Limit	Limit				
	Barium				2 2.04		102	80	120				
	Cadmium	·····			2 2.07		103	80	120				
	Calcium			2	1)	104	80	120				
	Chromiun	n		·· · · · · · · · · · · · · · · · · · ·	2 2.06	· · · · · · · ·	103	80	120				
	Magnesiu	····		2		· · · · · ·	102	80	120				
	Potassiur	· · · · · · · · · · · · · · · · · · ·		2			100	80	120				
1	Silver				2 2.08		104	80	120				
	Sodium			2	· · · · · · · · · · · · · · · · · · ·		99	80	120				
·	,				1	1	1	1					
		Post Digestic	on Spike (PDS) / Post Dic	estion Spi	ke Dupli	icate (PDSD)					
ample Spiked:	01030226-01												
RunID:	TJA_010316C-605379	Units:	mg/L										
nalysis Date:	03/17/2001 2:11	Analyst:	E_B										
reparation Date:	03/12/2001 15:00	Prep By:	Me	ethod									
A	nalyte	Sample	PDS	PDS Result	PDS %	PDSD	PDSE) Result	PDSD %	RPD	RPD	Low	High
	ŗ	Result	Spike Added		Recovery	Spike Added			Recovery		Limit	Limit	Limi
Calcium		98.3	10	103	47.6 *	10		104	52.5	9.8	20	75	12
odium		318	10	315	-24 *	10		312		81.9 *		- 1	
	I) / Matrix Spike	Duplicate				L	-l	1	L	
Qualifiers:	ND/U - Not Detected		-		1I - Matrix I	nterferen	се						
•	B - Analyte detected	in the associa	ated Metho	od Blank C) - Recover	y Unrepo	rtable	due to D	ilution				
			and PQL		- Recovery	— · · · ·							

rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

nalysis: ethod:	Metals by Me SW6010B	thod 6010B, Total						Order: Batch ID:	0102 1080	20760 09		
		Sample Spiked:	0103022								-	
		RunID:	TJA_010	316C-605376	Units:	mg/L						
		Analysis Date:	03/17/20	001 1:59	Analyst:	E_B						
-		Preparation Date:	03/12/20	001 15:00	Prep By:	MME M	lethod SW3010	A				
	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit		High Limit
arium		0.14	1	1.14	100	1 1	1.12	98.7	1.76	20	75	125
admium	• •	ND	1	1.05	105	1	1.04	104	0.700	20	75	125
Calcium		98	10	112	139 *	10	110	117	17.4	20	75	125
hromium		ND	1	1.02	102	1	1.02	102	0.0186	20	75	125
agnesium		32	10	42.6	109	10	41.8	101	7.44	20	75	125
Potassium		ND	10	11.5	115	10	11.2	112	2.62	20	75	125
Silver		ND	1	1.04	104	1	1.03	103	0.973	20	75	125
odium		320	10	332	143 *	10	324	60.7 *	81.1 *	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM Metals by Method 6010B, Total WorkOrder: 01020760 alysis: thod: SW6010B Lab Batch ID: 10809-T Method Blank Samples in Analytical Batch: nID: TJAT_010315A-602595 Units: mg/L Lab Sample ID **Client Sample ID** alvsis Date: 03/15/2001 19:50 Analyst: NS 01020760-01E **MW-1** 01020760-02E Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A MW-3 01020760-03E MW-4 01020760-04E MW-5 Analyte Result Rep Limit 01020760-06E MW-8 ND 0.005 Arsenic 01020760-07E MW-9 0.005 Lead ND ND 0.005 01020760-08E MW-10 Selenium 01020760-09E **MW-11A** Laboratory Control Sample (LCS) TJAT 010315A-602596 RunID: Units: mg/L Analysis Date: 03/15/2001 19:55 Analyst: NS Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A Analyte Spike Result Percent Lower Upper Added Limit Limit Recovery Arsenic 4 3.89 97 80 120 2 2.1 105 80 120 Lead 4 4.22 106 120 Selenium 80 Matrix Spike (MS) / Matrix Spike Duplicate (MSD) 01030226-01 Sample Spiked: TJAT_010315A-602601 RunID: Units: mg/L Analysis Date: 03/15/2001 20:09 Analyst: NS Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A Analyte Sample MS MS Result MS % MSD MSD Result MSD % RPD RPD Low Hiah Spike Result Recovery Spike Recovery Limit Limit Limit Added Added ND 2 2.06 103 2 2.05 102 0.547 20 Arsenic 75 125 ND 1.07 107 1.07 107 0.374 20 75 1 1 125 ad ND 2 2.24 2 112 2.24 112 00849 20 75 125 lenium ND/U - Not Detected at the Reporting Limit MI - Matrix Interference ualifiers: B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

	PL.		•				8880 IN HOUS	ON LABORATOR ITERCHANGE DRIVE STON, TEXAS 77054 (713) 660-0901	Y
				y Control Re	-				
				wn & Caldwo ervice, Hobbs, I					
nalysis: ethod:	Metals by Method 6 SW6010B	010B, Total					Order: latch ID:	01020760 10809A	
······································	Met	nod Blank		Ş	Samples in A	alytical Batch	1:		
unID: halysis Date: reparation Date:	TJA_010319B-606969 03/19/2001 19:19 03/12/2001 15:00	Units: Analyst: Prep By:	mg/L E_B MME Method S	C	<u>ab Sample II.</u> 1020760-09E	-	<u>Client Sam</u> MW-11A	npie ID	
Sodiur	Analyte	· · · · · · · · · · · · · · · · · · ·	Result Rep Lin	nit).5					
				y Control Samp	le (LCS)				
		sis Date:	TJA_010319B-6069 03/19/2001 19:24 03/12/2001 15:00	4 Analyst	—	hod SW3010A			
	Sodium	Analyte	3	Spike Re Added 20	sult Percer Recove 19.5		Upper Limit 120		
		Post Digesti	on Spike (PDS)	Post Digestion	n Spike Dupli	cate (PDSD)			
ample Spiked: unID: halysis Date: reparation Date:	01030226-01 TJA_010319B-606975 03/19/2001 19:44 03/12/2001 15:00	Units: Analyst: Prep By:	mg/L E_B Method						
An	alyte	Sample Result	PDS PDS Spike Added	Result PDS Recov		PDSD Result	PDSD % Recovery	RPD RPD Low Limit Lim	
bdium		312 Matrix	2 10 Spike (MS) / Ma		3.1 * 10	312	1.7 *	59.5 * 20	75 125
_	6								
	Run Ana	nple Spiked: ID: Iysis Date: paration Date:	01030226-01 TJA_010319B-6 03/19/2001 19 03/12/2001 15	:32 Analy	∕st: E_B	ethod SW3010)A		
Ar	alyte	Sample Result	MS MS Spike Added	Result MS Recov		MSD Result	MSD % Recovery	RPD RPD Lo Limit Lin	w High nit Limit
odium		311	0 10	324	118 10	319	66.6 *	56.0 20	75 125
Qualifiers:	ND/U - Not Detecte B - Analyte detecte J - Estimated value	d in the associ	ated Method Bla	nk D-Rec	•	ce rtable due to D Advisable QC			
The percent reco	overies for QC sample				•				

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	PL.			,	,		888	STON LABORAT DINTERCHANGE DRI DUSTON, TEXAS 7709 (713) 660-0901	IVE	
			Qualit	y Contro	ol Repor	t				
				wn & Ca ervice, Ho						
nalysis: lethod:	Metals by Method 6 SW6010B	010B, Total					WorkOrder: Lab Batch ID:	01020760 10809B		
		hod Blank			Samp	oles in Analy	ytical Batch:			
unID:	TJA_010320C-608941	Units:	mg/L			Sample ID		ample ID		
nalysis Date: reparation Date:	03/20/2001 15:28 03/12/2001 15:00	Analyst: Prep By:	E_B MME Method S	3W3010A	01020	0760-09E	MW-11A			
Calciur	Analyte	· · · · · · · · · · · · · · · · · · ·	Result Rep Lin	nit).1						
		·	Laborator	v Control	Sample (L	CS)		<u></u>		
		sis Date:	TJA_010320C-608 03/20/2001 15:3: 03/12/2001 15:00	2 A	nalyst: E	ng/L E_B MME Method	SW3010A			
	Calcium	Analyt	e	Spike Added 20	Result	Percent Recovery 5 102	Lower Upper Limit Limit 80 120			
			Spike (MS) / Ma	rix Spike	Duplicate	(MSD)				
	San Run	nple Spiked:	01030226-01 TJA_010320C-6	08944	Units:	ma/l				
ł		lysis Date:	03/20/2001 15		Analyst:	mg/L E_B				
1	Pre	paration Date:	03/12/2001 15	:00	Prep By:	MME Metho	d SW3010A			
An	alyte	Sample Result	MS MS Spike Added	Result	MS % Recovery	MSD MS Spike Added	D Result MSD % Recover		Low Hig Limit Lin	
alcium		9	3 10	110	124	10	107 92	2.329.2 * 20	75 1	
Qualifiers:	ND/II - Not Detecte	of at the Reno	rting Limit	N	II - Matrix i	nterference				
=()((a))tiors'	ND/U - Not Detecte		rting Limit iated Method Bla				le due to Dilution			



Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

				BJ Service, H								
halysis: ethod:	Metals by Method 60 SW6010B	10B, Total			·			Order: Batch ID:	0102 1082	20760 26		
	Metho	od Blank			Samp	oles in Ar	alytical Batch	1:				
unID: halysis Date: reparation Date:	TJA_010315C-603697 03/16/2001 2:41 03/13/2001 9:00	Units: Analyst: Prep By:	mg/L E_B MW Me	ethod SW3010A	01020	<u>Sample IC</u> 0760-10E 0760-11E 0760-17E	-	<u>Client San</u> MW-12 MW-13 MW-7	nple ID			
Bariur Cadm Calciu Chrom Magne Potas Silver Sodiu	um m iium sium sium		Result F ND ND ND ND ND ND ND ND	Rep Limit 0.005 0.01 0.01 0.1 0.1 2 0.01 0.5								
			Lab	oratory Contro	I Sample (L	.CS)						
	RunID: Analysis Prepara	s Date: 0	rja_01031 03/16/200 03/13/200	1 2:45	Analyst: E	ng/L E_B MW Meth	nod SW3010A					
		Analyte)	Spike Addeo	Result	Percer Recove		Upper Limit				
1	Barium				2 2.03		102 80	120				
•	Cadmium Calcium				2 2.11 20 21.4		105 80 107 80	120 120				
	Chromium				2 2.14		107 80	120				
	Magnesiu				20 20.4		102 80	120				
	Potassium	ו			20 20.2		101 80	120				
	Silver Sodium				2 2.1 ⁴ 20 20.4		105 80 100 80	120 120				
			n Snike	(PDS) / Post Di	astion Sn	ika Dunli						
ample Spiked: RunID: Nalysis Date: reparation Date:	01030291-01 TJA_010315C-603707 03/16/2001 3:06 03/13/2001 9:00	Units: Analyst: Prep By:	mg/L E_B	ethod								
Ar	alyte	Sample Result	PDS Spike Added	PDS Result	PDS % Recovery	PDSD Spike Added	PDSD Result	PDSD % Recovery	RPD	RPD Limit		-ligt Lim
Calcium	· · · · · · · · · · · · · · · · · · ·	71.6 121		79.4		10 10	78.6 126		* 11.1 * 21.7 *	20 20	75 75	12
				S) / Matrix Spik			120	00.0	<u>[</u>	20	/3	12
Qualifiers:	ND/U - Not Detected B - Analyte detected J - Estimated value t	in the associa	ated Meth	od Blank		y Unrepo	ce rtable due to D Advisable QC					
The percent record reco	overies for QC samples ported RPD may differ fr	are correct as rom the displa	s reported iyed RPD	I. Due to signific values but is co	ant figures	and oorted.					3/30/01 2	:30:1



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Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

					•===,							
halysis: ethod:	Metals by Me SW6010B	ethod 6010B, Total						Order: Batch ID:	0102 1082	20760 26		
		Sample Spiked:	0103029	1-01								
		RunID:	TJA_0103	315C-603700	Units:	mg/L						
		Analysis Date:	03/16/20	01 2:53	Analyst:	E_B						
-		Preparation Date:	03/13/20	001 9:00	Prep By:	MW M	lethod SW3010	A				
	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limi
arium		0.33	1	1.32	98.9	1	1.36	104	4.55	20	75	12
admium		ND	1	1.04	104	1	1.06	106	1.69	20	75	12
Calcium		72	10	83.1	114	10	84.2	126 *	9.69	20	75	12
hromium		ND	1	1.04	104	1	1.06	106	2.26	20	75	12
agnesium		19	10	28.9	103	10	29.6	110	6.61	20	75	12
Potassium		ND	10	11	105	10	11.6	110	4.92	20	75	12
iver		ND	1	1.04	104	. 1	1.07	107	2.80	20	75	12
odium		120	10	131	108	10	135	141 *	26.8 *	20	75	12

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

halysis:			500	01 1100, 110	bbs, NM							
ethod:	Metals by Method SW6010B	6010B, Total						Order: atch ID:	01020 10826			
	<u></u>	ethod Blank			Samp	les in Ana	alytical Batch	:				
unID: nalysis Date: reparation Date: <u>Arseni Lead</u> Seleni		Analyst: Prep By:	Result Rep Lin ND 0.0 ND 0.0	SW3010A mit 05 005	01020 01020	ample ID 1760-10E 1760-11E 1760-17E		<u>Client Sam</u> MW-12 MW-13 MW-7	iple ID			
			Laborator	y Control	Sample (L	CS)						
		iysis Date: 0	"JAT_010314B-60 03/14/2001 23:4 03/13/2001 9:00	A 0	nalyst: N		od SW3010A					
	Arsenid Lead Selenid	um			Result 4 4.04 2 2.18 4 4.36	1		Upper Limit 120 120 120				
		<u>Matrix S</u>	Spike (MS) / Ma	trix Spike	Duplicate	(MSD)						
	Ru Ar	ample Spiked: unID: nalysis Date: eparation Date:	01030291-01 TJAT_010314B 03/14/2001 23 03/13/2001 9:	:54	Units: Analyst: Prep By:	mg/L NS MW Me	thod SW3010	A				
Ar	nalyte	Sample Result	MS MS Spike Added	Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery		RPD Limit		High Limit
1							,		· · · · · · ·		75	
rsenic		0.0065 ND	·····	2.08 1.09	104 109	2	2.15 1.12	107	3.17 2.70	20 20	75	125

Qualifiers:

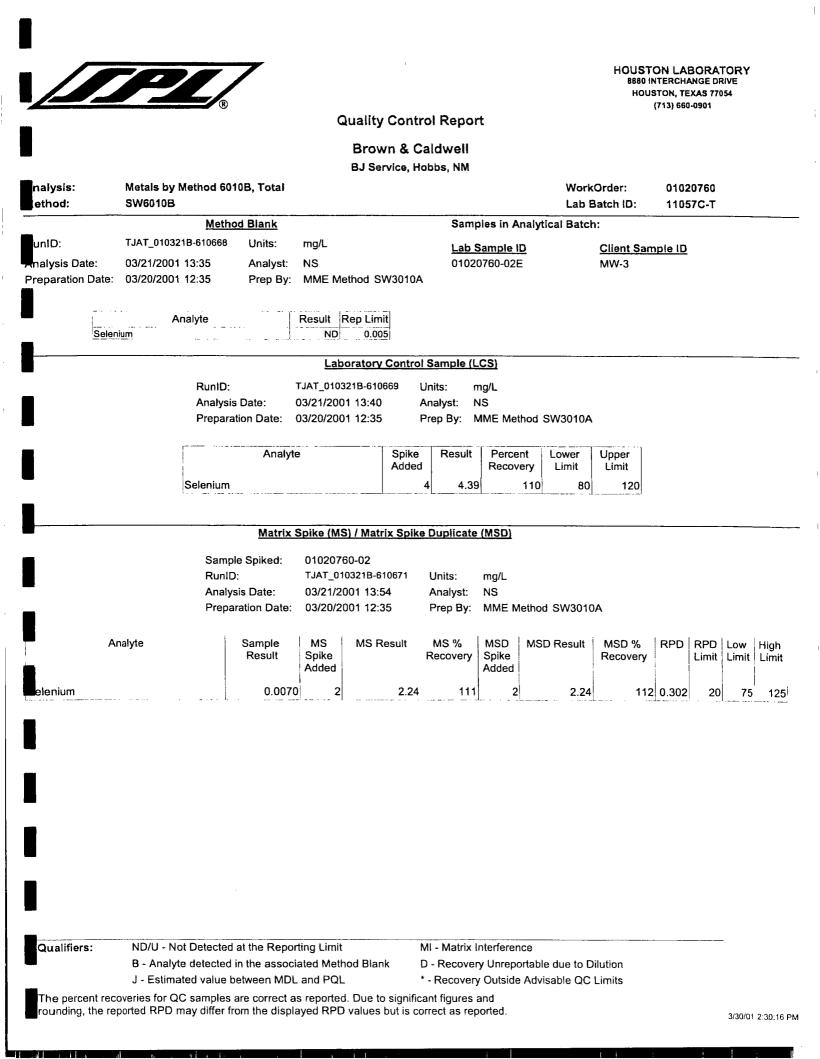
ND/U - Not Detected at the Reporting Limit

- B Analyte detected in the associated Method Blank
- J Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits





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

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Quality Control Report

Brown & Caldwell

B.I.Service Hobbe NM

			BJ Service, H	ODDS, NM				
nalysis: ethod:	Mercury, Total SW7470A				WorkOrder: Lab Batch II		20760 32	
	Metho	od Blank		Samples in A	Analytical Batch:			
uniD:	HGL_010321E-610968	Units:	mg/L	Lab Sample	ID Client	Sample ID		
alysis Date:	03/21/2001 16:24	Analyst:	R_T	01020760-01				
reparation Date:	03/21/2001 13:40		R_T Method SW7470A					
			5.05	01020760-03				
-	, A	· -		01020760-04	E MW-5			
l Mara	Analyte		Result Rep Limit	01020760-06	E MW-8			
Merci	<u></u>		ND 0.0002)	01020760-07	'E MW-9			
				01020760-08	E MW-1	0		
				01020760-09	E MW-1	1A		
				01020760-10				
				01020760-11				
				01020760-17	'E MW-7			
 W			Laboratory Contro	I Sample (LCS)				
	RunID:	H	IGL_010321E-610969	Units: mg/L				
_	Analysis	s Date: 0	3/21/2001 16:24	Analyst: R_T				
	Prepara	tion Date: 0	3/21/2001 13:40	Prep By: R_T Me	ethod E245.1			
		Analyte	Spike	Result Perci	ent Lower Upper	;]		
-		· · · · · · · · · · · · · · · · · · ·	Addeo					
	Mercury		0.0	02 0.00179	90 80 1	20		
	<u></u>			(110	<u> </u>			
		le Spiked:	pike (MS) / Matrix Spik					
	Runic	le Spiked:):	01020760-01 HGL_010321E-610977	Units: mg/L				
	RunID Analys	le Spiked:	01020760-01	Units: mg/L Analyst: R_T	Method SW7470A			
	RunIC Analy: Prepa	le Spiked:): sis Date: tration Date:	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40	Units: mg/L Analyst: R_T Prep By: R_T N		8/		
A	RunID Analys	le Spiked:): sis Date:	01020760-01 HGL_010321E-610977 03/21/2001 16:24	Units: mg/L Analyst: R_T	MSD Result MSD Record			ow High imit Lim
A	RunIC Analy: Prepa	le Spiked:): sis Date: tration Date: Sample	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40 MS MS Result Spike	Units: mg/L Analyst: R_T Prep By: R_T M MS % MSD Recovery Spike Added	MSD Result MSD Recov		Limit L	imit Lim
	RunIC Analy: Prepa	le Spiked:): sis Date: uration Date: Sample Result	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40 MS MS Result Spike Added	Units: mg/L Analyst: R_T Prep By: R_T MS MS % MSD Recovery Spike Added	MSD Result MSD Recov	very	Limit L	imit Lim
	RunIC Analy: Prepa	le Spiked:): sis Date: uration Date: Sample Result	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40 MS MS Result Spike Added	Units: mg/L Analyst: R_T Prep By: R_T MS MS % MSD Recovery Spike Added	MSD Result MSD Recov	very	Limit L	imit Lim
	RunIC Analy: Prepa	le Spiked:): sis Date: uration Date: Sample Result	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40 MS MS Result Spike Added	Units: mg/L Analyst: R_T Prep By: R_T MS MS % MSD Recovery Spike Added	MSD Result MSD Recov	very	Limit L	imit Lim
	RunIC Analy: Prepa	le Spiked:): sis Date: uration Date: Sample Result	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40 MS MS Result Spike Added	Units: mg/L Analyst: R_T Prep By: R_T MS MS % MSD Recovery Spike Added	MSD Result MSD Recov	very	Limit L	imit Lim
	RunIC Analy: Prepa	le Spiked:): sis Date: uration Date: Sample Result	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40 MS MS Result Spike Added	Units: mg/L Analyst: R_T Prep By: R_T MS MS % MSD Recovery Spike Added	MSD Result MSD Recov	very	Limit L	imit Lim
	RunIC Analy: Prepa	le Spiked:): sis Date: uration Date: Sample Result	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40 MS MS Result Spike Added	Units: mg/L Analyst: R_T Prep By: R_T MS MS % MSD Recovery Spike Added	MSD Result MSD Recov	very	Limit L	imit Lim
	RunIC Analy: Prepa	le Spiked:): sis Date: uration Date: Sample Result	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40 MS MS Result Spike Added	Units: mg/L Analyst: R_T Prep By: R_T MS MS % MSD Recovery Spike Added	MSD Result MSD Recov	very	Limit L	imit Lim
	RunIC Analy: Prepa	le Spiked:): sis Date: uration Date: Sample Result ND	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40 MS MS Result Spike Added 0.002 0.00192	Units: mg/L Analyst: R_T Prep By: R_T MS MS % MSD Recovery Spike Added	MSD Result MSD Record 2 0.00197	very	Limit L	ow High imit Lim 75 12
rcury	RunIL Analy Prepa	le Spiked:): sis Date: uration Date: Sample Result ND	01020760-01 HGL_010321E-610977 03/21/2001 16:24 03/21/2001 13:40 MS MS Result Spike Added 0.002 0.00192	Units: mg/L Analyst: R_T Prep By: R_T M MS % MSD Recovery Spike Added 96.2 0.002	MSD Result MSD Record 2 0.00197	very	Limit L	imit Lim



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

nalysis: ethod:	Volatile Organics by SW8260B	Method 826	08		WorkOrder: Lab Batch ID:	01020760 R31836
	Meth	od Blank		Samples in Analytic	cal Batch:	
unID:	L_010320B-609255	Units:	ug/L	Lab Sample ID	Client Sa	mple ID
halysis Date:	alysis Date: 03/20/2001 14:08		LT	01020760-12A		
				01020760-13A	MW-15	

Analyte	Result	Rep Limit
1,1,1,2-Tetrachloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	
1,1-Dichloropropene	ND	
1,2,3-Trichlorobenzene	ND	
1,2,3-Trichloropropane	ND	
1,2,4-Trichlorobenzene	ND	
1,2,4-Trimethylbenzene	ND	
1,2-Dibromo-3-chloropropane	ND	
1,2-Dibromoethane	ND	
1.7 Disblorebonzene	ND	
1,2-Dichloroethane	ND	
1,2-Dichloropropane	ND	
1,3,5-Trimethylbenzene	ND	
1,3-Dichlorobenzene	ND	
1,3-Dichloropropane	ND	
	ND ND	
1,4-Dichlorobenzene	ND	
2,2-Dichloropropane		
2-Butanone	ND ND	
2-Chloroethyl vinyl ether	ND	
2-Chlorotoluene	ND	
2-Hexanone	ND	
4-Chlorotoluene	ND	
4-Isopropyltoluene	ND	
4-Methyl-2-pentanone	ND	
Acetone	ND	100
Acrylonitrile	ND	50
Benzene	ND	5.0
Bromobenzene	ND	5.0
Bromochloromethane	ND	5.0
Bromodichloromethane	ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	
Carbon disulfide	ND	
Carbon tetrachloride	ND	
Chlorobenzene	ND	· · · ·
	ND	
Chloroethane		
Chloroform	ND	•) ·
Chloromethane	ND	
Dibromochloromethane	NE	
Dibromomethane	ND	
Dichlorodifluoromethane	NC	
Ethylbenzene	ND	
Hexachlorobutadiene	NC	5.0
Isopropylbenzene	ND) 5.(
Methyl tert-butyl ether	NE) 5.(
internation output official		
Methylene chloride	NC NC	5.0

Qualifiers: ND/U - Not Dete

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



01020760

R31836

WorkOrder:

Lab Batch ID:

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Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

nalysis: ethod:	Volatile Organics by SW8260B	Method 826	0B			
	Method Blank					
JuniD:	L_010320B-609255	Units:	ug/L			
alysis Date:	03/20/2001 14:08	Analyst:	LT			

Analyte	Result	Rep Limi	
n-Propylbenzene	ND	5.0	
Naphthalene	ND	5.0	
sec-Butylbenzene	ND	5.0	
Styrene	ND	5.0	
tert-Bulylbenzene	ND	5.0	
Tetrachloroethene	ND	5.0	
Toluene	ND	5.0	
Trichloroethene	ND	5.0	
Trichlorofluoromethane	ND	5.0	
Vinyl acetate	ND	10	
Vinyl chloride	ND		
cis-1,2-Dichloroethene	ND	5.0	
cis-1,3-Dichloropropene	ND	5.0	
m,p-Xylene	ND	5.0	
o-Xylene	ND	5.0	
trans-1,2-Dichloroethene	ND	5.0	
trans-1,3-Dichloropropene	ND	5.0	
1,2-Dichloroethene (total)	ND	5.0	
Xylenes, Total	ND	5.0	
Surr: 1,2-Dichloroethane-d4	90.0	62-119	
Surr: 4-Bromofluorobenzene	96.0	78-12	
Surr: Toluene-d8	100.0	74-12	

Laboratory Control Sample (LCS)

RunID:	L_010320B-609254	Units:	ug/L
Analysis Date:	03/20/2001 13:10	Analyst:	LT

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
1,1-Dichloroethene	50	54	108	61	145
Benzene	50	51	102	76	127
Chlorobenzene	50	57	114	75	130
Toluene	50	56	112	76	125
Trichloroethene	50	58	116	71	120

	Matrix	Spike (MS) / Matrix S	pike Duplicate	e (MSD)	
	Sample Spiked:	01030282-02			
	RunID:	L_010320B-609257	Units:	ug/L	
	Analysis Date:	03/20/2001 16:32	Analyst:	LT	
Qualifiers:	ND/U - Not Detected at the Repo	rting Limit	MI - Matrix	Interference	
	B - Analyte detected in the assoc	iated Method Blank	D - Recove	ry Unreportable due to Dilution	
	J - Estimated value between MD	L and PQL	* - Recover	y Outside Advisable QC Limits	
	coveries for QC samples are correct a eported RPD may differ from the disp				3/30/01 2:30:21 PM



hlorobenzene

ichloroethene

Toluene

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

172

134

115

125

134

Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

nalysis: Volatile Organics by Method 8260B WorkOrder: 01020760 SW8260B ethod: Lab Batch ID: R31836 MS Result MSD RPD Analyte Sample MS MS % MSD Result MSD % RPD Low High 1 Spike Result Recovery Spike Recovery Limit Limit Limit Added Added 100 ND 1,1-Dichloroethene 250 250 250 230 92 8 14 38 enzene 490 250 750 104 250 730 96 8 11 66

270

250

280

108

100

112

250

250

250

270

260

270

108

104

108

0

4

4

13

13

14

67

59

61

ND

ND

ND

250

250

250

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



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HOUSTON LABORATORY 8980 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 (713) 660-0901

Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

nalysis: ethod:	Fluoride-IC E300							Order: Batch ID:	0102 R31	20760 137	_	
	Metho	d Blank			Sam	ples in A	nalytical Batch	1:				
ınID:	WET_010309O-594809	Units:	mg/L		Lab	Sample I	D	Client San	nple ID			
alysis Date:	03/09/2001 11:53	Analyst:	КМ			0760-016	-	MW-1				
					0102	0760-021	=	MW-3				
					0102	0760-031	=	MW-4				
	Analyte		Result F	Rep Limit		0760-04		MW-5				
Fluo	and the second sec	· ··· - · · · · · · · · · · · · · · · ·	ND	0.10		0760-07		MW-9				
						0760-091 0760-101		MW-11A MW-12				
						0760-11		MW-12 MW-13				
			Lab	oratory Con	trol Sample (L	_CS)		,				
	RuniD:		WET_0103	090-594810	Units: r	ng/L						
	Analysis	Date:	03/09/200			<m< td=""><td></td><td></td><td></td><td></td><td></td><td></td></m<>						
		Analy	/te	Spi	ike Result ded	Perce Recov		Upper Limit				
						+						
	Fluoride				10 9.1	<u>)</u>	91 90	110				
					oike Duplicate	(MSD)						
		le Spiked:	0102076	60-01								
	RunID	le Spiked: :	0102076 WET_010		Units:	mg/L KM						
	RunID	le Spiked:	0102076 WET_010	50-01 03090-594812		mg/L						
	RunID	le Spiked:): sis Date: Sample	0102076 WET_010 03/09/20 MS	50-01 03090-594812	2 Units: Analyst: MS %	mg/L KM MSD	MSD Result	MSD %	RPD	RPD	Low	High
	RuniC Analy:	le Spiked:): sis Date:	0102076 WET_010 03/09/20	60-01 0309O-594812 001 11:53	2 Units: Analyst:	mg/L KM MSD	MSD Result	MSD % Recovery	RPD	RPD Limit		Higt Lim
l 	RuniC Analy:	le Spiked: 9: sis Date: Sample Result	0102076 WET_010 03/09/26 MS Spike Added	60-01 0309O-594812 001 11:53 MS Result	2 Units: Analyst: MS % Recovery	mg/L KM MSD Spike Added		Recovery		Limit	Limit	L
	RuniC Analy:	le Spiked: 9: sis Date: Sample Result	0102076 WET_010 03/09/20 MS Spike	60-01 0309O-594812 001 11:53 MS Result	2 Units: Analyst: MS %	mg/L KM MSD Spike Added		Recovery	RPD	Limit	Limit	Lin
	RuniC Analy:	le Spiked: 9: sis Date: Sample Result	0102076 WET_010 03/09/26 MS Spike Added	60-01 0309O-594812 001 11:53 MS Result	2 Units: Analyst: MS % Recovery	mg/L KM MSD Spike Added		Recovery		Limit	Limit	Lin
	RuniC Analy:	le Spiked: 9: sis Date: Sample Result	0102076 WET_010 03/09/26 MS Spike Added	60-01 0309O-594812 001 11:53 MS Result	2 Units: Analyst: MS % Recovery	mg/L KM MSD Spike Added		Recovery		Limit	Limit	Lim
	RuniC Analy:	le Spiked: 9: sis Date: Sample Result	0102076 WET_010 03/09/26 MS Spike Added	60-01 0309O-594812 001 11:53 MS Result	2 Units: Analyst: MS % Recovery	mg/L KM MSD Spike Added		Recovery		Limit	Limit	Lim
	RuniC Analy:	le Spiked: 9: sis Date: Sample Result	0102076 WET_010 03/09/26 MS Spike Added	60-01 0309O-594812 001 11:53 MS Result	2 Units: Analyst: MS % Recovery	mg/L KM MSD Spike Added		Recovery		Limit	Limit	Lim
	RuniC Analy:	le Spiked: 9: sis Date: Sample Result	0102076 WET_010 03/09/26 MS Spike Added	60-01 0309O-594812 001 11:53 MS Result	2 Units: Analyst: MS % Recovery	mg/L KM MSD Spike Added		Recovery		Limit	Limit	Lim
	RuniC Analy:	le Spiked: 9: sis Date: Sample Result	0102076 WET_010 03/09/26 MS Spike Added	60-01 0309O-594812 001 11:53 MS Result	2 Units: Analyst: MS % Recovery	mg/L KM MSD Spike Added		Recovery		Limit	Limit	Lim
uoride	RuniD Analyte	le Spiked: b: sis Date: Sample Result	0102076 WET_010 03/09/20 MS Spike Added .3 10	50-01 0309O-594812 001 11:53 MS Result	2 Units: Analyst: MS % Recovery 9.7 83.8	mg/L KM Spike Added	9.7	Recovery		Limit	Limit	Lim
	RuniC Analy:	le Spiked: sis Date: Sample Result 1 1 1	0102076 WET_010 03/09/20 MS Spike Added .3 10	50-01 0309O-594812 001 11:53 MS Result	2 Units: Analyst: MS % Recovery 9.7 83.8	mg/L KM Spike Added 10	9.7	Recovery 84.0		Limit	Limit	Lim

rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

nalysis: ethod:	Nitrogen, Nitrate (A E300	s N)						Order: atch ID:	0102076 R31139	0
L	Met	hod Blank			Samp	les in Ar	alytical Batch	:		
unID: nalysis Date:	WET_010309P-594830 03/09/2001 11:53		mg/L KM		01020	ample IC)760-01F	<u>)</u>	<u>Client San</u> MW-1	nple ID	
	Analyte		Result Rep Limit		01020760-02F 01020760-03F 01020760-04F 01020760-07F			MW-3 MW-4 MW-5 MW-9		
Nitro	<u>igen, Nitrate (As N)</u>	I	<u>ND</u> 0.1	oj	01020 01020	0760-09F 0760-10F 0760-11F		MW-11A MW-12 MW-13		
	·····	·····	Laboratory	Control S	Sample (L	CS)				
l L	Runiŭ Analy:		VET_010309P-594 93/09/2001 11:53			ng/L (M				
ľ		Analyte		Spike Added	Result	Percer Recove		Upper Limit		
	Nitrogen	, Nitrate (As N)		10	9.7	·	97 90	110		
		Matrix S	pike (MS) / Mat	ix Spike I	Duplicate	(MSD)				
	Run	nple Spiked: ID: Iysis Date:	01020760-01 WET_010309P-59 03/09/2001 11:5		Units: Analyst:	mg/L KM				
	Analyte	Sample Result	MS MS R Spike Added		MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD RP Lim	
trogen, Nitrate	(As N)	4.3	10	14.7	104	10	14.7	104	0.173	20 76 1
Qualifiers:	ND/U - Not Detecte		in a line to		I - Matrix I					

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

nalysis: ethod:	Sulfate E300								Order: Batch ID:	01020760 R31141	
		Metho	od Blank			Samp	oles in Anal	ytical Batch	n:		· ·····
unID:	WET_01030	9Q-594871	Units:	mg/L		Lab S	Sample ID		Client Sam	npie ID	
alysis Date:	03/09/2001	11:53	Analyst:	KM			0760-01F		MW-1		
						0102	0760-02F		MW-3		
						01020760-03F			MW-4		
	· · · · · · · · · · · ·	nalyte		Result Rep I	imit	0102	0760-04F		MW-5		
Sull		andiyte		and the second of the a	0.20	0102	0760-07F		MW-9		
1941			· · ·	.091		0102	0760-09F		MW-11A		
						0102	0760-10F		MW-12		
						0102	0760-11F		MW-13		
		<u> </u>		Laborat	ory Contro	I Sample (L	. <u>CS)</u>				
		RunID:	V	WET_010309Q-	594873	Units: г	ng/L				
		Analysis	s Date: 0	03/09/2001 11	:53		Ś				
			Analyte	•	Spike Addec	Result	Percent Recovery	Lower Limit	Upper Limit		
		Sulfate				11	10	7 90	110		
		RunIC	le Spiked:): sis Date:	01020760-01 WET_0103090 03/09/2001 1	Q-594875	Units: Analyst:	mg/L KM				
		Analys	sis Date.	03/09/2001	11.00	Analyst.					
	Analyte		Sample		S Result	MS %		SD Result	MSD %	RPD RPD	Low High
			Result	Spike Added		Recovery	Spike Added		Recovery	Limit	Limit Lim
								···· ····	405	1 4 00 00	
ulfate	·······	Ì	210	200	420	103	200	420	105	1.30 20	80 12

Jualifiers:

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

halysis: ethod:	Fluoride-IC E300					WorkOrder: Lab Batch ID:	01020760 R31142
	Meth	od Blank		Sar	nples in Analytica	I Batch:	
inID: alysis Date:	WET_010310C-594894 03/10/2001 15:14	Units: Analyst:	mg/L KM	010	<u>3 Sample ID</u> 020760-06F 020760-08F 020760-17F	<u>Client Sar</u> MW-8 MW-10 MW-7	<u>nple ID</u>
Fluo	Analyte ride		Result Rep Lin				
	······		Laborator	Control Sample	(LCS)		· · · · · · · · · · · · · · · · · · ·
	RuniD: Analysi	s Date:	WET_010310C-594 03/10/2001 15:14		mg/L KM		
	Fluoride	Analy	te	Spike Resul Added 10		wer Upper imit Limit 90 110	
		Matrix	Spike (MS) / Mat	rix Spike Duplica	te (MSD)		
	Runi	ile Spiked:): sis Date:	01020760-06 WET_010310C-5 03/10/2001 15:		mg/L KM		
A	Analyte	Sample Result 0.6	Spike Added	Result MS % Recover 8.6 79.7	Added	Recovery	RPD RPD Low High Limit Limit Limit 4 0.775 20 80 12
1							
Qualifiers:	ND/U - Not Detected B - Analyte detected J - Estimated value	in the assoc	iated Method Bla	nk D - Recov	x Interference ery Unreportable d ery Outside Advisat		



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

Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

·			BJ Se	rvice, Hobb	s, NM				
nalysis: ethod:	Nitrogen, Nitrate (As E300	N}				WorkOrd Lab Batc		01020760 R31144	
	Meth	od Blank			Samples in Ana	lytical Batch:			
unID: nalysis Date:	WET_010310D-594953 03/10/2001 15:14	Units: mg/ Analyst: KM			Lab Sample ID 01020760-06F 01020760-08F 01020760-17F	MV	/-10	ple ID	
 Nitro	Analyte ogen, Nitrate (As N)	Res	ult Rep Lim ND 0.1						
			Laboratory	Control Sa	mple (LCS)				
	RunID: Analysi		_010310D-594 D/2001 15:14		•				
		Analyte		Added	Result Percent Recovery	l l	nit		
	Nitrogen,	Nitrate (As N)		10	10.2 10	90]	110		
		Matrix Spike	e (MS) / Matr	rix Spike Du	plicate (MSD)		. <u> </u>		
	Runit	D: WE	020760-06 T_010310D-59 10/2001 15:1		iits: mg/L ialyst: KM				
Α	Analyte	Sample M Result Spi Add	ke		S % MSD N covery Spike Added		SD % covery	RPD RPD Low Limit Limit	High Limi
trogen, Nitrate	(As N)	0.66	10	10.2	95.8 10	10.2	95.7	0.0627 20 76	12
Qualifiers:	ND/U - Not Detected B - Analyte detected J - Estimated value	in the associated	Method Blar	ık D-I	Matrix Interference Recovery Unreporta lecovery Outside A	able due to Dilutio			

		Quality	Control Report	HOU	ISTON, TEXAS 77054 (713) 660-0901
		Brow	n & Caldwell		
		BJ Ser	vice, Hobbs, NM		
nalysis: ethod:	Sulfate E300	······		WorkOrder: Lab Batch ID:	01020760 R31222
	Method		Samples in Analytica	I Batch:	
unID: nalysis Date:	WET_010312E-596732 03/12/2001 9:30	Units: mg/L Analyst: KM	<u>Lab Sample ID</u> 01020760-06F 01020760-08F 01020760-17F	<u>Client Sar</u> MW-8 MW-10 MW-7	nple ID
Sulfa	Analyte	Result Rep Limit	j		
	RunID: Analysis D	WET_010312E-5967	<u>Control Sample (LCS)</u> 33 Units: mg/L Analyst: KM		
	Sulfate	Analyte		ower Upper Limit Limit 90 110	
		<u>Matrix Spike (MS) / Matri</u>	x Spike Duplicate (MSD)		
	Sample RunID: Analysis	WET_010312E-596	6736 Units: mg/L Analyst: KM		
A		Sample MS MS Re Result Spike Added	esult MS % MSD MSD F Recovery Spike Added	Result MSD % Recovery	RPD RPD Low High Limit Limit Limit
lfate		240 200	450 105 200	460 106	5 0.776 20 80 120
Qualifiers:	ND/U - Not Detected at B - Analyte detected in	the Reporting Limit the associated Method Blank	MI - Matrix Interference D - Recovery Unreportable c	lue to Dilution	



Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

ethod:	Alkalinity, M2320 B	Bicarbonat	e							orkOrder: D Batch ID:	01020760 R31246
	<u></u>	Metho	d Blank			Sa	mples i	n Analyt	ical Ba	tch:	<u> </u>
unID: nalysis Dat		12K-597228 1 10:15 Analyte	Units: Analyst:	mg/L SN Result Rep L ND	imit 2.0	La 011 011 011 011 011 011 01	b Samp 020760- 020760- 020760- 020760- 020760- 020760- 020760- 020760- 020760-	016 ID -01F -02F -03F -04F -06F -06F -08F -08F		<u>Client Sa</u> MW-1 MW-3 MW-4 MW-5 MW-5 MW-8 MW-9 MW-10 MW-11A MW-12	mpie ID
				Laborate	ory Contro	ol Sample	(LCS)				<u> </u>
		Analysis Alkalinity,	Date: Analy Bicarbonate		Spike Adde 2	d 3.4 2	mg/L SN ilt Pe Re 4.2	ercent covery 104	Lower Limit		
					Sample I	Duplicate					
		Run	inal Sample ID: ysis Date:	: 01020760-4 WET_01031 03/12/2001	2K-597232	Units: Analy		g/L N			
				Analyte	· · · · ·]	Sample Result	DUP Result	RP	ď	RPD Limit	
					:						

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



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

Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

nalysis: ethod:	Alkalinity, Bicarbonat M2320 B	6		WorkOrder: Lab Batch ID:	01020760 R31246A
	Metho	d Blank	Samples in Analyti	cal Batch:	
unID: halysis Date:	WET_010312K-597228 03/12/2001 10:15	Units: mg/L Analyst: SN	<u>Lab Sample ID</u> 01020760-11F 01020760-17F	<u>Client Sa</u> MW-13 MW-7	mple ID
Alka	Analyte linity, Bicarbonate	Result R	ep Limit		
		Labo	ratory Control Sample (LCS)		
	RunID: Analysis	WET_01031 Date: 03/12/2001	5		
	Alkalinity, f	Analyte Bicarbonate	Spike Result Percent Added 23.4 24.2 104	Lower Upper Limit Limit 90 110	
			Sample Duplicate		
	Runi Analı		0312K-597246 Units: mg/L 001 10:15 Analyst: SN Sample DUP RP1		
	Alkal	linity, Bicarbonate	Result Result 131 131	Limit	
Qualifiers:	-	at the Reporting Limit in the associated Metho etween MDL and PQL	MI - Matrix Interference od Blank D - Recovery Unreportable * - Recovery Outside Advis		
		and a second			



Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

∋thod:	Alkalinity, Carbonate M2320 B			WorkOrder: Lab Batch ID:	01020760 R31248
	Metho	od Blank	Samples in Ana	lytical Batch:	
inlD:	WET_010312L-597328	Units: mg/L	Lab Sample ID	Client Sar	nple ID
alysis Date:	03/12/2001 10:15	Analyst: SN	01020760-01F	MW-1	
			01020760-02F	MW-3	
			01020760-03F	MW-4	
r -	Analida	Result Re	01020760-04F	MW-5	
	Analyte calinity, Carbonate	ND ND	2.0 01020760-06F	MW-8	
-	anniny, Carbonate		01020760-07F	MW-9	
			01020760-08F	MW-10	
			01020760-09F	MW-11A	
			01020760-10F	MW-12	
	Analysis	s Date: 03/12/2001	10:15 Analyst: SN		
		s Date: 03/12/2001 Analyte	Spike Result Percent	Lower Upper	
 	Analysis Alkalinity, 1	Analyte	Spike Result Percent	/ Limit Limit	
	[Analyte	Spike Result Percent Added Recovery	/ Limit Limit	
	Alkalinity,	Analyte Carbonate	Spike Result Percent Added 23.4 24.2 10 Sample Duplicate	/ Limit Limit	
	Alkalinity,	Analyte Carbonate inal Sample: 0102076	Spike Result Percent Added 23.4 24.2 10 Sample Duplicate	/ Limit Limit	
	Alkalinity, Origi Runi	Analyte Carbonate inal Sample: 0102076 ID: WET_010	Spike Result Percent Added 23.4 24.2 10 Sample Duplicate	/ Limit Limit	
	Alkalinity, Origi Runi	Analyte Carbonate inal Sample: 0102076 ID: WET_010	Spike Result Percent Added 23.4 24.2 10 Sample Duplicate 0-01 0312L-597332 Units: mg/L	/ Limit Limit	
	Alkalinity, Origi Runi	Analyte Carbonate inal Sample: 0102076 ID: WET_010	Spike Added Result Recovery 23.4 24.2 23.4 24.2 30-01 0312L-597332 Units: mg/L 001 10:15 Analyst: SN	V Limit Limit	
	Alkalinity, Origi Runi Anal	Analyte Carbonate inal Sample: 0102076 ID: WET_010 lysis Date: 03/12/20	Spike AddedResult RecoveryPercent Recovery23.424.210Sample Duplicate50-010312L-597332Units: Analyst:mg/L001 10:15Analyst: SN	v Limit Limit	

