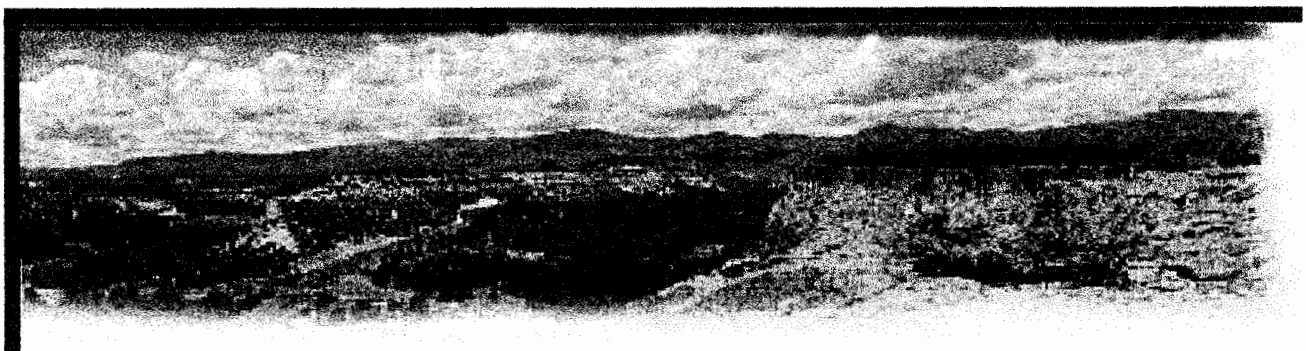

SAMPLING REPORT

August 1999

Los Alamos National Laboratory
Los Alamos, New Mexico

AUG 1999
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Prepared for:

U.S. Environmental Protection Agency
Region 6

TechLaw, Inc.

EPA Contract No. 68-W6-0063
Work Assignment No. 002BT065G

13277

SAMPLING REPORT
LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS , NEW MEXICO

Prepared for:

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August 19, 1999

TABLE OF CONTENTS

Section **Page**

1.0 INTRODUCTION 1
1.1 Objective 1
1.2 Site Background 1
1.2.1 Historical and Current Operations 1
1.2.2 Geographical Setting 2
1.2.3 Geology and Hydrology 3

2.0 SITE INVESTIGATION ACTIVITIES 5
2.1 Participants 5
2.2 Effluent 5
2.2.1 Effluent Sampling Procedure 6
2.2.2 Deviations from the Field Sampling Plan 8
2.3 Groundwater 8
2.3.1 Groundwater Sampling Procedures 8
2.3.2 Deviations from the Field Sampling Plan 9
2.4 Springs 10
2.4.1 Spring Sampling Procedures 11
2.4.2 Deviations from the Field Sampling Plan 12

3.0 LABORATORY RESULTS SUMMARY 13
3.1 Effluent Sampling Results 13
3.1.1 TA-50 Radioactive Waste Water Treatment Plant 13
3.1.2 Bayo Canyon Sanitary Waste Water Treatment Plant 14
3.1.3 Comparison of Effluent Results 15
3.2 Groundwater Sampling Results 15
3.2.1 Mortandad Canyon 15
3.2.2 Los Alamos/DP Canyon 16
3.2.3 Pueblo Canyon 18
3.2.4 Comparison of Groundwater Results 19
3.3 Spring Sampling Results 19
3.3.1 Comparison of Spring Results 20

4.0 QUALITY ASSURANCE SUMMARY 23
4.1 Quality Assurance/Quality Control Samples 23
4.1.1 QC Sampling Procedures 23
4.1.2 Deviations from the Field Sampling Plan 24
4.2 Laboratory and Analytical Methods 24

4.3 Data Validation 25

5.0 CONCLUSIONS 27
5.1 Sampling Activities 27
5.2 Analytical Results 27
5.2.1 Effluent Samples 27
5.2.2 Groundwater Samples 28
5.2.3 Spring Samples 29

6.0 RECOMMENDATIONS 31

7.0 REFERENCES 33

LIST OF TABLES

Table 1 Participants
Table 2 Well Location and Time Sampled
Table 3 Summary of Well Information
Table 4 Field Parameter Measurements
Table 5 Summary of Volatile Organic Results
Table 6 Summary of Inorganic Analysis Results
Table 7 Summary of General Chemistry Results
Table 8 Summary of Radionuclide Results

LIST OF FIGURES

Figure 1 Facility Location Map
Figure 2 Sample Locations in Mortandad Canyon
Figure 3 Sample Locations in Los Alamos and DP Canyons
Figure 4 Sample Locations in Pueblo Canyon
Figure 5 Sample Locations at San Ildefonso Pueblo

TABLE OF CONTENTS
(continued)

LIST OF APPENDICES

APPENDIX A	Field Logbooks
APPENDIX B	Chronological Summary of Field Activities
APPENDIX C	Generalized Well Construction and Lithologic Descriptions
APPENDIX D	Comparative Standards Description
APPENDIX E	Comparison of Analytical Results
APPENDIX F	Analytical Data
APPENDIX G	Chain-of-Custody Forms
APPENDIX H	Photographs

ABBREVIATIONS AND ACRONYMS LIST

α	Gross Alpha
β	Gross Beta
DOE	U.S. Department of Energy
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
H^3	Tritium
LANL	Los Alamos National Laboratory
$\mu g/\ell$	microgram per liter
MK	Morrison Knudson Corporation
μm	micrometer
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
QC	Quality Control
SOW	Statement of Work
Sr-90	Strontium-90
TA	Technical Area
TDS	Total Dissolved Solids
TechLaw	TechLaw, Inc.
TKN	Total Kjedahl Nitrogen
TSS	Total Suspended Solids
U	Uranium
UC	University of California
USGS	United States Geological Survey
VOC	Volatile Organic Compound

DISCLAIMER

This report was prepared for the U.S. Environmental Protection Agency (EPA) Region 6, by TechLaw, Inc. in fulfillment of Contract No. 68-W6-0063, Work Assignment No. 002BT065G. Any opinions, findings, and conclusions expressed herein are those of the contractor and not necessarily those of the EPA or cooperating agencies. Mention of any company or product names is not to be considered an endorsement by the EPA.

This report is intended to assist EPA personnel in documenting the collection of samples during sampling activities conducted at Los Alamos National Laboratories between August 19, 1998 and September 9, 1998. EPA personnel must exercise their technical judgement in using this report, as well as other relevant information, in determining what enforcement actions may result.

ACKNOWLEDGEMENTS

The data contained within this report was collected between August 17 and September 9, 1998. Thanks are due to Bruce Gallaher and Pat Longmire of Los Alamos National Laboratory who provided the support and cooperation necessary to make the sampling event a success. The Los Alamos National Laboratory field support personnel should be recognized for their long hours and hard work under stressful conditions in providing support and equipment necessary for the successful completion of the field activities. The Los Alamos National Laboratory field support personnel included Max Maes, Penny Gomez, Randy Lujan, Jenny Harris, Darril Stafford, and Jovie Hill.

Thanks are due to the San Ildefonso Pueblo for allowing access to springs and groundwater monitoring wells located on pueblo land. San Ildefonso Pueblo personnel responsible for assisting the sampling team in locating sampling locations include Dave Sarracino, Naomi Archuleta, and Noah Kaniatobe.

Special thanks are also due to the New Mexico Environment Department's DOE Oversight Bureau located in Whiterock, New Mexico for their assistance and support, especially Michael Dale and Steve Yanicak. Thanks are also due to John Young of the New Mexico Envornment Department's Hazardous and Radioactive Materials Bureau for his support.

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) requested that TechLaw, Inc. (TechLaw) provide support to the agency by collecting groundwater, spring, and effluent samples at Los Alamos National Laboratory, Los Alamos, New Mexico. The University of California (UC) operates Los Alamos National Laboratory (LANL) as a prime contractor to the U.S. Department of Energy (DOE), which owns LANL. The facility has been in operation since 1943 and was responsible for the development of the first atomic bomb. The facility is approximately 43 square miles in size and consists of mesa tops intersected by steep canyons. LANL is located approximately 25 miles northwest of Santa Fe, New Mexico (Figure 1).

LANL has been performing investigations/cleanups on former waste sites within the facility for the past seven years, as required by their hazardous waste permit. Several of the hazardous waste sites located on mesa tops and in canyons have released hazardous constituents to the environment. Some of the canyons impacted by the release of hazardous constituents continue on to the San Ildefonso and Santa Clara Indian Reservations.

1.1 Objective

The objective of this work assignment was to collect groundwater, spring, and effluent samples from various locations at LANL. Groundwater samples would be collected from wells located in Mortandad Canyon, Los Alamos Canyon, DP Canyon, Pueblo Canyon, and San Ildefonso Pueblo land. Spring samples would be collected from springs located in DP Canyon and San Ildefonso Pueblo land. Effluent samples would be collected from the Technical Area 50 Radioactive Waste Water Treatment Plant and from the Bayo Canyon Sanitary Waste Water Treatment Plant. The sampling locations and analytical suites per location were identified in the EPA Statement of Work (SOW).