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits



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

Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

nalysis: lethod:	Alkalinity, Carbonate M2320 B				WorkOrder: Lab Batch ID:	01020760 R31248A
	Method Bla	<u>nk</u>	Sa	mples in Analy	tical Batch:	
unID: malysis Date:	WET_010312L-597328 Uni 03/12/2001 10:15 Ana	is: mg/L Ilyst: SN	01	<u>b Sample ID</u> 020760-11F 020760-17F	<u>Client San</u> MW-13 MW-7	nple ID
Alka	Analyte alinity, Carbonate	Result Rep Lim	it O			
	<u></u>	Laboratory	Control Sample	(LCS)	<u> </u>	
	RunID: Analysis Date:	WET_010312L-597 03/12/2001 10:15		mg/L SN		
5		Analyte	Spike Resi Added	Recovery	Lower Upper Limit Limit	
	Alkalinity, Carbo		23.4 2 ample Duplicate	4.2 104	90 110	
 	Analysis D	ate: 03/12/2001 10 Analyte	0:15 Analy Sample Result	rst: SN DUP RF Result	PD RPD Limit	
	Alkalinity,	Carbonate	ND	ND	0 20	
-						



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

Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

halysis: ethod:	Chloride, Total E325.3			BJ Service, H				Order: atch ID:	010207 R31909		
	Metho	d Blank			Samp	les in A	nalytical Batch	;			
unID:	WET_010320U-610201	Units:	mg/L		l ah 9	ample I	n	Client Sam	nia ID		
halysis Date:	03/20/2001 11:30	Analyst:	cv			760-01F		MW-1			
		, ,)760-02F		MW-3			
)760-03F		MW-4			
,		· · r	Result	Jan Limit	01020)760-04F	=	MW-5			
	Analyte		ND	1.0	01020)760-06F	=	MW-8			
		··-·· ·- ·-		1.01	01020)760-07F	-	MW-9			
					01020	0760-08F	=	MW-10			
-)760-09 F		MW-11A			
						0760-10		MW-12			
					01020	0760-111	=	MW-13			
<u> </u>			Lab	oratory Contro	I Sample (L	CS)		<u> </u>			
	RunID:		WET_0103	20U-610203	Units: n	ng/L					
	Analysis	Date:	03/20/200	1 11:30	Analyst: C	v					
	(· · ·			0			······································	.			
		Analyte	e	Spike Addeo		Perce Recov		Upper Limit			
-	Chloride					·	101 90	110			
	Chionae			"	10		101 90	110			
		Matrix	Snike (MS	5) / Matrix Spik	e Dunlicate						<u> </u>
					e Dupicale	10001					
		le Spiked:	010207								
	RunID			0320U-610205	Units:	mg/L					
	Analys	sis Date:	03/20/20	001 11:30	Analyst:	CV					
	Analyte	Sample	MS	MS Result	MS %	MSD	MSD Result	MSD %	RPD RI	D Low	High
		Result	Spike Added		Recovery	Spike Added		Recovery	Lii	mit Limi	Lim
											_
Chloride		180	0 250	431	99.9	250	431	99.9	0	20 8	5 11
Qualificrat	ND/LL. Not Dotooted	at the Pone	tina Limit		MI - Matrix 1	ntorforo-					
Qualifiers:	ND/U - Not Detected B - Analyte detected		-		MI - Matrix I			lution			
-	J - Estimated value b						ortable due to Di Advisable QC I				
			anu i u(L	I. Due to signific				Lining			



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

halysis: ethod:	Chloride, Total E325.3							Order: Batch ID:	01020760 R31909A		
	Meth	od Blank			Samp	les in A	nalytical Batch	ı:		·	
unID:	WET_010320U-610201	Units:	mg/L		Lab S	ample I	D	<u>Client Sar</u>	npie ID		
halysis Date:	03/20/2001 11:30	Analyst:	cv)760-12E		MW-14			
					01020)760-17F	-	MW-7			
Chk	Analyte	· · · · · · · · · · · · · · · · · · ·	Result R	ep Limit 1.0							
			Labo	ratory Contro	ol Sample (L	CS)					
ſ	RunID:		WET_01032	0U-610203	Units: n	ng/L					
	Analysi		03/20/2001			SV SV					
1											
	· · · · · · · · · · · · · · · · · · ·	Analyt	e	Spike	Result	Perce	nt Lower	Upper			
				Adde		Recov		Limit			
	Chloride			1	09 110		101 90	110			
		Matrix	Spike (MS)	/ Matrix Spil	e Duplicate	(MSD)					
	Samp	le Spiked:	0102076	0-12							
	Runif		WET_010	320U-610218	Units:	mg/L					
	Analy	sis Date:	03/20/20	01 11:30	Analyst:	CV					
,	Analyte	Sample	MS	MS Result	MS %	MSD	MSD Result	MSD %	RPD RPD		High
		Result	Spike Added		Recovery	Spike Added		Recovery	Limit	Limit	Limit
hloride		33	500	823	7 99.9	500	827	99.9	0 20	0 85	11
			- <u> </u>				·		·		
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1											
-											
Qualifiers:	ND/U - Not Detected	at the Reno	rting Limit		MI - Matrix I	nterferer). 100				
	B - Analyte detected			od Blank			ortable due to D	ilution			

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

nalysis: ethod:	Hardness, Total (Titr E130.2	imetric, ED1	ГА)					Order: atch ID:	01020760 R32026		
	Meth	od Blank		<u> </u>	Sam	oles in Ar	alytical Batch	:	<u> </u>		
unID:	WET_010321O-612335	Units:	mg/L		Lab S	Sample IC)	Client San	iple ID		
halysis Date:	03/21/2001 13:30	Analyst:	CV			0760-01E	-	MW-1			
					0102	0760-02E		MW-3			
		•			0102	0760-03E		MW-4			
	Analyte		Result Rep I	imit	0102	0760-04E		MW-5			
Har	dness (As CaCO3)		ND	5.0		0760-06E		MW-8			
						0760-07E		MW-9			
						0760-08E		MW-10			
						0760-09E		MW-11A			
						0760-10E		MW-12			
					0102	0760-11E		MW-13			
<u></u>			Laborat	ory Contr	ol Sample (L	CS)					
	RuniD:		WET_0103210-	612338	Units: r	ng/L					
ļ	Analys	is Date:	03/21/2001 13	:30	Analyst: (DV V					
	······································	Analy	4_	C.l.	- D	0					
		Anary	le	Spik Adde		Percer Recove		Upper Limit			
	Hardness	(As CaCO3	<u>}</u>		153 150	_/	97 94	108			
	,	(,	I		-1	0,1 0,1	,			
		<u>Matrix</u>	Spike (MS) / N	latrix Spl	ke Duplicate	(MSD)					
	Sam	ole Spiked:	01020760-0	1							
	Runi		WET_010321		Units:	mg/L					
•	Analy	sis Date:	03/21/2001	3:30	Analyst:	CV					
	Analyte	Sample	MS M	S Result	MS %	MSD	MSD Result	MSD %	RPD RPD) Low	High
	•	Result	Spike		Recovery	Spike		Recovery	Limi		
			Added			Added					l
ardness (As Ca	aCO3)	31	0 500	82	0 102	500	800	98.0	3.92 2	0 81	11
!											
Qualifiers:	ND/U - Not Detected				MI - Matrix I	nterferen	ce				
1	B - Analyte detected	I in the assoc	ciated Method E	ilank	D - Recover	y Unrepo	rtable due to D	ilution			



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

Quality Control Report

Brown & Caldwell

•			BJ	Service, H	obbs, NM					
nalysis: ethod:	Hardness, Total (Til E130.2	rimetric, EDT/	A)					Order: Batch ID:	01020760 R32026A	
	Met	nod Blank			Sam	oles in A	nalytical Batc	n:		
unID:	WET_010321O-612335	Units:	mg/L		Lab S	Sample I	D	<u>Client San</u>	nple ID	
nalysis Date:	03/21/2001 13:30	Analyst:	CV		0102	0760-17E	E	MW-7		
	Analyte		Result Rep	Limit						
Har	dness (As CaCO3)		ND	5.0	I Sample (L	(2)				
	RuniD		VET_0103210 03/21/2001 13			ng/L				
ł	Analys	sis Date: (372 112001 13		Analyst: 0	SV .				
i i										
•	(Analyte	•	Spike		Perce		Upper		
				Addec		Recov		Limit		
•	Hardnes	s (As CaCO3)		1	53 150		97 94	108		
•										
		Matrix S	Spike (MS) / I	Matrix Spik	e Duplicate	(MSD)			·=·	
-	-									
		ple Spiked:	01020760-1							
	Run	ysis Date:	WET_010321 03/21/2001		Units: Analyst:	mg/L CV				
	,	yolo Date.	00/2 //2001	10.00	Analyst.	0,				
,	Analyte	Sample Result	MS M Spike Added	S Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD RPD Limit	
ardness (As Ca	aC03)	590	1250	1800	98.0	1250	1800	98.0	0 20	81 11
			L							
-										
-										
-										
6										
-										

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

Sample Receipt Checklist And Chain of Custody

B880 Interchange Drive, Houston, TX 77054 Cit 11 4964	other []	48hr 🗋 Standard 🔲		•	Requested TAT	a	Client/Constitut Acatusks:	<i>М</i> И-13	4		7		2		Mustrls	h1-m14	MUJ-12	SAMPLE ID	Cit Repair	sheeti	Project Number: 12532	Project Name: 13 JSWCS	Client Contact: R.X. Refrore		Chent Name Brown dCALC	And and	1000
Houston, TX	5. Relinquished by	3. Actinquished by:	1. Relinquished by Sampler	Stand	Special Reporting Requirements			3-3-01	3.5.01	3.8.01	3-54.01	3.8.01	3.8.01	10.5.5	12.8.51	28-01		DATE	د <i>د</i> ار	-				ccs C#	d childwert	An	X
	by:	by:	by Sampler.	Sundard QC	g Requirements			DEIM	13:45	chitl	11:50	مدزاا	10:50	stel	られら	5:12	ct.91	TIME comp						(7)137853554		Analysis Request &	
(713) 660-0901 (61()) - 57			- Jon	Level 3 QC	Fax Results		Laborat	N	r V	Ŀ	Ł	Ŵ	رير. الري	L'A	رد ا	ы	5	grab ≥	=wa =slu			=soi =oti			matri		SPL, J
				D	Ø	,	Laboratory remarks:	PGN	PCV	BUV	BIN	8,60		P.K.V	Phy	BGU	0,6,2	G=	plas glas	55	V=	=via	1	glass	matrix bottle	Chain of Custody Rec	Inc.
	ante	date	date 5-01	Level 4 QC	Raw Data			(ch/	Ch1	1 40 1	Ch I	(ch!	140)	1421	1 40 1	I CH	1 51	8=	l lit 8oz HC	1	б=	160:			size p	istody .	
500 Ambassador Caffery Parkway, Scott, LA 70583	time	lime	time?	0		23		11 21	91 21	5	911 21	91 2	91 C(91 L	4	12 4	<u>91 C</u>	3=	H2S	504	0	=oti	ner:		pres.	Record	
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affery P	6. Receive	4. Received by	2. Received by:			n		>	52		<u>حج</u>	يمنع .	>~	5-			×	╠┅┈	H.	i		1			49	~	SPL Word
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(518) 237-4775	319	-		(N)	PM sources					>-< 	(>.<		<u></u>	5~			× ><	17 m	いい	No	5,5 <u>6.14</u> 9,5	いし		125		page 1	100
87-4775	10/				je ment													G	· <i><i>the</i></i>	nc	125	5/41 5	140	75/1		0	3 27 97

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 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901 59-H Les Drive, Trrusse Cit MI 49404 (614) 047-5777 	Other []	48hr 🗋 Standard 🕅	24hr D 72hr D	در رونه باندر ا	Requested TAT												MW-11A	SAMPLE ID	えい	Project Location: 7-10 3135	Project Number: 12:532	Project Name: BJSUCS	Chent Contact: NCK R		Circut Name: Brown the	Contraction of the second seco	82821
Houston, TX 77 se Cincold 4	5. Relinquished by:	3. Relinquished by:	1. Relinquished by Sampler	Standard QC	Special Reporting Requirements												3-5-1 15	DATE T	Remond	-			C1.01 Ch) のづけキィーツ	ゆくれんいっしし	Analy	
TX 77054 (713) MI 40044 (610			Sampler. J	8 2	cquirements												15:15	TIME comp						6-713)759-5669		Analysis Request & Chain of Custody Reco	
(713) 660-0901 (61(^0)7-5777			Ň	Level 3 QC	Fax Results													derg qe						595		iest &	SF
				Ŕ													S		=wa =slu	iter idge		=soi ≠ot	l her:		matrix bottle	Chair	SPL, Inc
				D		y 101											261	P= G=	plas glas	stic ss	A V	=am =via	iber il	glas	bottle	1 of C	nc.
	date	date	1.2. 2 and	Level 4 QC	Raw Data	·											ch l		l lit 8oz		4=4 6=		40 = z	vial	size	ustody	
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or Ca			ک ا		letection												2	ß	72- Tun	ج – با ج – با	-60	.)	2/5 2/ 5				- 5
ffery P.		. Received by	. Received by		Limits (s											20.33 -07-07-0		Ţ	ph	O	20	-{}.	کار د	,	12		SPL Wonkonder Nev
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(318) 237-4775	1010	-		M				mana	e: societ di	-	200 a.m. 21	173 179 189 18					>	13		101 (1)	ر ۲۷ ۲	, r [.		ile da marinada		20	10082
	K	- Inde and some of the	*	 	Ļ	ter ter ter ter ter ter ter ter ter ter		2.496.2.49	ris (17 4	1.000 N 45.44	1963 - 1964 - 1964 - 1965 - 19				International States		- 22 A	IN G	ret. The	1110 En 13	510	1/17	Va 5 F	71			

1 8880 Interchange Drive, Houston, 1 Big-Hubes Dim Transe Cimeration	Other) (48hr 🗋 Standard 🕅	24hr () 72hr ()		Requested TAT	SKonder (H. J. Charl	Chent/Consultant Remarks:			MW-7	resp gran	Diply core	CICTM	g. riw	L-MW	SAMPLE ID	Imaire To: Mich Maxie	Project Location: 11255	Project Number 12-632	Project Name: 1555UCS	Client Contact: Mick & Why O.	Address Phone: 14/5 LOW :55 \$250	Chent Hanne: Brown & C.A.		800.0
TX 77054	5. Kelinquished by:		3. Relinquished by:	1. Relinquished by Sampler	Standard QC	Special Reporting Requirements					3, 900 5:50	3-7-01	3- 7-01	3.8.01 9:30	C1:5 10.12	5.2.0 (5.3.5)	DATE TIME	2 c Å				المهر (-7250 (711)759-	Carlwer	Analysis	
(713) 660-0901 (61(1017-57)				cr. MM		ments Fax Results	-, ,	Laborato			3	٤	3			r V	🗧 qeuð durco	=wa =slu	lter 1dge	S= 2 O	=soi =ot		0996	natrix	Analysis Request & Chai	SPL, Inc.
			date	date (-v)	Level 4 QC [M Raw Data (Laboratory remarks:	4		9,6- 1 1,2	V 40)	(1 V)	P(C,V 1) 4 1,2	8,62 1,42 1,2	1 ch A	G= 1= 8= 1=	8oz HC	ss ter 4	V = 4 $4 = 4$ $16 = 2$	=via .oz 160 =HN	40= z NO3			Chain of Custody Rec	nc.
Ambassador Cal				ume /5.2		Special Detection Limits (specify):				3	У	×	, , , ,	13 1		2	アント	umb UC- TE	- 87. X: 8	f Co ม (เว -c ม	J			S.	ecord	S
500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775	Manne I		4. Received by:	2. Received by:		Limits (specify):	CV LOIL				× ×	. >+;	* *	XXX	V V V	5.			- ۲۵ ۵۱ - ۲۵ ۱۱-۲۱	$\overline{\alpha}$	~	-15 215	L .	Request	01020760	SPL Wartanker Na
ott, LA 70583 (31)	C UUU			(M	Temp: A	Intad?			3-4 			× *			30 C	-FA 		0-71 1 F. 10 3315	~	rd m rm rm rm	2	Requested Analysis	$(\mathcal{O} \cup \mathcal{O})$	
8) 237-4775			-	net lant 4 miles	M				-		.><			5<			13 15 15	1'C) رط ترزيک	-1210	6	4 1 ¹ 114	7/1	17	1 01 1	100821



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

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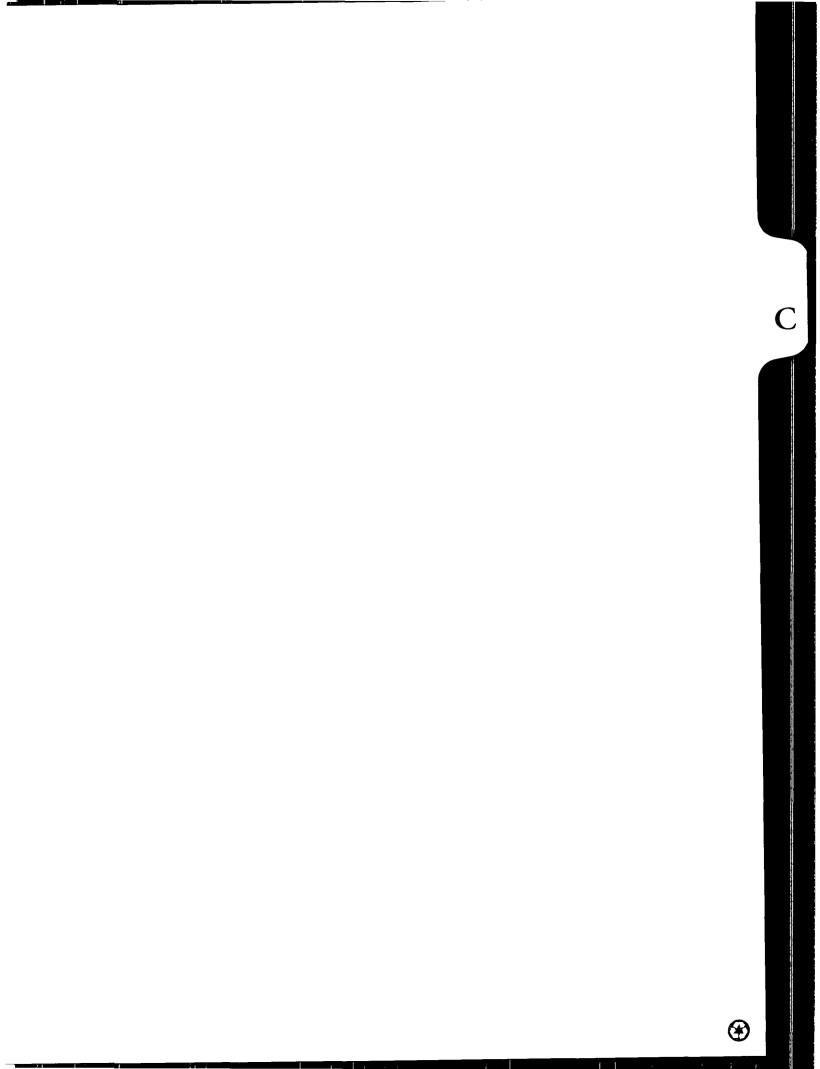
ł

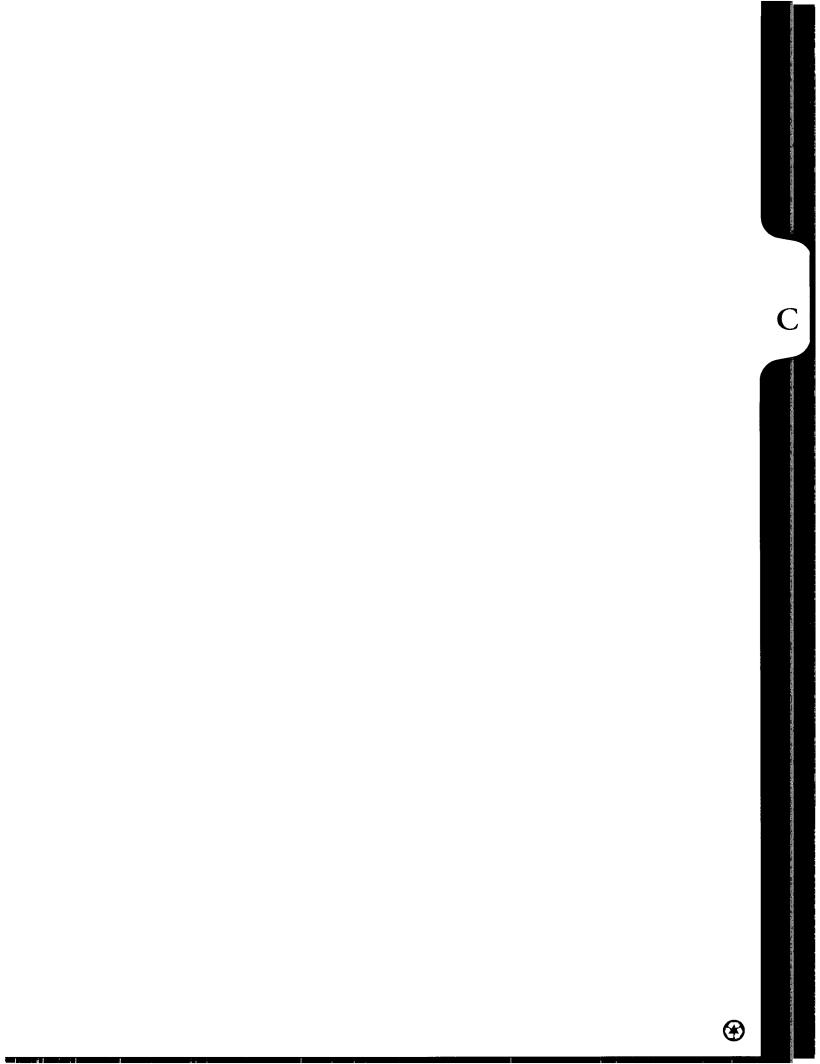
Sample Receipt Checklist

Workorder: 01020760		Received By:	DS	
Date and Time Received: 3/10/01 10:00:00 AM		Carrier name	FedEx	
Temperature: 2		Chilled by:	Water Ice	
1. Shipping container/cooler in good condition	?Yes 🗸	No 🗌 Not	Present	
2. Custody seals intact on shippping container	r/cooler? Yes	No 🗌 No	t Present 🔽	
3. Custody seals intact on sample bottles?	Yes 🗌	No 🗌 No	t 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' Sample was received but not listed on the cha Aslo, the laboratory did not receive sample fo	ain of custody.	No 🗔		
7. Samples in proper container/bottle?	Yes 🔽	Νο		
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 comp	liance? Yes 🗹	No [_]		
12. Water - VOA vials have zero headspace?	Yes 🔽	No 🗌 No	t Applicable	
13. Water - pH acceptable upon receipt?	Yes 🗹	No 🗌 No	ot Applicable	
SPL Representative: Wyatt, Neaundra	Contact Date	& Time: 3/9/01 10:0	09:00 AM	

Client Name Conta	icted: Tim Jenkins
Non Conformance Issues:	Sample was received but not listed on the chain of custody. Aslo, the laboratory did not receive sample for MW-7.
	Logged in samples on hold until further notice. Spoke to Tim Jenkins when he called about Trip Blank. Tim said that MW- 7 and COC for Trip Blank were be shipped for delivery on March 10, 2001. Received sample on March 10, 2001.







APPENDIX C

Groundwater Sampling Forms

P:\Wp\BJSERV\12832\077r.doc "Use or disclosure of data contained on this sheet is subject to the restriction specified at the beginning of this document."

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GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MV -1

	ECT INFO						-	<u>,</u>	21-2		
	lumber: <u>7283</u> 3354					Date:		Rivert	Time: 12:30		
Client: Project I	ocation:	1-1-5				Personnel: Weather:	Loudy a	Loul			
2. WELL											
		<u>}inchi</u>			C D Stainle	ess 🛛 Galv. St	eel 🛛 Teflon®	Other			
)iameter:		1	4				Other:			
	oth of Well: 6								ther:		
	Static Water:	e	feet	From: 🖞 To	p of Well Ca	sing (TOC)	Top of Protect	ive Casing 🛛 O	ither:		
Depth to Product:feet From:											
Length of Water Column: 3 5 feet Well Volume: 7 0 gal Screened Interval (from GS): Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft											
3. PURC	SE DATA	<u>المعا</u> ر									
Purge M	🖞 Bailer	, Size:	C Bladd	er Pump 🖾 2"	Submersible	Pump 🖾 4" S	Submersible Pur	np			
	: Pump/Baile)	D Stainle				mp 🛛 Other:			Equipment Model(s)		
		Dedica Dedica	ited 🗆 Prep hvlene 🗆	pared Off-Site	Field Clear Teflon®	aned Dispo	y Lun	1. <u>/ Co</u>	NS~ 11-22		
Materials: Rope/Tubing Delycethylene Delypropylene Teflon® A Other: <u>NYLim</u> Dedicated Depared Off-Site Delicated Disposable 2.											
Was wel	I purged dry?	Ø^.Yes	🗆 No		g Rate:	gal	/min				
Time	Cum. Gallons Removed	рН	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments		
17:25	1.sl	8.27	17.1	99.4 M	86	6:58	59.5				
ļ											
											
4. SAM	LING DA	TA						Geoc	hemical Analyses		
Method(s): Deristaltio	ze: 〔 c Pump □ [Bladder P nertial Lift P	omp 🖾 2" Su omp 🗆 Other:	bmersible Pu	imp 🛄 4" Subr	nersible Pump	Ferro	us Iron: mg/L		
Material	s: Pump/Bailer		ess DAPV	C Teflon pared Off-Site	O Other:_	aned ADisp	osablo	DO:	mg/L		
Material	s: Tubing/Rope	D Polyel	hylene 🖸	Polypropylene	C Teflon®	D Other: A	sylan.	Niitrat			
1	Water at Time			epared Off-Site		leaned 🤀Dis red? 🗆 Yes	posable	Nitrat			
	10: MW	•	Sample 1	Time:	<u>'\J</u>	# of Contain	• (Sulfa	te: mg/L		
	e Sample Colle		🗆 Yes 🖵	No ID:				Alkali	nity: mg/L		
5. COM	MENTS	Insi	fific	cileut .	NATER	the care	utu.	DUNG LA	ith Rumit		
Coli	ected 5	arch	Same	~ P	Hh de	50-50	ble part	20131 41	- <u></u>		
Noto: Instude	comments such a		U	•		1					
Note: Include	comments such a			presence of NA	NFL, UT OTHER	items not on the	tield data shee				
							190				

Signature

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GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MN-3

1	ECT INFO			her 016	*	Date:	ار. چ	······································	Time: //)		
Client:	10001 <u>1-11</u>	रं ज				Personnel	PRIAN ,	Runes	nine. <u></u>		
Project L	137-30 ocation: 14.4	264	<u> </u>			Weather:	Lordin	Cont	Time: // / つ		
2. WELL											
	Diameter:	, inch		Type: D PV	/C D Stainle		eel 🗋 Teflon®	D Other:			
·	Diameter:							Other: Other:			
	pth of Well:								ther:		
	Static Water: J			······································					ther:		
	Depth to Product:feet From:										
Length of Water Column: (4)											
3. PURC	GE DATA	ţ.)									
[~	agair ann					Submersible Pur		Equipment Model(s)		
Material	Materials: Pump/Bailer Dedicated Prepared Off-Site Deield Cleaned Disposable										
Materials: Rope/Tubing Delyethylene Delypropylene Define double d											
Was we	Was well purged dry?										
Time	Cum. Gallons Removed	pН	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments		
11:15	risk	7.51	15.8	116	137	5.56	7.9				
					<u> </u>	+					
								0			
4. SAIVII	PLING DA [¬] (s): ☐ Peristaltic		D Bladder P	umn 🗆 2" Su	ibmersible Pu	mn 🗆 4'' Subr	nersible Pumo		<u>hemical Analyses</u>		
Method	s): D Peristaltic			unp a outer	·			Ferro	us Iron: mg/L		
Material	s: Pump/Bailer	Dedic Dedic		pared Off-Site		aned D Disp		DO:	mg/L		
Material	s: Tubing/Roge					aned □ Dis		Nitrat	e: mg/L		
Depth to	o Water at Time					ed? 🗆 Yes					
	ID: MLS		Sample T	"ime://.	20	# of Contair	11	Sulfa	te: mg/L		
	te Sample Colle		u Yes 🖞	No ID:			•	Alkal	inity:mg/L		
5. COM	MENTS	FUSU	FIF. V	lert	41251	1 +0	Bucer	w.th	la una		
514	ected g	conab	gar	A1.4 . 1.).+/	ر کارکی	Ender E	26.041			
Note: Include	comments such a	s well cond	lition, odor,	presence of N	APL, or other	items not on the	field data shee	t.			
FORM GW	-1 (Rev 6/8/99 - w	ah)					Signature		2		

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: Mw-u

1. PROJECT INFORMATION Project Number: 1.5-32 Task Nur Client: 1.5-5-0-5- Project Location: 1.5-5-5	nber: <u>ə t (ə</u>	Date: Personnel: Weather: <u>b</u>	Derin	Run Ro	Time:						
2. WELL DATA Casing Diameter:											
Purge Method: Bailer, Size: 1 Blad Purge Method: Centrifugal Pump Peris Materials: Pump/Bailer Stainless Priv Dedicated Priv Dedicated Priv Materials: Cope/Tubing Polyethylene Dedicated Priv Was well purged dry? Ves No	der Pump	aned D Dispo A Other: eaned D Dispo Disponentiation of the second D Disponentiation of the second disponentiation of	psable y(posable //min	1. <u>inlo</u> 2	Equipment Model(s)						
Time Calling pH Temp <u>Removed</u> pH Temp <u>13:40</u> 2 7.51 /6.5	Cond. URP -//35/1/2 94	Oxygen G. G. V	Turbidity 57.2	Other:	Comments						
Materials: Tubing/Rope Delyethylene D Depth to Water at Time of Sampling: Sample ID: ハッディ Sample Duplicate Sample Collected? ロ Yes D	Arright Control C Other: cpared Off-Site Field Cle Polypropylene Teflon® Prepared Off-Site Field Cle Field Filter Field Filter Time: 3.444 Z ^A No ID:	eaned Choisp De Other: <u>A</u> leaned Dis red? D Yes # of Contain	osable Jylum posable D No ners: / 0	Ferro DO: Nitrat Sulfa Alkali	te:mg/L inity:mg/L						
	NET GIRTH	th a'	5,005,351	" perices	<u>19 11.74</u>						

Signature

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-S

Project I Client: Project I	IECT INFO Number: リータ パンサミル .ocation: ムリン	37- 1C3		ber: <u>0[b</u>		Date: <u>}</u> Personnel: _ Weather: _ <	5- Ul Deran Loudy	Rains	Time: 			
Screen I Total De Depth to Depth to	Casing Diameter: inches Type: IPVC Stainless Galv. Steel Teflon® Other:											
Purge N Material Material	GE DATA ethod: Bailer centr s: Pump/Bailer s: Rode/Tubing	C Stainle C Dedic C Polyet D Dedic	ess @PV(ated D Prej hylene D	C D Teflon@ Dared Off-Site Polypropylene epared Off-Site	 Other: Field Cle Teflon® Field Cl 		osable		<u>Equipment Model(s)</u> いろん (ノース)と			
Time	Cum. Gallons Removed	рН 7С)	Temp	Spec. Cond. 2.733	ORP	Dissolved Oxygen	Turbidity	Other:	Comments			
Method Material Materia Depth to Sample Duplica 5. COM	s: Pump/Bailer s: Tubing/Rope o Water at Time ID: <u>パカ</u> ねうご e Sample Colle MENTS	ze: Pump Stainl Dedic Polye Dedic of Sampl cted?	Inertial Lift P ess (APV ated D Pre thylene D ated Pr ing: Sample 1 D Yes Col F	Pump □ Other C □ Teflon(pared Off-Site Polypropylene epared Off-Site "ime:	B Other: Field Cle Field Cle Field C Field Filter S S S S S S S S S S S S S	eaned Disp deaned Disp leaned Disp red? Ves # of Contain	osable YLam posable ners: 10 VCLL +	Ferro DO: Nitrat Sulfa Alkali	te: mg/L			
L							India dala shee					

Signature

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-7

1 PRO	JECT INFO	RMAT	ION								
	Number: 125-1			bor all	,	Date: 3.	5-01		Time: 1247		
Client	BT SU	C.S	I ASK NUM	bei. <u>v.</u>		Date.	DAVIN	Reviews	1 ane		
Broject I	ocation:	550				Weather:	Lowely	- C (1) (
2. WELL											
· · · · · · · · · · · · · · · · · · ·	Diameter:	7	es					Other:			
	Diameter:			Type: Over	/C 🖸 Stainle	ess 🛛 Galv. Sl	eel 🛛 Teflon®	Other:			
	pth of Well:								ther:		
Depth to	Static Water:	5.27	feet	From: 🖬 To	op of Well Ca	sing (TOC)	Top of Protect	ive Casing 🗅 O	ther:		
Depth to Product: feet From:											
Length of Water Column: 3 2 feet Well Volume: 2 5 gal Screened Interval (from GS):											
3 PUR	GE DATA								gava		
	🖄 Bailer	, Size: /	v _	er Pump 🖸 2'	' Submersible	Pump Di4"s	Submersible Pur	np			
Purge iv	ietnoa: 🗆 Centr	nagari ang	မျင့်။မေ						Equipment Model(s)		
Material	s: Pump/Bailer	🛛 Dedica	ated 🕻 Prep		Field Clea	aned Dispo		1. 1/2	Equipment Model(s)		
Materials: Robe/Tubing Polyethylene Polypropylene Teflon® & Other: 127 Lan											
	Waterials: Bope/Tubing Dedicated Prepared Off-Site Disposable 2 Was well purged dry? Yes D No Pumping Rate:gal/min										
		ya res			ng Rate:		/min				
Time	Cum. Gallons Removed	рH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments		
12:45	1.06	7.14	15.9	2.174	164	5.06	26.6	. *			
	<u> </u>			<u> </u>							
	<u> </u>				ļ			······································			
	 	 	<u> </u>	<u> </u>							
4. SAM	PLING DA	TA , i						Geoc	hemical Analyses		
Method	(a): A Bailer, Siz	ze:				mp 🖸 4" Subr	nersible Pump				
1		-	Inertial Lift F ess 🖸 PV	Pump 🗆 Other:	B D Other:			rerro	us Iron: mg/L		
Materia	Is: Pump/Bailer	🗆 Dedic	ated 🛯 Pre	pared Off-Site	G Field Cle	aned 🖬 Disp		DO:	mg/L		
Materia	Is: Tubing/Rope	Polye	thylene 🖸 ated 🖾 Pr	Polypropylene epared Off-Site	e 🛛 Teflon® e 🗳 Field Cl	leaned Dis	posable	Nitrat	e: mg/L		
	o Water at Time	of Sampl				red? 🗅 Yes	11/	Sulfal	te: mg/L		
Sample	10:14h3-		Sample 1	rime: 10'	<u></u>	# of Contain	ners:				
Duplica	te Sample Colle	cted?	□ Yes	No ID:		-		Alkali	nity: mg/L		
5. COM	IMENTS	incl	しっとい	YPA	prick	1.5L.T	1-5 DU!	cet c	orcerent		
		م به را	0 5.2 5		5 - 1/ (<u>, , , ,</u> ,			
		· · / · · · · ·	54			••••••••••••••••••••••••••••••••••••••					
Note: Include	e comments such a	as well cond	lition, odor,	presence of N	APL, or other	items not on the	e field data shee	t	·····		
							M.	h-			
FORM GW	/-1 (Rev 6/8/99 - w	(ah)					Signature				

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-8

1 PRO	IECT INFO	RMAT	ION									
Project	Number: 12 5-2	32.	Task Num	her oll	2	Date: 3 ·	5-01	٦	Time: G'us			
Client:	37 500	13				Personnel	DE-AN.	Raile	Fime: <u><u>G</u>² <u>J</u> S</u>			
Project L	ocation: 1.1 %	بور				Weather:	ELoudy	160il				
2. WELL				7								
Casing [Diameter:	inch	es					Other:				
Screen		inch						D Other:				
	pth of Well: <u>62</u>							ive Casing 🔲 O				
Depth to	Static Water:	5-11	feet		· · · · · · · · · · · · · · · · · · ·				ther:			
	Depth to Product:feet From:											
Length of Water Column: <u>(+'-')</u> feet Well Volume: <u>3 · 7</u> gal Screened Interval (from GS); Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft												
	Apailor	Size:		er Pumo Di 2'	Submersible		Submersible Pur	nn				
Purge M	lethod: Centri	fugal Pump			nertial Lift Pun	np 🖸 Other:		ייי 	Equipment Model(s)			
Material	Materials: Rump (Goilor D Stainless D RVC D Teflon® D Other:											
Motorial	Materials: Bac/Tubing Delyethylene Delypropylene Deflon® 2 Other: N 140											
Dedicated Departed Off-Site Deficit Cleaned Disposable 2.												
Was we	Was well purged dry?											
Time	Cum. Gallons Removed	рН	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments			
5:15	1.0L	7.52	15.5	169 m	166	5.50	2/18					
			·			1						
				<u> </u>								
L				 								
	PLING DA							Casal				
	1		7 Bladder F	9umo □ 2" Su	hmersible Pu	min ∏i∡″Subi	nersible Pump	Geoci	nemical Analyses			
Method		Pump 🔾 I	nertial Lift F	ump 🛛 Other:			neroible r ump	Ferrou	us Iron: mg/L			
Material	ls: Pump/Bailer		ess ∕ð.PV ated □ Pre		Other: Eield Cle	aned Disp	osable	DO:	mg/L			
Material	ls: Tubing/Rope	D Polye	thylene 🛛	Polypropylene	🖵 Teflon®	D Other:	しょしい	b 1:1				
1				epared Off-Site		eaned D Dis		Nitrate	e:mg/L			
1 ·	o Water at Time	· ·	-		Field Filter	ed? 🗆 Yes	6 B	Sulfat	e:mg/L			
· ·	10:14w -8		Sample 1		1	# of Contai	ners: <u>///</u>	Alkali	nity: mg/L			
Duplica	te Sample Colle	cted?	O Yes O	1D:					······································			
5. COM	IMENTS	はちい	NACE,	にこう	ing	6- 70	Santa	in its	シャンシン			
Cal	U-LT Cal	5 ne	5: 5.	-DLe	witte	A 8.1		SHILL				
			· ····- / KC									
Note: Include	e comments such a	s well cond	lition, odor,	presence of NA	APL, or other	tems not on the	e field data shee	t.	······			
10												
FORM GW	FORM GW-1 (Rev 6/8/99 - wah) Signature											

BROWN AND CALDWELL

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GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MM-N

1. PRO	JECT INFC	RMAT	ION		<u> </u>							
Project I	Number: 128	-31-	Task Num	iber: 200		Date: 3.8	- 01		Time: /// J			
Client:	BJSU	C.S.				Personnel:	DEAN	Raines				
Project L	Location:	لياد				Weather:	dout	1 Col.	Time://:ЧЭ			
	DATA											
	Diameter:	2 incl	ies	Type: dy pv	C D Stain	ess D Galv. Si	leel 🖸 Teflon®	Other:				
Screen I	Diameter:	<u>ا</u> incl		·				0 D Other:				
Total De	epth of Well:								Dther:			
	Static Water:			a second se								
	Depth to Static Water: Static Water: Static Water: Static Water: Static Water: Other: Depth to Product:											
Length of Water Column: 3:4) feet Well Volume: 3:55 gal Screened Interval (from GS):												
3 PUR	GE DATA		1									
Purge M	ZA Bailer	r, Size: <u>/</u> ifugal Pum	_ □ Bladd p □ Perista	altic Pump 🗅 Ir	nertial Lift Pur	e Pump 🖾 4" S mp 🖾 Other:	Submersible Pur	mp	Equipment Model(s)			
Material	s: Pump/Bailer	C Stainl	ess Ø.PV(ated D.Prei	C D Teflon®	Other:	aned Disor	nsahle	. 1/0	いろ- ルートト			
Material	Materials: Bone/Tubing Delyethylene Delypropylene Delfon® & Other: <u>Augusta</u>											
	10					eaned ErDis		2				
Was we	II purged dry?	Ø Yes	D No		ng Rate:	gal	/min					
Time	Cum. Gallons Removed -	рН	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments			
11:45	1.0C	7.92	16-2	2.1000	153	5.56						
												
							<u> </u>	······································				
			<u> </u>									
ļ						+			(
4. SAM	PLING DA	TAN						Geoc	hemical Analyses			
Method	(s); Dailer, Si	/ ze:				mp 🖾 4" Subr	mersible Pump	Forra	us fron: mg/L			
			•	Pump C Other: C C Teflon				reilo	bus Iron: mg/L			
Materia	ls: Pump/Bailer	🖵 Dedic	ated 🛛 Pre	pared Off-Site	G Field Cle	aned 🖬 Disp		DO:	mg/L			
Materia	ls: Tubing/Rope	Polye	thylene 🖸 ated 🖾 Pr	Polypropylene epared Off-Site	Teflon®	leaned Dis	posable	Nitrat	te: mg/L			
	o Water at Time	•	•	······································	-	red? 🗅 Yes	No,	Sulfa	te: mg/L			
Sample	ID: MUJ-	<u>"i</u>	Sample 1	rime:	_رې	# of Contair	ners:		U =			
Duplica	te Sample Colle	cted?	□ Yes∕Ò	No ID:		_		Alkal	inity: mg/L			
5. COM	IMENTŞ	ていらい	FF, L	int a	the ar	1-1- cast	11 +.	Dura	Control 10			
COLL	Litene	gene 5	5:= 1-	-)// (en	- 74	2-5,000	sell-le	251121	us the parts			
Note: Include	e comments such a	as well con	dition, odor,	presence of NA	PL, or other	items not on the	field data shee	<u>t.</u>				
							24 2					
FORM GW	/-1 (Rev 6/8/99 - w	vah)					Signature	* ************************************				

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-13

1. PROJECT INFORMATION				يبيني بالكريب بالأليب بالبياب							
Project Number: 125-32 Task Numb	ber: 015	Date: 3 ·	5.01	r	ime: q'2,J						
Client: BT 5455		Personnel:	Derry, 1	2616-20							
Project Location:		Weather:	Cloudy.	,cool	"ime:、2、ソ						
2. WELL DATA											
	Type: GPVC G Staint	ess 🖸 Galv. St	eel 🗆 Teflon® ם	Other:							
Screen Diameter: inches	Type: ⊠`₽VC □ Staint										
	From: 🏚 Top of Well Ca										
	From: D Top of Well Ca										
Depth to Product: feet From:											
Length of Water Column: 1:54 feet Well Volume: 3 · 1 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:	er Pump 🛛 2" Submersible Itic Pump 🗔 Inertial Lift Pu	e Pump 🖸 4" S mp 🖾 Other:	ubmersible Pump		Equipment Model(s)						
Stainless PVC	C Teflon® C Other:										
Materials: Pump/Bamer Dedicated Prepared Off-Site Field Cleaned Opisposable 1. 10015h U-12											
Materials: Robe/Tubing Dedicated Depropries Field Cleaned Disposable 2.											
Was well purged dry? 🥳 Yes 🗆 No	Pumping Rate:	gal	/min								
Time Cum. Gallons pH Temp	Spec. Cond. ORP	Dissolved Oxygen	Turbidity	Other:	Comments						
9:25 1.26 7.23 16.1	22115/m -117	4.71	145								
	· · · · · · · · · · · · · · · · · · ·										
					·····						
4. SAMPLING DATA				Geoch	emical Analyses						
Method(s): Bailer, Size: D Bladder Provide State Provide State Provide State Provide State	ump 🔲 2" Submersible Pu	imp 🖸 4" Subr	nersible Pump	Ferrou	s Iron: <u>2 - 5</u> mg/L						
		•			ی این این این این این این این این این ای						
Materials: Pump/Bailer Dedicated Derepared Off-Site Field Cleaned Disposable DO:											
Dedicated D Prep				DO:	mg/L						
Dedicated Prep	pared Off-Site Field Cle Polypropylene Teflon® epared Off-Site Field C	🗹 Other: 🔨	YLOW	DO: Nitrate							
Materials: Pump/Bailer Dedicated Prep Materials: Tubing/Rope Depth to Water at Time of Sampling:	Polypropylene D Teflon& epared Off-Site D Field C Field Filter	🗹 Other: 🔨	posable	Nitrate	mg/L						
Materials: Pump/Bailer Dedicated Prep Materials: Tubing/Rope Dedicated Prep Dedicated Prep Dedicated Prep	Polypropylene D Teflon® epared Off-Site D Field C Field Filter	eaned Dis	posable No	Nitrate	:mg/L e:mg/L						
Materials: Pump/Bailer Dedicated Prep Materials: Tubing/Rope Dolyethylene Dedicated Prep Depth to Water at Time of Sampling: Sample ID: Sample T	Polypropylene D Teflon® epared Off-Site D Field C Field Filter	leaned Dis	posable No	Nitrate	:mg/L e:mg/L						
Materials: Pump/Bailer Dedicated Prep Materials: Tubing/Rope Polyethylene Dedicated Prep Depth to Water at Time of Sampling: Sample ID: Sample ID: Yes Duplicate Sample Collected? Yes Yes	Polypropylene	o d Other:	yLj posable ners: <u>/3</u>	Nitrate . Sulfate Alkalin	:mg/L e:mg/L hity:mg/L						
Materials: Pump/Bailer Dedicated Prep Materials: Tubing/Rope Polyethylene Dedicated Prep Depth to Water at Time of Sampling: Sample ID: <u>14</u> Duplicate Sample Collected? Yes	Polypropylene	o d Other:	yLj posable ners: <u>/3</u>	Nitrate . Sulfate Alkalin	:mg/L e:mg/L hity:mg/L						
Materials: Pump/Bailer Dedicated Prep Materials: Tubing/Rope Delicated Prep Depth to Water at Time of Sampling: Sample ID: <u>1907</u> Sample T Duplicate Sample Collected? Pres 5. COMMENTS IN SUFF. DUPLICATED	Polypropylene \Box Teflon® epared Off-Site \Box Field C Field Filter ime: $\underline{G \cdot 3}$ No ID: $\sum_{i=1}^{N_{i}} \sum_{j=1}^{N_{i}} \sum_{j=1}^{N_$	$\begin{array}{c c} \hline & Other: & & & \\ \hline & Other: & & & \\ \hline \\ \hline$	VLJM posable ners: <u>13</u>	Nitrate . Sulfate Alkalin	: mg/L e: mg/L hity: mg/L						
Materials: Pump/Bailer Dedicated Prep Materials: Tubing/Rope Polyethylene Dedicated Prep Depth to Water at Time of Sampling: Sample ID: Sample ID: Yes Duplicate Sample Collected? Yes Yes	Polypropylene \Box Teflon® epared Off-Site \Box Field C Field Filter ime: $\underline{G \cdot 3}$ No ID: $\sum_{i=1}^{N_{i}} \sum_{j=1}^{N_{i}} \sum_{j=1}^{N_$	$\begin{array}{c c} \hline & Other: & & & \\ \hline & Other: & & & \\ \hline \\ \hline$	VLJM posable ners: <u>13</u>	Nitrate . Sulfate Alkalin	: mg/L e: mg/L hity: mg/L						

BROWN AND CALDWELL

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MWILA

1. PROJ	ECT INFO	RMAT	ION				1				
Project N	lumber: 17.63	37-	Task Num	ber: 016		Date:`	5-01		Time: 15:05		
Client:	BJ SI	Jes_			<u> </u>	Personnel:	Distany	2 anne	٤		
Project L	ocation:			·····		Weather:					
2. WELL	DATA										
Casing D)iameter:	inch	es	Туре: 🖬 РV	C 🗆 Stainl	ess 🖸 Galv. Si	teel 🖸 Teflon®	C Other:			
Screen D	Diameter:	inch						Other:	the second secon		
	pth of Well: 6							ve Casing 🔲 O			
Depth to	Static Water:							ive Casing 🔲 O			
	Product:							ive Casing 🗅 C			
Length of Water Column: 3:55 feet Well Volume: 3:6 gal Screened Interval (from GS): Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft											
3. PURC	SE DATA	1.	1 1								
Purge M							Submersible Pun				
-	s: Pump/Bailer	C Stainle	ess ⊡∕ ^A PV0	C 🖸 Teflon®	D D Other:			·	Equipment Model(s)		
1						aned Dispo		1. 1-10	nibh 11-2)		
Materials: Rope/Thomas Delyethylene Delypropylene Teflon® Cother: 1/2/2)											
Was wel	I purged dry?	A Yes	🗆 No	Pumpir	ng Rate:	gal	l/min				
Time	Cum. Gallons Removed	pН	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments		
15:10	1.JL	716	15.7	-63.5-	-87	1.51	395				
							895				
				1							
4 SAME		TA						Geoc	hemical Analyses		
Method/	s). D'Bailer, Si	ze:				imp 🗖 4" Subi	mersible Pump		4.4		
	~	-	Inertial Lift P ess ⊡ PV	ump 🖸 Other:	D D Other:			Ferro	us Iron: _/ mg/L		
Material	s: Pump/Bailer	🛛 Dedic	ated 🗅 Pre	pared Off-Site	G Field Cle	aned Disp		DO:	<u>/ ˈ)</u> mg/L		
Material	s: Tubing/Rope					A Other: //		Nitrat	e: mg/L		
	Water at Time		ing:			red? 🖸 Yes	D No	Sulfal	te:mg/L		
Sample	10:14レノン	<u>II</u> <u>R</u>	Sample T	ime: <u>15</u> ?	12	# of Contain	ners: 112		17)		
Duplicat	e Sample Colle	cted?	⊡ Yes Ø	No ID:				Alkali	inity: mg/L		
5. COM	MENTS	たっ	SUFF	にいして	WAT	iv col	- L	to yur	88 1144		
12	p. C.L	. i.X a	ASI	65 30	pul	- mit	-1- 17		87.1.141-		
Noto: Indust-											
ivore: include	comments such a	is well cond	inion, odor,	presence of NA	APL, or other	items not on the	neld data sheel	<u>ו</u>			
							5-1				

Signature

BROWN AND CALDWELL

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: Mr. D.