1.2 Site Background

1.2.1 Historical and Current Operations

The facility began operations as Los Alamos Laboratory in March 1943 at the inception of Project Y of the Manhattan Project. The goal of this project was to develop the world's first nuclear weapon. When the first nuclear bomb was detonated at Trinity Site in southern New Mexico in 1945, more than 3,000 civilian and military personnel were working at Los Alamos Laboratory. In 1947, Los Alamos Laboratory became Los Alamos Scientific Laboratory, which in turn became Los Alamos National Laboratory in 1981.

LANL's original mission to design, develop, and test nuclear weapons has brodened and evolved as technologies, US priorities, and the world community have changed. LANL is now a

multiprogram laboratory with the central mission of reducing nuclear danger. The central mission at LANL has evolved beyond nuclear weapons testing and development to include five major elements to reduce nuclear danger:

- stockpile stewardship activities which ensure safe, secure, and reliable weapons;
- stockpile management projects which provide capabilities ranging from dismantlement to the recertification of existing nuclear weapons;
- nuclear materials management which ensures the availability or safe disposition of plutonium, highly enriched uranium, and tritium;
- effective nonproliferation and counterproliferation technologies to keep nuclear weapons, nuclear materials, and nuclear weapons knowledge out of the wrong hands; and
- environmental stewardship projects to provide for the remediation and reduction of wastes from the nuclear weapons complex.

LANL plans to continue its role in defense, particularly in nuclear weapons technology, and will increasingly use its multidisciplinary capabilities to solve important civilian problems (including initiatives in areas of health, national infrastructure, energy, education, and the environment) and industrial collaborations.

1.2.2 Geographical Setting

LANL and the nearby communities of Los Alamos and White Rock are located in Los Alamos County, in north-central New Mexico, approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The 43-square mile facility is situated on Pajarito Plateau, which consists of a series of finger-like mesas separated by east-west oriented canyons cut by intermittent streams (Figure 1). Mesa tops range in elevation from approximately 7,800 feet on the flanks of the Jemez Mountains to about 6,200 feet at their eastern termination above the Rio Grande Canyon.

Most LANL and community developments are confined to mesa tops. The surrounding land is largely undeveloped, and large tracts of land north, west and south of LANL are held by the Santa Fe National Forest, Bureau of Land Management, Bandelier National Monument, General Services Administration, and Los Alamos County. The Pueblo of San Ildefonso borders LANL to the east.

LANL is divided into Technical Areas (TAs) that are used for office building sites, experimental areas, and waste disposal locations. However, these uses account for only a small part of the

total land area held by LANL. Most land provides buffer areas for security and safety and is held in reserve for future use.

1.2.3 Geology and Hydrology

Most of the finger-like mesas in the Los Alamos area are formed from Bandelier Tuff, which includes ash fall, ash fall pumice, and rhyolite tuff. The tuff is more than 1,000 feet thick in the western part of the plateau and thins to approximately 260 feet eastward above the Rio Grande. It was deposited as a result of major eruptions in the Jemez Mountains' volcanic center approximately 1.2 to 1.6 million years ago.

On the western part of Pajarito Plateau, the Bandelier Tuff overlaps onto the Tschicoma Formation, which consists of older volcanics that form the Jemez Mountains. The tuff is underlain by the conglomerate of the Puye Formation in the central plateau and near the Rio Grande. Chino Mesa basalts interfinger with the conglomerate along the river. These formations overlie the sediments of the Santa Fe Group, which extend across the Rio Grande Valley and are more than 3,300 feet thick.

Surface water in the Los Alamos area occurs primarily as short-lived or intermittent reaches of streams. Perennial springs on the flanks of the Jemez Mountains supply base flow into upper reaches of some canyons, but the volume is insufficient to maintain surface flows across the LANL facility before they are depleted by evaporation, transpiration, and infiltration.

Groundwater in the Los Alamos area occurs in three modes: (1) water in shallow alluvium in canyons; (2) perched water (a body of groundwater above a less permeable layer that is separated from the underlying main body of groundwater by an unsaturated zone); and (3) the main aquifer of the Los Alamos area.

The main aquifer of the Los Alamos area is considered the only aquifer in the area capable of serving as a municipal water supply. Water in the main aquifer is under artesian conditions under the eastern part of the Pajarito Plateau near the Rio Grande. The source of recharge to the aquifer is presently uncertain. Isotopic and chemical composition of some waters from wells near the Rio Grande suggest that the source of water underlying the eastern part of the Pajarito Plateau may be the Sangre de Cristo Mountains. Groundwater flow along the Rio Grande rift from the north is another possible recharge source. The main aquifer discharges into the Rio Grande through springs in White Rock Canyon. The 11.5-mile reach of the river in White Rock Canyon between Otowi Bridge and the mouth of the Rito de los Frijoles receives an estimated 4,300 to 5,500 acre feet annually from the aquifer.

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2.0 SITE INVESTIGATION ACTIVITIES

TechLaw sampling team members and alternates arrived at the LANL facility on the afternoon of August 17, 1998. All LANL training and administrative requirements were completed by August 18, 1998.

Field activities began on August 19, 1998. TechLaw sampled effluent, groundwater wells, and springs located in Mortandad Canyon, Los Alamos Canyon, DP Canyon, Pueblo Canyon, and on San Ildefonso Pueblo land. NMED and LANL personnel collected split samples at various sample locations during the field activities. Field activities ended on September 9, 1998. A copy of the field log books maintained during the field activities is included in Appendix A. Appendix B presents a summary of field activities completed during each day of field work.

2.1 Participants

During the four weeks of sample collection activities, numerous personnel from various agencies and companies participated or observed the sampling operations. These groups included EPA Region 6, New Mexico Environment Department (NMED), DOE, UC, TechLaw, Morrison Knudson Corporation (MK), San Ildefonso Pueblo, and the U.S. Geological Survey (USGS). Table 1 presents a complete list of personnel which participated in and/or observed the sampling operations.

2.2 Effluent

The collection and analysis of effluent samples was completed to provide data on effluent being discharged into canyons located at the LANL facility. Effluent data only provides information on the effluent being discharged at the time of sampling and is not meant to characterize the waste stream. The effluent sampling locations were selected by EPA and NMED personnel.

Three samples were collected of effluent being discharged into Mortandad Canyon by the TA-50 Radioactive Waste Water Treatment Plant. One sample of effluent was collected during the first week of sampling activities as it was discharged into the canyon. Two samples, one at the source of discharge at the plant and one at Gauging Station 1 in Mortandad Canyon, were collected simultaneously during the second week of sampling. Each of these samples were analyzed for volatile organic compounds (VOCs), total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90, gross alpha, gross beta, stable nitrogen isotopes, and tritium.

Two samples were collected of effluent being discharged from the Bayo Sanitary Waste Water Treatment Plant. One sample was collected at the outfall located in Bayo Canyon (Bayo-1) and the second sample was collected from the culvert at the intersection of the stream channel and

State Route 502 (see Figure 4). Each of these samples were analyzed for total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90, gross alpha, gross beta, stable nitrogen isotopes, and tritium.

2.2.1 Effluent Sampling Procedure

TA-50 Radioactive Waste Water Treatment Plant

The TA-50 Radioactive Waste Water Treatment Plant operates two storage/treatment tanks, each with a capacity of approximately 25,000 gallons. Waste water at the plant is accumulated in one of the 25,000 gallon tanks until the tank is full. When the tank is full, the waste water is redirected to the second 25,000 gallon storage tank. The waste water in the full storage tank is batch treated and discharged into Mortandad Canyon. However, prior to discharging the treated waste water, TA-50 personnel test the effluent to make sure that the effluent does not exceed limits established in the plant's National Pollutant Discharge Elimination System (NPDES) permit. If the results indicate that the treated waste water is within the NPDES limits, then the treated waste water is discharged into Mortandad Canyon. If the treated waste water exceeds the limits of the NPDES permit, then the facility repeats the treatment process until it is within the limits of the NPDES permit. When the second storage tank is filled, the waste water is then redirected back to the first storage tank, and the process is repeated. The plant also has a third storage tank used as a backup to the two primary storage/treatment tanks.

Samples from the TA-50 plant were collected on two separate occasions. The samples (TA-50 and TA-502A) were collected directly from a storage/treatment tank via a sampling line while its contents were being discharged into Mortandad Canyon. Sample containers were filled beginning with the VOC containers and then proceeding to the non-filtered analyses (total metals, general chemistry, stable nitrogen isotopes, and tritium) containers and finishing with the filtered analyses containers (dissolved metals, dissolved uranium isotopes, dissolved strontium-90, gross alpha, and gross beta). The filtered sample material was passed through a new in-line 0.45 micrometer (μm) filter while filling the sample containers. All sample containers were filled slowly to avoid aeration. Filled sample containers were refrigerated at the TA-50 plant and screened by TA-50 personnel for radioactivity prior to relinquishing the samples to the TechLaw sampling team. Upon receipt of the samples from the TA-50 plant, the sampling team transferred the samples to a sample cooler which contained ice in order to maintain the samples at approximately 4°C. The samples were secured and stored inside the sample cooler until shipped to the analytical laboratory for analysis.

One sample was collected at Gauging Station 1 in Mortandad Canyon while the TA-50 plant was discharging effluent into the canyon. This sample (TA-502B) was collected simultaneously with sample TA-502A described in the previous paragraph. This sample was collected by lowering the intake of a peristaltic pump directly into the stream channel of Mortandad Canyon while the

TA-50 plant was discharging and using the pump to fill the appropriate sample containers. Sample containers were filled beginning with the VOC containers and then proceeding to the non-filtered analyses containers (total metals, general chemistry, stable nitrogen isotopes, and tritium) and finishing with the filtered analyses containers (dissolved metals, dissolved uranium isotopes, dissolved strontium-90, gross alpha, and gross beta). The filtered sample material was passed through a new in-line 0.45 μm filter while filling the sample containers. All sample containers were filled slowly to avoid aeration. The sample containers were placed in a sample cooler which contained ice in order to maintain the samples at approximately 4°C. The samples were secured and stored inside the sample cooler until shipped to the analytical laboratory for analysis. All waste generated during sampling activities were managed by LANL.

Bayo Sanitary Waste Water Treatment Plant

One sample was collected from the outfall at the Bayo Sanitary Waste Water Treatment Plant. This sample (Bayo-1) was collected by lowering the intake of a peristaltic pump directly into the effluent flowing out of the Bayo plant and using the pump to fill the appropriate sample containers. Sample containers were filled beginning with the non-filtered analyses containers (total metals, general chemistry, stable nitrogen isotopes, and tritium) and finishing with the filtered analyses containers (dissolved metals, dissolved uranium isotopes, dissolved strontium-90, gross alpha, and gross beta). The filtered sample material was passed through a new in-line 0.45 μm filter while filling the sample containers. Three filters were used while collecting the filtered samples because of the large amount of suspended solids entrained in the effluent. All sample containers were filled slowly to avoid aeration. The sample containers were placed in a sample cooler which contained ice in order to maintain the samples at approximately 4°C. The samples were secured and stored inside the sample cooler until shipped to the analytical laboratory for analysis.

One sample was collected at the culvert at the intersection between the stream channel which received the plant's discharge and State Route 502. This sample (Bayo-2) was collected by placing the intake of a peristaltic pump into the stream flow and using the pump to fill the appropriate sample containers. Sample containers were filled beginning with the non-filtered analyses containers (total metals, general chemistry, stable nitrogen isotopes, and tritium) and finishing with the filtered analyses containers (dissolved metals, dissolved uranium isotopes, dissolved strontium-90, gross alpha, and gross beta). The filtered sample material was passed through a new in-line 0.45 μm filter while filling the sample containers. All sample containers were filled slowly to avoid aeration. The sample containers were placed in a sample cooler which contained ice in order to maintain the samples at approximately 4°C. The samples were secured and stored inside the sample cooler until shipped to the analytical laboratory for analysis. All wastes generated during sampling activities were managed by LANL.

2.2.2 Deviations from the Field Sampling Plan

No deviations from the Field Sampling Plan occurred during the effluent sampling activities. All effluent samples were collected as prescribed in the Field Sampling Plan.

2.3 Groundwater

The collection and analysis of groundwater samples was completed to provide data to determine the presence or absence of contamination in groundwater at the different sampling locations. Thirty-one wells were sampled during the groundwater sampling activities. Dependent on the well sampled, groundwater was analyzed for VOCs, total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90, gross alpha, gross beta, stable nitrogen isotopes, and tritium. The groundwater sampling locations were selected by EPA and NMED personnel.

Wells sampled during the groundwater sampling activities were located in Mortandad Canyon (12 wells sampled; see Figure 2), Los Alamos Canyon (11 wells sampled; see Figure 3), DP Canyon (2 wells sampled; see Figure 3), Pueblo Canyon (5 wells sampled; see Figure 4), and the San Ildefonso Pueblo (1 well sampled; see Figure 5). Table 2 presents the location of each well sampled and the date and time each was sampled. Appendix C presents generalized well construction diagrams for each of the wells sampled.

2.3.1 Groundwater Sampling Procedures

The physical condition of the outside of each well was inspected upon arrival at each wellhead. The well casing diameter, static water level depth, and total well depth were measured in order to calculate the volume of water contained inside the well (one well volume). If the total depth of a well could not be measured because of a dedicated pump inside the well or the depth of the well was too great, the construction information for the well was used to verify the total depth of the well. A minimum purge volume (volume of groundwater to be removed before samples could be collected) was then calculated by multiplying the volume of water contained inside the well by three.

Once these initial measurements and calculations were made, purging activities began. The majority of shallow alluvial wells sampled contained dedicated bladder pumps which were used to purge and sample the wells. Shallow alluvial wells which did not contain dedicated bladder pumps were purged and sampled using a peristaltic pump. The only exception to this was well LLAO-5 located on the San Ildefonso Pueblo. The depth of this well was too great for the peristaltic pump to operate, so a small impeller pump was used to purge and sample this well. The deep aquifer wells, TW-1, TW-2A, TW-3, TW-4, and TW-8 contained dedicated centrifical pumps. Water quality parameters pH, temperature, dissolved oxygen, specific conductivity, and

turbidity were measured during the purging activities. Samples were not collected until the measured water quality parameters remained consistent over the last three intervals measured. Table 3 presents well data including the water level measured in each well, the total depth of each well, the calculated purge volume for each well, and the actual volume purged before sampling activities commenced. Table 4 presents the final water quality parameter measurements for each well sampled.

After the well was purged, sample containers were filled beginning with the VOC containers and then proceeding to the non-filtered analyses containers (total metals, general chemistry, stable nitrogen isotopes, and tritium) and finishing with the filtered analyses containers (dissolved metals, dissolved uranium isotopes, dissolved strontium-90, gross alpha, and gross beta). The filtered groundwater was passed through a new in-line 0.45 μm filter while filling the sample containers. All sample containers were filled slowly to avoid aeration. The sample containers were placed in a sample cooler which contained ice in order to maintain the samples at approximately 4°C. The samples were secured and stored inside the sample cooler until shipped to the analytical laboratory for analysis. All waste generated during sampling activities were managed by LANL.

2.3.2 Deviations from the Field Sampling Plan

Deviations from the Field Sampling Plan occurred during the groundwater sampling activities. Following are the specific deviations that were required.

- Well MCO-7 was sampled after the first well volume was purged and the water quality parameters had stabilized. This well had a slow recovery time.
- Well MCO-7.5B was sampled after the first well volume was purged and the water quality parameters had stabilized. This well had a slow recovery time.
- Well MCWB-6.5C was not sampled because the measured water level was below the screened interval of the well.
- Well MCWB-6.5D was not sampled because the well did not contain any groundwater.
- Well MCWB-7A was not sampled due to an excessively slow recovery time and turbid water conditions.
- Well MCWB-7B was added as an alternative sample location to well MCWB-7A; however; this well did not contain any groundwater.
- Well MCWB-7.7B was added as an alternative sample location to well MT-2.

- Well MT-2 was not sampled because the well did not contain any groundwater.
- Well MT-3 was sampled after two well volumes were purged and the water quality parameters had stabilized. This well had a slow recovery time.
- LAO-5 was sampled after approximately 1.5 well volumes were purged and the water quality parameters had stabilized. This well had a slow recovery time. Well LAO-5 was added as an alternative to well LAO-6.
- LAO-6 was not sampled because the measured water level was below the intake of the dedicated pump.
- LAO-6A was not sampled because the well did not contain any groundwater. This well was added as an alternative to well LAO-6.
- Well LADP-3 was not sampled because there was no dedicated pump available to purge and sample this well. This well was greater than 300 feet in depth.
- Well TW-1A was not sampled because there was not enough groundwater available to sample.
- Well TW-2 was not sampled because the dedicated pump was not functioning.
- Well LLAO-2 was not sampled due to excessively slow recovery time.
- Well R-9 was not sampled because there was no pump available to purge and sample this well. This well was completed in the regional aquifer.
- Well R-12 was not sampled because there was no pump available to purge and sample this well. This well was completed in the regional aquifer.

2.4 Springs

The collection and analysis of spring samples was completed to provide data to determine the presence or absence of contamination in groundwater discharging to the ground surface at the different sampling locations. Six springs were sampled during the spring sampling activities. Dependent on the spring sampled, the water was analyzed for total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90, gross alpha, gross beta, stable nitrogen isotopes, and tritium. The spring sampling locations were selected by EPA and NMED personnel.

2.4.1 Spring Sampling Procedures

DP Spring is located above a rocky cliff face in DP Canyon. The source of the spring was approximately 30 to 40 feet above where the samples were collected. The samples were collected from the cliff face as the water ran down the side of the cliff. Samples were collected using a clean, dedicated one-liter poly bottle pressed against the rock face. The samples were then transferred to the appropriate labeled sample containers. For the filtered analytical parameters, the water was collected in four one-liter containers and then transported back to the NMED Oversight Bureau office and filtered using a peristaltic pump and an in-line 0.45 μm filter.

Samples from La Mesita Spring, located just east of the Rio Grande River, were collected in the same manner as the DP Spring samples. A clean, dedicated one-liter poly was used to collect water just downstream from the source of the spring along the streambed. The samples were then transferred to the appropriate sample containers. For the filtered analytical parameters, the water was collected in four one-liter containers and then filtered using a peristaltic pump and an in-line 0.45 μm filter.

Sacred Spring is located along SR 502 and flows into a stagnant pool. The Sacred Spring samples were collected from the streambed prior to its confluence with the stagnant pool. Samples were collected in the same manner as for La Mesita Spring.