	JECT INFO				4	7.	s sal	ter Min ya se ter	(L'ad		
Project N	Number: 125	· <u>3/-</u>	Task Num	ber:	_	Date: 3.	50		Time:		
	BT SV					Personnel:	- Law Li	Rainal			
2. WELL	}										
	Diameter:	inch	es	Type: Dipy				Other:			
	epth of Well: 6										
Depth to	o Static Water:	59.76	feet	·	· · · · · · · · · · · · · · · · · · ·			ive Casing D OI			
Depth to Product: feet From: D Top of Well Casing (TOC) D Top of Protective Casing D Other:											
Length of Water Column: 1 bet Well Volume: 0-) gal Screened Interval (from GS):											
Note: 2-inch well ≈ 0.167 gal/ft 4-inch well ≈ 0.667 gal/ft											
1		r, Size: /	\ D Bladd	er Pumo 🗅 🤊	Submersible	Pump Di 4" S	Submersible Pur	no			
Purge M	lethod: Centr	rifugal Pump	D 🗅 Perista	ltic Pump 🛛 Ir	nertial Lift Pun	np 🛛 Other:			Equipment Model(s)		
Materials: Pump/Bailer Dedicated Prepared Off-Site Defield Cleaned Disposable											
Materials: Rode/Tubing Polyethylene Polypropylene Teflon® A Other:											
Waternals: Operiod Properties Was well purged dry? A Yes No Pumping Rate:											
Time	Cum. Gallons Removed	ρН	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments		
16:55	1. JL	ンント	16-3	2.2.5	-1/0	4:50	54				
		[1					
	+										
	+					+					
4. SAM) Bladder P	ump D 2" Su	hmersihle Pu	mp 🖸 4" Subr	nersible Pump		nemical Analyses		
			nertial Lift P	ump 🖾 Other:				Ferrou	us Iron: <u>25</u> mg/L		
Materia	Is: Pump/Bailer	Dedic.		pared Off-Site		aned 🖓 Disp		DO:	mg/L		
Materia	Is: Tubing/Robe	Polyei	thylene 🛛 ated 🖵 Pr	Polypropylene epared Off-Site	□ Teflon® □ Field Cl	⊡ ¹ Other: <u>/_</u> eaned □ Dis	posable	Nitrate	e: mg/L		
4 .	o Water at Time	•	ng:		Field Filter	ed? 🗆 Yes	D No	Sulfat	e: mg/L		
Sample	10:10-13		Sample T			# of Contair	ners:		· · · · · · · · · · · · · · · · · · ·		
Duplica	te Sample Colle	cted?	🖞 Yes 🗆	No ID:	mpli	<u>2</u> -1 C		Alkalir	nity: <u> </u>		
5. COM	IMENTS	Ins	しちらい	'C. 16-27	twai	C- Tis	Ovret	E, with	10000		
500	Untal	5 ret	511-	pto a	~ th	dij.P	Jse.56	t, with Sciller	· · · · · · · · · · · · · · · · · · ·		
Note: Include	e comments such a	as well conc	lition, odor, j	presence of NA	PL, or other i	tems not on the	field data shee	t			
							E.	A			
FORM GW	/-1 (Rev 6/8/99 - w	vah)					Signature				

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-13

1. PRO.	IECT INFO	RMAT	ION				 1					
Project I	Number:)	Task Num	iber: 01 b		Date: 3	5.0		Time: 14, 2. D			
Client:	BJSU	CS										
Project L	ocation: 42	كو را				Weather:	ioudy.	col				
2. WELI	DATA											
Casing [Diameter:	inch	es	Туре: 🗗 ру	/C D Stainle	ss 🛛 Galv. S	leel 🛛 Teflon@	0 D Other:				
		inch						Other:				
Total De	pth of Well:	5.2 · fee	et	From: 🏟 To	op of Well Cas	ing (TOC)	Top of Protec	tive Casing 🛛 C)ther:			
Depth to	Static Water:	5.19	feet	From: A To	op of Well Cas	ing (TOC)	Top of Protec	tive Casing 🛛 C	Other:			
Depth to	Depth to Product:feet From: D Top of Well Casing (TOC) D Top of Protective Casing D Other:											
Length of Water Column: () - 0 [feet Well Volume:) - 0 gal Screened Interval (from GS): Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft												
3. PURGE DATA												
Purge N	lethod: Dentr	r, Size: <u>/</u> ifugal Pumr	Bladd	ler Pump 🖾 2' altic Pump 🖾 Ir	' Submersible nertial Lift Purr	Pump 🖾 4" \$ np 🖾 Other:	Submersible Pu	imp	Equipment Model(s)			
	s: PumpkBailer	Stainle	ess ØCPV(C 🛛 Teflon®	D 🗆 Other:			21				
Materials: Fond/Tubing Polyethylene Polypropylene Teflor® Other: 1. 1. 1. 1. 1. 1. 1. 1.												
Waterrais. Hoper Hubing Dedicated Prepared Off-Site Pield Cleaned Disposable 2.												
Was well purged dry? 🖉 Yes 🗆 No Pumping Rate: gal/min												
Time	Cum. Gallons Removed	рН	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments			
14:25	1.32	1.50	17.2	.178-Ju	-47	6.47	37.5					
								<u></u>				
			! {									
								, 				
4. SAM	PLING DA	TA						Geoc	hemical Analyses			
Method	(s): Deristaltio	ze: <u> </u>	Bladder F Inertial Lift F	Pump 🗅 2" Su Pump 🗔 Other:	bmersible Pur	mp 🖸 4" Subi	mersible Pump	Ferro	us Iron: mg/L			
Materia	s: Pump/Bailer	🗅 Stainle	ess el PV	C 🖬 Teflon	0 Cl Other:							
ł				pared Off-Site Polypropylene				DO:	mg/L			
	ls: Tubing/Rope	Dedic Dedic	ated D Pr	epared Off-Site	e 🖸 Field Cle	eaned O/Dis	posable	Nitral	te: mg/L			
	o Water at Time				Field Filter	ed? 🗅 Yes	. /	Sulfa	te: mg/L			
	10: N1 W-1		Sample 7	Fime:	<u></u>	# of Contai	ners: 10	 Alkal	inity: mg/L			
`	te Sample Colle	cted?	□ Yes (⊅	No 1D:								
ENTS FISHEFE WAFEN IN WILL FUT PUBSITS MITH Colling of Exapper with dig Potralle beilter.												
uch as well condition, odor, presence of NAPL, or other items not on the field data sheet.												
							ir.		··			
	h) Signature											

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-14

Project N	ECT INFO umber:12日 乃了 らいらい	37-		ber:) 	Date: 3		201-3	Time: 17 20
	ocation: Llub					Weather:	Loudi	Coll	
2. WELL									
Casing D	iameter:	inch	es	Type: 🍳 Pv	/C 🛛 Stainl	ess 🛛 Galv. Si	teel D Teflon®	0 🖸 Other:	
)iameter:			Туре: ⊉́ ₽∖	/C 🖸 Stainl	ess 🗅 Galv. S	teel 🗅 Teflon®	0 D Other:	
	oth of Well: 67	e							ther:
	Static Water:_(feet					tive Casing DO	
	Product:							tive Casing DO	
Length o	f Water Column	513	_ teet	vveli volume	: <u>[]</u>	gai		erval (from GS): h well = 0.167 gab	
	SE DATA	. 1							
Purge M	ethod: 🗖 Bailer	r, Size: <u></u> ifugal Pumi	Bladd	er Pump 🛄 2' altic Pump 🗔 h	" Submersible nertial Lift Pu	ePump □14" 5 mp□1Other:	Submersible Pu		Fauinment Model(a)
1	: Pump/Bailer	C Stainle	ess di PV	C D Teflon®	D Other:_	aned A Disp			Equipment Model(s)
Materials		Polyet	hylene 🗅	Polypropylene	C Teflon®	🗹 Other:	YUN	1	
1	I purged dry?					eaned 🖸 Disp		2	
	Cum, Gallons	۲es کلیز 		Pumpir Spec.	ng Rate:	ga	l/min		
Time	Removed	рН	Temp	Cond.	ORP	Oxygen	Turbidity	Other:	Comments
5:25	JEL	7.23	16	12335/	270	6:62	224	¥ -	
}	······								
					<u> </u>				
		Τ.							
4. SAIVIT	S):	$\frac{1}{2e}$	Bladder F	ump 🗅 2" Su	ibmersible PL	imp 🖸 4'' Subi	mersible Pump		nemical Analyses
1	\sim	•		Pump 🖾 Other:		<u></u>		Ferroi	us Iron: mg/L
Material	s: Pump/Bailer	Dedic	ated 🗖 Pre	pared Off-Site	Field Cla	eaned 21Disp		DO:	mg/L
Material	s: Tubing/Robe	Polye	thylene 🖸 ated 🖸 Pr	Polypropylene epared Off-Site	e 🛛 Teflon® e 🖾 Field C	eaned Dis	posable	Nitrate	e: mg/L
	Water at Time		ing:			red? 🗆 Yes	D No	Sulfat	:e: mg/L
1	10: Malas-		Sample 7		ز (# of Contai	ners:		
Duplicat	e Sample Colle	cted?	□ Yes ∕d	No ID:				Alkali	nity: mg/L
5. COM	MENTS cernel o	7 - 50 7 1~-5	FF,CI Sar	er u		d.3	l top Opsase	vrjë no	1-1- 1. unger e.r.
Note: Include	comments such a	as well cond	lition, odor,	presence of N	APL, or other	items not on the	e field data shee	et.	······································
							11	12-	

Signature

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: ML1-15

1. PRO.	IECT INFO	RMAT	ION							
Project I	Number: 12 8	37-	Task Num	1.1016		Date: 3 - 3	F - 61		Time: 9:40	
Client:	Client: 133 51/03					Personnel:	Date: <u>3 Station</u> Time: <u>9:49</u> Personnet: <u>DEKry Raines</u>			
Project l	ocation: 1:0	260				Weather:C	Loudy	<u></u>		
	DATA									
Casino I)iameter:	- inch		Type: DP	VC D Stain	less 🛛 Galv St	eel () Tefion®) D Other:		
Screen	Diameter:	inct								
Total De	Diameter:	fe	et		ype: 1 PVC Stainless Galv. Steel Teflon® Other:					
	Static Water:			From: D Top of Well Casing (TOC) D Top of Protective Casing D Other:						
	Product:						ng (TOC)			
	of Water Column		_ feet	L				erval (from GS)		
								h well = 0.167 ga		
3. PUR	GE DATA	11								
Purge N						e Pump □ 4" S mp □ Other:				
-		C Stainle	ess 🖬 PV(C 🖸 Teflon	D D Other:				Equipment Model(s)	
	s: Pump/Bailer					aned Dispo		10	r. ba 11-22	
Material	s: Rope/Tubing	Polyet Dedic	hylene 🛛 ated 🖵 Pri	Polypropylene epared Off-Site	e 🛛 Teflon® e 🖵 Field Cl	leaned Disp	posable	2.		
Was we	Il purged dry?	À Yes	🗆 No	Pumpi	ng Rate:	gal	/min			
Time	Cum. Gallons Removed	pН	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments	
Cilla	1.aL	7.31	16-7	2.149	a./4	- 7 G	18			
9:40	1.00	1.31	16. 1		u. 1 7		10			
					+					
4. SAM	PLING DA	ТА						Geoc	hemical Analyses	
Method	Method(s):									
Materia	Materials: Pump/Bailer Stainless @ PVC I Teflon® I Other									
Bástavia	Dedicated Derepared Off-Site Defield Cleaned (Disposable Do mg/L									
iviateria	Materials: Tubing/Rope Dedicated Derepared Off-Site Defield Cleaned Disposable Nitrate: mg/L									
	Depth to Water at Time of Sampling: Field Filtered? D Yes Z No Sulfate: mg/L									
ł	Sample ID: <u>Antonia Sample Time: 1 1 1 4 # of Containers:</u>									
Duplica	te Sample Colle	cted?	O Yes O	No ID:				Aikal	inity:mg/L	
5. COM	MENTS	Insi) FF) C	iint o	UNTER	in mill	(I, †u /	Durce	4h QueP.	
1	5. COMMENTS Insufficient water in well to purge with purp. Callertial good signals with fill baller									
Note: Include	e comments such a	as well con	lition odor	Dresence of N	APL or other	items not on the	field data shor			
Autore: Intelauto				presence of N				rt.		
								5		

Signature

i

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: 3 W-4

1. PROJEC			. 1		-7	6-41		111.5
Project Numbe	ber: <u>315</u>	_	Date: 3 -	<u></u>		Time: 12:5		
Client:	355105		···		Personnel:	LENY,	Marinis.	
Project Locatio	on: interty				Weather:	Loudy,	$c_{\rm s}$	
2. WELL DA	ATA							
Casing Diame	ter:i	nches	Туре: 🖬 Фү	C D Stainle	ss 🛛 Galv. St	eel 🛛 Teflon®	Other:	
Screen Diame	11	nches	Туре: оўгру	C D Stainle	ss 🖸 Galv. Si	teel 🛛 Teflon®	0 🛛 Other:	
Total Depth of	Well: 61.51	feet	From: Chi To	op of Well Cas	ing (TOC)	Top of Protec	tive Casing D C	Other:
	c Water: 61.4	4.	From: D To	op of Well Cas	ing (TOC)	Top of Protec	tive Casing 🔲 C	Other:
	uct:fe		From:	op of Well Cas	ing (TOC)	Top of Protec	tive Casing 🔲 C	Other:
	er Column:						erval (from GS)	
							ch well = 0.167 ga	
3. PURGE I								
Purge Method	Bailer, Size: Centrifugal Pu	Blado	er Pump D 2'	Submersible	Pump 🖬 4" S	Submersible Pu	mp	Carling and Be-d-1/->
Materials: Pur	[] Sta		C C Teflon®					Equipment Model(s)
iviaterials: Pur	Der Der	dicated D Pre	pared Off-Site	C Field Clea	ned 🗅 Dispo	osable	1	
Materials: Rop	ie/rubiou		Polypropylene epared Off-Site			posable	2.	
Was well purg	ied dry? ם א	′es 🗅 No	Pumpir	ng Rate:	gal	/min		
l ime Re	n. Gallons emovedpH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
77-4-1-1-	于	;						
								<u> </u>
		_						
					{			
4. SAMPLIN							Gana	hemical Analyses
	Bailer, Size: Peristaltic Pump	🗅 Bladder f	ump 🖸 2" Su	bmersible Pur	nn El 4" Subr	nersible Pumn		
Method(s):	Peristaltic Pump	Inertial Lift F	ump 🖾 Other				Ferro	us iron: mg/L
Materials: Pu	Materials: Pump/Bailer Distainless PVC Teflon® Other:Dedicated Prepared Off-Site Field Cleaned Disposable DO:mg/L							
Materials: Tul		lyethylene 🛛	Polypropylene epared Off-Site	C Teflon®	D Other:		Nitrat	te: mg/L
Depth to Wat	er at Time of San		•				0	
Sample ID: Sample Time: # of Containers:								
Duplicate Sar	Sample ID Sample Time # of Containers Duplicate Sample Collected? U Yes D No ID: Alkalinity:mg/L							
E COMME								
5. COMME	NIO NO	r 51	mark the	mell	a-7			
					/			
Note: Include comm	ents such as well c	andition oder	presence of N/	Pl or other it	ame not on the	field data shar		
Contest manage comm					ionis nuc un the		л. 	
						120		
FORM GW-1 (F	Rev 6/8/99 - wah)					Signature		

BROWN AND CALDWELL

Suite 2500, 1415 Louisiana, Houston, TX 77002 (713) 759-0999 • (713) 308-3886

TRANSMITTAL MEMORANDUM

Date: January 10, 2002	Job No: 12832-016
Subject: Hobbs, New Mexico Fac	cility
Certified Mail No.:	
Equipment No:	
Spec. Ref:	
Submittal No:	
	Subject: Hobbs, New Mexico Fac Certified Mail No.: Equipment No: Spec. Ref:

WE ARE SENDING:	Attached	Under separate cover via US Mail the following items:
Shop Drawings	Prints	Plans Samples Specifications
	Change Order	Groundwater Sampling Report

THESE ARE TRANSMITTED AS CHECKED BELOW:

- For Approval
- As requested
- For review and comment
- With submittal review action noted

SUBMITTAL REVIEW ACTIONS:

No exceptions taken
 Make revisions
 Amend and resubmit
 Rejected--see Remarks
 None

Copies	Date	No.	Description
1	01/07/02	1	June 2001 Groundwater Sampling Report, BJ Services Company, U.S.A., Hobbs, New Mexico
1	01/07/02	1	September 2001 Groundwater Sampling Report, BJ Services Company, U.S.A., Hobbs, New Mexico

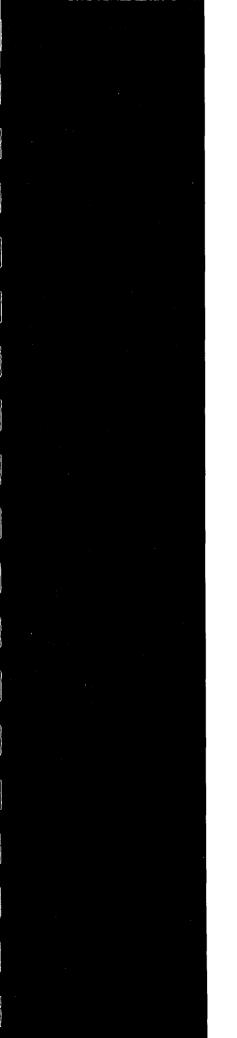
REMARKS:

cc: Chris Williams, State of New Mexico Jo Ann Cobb, BJ Services Company, U.S.A. Brown and Caldwell Project File

Richard Rex 100

Richard L. Rexroad, P.G.

If enclosures are not as noted, kindly notify us at once



BROWN AND CALDWELL

JUNE 2001 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY

BJ SERVICES COMPANY, U.S.A.

JANUARY 7, 2002

JUNE 2001 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: 12832.016

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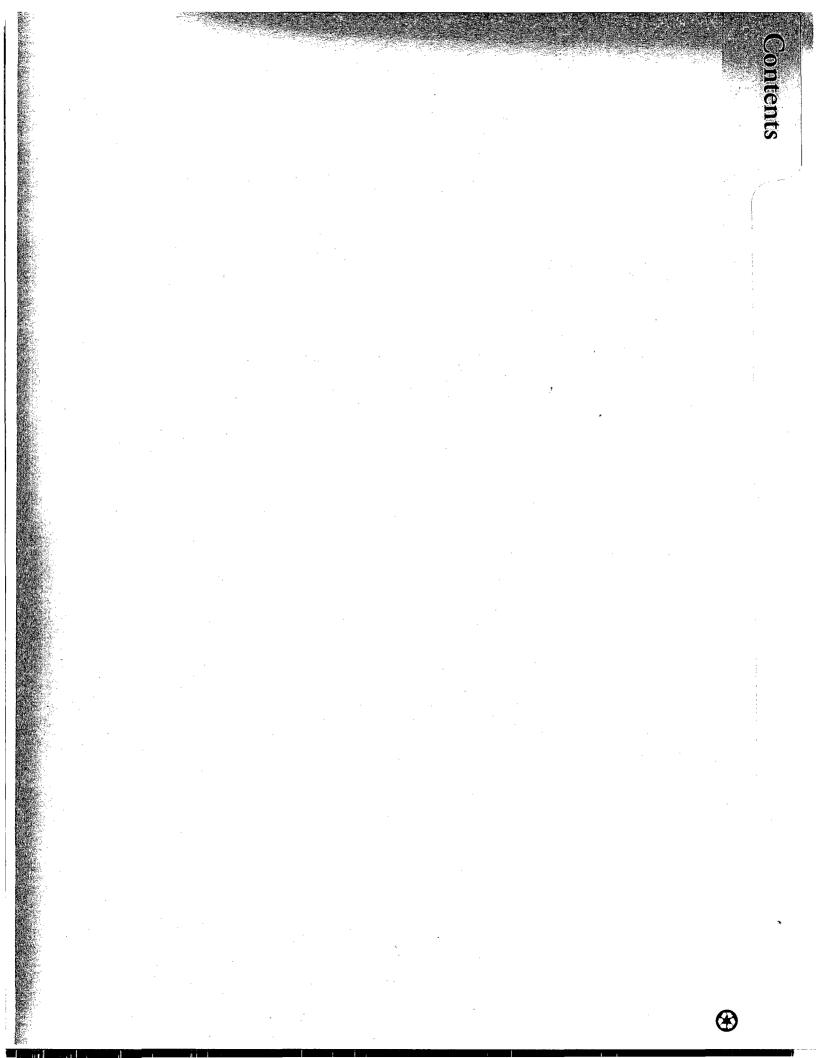
Richard Rexroad Project Manager

January 7, 2002

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

"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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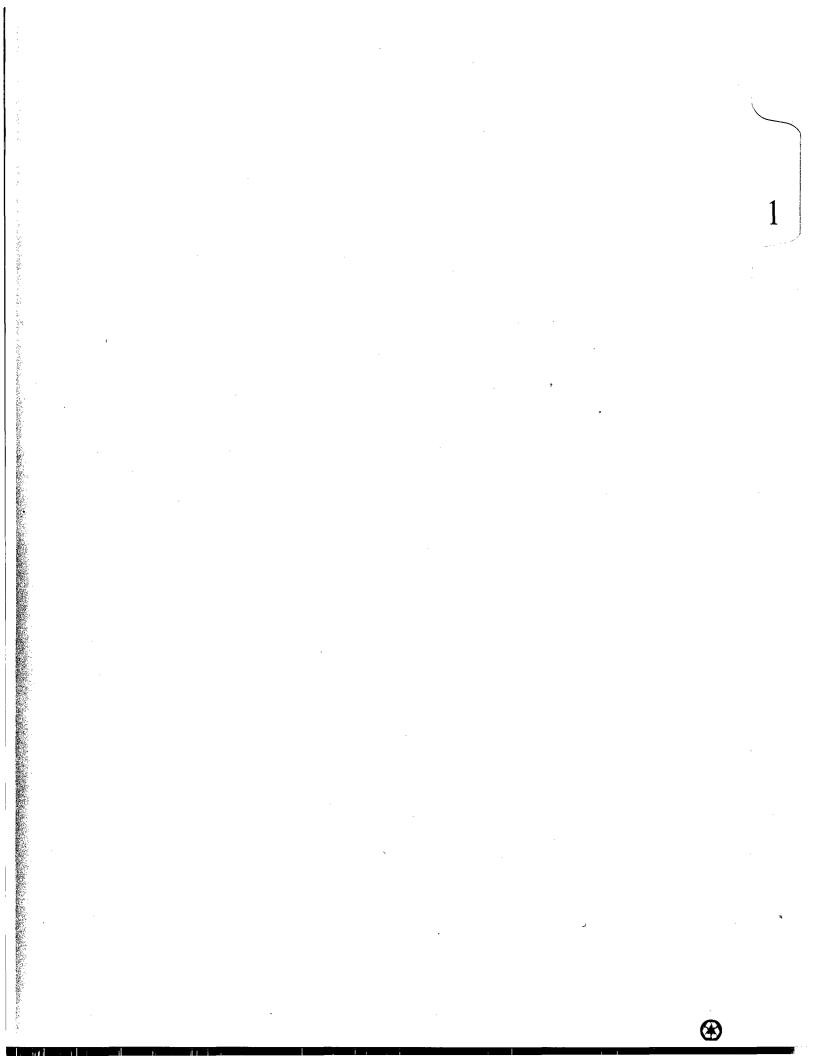
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1.0 INTRODUCTION

Brown and Caldwell conducted field activities associated with the June 2001 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 June 21-22, 2001. Groundwater samples from monitor wells MW-14 and MW-15 were analyzed for chloride content. Groundwater samples from the remaining wells sampled in June 2001 were analyzed for gasoline- and diesel-range total petroleum hydrocarbons (TPH-G and TPH-D) and benzene, toluene, ethylbenzene, and xylenes (BTEX). This report presents a description of the groundwater sampling field activities, a summary of the analytical results, and an evaluation of remedial technologies being applied at the facility. A groundwater potentiometric surface map, a benzene concentration 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 are also presented in this report.

BJ Services removed three field waste tanks at the facility on March 6-7, 1997. The ongoing groundwater monitoring program was expanded to address both the former fuel island and the

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former field waste tanks areas of the facility, as directed by NMOCD in correspondence dated January 21, 1999.

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

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2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled 10 groundwater monitor wells at the facility on June 21-22, 2001 to determine concentrations of dissolved-phase hydrocarbons in groundwater and to evaluate general groundwater quality in the area of the facility. Monitor well locations are shown in Figure 1. Brown and Caldwell installed and sampled four confirmation soil borings at the former fueling system area of the facility on July 23, 2001 to verify that cleanup goals for soil, as specified in the NMOCD-approved RAP for the facility, have been achieved. The following subsections describe the field activities conducted by Brown and Caldwell at the facility in June 2001 and July 2001 and present the results of the associated soil and groundwater analyses.

2.1 June 2001 Groundwater Sampling Activities

Groundwater level measurements were obtained from monitor wells prior to purging and sampling the wells. Groundwater levels were measured to the nearest 0.01 foot with an oil/water interface probe. Current and historic groundwater elevation data are presented in Table 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with a hydraulic gradient of approximately 0.008 foot/foot. A groundwater elevation map for June 21, 2001 is presented in Figure 2. The groundwater elevation data presented in Table 2 indicate that groundwater levels have declined in all monitor wells at the facility since late 1995. Monitor well OW-4 did not contain sufficient water in June 2001 for collection of a groundwater sample.

All monitor wells except MW-12 were purged and sampled using a bladder pump. Downhole tubing was decontaminated between each usage by pumping distilled water through the full length of the tubing to clean its interior and by rinsing its exterior with distilled water. The wells were sampled in general order of least impacted to most impacted (based on analytical results from the March 2001 sampling event) to further mitigate the potential for cross-contamination of wells. Monitor well MW-12 did not contain adequate water to facilitate use of the bladder pump, so the well was purged using a disposable bailer.

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Field parameter measurements for pH, conductivity, oxidation-reduction (redox) potential, dissolved oxygen, and temperature were collected during and upon completion of well purging. Ferrous iron and alkalinity were measured in selected wells upon conclusion of purging activities to further assist in assessment of natural attenuation potential. Turbidity of groundwater was typically measured upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix A. Field readings for the groundwater sampling event are summarized in Table 3.

Groundwater samples were collected directly from the discharge line of the bladder pump upon completion of purging operations in each well. The groundwater sample collected from monitor well MW-12 was collected using the bailer that was used for purging the well. Each sample was transferred to laboratory-prepared, clean glass or plastic containers sealed with Teflon[®]-lined lids, labeled, and placed on ice in an insulated cooler for shipment via overnight courier to Southern Petroleum Laboratory in Houston, Texas for analysis. Completed chain-of-custody documentation was provided for all samples.

Field measurement equipment was decontaminated prior to and after each usage. Decontamination procedures consisted of washing with fresh water and a non-phosphate detergent, then rinsing with deionized water. Purge water was discharged to an on-site water reclamation system for re-use by BJ Services.

2.2 **Results of Groundwater Analyses**

Groundwater samples collected from all wells during this sampling event except monitor wells MW-14 and MW-15 were analyzed for TPH-D and TPH-G by EPA Method 8015B and for BTEX by EPA Method 8021B. Groundwater samples from monitor wells MW-14 and MW-15 were analyzed for chloride by Method 325.3. Groundwater samples from selected wells were analyzed for nitrate and sulfate by Method 300.0 and for dissolved methane by Method RSK-SOP 147/175 to assist in evaluation of natural attenuation processes at the facility. The laboratory analytical

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reports and chain-of-custody documentation for the groundwater samples collected during the June 2001 sampling event are provided in Appendix B.

Current and cumulative analytical results for BTEX, TPH-D, and TPH-G are presented in Table 4. The results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12 are presented in Table 5.

Benzene concentrations in excess of the laboratory detection limit were reported in three of the 10 groundwater samples submitted for BTEX analysis during this sampling event. Benzene concentrations were below the New Mexico Water Quality Control Commission (NMWQCC) standard of 0.01 milligrams per liter (mg/L) in all wells except monitor well MW-12. The detection of benzene at 0.012 mg/L in monitor well MW-12 is the lowest benzene concentration ever measured in this well, however.

Benzene concentrations in monitor wells located near the former fuel island source area remained below the NMWQCC standard of 0.01 mg/L in June 2001. Benzene was not detected in monitor wells MW-3, MW-4, or MW-13, and has not been detected in these wells since June 1999, March 1999, and June 2000, respectively. Adjustments to the biosparging system in July 1999 and March 2000 to increase air flow to the monitor well MW-13 area resulted in decreases in the concentration of benzene in monitor well MW-13 from 1.5 mg/L on July 2, 1999 to the present non-detectable concentration.

Figure 3 presents a benzene concentration and total BTEX distribution map for the June 2001 sampling event. A total petroleum hydrocarbon distribution map for the June 2001 sampling event is presented in Figure 4.

Table 6 presents current and historic results for chloride analyses performed on groundwater samples collected at the facility. The chloride concentration of 222 mg/L in downgradient wells MW-14 and MW-15 in June 2001 is less than the NMWQCC standard of 250 mg/L for chloride.

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The chloride concentration in monitor well MW-15 has remained essentially constant from the time of its installation in January 2001 to the present. The chloride concentration in monitor well MW-14 has decreased from 368 mg/L to 222 mg/L during this time period.

2.3 July 2001 Confirmation Soil Boring Installation and Sampling Activities

On July 23, 2001, Brown and Caldwell installed and sampled confirmation soil borings at four locations in the former fueling system area at which groundwater impact had previously been present, in accordance with the requirements specified in the RAP for the facility. The locations of these soil borings, which were designated as CSB-1 through CSB-4, are shown in Figures 3 and 4.

The confirmation soil borings were installed using an Ingersoll-Rand TH-60 truck-mounted air rotary drilling rig. The soil borings were advanced to the top of the water table. The depth to groundwater was measured prior to drilling at nearby monitor wells, using a decontaminated water level indicator, to verify the anticipated depth at which the saturated zone would be reached.

Soil cores were recovered at approximate 5-foot centers from a depth of 20 feet below grade to the total depth of each boring, scanned with a calibrated photoionization detector (PID), and classified using the Unified Soil Classification System (USCS). The soil cores were used in conjunction with soil cuttings derived from intervals not cored to create boring logs for each of the four soil borings, which are presented in Appendix C. PID screening of recovered soil cores was conducted using the following procedures:

- 1. A small quantity (i.e., a few ounces) of representative soil was removed from the recovered soil core and placed in a previously unused zip-lock bag;
- 2. The bag was sealed, and the exterior of the bag was labeled regarding soil boring identification and depth interval;
- 3. The sealed bag was placed in a sunny location for approximately 5 minutes;
- 4. The probe of the calibrated PID was inserted into the bag while simultaneously kneading the soil by hand through the exterior of the bag to further facilitate the release of volatile constituents that may have been present;

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5. The maximum readout of the PID was recorded.

After completion of PID scanning and USCS classification, the remaining portion of each recovered soil core was separately wrapped in aluminum foil. The boring number and depth interval were marked on the exterior of the aluminum foil using waterproof ink, and the wrapped core was placed in an iced cooler until a determination is made as to whether a sample from the interval in question would be submitted for laboratory analysis. After determining which sample intervals were to be selected for laboratory analysis at a given sample location, wrapped soil cores were retrieved from the cooler, unwrapped, and appropriate sample containers were filled and labeled.

A soil sample from the interval immediately overlying the top of the saturated zone was collected from each confirmation boring and submitted for laboratory analysis. It was anticipated that a soil sample would also be collected for laboratory analysis from the interval of each confirmation soil boring that displayed the maximum PID response. No positive PID responses were obtained from cores recovered from any of the four confirmation soil borings, however. The sample submitted from an interval exclusive of the top of the saturated zone was therefore collected according to the following criteria:

- 1. If visual or olfactory evidence of contaminant impact in one or more soil cores from a given soil boring was observed, then the interval displaying the greatest apparent degree of visual or olfactory evidence of contaminant impact would have been selected for laboratory analysis. No visual or olfactory evidence of contaminant impact was observed in any of the recovered soil cores, however, so the following basis of soil sample selection was used.
- 2. Since there was no visual or olfactory evidence of contaminant impact in any of the recovered soil cores, a sample was submitted for laboratory analysis from an interval in which accumulation of downward-migrating contaminants would be anticipated based on vertical stratigraphic variation (e.g., a coarse-grained permeable interval overlying a fine grained interval, a coarse-grained permeable interval overlying a relatively impermeable, indurated layer, etc.) or, in the absence of this type of lithologic variation, from the second sample interval above the top of the saturated zone.

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At the conclusion of sampling, the soil samples were delivered to an overnight courier for shipment to Southern Petroleum Laboratory in Houston, Texas. A completed chain-of-custody form was submitted to the analytical laboratory along with the samples. Each of the soil samples was analyzed for the following parameters:

- BTEX by EPA Method 8021B;
- TPH-D by EPA Method 8015; and
- TPH-G by EPA Method 8015.

The following section provides a discussion of the analytical results for the confirmation soil samples and a comparison of these results to the remediation goals for soil at the former fueling system area of the facility.

2.4 **Results for Confirmation Soil Samples**

Table 7 presents the analytical results for the confirmation soil samples collected at the BJ Services Hobbs, New Mexico facility on July 23, 2001. The associated laboratory analytical report is provided in Appendix D.

There were no detections of benzene in any of the eight confirmation soil samples. There were no detections of BTEX constituents, TPH-D, or TPH-G in any of the soil samples collected from confirmation soil borings CSB-3 and CSB-4, which were the two southernmost borings.

Confirmation soil boring CSB-2 was installed at a location in immediate proximity to the former fuel island. There were no detections of BTEX constituents in either of the samples from this boring. TPH-G concentrations ranged from less than 0.10 milligrams per kilogram (mg/kg) in the 54- to 56-foot sample interval to 0.23 mg/kg in the sample collected from the 35- to 37-foot interval. TPH-D was detected at respective concentrations of 33 mg/kg and 25 mg/kg in these samples.

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Confirmation soil boring CSB-1 was installed in immediate proximity to the location of the former diesel and gasoline aboveground storage tanks (ASTs). There were no detections of BTEX constituents, TPH-D, or TPH-G in the soil sample collected from the capillary fringe at a depth of 54 feet to 56 feet in this boring. Ethylbenzene and xylenes were detected at respective concentrations of 0.0013 mg/kg and 0.0118 mg/kg in the 45- to 47-foot sample from this boring, and TPH-G and TPH-D were detected at respective concentrations of 0.12 mg/kg and 6.6 mg/kg in this sample. Benzene and toluene were not detected in the 45- to 47-foot sample from confirmation soil boring CSB-1.

The following remediation goals for unsaturated-contaminated soils were specified in the NMOCD-approved RAP for the facility:

Parameter	Remediation Goal		
Benzene	10 ppm		
Total BTEX	50 ppm		
ТРН	1000 ppm		

Comparison of the analytical results for the soil samples collected from confirmation soil borings CSB-1 through CSB-4 as presented in Table 7 to the remediation goals specified above indicates that hydrocarbon concentrations in all soil samples are less than these remediation goals. Hydrocarbon concentrations in the confirmation soil samples were in fact typically as much as 2 to 4 orders of magnitude less than these remediation goals.

Based on the cumulative groundwater analytical results presented in Section 2.2 and the confirmation soil sample analytical results presented herein, the following course of action is prescribed in the NMOCD-approved RAP for the former fueling system area of the BJ Services Hobbs, New Mexico facility:

1. Continue quarterly groundwater monitoring for 1 year;

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- 2. If groundwater analytical results do not exceed the groundwater remediation goals specified in the RAP during the 1-year quarterly monitoring period, then;
- 3. A biosparging system closure report will be submitted for the former fueling system area of the facility; and
- 4. The biosparging system will be decommissioned, and the remediation and applicable monitor wells will be plugged and abandoned (P&Ad).

The biosparging system may be re-activated in the event that groundwater remediation goals are exceeded during the 1-year quarterly monitoring period.

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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 at Hobbs, New Mexico.

3.1 **Biosparging System at the Former Fueling System Area**

Based on the results of previous investigations conducted by Brown and Caldwell and Roberts/Schornick and Associates, Inc., Brown and Caldwell recommended the installation of a biosparging system at the former fueling system area of the facility in the 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 and expanded in April 1997 and February 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in former fueling system source area monitor wells MW-1, MW-3, MW-4, MW-9, and MW-13, as documented in the December 2000 groundwater sampling report for the facility.

Based on these favorable trends in hydrocarbon concentrations and in accordance with the recommendations presented in the report for the June 2000 groundwater sampling event, the biosparging system was deactivated on November 1, 2000. The June 2001 sampling event is the third sampling event completed since this shut down.

Benzene concentrations in former fueling system source area monitor wells MW-3, MW-4, MW-9, and MW-13 have remained at non-detectable levels since deactivation of the biosparging system. BTEX constituent concentrations in these wells and monitor well MW-1 have now remained below applicable NMWQCC standards for five consecutive quarters.

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 in this area. The analytical results for these soil samples, as P:\Wp\BJSERV\12832\081r.doc 11

discussed in Section 2.4, indicate that remediation goals for soil in this area have successfully been achieved.

To further demonstrate the effectiveness of the biosparging system in remediating hydrocarbonimpacted soils in the former fueling system area, Figure 5 presents a comparison of BTEX and TPH data from soil samples collected in this area in July-August 1992 (prior to activation of the biosparging system in November 1995) to data from the July 2001 confirmation soil borings, which were installed after deactivation of the biosparging system in November 2000. Comparison of soil data from 1992 soil borings SB-2 and SB-6 to 2001 soil boring CSB-1, which were installed in the vicinity of the former diesel and gasoline AST locations, indicates that BTEX constituent concentrations have dropped by 2 to 5 orders of magnitude and that TPH-D concentrations have decreased by 2 to 3 orders of magnitude in this area as a result of operation of the biosparging system.

Soil boring SB-5 was installed in 1992 at the former fuel island location, and confirmation soil boring CSB-2 was installed in 2001 in close proximity to the SB-5 location. Comparison of soil samples collected from the capillary fringe in these two borings indicate that BTEX constituent concentrations have dropped by 2 to 4 orders of magnitude and that TPH-D concentrations have decreased by an order of magnitude in this area as a result of operation of the biosparging system.

Confirmation soil boring CSB-3 was installed in 2001 at a location downgradient of the former fuel island dispensers, in proximity to 1992 soil borings SB-1 and SB-4. Comparison of BTEX data from the confirmation soil samples to the 1992 soil samples indicates that BTEX constituent concentrations have typically decreased by 3 to 4 orders of magnitude. TPH-D concentrations have displayed decreases ranging from less than 1 order of magnitude to 3 orders of magnitude over this time period.

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The data presented in Figure 5 also indicate that the upgradient extent of hydrocarbon impact to soil is defined by 1992 soil boring SB-7 and that the downgradient extent of hydrocarbon-impacted soil is defined by 2001 confirmation soil borings CSB-3 and CSB-4.

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).

The primary evidence of natural attenuation is plume behavior. 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 the field waste 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 natural attenuation rate of the area.

The June 2001 sampling event is the first in which there were no detections of BTEX constituents in former field waste tanks area monitor well MW-10. The concentrations of benzene and total BTEX measured in former field waste tanks area monitor well MW-12 in June 2001 are lower than at any time during the monitoring history of the well. These data provide primary evidence that natural attenuation of hydrocarbons is occurring in these areas.

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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. The following lines of geochemical evidence 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 during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring. June 2001 dissolved oxygen data for the facility suggest that natural attenuation of hydrocarbons is ongoing at the facility.

Dissolved oxygen concentrations measured in non-hydrocarbon impacted monitor wells MW-3, MW-4, MW-5, MW-14 and MW-15 range from 3.33 mg/L to 4.61 mg/L.

Dissolved oxygen concentrations in former field waste tanks area monitor wells MW-10 and MW-11A were measured at 0.70 mg/L and 0.64 mg/L, respectively. Benzene was detected at a concentration of 0.0015 mg/L in monitor well MW-11A in June 2001, continuing a generally decreasing concentration trend in the well. Benzene was not detected in monitor well MW-10 in June 2001; this non-detection, the first in MW-10, also continues a generally declining trend in the well. It is anticipated that the dissolved oxygen content in monitor well MW-10 will begin, in the near future, to rebound to a concentration comparable to those measured in monitor wells MW-3, MW-4, MW-5, MW-14 and MW-15 in June 2001.

The dissolved oxygen content of former field waste tanks area monitor well MW-12 was not measured because oxygen is typically added to groundwater when a bailer is used for well purging and sampling. Hence, erroneous and potentially misleading dissolved oxygen data for monitor well MW-12 could have been generated had an attempt been made to measure the dissolved oxygen content of groundwater from this well.

The dissolved oxygen content of monitor well MW-13, which is located downgradient of the biosparging system at the former fueling system area, was measured at 1.40 mg/L in June 2001. This dissolved oxygen concentration is intermediate between the dissolved oxygen concentration measured in other non-hydrocarbon impacted monitor wells (i.e., MW-3, MW-4, MW-5, MW-14 and MW-15) and those exhibited by the former field waste tanks area monitor wells (i.e., MW-10 and MW-11A). Although no BTEX constituents were detected in monitor well MW-13, examination of the BTEX data presented in Table 4 indicates that decline in BTEX constituent concentrations in the well has been precipitous, with total BTEX concentrations of nearly 300 mg/L measured in the well as recently as March 2000. The intermediate dissolved oxygen concentration of

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dissolved oxygen in this area is currently rebounding after the recent removal of hydrocarbons from groundwater in the area and the November 2000 deactivation of the biosparging system.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility has also indicated that dissolved oxygen concentrations are typically depressed in hydrocarbon-impacted monitor wells relative to non-impacted monitor wells at the facility, providing further evidence of the occurrence of natural attenuation of hydrocarbons at the facility.

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 concentrations were measured at less than 0.1 mg/L in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 during the June 2001 sampling event. These concentrations are less than the background nitrate concentration of 2.74 mg/L measured in monitor well MW-5 (see Table 5). The non-detections of nitrate in monitor wells MW-10, MW-11A, and MW-12 suggest that nitrate acts as an electron acceptor during natural attenuation of hydrocarbons that has occurred and continues to occur in the former field waste tanks area of the facility.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors 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.

Ferrous iron was measured at respective concentrations of 6.5 mg/L and greater than 10 mg/L in former field waste tanks area monitor wells MW-11A and MW-10, as shown in Table 4. Ferrous iron was not detected in the background well, MW-5. The elevated ferrous iron concentrations in monitor wells MW-10 and MW-11A suggest that ferric iron is being used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area.

Ferrous iron was measured at a concentration of 1.6 mg/L in monitor well MW-13. This ferrous iron concentration is intermediate between the ferrous iron concentration of 0 mg/L measured in the background well and those measured in former field waste tanks area monitor wells MW-10 and MW-11A (i.e., 6.5 mg/L and greater than 10 mg/L). The intermediate ferrous iron oxygen concentration measured in monitor well MW-13 in June 2001 provides further evidence that the groundwater geochemistry in the area of well MW-13 is currently returning to ambient conditions after the recent removal of hydrocarbons from groundwater in that area and the November 2000 deactivation of the biosparging system.

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- 4. Microbes that utilize sulfate become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through use of sulfate as an electron acceptor. Sulfate concentrations in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 exceed the concentration of sulfate in background monitor well, MW-5, however (see Table 5). These data indicate 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, and its concentration should therefore increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.

As shown in Table 5, methane was detected in the background well at a concentration of 0.0017 mg/L and at concentrations ranging from 0.0021 mg/L to 0.044 mg/L in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12. The elevated methane concentrations in monitor wells in the former field waste tanks area suggest that utilization of carbon dioxide as an electron acceptor, resulting in methanogenesis, has occurred during natural attenuation of hydrocarbons in this area, especially in the vicinity of monitor well MW-10, which displayed a methane concentration that is an order of magnitude greater than that of the background well, MW-5.

6. Redox potential is a measure of chemical energy in groundwater. The redox potential of groundwater from background well MW-5 was measured at 172.5 millivolts (mV). Redox values in other non-hydrocarbon impacted wells MW-3, MW-4, MW-14 and MW-15 ranged from 139.0 mV to 163.2 mV, as shown in Table 3. Redox values in monitor wells MW-10 and MW-11A, which are located in the vicinity of the former field wastes tanks, ranged from -103.8 mV to -104.5 mV. The negative redox values in the former field waste tank area monitor wells provide additional evidence that natural attenuation of hydrocarbons is occurring in the area of the former field waste tanks.

A groundwater redox potential of 94.0 mV was measured in monitor well MW-13. This value is intermediate between the redox values ranging from 139.0 mV to 172.5 mV in other non-hydrocarbon impacted wells (i.e., MW-3, MW-4, MW-5, MW-14 and MW-15) and the negative redox potentials measured in former field waste tanks area monitor wells MW-10 and MW-11A, providing further evidence that the groundwater geochemistry in the area of monitor well MW-13 is currently returning to ambient conditions after the recent removal of hydrocarbons in groundwater in that area and the November 2000 deactivation of the biosparging system

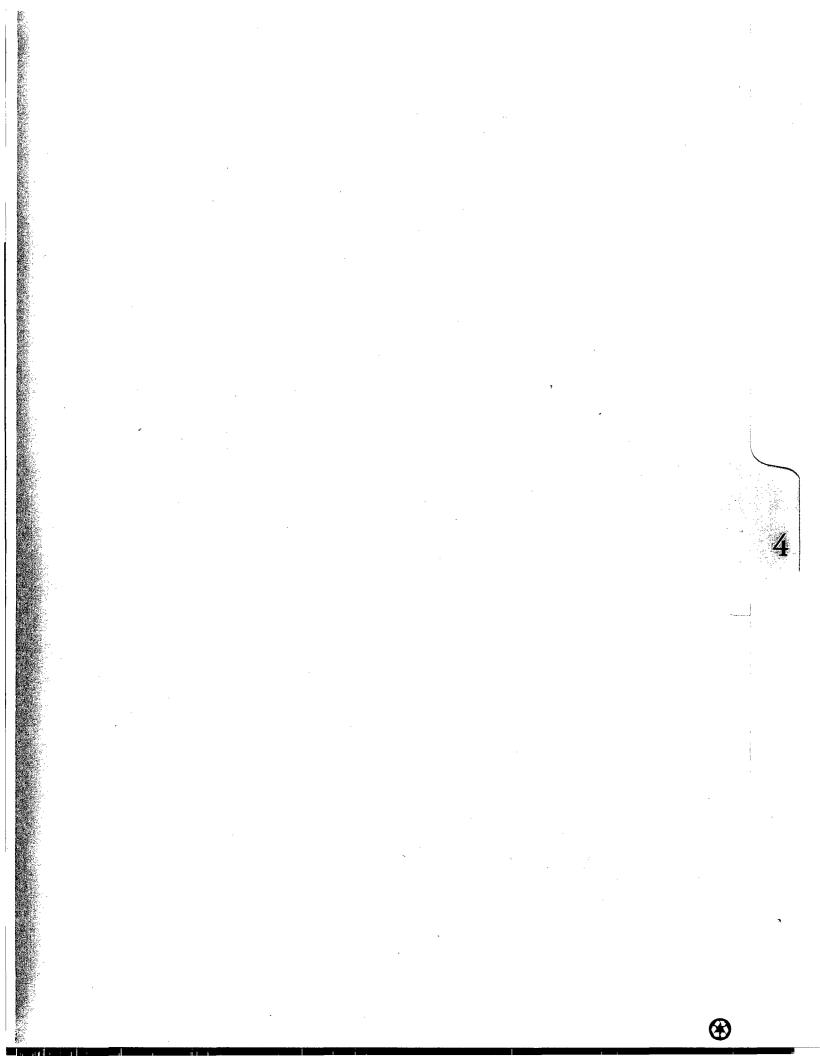
7. Alkalinity is expected to increase during natural attenuation processes, due to the leaching of carbonates from mineral substrates by microbially produced organic acids. Alkalinity data collected from monitor wells MW-4, MW-5, MW-7, MW-10, MW-11A and MW-13 in June 2001 are inconclusive, however.

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In conclusion, dissolved oxygen and nitrate data from this and previous groundwater sampling events suggest that these constituents are acting as electron acceptors during intrinsic bioremediation processes that are ongoing at former field waste tanks area of the facility. Ferric iron also appears to be serving as an electron acceptor during natural attenuation of hydrocarbons, as evidenced by elevated ferrous iron concentrations in monitor wells at the former field waste tanks area. Redox data provide further evidence that natural attenuation of hydrocarbons is occurring in this area. The elevated methane concentrations detected in former field waste tanks area monitor wells suggest that carbon dioxide is also serving locally as an electron acceptor during intrinsic bioremediation of hydrocarbons in this area.

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

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4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the June 2001 groundwater sampling event and the July 2001 confirmation soil sampling event conducted at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Dissolved benzene, BTEX, and TPH concentrations in all monitor wells located near the former fueling system source area are non-detectable or below applicable standards and have remained at these levels for the past five quarterly groundwater sampling events.
- Benzene, total BTEX, and TPH concentrations in all confirmation soil samples collected at the former fueling system source area are less than the remediation goals for soil that were specified in the NMOCD-approved RAP for the facility.
- Operation of the biosparging system in the former fueling system source area has resulted in substantial reductions in hydrocarbon impacts and achievement of remediation goals for soil and groundwater in this area.
- For the second consecutive quarter, benzene and total BTEX concentrations measured in former field waste tanks area monitor wells MW-10 and MW-12 are lower than at any time during the monitoring history of these wells. The June 2001 sampling event is the first in which there were no detections of BTEX constituents in monitor well MW-10. Benzene concentrations in all monitor wells at the former field waste tanks area of the facility, except MW-12, are less than the New Mexico WQCC standard of 0.01 mg/L for benzene.
- Natural attenuation processes appear to be occurring in the vicinity of the former field waste tanks removed in March 1997, based on decreasing hydrocarbon concentrations in local monitor wells over time and as substantiated by geochemical data.
- Groundwater geochemistry in the vicinity of monitor well MW-13, which is located downgradient of the former fueling system source area and the biosparging system, appears to be returning to ambient conditions following removal of hydrocarbons and the November 2000 deactivation of the biosparging system.
- Chloride concentrations in monitor wells MW-14 and MW-15 are less than the NMQCC standard of 250 mg/L. Chloride concentrations are decreasing in monitor well MW-14 and

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have remained essentially constant in monitor well MW-15 since the installation of these wells in January 2001.

4.2 Recommendations

- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-10, MW-11A, and MW-12. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters.
- Continue quarterly monitoring of wells pertaining to the former fueling system source area for 1 year.
- If analytical results for groundwater samples collected from monitor wells at the former fueling system source area do not exceed the groundwater remediation goals specified in the RAP during the 1-year quarterly monitoring period, then a biosparging system closure report will be submitted for the former fuel island portion of the facility.
- After submittal and approval of the biosparging system closure report by the NMOCD, decommission the biosparging system and P&A the injection wells, extraction wells, and applicable monitor wells.

DISTRIBUTION

June 2001Groundwater Sampling Report BJ Services Company, U.S.A. Hobbs, New Mexico

January 7, 2002

Final Distribution as follows:

 1 copy to: State of New Mexico Energy, Minerals, and Natural Resources Dept. Oil Conservation Division 2040 South Pacheco Street, State Land Office Building Santa Fe, New Mexico 87505

Attention: Mr. Wayne Price

copy to: State of New Mexico
 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. 11211 FM 2920 Tomball, Texas 77375

Attention: Ms. Jo Ann Cobb

1 copy to: Brown and Caldwell, Project File

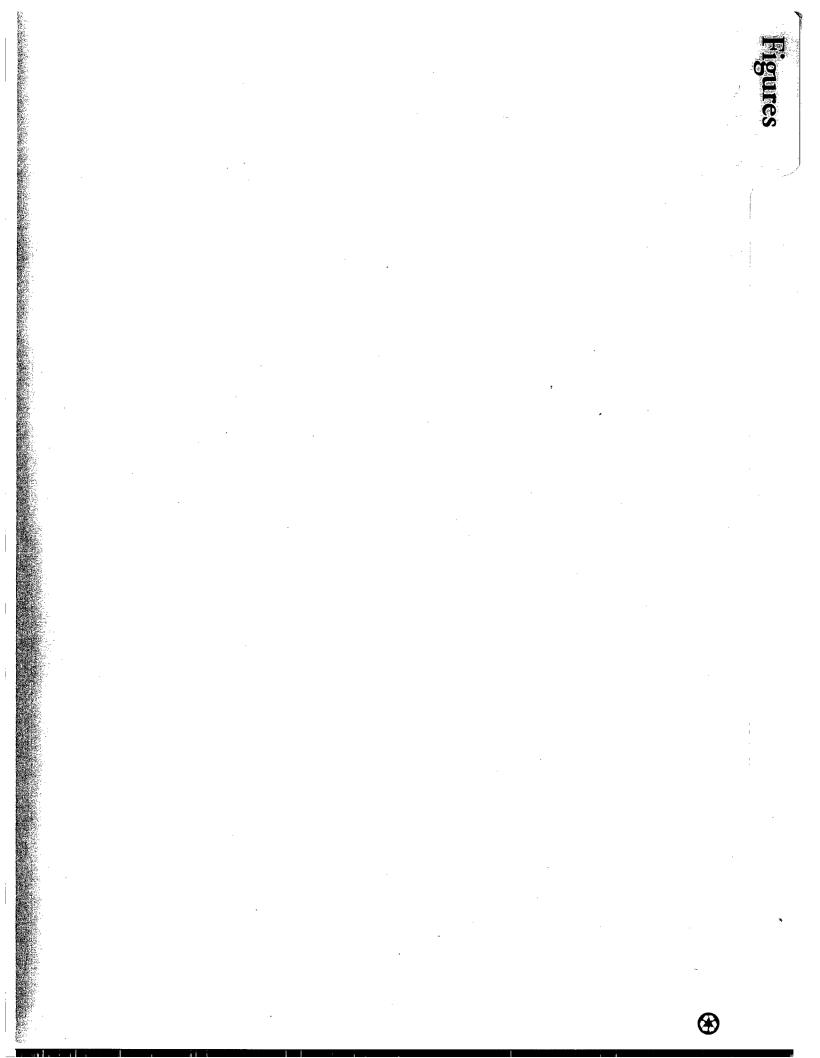
QUALITY CONTROL REVIEWER

Lym Wright

Principal Geologist

RLR/uak

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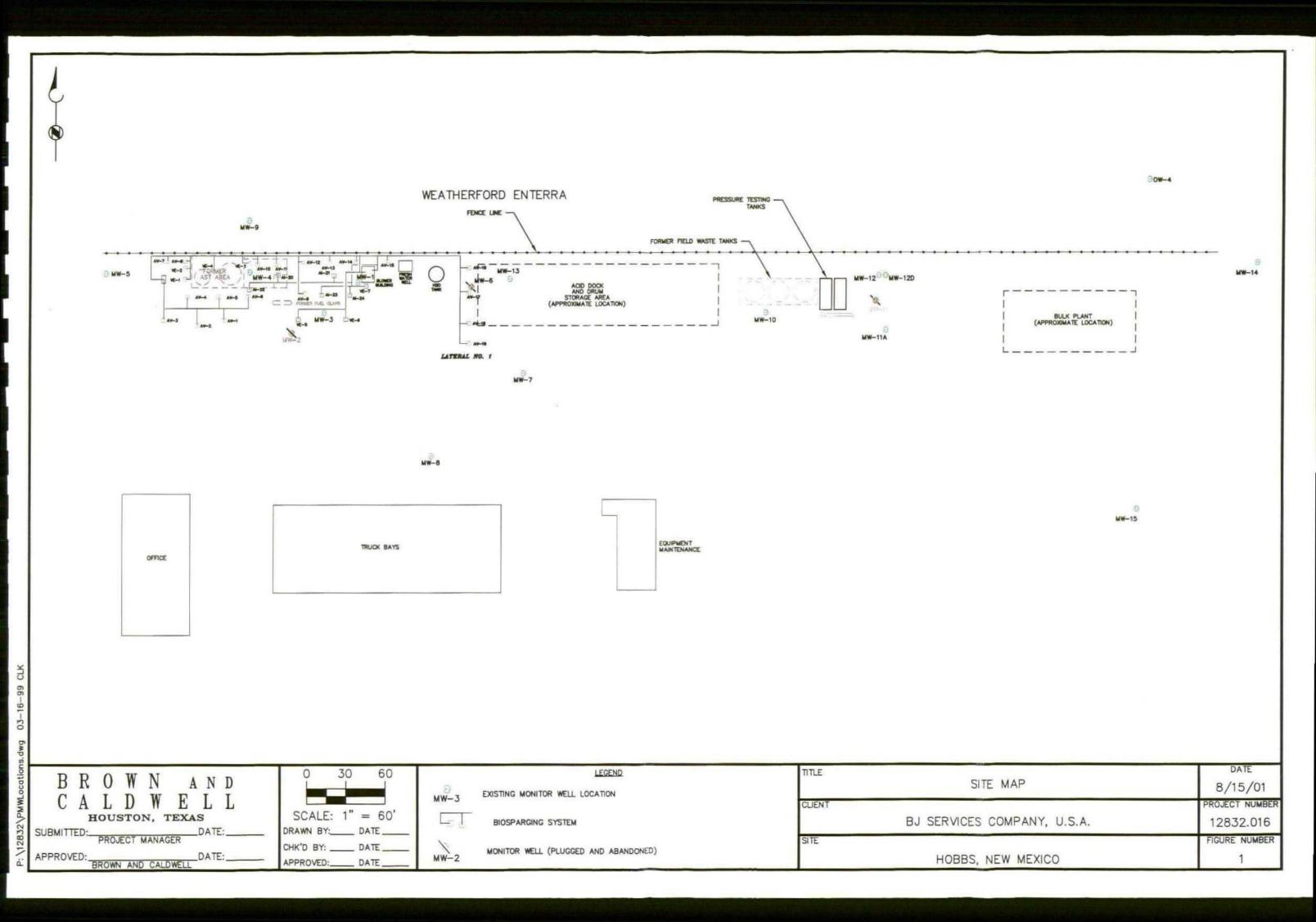


FIGURES

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WEATHERFORD ENTERRA PRESSURE TESTING FENCE LINE -9 MW-9 3586.87 FORMER FIELD WASTE TANKS -

MW-6 0

11

AN-18

AV-18 LATERAL NO. 1

3585.75

0 WW-7 3585.64

ACID DOCK AND DRUM STORAGE AREA (APPROXIMATE LOCATION)

AP-14

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AV-13 A-21

A-33

0 MW-3 3586.66

A-30

VE-S

1

3587.

AV-1

¥E-4

1-2

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0 MW-5

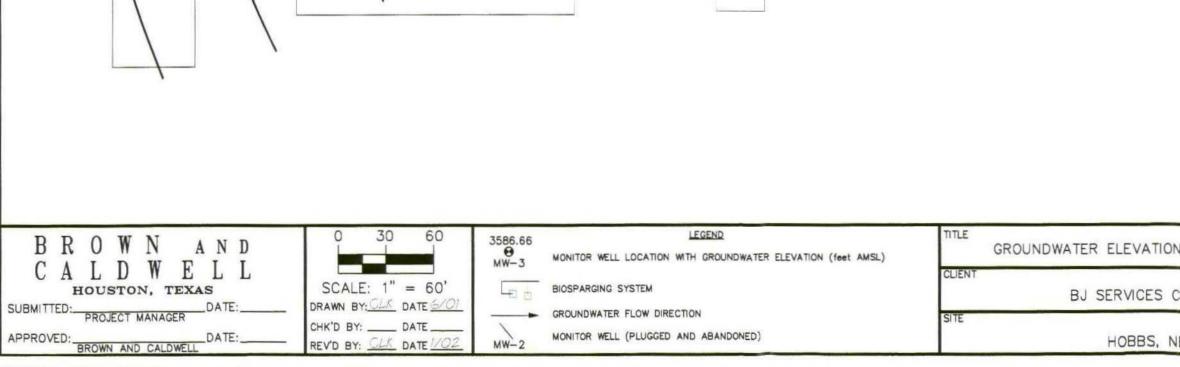
3587.78

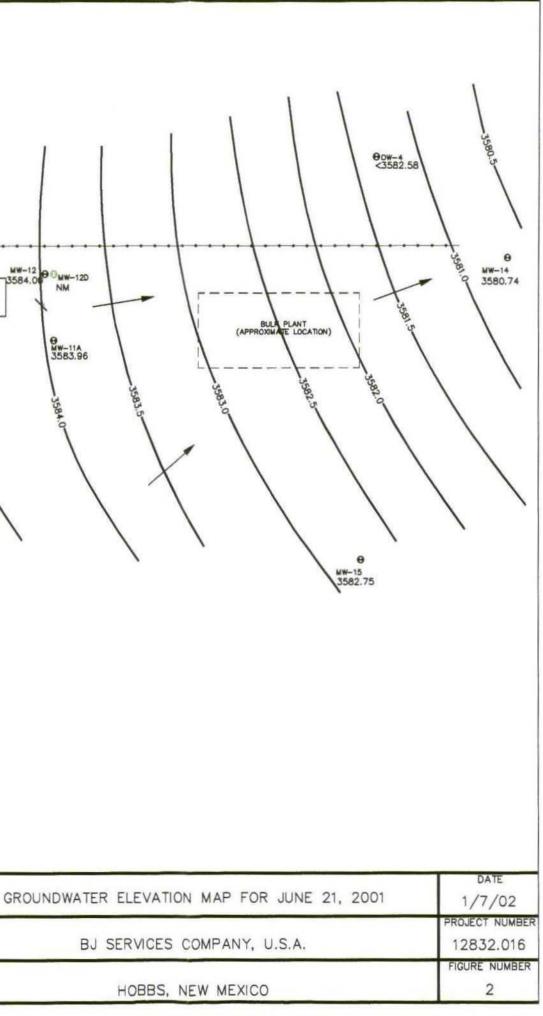
AV-15

TRUCK BAYS

3586.54

0 MW-8 3586.15



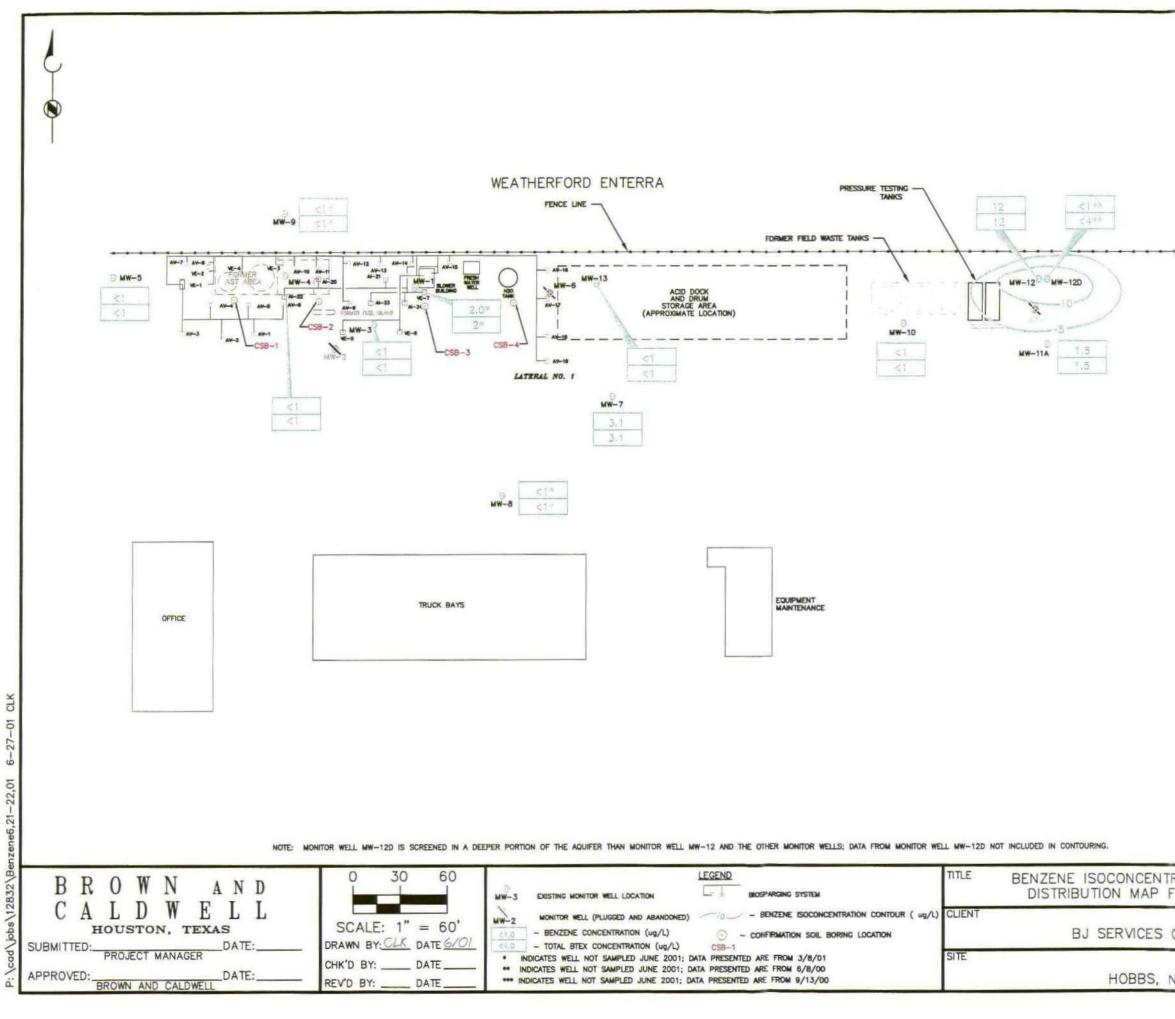


MW-12 73584.00 MW-120 NM

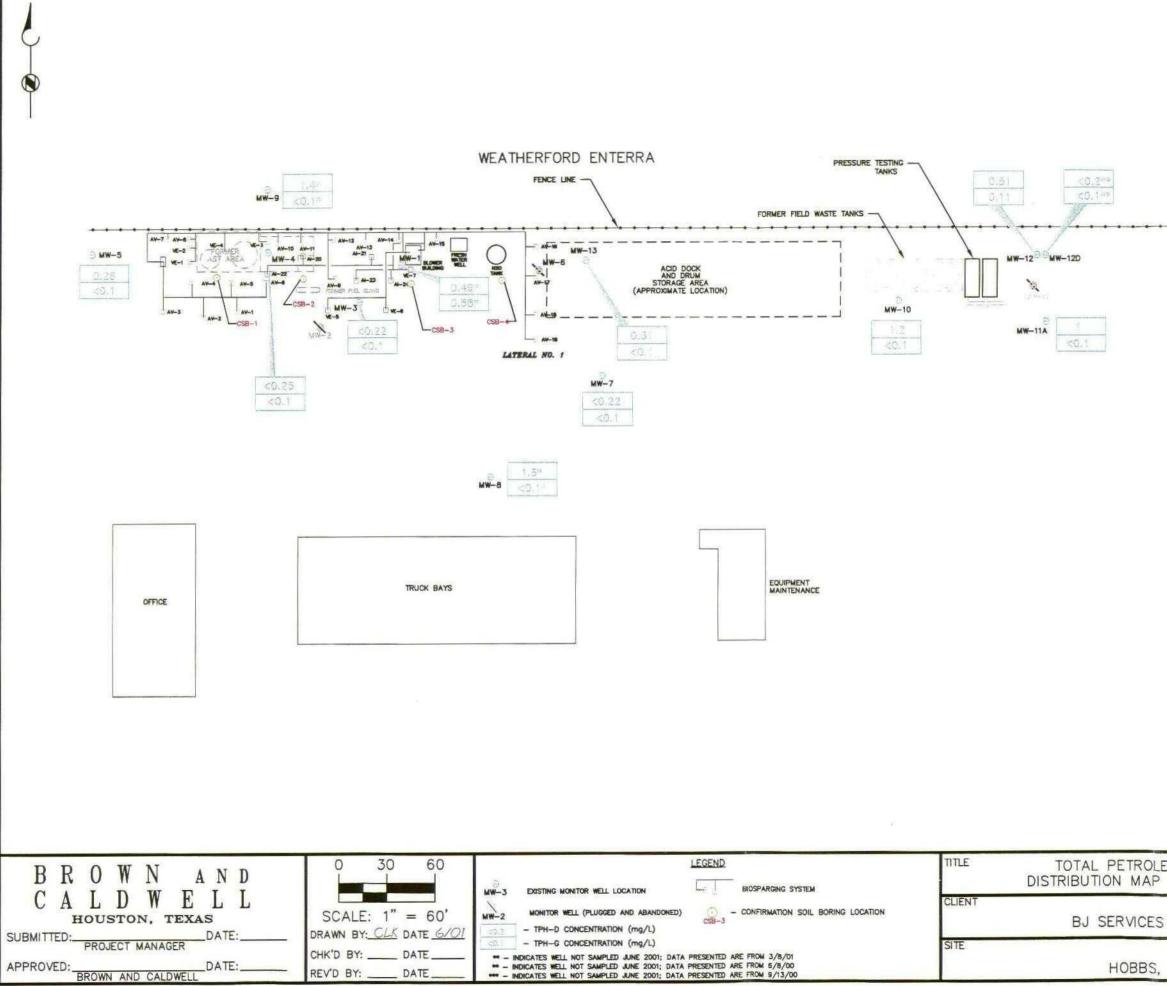
9 MW-11A 3583.96

0 MW-10 3584.66

EQUIPMENT

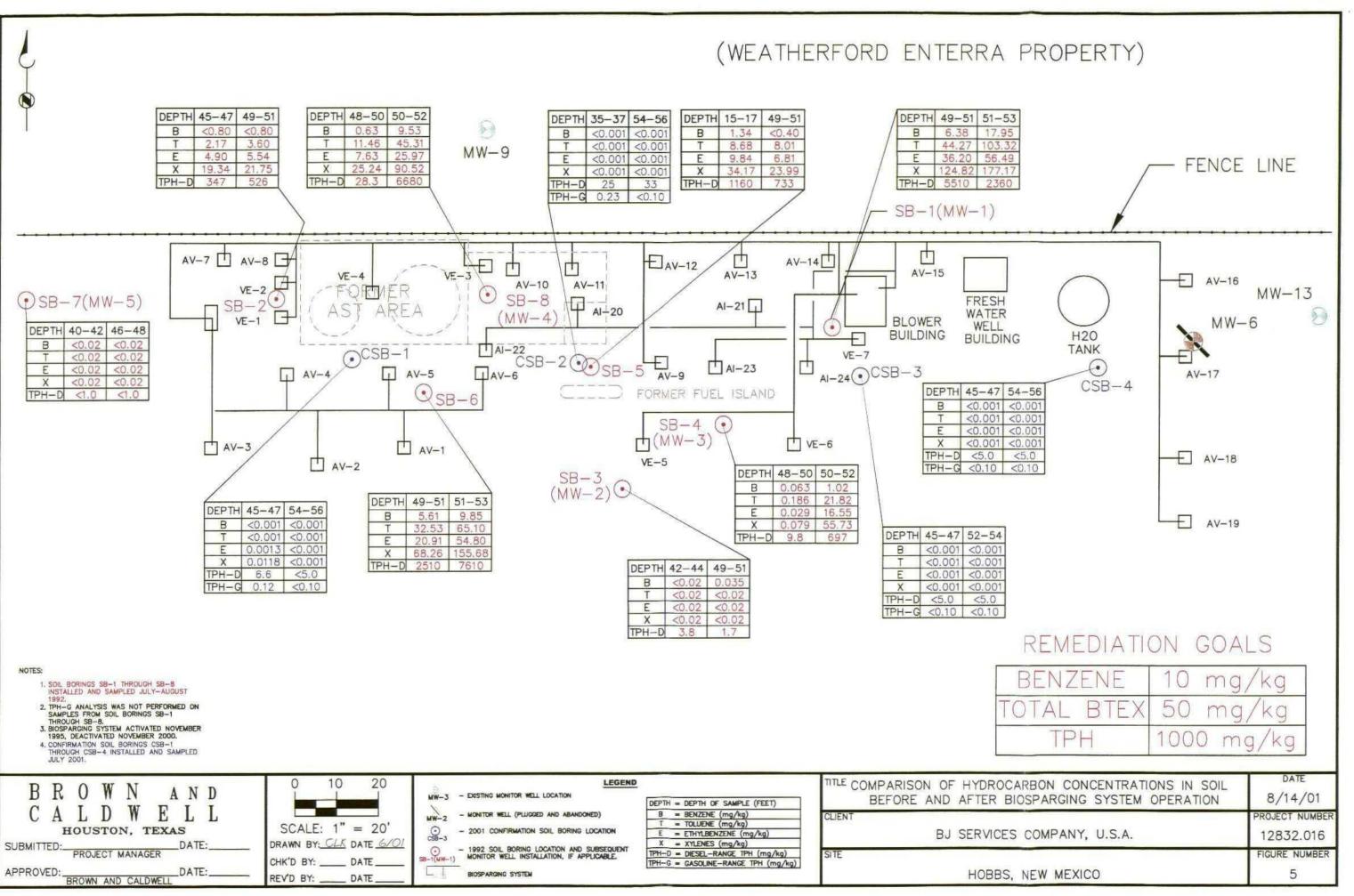


BULK PLANT APPROXIMATE LOCATION	<5.0° <5.0° Э М₩-14
<u>< 5.0%</u> ୧୨.୦% ୦ ୮୪୫–15	
ATION AND TOTAL BTEX OR JUNE 21-22, 2001	DATE 6/27/01 PROJECT NUMBER
OMPANY, U.S.A.	12832.016 FIGURE NUMBER
EW MEXICO	3



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EUM HYDROCARBONS FOR JUNE 21–22, 2001 S COMPANY, U.S.A. DATE 7–9–01 PROJECT NUMBER 12832.016 FIGURE NUMBER	UN-4 COLORINA	20.28 20.19 3 W-14
S COMPANY, U.S.A. 12832.016	EUM HYDROCARBONS FOR JUNE 21-22, 2001	
FIGURE NUMBER		PROJECT NUMBER
NEW MEXICO 4	NEW MEXICO	



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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 -	Brown and Caldwell conducted a soil and groundwater investigation
August 10, 1992	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.

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Date	Activity
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.
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) 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.

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Date	Activity
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.
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 though 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 though 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.

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Date	Activity
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.
May 19, 1999	The NMOCD approved the groundwater delineation work plan.
June10, 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.

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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.

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Table 3 June 21-22, 2001 Field Screening Results for Groundwater Samples Hobbs, New.Mexico Facility BJ Services Company, U.S.A.

Monitor Well	Cumulative Liters Removed	рН	Temperature (⁰ C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)	Alkalinity (mg/L)	Turbidity NTUs ⁽¹⁾
[]	0.5	7.69	25.65	279	156.1	6.73	NM	NM	NM	NM
1012	1.0	7.27	24.63	861	155.4	5.47	NM	NM	NM	NM
MW-3	1.4	7.21	23.62	1082	150.3	4.35	NM	NM	NM	55
	1.8	7.20	23.56	1121	146.3	3.87	3.4	NM	NM	NM
	1.0	7.92	29.11	180	133.4	6.92	NM	NM	NM	9.9
	1.4	7.01	24.74	1243	150,4	5.35	NM	NM	NM	NM
MW-4	1.7	7.09	23.88	1286	153.4	4.65	NM	NM	NM	24.4
	2.0	7.11	23.78	1297	154.0	4.61	0.0	0.8	385	NM
	1.2	6.50	21.64	1229	147.9	5.94	NM	NM	NM	NM
MW 5	1.7	6.11	21.44	1222	156.1	4.94	NM	NM	NM	27.5
MW-5 —	2.2	5.85	21.23	1222	168.2	3.72	NM	NM	NM	NM
	2.5	5.79	21.33	1220	172.5	3.45	2.0	0.0	770	22.9
	1	6.37	26.55	901	172.2	5.62	NM	NM	NM	26.6
MW-7	1.6	6.53	25.75	1104	173.9	4.91	NM	NM	NM	NM
	2.1	6.61	25.65	1324	175.3	3.77	1.0	0	< 385	0.0
	0.6	7.60	24.66	504	-49.5	5.66	NM	NM	NM	NM
	1.0	6.73	23.03	1924	-63.3	3.57	NM	NM	NM	NM
MW-10	1.3	6.65	23.12	2502	-84.6	1.50	NM	NM	NM	NM
	1.6	6.64	22.80	2635	-98.1	0.92	NM	NM	NM	NM
	1.9	6.64	22.81	2663	-103.8	0.70	0.0	> 10	575	102
	1.0	7.06	20.22	2830	-14.9	3.65	NM	NM	NM	NM
MW-11A	1.5	7.05	20.42	3625	-81.6	1.21	NM	NM	NM	> 1000
	1.8	7.06	20.41	. 3707	-91.5	0.94	, NM	NM	NM	NM
	2.1	7.06	20.44	3788	-104.5	0.64	0.0	6.5	770	521
MW-12	NM-B	NM-B	NM-B	NM-B	NM-B	NM-B	NM-B	NM-B	NM-B	NM-B
	1.0	7.49	20.86	2151	198.2	3.02	NM	NM	NM	NM
MW-13	1.5	7.39	20.84	2209	127.4	1.51	NM	NM	NM	315
	1.8	7.37	20.83	2210	94.0	1.40	0.8	1.6	193	88
	1.0	7.07	23.59	162.1	162.1	7.36	NM	NM	NM	NM
MW-14	1.6	6.97	20.21	165.0	165.0	2.56	NM	NM	NM	24.5
	2.0	6.95	19.79	165.3	165.3	3.31	NM	NM	NM	NM
	2.6	6.95	19.69	159.0	139.0	3.33	3.15	NM	NM	<u></u>
	1.0	7.00	20.23	1414	160.9	3.97	NM	NM	NM	NM
MW-15	2.0	6.99	20.17	1422	160.4	3.81	NM	NM	NM	NM
	2.5	6.96	20.16	1422	163.2	3.90	4,0	NM	NM	- 39
OW-4 ⁽²⁾	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NND

⁽¹⁾ NTUs = Nephelometric turbidity units

(2) Well dry

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.NM=Not MeasuredNM-D=Not Measured (well dry)

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NM-B=Not Measured (purged well with bailer)

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgram	ns per liter, ug/L		milligrams p	er 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	1.5
	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 9/12/97	Regular	1800.0	4400.0	1000.0	3000.0		
	12/10/97	-	7600.0				23	21
		Regular	4800.0	12000.0	2800.0	8200.0	11	
	3/24/98	Regular		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
	9/30/98	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/98	Regular	<1.0	1.5	17.0	110.0	1,4	0.31
	3/10/99	Regular	<1.0	<1.0	8.2	110.0	0.62	0.85
	3/10/99	Duplicate	<1.0	<1.0	7.9	110.0	0.66	0.84
	6/10/99	Regular	<1.0	1.1	<1.0	28.0	0.53	0.55
	6/10/99	Duplicate	<1.0	1.8	<1.0	41.0	0.69	0.76
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99 3/9/00	- Bagular	NS < 1	NS < 1	NS < 1	NS 9.1	NS 14	⁻ NS 1.3
	6/8/00	Regular	NS	NS	NS	NS 9.1	NS	NS
	9/13/00	_	NS	NS	NS	NS	NS	NS
	12/7/00	-	NS	NS	NS	NS	NS	NS
	3/8/01	Regular	2.0	<1	<1	<1	0.49	0.58
	6/21/01	-	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	13
	8/23/96	Regular 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

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Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgran	ns per liter, ug/L		milligrams p	er liter, mg/L
MW-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
	9/30/98	Regular	42.0	470.0	450.0	530.0	1.0	3.8
	12/10/98	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/99	Regular	3.2	7,4	42.0	32.0	0.2	0.44
	6/10/99	Regular	1.7	3.1	<1.0	36.0	<0.20	0.18
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/00	Regular	< 1	< 1	< 1	< 1	0.32	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	< 1	<0.22	< 0.1
	9/13/00	Regular	< 1	< 1	< 1	< 1	<0.2	< 0.1
	12/7/00	Regular	< 1	< 1	< 1	< 1	<0.25	< 0.1
	3/8/01	Regular	< 1	< 1	< 1	< 1	0.42	<0.1
	6/21/01	Regular	<1	< 1	< 1	< 1	<0.22	<0.1
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
	9/30/98	Regular	80.0	180.0	370.0	840.0	2.0	3.9
	12/10/98	Regular	28.0	70.0	210.0	960.0	9.3	4.3
	12/10/98	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
	3/10/99	Regular	8.0	20.0	250.0	1400.0	13.0	13
	6/10/99	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63
	9/14/99	Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17
	12/9/99	Regular	< 1	2.5	2.3	20.1	2	0.53
	3/10/00	Regular	< 1	< 1	< 1	3.6	2.6	0.15
	6/8/00	Regular	<1	< 1	< 1	<1	0.44	0.23
	9/13/00	Regular	< 1	< 1	< 1	<1	0.61	<0.1
	12/7/00	Regular	< 1	< 1	1.3	< 1	0.53	0.16
	3/8/01	Regular	<1	< 1	< 1	< 1	0.43	0.16
	6/21/01	Regular	< 1	< 1	< 1	<1	<0.25	< 0.1
MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA	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 NA
	8/1/95	Regular	< 0.3	< 0,3	< 0.3	< 0.6	NA	NA

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Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgram	ns per liter, ug/L		milligrams p	er liter, mg/L
MW-5	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	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	<]	<1	< 0.2	< 0.1
	9/30/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
	6/10/99	Regular	<1.0	<1.0	<1.0	<1.0	<0,20	<0.1
	9/14/99	Regular	<1.0	<1.0	<1.0	<2.0	<0.20	<0.10
	12/9/99	Regular	< 1	< 1	< 1	<1	< 0.2	< 0.1
	3/9/00	Regular	< 1	<1	<1	<1	0.55	< 0.1
	6/8/00	Regular	< 1	< 1	<	<1	< 0.2	< 0.1
	9/13/00	Regular	<1	< 1	<1	<1	< 0.2	< 0,1
	12/7/00	Regular	< 1	<1	< 1	<1	< 0.25	< 0,1
	3/8/01	Regular	< 1	<1	< 1	<1	0.56	<0.1
	6/21/01	Regular	< 1	< 1	< 1	< 1	0.26	<0.1
MW-6	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	4. <u>2</u> < 1	4.0	<1	< 0.2	< 0.1
	6/23/98	Regular	170.0	4.1	15.0	7.2	1.2	0.51
	9/30/98	Regular	1000.0	4.1	140.0	270.0	4.0	3.3
	12/10/98	Regular	7.6	6.6	140.0	5.8	2.0	< 0.1
	3/10/98	Regular	2500.0	930.0	590.0	1400.0	11.0	13
MW-7		····	2300.0 NS	930.0 NS		1400.0 NS	NA	NS
ivi vv - /	8/10/92 2/9/93	Regular			NS			
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	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 8/1/95	Regular Regular	52.0 22.0	3.4 2.2	0.7 0.9	2.8 2.8	NA NA	NA < 0.1