Otowi Spring is located near the west bank of the Rio Grande River near SR 502. The samples were collected using a peristaltic pump. The intake for the peristaltic pump was placed directly in a small pool at the spring's point of origin. Spring water was pumped directly into the appropriate sample containers. For the filtered analytical parameters, the water was filtered using the peristaltic pump and an in-line 0.45 μm filter.

Basalt Spring is located south of SR 502 in a deep, narrow canyon. Samples were collected using a clean, dedicated one-liter sample bottle to transfer sample material to the appropriate sample containers. Samples for filtered analytical parameters were collected in a four-liter sample container and then filtered later the same day at the well LLAO-2 location using a peristaltic pump and an in-line 0.45 μm filter.

L.A. Spring was located in the same canyon southeast of Basalt Spring, but at a higher ground elevation. This spring consisted of a metal pipe driven into a rock-face and hidden by dense foliage. Water flowed from the end of the metal pipe. Samples were collected by filling the sample bottles directly from the metal pipe. Samples for filtered analytical parameters were collected in a four-liter sample container and then filtered later the same day at the well LLAO-2 location using a peristaltic pump and an in-line 0.45 μm filter.

All spring sample containers were filled beginning with the non-filtered analyses containers (total metals, general chemistry, stable nitrogen isotopes, and tritium) and finishing with the filtered analyses containers (dissolved metals, dissolved uranium isotopes, dissolved strontium-90, gross alpha, and gross beta). All sample containers were filled slowly to avoid aeration. The sample containers were placed in a sample cooler which contained ice in order to maintain the samples at approximately 4°C. The samples were secured and stored inside the sample cooler until shipped to the analytical laboratory for analysis. All waste generated during sampling activities were managed by LANL.

2.4.2 Deviations from the Field Sampling Plan

No deviations from the Field Sampling Plan occurred during the spring sampling activities. All spring samples were collected as prescribed in the Field Sampling Plan.

3.0 LABORATORY RESULTS SUMMARY

3.1 Effluent Sampling Results

3.1.1 TA-50 Radioactive Waste Water Treatment Plant

Two effluent samples were collected from the TA-50 Radioactive Waste Water Treatment Plant and one sample was collected approximately ¼-mile downstream of the plant's outfall at Gauging Station 1 located in Mortandad Canyon (Figure 2). These samples were analyzed for VOCs, total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90, gross alpha, gross beta, stable nitrogen isotopes, and tritium. Analytical results obtained from these samples are presented in Tables 4 through 8 and in Appendix F.

Results of the VOC analysis identified two compounds in the TA-50 effluent. These compounds included acetone and methylene chloride. However, these compounds were detected in laboratory blanks which indicates potential laboratory contamination, or the results were estimated. Results of the VOC analysis are summarized in Table 5.

Inorganic results for total metals identified eleven inorganic analytes at concentrations greater than the detection limits and results for dissolved metals identified eleven inorganic analytes at concentrations greater than detection limits. Total aluminum was detected at concentrations ranging from 49.6 micrograms per liter ($\mu g/\ell$) to 2330 $\mu g/\ell$ and dissolved aluminum was detected at concentrations ranging from 57.0 $\mu g/\ell$ to 312 $\mu g/\ell$. Total barium was detected at concentrations ranging from 7.6 $\mu g/\ell$ to 44.4 $\mu g/\ell$ and dissolved barium was detected at concentrations ranging from 9.1 $\mu g/\ell$ to 35 $\mu g/\ell$. Total beryllium was detected at 0.67 $\mu g/\ell$, and dissolved beryllium was detected at concentrations ranging from 0.64 $\mu g/\ell$ to 0.68 $\mu g/\ell$. Total boron was detected at concentrations ranging from 105 $\mu g/\ell$ to 192 $\mu g/\ell$, and dissolved boron was detected at concentrations ranging from 103 $\mu g/\ell$ to 222 $\mu g/\ell$. Total chromium was detected at concentrations ranging from 4.5 $\mu g/\ell$ to 6.4 $\mu g/\ell$, and dissolved chromium was detected at 5.2 $\mu g/\ell$. Total copper was detected at concentrations ranging from 41.4 $\mu g/\ell$ to 145 $\mu g/\ell$, and dissolved copper was detected at concentrations ranging from 41.1 $\mu g/\ell$ to 155 $\mu g/\ell$. Iron was detected at concentrations ranging from 73.4 $\mu g/\ell$ to 1780 $\mu g/\ell$, and dissolved iron was detected at concentrations ranging from 61.2 $\mu g/\ell$ to 123 $\mu g/\ell$. Total lead was detected at concentrations ranging from 2.9 $\mu g/\ell$ to 6.9 $\mu g/\ell$, and dissolved lead was detected at concentrations ranging from 2.7 $\mu g/\ell$ to 6.1 $\mu g/\ell$. Total manganese was detected at concentrations ranging from 5.0 $\mu g/\ell$ to 77.2 $\mu g/\ell$, and dissolved manganese was detected at concentrations ranging from 6.4 $\mu g/\ell$ to 11.2 $\mu g/\ell$. Total mercury was detected at concentrations ranging from 0.16 $\mu g/\ell$ to 0.26 $\mu g/\ell$, and dissolved mercury was detected at 0.29 $\mu g/\ell$. Total molybdenum was detected at concentrations ranging from 28.8 $\mu g/\ell$ to 151 $\mu g/\ell$, and dissolved molybdenum was detected at concentrations ranging from 24.4 $\mu g/\ell$ to 143 $\mu g/\ell$. Results of the total metals and dissolved metals analyses are summarized in Table 6.

All of the TA-50 samples were analyzed for general chemistry parameters as specified by EPA. These parameters included chloride, fluoride, sulfate, bicarbonate alkalinity, total suspended solids (TSS), total dissolved solids (TDS), total Kjedahl nitrogen (TKN), total phosphorous, nitrate/nitrite nitrogen, ammonia nitrogen, and stable nitrogen isotope ratios. Results of these analyses are summarized in Table 7.

All of the TA-50 samples were analyzed for radiochemistry as specified by EPA. These radionuclides include Isotopic Uranium (U), Gross Alpha (α), Gross Beta (β), Strontium 90 (Sr-90), and Tritium (H^3). The uranium isotopes identified include U-234, U-238, and U235/236. Results of these analyses are summarized in Table 8.

3.1.2 Bayo Canyon Sanitary Waste Water Treatment Plant

Two effluent samples were collected from the Bayo Canyon Sanitary Waste Water Treatment Plant. One sample was collected directly from the plant's outfall and the other sample was collected at the intersection of the effluent and State Route 502 (Figure 4). These samples were analyzed for total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90, gross alpha, gross beta, stable nitrogen isotopes, and tritium. Analytical results obtained from these samples are presented in Tables 4 through 8 and in Appendix F.

Inorganic results for total metals identified eleven inorganic analytes at concentrations greater than the detection limits and results for dissolved metals identified eleven inorganic analytes at concentrations greater than detection limits. Total aluminum was detected at concentrations ranging from 41.2 μg/ℓ to 306 μg/ℓ and dissolved aluminum was detected at 167 μg/ℓ. Total arsenic was detected at concentrations ranging from 5.6 μg/ℓ to 8.8 μg/ℓ, and dissolved arsenic was detected at concentrations ranging from 5.4 μg/ℓ to 9.0 μg/ℓ. Total barium was detected at concentrations ranging from 12.8 μg/ℓ to 20.9 μg/ℓ, and dissolved barium was detected at concentrations ranging from 8.6 μg/ℓ to 18.3 μg/ℓ. Total boron was detected at concentrations ranging from 298 μg/ℓ to 328 μg/ℓ, and dissolved boron was detected at concentrations ranging from 257 μg/ℓ to 324 μg/ℓ. Total copper was detected at concentrations ranging from 7.3 μg/ℓ to 29.4 μg/ℓ, and dissolved copper was detected at concentrations ranging from 8.2 μg/ℓ to 23.2 μg/ℓ. Iron was detected at concentration ranging from 301 μg/ℓ to 754 μg/ℓ, and dissolved iron was detected at concentrations ranging from 243 μg/ℓ to 614 μg/ℓ. Dissolved lead was detected at concentrations ranging from 2.4 μg/ℓ to 6.4 μg/ℓ. Total manganese was detected at concentrations ranging from 18.7 μg/ℓ to 306 μg/ℓ, and dissolved manganese was detected at concentrations ranging from 16.9 μg/ℓ to 299 μg/ℓ. Results of the total metals and dissolved metals analyses are summarized in Table 6.

All of the Bayo plant samples were analyzed for general chemistry parameters as specified by EPA. These parameters included chloride, fluoride, sulfate, bicarbonate alkalinity, TSS, TDS,

TKN, total phosphorous, nitrate/nitrite nitrogen, ammonia nitrogen, and stable nitrogen isotope ratios. Results of these analyses are summarized in Table 7.

All of the Bayo plant samples were analyzed for radiochemistry as specified by EPA. These radionuclides include Isotopic Uranium (U), Gross Alpha (α), Gross Beta (β), Strontium 90 (Sr-90), and Tritium (H^3). The uranium isotopes identified include U-234, U-238, and U235/236. Results of these analyses are summarized in Table 8.