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Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	T.P.H-G
Well	Date	Туре		microgran	ns per liter, ug/L	*	milligrams p	er liter, mg/L
MW-7	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
	9/30/98	Regular	< 1.0	< 1.0		< 1.0	< 0.20	< 0.1
	12/10/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/99	Regular	< 1.0 <1.0	<1.0	<1.0	< 1.0	4.7	< 0.1
	6/10/99	Regular	<1.0	<1.0	<1.0	<1.0	4.7 < 0.20	< 0.1
	9/13/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.1
	12/9/99	Regular	< 5	< 5	< 5	< 5	1.8	< 0.10
	3/9/00	Regular	<1	<1	< 1	< 1	0.66	< 0.3
	6/8/00	Regular	<1	<1	< 1	<1	< 0.21	< 0.1
	9/13/00	Regular	< 1	<1	<1	<1	< 0.21	< 0.1
	12/7/00	Regular	< 1	<1	<1	<1	< 0.29	< 0.1
	3/8/01	Regular	<1	< 1	<1	< 1	1.2	< 0.1
	6/21/01	Regular	3.1	<1	<1	<1	<0.22	< 0.1
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	1.2	0.5	1.5	NA	< 0.1
	11/15/95	Regular	< 0.3	0.5	< 0.3	< 0.6	NA 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		< 0.1
	12/2/96	-	< 0.5	< 0.5	< 1	< 1	NA < 0.1	< 0.1
	3/12/97	Regular Regular	< 1		< 1		< 0.1	< 0.1
	6/12/97	Regular Regular	< 1	• 1		1.8 < 1	< 0.1	< 0.1
1	9/11/97	Regular	<1		< 1			
		Regular		,	<]	<1	0.1	< 0.1
3/23/9 6/23/9 9/30/9	12/10/97	Regular	<1		<	< 1	0.3	< 0.1
		Regular	< 1		< 1	< 1	< 0.2	< 0.1
		Regular	< 1		< 1	< 1	< 0.2	< 0.1
	9/30/98	Regular	< 1.0	10	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/98	Regular	< 1.0	10	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/99	Regular	<1.0	10	<1.0	<1.0	<0.20	<0.1
	6/10/99	Regular	<1.0	10	< 1.0	<1.0	<0.20	<0.1
	9/13/99	Regular	< 1.0	1.0	1.0	< 2.0	<0.20	<0.10
	12/9/99	-	NS		NS	NS	NS	NS
	3/9/00	Regular	< 1	ł	1	< 1	0.55	<0.1

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Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgram	ns per liter, ug/L		milligrams p	er liter, mg/L
MW-8	9/13/00	-	NS	NS	NS	NS	NS	NS
	12/7/00		NS	NS	NS	NS	NS	NS
	3/8/01	Regular	<1	< 1	< 1	< 1	1.6	<0.1
	6/21/01	-	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
I	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	4.5 < 1	<1	0.8 < 1		0.80	0.92
	6/23/98	Regular	2.4	22.0	10.0	26.0 36.0	1	0.25
	9/30/98	-	1.1	5.5			< 0.2	
	9/30/98 12/10/98	Regular			21.0	59.0 70.0	0.27	0.27
	3/10/98	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
		Regular	<1.0	<1.0	5.7	68.0	<0.2	0.22
	6/10/99	Regular	<1.0	1.8	1.8	71.0	< 0.20	0.43
	9/13/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	-	NS	NS	NS	NS	NS	NS
	3/9/00	Regular	< 1	< 1	< 1	64.0	0.66	1.3
	6/8/00	-	NS	NS	NS	NS	NS	NS
	9/13/00	-	NS	NS	NS	NS	NS	NS
	12/7/00	-	NS	NS	NS	NS	NS	NS
	3/8/01	Regular	< 1	< 1	< 1	< 1	1.4	<0.1
	6/21/01		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

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Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgram	ns per liter, ug/L		milligrams p	er liter, mg/L
MW-10	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
	6/23/98	Regular	37.0	< 5	< 5	< 5	2.1	< 0.5
	9/30/98	Regular	84.0	3.2	30.0	2.2	1.4	0.36
	12/10/98	Regular	29.0	1.0	7.0	1.0	0.86	0.18
	3/9/99	Regular	28.0	<5.0	5,8	<5.0	0.92	<0.5
	6/10/99	Regular	17.0	<1.0	<1.0	<1.0	0,30	0.16
	9/14/99	Regular	10.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	23.0	< 1	< 1	1.2	0.44	0.16
	3/10/00	Regular	300.0	4.3	6.6	43.2	1.2	0.85
	6/8/00	Regular	78.0	1.7	7.2	9.0	0.67	0.74
	9/13/00	Regular	23.0	1.5	1.1	2.9	1.6	0.41
	12/7/00	Regular	7.2	<1	<1	<1	1.5	0.15
	3/8/01	Regular	3.4	1.1	- <1	<1	3.4	0.2
	6/22/01	Regular	< 1	<1	< 1	<1	1.2	<0.1
MW-11	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
	9/30/98	Regular	9.3	3.7	2.2	7.0	<0.20	0.1
	12/10/98	Regular	1.7	<1.0	<1.0	<1.0	<0.20	<0.1
	3/10/99	Regular	<5	<5	<5	<5	0.3	< 0.5
	6/10/99	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.10
	9/13/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	< 0.10
	12/9/99	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
	3/9/00	Regular	1.2	<1	<]	<1	0.43	< 0.1
	6/8/00	Regular	3.6	< 1	< 1	< 1	0.37	< 0.1
	9/13/00	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	<0.12
	6/22/01	Regular	1.5	<1	< 1	<1	1	<0.3
MW-12		Regular	1.5			8.0	0.29	0.41
s vi vv - 1 Z	3/24/98 6/23/98	Regular Regular	88.0	11.0 < 5	6.0 < 5	8.0 < 5	< 0.29	< 0.5
	6/23/98	Duplicate	89.0	< 5	< 5	< 5	0.2	< 0.5
	9/30/98	Regular	260.0	3.0	1.2	7.9	<0.20	0.62
	12/10/98	Regular	160.0	<1.0	<1.0	1.2	0.21	0.36
	3/10/99	Regular	160.0	1.1	<1.0	2.9	0.38	0.45

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Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре	micrograms per liter, ug/L			milligrams per liter, mg/L		
MW-12	6/10/99	Regular	49.0	1.4	<1.0	<1.0	0.22	0.13
	9/14/99	Regular	75.0	< 1.0	< 1.0	< 2.0	<0.20	0.23
	12/9/99	Regular	64.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/00	Regular	93.0	< 1	< 1	<1	< 0.2	0.21
	3/10/00	Duplicate	99.0	<1	< 1	< 1	0.22	0.22
	6/8/00	Regular	62.0	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/00	Regular	34.0	< 1	< 1	< 1	0.23	< 0.1
	12/7/00	Regular	27	<1	2.9	1.9	<0.25	<0.1
	3/8/01	Regular	14	<1	<1	<1	2.1	0.1
	6/22/01	Regular	12	< 1	< 1	< 1	0.51	0.11
MW-12D	7/2/99	Regular	< 5	< 5	< 5	< 5	<0.20	<0.10
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/00	Regular	< 1	< 1	< 1	< 1	0.24	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/00	-	NS	NS	NS	NS	NS	NS
	12/7/00	-	NS	NS	NS	NS	NS	NS
MW-13	7/2/99	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/99	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/99	Regular	430.0	16.0	410.0	40.9	0.46	3.2
	3/10/00	Regular	88.0	2.8	200.0	1.3	1.9	0.99
	6/8/00	Regular	6.0	< 1	63.0	3.3	1.1	0.91
	9/13/00	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/00	Regular	<1	<1	<1	<1	0.43	<0.1
	3/8/01	Regular	<1	<1	1.2	<1	2	<0.1
	6/22/01	Regular	< 1	< 1	< 1	< 1	0.31	<0.1
MW-14	1/14/01	Regular	<1	<1	<1	<1	<0.2	<0.1
	6/21/01	-	NS	NS	NS	NS	NS	NS
MW-15	1/14/01	Regular	<1	<1	<1	<1	<0.2	<0.1
	6/21/01	-	NS	NS	NS	NS	NS	NS
OW-4	6/10/99	Regular	<1.0	<1.0	<1.0	4.4	<0.2	<0.10
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.2	<0.1
	3/9/00	Regular	<1.0	<1.0	<1.0	<1.0	0.25	<0.1
	6/8/00	Regular	<1.0	<1.0	<1.0	<1.0	<0.21	<0.1
	9/13/00	Regular	<1.0	<1.0	<1.0	<1.0	<0.2	<0.1
	12/7/00	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	3/8/01	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	6/21/01	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D

¹ Well plugged and abandoned 7/1/99

NA=Not Analyzed NS=Not Sampled

NSP=Not Sampled due to Phase Separated Hydrocarbons

NS-D=Not Sampled because well was dry

Table 5Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for
Monitor Wells MW-5, MW-10, MW-11A, and MW-12

Hobbs, New Mexico

BJ Services Company, U.S.A.

				Methane
Well	Date	Nitrate ¹ (mg/L)	Sulfate ¹ (mg/L)	(mg/L)
	3/23/98	3.87	190	< 0.0012
	3/9/99	<0.1	195	< 0.0012
	6/10/99	4.73	209	< 0.0012
	9/14/99	4.3	210	< 0.0012
	12/9/99	4.2	210	< 0.0012
MW-5	3/9/00	5.3	260	< 0.0012
	6/8/00	4.7	240	< 0.0012
	9/13/00	3.93	200	< 0.0012
	12/7/00	3.27	160	< 0.0012
	3/8/01	3.24	180	< 0.0012
	6/21/01	2.74	150	0.0017
	3/23/98	0.07	320	0.91
	6/23/98	<0.1	325	0.55
	9/30/98	<0.1	204	0.81
	12/10/98	<0.1	180	0.091
	3/9/99	<0.1	142	0.035
	517177	-0.1	223 ³	0.055
MW-10	9/14/99	<0.10	160	0.0049
101 00 -10	12/9/99	0.49	170	0.0039
	3/10/00	0.1	160	0.0056
	6/8/00	<0.1	150	0.031
	9/13/00	<0.1	160	0.031
	12/7/00	<0.1	190	0.17
	3/8/01	<0.1	270	< 0.0012
	6/22/01	<0.1	270	0.044
MW-11A	3/23/98	< 0.05	190	0.14
	6/23/98	<0.1	225	0.11
	9/30/98	0.4	196	0.043
	12/10/98	0.7	188	0.033
	2/10/00	<0.1	164	0.004
	3/10/99	<0.1 ²	227 ³	0.094
	6/10/99	<0.1	181	0.0036
	9/13/99	0.22	250	< 0.0012
	12/9/99	<0.1	290	0.0079

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Table 5Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for
Monitor Wells MW-5, MW-10, MW-11A, and MW-12

Hobbs, New Mexico

BJ Services Company, U.S.A.

		1		Methane
Well	Date	Nitrate ¹ (mg/L)	Sulfate ¹ (mg/L)	(mg/L)
MW-11A	3/9/00	0.11	270	0.037
	6/8/00	<0.1	240	0.0069
	9/13/00	<0.1	320	< 0.0012
	12/7/00	<0.1	260	0.0096
	3/8/01	<0.1	330	0.0028
	6/22/01	<0.1	180	0.0074
	3/23/98	< 0.05	240	< 0.0012
	6/23/98	<0.1	240	< 0.0012
	9/30/98	<0.1	168	< 0.0012
	12/10/98	<0.1	202	< 0.0012
MW-12	3/10/99	<0.1	137	< 0.0012
	5/10/99	<0.1 ²	193 ³	<0.0012
	6/10/99	<0.1	217	< 0.0012
	9/14/99	<0.10	230	< 0.0012
	12/9/99	<0.1	180	< 0.0012
	3/10/00	<0.1	210	< 0.0012
	6/8/00	<0.1	220	< 0.0012
	9/13/00	<0.1	240	< 0.0012
	12/7/00	<0.1	260	< 0.0012
	3/8/01	<0.1	300	< 0.0012
	6/22/01	<0.1	360	0.0021

1=By EPA Method 300, except as noted

2=By EPA Method 353.3

3=By EPA Method 375.4

mg/L = milligrams per liter

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Table 6Cumulative Results⁽¹⁾ for Chloride⁽²⁾ AnalysesHobbs, New Mexico FacilityBJ Services Company, U.S.A.

Samule Date									Monito	Monitor Wells ⁽³⁾							
	MW-1	MW-3		MW-4 MW-5	MW-6	MW-7	MW-8	9-WM	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
8/1/8	160	150	310	130	380	310	350	110	2200	3400	NA ⁽⁴⁾	NA	NA	AN	NA	NA	NA
8/23/96	130	140	100	66	210	250	360	140	2000	2900	NA	NA	NA	AN	NA	AN	NA
3/23-24/98	212	206	126	151	183	223	364	164	2390	NA	940	1200	NA	NA	ΝA	NA	NA
3/9-10/99	163	156	142	155	411	238	274	123	1160	NA	834	314	NA	NA	NA	NA	NA
6/10-7/2/99	NA	ΝA	NA	NA	AN	٨N	NA	NA	NA	NA	NA	NA	195	496	AN	NA	266
3/9-10/00	258	196	196	196	AN	224	241	131	474	NA	1290	327	117	276	ΝA	NA	258
1/14/01	ΝA	ΝA	ΝN	NA	AN	ΝA	ΝA	NA	ΝA	NA	NA	NA	NA	NA	368	219	NA
3/8-9/01	NA	165	172	152	٩N	224	250	127	879	NA	1720	586	NA	276	327	NA	AN
6/21/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ΝA	NA	NA	222	222	NA
I/2000 ci; (1)																	

(1) - in mg/L.

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

(¹⁾ - 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-12 installed June 1999. MW-13 installed June 1999. MW-14 installed June 1999. MW-14 installed January 2001.

(4) - NA indicates not analyzed.

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Table 7

Analytical Results⁽¹⁾ for Confirmation Soil Samples Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Contirmation Depth Soil Boring (feet ID gr	epth Interval (feet below grade)	Benzene ⁽²⁾	Toluene	Ethyl- benzene	Xylenes	Total BTEX ⁽³⁾	D-H4T	D-H-T	TPH-D plus TPH-G ⁽⁴⁾
CSB-1	45-47	<0.001	<0.001	0.0013	0.0118	0.0131	6.6	0.12	6.72
1-000	54-56	<0.001	<0.001	<0.001	<0.001	<0.004	<5.0	<0.10	<5.1
CSB-2	35-37	<0.001	<0.001	<0.001	<0.001	<0.004	25	0.23	25.23
	54-56	<0.001	<0.001	<0.001	<0.001	<0.004	33	<0.10	33
CSB-3	45-47	<0.001	<0.001	<0.001	<0.001	<0.004	<5.0	<0.10	<5.1
C-700	52-54	<0.001	<0.001	<0.001	<0.001	<0.004	<5.0	<0.10	<5.1
CSB-4	45-47	<0.001	<0.001	<0.001	<0.001	<0.004	<5.0	<0.10	<5.1
1 900	54-56	<0.001	<0.001	<0.001	<0.001	<0.004	<5.0	<0.10	<5.1

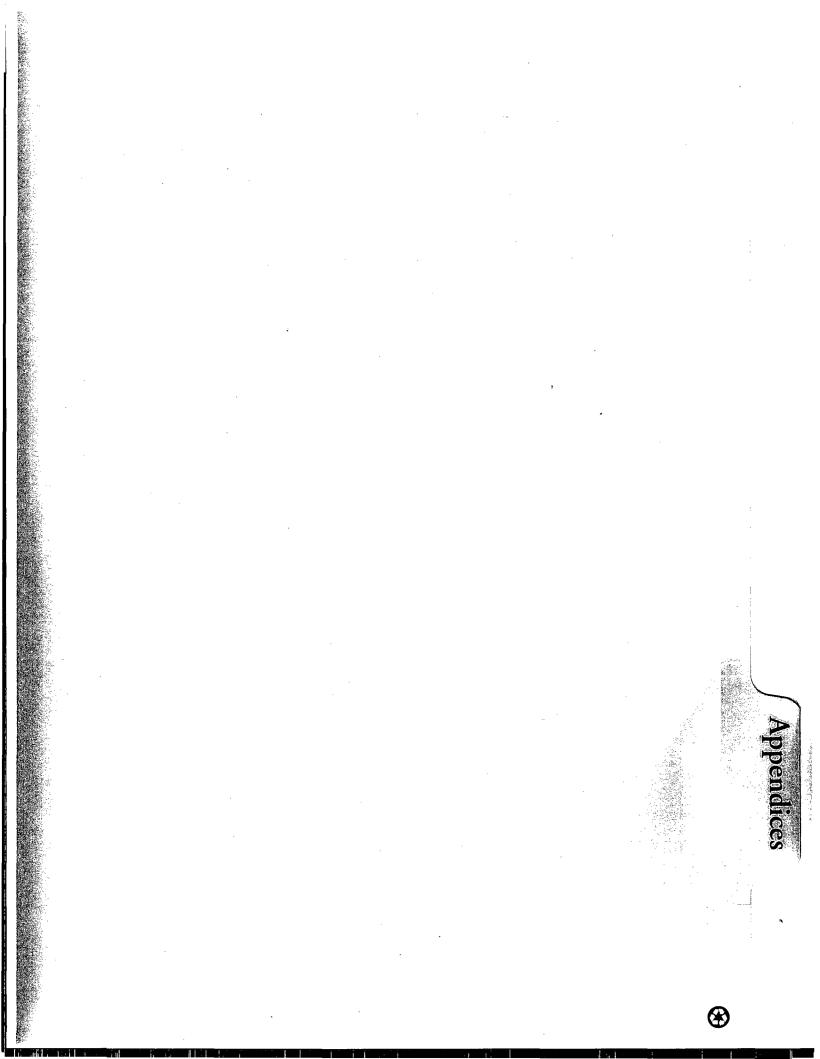
(1) - in milligrams per kilogram (mg/kg)

 $^{(2)}$ - remediation goal for benzene = 10 parts per million (ppm or mg/kg)

⁽³⁾ - remediation goal for total BTEX = 50 ppm (50 mg/kg)

⁽⁴⁾ - remediation goal for TPH = 1000 ppm (1000 mg/kg)

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APPENDICES

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APPENDIX A

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Groundwater Sampling Forms

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	IECT INFO					Date: 06	21/01		me: 1530
Project Client:_	Number: BJ Svcs	_ 12832	Task Numi	oer:		Personnel	lenkins Kelly		TNDY
	Location:	_ Hobbs				Weather:	90, SU	NNY, W	INDY
2. WELL	DATA		-						
Casing	Diameter:		nes	Type: 🗶 P	VC 🗆 Stainle	ess 🛛 Galv. St	eel 🗆 Teflon®	Other:	
	Diameter:	<u> </u>	nes	Type: 🔏	VC 🗆 Stainle	ess 🗆 Galv. St	eel 🖵 Teflon®	Other:	
	epth of Well:_							ctive Casing 🛛 🔾	
	o Static Water							ctive Casing Q	
	o Product: of Water Colu				op of Well Co ne:				
Lengin						gui		erval (from GS): well = 0.167 gal/ft	
. PURG	E DATA								
Purge N	Aethod: 🛛 Baik Cer	er, Size: htrifugal Pun	np 🗆 Periste	r Pump 🔲 2 altic Pump 🕻	" Submersible) Inertial Lift Pu	Pump 🖬 4" S ump 🖬 Other:	ubmersible Pur	qn	Equipment Model(
	ıls: Pump/Baile	Staini	ess 🛛 PVC	🗆 Teflon@	0 🗆 Other:				
	ils: Rope/Tubin			•	ne 🗆 Teflon@		isposable	UC1	GAM
		Dedic	cated 🗅 Pr	epared Off-S	Site REield (2.72	LA M. A. DRT
Was we	Il purged dry?	•	□ No		ing Rate:	· · ·	min	3	MAR I MILOY
Time	Cum. -Callon Removed	рH	Temp	Spec. Cond.	Eb	Dissolved Oxygen	Turbidity	Other:	Comments
1530	0.5	7.69	25.65	279	156.1	6.73			
540	1.9-1.0	7.27	24.63	861	155.4	5.47			
1542	1.4	7.21	23.67	1		4.35	55		
544	1,8	1	23.56		146,3		57		
<u> </u>	170	1.20	67.36	1161	146,2	2.01			
					: 				
<u> </u>									
						·			
					۰				
							2 2 2		
		ТЛ						Geoch	emical Analyses
1. SAMI		10							Iron: mg/L
		ize: 📕				ar Subn	nersible Pump	E Ferrous	
Method	d(s): Dailer, S Deristait		inertiai Lift P	ump 🛛 Othe	ər:		nersible Pump		3.4
Method	No). 🗘 Bailer, S	ize: / Ic Pump □ r /LStaini □ Dedic	Inertial Lift P ess	ump 🖬 Othe Teflon® pared Off-Si	er:) ⊒ Ottrear te _⊒ Freaktir	 ≪oned ⊒D		DO:	3.4 mg/
Methoc Materic	d(s): Dailer, S Deristait	ilze: / Itc Pump □ M_Staini □ Dedic	Inertial Lift P ess D PVC cated D Pre ethylene D	ump D Othe Teflon® pared Off-Si Polypropyle	er: Di Ottoer te Li Feerd (ne Li Teerkyre	 ≪oned ⊒D	isposable		
Method Materic Materic Depth t	d(s): D Bailer, S D Peristalt ils: Pump/Baile ils: Tubing/Rop o Water at Tim	ize: / Ilc Pump	Inertial Lift P ess	ump D Othe D Teflorce pared Off-Si Polypropyle repared Off-	er:) te former	 ≫⊐ned □D ® □ Other:	isposable Disposable	DO:	: mg/
Method Materic Materic Depth t Sample	d(s): D Bailer, S D Peristalt als: Pump/Baile als: Tubing/Rop to Water at Tim HD:	ize: ic Pump r	Inertial Lift P ess PVC cated Pre ethylene cated Pri cated Pri bling: Sample Ti	Teflone pared Off-Si Polypropyle repared Off- me: 150	er:) Cithear te Cithear ine Citheart (Site A Constitutions) Fiend Fithere /5	eraned D D Other: Ceraned D	Disposable	DO: Nitrate	mg/
Method Materic Materic Depth t Sample	d(s): D Bailer, S D Peristalt ils: Pump/Baile ils: Tubing/Rop o Water at Tim	ize: ic Pump r	Inertial Lift P ess PVC cated Pre ethylene cated Pri cated Pri bling: Sample Ti	Teflone pared Off-Si Polypropyle repared Off- me: 150	er: D Cither te Cither ne Cither() Site A Constit Field Fithere 45	Haned □D □ Other: Haned □ Hana Yes	Disposable	DO: Nitrate Sulfate	mg/
Method Materic Materic Depth t Sample Duplicc	d(s): D Bailer, S D Peristalt als: Pump/Baile als: Tubing/Rop to Water at Tim HD:	ize: ic Pump r	Inertial Lift P ess PVC cated Pre ethylene cated Pri cated Pri bling: Sample Ti	Teflone pared Off-Si Polypropyle repared Off- me: 150	er: D Cither te Cither ne Cither() Site A Constit Field Fithere 45	Haned □D □ Other: Haned □ Hana Yes	Disposable	DO: Nitrate Sulfate	mg/

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BROWNAND CALDWELL

WELL ID:_____MW-4_____

Project Number:	10800 Tan	k Number:		Date: 6	21/01	Tia	ne: (610
Client:_BJ Svcs	12002 TOS		_	Personnel			
Project Location:	Hobbs			Weather:	75. SUN	my, we	404
WELL DATA							
Casing Diameter:						Other:	
Screen Diameter:	Y -				teel 🛛 Teflon®		
Total Depth of Well		FF				tive Casing 🛛 Ot	
Depth to Static Wa	ter: 56.18 fee					tive Casing 0	
Depth to Product:_			Top of Well C		Top of Protect	ctive Casing 🔲 O	her:
Length of Water Co	olumn:fe	et Well Volur	ne:	gal		ərval (from GS):_ vell = 0.167 gal/ft	4-inch well = 0.667 g
PURGE DATA							
Purge Method:	ailer, Size: 🙀	Bladder Pump	2" Submersible		Submersible Purr	q	
	Stainless				·		Equipment Model(s)
Materials: Pump/Bo		d 🗆 Prepared Off-S					- <u>MP15</u>
Materials: Rope/Tul		ne 🗗 Polypropyle d 🛛 Prepared Off-	Site 🍂 Field	Cleaned	Disposable		DOKL
Was well purged di	y? 🗆 Yes 🖊	No Pump	oing Rate:	2.15 .5	/min	3. HANI	vah turbe
Time Cum. Gall Remove	DH I	emp Spec. Cond.	ag	Dissolved Oxygen	Turbidity	Other:	Comments
615 1.0	7.92 2	9.11 180	133.4	6.92	9.9		
618 1.4	7.01 24	1.74 150-4	150.4	15,35			
620 1.7	7.092	.88 129.6	153.4	4.65	24.4		
22 2.0		78 1297		1.1.			
occ po	(11 63	D 1 211	127.0	/.01			
					<u> </u>		
					1	5 1	
			1	-			
			-				······
. SAMPLING D	ATA					Geoche	emical Analyses
		dder Pump 🔲 2" Su		mp 🗖 4" Subr	mersible Pump	Ferrous	Iron: 0.8 mg/L
Materials: Pump/Bo		ital Lift Pump 🗅 Ott 🗆 PVC 🛛 Teflon				DO:	\mathcal{O}
					Disposable	DO.	
Materials: Tubing/R	ope	ene 🛛 Polypropyle d 🖵 Prepared Off	ene 🗆 Teflor -Site 🕵 Field	189 🖬 Other: I Cleaned 🛛 🖾	Disposable	Nitrate:	mg/l
Depth to Water at				red? 🗆 Yes	• -	Sulfate:	mg/L
Sample ID: MW	<u>-4</u> sai	mple Time: 6	5	# of Contc		Alkalinit	y: 585 mg/1
Duplicate Sample	Collected? 🗅	Yes No ID:			-		
. COMMENTS							<u></u>

WELL ID:_____MW-5_____

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	JECT INFO					06	6/21/01		AGUE
	Number:	12832	Task Num	ber:		Dule			Time 0945
	_BJ Svcs	i la bit				Personnel:	Jenkins, Kelly	NY LA	NDY
Project	Location:	_Hobbs				Weather:_	אישל איש		
WELL	DATA	-							
Casing	Diameter:	inch	nes	Type:	VC 🗆 Stain	less 🛛 Galv. S	teel 🛛 Teflon®	Other:	
	Diameter:			Туре: 🍂	VC 🛛 Stain	less 🛛 Galv. S	teel 🛛 Teflon®	Other:	
Total De	epth of Weil	<u>4,5</u> fee	et	From: 📕	Top of Well C	asing (TOC)	Top of Protect	ctive Casing	
Depth t	to Static Water	5794	feet	From: 🗯	lop of Well C	asing (TOC)	Top of Protect	ctive Casing	□ Other:
	to Product:						Top of Protection	ctive Casing	❑ Other:
Length	of Water Colu	mn: <u>4.5</u>	feet	Well Volum	ne: 0,7_	gat	Screened Int	•	,
	GE DATA							vell = 0.167 gai	/ft 4-inch weil = 0.667
-	C) Baile	er, Size:		er Pump 🗅 2	" Submersible	ePump 🖬 4":	Submersible Pun	qu	
Purge N	Nethod: Cen	ntrifugal Pu n	np 🛛 Perist	altic Pump 🕻	linertial Lift F	ump 🛛 Other	"		Equipment Model(
Materia	als: Pump/Baile) 🛛 Other: ite 🖸 Field (Cleaned D	Disposable	I QE	D-MP15
Materia	als: Rope/Tubin	g 🎘 Polye	thylene		ne 🗆 Teflon Site 🗇 🖙 🖃	® □ Other: Cleaned □	Disposable	2 457	-600×L
Was we	ell purged dry?								MAH TURSTO
	Cum. Gallon			Spec.	ORF	Dissolved	Ŷ	Other:	
Time	Removed	рН	Temp	Cond.	<u>Eb</u>	Oxygen	Turbidity		Comments
25	1.2	6.50	21,64	(229	147.9	5.94			CLEAR
530	1.7	6.11	21 44	1222	156,1	4.94	27,5		4.7
n35	2.2			1		3.72			11 .
				1222			110		
<u>)38</u>	2.5	<u>3.M</u>	ZI.33	1220	172.5	5.45	22.9		1
				†					
	<u> </u>								
									1
						1			-
	1						+		
			L	1	!				<u> </u>
SAM			Diand D				mentinie D		
Method	🗆 Peristalti	ic Pump 🗖	Inertial Lift F	Pump 🛛 Oth	er:	mp 🖬 4" Subi	mersible Pump	Ferro	ous Iron: 0.0 mg/L
Materic	als: Pump/Baile		ess DPVC		Other:_	Cleaned 🔲 🕻		DO:	2.6 _mg,
Materia	als: Tubing/Rop							Nitro	ate:mg/
	to Water at Tim		0	<u>, 70</u> ime:]01		ed? 🗆 Yes	· 9	Sulfo	-774
Depth t			Sample T			# of Conto	ainers:	Alko	ilinity: <u>10</u> mg/l
Depth t Sample	10: MW-5			No ID:					
Depth t Sample	a ID: MWS	llected?	- 160 X						
Depth t Sample Duplicc			<u> </u>		PRAI	URIUN	OBSER	π0.	
Depth t Sample Duplicc	ate Sample Co		<u> </u>		PRAU	UPOWAS	OBSER	ÆØ.	
Depth t Sample Duplicc	ate Sample Co		<u> </u>		PRAU	UPUUN	OBSER	/E ().	

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BROWN AND CALDWELL

B R O W N AND C A L D W E L L

WELL ID:_____MW-7_____

	CT INFOR					Date: 06	hilo		1247
-	mber:	12832	. Task Numi	ber:	-				Time: 1240
Client:_ BJ							Jenkins, Kelly		
Project Loc	cation:	Hobbs				Weather:			
. WELL D									
Casing Dia	ameter: 2	incl	nes	Type: 🤻 P	VC 🗆 Stainle	ess 🛛 Galv. St	eel 🗆 Teflon®	Other:	
	meter:	•	ıes	Type: 🗨 P	VC 🗆 Stainle	ess 🛛 Galv. St	eel 🗆 Teflon®	Other:	
	h of Well:	10 .] Other:
Depth to S	tatic Water:	58.91	feet	From: 💋 T	op of Well Co	using (TOC)	Top of Prote	ctive Casing] Other:
Depth to P	Product:	fee	t	From:	op of Well Co	osing (TOC)	Top of Prote	ctive Casing (Other:
Length of \	Water Colun	nn:	feet	Well Volum	ie:	gal		erval (from G well = 0.167 gal,	
Materials: F	hod: 🛛 Baile Cent Pump/Bailer Rope/Tubing	trifugal Pur Stainl Dedic Polye	mp	altic Pump Tetion® epared Off-Si Polypropyler	Inertial Lift Pi O D Other: te D Field C ne D Teflon(ump 🛯 Other:	Pisposable		Equipment Model(s) D-MP15 -600 XL
Was well p	ourged dry?				-	.15 L		3. HAA	INAH TURBED.
lime i i	ium. Sallons Removed	рН	Temp	Spec. Cond.	OFP	Dissolved Oxygen	Turbidity	Other:	Comments
755	12	637	76,55	901	172.2	K12.	~		\ ·
	1.6L	1 52				9/01			<u> </u>
	-	· · · · · · · · · · · · · · · · · · ·		+ <u> </u>		9.71			
300 2	2.1 L	6.61	25.65	1324	175.5	3.77	6.0		Ļ
·					· .		•		
<u> </u>			+						<u> </u>
	·		+	ļ		1	+		
				<u></u>		ļ		.	
SAMPI	ING DAT	A						Geo	chemical Analyses
Method(s)	🗆 Bailer, Siz	:e: /				np 🗆 4" Subr	nersible Pump		
		A		Pump 🖬 Othe : 🔲 Tefloraf	ər: 0 🖬 Other:				
Materials:	Pump/Bailer	Dedic	cated 🖾 Pre	epared Off-Si	te 🛛 Field C	ileaned 🛛 🗆 🛙	Disposable	DO:	<u> </u>
	Tubing/Rope	Dedi	cated DP	repared Off-	ne 🗆 Teflon Site 🖵 Field	₿ ◘ Other: Cleaned □	Disposable	Nitro	ite: mg/L
		(0	pling: 5	7.8		ed? 🗆 Yes	X No	Sulfo	ite:mg/L
Depth to V	Water at Tim	e or sam		imai 151	00	# of Conta	iners:	Alka	linity: 555 mg/L
Depth to V Sample ID	Mw-7	,	Sample T						· •
Depth to V Sample ID	Sample Coll	ected?	□ Yes 🗶	No ID:	<u> </u>		20		· · · · · ·
Depth to V Sample ID	Sample Coll	ected?	□ Yes 🗶	No ID:	<u> </u>	CFD	ALCON TAJAN	ALL CO	WITHTAKKS.
Depth to V Sample ID Duplicate . COMN	Sample Coll Sample Sall	ected? WELL	Purm TED R	NO ID:	RY PR		DD FZLCSAL 774FAN		WITH THE R.S.

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B R O W N AND C A L D W E L L

WELL ID:_____MW-10_____

	ECT INFC			ber:			122/01		Time: 0940
Client:			TOSK NUT		_		Jenkins, Kelly		nine. <u></u>
	Location:	Hobbs				Weather:	TO, SUN	vy, uz	THDY
2. WELL									
		2 inch			VC. D Staiple	ss 🗆 Galv St	eel 🗆 Teflon®	Other:	
	Diameter:						eel 🛛 Teflon® I		
	pth of Well:						☐ Top of Protec		Other:
	o Static Wate			From: 💉	op of Well Co	ising (TOC)	Top of Protec	tive Casing 🛛	Other:
	o Product:			From:	op of Well Co	using (TOC)	Top of Protect	tive Casing 🖸	Other:
Length	of Water Colu	ımn:	_ feet	Well Volum	ie:	gal	Screened Inte		
							Note: 2-inch w	/ell = 0.167 gal/	4 4-inch well = 0
		ler, Size:	X-Bladde	ar Pump 📮 2	" Submersible	Pump 🖬 4" 9	ubmersible Pum	p	
Purge N		_				ump 🛛 Other:			Equipment Mo
Materia	ls: Pump/Baile	er 🛛 Dedic	ated 🗆 Pre		te 🛛 Field C	leaned 🔲 🕻	isposable	IDET	-MP15
Materia	ls: Rope/Tubi	ng Ledic	hylene 🗆 ated 🗆 Pi	Polypropyler repared Off-5	ne 🗆 Teflon@ Site 🔏 Field (0 🗆 Other: Cleaned 🛛 🗐	Disposable	2. YS	t GCBXC
Was we	ll purged dry'		🛛 No			. 15		3. Hom	MAH TURB
Time	Cum Galior	Ha	Temp	Spec.	ORP	Dissolved	Turbidity	Other:	Commer
	Removed		quier	Cond.		Oxygen			Commen
05									
0951	0.6	7.60	24. K	504	-49,5	5.66			
1953	1.0	6.73	23,03	1924	-63.3	3.57			
955	13		23,1Z	********	-84.6	1,50	_		
1957	16	1 1.1				0.92	_		
0000	10			2635			107		
1-270	1.7	6,07	26.81	2003	-103,8	0.70	102		, <u> </u>
					-				
4. SAMI		TA		<u>.</u>		<u></u>	<u> </u>	Geod	hemical Analyses
Method			Bladder Pu	ump 🗆 2" Sul	omersible Pun	np 🛛 4" Subr	nersible Pump		us Iron: >10 m
	ls: Pump/Baik	ttic Pump 🗀 I	inertial Lift F ess	rump □ Othe	er:			DO:	<u>D</u> D
		L Dealc	atea 🖬 Pre	eparea On-si	re uriela.C	ieanea 🖬 L	isposable		
Materia	ls: Tubing/Roj		ated DP	repared Off-		Cleaned	Disposable	Nitrat	
	o Water at Tir					ed? 🗆 Yes		Sulfat	
	10: MW-1			ime: /00	50	# of Conta	iners: 🔼	Alkal	nity: <u>575</u> r
Duplico	te Sample Co	ollected?	□ Yes 🗶	No ID:					
5. CON	IMENTS							••	
					.				
1									
Note: Incluic	e comments «	ich as well or	ondition or	for, presence	OF NAPL OF	ther items no	on the field	ta sheet	

. PROJ	ECT INFOI	RMATIC	DN N	6	mar ff	×	1.1.		10 0815
Project	Number:	12832	Task Num	ber:	_	Date:	122101		(ime: <u>1115</u>
	BJ Svcs	Hobbs				Personnel:	Jenkins, Kelly	uny C	UTADY .
			_			wedmer:_			
. WELL	_				VC D Stainle	ess 🗆 Galv St	eel 🖵 Teflon®	Q Other:	
	Diameter:						teel 🛛 Teflon®		
	epth of Well:						Top of Prote		Q Other:
	o Static Water:			From:	op of Well Co	asing (TOC)	Top of Prote	ctive Casing	Other:
	o Product:			From:	op of Weil Co	asing (TOC)	Top of Prote	ctive Casing	Other:
Length	of Water Colur	nn:	_ feet	Well Volum	ie:	gal	Screened Inf	terval (from (well = 0.167 gc	,
. PURG	E DATA			<u> </u>			<u> </u>		
Materia	ils: Pump/Bailer Ils: Rope/Tubing Il purged dry?	Dedic Polye	ated 🗆 Pri thylene 🗆	Polypropyler repared Off-S	te 🖸 Field C ne 🗅 Teflork ìite 🍂 Field (Cleaned 🛛 🗖 🕻	Disposable	i -	D-MP15 I-GOEXL NNAH TUROLO,
Time	Cum. Callo ns Removed	рН	Temp	Spec. Cond.	ore	Dissolved Oxygen	Turbidity	Other:	Comments
829	1.0	7.06	26.22	2830	-14.9	3.65			CLOUDY
R 32_	1.5	2.05	20,42	3625	-81.6	1.2(7/200		SLIGHTLY CLOUDE
834	1.8			3707			-		
836	2.1			3788	-104.5	0.64	521		CLOUDY
<u> </u>					1				
					1				
						<u> </u>			:
		+							- <u> </u>
									:
	PLING DAT		(Bladder Pi	ump 🗇 2" Sut	omercible Pur		nersible Pump		chemical Analyses
Methoc		c Pump 🗖	Inertial Lift F		ər:			Feri	
Materia	ıls: Pump/Bailer	Dedic	ated D PVC	C 🛛 Teflon® epared Off-Si	te ultimit		Disposable	DO	. 0.0 mg/L
Matoria	ils: Tubing/Rope	e E Polye Dedic	thylene 🕻 cated 🛛 F	Polypropyler Prepared Off-	ne 💷 'eskin Site 🎜 wakt	®⊒ Other: Ceaned ⊒	Disposable	Nitr	ate: mg/L
Materia	o Water at Tim	-				ecto ا Yes			ate:mg/L
Depth t	ID: MW-11								alinity: 770 mg/L
Depth t Sample				NO ID:	14-06/2	z <i>j</i> oi ()	900	4 contra	THERS
Depth t Sample	ite Sample Col	lected?							
Depth t Sample Duplica	ite Sample Coll IMENTS	lected?							

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t t

	ECT INFOR			nber:	_	Date:	122/01	ı 	Time: 0915
Client: Project l	BJ Svcs _ocation:	Hobbs				Personnel:_ Weather:	Jenkins, Kelly 85, SU	MAY, BI	Time: 0915
2. WELL									
Casing (Diameter:	inct	nes	1				Other:	
	Diameter:	incr						0 🛛 Other:	
	pth of Well:								Other:
	o Static Water:								Other:
	o Product: of Water Colum			Well Volum					
					e	gai		terval (from (well = 0.167 gc	,
3. PURG Purge M	E DATA						ubmersible Pu	mp	Equipment Mode
Materia	ls: Pump/Bailer			C 🛛 Teflon® epared Off-Sit			isposable	۱	
Materia	ls: Rope/Tubing			Prolypropylen Prepared Off-Si				2.	
Was we	ll purged dry?					gal/		3.	
<u></u>	Cum. Gallons		1	Spec.		Dissolved	·	 Other:	
Time	Removed	рН	Temp	Cond.	Eh	Oxygen	Turbidity		_ Comments
					•				
		· ·		·	1	<u> </u>		<u> </u>	· · · ·
				<u> </u>					
· · · · · · · · · · · · · · · · · · ·				ļ		<u> </u>			
	1								
						1			
<u>-</u>				<u> </u>					
		<u> </u>		<u> </u>			<u> </u>		· · · · · · · · · · · · · · · · · · ·
<u></u>	<u> </u>		ļ						
	1								
4 6 4 4 4			0				ſ		chemical Analyses
	(s): Bailer, Siz	~~~~~ •:~~~~	X. 1 Bladder Pl	ump 🗇 2" Sub	mersible Pun	no 🗆 4" Subr	nersible Pump	960	
vietnoo	(s): Peristaltic	Pump 🗆	Inertial Lift	Pump 🛛 Othe	r:			Ferr	ous Iron: mg.
	ls: Pump/Bailer	u staini	ess LIPVO	C 🔲 Teflon® epared Off-Sit	U Other:			DO	
Materia	ls: Tubing/Rope		ated D	Polypropyler Prepared Off-S	ite 🖸 Teflond		Disporable	Nitr	ate:m
Depth t	o Water at Time							Sulf	ate:mg
	10: MW-1		Sample 1	Time: [0:	45	# of Conta		Aller	alinity: 575 mg
	te Sample Coll								
5. CON						7 M A	-0 -0		
5. COIV	INENIS	-m	uffi	CLENT	WA	ER FO	गर म्प	MP. U	UED

B R O W N AND C A L D W E L L

WELL ID:_____MW-13

Project N	lumber:	12832	Task Numl	oer:	_	Date:	0/22/01	Tir	ne: 0710
Client:_	BJ Sv cs						Jenkins, Kelly	· it has seen as	·• •
Project L	ocation:	_ Hobbs				Weather:	75 jaa	09, BREEZ	<u> </u>
2. WELL	DATA								
Casing [)iameter:	Z inch	es	Туре: 🖌 ру	/C 🗆 Stainle	ss 🗅 Galv. St	eel 🗆 Tefion®	Other:	
Screen D)iameter:	2inch	es	Туре: 🛛 ру	/C 🗆 Stainte	ss 🗖 Galv. St	eel 🛛 Teflon®	Other:	
Total De	oth of Well:	5.2 fee	et	From: 🎢 T	op of Well Ca	sing (TOC)	Top of Protec	tive Casing 🛛 O	ther:
Depth to	Static Water	59.80	feet	From: 🗶 T	op of Well Ca	sing (TOC)	Top of Protec	tive Casing 🔲 O	ther:
Depth to	Product:	feet		From: 🖬 T	op of Well Ca	sing (TOC)	Top of Protec	tive Casing 🛛 O	ther:
Length c	of Water Colu	mn:	feet	Well Volum	e:	gal		erval (from GS):_	
	e data						Note: 2-inch v	vell = 0.167 gal/ft	4-inch well = 0.667
Material Material	ethod: Cer s: Pump/Baile s: Rope/Tubin I purged dry?	ntrifugal Purr	np	altic Pump Teflon® epared Off-Si Polypropyler epared Off-S	I Inertial Lift Pu D Other: te I Field Cl Me I Tetlon® Site I Field C ng Rate:	imp Other: eaned I D Other: Cleaned I	Disposable	2 ISL	Eauipment Model(s - MP(5- 600 X L & TuRB.
Time	Cum. Gallon:	s рн	Temp	Spec.	ORP	Dissolved	Turbidity	Other:	Comments
5726	Removed			Cond.	198.2	Oxygen 3.02			
7729	1.5			1	127.4		315		
1781	1.8	_	1		94.0		80		
	110	1.21	Luios	-10		1/10	QA		
	· · · · · · · · · · · · · · · · · · ·					 			····
			· · •		+				
			1 						
							1		
	· <u> </u>					<u>. </u>		· ·	
1. SAMF	LING DA	TA		- <u></u>				Geoche	emical Analyses
Method							nersible Pump	Ferrous	Iron: 16 mg/L
Mataria	s: Pump/Baile		ess 🗆 PVC	□ Teflon@	er: 0			DO:	0.8 mg/
Marenal	s. Fumptoulle	Dedic	cated 🗆 Pre	epared Off-Si	te 🛛 Field Cl	leaned 🗆 🕻)isposable		
Materia	s: Tubing/Rop				ne 🗆 Teflon® Site 🖸 Field (Disposable	Nitrate:	mg/
Depth to	Water at Tin	ne of Samp	oling:	,	Field Filtere	ed? 🗆 Yes	× No , ,	Sulfate:	mg/L
Sample	1D: MW~	13	Sample T	ime: 01	25	# of Conta	iners: 4	Alkalinit	y: 193 mg/L
	te Sample Co	ollected?	X Ye ∮ ⊡	No ID:					
Duplica									
Duplica 5. COM	MENTS								
	MENTS								
	MENTS								

WELL ID:_____MW-14_____

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BROWNAND CALDWELL

1. PROJECT INFORMATION		\sim	6.1		1100
Project Number: 12832 Task N	umber:		121/01	T	
Client:_BJ Svcs			_Jenkins, Kelly	_	
Project Location: Hobbs		Weather:	90, WIN	Mysuna	14
2. WELL DATA					
Casing Diameter: 2 inches		🗆 Stainless 🛛 Galv. S	iteei 🗋 Teflom®		
~ ~		□ Stainless □ Galv. S			
Screen Diameter: <u> </u>		Well Casing (TOC)			
Total Depth of Well: 67.2 feet					
Depth to Static Water: 9. // feet		Well Casing (TOC)			
Depth to Product:feet		f Well Casing (TOC)	Top of Protect	tive Casing	Other:
Length of Water Column: 77.5 feet	Well Volume:	gal		erval (from GS) /ell = 0,167 gal/ft	
3. PURGE DATA					
	dder Pump 🔲 2" Subr		Submersible Pum	n	
Purge Method: Centrifugal Pump C			(:		Equipment Modei(s)
Materials: Pump/Bailer	PVC □ Teflon® □ (Prepared Off-Site □	Other:	Dispasable		
	Polypropylene	Teflon® 🗆 Other:		•	
Was well purged dry? 🗆 Yes 🕂 N	Pumping R	ate: 0.2 5	Vmin	3	
Time Cum. G allons pH Terr Removed pH Terr	p Spec. O Cond.	Dissolved Oxygen	Turbidity	Other:	Comments
14/0 1.0 7.07 23.9	9 716 16	2.1 7.36			
		65,0 3.56	745		
			47.2	i	······
142 2.0 6.95 19.7	9 1686 16	5.3 3.31			
424 2.6 6.9519.6	9 1691 13	903.33	~		
		/			<u>, , , , , , , , , , , , , , , , , , , </u>
		·			
					·····
		l l			
4. SAMPLING DATA				Coord	nemical Analyses
	er Pump 🛛 2" Submers	sible Pump D 4" Sub	mersihle Pump		
Method(s): Deristaltic Pump Dinertial			meisible Pump	Ferrou	s Iron: mg/L
Viciencis: Pumo/Boiler			Dispatchic	DO:	3,5 mg/L
	Prepared Off-Site			Nitrate	e: mg/L
	Prepared Off-Site		Disposable		
Depth to Water at Time of Sampling:		d Filtered? 🗅 Yes	O No	Sulfate	e: mg/L
	le Time: <u>(43</u> C	/ # of Conto	ainers:	Alkalir	nity: mg/L
Duplicate Sample Collected? 🛛 Yes	No ID:				
5. COMMENTS					
· · · · · · · · · · · · · · · · · · ·					
Note: Include comments such as well condition	, odor, presence of N	APL, or other items no	of on the field dat	ta sheet.	
			-1	1a	
FORM GW-1 (Rev 6/8/99 - wah)			Signature	×	

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Project						α	121 AN		luue
0		12832	task Nùm	ber:		Date:			Time: /445
	BJ Svcs Location:	Hobbs				Veather:	Jenkins, Kelly	NAY, a	TND4
2. WELL							· / ·		
	Diameter:	z inct	nes	Туре: 🗶 Р	VC 🗆 Stainle	ess 🖵 Galv. Si	teel 🛛 Teflon®	Other:	
	Diameter:	7					teel 🛛 Teflon®	······	
	epth of Well:	1	et	From: 🛒	op of Well Co	asing (TOC)	Top of Protect	ctive Casing	□ Other:
Depth t	o Static Wate	60.49	feet	From: 🛋 T	op of Well Co	asing (TOC)	Top of Prote	ctive Casing	□ Other:
	o Product:			L			Top of Prote	ctive Casing	• Other:
Length	of Water Colu	imn:	feet	Well Volum	ne:	gat	Screened Inf Note: 2-inch	terval (from G <i>well = 0.167 ga</i>	,
3. PURG	E DATA								
	□ Bail 1ethod: □ Cer	er, Size:			" Submersible		Submersible Pur	np	_
		Kstain			D Other:		:	~	
	ls: Pump/Baile		cated 🗆 Pre	epared Off-Si	te 🖸 Field C	Cleaned DE			D-MP/5
Materic	ls: Rope/Tubir		cated D P	repared Off-S	Site 🛛 Field	Cleaned	Disposable	2. 11/1	NNAH-TURB
Was we	ll purged dry?	Yes	No	Pumpi	ing Rate:	<u>7.2 </u>	/min	3. <u>YS</u>	I-600XL
Time	Cum. Gallor Removed	в _{рн}	Temp	Spec. Cond.		Dissolved Oxygen	Turbidity	Other:	Comments
500	1.5	7.00	20.23	1414	160.9	3.97	-		SILTY, PROW
502	2.0	6.99	20.17	(422	160.4	3.81			(LEARTING
1504	2.5	696	Z0,16	1422	163.2	3,90	539		CLEARENG
									-
				<u> </u>	-				
			<u> </u>						
				<u> -</u>					
			<u> </u>						
4. SAM	PLING DA	JA						Geo	ochemical Analyses
Method							mersible Pump	Ferr	ous Iron: mg/L
Mataria	lls: Pump/Baile				ər:)) 🛛 Other:			DO:	46
Materic	is: Ритр/Ваію		catea u Pre	eparea On-si		Jieanea 🖬 L	Disposable		~
Materic	ils: Tubing/Rop					® Other: Cleaned D	Disposable	Nifro	ate:mg/
Depth I	o Water at Tir ID: <u>MW</u>	ne of Sam	pling:		Field Filter	ed? 🗆 Yes	🗆 No	Sulf	ate:mg/L
						# of Conto	iners:	Alko	alinity: 203 mg/L
Duplico	ite Sample Co	ollected?	U Yes 🗴	No iD:					
5. CON	1MENTS								
						All and a second second			

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WELL ID:___OW-4

BROWNAND CALDWELL

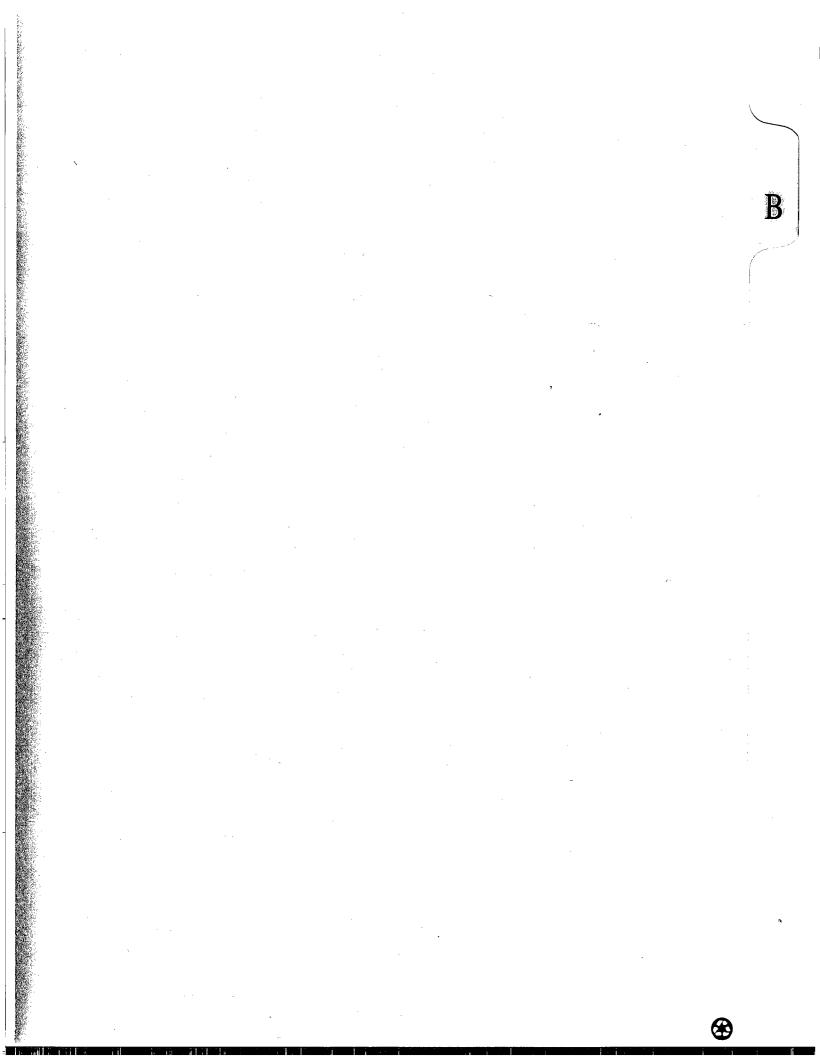
1. PROJECT INFO	RMATIO	N				11		
Project Number:	_ 12832 1	ask Nurr	iber:	-		121/01	/	Time: <u>09/5</u>
Client:_BJ Svcs					Personnel:_			
Project Location:	_Hobbs				Weather:	90, SINN	ug WIDY	
2. WELL DATA								
Casing Diameter:	inche	s	Туре: 🌔	'C 🛛 Staini	ess 🛛 Gaiv. Ste	el 🗋 Teflon®	Other:	
Screen Diameter:	4 inche	s	Туре: 🤙 ру	'C 🗆 Stainl	ess 🛛 Galv. St	eel 🗆 Teflon®	Other:	
Total Depth of Well:	61650		From: 🖌 To	p of Well C	asing (TOC) (Top of Prote	ctive Casing 🛛	Other:
Depth to Static Wate	61.48	eet	From: RTa	p of Well C	asing (TOC)	Top of Prote	ctive Casing 🛛	Other:
Depth to Product:	feet		From: 🗆 T	op of Well C	asing (TOC)	Top of Prote	ctive Casing 📮	Other:
Length of Water Colu	mn: 0, (7	feet	Well Volum	Ð:	gal		terval (from GS well = 0.167 gal/f	,
3. PURGE DATA								
	er, Size:	Bladde	er Pump 🔲 2"	Submersible	Pump 🛛 4" S	ubmersible Pur	np	
	D Stainle		C D Teflon®					Equipment Model(s)
Materials: Pump/Baile	r 🛛 Dedico	ited 🖬 Pr	epared Off-Sit	e 🛛 Field 🤇	Cleaned D		1	
Materials: Rope/Tubir					® □ Other: Cleaned □[2	. <u> </u>
Was well purged dry?	🗆 Yes	🗆 No	Pumpi	ng Rate:	gal/	min	3	
Time Cum. Gallon	s pH	Temp	Spec.	Eh	Dissolved	Lurbidity L	Other:	Comments
Removed			Cond.		Oxygen	,		
			1					
		-						
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	+ +							
								·
				1				· · · · · · · · · · · · · · · · · · ·
t	-							
4. SAMPLING DA		م راد م					Geoc	hemical Analyses
			ump ⊔ 2" Sub Pump □ Othe		mp 🚽 4" Subri	nersible Pump	Ferrou	us Iron: mg/L
Materials: Pump/Baile	NT CONTRACTOR		C 🛛 Teflon® epared Off-Sit		livaned D		DO:	mg/L
Materials: Tubing/Rop	Polyett	nylene C	Polypropyler	e Jaar	n 🚽 Other:	·	Nitrat	e: mg/L
0. ,	L Dedico						Sulfat	e: mg/L
Depth to Water at Tin Sampie ID:		-						
Duplicate Sample Co							Aikalii	nity: mg/L
5. COMMENTS	well	, NO	C SHIT!	un p	UE 70	TURCU	witch	IT WATER
	in	we						
Note: Include comments su	ch as well co	ndition, o	dor, presence	o! '•	there tokins not	on the field do	ata sheet	
						1		
FORM GW-1 (Rev 6/8/99 - v	vah)					Signature	- Art	

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APPENDIX B

Laboratory Analytical Reports for Groundwater Samples

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Brown & Caldwell

	Certificate of Analysis Number: <u>01060768</u>										
Report To:	Project Name:	BJ Service-Hobbs #12832-016									
Brown & Caldweil	Site:	Hobbs, NM									
Rick Rexroad	Site Address:										
1415 Louisiana											
Suite 2509 Houston	PO Number:										
тх	<u>State:</u>	New Mexico									
77002-	State Cert. No.:										
ph: (713) 759-0999 fax: (713) 308-3886	Date Reported:	7/10/01									

This Report Contains A Total Of 20 Pages

Excluding This Page

And

Chain Of Custody



Case Narrative for: Brown & Caldwell

	of Analysis Number: <u>1060768</u>
Report To:	Project Name: BJ Service-Hobbs #12832-016
Brown & Caldwell	<u>Site:</u> Hobbs, NM
Rick Rexroad	Site Address:
1415 Louisiana	
Suite 2509 Houston	PO Number:
тх	State: New Mexico
77002-	State Cert. No.:
ph: (713) 759-0999 fax: (713) 308-3886	Date Reported: 7/10/01

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.

Tomallest Sonia West

Senior Project Manager

7/10/01



096668

6/22/01 9:30:00 AM

Brown & Caldwell

		C	ertificate	of Analysis Number	•			
				01060768				
<u>Report To:</u>	Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston			<u>Project</u> <u>Site:</u> <u>Site Adr</u>	dress:	BJ Service-Ho Hobbs, NM	bbbs #12832-016	i
	TX 77002- ph: (713) 759-0999	fax: (713) 3	08-3886	<u>PO Nun</u> <u>State:</u> <u>State C</u> i	ert. No.:	New Mexico		
<u>Fax To:</u>	Brown & Caldwell Rick Rexroad	fax : (713)	308-3886	Date Re	ported:	7/10/01		
Clier	nt Sample ID	Lab Sample ID	Matrix	Date Collected	Date	Received	COC ID	HOLD
MW-5		01060768-01	Water	6/21/01 10:45:00 AM	6/22/01	9:30:00 AM	096668	
MW-7		01060768-02	Water	6/21/01 1:00:00 PM	6/22/01	9:30:00 AM	096668	
MW-14		01060768-03	Water	6/21/01 2:30:00 PM	6/22/01	9:30:00 AM	096668	
MW-15		01060768-04	Water	6/21/01 3:05:00 PM	6/22/01	9:30:00 AM	096668	
4W-3	······	01060768-05	Water	6/21/01 3:45:00 PM	6/22/01	9:30:00 AM	096668	
MW-4		01060768-06	Water	6/21/01 4:25:00 PM	6/22/01	9:30:00 AM	096668	

6/21/01

01060768-07

Water

Amallut Sonia West

Senior Project Manager

TB-6/21/01

7/10/01

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer

7/10/01 12:07:26 PM



Client Sample ID MW-5			Coll	ected:	6/21/01 10:45:00	SPL Sample ID:	01060768-01
			Site	Hol	obs, NM		
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed Ana	alyst Seq. I
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	ND		0.26		1	07/03/01 10:30 AM	727965
Surr: n-Pentacosane	85.7	%	18-120		1	07/03/01 10:30 AM	727965
Prep Method Prep Date			Prep Initials				
SW3510B 06/22/2001 19	9:37		KL				
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND		0.1		1	06/29/01 18:11 D_R	725868
Surr: 1,4-Difluorobenzene	106	%	74-121		1	06/29/01 18:11 D_R	725868
Surr: 4-Bromofluorobenzene	109	%	55-150		1	06/29/01 18:11 D_R	725868
HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg/L	
Ethane	ND		0.0025		1	07/05/01 17:32 DR	730543
Ethylene	ND		0.0032		1	07/05/01 17:32 DR	730543
Methane	0.0017		0.0012		1	07/05/01 17:32 DR	730543
NITROGEN, NITRATE (AS N)				MCL	E300	Units: mg/L	
Nitrogen, Nitrate (As N)	2.74		0.1	10	1	06/22/01 10:00 KM	716089
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug/L	
Benzene	ND		1		1	06/29/01 18:11 D_R	725769
Ethylbenzene	ND		1		1	06/29/01 18:11 D_R	725769
Toluene	ND		1		1	06/29/01 18:11 D_R	725769
Xylenes,Total	ND		1		1	06/29/01 18:11 D_R	725769
Surr: 4-Bromofluorobenzene	103	%	48-156		1	06/29/01 18:11 D_R	725769
Surr: 1,4-Difluorobenzene	98.6	%	72-137		1	06/29/01 18:11 D_R	725769
SULFATE				MCL	E300	Units: mg/L	
Sulfate	150		4		20	06/22/01 10:00 KM	716096

Qualifiers:

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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

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

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Client Sample ID M	W-7			Col	lected:	6/21/01 1:00:00	SPL Sample ID	: 0106	0768-02
				Site	: Ho	bbs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE OR	GANICS				MCL	SW8015B	Units: mg	/L	
Diesel Range Organic	s	ND		0.22		1	07/03/01 11:09	AM	727966
Surr: n-Pentacosar	e	88.2	%	18-120		1	07/03/01 11:09	АМ	727966
Prep Method	Prep Date			Prep Initials					
SW3510B	06/22/2001	19:37		KL					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: mg	/L	
Gasoline Range Orga	nics	ND		0.1		1	06/29/01 18:38	D_R	725871
Surr: 1,4-Difluorobe	enzene	100	%	74-121		1	06/29/01 18:38	D_R	725871
Surr: 4-Bromofluor	obenzene	111	%	55-150		1	06/29/01 18:38	D_R	725871
PURGEABLE AROM	ATICS				MCL	SW8021B	Units: ug/	Ľ	
Benzene		3.1		1		1	06/29/01 18:38	D_R	725772
Ethylbenzene		ND		1		1	06/29/01 18:38	D_R	725772
Toluene		ND		1		1	06/29/01 18:38	D_R	725772
Xylenes, Total		ND		1		1	06/29/01 18:38	D_R	725772
Surr: 4-Bromofluoro	benzene	104	%	48-156		1	06/29/01 18:38	D_R	725772
Surr: 1.4-Difluorobe	nzene	99.2	%	72-137		1	06/29/01 18:38) R	725772

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-14		Col	lected:	6/21/01 2:30:00	SPL Sample I	D: 0106	0768-03
		Site	e: Hol	obs, NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL		· · · · · · · · · · · · · · · · · · ·	MCL	E325.3	Units: mg	g/L	
Chloride	222	5		5	07/06/01 11:10	CV	731560

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



Client Sample ID MW-15		Col	lected:	6/21/01 3:05:00	SPL Sample ID	: 0106	0768-04
		Site	e: Hol	obs, NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg	/L	
Chloride	222	5		5	07/06/01 11:10	CV	731563

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 M	W-3			Coll	ected:	6/21/01 3:45:00	SPL Sample I	D: 0106	0768-05
				Site	: Hol	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE OR	GANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organic	Diesel Range Organics ND			0.22		1	07/03/01 11:47	AM	727967
Surr: n-Pentacosar	ie	77.8	%	18-120		1	07/03/01 11:47	AM	727967
Prep Method	Prep Date			Prep Initials					
SW3510B	06/22/2001 1	19:37		KL					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Orga	inics	ND		0.1		1	06/30/01 0:09	D_R	725878
Surr: 1,4-Difluorobe	enzene	102	%	74-121		1	06/30/01 0:09	D_R	725878
Surr: 4-Bromofluor	obenzene	100	%	55-150		1	06/30/01 0:09	D_R	725878
PURGEABLE ARON	ATICS				MCL	SW8021B	Units: ug	J/L	
Benzene		ND		1		1	06/30/01 0:09	D_R	725807
Ethylbenzene		ND		1		1	06/30/01 0:09	D_R	725807
Toluene		ND		1		1	06/30/01 0:09	D_R	725807
Xylenes, Total		ND		1		1	06/30/01 0:09	D_R	725807
Surr: 4-Bromofluor	obenzene	102	%	48-156		1	06/30/01 0:09	D_R	725807
Surr: 1,4-Difluorobe	enzene	98.0	%	72-137		1	06/30/01 0:09	DR	725807

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 M	W-4			Coll	ected:	6/21/01 4:25:00	SPL Sample I	D: 0106	0768-06
				Site	: Hol	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. i
DIESEL RANGE OR	GANICS				MCL	SW8015B	Units: mg	g/L	
Diesel Range Organic	Diesel Range Organics			0.25		1	07/03/01 12:25	AM	727968
Surr: n-Pentacosar	e	100	%	18-120		1	07/03/01 12:25	AM	727968
Prep Method	Prep Date			Prep Initials					
SW3510B	06/22/2001	19:37		KL					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: mg	g/L	
Gasoline Range Orga	nics	ND		0.1		1	06/30/01 0:36	D_R	725879
Surr: 1,4-Difluorobe	enzene	99.0	%	74-121		1	06/30/01 0:36	D_R	725879
Surr: 4-Bromofluor	obenzene	100	%	55-150		1	06/30/01 0:36	D_R	725879
PURGEABLE ARON	IATICS				MCL	SW8021B	Units: ug	/L	
Benzene		ND		1		1	06/30/01 0:36	D_R	725808
Ethylbenzene		ND		1		1	06/30/01 0:36	D_R	725808
Toluene		ND		1		1	06/30/01 0:36	D_R	725808
Xylenes, Total		ND		1		1	06/30/01 0:36	D_R	725808
Surr: 4-Bromofluoro	obenzene	102	%	48-156		1	06/30/01 0:36	D_R	725808
Surr: 1,4-Difluorobe	enzene	98.4	%	72-137		1	06/30/01 0:36	D_R	725808

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 TB-6/21/01			Col	lected:	6/21/01	SPL Sample ID: 0	1060768-07
			Site	e: Hob	obs, NM		
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed Analy	vst Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND		0.1		1	07/05/01 14:46 D_R	730864
Surr: 1,4-Difluorobenzene	104	%	74-121		1	07/05/01 14:46 D_R	730864
Surr: 4-Bromofluorobenzene	105	%	55-150		1	07/05/01 14:46 D_R	730864
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug/L	
Benzene	ND		1		1	06/29/01 17:43 D_R	725766
Ethylbenzene	ND		1		1	06/29/01 17:43 D_R	725766
Toluene	ND		1		1	06/29/01 17:43 D_R	725766
Xylenes,Total	ND		1		1	06/29/01 17:43 D_R	725766
Surr: 4-Bromofluorobenzene	105	%	48-156		1	06/29/01 17:43 D_R	725766
Surr: 1,4-Difluorobenzene	98.3	%	72-137		1	06/29/01 17:43 D_R	725766

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

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

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Quality Control Documentation

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Quality Control Report

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Method:		iesel Ran W8015B	ge Orgar	nics									kOrder: Batch ID:	010 129	60768 79		
			Met	nod Blank					Sam	ples in	Analy	tical Bate	:h:				
RunID:	HF	P_V_01070	3B-727960	Units:	mg/L			ļ	ab :	Sample	D ID		Client S	ample II	2		
Analysis Date		7/03/2001		Analyst:	AM			(106	0768-0	1B		MW-5				
Preparation D	ate: 06	5/22/2001	19:37	Prep By:	KL	Method S	SW3510			0768-0			MW-7				
										0768-0			MW-3				
		Ar	Analyte Result Rep			Rep Lin	nit	(106	0768-06	6B		MW-4				
Ĩ		nge Organie			N		20										
	Surr: n-	Pentacosar	ne		91.	6 18-12	20										
	•• • • • •				L	aborator	Contro	ol Samp	le (L	CS)							
			RunID	:		10703B-72		Units:		ng/L							
			Analys			001 6:00		Analysi		λ. Μ							
			Prepar			001 19:33	7	Prep B		KL Me	ethod	SW3510E	3				
		[Analyt	е		Spike		sult	Perc		Lower	Upper				
		1								1 D		1 1	1:				
		Į				_	Adde	d		Reco	very	Limit	Limit				
		ļ	Diesel Ra	ange Organics	6			a 2.5	2.3	J	91	21 21	Limit 175				
		ļ	Diesel Ra	ange Organic	6				2.3	J							
			Diesel Ra			MS) / Mat	2	2.5			91						
				Matrix	Spike (1		2	2.5			91						
			Sam	Matrix	Spike (1 01060	738-02	rix Spil	2.5 ke Dupli	cate	(MSD)	91						
			Sam Runi	<u>Matrix</u> ple Spiked: D:	Spike (1 01060 HP_V_	738-02 010703B-7	rix Spil 727963	2.5 ce Dupli Units:	cate	(MSD) mg/L	91						
			Sam Runi Anal	Matrix ple Spiked: D: ysis Date:	01060 01060 HP_V_ 07/03	9738-02 _010703B-7 /2001 7:5	rix Spik 727963 6	2.5 ce Dupli Units: Analy	cate	(MSD) mg/L AM	91	21	175				
			Sam Runi Anal	<u>Matrix</u> ple Spiked: D:	01060 01060 HP_V_ 07/03	738-02 010703B-7	rix Spik 727963 6	2.5 ce Dupli Units:	cate	(MSD) mg/L AM	91		175				
	Analyt		Sam Runi Anal	Matrix ple Spiked: D: ysis Date:	01060 01060 HP_V_ 07/03)738-02 _010703B-7 /2001 7:5 /2001 19:	rix Spik 727963 6	2.5 ce Dupli Units: Analy	cate st: 3y:	(MSD) mg/L AM	91 Metho	21	175	RPD	RPD	Low	High
	Analyt		Sam Runi Anal	<u>Matrix</u> ple Spiked: D: ysis Date: aration Date:	Spike (1 01060 HP_V_ 07/03, 06/22, MS Spike	0738-02 _010703B-7 /2001 7:5 /2001 19: 	rix Spil 727963 6 37	2.5 Vnits: Analy Prep	st: 3y:	(MSD) mg/L AM KL MSD Spike	91 Metho	21 5 SW3510	175 DB		RPD Limit		High Limit
	Analyt		Sam Runi Anal	Matrix ple Spiked: D: ysis Date: aration Date: Sample	Spike (1 01060 HP_V_ 07/03, 06/22, MS	0738-02 _010703B-7 /2001 7:5 /2001 19: 	rix Spil 727963 6 37	2.5 Cunits: Analy Prep MS 9	st: 3y:	(MSD) mg/L AM KL I MSD	91 Metho	21 5 SW3510	175 DB MSD %		1		

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Method:	Headspace Gas Analy RSK147	sis			WorkOrder: Lab Batch ID:	01060768 R38400
	Metho	d Blank		Samples in Analytic	al Batch:	<u></u>
RunID:	VARC_010705A-730549	Units:	mg/L	Lab Sample ID	Client Sar	nple ID
Analysis Date:	07/05/2001 18:42	Analyst:	DR	01060768-01D	MW-5	

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

Sample Duplicate

Original Sample:	01060700-06		
RunID:	VARC_010705A-735492	Units:	mg/L
Analysis Date:	07/06/2001 14:40	Analyst:	DR

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	0.054	0.055	2	50
Propane	ND	ND	0	50
Propylene	ND	ND	0	50

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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.

7/10/01 12:07:42 PM



Quality Control Report

Brown & Caldwell

BJ	Service-Hobbs	#12832-016
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Analysis: Method:	Purgeable Aromatics SW8021B					WorkOrder: Lab Batch ID:	01060768 R38041	
	Metho	d Blank			Samples in Analyt	vtical Batch:		
RuniD:	HP_R_010629A-723625	Units:	ug/L		Lab Sample ID	Client Sar	nole ID	
Analysis Date	e: 06/29/2001 12:40	Analyst:	D_R		01060768-01A	MW-5		
			-		01060768-02A	MW-7		
					01060768-05A	MW-3		
Г	A				01060768-06A	MW-4		
	Analyte	· · · · · · · · · · · · · · · · · · ·	Rep Limit	01060768-07A	TB-6/21/0	1		
-	Benzene		ND ND ND	1.0		10 0.2110	•	
-	Ethylbenzene			1.0				
	Toluene			1.0				
	Xylenes,Total		ND	1.0				
	Surr: 1,4-Difluorobenzene		98.7	72-137				
	Surr: 4-Bromofluorobenzene		102.0	48-156				
			Lai	boratory Cont	rol Sample (LCS)			
	RunID:		HP_R_010	0629A-723624	Units: ug/L			

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	51	101	70	130
Ethylbenzene	50	49	98	70	130
Toluene	50	50	101	70	130
Xylenes, Total	150	149	99	70	130

Analyst: D_R

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

Sample Spiked:	01060768-01		
RunID:	HP_R_010629A-725760	Units:	ug/L
Analysis Date:	06/29/2001 15:25	Analyst:	DR

06/29/2001 10:40

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	24	120	20	31	156	26.2 *	21	32	164
Ethylbenzene	ND	20	24	118	20	23	114	3.68	19	52	142
Toluene	ND	20	24	116	20	24	119	2.69	20	38	159
Xylenes,Total	ND	60	69	115	60	66	110	4.44	18	53	144

Qualifiers:

ND/U - Not Detected at the Reporting Limit

J - Estimated value between MDL and PQL

B - Analyte detected in the associated Method Blank

Analysis Date:

MI - Matrix Interference

- D Recovery Unreportable due to Dilution
- * Recovery Outside Advisable QC Limits

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.

7/10/01 12:07:44 PM



Quality Control Report

Brown & Caldwell

Analysis: Method:	Gasoline R SW8015B	ange Orga	nics								Order: Batch ID:	•	60768 135		
		Metho	d Blank				Sam	oles in A	nalyti	cal Batc	ח:				
RunID:	HP_R_010629	9C-725904	Units:	mg/L			Lab	Sample I	D		Client Sar	nole IC)		
Analysis Date	e: 06/29/2001	11:35	Analyst:	D_R				0768-01	_		MW-5		-		
							0106	0768-024	4		MW-7				
							0106	0768-05A	7		MW-3				
ſ	An	alyte		Result	Rep Limi	t	0106	0768-064	4		MW-4				
ļ	Gasoline Range Orga			ND		-									
	Surr: 1,4-Difluorobe			97.7											
Ĺ	Surr: 4-Bromofluoro	benzene		105.7	55-150	ו									
				La	boratory	Control	Sample (L	CS)							
		RuniD:			0629C-725	-		ng/L							
		Analysis	Date:	06/29/20	01 11:07	А	nalyst: D)_R							
	ſ		Analyt	e		Spike	Result	Perce	nt	Lower	Upper				
						Added		Recov	ery	Limit	Limit				
		Gasoline R	ange Orgar	nics			1 0.91	Recov							
	(Gasoline Ri	ange Orgar	nics		Added	1 0.91	Recov	ery	Limit	Limit				
	C	Gasoline Ri			C) / Mater	Added		Recove	ery	Limit	Limit				
	Ċ	Gasoline R			S) / Matri	Added	1 0.91 Duplicate	Recove	ery	Limit	Limit				
	(Added		Recove	ery	Limit	Limit				
			Matrix	Spike (M 010607		Added		Recove	ery	Limit	Limit				
	[Sample	<u>Matrix</u> Spiked:	<mark>Spike (M</mark> 010607 HP_R_0	68-02	Added	Duplicate	Recove	ery	Limit	Limit				
		Sample RunID:	<u>Matrix</u> Spiked:	<mark>Spike (M</mark> 010607 HP_R_0	68-02 10629C-72	Added	Duplicate Units:	(MSD) mg/L	ery	Limit	Limit				
	(Sample RunID:	<u>Matrix</u> Spiked:	<mark>Spike (M</mark> 010607 HP_R_0	68-02 10629C-72	Added	Duplicate Units:	(MSD) mg/L	ery	Limit	Limit				
	Analyte	Sample RunID: Analysi	Matrix Spiked: s Date: Sample	Spike (M 010607 HP_R_0 06/29/2 MS	68-02 10629C-72	Added x Spike 25863 0 esult	Duplicate Units: Analyst: MS %	(MSD) mg/L D_R MSD	91	Limit	Limit 130 MSD %	RPD			
		Sample RunID: Analysi	Matrix Spiked: s Date:	010607 HP_R_0 06/29/2 MS Spike	768-02 010629C-72 2001 16:20	Added x Spike 25863 0 esult	Duplicate Units: Analyst:	Recove (MSD) mg/L D_R MSD Spike	91	Limit 70	Limit 130	RPD		Low Limit	
		Sample RunID: Analysi	Matrix Spiked: s Date: Sample	Spike (M 010607 HP_R_0 06/29/2 MS	768-02 010629C-72 2001 16:20	Added x Spike 25863 0 esult	Duplicate Units: Analyst: MS %	(MSD) mg/L D_R MSD	91	Limit 70	Limit 130 MSD %	RPD			High Limit

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matnx Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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 increast as reported.

7/10/01 12:07:46 PM



Quality Control Report

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Brown & Caldwell

BJ Service-Hobbs #12832-016

Method:	Gasoline Rar SW8015B	nge Organ	ics								(Order: Batch ID:		60768 3422		
,00 17 A	Method Blank							Samples in Analytical Batch:							
RuniD:	HP_S_0107050	-730863	Units:	mg/L			Lab	Sample	ID		Client Sa	ampie II	5		
Analysis Date:	07/05/2001 13	3:12	Analyst:	D_R				60768-07			TB-6/21/	_	-		
	Ana	lyte		Result	Rep Limit	5									
S	soline Range Organi Surr: 1,4-Difluoroben Surr: 4-Bromofluorob	zene		ND 102.0 104.7	0.10 74-121 55-150]									
				Lat	oratory	Contro	ol Sample (LCS)							
		RunID:		HP_S_010	705C-7308	362	Units:	mg/L							
		Analysis D	ate:	07/05/200	01 12:45			D_R							
	ſ		A = = , +			Calles	Desult	Darra							
			Analyte	9		Spike Addeo		Perce		Lower Limit	Upper Limit				
	G	asoline Ra	······				<u>ا</u> د								
	G	asoline Rai	nge Organ	ics		Addeo	1 · · ·	Recov	very	Limit	Limit				
	G	asoline Ra	nge Organ	ics	S) / Matri	Addeo	<u>ا</u> د	Recov	very	Limit	Limit				
	G	asoline Ra	nge Organ <u>Matrix S</u>	ics		Addeo	1 · · ·	Recov	very	Limit	Limit				
	G	Sample RuniD:	nge Organ <u>Matrix S</u> Spiked:	ics Spike (M 010700: HP_S_0	23-03 10705C-73	Addeo x Spik	1 · · ·	(MSD) mg/L	very	Limit	Limit				
	G	Sample	nge Organ <u>Matrix S</u> Spiked:	ics Spike (M 010700: HP_S_0	23-03	Addeo x Spik	1 e Duplicate	Recov	very	Limit	Limit				
		Sample RunID: Analysis	nge Organ <u>Matrix S</u> Spiked: Date:	ics Spike (M 010700: HP_S_0 07/05/2	23-03 10705C-73 001 21:35	Addeo x Spik 0866 5	t 1 e Duplicate Units: Analyst:	(MSD) mg/L D_R	101	Limit 70	Limit 130				
A	G	Sample RunID: Analysis S	nge Organ <u>Matrix S</u> Spiked:	ics Spike (M 010700: HP_S_0	23-03 10705C-73	Addeo x Spik 0866 5	1 e Duplicate Units:	(MSD) mg/L	101	Limit	Limit	RPD		Low Limit	

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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.

- PM



Quality Control Report

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Method:	Nitrogen, I E300	Nitrate (As I	N)						kOrder: Batch ID:		60768 7664		
		Metho	d Blank			Sam	ples in /	Analytical Bate	:h:				
RunID:	WET_01062	2U-716083	Units:	mg/L		Lab	Sample	ID	Client Sa	mple IC	<u>)</u>		
Analysis Dat	e: 06/22/2001	10:00	Analyst:	КМ		0106	0768-01	c	MW-5		<u>• ID</u>		
	A	nalyte		Result	Rep Limit								
	Nitrogen, Nitrate (As	N)		ND	0.10								
	··· · · · · · · · · · · · · · · · · ·			Lat	oratory Cor	trol Sample (LCS)					<u> </u>	
		RunID:	,	NET_0106	622U-716084	Units:	ng/L						
		Analysis	Date:	06/22/200	01 10:00		<m< td=""><td></td><td></td><td></td><td></td><td></td><td></td></m<>						
			Analyte			ike Result ded	Perce Recov		Upper Limit				
		Nitrogen, N	itrate (As N))	Ad		Recov		Limit				
		· · ·	itrate (As N))	Ad S) / Matrix S	ded 10 9.54	Recov	very Limit	Limit				
		Sample RunID:	itrate (As N) <u>Matrix S</u> Spiked:	5 pike (M 010607 WET_01	Ad S) / Matrix S 71-01 0622U-716086	ded 10 9.54 pike Duplicate	(MSD) mg/L	very Limit	Limit		R37664		
		Sample RunID:	itrate (As N) <u>Matrix S</u> Spiked:	5 pike (M 010607 WET_01	Ad <u>S) / Matrix S</u> 71-01	ded 10 9.54 pike Duplicate	Recov	very Limit	ch: <u>Client Sample ID</u> MW-5 Upper Limit				
	Analyte	Sample RunID: Analysi	itrate (As N) <u>Matrix S</u> Spiked:	5 pike (M 010607 WET_01	Ad S) / Matrix S 71-01 0622U-716086	ded 10 9.54 pike Dup!Icate Units: Analyst:	(MSD) mg/L	very Limit	Limit	RPD			High Limi

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Method:	Sulfate E300								(Order: Batch ID:				
		Me	thod Blank			Sam	ples in /	Analytical Batc					
RunID:	WET_010	0622V-71609	4 Units:	mg/L		Lab	Sample	ID	<u>Client Sar</u>	mple ID	<u>)</u>		
Analysis Dat	ie: 06/22/20	001 10:00	Analyst:	KM		0106	60768-01	С	MW-5				
		Analyte	r	Result	Rep Limit								
	Sulfate	Analyte		ND	0.20								
				Lal	oratory Contro	ol Sample (LCS)						
		Runil Analy		WET_010 06/22/20	322V-716095 01 10:00		mg/L KM						
			Analyte	e	Spike Adde		Perce		Upper Limit				
		Sulfate				10 1	1	108 90	110				
		Rur	nple Spiked: nD: nysis Date:	_	68-01 0622V-716097 · 001 10:00	Units: Analyst:	mg/L KM						
	Analyte		Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD		Low Limit	High Limit
				200	360	107	200	360				80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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.



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

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Quality Control Report

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Method:	Chloride, 1 E325.3	otal								orkO b Bat	rder: tch ID:		60768 474		
		Metho	od Blank				Sam	ples in /	Analytical B	atch:					
RunID:	WET_01070	6C-731557	Units:	mg/L			Lab	Sample	D	c	lient Sa	mple IC)		
Analysis Date:	07/06/2001	11:10	Analyst:	CV			0106	0768-03 0768-04	A	N	1W-14 1W-15		-		
1	Ar	nalyte	T	Result	Rep Limit	t									
Chlo				ND	1.0	-i									
		· · · ·	····	Lab	oratory	Contro) Sample (I	LCS)							
		RunID: Analysis		WET_0107 07/06/200	706C-7315 01 11:10			ng/L CV							
			Analyte	8		Spike Addec		Perce Recov			pper _imit				
		Chloride				76	.2 75.2	2	99	90	110				
		RunID	e Spiked:	0106070 WET_01	•	1561	e Duplicate Units: Analyst:	mg/L CV							
A	nalyte	RunID	e Spiked: :	0106070 WET_01 07/06/20 MS Spike	68-03 0706C-731	1561 D	Units:	mg/L CV MSD Spike	MSD Resu		ISD % ecovery	RPD		Low Limit	High Limit
A	nalyte	RunID	e Spiked: : sis Date: Sample	0106070 WET_01 07/06/20 MS Spike Added	68-03 0706C-731 001 11:10	1561 D	Units: Analyst: MS % Recovery	mg/L CV MSD					Limit	Limit	Limit
	nalyte	RunID	e Spiked: : sis Date: Sample Result	0106070 WET_01 07/06/20 MS Spike Added	68-03 0706C-731 001 11:10	1561 D esult	Units: Analyst: MS % Recovery	mg/L CV MSD Spike Added		R	ecovery		Limit	Limit	Limit
	ND/Ū - Not	RunID Anaiys	e Spiked: : sis Date: Sample Result	0106070 WET_01 07/06/20 MS Spike Added 250	68-03 0706C-731 001 11:10 MS Re	1561 D esult 470	Units: Analyst: MS % Recovery	mg/L CV MSD Spike Added 250	Ce	70 R	99.1		Limit	Limit	Limit

Sample Receipt Checklist And Chain of Custody

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7/10/01 12:07:56 PM



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

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Sample Receipt Checklist

Workorder:	01060768		Receive	ed By:	RE	
Date and Time Received:	6/22/01 9:30:00 AM		Carrier	name:	FedEx	
Temperature:	3		Chilled	by:	Water Ice	
1. Shipping container/co	oler in good condition?	Yes 🗹	No 🗌	Not Prese	ent	
2. Custody seals intact o	on shippping container/cooler?	Yes 🗹	No	Not Prese	ent 🗋	
3. Custody seals intact o	on sample bottles?	Yes	No 🗌	Not Prese	ent 🗹	
4. Chain of custody pres	ent?	Yes 🗹	No			
5. Chain of custody sign	ed when relinquished and received?	Yes 🗹	No			
6. Chain of custody agre	es with sample labels?	Yes 🗹	Νο			
7. Samples in proper cor	ntainer/bottle?	Yes 🗹	No 🗌			
8. Sample containers int	act?	Yes 🗹	No 🗌			
9. Sufficient sample volu	me for indicated test?	Yes 🗹	No 🗌			
10. All samples received v	vithin holding time?	Yes 🗹	No			
11. Container/Temp Blank	temperature in compliance?	Yes 🗹	No 🗌			
12. Water - VOA vials have	e zero headspace?	Yes 🗹	No 🗌	Not Appli	cable 🗌	
13. Water - pH acceptable	upon receipt?	Yes 🗹	No 🗌	Not Appli	cable	

SPL Representative:	Contact Date & Time:
Client Name Contacted:	
Non Conformance Issues:	
Client Instructions:	

	N		S	SPL, I	Inc.				SPL W	N -) 8		60	096668	8
	A	Analysis Reques	ن ب	& Chain of Custody Record	n of Ci	ustody	Reco	p	$\overline{\bigcirc}$	$O(\rho)$)/\((X	page	l of	
Chent Name: ERCU/N AND LAIDUFIL	DWELL			matrix	bottle	size	pres.		(/ ·	Rec	Requested	d Analysis	rsis		
Address Phone: 1415 Ox 4287ANA STE 270, HOW TX 7137590	Sre ZZU, H	24th 713	159092		selg				5/0	7	(0	9-1 200	٤'		Ś
Client Contact: R.W.K. REX.R.M.	Ý Ý							2/ Jets	81	k (i	210	化月	<i>4</i> Z	<u>73</u> 971	3
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Project Number: 12832-016	0					[=9		10D	193 7 00	ρξ) ő	(1) 11)	70 7		
Project Location: HUBBS, NM	-					τ		// 10 1	ख्यः इर्रे	17	<u>ajz</u>	1877 471	IJ	<u></u>	
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SAMPLE ID	DATE	TIME	comp grab	= M		3=8		in _N	14	ØN	¥ 75	<u>]</u> 3.}{(C		
NW-5	DELZIDI	1645			P.A.V	041		x 6		X	X	X			
MiU-7	00/12/01	800		(n)	R	140	-	イ X 大	X						
MiU-IH	121 Ini	ach/	2	\mathcal{N}	d		1						X		
MW-15	16/1/01	1505	>	11	a		١						1>		
1 MW-2	0421/01	1545	\mathcal{A}	3	6.1	- E	-	ト	\times					+	
MW-H	popular	1625)	P.J	(A)		\geq							
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												5	54		
Gient/Consultant Remarks:				Laborato	Laboratory remarks:							Intact?	12	Y UN	7
NUTRATE MUST bed	ind red u	artin 29 How	How Sut	Barphin	A		ľ					Temp:	ä		
Requested TAT	Spotial Report	ial Reporting Requirements		ax Results	5	Raw Data		Special Detection Limits (specify):	tion Limit	s (specify):			PM revie	(leitini) v:	
l	St	Standard QC	Level 3	13 QC		Level 4 QC		P							
24hr 🔲 72hr 📙	1. Relinguetahed by Sampl	cythy Sympler				date /	<u>10</u>	196 M	2. Recei		X				
48hr 🔲 Standard 🕅	3. Kelinquishof by	der:							4. Rea	in the second					
	5. Relinquished by:	ikq pa				date	1.3	time	6. Rec	IL AL	- MA	41/1	<u>n/ralp</u>	(01011)	
 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901 459-Huehes Drive. Traverse City. MI 49684 (616) 947-5777 	, Houston, verse Citv, I	IX 77054 (7 MI 49684 (6	13) 660-09 16) 947-57	106		٥	00 Am	500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775	Caffery	Parkwa	y, Scott	, LA 705	83 (318)	137-47	R