3.1.3 Comparison of Effluent Results

Analytical results for effluent samples collected during the sampling event are presented in Tables 5 through 8. Included on each table are various water quality standards, guidelines, and limits established by EPA, NMED, and DOE. These water quality standards, guidelines, and limits are included on each table to facilitate easy comparison with the analytical results; however, these water quality standards, guidelines, and limits may not apply to the locations sampled and are presented only as comparison data. A summary comparing the analytical results with the EPA, NMED, and DOE water quality standards, guidelines, and limits is included at the beginning of each analytical summary table (Tables 5 through Table 8). A description of the EPA, NMED, and DOE water quality standards, guidelines, and limits used for comparison is included in Appendix D.

Comparison tables comparing analytical results from split samples collected during the field activities are presented in Appendix E. These tables compare the analytical results of split samples collected by NMED and LANL personnel to the EPA results. The tables also include various water quality standards, guidelines, and limits established by EPA, NMED, and DOE.

3.2 Groundwater Sampling Results

3.2.1 Mortandad Canyon

Twelve groundwater wells located in Mortandad Canyon were sampled (Figure 2). Eleven of the wells sampled were completed in the shallow alluvial aquifer and one well (TW-8) was completed in the main aquifer. Samples collected from these wells were analyzed for VOCs, total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90, gross alpha, gross beta, stable nitrogen isotopes, and tritium. Analytical results obtained from these samples are presented in Tables 4 through 8 and in Appendix F.

Results of the VOC analysis identified two compounds in the groundwater samples. These compounds included acetone and methylene chloride. However, these compounds were detected in laboratory blanks which indicates potential laboratory contamination, or the results were estimated. Results of the VOC analysis is summarized in Table 5.

Inorganic results for total metals identified thirteen inorganic analytes at concentrations greater than the detection limits and results for dissolved metals identified twelve inorganic analytes at concentrations greater than detection limits. Total aluminum was detected at concentrations ranging from 51.7 μg/ℓ to 14900 μg/ℓ and dissolved aluminum was detected at concentrations ranging from 36.8 μg/ℓ to 6080 μg/ℓ. Total arsenic was detected at concentrations ranging from 2.3 μg/ℓ to 9.2 μg/ℓ, and dissolved arsenic was detected at concentrations ranging from 2.0 μg/ℓ to 6.8 μg/ℓ. Total barium was detected at concentrations ranging from 62.7 μg/ℓ to 195 μg/ℓ, and dissolved barium was detected at concentrations ranging from 62.4 μg/ℓ to 187 μg/ℓ. Total beryllium was detected at concentrations ranging from 0.62 μg/ℓ to 1.90 μg/ℓ, and dissolved beryllium was detected at 1.0 μg/ℓ. Total Boron was detected at concentrations ranging from 70.8 μg/ℓ to 179 μg/ℓ, and dissolved boron was detected at concentrations ranging from 86.8 μg/ℓ to 220 μg/ℓ. Total chromium was detected at concentrations ranging from 4.5 μg/ℓ to 77.31 μg/ℓ, and dissolved chromium was detected at concentrations ranging from 4.2 μg/ℓ to 30.6 μg/ℓ. Total copper was detected at concentrations ranging from 6.2 μg/ℓ to 16.6 μg/ℓ, and dissolved copper was detected at concentrations ranging from 6.2 μg/ℓ to 17.0 μg/ℓ. Iron was detected at concentration ranging from 49.0 μg/ℓ to 14900 μg/ℓ, and dissolved iron was detected at concentrations ranging from 34.7 μg/ℓ to 9090 μg/ℓ. Total lead was detected at concentrations ranging from 1.6 μg/ℓ to 22.3 μg/ℓ, and dissolved lead was detected at concentrations ranging from 1.6 μg/ℓ to 43.3 μg/ℓ. Total manganese was detected at concentrations ranging from 1.0 μg/ℓ to 13200 μg/ℓ, and dissolved manganese was detected at concentrations ranging from 0.86 μg/ℓ to 1240 μg/ℓ. Total mercury was detected at 0.10 μg/ℓ, and dissolved mercury was detected at 0.10 μg/ℓ. Total molybdenum was detected at concentrations ranging from 32.1 μg/ℓ to 1040 μg/ℓ, and dissolved molybdenum was detected at concentrations ranging from 30.0 μg/ℓ to 962 μg/ℓ. Total selenium was detected at concentrations ranging from 2.6 μg/ℓ to 4.2 μg/ℓ. Results of the total metals and dissolved metals analyses are summarized in Table 6.

All of the Mortandad Canyon groundwater samples were analyzed for general chemistry parameters as specified by EPA. These parameters included chloride, fluoride, sulfate, bicarbonate alkalinity, TSS, TDS, TKN, total phosphorous, nitrate/nitrite nitrogen, ammonia nitrogen, and stable nitrogen isotope ratios. Results of these analyses are summarized in Table 7.

All of the Mortandad Canyon groundwater samples were analyzed for radiochemistry as specified by EPA. These radionuclides include Isotopic Uranium (U), Gross Alpha (α), Gross Beta (β), Strontium 90 (Sr-90), and Tritium (H^3). The uranium isotopes identified include U-234, U-238, and U235/236. Results of these analyses are summarized in Table 8.

3.2.2 Los Alamos/DP Canyon

Twelve groundwater wells located in Los Alamos Canyon and two wells located in DP Canyon were sampled (Figure 3). Thirteen of the groundwater wells were completed in the shallow

alluvial aquifer, including the well located on San Ildefonso Pueblo land (LLAO-5). One of the wells sampled in Los Alamos Canyon (TW-3) was completed in the main aquifer. Samples collected from these wells were analyzed for VOCs, total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90, gross alpha, gross beta, stable

nitrogen isotopes, and tritium (depending on their location). Analytical results obtained from these samples are presented in Tables 4 through 8 and in Appendix F.

The samples from the two wells located in DP Canyon (LAUZ-1 and LAUZ-2) were analyzed for VOCs. Results of the VOC analysis identified one compound in the groundwater sample from one of these wells. This compound was methylene chloride. However, this compound was also detected in laboratory blank which indicates potential laboratory contamination. Results of the VOC analysis is summarized in Table 5.

Inorganic results for total metals identified thirteen inorganic analytes at concentrations greater than the detection limits and ten results for dissolved metals identified ten inorganic analytes at concentrations greater than detection limits. Total aluminum was detected at concentrations ranging from 41.8 μg/ℓ to 2520 μg/ℓ, and dissolved aluminum was detected at concentrations ranging from 34.9 μg/ℓ to 978 μg/ℓ. Total arsenic was detected at concentrations ranging from 2.1 μg/ℓ to 3.6 μg/ℓ, and dissolved arsenic was detected at concentrations ranging from 2.3 μg/ℓ to 3.2 μg/ℓ. Total barium was detected at concentrations ranging from 23.4 μg/ℓ to 238 μg/ℓ, and dissolved barium was detected at concentrations ranging from 23.9 μg/ℓ to 228 μg/ℓ. Total beryllium was detected at 0.64 μg/ℓ. Total Boron was detected at concentrations ranging from 25.6 μg/ℓ to 106 μg/ℓ, and dissolved boron was detected at concentrations ranging from 31.9 μg/ℓ to 103 μg/ℓ. Total chromium was detected at concentrations ranging from 12.6 μg/ℓ to 16.8 μg/ℓ, and dissolved chromium was detected at concentrations ranging from 4.2 μg/ℓ to 12.0 μg/ℓ. Total copper was detected at 8.2 μg/ℓ, and dissolved copper was detected at 7.0 μg/ℓ. Iron was detected at concentration ranging from 40.2 μg/ℓ to 1340 μg/ℓ, and dissolved iron was detected at concentrations ranging from 5.0 μg/ℓ to 879 μg/ℓ. Total lead was detected at 3.5 μg/ℓ, and dissolved lead was detected at concentrations ranging from 1.7 μg/ℓ to 480 μg/ℓ. Total manganese was detected at concentrations ranging from 1.3 μg/ℓ to 627 μg/ℓ, and dissolved manganese was detected at concentrations ranging from 0.94 μg/ℓ to 577 μg/ℓ. Total mercury was detected at 3.0 μg/ℓ. Total molybdenum was detected at concentrations ranging from 7.3 μg/ℓ to 315 μg/ℓ, and dissolved molybdenum was detected at concentrations ranging from 7.3 μg/ℓ to 317 μg/ℓ. Total selenium was detected at 2.6 μg/ℓ. Results of the total metals and dissolved metals analyses are summarized in Table 6.

All of the Los Alamos/DP Canyon groundwater samples were analyzed for general chemistry parameters as specified by EPA. These parameters included chloride, fluoride, sulfate, bicarbonate alkalinity, TSS, TDS, TKN, total phosphorous, nitrate/nitrite nitrogen, ammonia nitrogen, and stable nitrogen isotope ratios. Results of these analyses are summarized in Table 7.

All of the Los Alamos/DP Canyon groundwater samples were analyzed for radiochemistry as specified by EPA. These radionuclides include Isotopic Uranium (U), Gross Alpha (α), Gross

Beta (β), Strontium 90 (Sr-90), and Tritium (H^3). The uranium isotopes identified include U-234, U-238, and U235/236. Results of these analyses are summarized in Table 8.