Brown & Caldwell

Cert	tificate of Analysis Number:
	<u>01060808</u>
Report To:	Project Name: BJ Service, Hobbs, NM
Brown & Caldwell	<u>Site:</u> Hobbs,NM
Rick Rexroad	Site Address:
1415 Louisiana	
Suite 2509 Houston	PO Number:
тх	State: New Mexico
77002-	State Cert. No.:
ph: (713) 759-0999 fax: (713) 308-3886	Date Reported: 7/10/01

This Report Contains A Total Of 17 Pages

Excluding This Page

And

Chain Of Custody

7/10/01

Date



Case Narrative for: Brown & Caldwell

	f Analysis Number: 1060808
Report To:	Project Name: BJ Service, Hobbs, NM
Brown & Caldwell	<u>Site:</u> Hobbs,NM
Rick Rexroad	Site Address:
1415 Louisiana	
Suite 2509 Houston	PO Number:
тх	State: New Mexico
77002-	State Cert. No.:
ph: (713) 759-0999 fax: (713) 308-3886	Date Reported: 7/10/01

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.

ma alest Sonia West

Senior Project Manager

7/10/01



Brown & Caldwell

		C	ertificate	of Analysis Number	•		
			<u>(</u>	01060808			
<u>Report To:</u>	Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX			<u>Project</u> <u>Site:</u> <u>Site Ad</u> PO Nur		Hobbs, NM	
	77002- ph: (713) 759-0999	fax: (713) 3	08-3886	State:	New Mexico ert. No.:		
<u>Fax To:</u>	Brown & Caldwell Rick Rexroad	fax : (713)	308-3886	Date Re	eported: 7/10/01		
Clier	nt Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-13		01060808-01	Water	6/22/01 7:35:00 AM	6/23/01 10:00:00 AM	096670	
MW-11A		01060808-02	Water	6/22/01 8:40:00 AM	6/23/01 10:00:00 AM	096670	
MW-12		01060808-03	Water	6/22/01 10:45:00 AM	6/23/01 10:00:00 AM	096670	
MW-10		01060808-04	Water	6/22/01 10:00:00 AM	6/23/01 10:00:00 AM	096670	
Duplicate		01060808-05	Water	6/22/01 9:00:00 AM	6/23/01 10:00:00 AM	096670	
TB- 6/15/01		01060808-06	Water	6/22/01	6/23/01 10:00:00 AM	096670	

Sonia West Senior

Senior Project Manager

7/10/01

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer

7/10/01 12:10:06 PM



Client Sample ID M	W-13			Col	lected:	6/22/01 7:35:00	SPL Sample I): 0106	0808-01
				Site	e: Hol	bbs,NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. i
DIESEL RANGE OR	GANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organic	cs	0.31		0.2		1	07/06/01 7:54	AM	731304
Surr: n-Pentacosar	ıe	90.0	%	18-120		1	07/06/01 7:54	AM	731304
Prep Method	Prep Date			Prep Initials]				
SW3510B	06/26/2001 1	15:52		KL]				
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Orga	inics	ND		0.1		1	06/29/01 19:33	D_R	725872
Surr: 1,4-Difluorobe	enzene	100	%	74-121		1	06/29/01 19:33	D_R	725872
Surr: 4-Bromofluor	obenzene	106	%	55-150		1	06/29/01 19:33	D_R	725872
PURGEABLE ARON	IATICS				MCL	SW8021B	Units: ug	/L	
Benzene		ND		1		1	06/29/01 19:33	D_R	725779
Ethylbenzene		ND		1		1	06/29/01 19:33	D_R	725779
Toluene		ND		1		1	06/29/01 19:33	D_R	725779
Xylenes,Total		ND		1		1	06/29/01 19:33	D_R	725779
Surr: 4-Bromofluoro	obenzene	105	%	48-156		1	06/29/01 19:33	D_R	725779
Surr: 1,4-Difluorobe	enzene	98.7	%	72-137		1	06/29/01 19:33	DR	725779

Qualifiers:

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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

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

7/10/01 12:10:12 PM



Client Sample ID MW-11A			Coll	ected:	6/22/01 8:40:00	SPL Sample II): 0106	0808-02
			Site	: Hol	bbs,NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organics	1		0.24		1	07/06/01 8:32	AM	731305
Surr: n-Pentacosane	91.6	%	18-120		1	07/06/01 8:32	AM	731305
Prep Method Prep Date			Prep Initials					
SW3510B 06/26/2001 1	5:52		KL					
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Organics	0.1		0.1		1	06/29/01 20:01	D_R	725873
Surr: 1,4-Difluorobenzene	104	%	74-121		1	06/29/01 20:01	D_R	725873
Surr: 4-Bromofluorobenzene	112	%	55-150		1	06/29/01 20:01	D_R	725873
HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: m	g/L	
Ethane	ND		0.0025		1	07/06/01 20:05	DR	733031
Ethylene	ND		0.0032		1	07/06/01 20:05	DR	733031
Methane	0.0074		0.0012		1	07/06/01 20:05	DR	733031
NITROGEN, NITRATE (AS N)				MCL	E300	Units: m	g/L	
Nitrogen, Nitrate (As N)	ND		0.1		1	06/23/01 10:54	КМ	716773
PURGEABLE AROMATICS				MCL	SW8021B	Units: uç	j/L	
Benzene	1.5		1		1	06/29/01 20:01	D_R	725785
Ethylbenzene	ND		1		1	06/29/01 20:01	D_R	725785
Toluene	ND		1		1	06/29/01 20:01	D_R	725785
Xylenes,Total	ND		1		1	06/29/01 20:01	D_R	725785
Surr: 4-Bromofluorobenzene	125	%	48-156		1	06/29/01 20:01	D_R	725785
Surr: 1,4-Difluorobenzene	99.6	%	72-137		1	06/29/01 20:01	D_R	725785
SULFATE				MCL	E300	Units: m	g/L	
Sulfate	180		4		20	06/25/01 10:52	KM	718273

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

7/10/01



Client Sample ID MV	V-12			Coll	ected:	6/22/01 10:45:00	SPL Sample II): 0106	0808-03
				Site	: Hot	obs,NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. i
DIESEL RANGE ORG	SANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organics	3	0.51		0.22		1	07/06/01 9:11	AM	731307
Surr: n-Pentacosane)	84.1	%	18-120		1	07/06/01 9:11	АМ	731307
Prep Method	Prep Date			Prep Initials					
SW3510B	06/26/2001 1	15:52		KL					
GASOLINE RANGE C	RGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Organ	nics	0.11		0.1		1	06/29/01 21:24	D_R	725874
Surr: 1,4-Difluorober	nzene	102	%	74-121		1	06/29/01 21:24	D_R	725874
Surr: 4-Bromofluorol	benzene	134	%	55-150		1	06/29/01 21:24	D_R	725874
HEADSPACE GAS A	NALYSIS				MCL	RSK147	Units: m	g/L	
Ethane		ND		0.0025		1	07/06/01 20:19	DR	733033
Ethylene		ND	_	0.0032		1	07/06/01 20:19	DR	733033
Methane		0.0021		0.0012		1	07/06/01 20:19	DR	733033
NITROGEN, NITRATE	E (AS N)				MCL	E300	Units: m	g/L	
Nitrogen, Nitrate (As N)	ND		0.1		1	06/23/01 10:54	КМ	716774
PURGEABLE AROM	ATICS				MCL	SW8021B	Units: ug	ı/L	
Benzene		12		1		1	06/29/01 21:24	D_R	725800
Ethylbenzene		ND		1		1	06/29/01 21:24	D_R	725800
Toluene		ND		1		1	06/29/01 21:24	D_R	725800
Xylenes, Total		ND		1		1	06/29/01 21:24	D_R	725800
Surr: 4-Bromofluorol	penzene	111	%	48-156		1	06/29/01 21:24	D_R	725800
Surr: 1,4-Difluorober	nzene	100	%	72-137		1	06/29/01 21:24	D_R	725800
SULFATE					MCL	E300	Units: m	g/L	
Sulfate		360		10		50	06/25/01 10:52	KM	718276

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

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

* - Surrogate Recovery Outside Advisable QC Limits J - Estimated Value between MDL and PQL



Client Sample ID MW-	·10		Col	lected:	6/22/01 10:00:00	SPL Sample ID	: 0106	0808-04
			Site	e: Hol	bbs,NM			_
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq.
DIESEL RANGE ORGA	ANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	1.2		0.25		1	07/06/01 9:49	۹M	731309
Surr: n-Pentacosane	63.0	%	18-120		1	07/06/01 9:49	AM	731309
Prep Method	Prep Date		Prep Initials					
SW3510B	06/26/2001 15:52		KL					
GASOLINE RANGE OF	RGANICS			MCL	SW8015B	Units: mg	/L	
Gasoline Range Organic	s ND		0.1		1	06/30/01 2:54)_R	725880
Surr: 1,4-Difluorobenz	ene 101	%	74-121		1	06/30/01 2:54 E)_R	725880
Surr: 4-Bromofluorobe	enzene 103	%	55-150		1	06/30/01 2:54 E)_R	725880
HEADSPACE GAS AN	ALYSIS			MCL	RSK147	Units: mg	/L	
Ethane	ND		0.0025		1	07/06/01 20:33	DR	733036
Ethylene	ND		0.0032		1	07/06/01 20:33	DR	733036
Methane	0.044		0.0012		1	07/06/01 20:33	DR	733036
NITROGEN, NITRATE	(AS N)			MCL	E300	Units: mg	/L	
Nitrogen, Nitrate (As N)	ND		0.1		11	06/23/01 10:54	<m< td=""><td>716776</td></m<>	716776
PURGEABLE AROMA	TICS			MCL	SW8021B	Units: ug/	L	
Benzene	ND		1	···	1	06/30/01 2:54)_R	727614
Ethylbenzene	ND		1		1	06/30/01 2:54 E)_R	727614
Toluene	ND		1		1	06/30/01 2:54 E	D_R	727614
Xylenes,Total	ND		1		1	06/30/01 2:54)_R	727614
Surr: 4-Bromofluorobe	enzene 103	%	48-156	•	1	06/30/01 2:54 C)_R	727614
Surr: 1,4-Difluorobenz	ene 99.0	%	72-137		1	06/30/01 2:54 E)_R	727614
SULFATE				MCL	E300	Units: mg	/L	
Sulfate	270		4	······	20	06/25/01 10:52	<m< td=""><td>718277</td></m<>	718277

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

7/10/01 12:10:18 PM



Client Sample ID Du	plicate		•	Coll	ected:	6/22/01 9:00:00	SPL Sample I	D : 0106	0808-05
				Site	: Hol	obs,NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORC	GANICS				MCL	SW8015B	Units: mg/L		
Diesel Range Organics	S	1.9		0.24		1	07/06/01 10:28 AM		731311
Surr: n-Pentacosane	e	86.7	%	18-120		1	07/06/01 10:28	АМ	731311
Prep Method	Prep Date			Prep Initials					
SW3510B	06/26/2001 1	15:52		KL					
GASOLINE RANGE	GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L		
Gasoline Range Organ	nics	ND		0.5		5	06/29/01 23:41	D_R	725877
Surr: 1,4-Difluorobe	nzene	97.6	%	74-121		5	06/29/01 23:41	D_R	725877
Surr: 4-Bromofluoro	benzene	105	%	55-150		5	06/29/01 23:41	D_R	725877
PURGEABLE AROM	ATICS				MCL	SW8021B	Units: ug	/L	
Benzene		ND		5		5	06/29/01 23:41	D_R	725806
Ethylbenzene		ND		5		5	06/29/01 23:41	D_R	725806
Toluene		ND		5		5	06/29/01 23:41	D_R	725806
Xylenes, Total		ND		5		5	06/29/01 23:41	D_R	725806
Surr: 4-Bromofluoro	benzene	101	%	48-156		5	06/29/01 23:41	D_R	725806
Surr: 1,4-Difluorober	nzene	99.6	%	72-137		5	06/29/01 23:41	D_R	725806

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

7/10/01 12:10:19 PM



Client Sample ID TB- 6/15/01			Col	lected:	6/22/01	SPL Sample ID:	01060808-06
			Site	ə: Hol	bbs,NM		
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed Ana	alyst Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND		0.1		1	06/29/01 23:14 D_R	725876
Surr: 1,4-Difluorobenzene	97.3	%	74-121		1	06/29/01 23:14 D_R	725876
Surr: 4-Bromofluorobenzene	105	%	55-150		1	06/29/01 23:14 D_R	725876
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug/L	
Benzene	ND		1		1	06/29/01 23:14 D_R	725805
Ethylbenzene	ND		1		1	06/29/01 23:14 D_R	725805
Toluene	ND		1		1	06/29/01 23:14 D_R	725805
Xylenes, Total	ND		1	-	1	06/29/01 23:14 D_R	725805
Surr: 4-Bromofluorobenzene	101	%	48-156		1	06/29/01 23:14 D_R	725805
Surr: 1,4-Difluorobenzene	98.1	%	72-137		1	06/29/01 23:14 D R	725805

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

7/10/01 12:10:20 PM



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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Method:	Diesel I SW801	Range Organics B						(Order: Batch ID:	010 130	60808 57		
		Method Blank			Sam	ples in A	Analytical Batc	h:				
RunID:	HP_V_0	0706A-731280 Units:	mg/L		Lab	Sample	ID	Client San	npie IC)		
Analysis Date:	07/06/20	01 3:24 Analy	st: AM			50808-01	_	MW-13		-		
Preparation Da	ate: 06/26/20	01 15:52 Prep I	By: KL N	lethod SW3510	B 0106	60808-02	В	MW-11A				
					0106	60808-03	В	MW-12				
		Analyte	Result	Rep Limit		80808-04		MW-10				
c	iesel Range Or	· · · · · · · · · · · · · · · · · · ·	ND		0106	60808-05	В	Duplicate				
Ĺ	Surr: n-Pentac	osane	65.4	18-120								
			La	boratory Contro	ol Sample (LCS)						
		RunID:	HP_V_010	0706A-731281	Units:	mg/L						
		Analysis Date:	07/06/20	01 4:02		AM						
		Preparation Date	: 06/26/20	01 15:52	Prep By:	KL Me	thod SW3510B					
		Ana	llyte	Spike		Perce		Upper				
				Addeo		Recov		Limit				
		Diesel Range Orga	nics	2	.5 3	2	80 21	175				
		Matr	ix Spike (M	S) / Matrix Spik	e Duplicate) (MSD)						
		Sample Spiked	010608	61-04								
		RunID:		10706A-731285	Units:	mg/L						
		Analysis Date:		001 6:37	Analyst:	AM						
		Preparation Da	e: 06/26/2	001 15:52	Prep By:	KL M	ethod SW3510	В				
	Analyto	Samala	MS		MS %	MOD					Law	Linh
	Analyte	Sample Result	Spike	MS Result	MS % Recovery	MSD Spike	MSD Result	MSD % Recovery	RPD		Low Limit	High Limit
			Added			Added						
Diesel Range (1 0	.56 2.5	2.7	86.5	2.5	2.2	66.2	26.5	39	13	i 130

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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.

7/10/01 12:10:25 PM



Ethylene

Methane

Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

Analysis: Method:	Headspace Gas Analy RSK147	/sis			WorkOrder: Lab Batch ID:	01060808. R38526
	Metho	d Blank		Samples in Analytica	al Batch:	
RunID:	VARC_010706B-733056	Units:	mg/L	Lab Sample ID	Client Sar	nple ID
Analysis Date	: 07/08/2001 12:02	Analyst:	DR	01060808-02D	MW-11A	
				01060808-03D	MW-12	
				01060808-04D	MW-10	
[Analyte		Result Rep Limit			
1	Ethane		ND 0.0025			

Sample Duplicate

Original Sample:	01060810-10		
RunID:	VARC_010706B-733061	Units:	mg/L
Analysis Date:	07/08/2001 13:00	Analyst:	DR

0.0032

0.0012

ND

ND

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	0.01	0.011	9	50
Propane	ND	ND	0	50
Propylene	ND	ND	0	50

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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.

7/10/01 12:10:27 PM



Quality Control Report

Brown & Caldwell

BJ	Service,	Hobbs,	NM
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Analysis: Method:	Purgeable Aromatics SW8021B					WorkOrder: Lab Batch ID:	01060808 R38041
	Metho	d Blank			Samples in Analytic	al Batch:	
RunID:	HP_R_010629A-723625	Units:	ug/L		Lab Sample ID	<u>Client Sar</u>	nple ID
Analysis Date:	06/29/2001 12:40	Analyst:	D_R		01060808-01A	MW-13	
					01060808-02A	MW-11A	
					01060808-03A	MW-12	
					01060808-04A	MW-10	
	Analyte			Rep Limit	01060808-05A	Duplicate	
Benz	zene		ND	1.0		•	
Ethy	lbenzene		ND	1.0	01060808-06A	TB- 6/15/0	1
Tolu	ene		ND	1.0			
Xyler	nes,Total		ND	1.0			
Su	urr: 1,4-Difluorobenzene		98.7	72-137			
S	urr: 4-Bromofluorobenzene		102.0	48-156			

Laboratory	Control	Sample	(LCS)

RunID:	HP_R_010629A-723624	Units:	ug/L
Analysis Date:	06/29/2001 10:40	Analyst:	D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	51	101	70	130
Ethylbenzene	50	49	98	70	130
Toluene	50	50	101	70	130
Xylenes,Total	150	149	99	70	130

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

Sample Spiked:	01060768-01		
RunID:	HP_R_010629A-725760	Units:	ug/L
Analysis Date:	06/29/2001 15:25	Analyst:	DR

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	24	120	20	31	156	26.2 *	21	32	164
Ethylbenzene	ND	20	24	118	20	23	114	3.68	19	52	142
Toluene	ND	20	24	116	20	24	119	2.69	20	38	159
Xylenes,Total	ND	60	69	115	60	66	110	4.44	18	53	144

Qualifiers:

ND/U - Not Detected at the Reporting Limit B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

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MI - Matrix Interference

- D Recovery Unreportable due to Dilution
 - * Recovery Outside Advisable QC Limits

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.

7/10/01 12:10:29 PM



Quality Control Report

Brown & Caldwell BJ Service, Hobbs, NM

Analysis: Method:	Gasoline Range Orga SW8015B	nics				WorkOrder: Lab Batch ID:	01060808 R38135
	Metho	d Blank			Samples in Analytic	al Batch:	
RunID:	HP_R_010629C-725904	Units:	mg/L		Lab Sample ID	Client Sar	n <u>ple ID</u>
Analysis Date	: 06/29/2001 11:35	Analyst:	D_R		01060808-01A	MW-13	
					01060808-02A	MW-11A	
					01060808-03A	MW-12	
ſ			Decult	Den Limit	01060808-04A	MW-10	
-	Analyte		Result	Rep Limit	01060808-05A	Duplicate	
1	Gasoline Range Organics		ND		04000000 000	•	4
	Surr: 1,4-Difluorobenzene		97.7	74-121	01060808-06A	TB- 6/15/0	1
ſ	Surr: 4-Bromofluorobenzene		105.7	55-150			

Laboratory Con	trol Sampl	e (LCS)
HP_R_010629C-725903	Units:	mg/L

RunID: Analysis Date:

Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.91	91	70	130

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

Sample Spiked:	01060768-02		
RunID:	HP_R_010629C-725863	Units:	mg/L
Analysis Date:	06/29/2001 16:20	Analyst:	D_R

06/29/2001 11:07

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	0.9	0.79	81.1	0.9	0.73	74.3	8.75	36	36	160

Qualifiers:

ND/U - Not Detected at the Reporting Limit B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* Recovery Outside Advisable QC Limits

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.

7/10/01 12:10:31 PM



Quality Control Report

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Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Method:	Nitrogen, N E300	litrate (As	5 N)								Order: Batch ID:		60808 7702		
		Meth	od Blank				Sam	ples in A	Analyti	cal Batc	h:				
RunID:	WET_010623	81-716764	Units:	mg/L			Lab	Sample	ID		Client Sa	mole IC	2		
Analysis Dat	e: 06/23/2001	10:54	Analyst:	км				0808-02			MW-11A		-		
			·				0106	0808-03	с		MW-12				
							0106	0808-04	С		MW-10				
	Ar	naiyte		Result	Rep Limit										
	Nitrogen, Nitrate (As	N)		ND	0.10										
<u> </u>			.	Lal	ooratory Co	ontrol	Sample (L	CS)				<u> </u>			
		RunID:	,	WET_010	6231-716766	Ur	nits: r	ng/L							
		Analys			01 10:54	Ar		κ <u>Μ</u>							
		Nitrogen.	Nitrate (As N))		Added 10	9.54	Recov	95	Limit 90	Limit 110				
<u>_</u>		,	·····		S) / Matrix			(MSD)							
			<u>Matrix S</u>	Spike (M	S) / Matrix			(MSD)							
		Sam	<u>Matrix S</u> ble Spiked:	Spike (M 010608	11-03	Spike I	Duplicate		1						
		Samı Runil	<u>Matrix S</u> ble Spiked: D:	010608 WET_01	11-03 06231-71676	Spike I 9 (Duplicate Units:	mg/L							
		Samı Runil	<u>Matrix S</u> ble Spiked:	010608 WET_01	11-03	Spike I 9 (Duplicate		1						
	Analyte	Samı Runil	<u>Matrix S</u> ble Spiked: D:	010608 WET_01	11-03 06231-71676	Spike I 9 (/	Duplicate Units:	mg/L	MSD	Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limi

Qualifiers:

1 4

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

РM

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

Brown & Caldwell

BJ Service,	Hobbs	NM

Method: RunID: Analysis Date:	E300 <u>M</u> WET_010625I-7182 06/25/2001 10:52	ethod Blank 1 Units: Analyst:	mg/L KM			ples in /	Analytical Batc	Batch ID:		790		
Analysis Date:	WET_010625I-7182	1 Units:				•		h:				
	06/25/2001 10:52	Analyst:			l ah s	Sample		Client Sar	nnia IF	•		
		·				0808-02		MW-11A		2		
					0106	0808-03	с	MW-12				
1					0106	0808-04	С	MW-10				
	Analyte		Result	Rep Limit								
Sult	lfate		ND	0.20								
· · · · · · · · · · · · · · · · · · ·			Lat	oratory Contro	l Sample (L	CS)						
	Rur	ID:	WET_0106	3251-718272	Units: n	ng/L						
	Ana	lysis Date:	06/25/200	01 10:52		KM						
	[Analyte		Spike	Result	Perce	ent Lower	Upper				
		Analyte	2	Addec		Recov		Limit				
	Sulfate	•			10 11	!	107 90	110				
		unID: nalysis Date:		06251-718274 001 10:52	Units: Analyst:	mg/L KM						
,	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limi
Sulfate		180	200	410	112	200	410	111	0.202	20	80	12

Qualifiers:

H.

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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

7/10/01 12:10:36 PM



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

Sample Receipt Checklist

	Workorder:	01060808		Receive	ed By: RE	:
-	Date and Time Received:	6/23/01 10:00:00 AM		Carrier r	name: FedEx	:
1	Temperature:	4		Chilled I	by: Water Ice	
	1. Shipping container/c	ooler in good condition?	Yes 🗹	No 🗌	Not Present	
	2. Custody seals intact	on shippping container/cooler?	Yes 🗹	No 🗌	Not Present	
	3. Custody seals intact	on sample bottles?	Yes 🗌	No 🗌	Not Present	
	4. Chain of custody pres	sent?	Yes 🗹	No 🗌		
	5. Chain of custody sign	ned when relinquished and received?	Yes 🗹	No 🗌		
	6. Chain of custody agre	ees with sample labels?	Yes 🗹	No 🗌		
	7. Samples in proper co	ntainer/bottle?	Yes 🔽	No 🗌		
	8. Sample containers in 1.Received 1-40ml vi	tact? al ID#MW-13 broken.	Yes	No 🗹		
	9. Sufficient sample vol		Yes 🗹	No 🗌		
1	0. All samples received	within holding time?	Yes 🗹	No 🗌		
1	1. Container/Temp Blan	k temperature in compliance?	Yes 🗹	No 🗌		
1	2. Water - VOA vials hav	e zero headspace?	Yes 🗹	No 🗌	Not Applicable	
1	3. Water - pH acceptable	ə upon receipt?	Yes 🗹	No 🗌	Not Applicable	

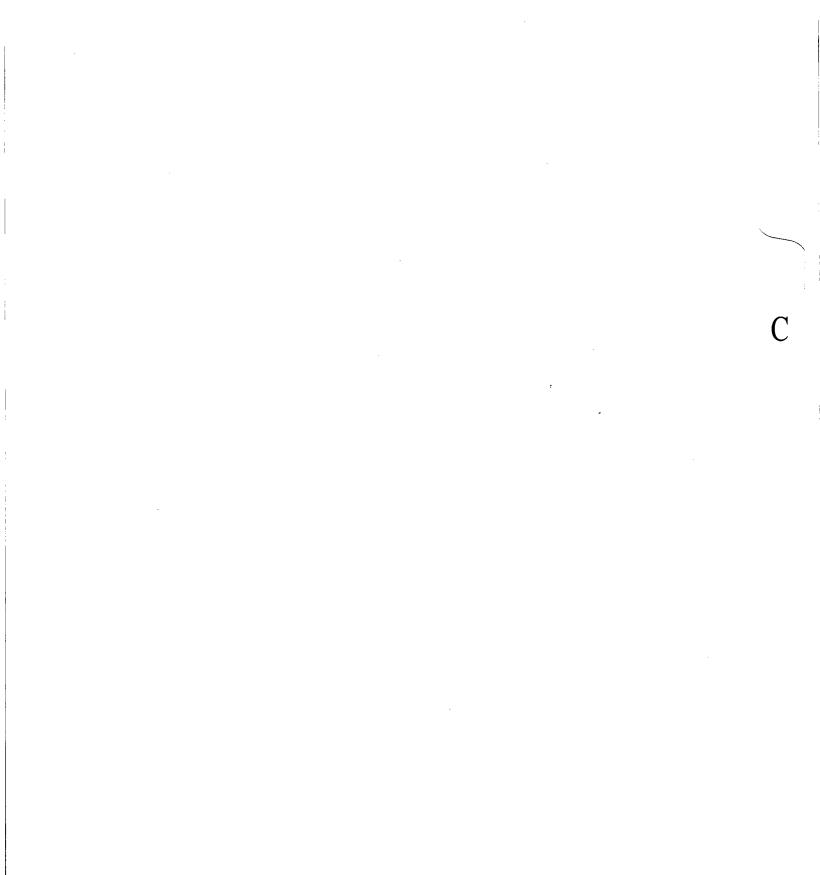
SPL Represent	itive:	Contact Date & Time:	
Client Name Conta	cted:		
Non Conformance Issues:	1.2-40ml vials for ID#MW-13 left for analysis.		
Client Instructions:			

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7/10/01 12:10:37 PM

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SPL, Inc. SPL, Inc.	rd OIObOUOS page L of L	Number of Containers Number of Containers Number of Containers Number of Newrows Number (2013) Sulfate (2010) Sulfate (2		× × × ×	8 X X X X X	4×× 1				1 1 1	Special Detection Limits (specify): PM review (initial)		1630	time 4. Received by:
In the sequent of the sequent of the sequent of the sequence o	Custody Reco	1=1 liter 4=402 40=vial 55 8=802 16=1602 8 1=HCI 2=HNO3 7							4s:		σ	Level 4 QC	26/21/01	dafe
CHIDWELL TE 250, Hay, K. R. T. R. 1990 C. 1900 C. 1900		(1759.0°7497)	A C	7 7	7	7	3		Laboratory remai	-		Level 3		
	X Analysis	Chidwerd, The ZER, Hay, The Laboration of the La	12/01		apol lation	which and	av/2/6			WHY THENCE	Special Reporting Requir	Standard QC	1. Relinquighed by	



APPENDIX C

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Boring Logs for Confirmation Soil Borings

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Proje	ct Na	ame:	B,	J Services				Pro	oject Nun	nber: <u>1</u>	2832.023	Sheet	_1_ of _2_
Proje	ct Lo	ocatio	n: H	lobbs, New Mexico				L	logged B	y: Cory	Green	Approved: Rick	Rexroad
Drilli	ng C	Contra	ctor:	Harrison & Cooper					Date Star		3/01		//23/01
Drilli	ng E	quipr	nent:	TD-60	Driller: Lenard H	Ienr	ion	ר נ	fotal Bor Depth: (fe	ring eet) 56.()	Depth to Static Water: (feet)	55.5
Drilli	ng N	Aetho	d:	Air Rotary	Borehole Diameter:	8''			OC Elev	vation: and Type		Ground Elevation:	ND
Samp	oling	Meth	nod:	Split Spoon				0	of Well C	and Type	NA		
Com	nent	:s:							Slot Size: Developn	NA nent Metho		aterial: NA	
Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description		Readings	Sampled Interval	Recovery (feet)	Sample ID			Remarks	
-				Drilled Without Sampling			\vdash						
20		SM		Silty Sand (SM) light brown, fine	-vfg, dry.	0	X	2					
30		SP		Sand (SP) light brown to brown,	fine grained.	0	X	2					

pe et ct				B	J Services			-		per: 12832.023 Sheet 2 of
Base Base	ojec	n Na	ame:				T	Pr	oject Numb	ber: <u>12832.023</u> Sheet <u>2</u> of
SM Silty Sand (SM) brown, fine grained, soft, wet. SP Sand (SP) brown, vfg, slightly moist. O 2 SP Sand (SP) brown, vfg, slightly moist. O 2 SP Sand (SP) brown, wfg, slightly moist. O 2 SP Sand (SP) brown, wfg, slightly moist. O 2 Sample CSB-1-45-47 Sample CSB-1-45-47 Sample CSB-1-54-56	Deput (teet)	Depth to Water	USC Soil Type	Lithology	Description	Readings	Sampled Interval	Recovery (feet)	Sample ID	Remarks
SP Sand (SP) brown, vfg, slightly moist. 0 2 0 2 0 2 0 2 Sample CSB-1-45-47			SM		Silty Sand (SM) brown, fine grained, soft, wet.	0	X	2		
Sample CSB-1-45-47 Sample CSB-1-45-47 Sample CSB-1-45-47 Sp Sample CSB-1-45-47 Sp Sample CSB-1-45-47			SP		Sand (SP) brown, vfg, slightly moist.	0	X	2		
SP Sand (SP) brown, moist, wet @ 55.5'. 0 2 Y SP Sand (SP) brown, moist, wet @ 55.5'. 0 2						0	X	2		Sample CSB-1-45-47
$ = \sum_{n=1}^{\infty} Sample CSB-1-54-56 $	-					. 0	X	2		
	-	Ţ	SP		Sand (SP) brown, moist, wet @ 55.5'.	0	X	2		Sample CSB-1-54-56
		ļ								

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Proje	ct Na	ame:	B	J Services				Pro	oject Nun	nber:	12832.0)23 Sheet <u>1</u> of <u>2</u>
Proje	ct Lo	ocatio	n: F	lobbs, New Mexico				L	logged B	y: Cory	Green	Approved: Rick Rexroad
Drilli	ng C	Contra	ctor:	Harrison & Cooper						ted: 7/2	23/01	Date Finished: 7/23/01
Drilli	ng E	quipr	nent:	TD-60	Driller: Lenard H	Ienr	ion	1	fotal Bor Depth: (fe	ring eet) 56.	.0	Depth to Static Water: (feet) 55.5
Drilli	ng N	Aetho	d:	Air Rotary	Borehole Diameter:	8''			FOC Elev			Ground Elevation: ND
Samp	oling	Meth	nod:	Split Spoon					Diameter of Well C	and Type Casing:	NA	
Com	nent	:s:							Slot Size:			r Material: NA
] [Developn	nent Meth	iod: NA	1
Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description		Readings	Sampled Interval	Recovery (feet)	Sample ID			Remarks
				Drilled Without Sampling			$\left \right $					
						2						
											Ĩ	
4-												
6-												
8-												
10-												
12-												
-												
14												
16-												
- 81								i				
18 20 22 22		SM		Silty Sand (SM) light brown, dry,	vfg-fine grained.	0	$\left \right\rangle$	2				
22-							\mathbb{A}					
24 _												
26 —		SM		Slightly Silty Sand (SM) light bro	wn to brown, vfg, dry.	0	∇	2				
							\square					
28-								:				
30 -		SP		Sand (SP) brown, vfg, dry.	II							
				Sand (St. / Drown, vig, dry.		10	X	2				
32-	Ì	Ì]	H					

Sheet <u>2</u> of <u>2</u> **BJ** Services Project Name: 12832.023 Project Number: ____ Readings Sampled Interval Depth to Water USC Soil Type Recovery (feet) Depth (feet) Description Sample ID Remarks Lithology 34 — SP Sand (SP) light brown, vfg, slightly moist. CSB-2-35-37 61 2 36 -38 --40 --42 --42 ---44 -SP Sand (SP) light brown, fine grained to vfg, slightly 0 2 moist. 46 — 10 2 48-50-0 2 52 54 SP Sand (sp) brown, vfg, moist. CSB-2-54-56 10 2 _ Ţ 56 -

Proje	ct Ni	ame:	<u></u>	J Services				Pro	ject Nun	nber: _	12832.	023	She	et <u>1</u> of <u>2</u>
Proje	ect Lo	ocatic	on: H	Iobbs, New Mexico				I	Logged B	y: Cor	y Green	I	Approved: Ri	ck Rexroad
Drilli	ing C	Contra	actor:	Harrison & Cooper					Date Star		23/01		Date Finished:	7/23/01
Drilli	ing E	Equip	ment:	TD-60	Driller: Lenard	Heni	10 n	Ī	Fotal Bor Depth: (fe	ing eet) 54	.0		Depth to Static Water: (feet)	53.5
Drill	ing N	Aetho	d:	Air Rotary	Borehole Diameter:	8''			FOC Elev				Ground Elevation	on: ND
Sam	pling	Metl	nod:	Split Spoon			_		Diameter of Well C	and Typ asing:	e NA			
Com	ment	ts:							Slot Size:			er Ma	terial: NA	
			_					I	Developm	nent Met	hod: N	A		
Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description		Readings	Sampled Interval	Recovery (feet)	Sample ID				Remarks	
				Drilled Without Sampling	<u></u>					· · · · · · · · · · · · · · · · · · ·		[,
20-		SM		Silty Sand (SM) light brown, vfg,		0	X	2						
26		SM		Silty Sand (SM) light brown, vfg,	dry.	0		2						
30	- - - -	SP		Sand (SP) light brown, fine grain	ed, dry.	0	X	2						

CSB-3 _____

BJ Services Project Name: 12832.023 Sheet <u>2</u> of <u>2</u> Project Number: Sampled Interval Readings Depth to Water USC Soil Type Recovery (feet) Depth (feet) Sample ID Description Remarks Lithology 0 2 SP Sand (SP) light brown, vfg, dry. 0 2 42-44 — SP Sand (SP) brown, vfg, slightly moist to dry. 46-Sample CSB-3-45-47 0 2 48-] 50 0 2 ______ 52 ____ SP Sand (SP) brown, vfg, becomes moist @ 53.5'. Sample CSB-3-52-54 0 2 (₅₄ Ţ

Proje	ct Na	ame:	B,	J Services				Pro	oject Nun	nber:	12832.0	23	_ She	et <u>1</u> of <u>2</u>
Proje	ct Lo	ocatio	n: F	lobbs, New Mexico				L	Logged B	y: Cory	Green	Ар	proved: R i	ck Rexroad
Drilli	ng C	ontra	ctor:	Harrison & Cooper					Date Star		23/01		te Finished:	7/23/01
Drilli	ng E	quipr	nent:	TD-60	Driller: Lenard H	Ienr	ion	ך נ	fotal Bor Depth: (fe	ing eet) 56	.0	De Wa	pth to Static ater: (feet)	55.5
Drilli	ng N	1etho	d: .	Air Rotary	Borehole Diameter:	8''			FOC Elev			Gro	ound Elevation	on: ND
Samp	ling	Meth	od:	Split Spoon					Diameter of Well C	and Type asing:	NA			
Com	nent	s:						1	Slot Size:				I: NA	
									Developn	nent Meth	nod: NA	.		
Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description		Readings	Sampled Interval	Recovery (feet)	Sample ID			Rei	marks	
-				Drilled Without Sampling							T			
2-														
4_														
_														
6-														
8-														
10-														
12-														
14														
16-														
18-														
20		SМ		Silty Sand (SM) light brown, vgf,	dry.	0	$\overline{\nabla}$	2						
22-							Д							
-														
24-		014												
26		SM		Silty Sand (SM) light brown, vgf.	ary.	0		2						
28-														
-														
30-		SP		Sand (SP) light brown, vfg, dry to	very slightly moist.	0	\square	2						
32-							Д							

Proje	ct Na	ame:	<u></u>	J Services			Pro	oject Number	
Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	NCAUILIES	Sampled Interval	Recovery (feet)	Sample ID	Remarks
4 				C)	X	2		
		SP		Sand (SP) light brown, vfg, slightly moist.	D	X	2		
					D	X	2		Sample CSB-4-45-47
					0	X	2		
4 5	Ţ	SP		Sand (SP) light brown, vfg, becomes wet @ 55.5'.	D I	X	2		Sample CSB-4-54-56
:									

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APPENDIX D

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Laboratory Analytical Report for Confirmation Soil Samples

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

Brown & Caldwell

		Analysis Number:	
	<u>010</u>	070914	
Report To:		Project Name:	BJ Hobbs
Brown & Caldwell		<u>Site:</u>	Hobbs, NM
Rick Rexroad		Site Address:	
1415 Louisiana			
Suite 2509		PO Number:	
Houston		State:	New Mexico
ТХ		State.	New Mexico
77002-		State Cert. No .:	
ph: (713) 759-0999	fax: (713) 308-3886	Date Reported:	8/9/01

This Report Contains A Total Of 22 Pages

Excluding This Page

And

Chain Of Custody

8/9/01



Case Narrative for: Brown & Caldwell

Certificate of Analysis Number:

01070914

Report To:	Project Name: BJ Hobbs
Brown & Caldwell	<u>Site:</u> Hobbs, NM
Rick Rexroad	Site Address:
1415 Louisiana	
Suite 2509	PO Number:
Houston	
тх .	State: New Mexico
77002-	State Cert. No.:
ph: (713) 759-0999 fax: (713) 308-3886	Date Reported: 8/9/01

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 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.

West ∕Sonia West

Senior Project Manager

8/9/01



Brown & Caldwell

		C	ertificate	of Analysis Numb	per:	······································		
			<u>0</u>	1070914				
Report To:	Brown & Caldwell			Proje	ect Name:	BJ Hobbs		
•	Rick Rexroad			Site:		Hobbs, NM		
	1415 Louisiana Suite 2509			Site	Address:			
	Houston							
_	тх			PON	lumber:			
	77002- ph: (713) 759-0999	fax: (713) 3	308-3886	<u>State</u>	e: e Cert. No.:	New Mexico		
Fax To:	Brown & Caldwell			Date	Reported:	8/9/01		
	Rick Rexroad	fax : (713)	308-3886					
Clier	nt Sample ID	Lab Sample ID	Matrix	Date Collected	Dat	e Received	COC ID	HOLD

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COCID	HOLD
CSB-4-45-47	01070914-01	Soil	7/23/01 10:56:00 AM	7/25/01 10:00:00 AM	095728	
CSB-4-54-56	01070914-02	Soil	7/23/01 11:23:00 AM	7/25/01 10:00:00 AM	095728	
CSB-3-45-47	01070914-03	Soil	7/23/01 12:32:00 PM	7/25/01 10:00:00 AM	095728	
CSB-3-52-54	01070914-04	Soil	7/23/01 12:43:00 PM	7/25/01 10:00:00 AM	095728	
CSB-2-35-37	01070914-05	Soil	7/23/01 1:33:00 PM	7/25/01 10:00:00 AM	095728	
CSB-2-54-56	01070914-06	Soil	7/23/01 2:10:00 PM	7/25/01 10:00:00 AM	095728	
CSB-1-45-47	01070914-07	Soil	7/23/01 3:39:00 PM	7/25/01 10:00:00 AM	095728	
CSB1-54-56	01070914-08	Soil	7/23/01 3:51:00 PM	7/25/01 10:00:00 AM	095728	
CSB-RB	01070914-09	Water	7/23/01 4:05:00 PM	7/25/01 10:00:00 AM	095728	

West ma Sonia West

Senior Project Manager

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8/9/01

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



Client Sample ID C	SB-4-45-47			Coll	ected:	7/23/01 10:56:00	SPL Sample II	D: 0107	0914-01
				Site	Hol	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. i
DIESEL RANGE OR	GANICS				MCL	SW8100M	Units: m	g/Kg	
Diesel Range Organic	s	ND		5.0		1	08/08/01 2:42	AM	781562
Surr: n-Pentacosar	ie	72.8	%	20-154		1	08/08/01 2:42	AM	781562
Prep Method	Prep Date			Prep Initials					
SW3550B	07/30/2001	15:54		EE					
GASOLINE RANGE	ORGANICS		·····		MCL	SW8015B	Units: m	g/Kg	····
Gasoline Range Orga	nics	ND		0.10	_	1	07/27/01 22:11	TM	765890
Surr: 1,4-Difluorobe	enzene	94.7	%	63-122		1	07/27/01 22:11	TM	765890
Surr: 4-Bromofluoro	obenzene	107	%	39-150		1	07/27/01 22:11	ТМ	765890
PURGEABLE AROM	IATICS				MCL	SW8021B	Units: ug	/Kg	
Benzene		ND		1		1	07/27/01 22:11	TM	765540
Ethylbenzene		ND		1		1	07/27/01 22:11	TM	765540
Toluene		ND		1		1	07/27/01 22:11	TM	765540
Xylenes, Total		ND		1		1	07/27/01 22:11	TM	765540
Surr: 1,4-Difluorobe	enzene	93.3	%	59-127		. 1	07/27/01 22:11	TM	765540
Surr: 4-Bromofluoro	benzene	106	%	48-156		1	07/27/01 22:11	TM	765540

Qualifiers:

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ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

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J - Estimated Value between MDL and PQL



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

Client Sample ID C	SB-4-54-56			Coll	ected:	7/23/01 11:23:00	SPL Sample I): 0107	0914-02
				Site	Hol	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE OR	GANICS				MCL	SW8100M	Units: mg	g/Kg	
Diesel Range Organi	cs	ND		5.0		1	08/08/01 4:37	AM	781567
Surr: n-Pentacosa	ne	94.8	%	20-154		1	08/08/01 4:37	AM	781567
Prep Method	Prep Date			Prep Initials					
SW3550B	07/30/2001	15:54		EE					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: mg	g/Kg	
Gasoline Range Orga	anics	ND		0.10		1	07/27/01 22:39	ТМ	765891
Surr: 1,4-Difluorob	enzene	93.7	%	63-122		1	07/27/01 22:39	TM	765891
Surr: 4-Bromofluor	obenzene	106	%	39-150		1	07/27/01 22:39	ТМ	765891
PURGEABLE ARON	ATICS		· ·		MCL	SW8021B	Units: ug	/Kg	
Benzene		ND		1		1	07/27/01 22:39	TM	765541
Ethylbenzene		ND		1		1	07/27/01 22:39	TM	765541
Toluene		ND		1		1	07/27/01 22:39	TM	765541
Xylenes,Total		ND		1		1	07/27/01 22:39	ТМ	765541
Surr: 1,4-Difluorob	enzene	92.8	%	59-127		. 1	07/27/01 22:39	TM	765541
Surr: 4-Bromofluor	obenzene	106	%	48-156		1	07/27/01 22:39	TM	765541

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

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Client Sample ID C	SB-3-45-47			Col	lected:	7/23/01 12	:32:00	SPL Sample II	D: 0107	0914-03
				Site	e: Hol	bbs, NM				
Analyses/Method	<u></u>	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE OR	GANICS				MCL	SW8	100M	Units: m	g/Kg	
Diesel Range Organic	S	ND		5.0		1		08/08/01 5:16	AM	781568
Surr: n-Pentacosar	10	96.3	%	20-154		1		08/08/01 5:16	AM	781568
Prep Method	Prep Date			Prep Initials						
SW3550B	07/30/2001	15:54		EE						
GASOLINE RANGE	ORGANICS				MCL	SW8	015B	Units: m	g/Kg	
Gasoline Range Orga	inics	ND		0.10		1		07/27/01 23:07	ТМ	765892
Surr: 1,4-Difluorobe	enzene	94.7	%	63-122		1		07/27/01 23:07	TM	765892
Surr: 4-Bromofluor	obenzene	107	%	39-150		1		07/27/01 23:07	ТМ	765892
PURGEABLE ARON	IATICS	-			MCL	SW8	021B	Units: ug	ı∕Kg	
Benzene		ND		1		1		07/27/01 23:07	TM	765542
Ethylbenzene		NĎ		1		1		07/27/01 23:07	TM	765542
Toluene		ND		1		1		07/27/01 23:07	TM	765542
Xylenes,Total		ND		1		1		07/27/01 23:07	TM	765542
Surr: 1,4-Difluorobe	enzene	93.5	%	59-127		1		07/27/01 23:07	TM	765542
Surr: 4-Bromofluor	obenzene	105	%	48-156		1		07/27/01 23:07	TM	765542

Qualifiers:

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ili.