3.2.3 Pueblo Canyon

Five groundwater wells located in Pueblo Canyon were sampled (Figure 4). Well APCO-1 was completed in the shallow alluvial aquifer, wells POI-4 and TW-2A were completed in the intermediate aquifer, and wells TW-1 and TW-4 were completed in the main aquifer. Samples collected from these wells were analyzed for total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90, gross alpha, gross beta, stable nitrogen isotopes, and tritium. Analytical results obtained from these samples are presented in Tables 4 through 8 and in Appendix F.

Inorganic results for total metals identified ten inorganic analytes at concentrations greater than the detection limits and ten results for dissolved metals identified ten inorganic analytes at concentrations greater than detection limits. Total aluminum was detected at concentrations ranging from 36.0 μg/ℓ to 60.5 μg/ℓ, and dissolved aluminum was detected at 33.8 μg/ℓ. Total arsenic was detected at concentrations ranging from 2.8 μg/ℓ to 5.3 μg/ℓ, and dissolved arsenic was detected at concentrations ranging from 3.1 μg/ℓ to 6.6 μg/ℓ. Total barium was detected at concentrations ranging from 40.8 μg/ℓ to 94.6 μg/ℓ, and dissolved barium was detected at concentrations ranging from 43.3 μg/ℓ to 89.6 μg/ℓ. Total Boron was detected at concentrations ranging from 40.2 μg/ℓ to 334 μg/ℓ, and dissolved boron was detected at concentrations ranging from 24.5 μg/ℓ to 314 μg/ℓ. Total chromium was detected at 40.9 μg/ℓ. Total copper was detected at concentrations ranging from 7.4 μg/ℓ to 13 μg/ℓ, and dissolved copper was detected at 8.3 μg/ℓ. Iron was detected at concentration ranging from 10.8 μg/ℓ to 21300 μg/ℓ, and dissolved iron was detected at concentrations ranging from 6.4 μg/ℓ to 4850 μg/ℓ. Total lead was detected at concentrations ranging from 4.0 μg/ℓ to 28.4 μg/ℓ, and dissolved lead was detected at concentrations ranging from 5.3 μg/ℓ to 12.1 μg/ℓ. Total manganese was detected at concentrations ranging from 1.6 μg/ℓ to 925 μg/ℓ, and dissolved manganese was detected at concentrations ranging from 1.5 μg/ℓ to 942 μg/ℓ. Total molybdenum was detected at 8.0 μg/ℓ. Results of the total metals and dissolved metals analyses are summarized in Table 6.

All of the Pueblo Canyon groundwater samples were analyzed for general chemistry parameters as specified by EPA. These parameters included chloride, fluoride, sulfate, bicarbonate alkalinity, TSS, TDS, TKN, total phosphorous, nitrate/nitrite nitrogen, ammonia nitrogen, and stable nitrogen isotope ratios. Results of these analyses are summarized in Table 7.

All of the Pueblo Canyon groundwater samples were analyzed for radiochemistry as specified by EPA. These radionuclides include Isotopic Uranium (U), Gross Alpha (α), Gross Beta (β),

Strontium 90 (Sr-90), and Tritium (H^3). The uranium isotopes identified include U-234, U-238, and U235/236. Results of these analyses are summarized in Table 8.

3.2.4 Comparison of Groundwater Results

Analytical results for groundwater samples collected during the sampling event are presented in Tables 5 through 8. Included on each table are various water quality standards, guidelines, and limits established by EPA, NMED, and DOE. These water quality standards, guidelines, and limits are included on each table to facilitate easy comparison with the analytical results; however, these water quality standards, guidelines, and limits may not apply to the locations sampled and are presented only as comparison data. A summary comparing the analytical results with the EPA, NMED, and DOE water quality standards, guidelines, and limits is included at the beginning of each analytical summary table (Tables 5 through Table 8). A description of the EPA, NMED, and DOE water quality standards, guidelines, and limits used for comparison is included in Appendix D.

Comparison tables comparing analytical results from split samples collected during the field activities are presented in Appendix E. These tables compare the analytical results of split samples collected by NMED and LANL personnel to the EPA results. Analytical results from split samples collected by the USGS for the San Ildefonso Pueblo were not available for comparison. The tables also include various water quality standards, guidelines, and limits established by EPA, NMED, and DOE.

3.3 Spring Sampling Results

Six springs were sampled. One of these springs (DP Spring) was located in DP Canyon (Figure 3) and five of these springs were located on San Idefonso Pueblo land (Figure 5). The samples collected from the springs were analyzed for total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90 (DP Spring only), gross alpha, gross beta, stable nitrogen isotopes, and tritium. Analytical results obtained from these samples are presented in Tables 4 through 8 and in Appendix F.

Inorganic results for total metals identified nine inorganic analytes at concentrations greater than the detection limits and results for dissolved metals identified eight inorganic analytes at concentrations greater than detection limits. Total aluminum was detected at concentrations ranging from 31.9 $\mu g/\ell$ to 1170 $\mu g/\ell$, and dissolved aluminum was detected at concentrations ranging from 26.0 $\mu g/\ell$ to 707 $\mu g/\ell$. Total arsenic was detected at concentrations ranging from 2.1 $\mu g/\ell$ to 4.5 $\mu g/\ell$, and dissolved arsenic was detected at concentrations ranging from 2.0 $\mu g/\ell$

to 3.7 μg/ℓ. Total barium was detected at concentrations ranging from 38.6 μg/ℓ to 146 μg/ℓ, and dissolved barium was detected at concentrations ranging from 30.7 μg/ℓ to 144 μg/ℓ. Total boron was detected at concentrations ranging from 42.2 μg/ℓ to 269 μg/ℓ, and dissolved boron was detected at concentrations ranging from 36.2 μg/ℓ to 262 μg/ℓ. Dissolved chromium was detected at concentrations ranging from 3.0 μg/ℓ to 3.8 μg/ℓ. Total copper was detected at concentrations ranging from 7.1 μg/ℓ to 10.9 μg/ℓ, and dissolved copper was detected at 14.8 μg/ℓ. Total iron was detected at concentrations ranging from 28.4 μg/ℓ to 596 μg/ℓ, and dissolved iron was detected at concentrations ranging from 22.7 μg/ℓ to 376 μg/ℓ. Total lead was detected at 2.0 μg/ℓ, and dissolved lead was detected at concentrations ranging from 4.3 μg/ℓ to 7.2 μg/ℓ. Total manganese was detected at concentrations ranging from 0.75 μg/ℓ to 49.4 μg/ℓ, and dissolved manganese was detected at concentrations ranging from 0.91 μg/ℓ to 8.3 μg/ℓ.

Dissolved mercury was detected at 0.10 μg/ℓ. Results of the total metals and dissolved metals analyses are summarized in Table 6.

All of the spring samples were analyzed for general chemistry parameters as specified by EPA. These parameters included chloride, fluoride, sulfate, bicarbonate alkalinity, TSS, TDS, TKN, total phosphorous, nitrate/nitrite nitrogen, ammonia nitrogen, and stable nitrogen isotope ratios. Results of these analyses are summarized in Table 7.

All of the spring samples were analyzed for radiochemistry as specified by EPA. These radionuclides include Isotopic Uranium (U), Gross Alpha (α), Gross Beta (β), Strontium 90 (Sr-90), and Tritium (H^3). The uranium isotopes identified include U-234, U-238, and U235/236. Results of these analyses are summarized in Table 8.

3.3.1 Comparison of Spring Results

Analytical results for spring samples collected during the sampling event are presented in Tables 5 through 8. Included on each table are various water quality standards, guidelines, and limits established by EPA, NMED, and DOE. These water quality standards, guidelines, and limits are included on each table to facilitate easy comparison with the analytical results; however, these water quality standards, guidelines, and limits may not apply to the locations sampled and are presented only as comparison data. A summary comparing the analytical results with the EPA, NMED, and DOE water quality standards, guidelines, and limits is included at the beginning of each analytical summary table (Tables 5 through Table 8). A description of the EPA, NMED, and DOE water quality standards, guidelines, and limits used for comparison is included in Appendix D.

Comparison tables comparing analytical results from split samples collected during the field activities are presented in Appendix E. These tables compare the analytical results of split samples collected by NMED and LANL personnel to the EPA results. Analytical results from

split samples collected by the USGS for the San Ildefonso Pueblo were not available for comparison. The tables also include various water quality standards, guidelines, and limits established by EPA, NMED, and DOE.

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4.0 QUALITY ASSURANCE SUMMARY

4.1 Quality Assurance/Quality Control Samples

Data Quality Objectives (DQOs) for this work assignment required that certain quality control (QC) samples be collected during the sampling activities conducted for this work assignment. The types of QC samples collected included field duplicate samples, field blank samples, matrix spike/matrix spike duplicate samples, and trip blanks. Dependent on the location sampled, QC samples were analyzed for VOCs, total metals, dissolved metals, general chemistry, dissolved uranium isotopes, dissolved strontium-90, gross alpha, gross beta, stable nitrogen isotopes, and tritium.

4.1.1 QC Sampling Procedures

Field Duplicate Samples

Two field duplicate samples were collected of groundwater, one in Mortandad Canyon (MCO-5X) and one in Los Alamos Canyon (LAO-2F). These samples were collected concurrently with samples MCO-5 and LAO-2 by alternating the filling sample containers. The sample containers were filled slowly to avoid aeration. These samples were handled in an identical manner as the corresponding sample. The sample containers were placed in a sample cooler which contained ice in order to maintain the samples at approximately 4°C. The samples were secured and stored inside the sample cooler until shipped to the analytical laboratory for analysis. The purpose of the field duplicate samples is to verify laboratory analytical procedures and sampling techniques.

Field Blank Samples

Three field blank samples (LANL-FB-1, LANL-FB-2, and LANL-FB-3) were collected during the sampling operations conducted at the LANL facility. These samples were collected by pouring reagent grade water into appropriate sample containers. The sample containers were filled slowly to avoid aeration. The sample containers were placed in a sample cooler which contained ice in order to maintain the samples at approximately 4°C. The samples were secured and stored inside the sample cooler until shipped to the analytical laboratory for analysis. The purpose of the field blank samples was to check for contamination resulting from ambient conditions.

Matrix Spike/Matrix Spike Duplicate Samples

Three matrix spike/matrix spike duplicate samples were collected during the sampling operations conducted at the LANL facility. These samples were collected by filling one and sometimes two extra sample containers for each analytical parameter. The locations where these samples were

collected were MCO-6, LAO-0.91, and LLAO-5. The sample containers were placed in a sample cooler which contained ice in order to maintain the samples at approximately 4°C. The samples were secured and stored inside the sample cooler until shipped to the analytical laboratory for analysis. These samples were collected to ensure that the laboratory had sufficient volume of sample material to conduct matrix spike and matrix spike duplicate sample analysis for QC purposes.

Trip Blank Samples

All trip blanks were pre-prepared by the analytical laboratory and shipped to the sampling team at the LANL facility. Nine trip blank samples were submitted to the analytical laboratory. One trip blank sample was placed inside each sample cooler shipped to the laboratory which contained sample(s) to be analyzed for VOCs. The purpose of the trip blank samples was to detect the presence of contaminants that may have been introduced to samples during transport and storage.

4.1.2 Deviations from the Field Sampling Plan

Deviations from the Field Sampling Plan occurred during the sampling activities. Following are the specific deviations that occurred.

- Only two field duplicate samples were collected instead of the four samples required because of dry and low yielding groundwater wells and slow recovery rates. The Field Sampling Plan required one field duplicate sample to be collected for every ten samples collected (10%).

- Only three field blank samples were collected instead of the four samples required because of dry and low yielding groundwater wells and slow recovery rates. The Field Sampling Plan required one field blank sample to be collected for every ten samples collected (10%).

- Only three matrix spike/matrix spike duplicate samples were collected instead of the four samples required because of dry and low yielding groundwater wells and slow recovery rates. The Field Sampling Plan required one matrix spike/matrix spike duplicate sample to be collected for every ten samples collected (10%).

4.2 Laboratory and Analytical Methods

The analyses were performed by two laboratories within the Quanterra Laboratory system and by Coastal Science Laboratories, Inc. located in Austin, Texas. The Quanterra laboratories which performed the analyses were Quanterra-St. Louis and Quanterra-Richland.

The following identifies the analyses, analytical methods used, and the corresponding laboratory performing the analyses.

Parameter	Method Number	Laboratory
Chloride	EPA 300.0	Quanterra-St. Louis
Fluoride	EPA 300.0	Quanterra-St. Louis
Sulfate	EPA 300.0	Quanterra-St. Louis
Bicarbonate Alkalinity	EPA 310.1	Quanterra-St. Louis
Metals (Total & Dissolved)	SW-846 6010/7470	Quanterra-St. Louis
Ammonia Nitrogen	EPA 350.1	Quanterra-St. Louis
Nitrate/Nitrite Nitrogen	EPA 353.1	Quanterra-St. Louis
Total Kjedahl Nitrogen	EPA 351.2	Quanterra-St. Louis
Total Phosphorous	EPA 365.1	Quanterra-St. Louis
Total Dissolved Solids	EPA 160.1	Quanterra-St. Louis
Total Suspended Solids	EPA 160.2	Quanterra-St. Louis
Volatile Organic Compounds	SW-846 8260	Quanterra-St. Louis
Gross Alpha/Beta	EPA 9310	Quanterra-St. Louis
Isotopic Uranium	NAS-NS-3050	Quanterra-St. Louis
Strontium-90	STD Method	Quanterra-St. Louis
Tritium	Liquid Scintillation	Quanterra-Richland
Stable Nitrogen Isotopes	Reaction-Distillation	Coastal Laboratories

4.3 Data Validation

Analytical data received by TechLaw has been transferred to EPA Region 6 for validation. The analytical data reported in this report has not been validated and should be treated as preliminary data.

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5.0 CONCLUSIONS

5.1 Sampling Activities

TechLaw sampled effluent, groundwater wells, and springs located in Mortandad Canyon, Los Alamos Canyon, DP Canyon, Pueblo Canyon, and on San Ildefonso Pueblo land from August 19 to September 9, 1998. NMED and LANL personnel collected split samples at various sample locations during the field activities.

During the sampling event, LANL provided equipment and personnel necessary for obtaining samples of effluent, groundwater, and springs. Equipment included electronic water level indicators, pumps, pump controllers, electrical battery, compressed gas, instruments used to measure field parameters, and filter material. Malfunctions in the equipment used to measure field parameters caused the sampling team to be unable to measure all of the field parameters used to ensure that stagnet water within the well casing was purged prior to sampling. In addition, the LANL field team measured the depth to groundwater in each well using an electronic water level indicator. The LANL team measured the depth of groundwater to the top of the well casing and sometimes to the top of the steel protective outer casing. LANL field personnel should ensure that the water level for each well is measured to the appropriate surveyed point for each well and that the surveyed point is well marked. This will ensure that accurate groundwater elevations and groundwater gradients are calculated. In general, sampling activities conformed with accepted sampling procedures.

5.2 Analytical Results

Analytical results are presented in Table 5 through Table 8. Comparison tables comparing analytical results from split samples collected during the field activities are presented in Appendix E. These tables compare the analytical results of split samples collected by NMED and LANL personnel to the EPA results. The tables also include various water quality standards, guidelines, and limits established by EPA, NMED, and DOE. A description of the EPA, NMED, and DOE water quality standards, guidelines, and limits used for comparison is included in Appendix D.

5.2.1 Effluent Samples

Analytical results from effluent samples collected at the TA-50 Radioactive Wastewater Treatment Plant indicate the effluent exceeded DOE Derived Concentration Guides (DOE DCGs) for Americium-241, Plutonium-238, and Plutonium-239/240. DOE DCGs are established in DOE Order 5400.5. In addition, total mercury and gross alpha results for effluent

samples collected at the TA-50 plant as well as the gauging station downstream from the plant exceeded the New Mexico Standards for Interstate and Intrastate Streams limits for Wildlife Habitat.

5.2.2 Groundwater Samples

Analytical results from groundwater samples collected during the sampling event were compared to various water quality standards, guidelines, and limits established by EPA, NMED, and DOE. Trends in the groundwater quality within Mortandad Canyon, Los Alamos Canyon, and DP Canyon were identified and are discussed below.

- Elevated nitrate/nitrite nitrogen concentrations (37,800 μg/L to 6,720 μg/L) within the alluvial aquifer of Mortandad Canyon were identified. These elevated concentrations are attributable to the past and present effluent discharges from the TA-50 Radioactive Wastewater Treatment Plant. Analytical results from effluent samples collected from the TA-50 plant also exhibited elevated concentrations (17,700 μg/L to 14, 900 μg/L) of nitrate/nitrite nitrogen.

- Elevated total iron concentrations within the alluvial aquifer of Los Alamos Canyon and DP Canyon were identified; however, elevated iron concentrations were not identified in the samples which were filtered. The source of the elevated total iron concentrations may be attributed to the mineral composition of the alluvial sediments and bedrock contained within these canyons.

- Elevated gross alpha concentrations (19.7 pCi/L to 1.02 pCi/L) within the alluvial aquifer of Mortandad Canyon were identified. These elevated concentrations are attributable to the past and present effluent discharges from the TA-50 Radioactive Wastewater Treatment Plant. Analytical results from effluent samples collected from the TA-50 plant also exhibited elevated concentrations (133 pCi/L to 31.9 pCi/L) of gross alpha.

- Elevated gross beta concentrations (148 pCi/L to 5.36 pCi/L) within the alluvial aquifer of Mortandad Canyon were identified. These elevated concentrations are attributable to the past and present effluent discharges from the TA-50 Radioactive Wastewater Treatment Plant. Analytical results from effluent samples collected from the TA-50 plant also exhibited elevated concentrations (141 pCi/L to 48.9 pCi/L) of gross beta.

- Elevated gross beta concentrations (175 pCi/L to 80.4 pCi/L) within the alluvial aquifer of DP Canyon and at monitoring well LAO-3A located near the confluence of DP Canyon and Los Alamos Canyon were identified. The potential source of the gross beta

concentrations are attributable to past discharges from TA-21. Elevated concentrations of gross beta were also detected in DP Spring which is discussed in Section 5.2.3.

- Elevated strontium-90 concentrations (45.7 pCi/L to 15.2 pCi/L) within the alluvial aquifer of DP Canyon and at monitoring well LAO-3A located near the confluence of DP Canyon and Los Alamos Canyon were identified. The potential source of the strontium-90 concentrations are attributable to past discharges from TA-21. Elevated concentrations of gross beta were also detected in DP Spring which is discussed in Section 5.2.3.