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

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Client Sample ID CS	SB-3-52-54			Coll	ected:	7/23/01 12:43:00	SPL Sample II): 0107	0914-04
				Site	Hol	bbs, NM			
Analyses/Method		Besult		Rep.Limit	-	Dil. Factor QUAL	Date Analyzed	Analyst	Seq. ‡
DIESEL RANGE OR	GANICS				MCL	SW8100M	Units: m	g/Kg	
Diesel Range Organic	s	ND		5.0	-	1	08/08/01 5:54	AM	781570
Surr: n-Pentacosan	e	96.6	%	20-154		1	08/08/01 5:54	AM	781570
Prep Method	Prep Date			Prep Initials					
SW3550B	07/30/2001	15:54		EE					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: m	g/Kg	
Gasoline Range Orga	nics	ND		0.10		1	07/27/01 23:36	ТМ	765893
Surr: 1,4-Difluorobe	nzene	93,7	%	63-122		1	07/27/01 23:36	TM	765893
Surr: 4-Bromofluoro	benzene	106	%	39-150		1	07/27/01 23:36	ТМ	765893
PURGEABLE AROM	ATICS				MCL	SW8021B	Units: ug	/Kg	
Benzene		ND		1		1	07/27/01 23:36	TM ·	765543
Ethylbenzene		ND		1		1	07/27/01 23:36	TM	765543
Toluene		ND		1		1	07/27/01 23:36	ТМ	765543
Xylenes,Total		ND		1		1	07/27/01 23:36	TM	765543
Surr: 1,4-Difluorobe	nzene	93.0	%	59-127		- 1	07/27/01 23:36	TM	765543
Surr: 4-Bromofluoro	hannana	104	%	48-156		-	07/27/01 23:36	ТМ	765543

Qualifiers:

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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

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>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



Client Sample ID C	SB-2-35-37			Coll	ected:	7/23/01 1:33:00	SPL Sample II	D: 0107	0914-05
				Site	: Hol	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. 4
DIESEL RANGE OR	GANICS				MCL	SW8100M	Units: m	g/Kg	
Diesel Range Organic	:s	25		5.0		1	08/08/01 6:32	AM	781571
Surr: n-Pentacosar	e	97.8	%	20-154		1	08/08/01 6:32	AM	781571
Prep Method	Prep Date			Prep Initials					
SW3550B	07/30/2001	15:54		EE					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: m	g/Kg	
Gasoline Range Orga	nics	0.23		0.10		1	07/28/01 5:44	ТМ	768102
Surr: 1,4-Difluorobe	enzene	98.7	%	63-122		1	07/28/01 5:44	TM	768102
Surr: 4-Bromofluor	obenzene	121	%	39-150		1	07/28/01 5:44	ТМ	768102
PURGEABLE ARON	ATICS				MCL	SW8021B	Units: ug	/Kg	
Benzene		ND		1		1	07/28/01 5:44	TM	767651
Ethylbenzene		ND		1		1	07/28/01 5:44	TM	767651
Toluene		ND		1		1	07/28/01 5:44	TM	767651
Xylenes, Total	· · · · · · · · · · · · · · · · · · ·	ND		1		1	07/28/01 5:44	ТМ	767651
Surr: 1,4-Difluorobe	enzene	97.2	%	59-127		· 1	07/28/01 5:44	TM	767651
Surr: 4-Bromofluoro	obenzene	118	%	48-156		1	07/28/01 5:44	TM	767651

Qualifiers:

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ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

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J - Estimated Value between MDL and PQL

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

MI - Matrix Interference



Client Sample ID C	SB-2-54-56			Coll	ected:	7/23/01 2:10:00	SPL Sample ID	: 0107	0914-06
				Site	: Hot	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. i
DIESEL RANGE OR	GANICS				MCL	SW8100M	Units: mg	ı/Kg	
Diesel Range Organie	CS	33		5.0		1	08/08/01 7:11	AM	781573
Surr: n-Pentacosar	ne	103	%	20-154		1	08/08/01 7:11	AM	781573
Prep Method	Prep Date			Prep Initials					
SW3550B	07/30/2001 1	5:54		EE					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: mg	ı/Kg	
Gasoline Range Orga	anics	ND		0.10		1	07/28/01 6:12	TM	768103
Surr: 1,4-Difluorob	enzene	94.0	%	63-122		1	07/28/01 6:12	ТМ	768103
Surr: 4-Bromofluor	obenzene	110	%	39-150		1	07/28/01 6:12	ТМ	768103
PURGEABLE ARON	ATICS				MCL	SW8021B	Units: ug	/Kg	
Benzene		ND		1		1	07/28/01 6:12	TM	767652
Ethylbenzene		ND		1		1	07/28/01 6:12	ТМ	767652
Toluene		ND		1		1	07/28/01 6:12	TM	767652
Xylenes,Total		ND		1		1	07/28/01 6:12	ТМ	767652
Surr: 1,4-Difluorob	enzene	92.3	%	59-127		· 1	07/28/01 6:12	TM	767652
Surr: 4-Bromofluor	obenzene	106	%	48-156		1	07/28/01 6:12	ТМ	767652

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

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Client Sample ID CS	B-1-45-47			Colle	ected:	7/23/01 3:39:00	SPL Sample II	D : 0107	0914-07
				Site	Hol	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORG	ANICS				MCL	SW8100M	Units: m	g/Kg	
Diesel Range Organics	3	6.6		5.0		1	08/08/01 5:54	AM	781611
Surr: n-Pentacosane	}	96.5	%	20-154		1	08/08/01 5:54	AM	781611
Prep Method	Prep Date			Prep Initials					
SW3550B	07/30/2001 1	5:54		EE					
GASOLINE RANGE C	RGANICS		· · ·		MCL	SW8015B	Units: m	g/Kg	
Gasoline Range Organ	ics	0.12		0.10		1	07/28/01 6:41	TM	768104
Surr: 1,4-Difluorober	izene	97.0	%	63-122		1	07/28/01 6:41	TM	768104
Surr: 4-Bromofluorob	penzene	116	%	39-150		1	07/28/01 6:41	ТМ	768104
PURGEABLE AROMA	ATICS				MCL	SW8021B	Units: ug	/Kg	
Benzene	••••••••••••••••••••••••••••••••••••••	ND		1		1	07/28/01 6:41	TM	767653
Ethylbenzene		1.3		1		1	07/28/01 6:41	TM	767653
Toluene		ND		1		1	07/28/01 6:41	TM	767653
Xylenes, Total		11.8	,	1		1	07/28/01 6:41	ТМ	767653
Surr: 1,4-Difluorober	zene	93.4	%	59-127		1	07/28/01 6:41	ТМ	767653
Surr: 4-Bromofluorob	penzene	108	%	48-156		1	07/28/01 6:41	ТМ	767653

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

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J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



Client Sample ID C	SB1-54-56			Coll	ected:	7/23/01 3:51:00	SPL Sample I) : 0107	0914-08
				Site	: Hol	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE OR	GANICS				MCL	SW8100M	Units: mg	g/Kg	
Diesel Range Organi	cs	ND		5.0		1	08/08/01 6:32	AM	781612
Surr: n-Pentacosar	ne	96.1	%	20-154		1	08/08/01 6:32	AM	781612
Prep Method	Prep Date			Prep Initials					
SW3550B	07/30/2001	15:54		EE					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: mg	g/Kg	
Gasoline Range Orga	anics	ND		0.10		1	07/28/01 7:09	TM	768105
Surr: 1,4-Difluorob	enzene	94.0	%	63-122		1	07/28/01 7:09	ТМ	768105
Surr: 4-Bromofluor	obenzene	107	%	39-150		1	07/28/01 7:09	ТМ	768105
PURGEABLE ARON	ATICS		-		MCL	SW8021B	Units: ug	/Kg	
Benzene		ND		1		1	07/28/01 7:09	TM	767654
Ethylbenzene		ND		1		1	07/28/01 7:09	ТМ	767654
Toluene		ND		1		1	07/28/01 7:09	ТМ	767654
Xylenes,Total		ND		1		1	07/28/01 7:09	ТМ	767654
Surr: 1,4-Difluorob	enzene	92.4	%	59-127	•	. 1	07/28/01 7:09	TM	767654
Surr: 4-Bromofluor	obenzene	107	%	48-156		1	07/28/01 7:09	TM	767654

Qualifiers:

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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



Client Sample ID CS	B-RB			Colle	ected:	7/23/01 4:05:00	SPL Sample II): 010	70914-09
				Site:	Hot	obs, NM			
Analyses/Method	F	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORG	ANICS				MCL	SW8015B	Units: mg	g/L	
Diesel Range Organics	3	ND		0.2		1	08/04/01 7:58	AM	777652
Surr: n-Pentacosane	3	82.2	%	18-120		1	08/04/01 7:58	AM	777652
Prep Method	Prep Date			Prep Initials					
SW3510B	07/27/2001 15:3	7		KL					
GASOLINE RANGE C	ORGANICS				MCL	SW8015B	Units: mg	ŋ/∟	
Gasoline Range Organ	nics	ND		0.1		1	08/03/01 18:44	D_R	775091
Surr: 1,4-Difluorober	nzene	89.0	%	74-121		1	08/03/01 18:44	D_R	775091
Surr: 4-Bromofluorol	benzene	92.3	%	55-150		1	08/03/01 18:44	D_R	775091
PURGEABLE AROM	ATICS				MCL	SW8021B	Units: ug	/L	
Benzene		ND		1		1	08/03/01 18:44	D_R	775062
Ethylbenzene		ND		1		1	08/03/01 18:44	D_R	775062
Toluene		ND		1		1	08/03/01 18:44	D_R	775062
Xylenes,Total	<u></u>	ND		1		1	08/03/01 18:44	D_R	775062
Surr: 4-Bromofluorot	penzene	100	%	48-156		1	08/03/01 18:44	D_R	775062
Surr: 1,4-Difluorober	nzene	96.6	%	72-137		1	08/03/01 18:44	D_R	775062

Qualifiers:

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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

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Quality Control Documentation

8/9/01 6:05:02 PM



Quality Control Report

Brown & Caldwell

BJ Hobbs

					BJ Hobi)S					
Analysis: Method:	Diesel Range Orga SW8015B	nics							kOrder: Batch ID:	01070914 13744a	ł
										157448	
		<u>hod Blank</u>				Sam	pies in A	Analytical Bate	cn:		
RunID:	HP_V_010804B-77764	7 Units:	mg/L			Lab	Sample	ID	Client Sa	mple ID	
Analysis Date:	08/04/2001 1:35	Analyst:	AM			0107	0914-09	В	CSB-RB		
Preparation Date:	07/27/2001 15:37	Prep By:	KL I	Method SV	V3510B						
	Analyte		Result	Rep Limit							
	Range Organics		NE		-						
Sur	r: n-Pentacosane		87.8	8 18-120]				·		
<u></u>	<u></u>		La	aboratory (Control	Sample (I	<u>.CS)</u>				
	Runi):	HP_V_01	0804B-7776	48 U	nits: r	ng/L				
	Analy	sis Date:	08/04/20	001 2:13	A	naiyst: /	۹M				
	Prepa	ration Date:	07/27/20	001 15:37	P	rep By: H	KL Me	thod SW3510	3		
		Analyt	9		Spike Added	Result	Perce Recov		Upper Limit		
	Diesel R	ange Organics	 3		2.5	2.2		87 21	175		
	<u>ب</u>							<u></u>			
		Matrix	Spike (N	IS) / Matri:	x Spike	Duplicate	(MSD)				•
	Sarr	ple Spiked:	01070	903-02							
	Run		HP_V_	010804B-77	7650	Units:	mg/L				
	Ana	lysis Date:	08/04/	2001 4:08		Analyst:	AM				
		paration Date:	07/27/	2001 15:37	7	Prep By:	KL N	lethod SW351	0B		
An	alyte	Sample	MS	MS Re	sult	MS %	MSD	MSD Result	MSD %	RPD RPD	Low High
		Result	Spike Added		F	Recovery	Spike Added		Recovery	Limit	t Limit Limi
Diesel Range Orga	anics	ND	2.5	5	1.8	69.2	2.5	1.8	68.1	1.54 39	9 13 13
				- i				·			

Qualifiers:

ND/U - Not Detected at the Reporting Limit

g Limit Mil - Mat

- B Analyte detected in the associated Method Blank
- J Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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.



Brown & Caldwell

B.I Hobbs

Analysis: Method:	Diesel Ran SW8100M	ge Organic	s							(Order: Batch ID:	010 138	70914		
		Metho	d Blank				Sam	ples in A	Analytical Batc				<u> </u>	·
RunID:	HP_V_01080		Units:	mg/Kg										
	08/08/2001							Sample 70914-01		Client Sa CSB-4-45		2		
Analysis Date: Preparation Date:			Analyst: Prep By:	AM EE N	lethod SN	NGEED		70914-01		CSB-4-45 CSB-4-54				
rieparation Date.	0//30/2001	10.04	гтер Бу.			140000		70914-02		CSB-3-45				
·						_		70914-04		CSB-3-52				
		nalyte			Rep Limi	-		70914-05		CSB-2-35				
	I Range Organic rr: n-Pentacosar			ND 101.0			0107	70914-06	В	CSB-2-54	-56			
	i. III chaboda	<u></u>			20 10	<u>.</u>	0107	70914-07	В	CSB-1-45	-47			
							0107	70914-08	В.,	CSB1-54	4-56			
	1999-1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1			La	boratory	Contro	ol Sample (LCS)						
		RunID:		HP_V_01	0808B-781	560	Units: I	mg/Kg						
		Analysis		 08/08/20				AM						
		-			01 15:54		•	EE Me	thod SW3550B					
			Analyte	Э		Spike		Perce		Upper				
	~					Addeo	1	Recov	ery Limit	Limit				
		Diesel Rang	ge Organics	3			83 83	3	100 50	150				
			Matrix S	Spike (M	S) / Matri	ix Spik	e Duplicate	e (MSD)						
				010700	14-01									
		Sample	e Spiked:	010708										
		Sample RunID:	Spiked:		10808B-78	81563	Units:	mg/Kg						
				HP_V_C		81563	Units: Analyst:	mg/Kg AM						
		RunID: Analysi		HP_V_0 08/08/2	10808B-78			AM	lethod SW3550	B				
		RunID: Analysi	s Date:	HP_V_0 08/08/2	10808B-78 2001 3:21		Analyst:	AM	lethod SW3550	B				
Ar	nalyte	RunID: Analysi Prepara	s Date:	HP_V_0 08/08/2 07/30/2 MS	10808B-78 2001 3:21	4	Analyst: Prep By: MS %	AM EE M MSD	lethod SW3550 MSD Result	MSD %	RPD	RPD	Low	High
ıA	alyte	RunID: Analysi Prepara	s Date: ation Date:	HP_V_0 08/08/2 07/30/2 MS Spike	2001 3:21 2001 15:5	4	Analyst: Prep By:	AM EE M MSD Spike			RPD		Low Limit	High Limi
Ar Diesel Range Orga		RunID: Analysi Prepara	s Date: ation Date: Sample	HP_V_0 08/08/2 07/30/2 MS Spike Added	010808B-78 2001 3:21 2001 15:5 MS Re	4	Analyst: Prep By: MS % Recovery	AM EE M MSD		MSD % Recovery	RPD		Limit	Limi

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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.



Brown & Caldwell B.I.Hobbs

						obbs							
Analysis: Method:	Purgeabl SW8021E	e Aromatio 3	s						rkOrder: Batch ID:		70914 0180		
		Met	hod Blank	· <u>···</u> ·		Sam	ples in A	Analytical Bat	ch:	<u>_</u>			
RunID;	HP_J_0103	727A-765523	Units:	ug/Kg		Lab	Sample	D	Client Sa	imple IC)		
Analysis Dat	e: 07/27/200)1 11:42	Analyst:	ТМ			0914-01	-	CSB-4-4		-		
						0107	0914-02	A	CSB-4-54	4-56			
						0107	0914-03	A	CSB-3-4	5-47			
		Analyte		Result	Rep Limit	0107	0914-04.	Ą	CSB-3-52	2-54			
	Benzene	Analyte	,	ND	1.0								
	Ethylbenzene			ND	1.0								
	Toluene	·		ND	1.0								
	Xylenes,Total Surr: 1,4-Difluoro	obenzene		ND 88.3	1.0 59-127								
	Surr: 4-Bromoflu			96.0	48-156			•					
						10		<u></u>	<u></u>				
				Lac	poratory Contr	oi Sample (I							
		RunID	:	HP_J_010	727A-765520	Units: ı	ıg/Kg						
							M						
			sis Date:	07/27/200	01 8:52	Analyst: 1							
			sis Date:	07/27/200	01 8:52	Analyst: 1							
			sis Date:	07/27/200	01 8:52	Analyst: 1							
				. <u> </u>			Perce	nt Lower	Upper				
	"		sis Date: Analyt	. <u> </u>	01 8:52 Spik Adde	e Result			Upper Limit				
	,		Analyt	. <u> </u>	Spik	e Result	Perce Recov		Limit				
	,	Analys	Analyt	. <u> </u>	Spik	e Result	Perce Recov	ery Limit	Limit				
	,	Analys Benzene	Analyt	. <u> </u>	Spik	e Result 50 51	Perce Recov	ery Limit	Limit 0 120 3 127				
	,	Analys Benzene Ethylben	Analyt zene	. <u> </u>	Spike Adde	e Result 50 51 50 49	Perce Recov	ery Limit 101 60 97 61	Limit 0 120 3 127 4 122				
	,	Analys Benzene Ethylben Toluene	Analyt zene	. <u> </u>	Spike Adde	e Result 50 51 50 49 50 50	Perce Recov	ery Limit 101 60 97 60 99 64	Limit 0 120 3 127 4 122		·		
	,	Analys Benzene Ethylben Toluene	Analyt zene Total	e	Spike Adde	Result 50 51 50 49 50 50 50 145	Perce Recov	ery Limit 101 60 97 60 99 64	Limit 0 120 3 127 4 122				
	,	Analys Benzene Ethylben Toluene Xylenes,	Analyt zene Total <u>Matrix</u>	e Spike (MS	Spik Adde S) / Matrix Spi	Result 50 51 50 49 50 50 50 145	Perce Recov	ery Limit 101 60 97 60 99 64	Limit 0 120 3 127 4 122				
	,	Analys Benzene Ethylben Toluene Xylenes, Sam	Analyt zene Total <u>Matrix</u> ple Spiked:	e Spike (MS 010709	Spiki Adde S) / Matrix Spi 05-14	e Result 50 51 50 49 50 50 50 145 ke Duplicate	Perce Recov	ery Limit 101 60 97 60 99 64	Limit 0 120 3 127 4 122				
	,	Analys Benzene Ethylben Toluene Xylenes, Sam Run	Analyt zene Total <u>Matrix</u> ple Spiked: D:	е Spike (М 010709 HP_J_01	Spiki Adde S) / Matrix Spi 05-14 10727A-765521	Result 50 51 50 49 50 50 50 145 ke Duplicate Units:	Perce Recov	ery Limit 101 60 97 60 99 64	Limit 0 120 3 127 4 122				
		Analys Benzene Ethylben Toluene Xylenes, Sam Run	Analyt zene Total <u>Matrix</u> ple Spiked:	е Spike (М 010709 HP_J_01	Spiki Adde S) / Matrix Spi 05-14	e Result 50 51 50 49 50 50 50 145 ke Duplicate	Perce Recov	ery Limit 101 60 97 60 99 64	Limit 0 120 3 127 4 122				
	*	Analys Benzene Ethylben Toluene Xylenes, Sam Run	Analyt zene Total <u>Matrix</u> ple Spiked: D:	е Spike (М 010709 HP_J_01	Spiki Adde S) / Matrix Spi 05-14 10727A-765521	Result 50 51 50 49 50 50 50 145 ke Duplicate Units:	Perce Recov	ery Limit 101 60 97 60 99 64	Limit 0 120 3 127 4 122				
	Analyte	Analys Benzene Ethylben Toluene Xylenes, Sam Run	Analyt zene Total <u>Matrix</u> ple Spiked: D:	е Spike (М 010709 HP_J_01	Spiki Adde S) / Matrix Spi 05-14 10727A-765521	Result 50 51 50 49 50 50 50 145 ke Duplicate Units:	Perce Recov	ery Limit 101 60 97 60 99 64	Limit 0 120 3 127 4 122	RPD	RPD	Low	High
	Analyte	Analys Benzene Ethylben Toluene Xylenes, Sam Run	Analyt zene Total <u>Matrix</u> ple Spiked: D: ysis Date:	e Spike (M 010709 HP_J_01 07/27/2 MS Spike	Spiki Adde S) / Matrix Spi 05-14 10727A-765521 001 9:49	Result 50 51 50 49 50 50 50 145 ke Duplicate Units: Analyst:	Perce Recov (MSD) ug/Kg TM MSD Spike	ery Limit 101 60 97 61 99 64 97 61	Limit 120 127 127 122 129			Low Limit	High Limit
	Analyte	Analys Benzene Ethylben Toluene Xylenes, Sam Run	Analyt zene Total <u>Matrix</u> ple Spiked: D: ysis Date: Sample	e Spike (M 010709 HP_J_01 07/27/2	Spiki Adde S) / Matrix Spi 05-14 10727A-765521 001 9:49	Result 50 51 50 49 50 50 50 145 ke Duplicate Units: Analyst:	Perce Recov (MSD) ug/Kg TM	ery Limit 101 60 97 61 99 64 97 61	Limit 120 127 127 122 129 MSD %				
Benzene	Analyte	Analys Benzene Ethylben Toluene Xylenes, Sam Run	Analyt zene Total <u>Matrix</u> ple Spiked: D: ysis Date: Sample	e Spike (MS 010709 HP_J_01 07/27/2 MS Spike Added	Spiki Adde S) / Matrix Spi 05-14 10727A-765521 001 9:49	Result 50 51 50 49 50 50 50 145 ke Duplicate Units: Analyst: MS % Recovery	Perce Recov (MSD) ug/Kg TM MSD Spike	ery Limit 101 60 97 61 99 64 97 61	Limit 120 127 127 122 129 129 MSD % Recovery		Limit	Limit	
Benzene Ethylbenzene		Analys Benzene Ethylben Toluene Xylenes, Sam Run	Analyt zene Total D: ysis Date: Sample Result	e Spike (MS 010709 HP_J_01 07/27/2 MS Spike Added	Spiki Adde S) / Matrix Spi 05-14 10727A-765521 001 9:49 MS Result	Result 50 51 50 49 50 50 50 145 ke Duplicate Units: Analyst: MS % Recovery 9 93.6	Perce Recov (MSD) ug/Kg TM MSD Spike Added	ery Limit 101 60 97 60 99 60 97 60 97 60 MSD Result	Limit 120 127 4 122 3 129 MSD % Recovery 3 88.	3 5.85	Limit	Limit 35	Limi
		Analys Benzene Ethylben Toluene Xylenes, Sam Run	Analyt zene Total <u>Matrix</u> ple Spiked: D: ysis Date: Sample Result	e Spike (MS 010709 HP_J_01 07/27/2 MS Spike Added 20 20 20	Spiki Adde S) / Matrix Spi 05-14 10727A-765521 001 9:49 MS Result	Presult 50 51 50 49 50 50 50 145 ke Duplicate Units: Analyst: MS % Recovery 9 93.6 3 88.2	Perce Recov	ery Limit 101 60 97 60 99 60 97 60 97 60 97 60 11	Limit 120 127 127 122 122 129 129 129 129 129 129	3 5.85 9 8.71	Limit 34 35	Limit 35 31	Limi 13 13

Qualifiers:

ND/U - Not Detected at the Reporting Limit

J - Estimated value between MDL and PQL

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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

Brown & Caldwell

BJ Hobbs

Analysis: Method:	Gasoline R SW8015B	ange Orga	nics							kOrder: Batch ID:		070914 0190		
		Metho	d Blank			·····	Sam	ples in /	Analytical Bate	 h:				
RunID:	HP_J_010723		Units:	mg/Kg				Sample	-	Client Sa	nnie li	r		
Analysis Date:	07/27/2001	11.42	Analyst:	TM				0914-01.		CSB-4-45		2		
inalycic Date.	01/21/2001		/ maryot.					0914-02		CSB-4-54				
								0914-03		CSB-3-45				
,	·	· - <u>-</u>				7		0914-04		CSB-3-52				
		nalyte			Rep Limi	-								
	asoline Range Orga Surr: 1,4-Difluorobe			ND 93.0										
	Surr: 4-Bromofluor			99.7										
				Lai	boratory	Contro	I Sample (I	CS)	<u></u>					
		BunlD:			727C-7658			ng/Kg						
		Analysis		07/27/20				ГМ						
		,	Dailo.	0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	07 0.20		in lary of.							
	[Analyt			Spike	Result	Perce	nt Lower	Upper				
			Andryt	5		Added		Recov		Limit				
		Gasoline R	anne Organ	lics			1 1.1	1	110 70	130				
	, (l.			1						
			Matrix :	Spike (M	S) / Matri	x Spike	e Duplicate	(MSD)						
		Sample	Spiked:	010709	05-14									
		RunID:	,	HP_J_0	10727C-76	5880	Units:	mg/Kg						
		Analysi	s Date:	07/27/2	2001 10:4	5	Analyst:	ТМ						
	Analyte		Sample	MS	MS Re	sult	MS %	MSD	MSD Result	MSD %	RPD	RPD	Low	High
			Result	Spike		ĺ	Recovery	Spike Added		Recovery		Limit	Limit	Limil
				Added										
Gasoline Range	Organics		1.3	0.9		2.3	108	0.9	2.1	93.8	14.1	50	26	147

Qualifiers:

ND/U - Not Detected at the Reporting Limit

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J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

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Brown & Caldwell

BJ Hobbs

Analysis: Method:	Purgeable SW8021B	e Aromatice	;							rkOrder: Batch ID:		70914 0268		
	3W6021B							<u> </u>					— <u>. </u>	
		Meth	od Blank				Sam	ples in A	nalytical Bat	ch:				
RunID:	HP_J_01072	28B-767649	Units:	ug/Kg			Lab	Sample I	D	Client Sar	npie ID	2		
Analysis Date:	07/28/2001	1 4:48	Analyst:	ТМ			0107	0914-05 <i>4</i>	٩	CSB-2-35-	37			
							0107	0914-064	4	CSB-2-54-	56			
							0107	0914-07	4	CSB-1-45-	47			
(Desult	Rep Limit		0107	0914-08.4	4	CSB1-54	-56			
IR.	A Snzene	nalyte		ND	1.0									
been the	hylbenzene	· ·		ND	1.0									
	pluene	······		ND	1.0									
X	/lenes,Total Surr. 1,4-Difluorot	0007000		ND	1.0 59-127									
	Surr: 4-Bromofluo			88.8 92.8	48-156									
				Lat	oratory Co	ntrol	Sample (L	CS)						
		RunID:			728B-767646	1	inits: L	ig/Kg						
		Analysis)7/28/200				'9/139 "М						
		Analysis	Date.	1120/200	01 1.07		indiyot. i							
	N.		Analyte	l		pike dded	Result	Percer Recove		Upper Limit				
		D						ļ		·····				
		Benzene				50		· · · · · · · · · · · · · · · · · · ·	102 60					
		Ethylbenze	ene			50			102 68					
		Toluene				50			102 64	+				
						450								
		Xylenes,T	otal		<u> </u>	150	151		101 68	125				
		Xylenes,T				150	151	<u> </u>	101 68	125				
		Xylenes,T		niko (M	C) / Motrix S		J	J,	101 68	129				
		Xylenes,T		ipike (M	S) / Matrix S		J	J,	101 68					. <u></u>
			<u>Matrix S</u>	o10709			J	J,	101 68					
			<u>Matrix S</u> le Spiked:	010709		Spike	J	(MSD)	101 68	123				
		Samp RunID	<u>Matrix S</u> le Spiked: ;	010709 HP_J_01	94-01	Spike	Duplicate	J,	101 68					
		Samp RunID	<u>Matrix S</u> le Spiked:	010709 HP_J_01	94-01 10728B-76764	Spike	Duplicate Units:	(MSD) ug/Kg	101 68					
		Samp RunID	<u>Matrix S</u> le Spiked: ;	010709 HP_J_01	94-01 10728B-76764	Spike	Duplicate Units:	(MSD) ug/Kg	101 68					<u></u>
	Analyte	Samp RunID	<u>Matrix S</u> le Spiked: : sis Date:	010709 HP_J_01 07/28/2	94-01 10728B-76764 001 2:54	<u>Spike</u> 7	Duplicate Units: Analyst:	(MSD) ug/Kg TM			RPD	RPD	Low	Hiah
	Analyte	Samp RunID	<u>Matrix S</u> le Spiked: ;	010709 HP_J_01 07/28/2 MS Spike	94-01 10728B-76764	Spike 7	Duplicate Units: Analyst: MS %	(MSD) ug/Kg TM MSD Spike	MSD Result	MSD % Recovery	RPD	- Limit	Low Limit	High Limi
	Analyte	Samp RunID	<u>Matrix S</u> le Spiked: : sis Date: Sample	010709 HP_J_01 07/28/2 MS	94-01 10728B-76764 001 2:54	Spike 7	Duplicate Units: Analyst: MS %	(MSD) ug/Kg TM MSD		MSD %	RPD	- Limit	Low Limit	High Limi
Benzene	Analyte	Samp RunID	<u>Matrix S</u> le Spiked: : sis Date: Sample Result	010709 HP_J_01 07/28/2 MS Spike Added	94-01 10728B-76764 001 2:54	Spike 7	Duplicate Units: Analyst: MS % Recovery	(MSD) ug/Kg TM MSD Spike Added	MSD Result	MSD % Recovery		Limit	Limit	Limi
· · · · · · · · · · · · · · · · · · ·	Analyte	Samp RunID	<u>Matrix S</u> le Spiked: : sis Date: Sample Result ND	010709 HP_J_01 07/28/2 MS Spike Added 20	94-01 10728B-76764 001 2:54	3 pike 7 It	Duplicate Units: Analyst: MS % Recovery 85.0	(MSD) ug/Kg TM MSD Spike Added 20	MSD Result	MSD % Recovery 95.3	11.5	Limit	Limit 35	Limi 13
Ethylbenzene	Anałyte	Samp RunID	<u>Matrix S</u> le Spiked: r: sis Date: Sample Result ND ND	010709 HP_J_01 07/28/2 MS Spike Added 20 20	94-01 10728B-76764 001 2:54 MS Resul	5 pike 7 1t 17	Duplicate Units: Analyst: MS % Recovery 85.0 82.4	(MSD) ug/Kg TM MSD Spike Added 20 20	MSD Result	MSD % Recovery 9 95.3 8 89.0	11.5 7.73	Limit 34 35	Limit 35 31	Limi 13 13
Benzene Ethylbenzene Toluene Xylenes,Total	Analyte	Samp RunID	<u>Matrix S</u> le Spiked: : sis Date: Sample Result ND	010709 HP_J_01 07/28/2 MS Spike Added 20 20 20	94-01 10728B-76764 001 2:54 MS Resul	3 pike 7 It	Duplicate Units: Analyst: MS % Recovery 85.0	(MSD) ug/Kg TM MSD Spike Added 20	MSD Result	MSD % Recovery 9 95.3 8 89.0 3 90.6	11.5	Limit 34 35 28	Limit 35 31 31	13 13 13

Qualifiers:

ND/U - Not Detected at the Reporting Limit

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

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.

B - Analyte detected in the associated Method Blank



Brown & Caldwell

BJ Hobbs

Analysis: Method:	Gasoline Ri SW8015B	ange Orga	nics						Order: Batch ID:	0107 R40	70914 298		
		Metho	d Blank			Sam	ples in A	nalytical Batc	h:				
RunID:	HP_J_010728	E-768100	Units:	mg/Kg		Lab	Sample I	D	<u>Client Sar</u>	nple ID)		
Analysis Date:	07/28/2001	4:48	Analyst:	ТМ			0914-05		CSB-2-35-		-		
			, -			0107	0914-06	4	CSB-2-54-				
						0107	0914-07	4	CSB-1-45-				
	A =	-1.40		Desult		0107	0914-08	4	CSB1-54	-56			
Gas	oline Range Orga	alyte		ND	Rep Limit 0.10								
	urr. 1,4-Difluorobe			92.0	63-122								
S	urr: 4-Bromofluoro	benzene		96.7	39-150								
	·····			Lab	oratory Contro	ol Sample (l	_CS)						
		BunID:	1		28E-768097		ng/Kg						
		Analysis		07/28/200			ſig/Rg ΓΜ						
		Analysis	Dale.	577201200	1 2.20	Analyst.	101						
	٢		A		O!!!!	Desuit	Daraa	at Lawar 1	linner				
			Analyte	9	Spike Adde		Percei Recove		Upper Limit				
	-	Gasolina Br	ange Organ			1 0.91	·	91 70	130				
			inge Organ			1 0.31		31 70	100				
<u></u>			Matrix S	pike (MS	6) / Matrix Spik	e Duplicate	(MSD)	·····	·····				
<u></u>					5) / Matrix Spik	e Duplicate	(MSD)	<u></u>					
			Matrix S Spiked:	0107099	94-01								
		RunID:	Spiked:	0107099 HP_J_01	94-01 0728E-768098	Units:	mg/Kg						
			Spiked:	0107099 HP_J_01	94-01								
		RunID:	Spiked:	0107099 HP_J_01	94-01 0728E-768098	Units:	mg/Kg						
Δ	nalvte	RunID: Analysi	Spiked: s Date:	0107099 HP_J_01 07/28/20	94-01 0728E-768098 001 3:51	Units: Analyst:	mg/Kg TM	MSD Besult	MSD %	RPD	BPD	Low	High
Ą	nalyte	RunID: Analysi	Spiked:	0107099 HP_J_01	94-01 0728E-768098	Units:	mg/Kg	MSD Result	MSD % Recovery	RPD	RPD Limit		
Α	nalyte	RunID: Analysi	Spiked: s Date: Sample	0107099 HP_J_01 07/28/20 MS	94-01 0728E-768098 001 3:51	Units: Analyst: MS %	mg/Kg TM MSD	MSD Result		RPD			
		RunID: Analysi	Spiked: s Date: Sample	0107099 HP_J_01 07/28/20 MS Spike Added	94-01 0728E-768098 001 3:51	Units: Analyst: MS % Recovery	mg/Kg TM MSD Spike	MSD Result 0.81	Recovery	RPD 15.3	Limit	Limit	High Limi 14
A Gasoline Range (RunID: Analysi	Spiked: s Date: Sample Result	0107099 HP_J_01 07/28/20 MS Spike Added	94-01 0728E-768098 001 3:51 MS Result	Units: Analyst: MS % Recovery	mg/Kg TM MSD Spike Added		Recovery		Limit	Limit	Limi
		RunID: Analysi	Spiked: s Date: Sample Result	0107099 HP_J_01 07/28/20 MS Spike Added	94-01 0728E-768098 001 3:51 MS Result	Units: Analyst: MS % Recovery	mg/Kg TM MSD Spike Added		Recovery		Limit	Limit	Limi

Qualifiers:

ND/U - Not Detected at the Reporting Limit

Limit MI - Matrix Interference d Method Blank D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

B - Analyte detected in the associated Method Blank

 J - Estimated value between MDL and PQL

3 i

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.



Brown & Caldwell

					Brown									
Analysis: Method:	Purgeable Ar SW8021B	omatics			BJ	Hobb	IS			kOrder: Batch iD:	010 R40	70914 1642		
	· · · · · · · · · · · · · · · · · · ·	Method	Biank		,,,		Sam	ples in A	Analytical Bate	:h:		<u></u>		
RunID:	HP_S_010803A	-775055	Units:	ug/L			Lab	Sample	סו	Client San	nole IC)		
Analysis Da	te: 08/03/2001 13	3:10	Analyst:	D_R				0914-09		CSB-RB		•		
	Anai	yte		Result	Rep Limit									
	Benzene			ND										
	Ethylbenzene Toluene	·		ND ND										
	Xylenes, Total			ND										
	Surr: 1,4-Difluorobenz			99.9	72-137									
	Surr: 4-Bromofluorobe	enzene		99.5	48-156									
	<u></u>			La	boratory Cor	trol S	Sample (I	<u>.CS)</u>						
		Analysis [01 11:51)_R						
	r.		Analyte	•		ike ded	Result	Perce Recov		Upper Limit				
	Be	enzene				50			103 70					
	Et	hylbenzen	e			50	55	5	109 70	130				
	Et Tc	hylbenzen bluene					55 53	3	109 70 106 70	130 130				
	Et Tc	hylbenzen				50	55 53	3	109 70	130 130				
	Et Tc	hylbenzen bluene	al	Spike (M	S) / Matrix S	50 50 150	55 53 164	3 3 4	109 70 106 70	130 130				
	Et Tc	hylbenzen bluene /lenes,Toti	al <u>Matrix S</u>		S) / Matrix S	50 50 150	55 53 164	3 3 4	109 70 106 70	130 130				
	Et Tc	hylbenzen oluene /lenes,Tota Sample	al	010709	990-02	50 50 150	55 53 164 Duplicate	(MSD)	109 70 106 70	130 130				
	Et Tc	hylbenzen oluene /lenes,Toti Sample RunID:	al <u>Matrix S</u> Spiked:	010709 HP_S_C	990-02 910803A-77505	50 50 150 pike I	55 53 164 Duplicate	(<u>MSD</u>) ug/L	109 70 106 70	130 130				
	Et Tc	hylbenzen oluene /lenes,Tota Sample	al <u>Matrix S</u> Spiked:	010709 HP_S_C	990-02	50 50 150 pike I	55 53 164 Duplicate	(MSD)	109 70 106 70	130 130				
	Et Tc	hylbenzen bluene Vlenes,Tot Sample RunID: Analysis	al <u>Matrix S</u> Spiked:	010709 HP_S_C	990-02 910803A-77505	50 50 150	55 53 164 Duplicate	(<u>MSD</u>) ug/L	109 70 106 70	130 130	RPD	RPD Limit	Low Limit	
Benzene		hylbenzen bluene Vlenes,Tot Sample RunID: Analysis	al <u>Matrix S</u> Spiked: Date: Sample	010709 HP_S_0 08/03/2 MS Spike Added	990-02 910803A-77505 2001 15:09 MS Result	50 50 150	55 53 164 Duplicate Units: Analyst: MS %	ug/L D_R MSD Spike	109 70 106 70 109 70 MSD Result	130 130 130 130 MSD % Recovery 134	2.05	Limit 21	Limit 32	Lin 1
Ethylbenzer	Analyte	hylbenzen bluene Vlenes,Tot Sample RunID: Analysis	al <u>Matrix S</u> Spiked: Date: Sample Result ND ND	010709 HP_S_0 08/03/2 MS Spike Added 20 20	990-02 010803A-77505 2001 15:09 MS Resul	50 50 150 9 8 8 9 7 27 27	55 53 164 Duplicate Units: Analyst: MS % lecovery 137 137	(MSD) ug/L D_R MSD Spike Added 20 20	109 70 106 70 109 70 MSD Result	130 130 130 130 130 MSD % Recovery 134 134	2.05 2.19	Limit 21 19	Limit 32 52	Lin 1
Benzene Ethylbenzer Toluene Xylenes,Tot	Analyte	hylbenzen bluene Vlenes,Tot Sample RunID: Analysis	al <u>Matrix S</u> Spiked: Date: Sample Result ND	010709 HP_S_C 08/03/2 MS Spike Added 20 20 20	990-02 910803A-77505 2001 15:09 MS Result	50 50 150 9 8 8 8 8 9 7	55 53 164 Duplicate Units: Analyst: MS % lecovery 137	(MSD) ug/L D_R MSD Spike Added 20	109 70 106 70 109 70 MSD Result 27 27 27 26	130 130 130 130 130 MSD % Recovery 134 134 132	2.05 2.19 1.69	Limit 21 19 20	Limit 32 52 38	1

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Ar

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

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Quality Control Report

Brown & Caidwell

BJ Hobbs

		0.10 74-121 55-150	Lab	ples in A <u>Sample I</u> 0914-09/		h: <u>Client San</u> CSB-RB	nple ID			
Analyst:	D_R Result F ND 91.7 96.3	0.10 74-121 55-150					<u>nple ID</u>			
	Result F ND 91.7 96.3	0.10 74-121 55-150								
	ND 91.7 96.3 Labo	0.10 74-121 55-150								
	ND 91.7 96.3 Labo	0.10 74-121 55-150								
	96.3 Labo	55-150								
		oratory Contro	ol Sample (l	LCS)						
is Date:	HP_S_0108 08/03/2001			mg/L D_R						
Analyte	э					Upper Limit				
Range Organ	ics		1 0.75	5	75 70	130				
Matrix S	Spike (MS) / Matrix Spik	e Duplicate	(MSD)					·····	
ale Spiked:	0107000	0-03								
•			Units:	ma/L						
vsis Date:			Analyst:	D_R						
Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit		High Limi
	1			0.9			1			
1	Range Organ <u>Matrix S</u> ple Spiked: D: ysis Date: Sample	ple Spiked: 0107099 D: HP_S_010 ysis Date: 08/03/20 Sample MS Result Spike	Added Range Organics Matrix Spike (MS) / Matrix Spike ple Spiked: 01070990-03 ID: HP_S_010803B-775088 ysis Date: 08/03/2001 16:02 Sample MS Result Spike	Added Range Organics 1 0.75 Matrix Spike (MS) / Matrix Spike Duplicate ple Spiked: 01070990-03 ID: HP_S_010803B-775088 Units: ysis Date: 08/03/2001 16:02 Analyst: Sample MS MS Result MS % Result Spike MS Recovery	Added Recov Range Organics 1 0.75 Matrix Spike (MS) / Matrix Spike Duplicate (MSD) ple Spiked: 01070990-03 ID: HP_S_010803B-775088 Units: ysis Date: 08/03/2001 16:02 Analyst: Sample MS MS Result MS % Result Spike MS Result MS %	Added Recovery Limit Range Organics 1 0.75 75 70 Matrix Spike (MS) / Matrix Spike Duplicate (MSD) ple Spiked: 01070990-03 ID: HP_S_010803B-775088 Units: mg/L ysis Date: 08/03/2001 16:02 Analyst: D_R Sample MS MS Result MS % MSD Result Result Spike Spike MSD Result	Added Recovery Limit Range Organics 1 0.75 75 70 Matrix Spike (MS) / Matrix Spike Duplicate (MSD) ple Spiked: 01070990-03 D: HP_S_010803B-775088 Units: mg/L ysis Date: 08/03/2001 16:02 Analyst: D_R Sample MS MS Result MS % MSD Result Spike MSD % Recovery	Added Recovery Limit Limit Range Organics 1 0.75 75 70 130 Matrix Spike (MS) / Matrix Spike Duplicate (MSD) ple Spiked: 01070990-03 D: HP_S_010803B-775088 Units: mg/L ysis Date: 08/03/2001 16:02 Analyst: D_R Sample MS MS Result MS % MSD MSD Result MSD % RPD Result Spike Spike Recovery Spike RPD Recovery	Added Recovery Limit Range Organics 1 0.75 75 70 Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Matrix Spike (MS) / Matrix Spike Duplicate (MSD) ple Spiked: 01070990-03 D: HP_S_010803B-775088 Units: ysis Date: 08/03/2001 16:02 Analyst: D_R Sample MS MS Result MS % MSD MSD Result MSD % Result Spike MS Recovery Spike MSD % RPD RPD	Added Recovery Limit Limit Range Organics 1 0.75 75 70 130 Matrix Spike (MS) / Matrix Spike Duplicate (MSD) ple Spiked: 01070990-03 ID: HP_S_010803B-775088 Units: mg/L ysis Date: 08/03/2001 16:02 Analyst: D_R Sample MS MS Result MS % MSD MSD Result MSD % RPD RPD Low Limit Limit Recovery Spike Spike Recovery Recovery Limit

Qualifiers:

11

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution

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8/9/01 6:05:05 PM

Sample Receipt Checklist And Chain of Custody

8/9/01 6:05:05 PM



يمواجع ويحديها بالتباري والتراز كالأت كالت

.

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

Sample Receipt Checklist

			<u> </u>	
Workorder: 01070914		Receive	ed By: DS	
Date and Time Received: 7/25/01 10:00:00 AM		Carrier	name: FedEx	
Temperature: 2		Chilled	by: Water ic	e
1. Shipping container/cooler in good condition?	Yes 🗹	No 🗌	Not Present	
2. Custody seals intact on shippping 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 🗌		
g, 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: Client Name Contacted:	Contact Date a	& Time:		
Non Conformance Logged in for GRO & DRO per SW Issues:				
Client Instructions:				· · · · · · · · · · · · · · · · · · ·

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