In addition to the trends identified above, analytical results from samples collected in Pueblo Canyon suggest communication between the surface and the groundwater within the intermediate aquifer in Pueblo Canyon. Concentration patterns of constituents within effluent discharged from the Bayo Canyon Sanitary Wastewater Treatment Plant are similar to concentration patterns within groundwater collected from monitoring wells APCO-1 and TW-2A.

Test wells TW-1, TW-2A, TW-3, and TW-4 sampled during the sampling event were installed between 1949 and 1950. Analytical results from these test wells indicated high concentrations of total iron. In addition, analytical results from test wells TW-1, TW-2A, and TW-4 also indicated elevated levels of lead and manganese. Because of the age of the test wells and the likely construction materials used in the wells, the elevated concentrations of total iron, lead, and manganese may be due to the deterioration of the wells and/or pumps within the wells.

5.2.3 Spring Samples

Analytical results from spring samples collected from DP Spring revealed elevated levels of gross beta (112 pCi/L) and strontium-90 (40.7 pCi/L), which is similar to the analytical results from LAUZ-1 and LAUZ-2 located upgradient from DP Spring. This correlation between the groundwater results from DP Spring and LAUZ-1 and LAUZ-2 is expected since DP Spring is located downgradient from the LAUZ wells, and springs occur where the groundwater intersects the surface.

Isotopic uranium results from La Mestita Spring located on the east side of the Rio Grande River were slightly elevated above analytical results from the other spring samples collected during the sampling event. NMED reports that these slightly elevated concentrations are likely due to isolated variances in the local lithology on the east side of the Rio Grande River and are not the result of operations conducted at LANL.

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6.0 RECOMMENDATIONS

In general, the alluvial groundwater in Mortandad Canyon exceeded the EPA Drinking Water Maximum Contaminant Levels (MCLs) for Gross Alpha (15 pCi/L), Strontium-90 (8 pCi/L), and Nitrates (10mg/L). In general, no chemical contamination was found. The major source of the contamination is the TA-50 Radioactive Wastewater Treatment Plant. It should be noted that this groundwater is not being used for drinking water and therefore no exposure under this route is occurring. Although there is no drinking water exposure, there is a concern that the alluvial aquifer contamination is being transported downward to the main aquifer. The main aquifer well (TW-8) sampled in Mortandad Canyon had no radionuclide or chemical contamination above EPA Drinking Water MCLs.

The alluvial groundwater monitoring wells and springs in DP and upper (near the confluence of DP and Los Alalmos Canyons) Los Alamos Canyon in general had radionuclides exceeding the EPA Drinking Water MCLs for Strontium-90 (8 pCi/L). In general, no chemical contamination was found. The major source of the contamination came from TA-21 operations. Currently, the groundwater and DP spring are not being used for drinking water and no exposure under this route is occurring. However, there is a concern that the alluvial aquifer contamination could be transported downward to the main aquifer. The main aquifer wells, TW-1, TW-3, and TW-4 did not have radionuclide contamination above EPA Drinking Water MCLs.

The springs and groundwater monitoring well sampled on San Ildefonso Pueblo land had no radionuclide or chemical contamination above EPA Drinking Water MCLs.

In summary, three of the Canyons sampled (DP, Mortandad, and Los Alamos) had groundwater exceeding EPA's Drinking Water MCLs for radionuclides and/or nitrates. All contamination detected within these canyons was within facility boundary of LANL, and no offsite contamination was detected. None of the contaminated aquifers are currently being used as a drinking water source.

The following are EPA recommendations pertaining to the investigation of the Canyons conducted at LANL from August 19 to September 9, 1998:

- DOE should initiate the treatment modifications (ultra filtration and reverse osmosis) and minimization of tritium waste to the TA-50 Wastewater Treatment Plant as expeditiously as possible. At a minimum, DOE should ensure that the operation of the wastewater treatment plant meets the DOE effluent release limits for radionuclides (DOE Derived Concentration Guides); and

- Need for additional characterization (lateral and vertical) and groundwater monitoring of the intermediate and deep aquifers in Mortandad, Los Alamos, and Pueblo Canyons to understand the flow regime and any connection between any intermediate aquifers/saturated zones and the main drinking water aquifer. Of the three Canyons, special priority should be placed on Mortandad, since there are continuing effluent releases and there are unanswered questions about the vertical and lateral flow of the aquifers in this canyon.

7.0 REFERENCES

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TABLES

TABLE 1: Participants

Representative/Associated Agency	Name
U.S. Environmental Protection Agency, Region 6	Rich Mayer, Work Assignment Manager
	Kim Hill
	Allen Chang
Los Alamos National Laboratory	Steve Rae
	Bruce Gallaher
	Ken Mullen
	Max Maes
	Randy Lujan
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	Pat Longmire
New Mexico Environment Department	Steve Yanicak, Oversight Bureau
	Michael Dale, Oversight Bureau
	Chris Hanlon-Meyer, Oversight Bureau
	John Young, Hazardous Radioactive Materials Bureau
U.S. Department of Energy	Bonnie Koch
San Ildefonso Pueblo Department of Environmental and Cultural Preservation	Dave Sarracino, Pueblo representative
	Naomi Archuleta, Pueblo water quality
	Noah Kaniatobe, Pueblo GIS tech
U.S. Geological Survey	Cindy Abeyta
	Bob McBree
TechLaw, Inc.	Bret Kendrick
	Christa Morrow
	Wally O'Rear
Morrison - Knudeson, Inc.	Andy Crowder
	Jenny Harris

TABLE 2: Well Location and Time Sampled

Well No.	Location	Aquifer Monitored	Date Sampled	Time Sampled (hours)
MCO-2	Mortandad Canyon	Alluvial Aquifer	8/19/98	1430
MCO-3	Mortandad Canyon	Alluvial Aquifer	8/20/98	0930
MCO-4B	Mortandad Canyon	Alluvial Aquifer	8/20/98	1233
MCO-5	Mortandad Canyon	Alluvial Aquifer	8/20/98	1447
MCO-6	Mortandad Canyon	Alluvial Aquifer	8/21/98	0945
MCO-7	Mortandad Canyon	Alluvial Aquifer	8/21/98	1214
MCO-7.5B	Mortandad Canyon	Alluvial Aquifer	8/25/98	1010
MCWB-6.5E	Mortandad Canyon	Alluvial Aquifer	8/24/98	1048
MCWB-7.7B	Mortandad Canyon	Alluvial Aquifer	8/26/98	1315
MT-3	Mortandad Canyon	Alluvial Aquifer	8/27/98	1342
MT-4	Mortandad Canyon	Alluvial Aquifer	8/26/98	1014
LAO-B	Los Alamos Canyon	Alluvial Aquifer	8/31/98	1100
LAO-0.3	Los Alamos Canyon	Alluvial Aquifer	9/1/98	1430
LAO-0.6	Los Alamos Canyon	Alluvial Aquifer	8/31/98	1330
LAO-0.91	Los Alamos Canyon	Alluvial Aquifer	9/3/98	1300
LAO-1.2	Los Alamos Canyon	Alluvial Aquifer	8/31/98	1155
LAO-1.6g	Los Alamos Canyon	Alluvial Aquifer	9/1/98	1000
LAO-2	Los Alamos Canyon	Alluvial Aquifer	8/31/98	1611
LAO-3A	Los Alamos Canyon	Alluvial Aquifer	8/31/98	1434
LAO-4.5C	Los Alamos Canyon	Alluvial Aquifer	8/31/98	1106
LAO-5	Los Alamos Canyon	Alluvial Aquifer	8/31/98	0943
LAUZ-1	DP Canyon	Alluvial Aquifer	9/4/98	1018
LAUZ-2	DP Canyon	Alluvial Aquifer	9/4/98	1207
APCO-1	Pueblo Canyon	Alluvial Aquifer	9/3/98	0940
POI-4	Pueblo Canyon	Intermediate Aquifer	9/2/98	1600
TW-1	Pueblo Canyon	Main Aquifer	9/1/98	0949
TW-2A	Pueblo Canyon	Intermediate Aquifer	9/1/98	1051
TW-3	Los Alamos Canyon	Main Aquifer	9/1/98	1350
TW-4	Pueblo Canyon	Main Aquifer	9/1/98	0832
TW-8	Mortandad Canyon	Main Aquifer	9/2/98	1556
LLAO-5	Los Alamos Canyon	Alluvial Aquifer	9/8/98	1400

TABLE 3: Summary of Well Information

Well No	Location	Date Sampled	Water Level (feet)	Total Well Depth (feet)	Calculated Purge Volume (gallons)	Volume Purged (gallons)	Purge/Sample Method	Comments
MCO-2	Mortandad Canyon	8/19/98	6.42	9.25	1.38	1.5	Peristaltic Pump	None
MCO-3	Mortandad Canyon	8/20/98	5.55	10.83	5.81	6.0	Peristaltic Pump	None
MCO-4B	Mortandad Canyon	8/20/98	22.15	33.90	5.74	6.0	Dedicated Bladder Pump	None
MCO-5	Mortandad Canyon	8/20/98	24.62	46.00	23.53	23.5	Dedicated Bladder Pump	None
MCO-6	Mortandad Canyon	8/21/98	39.92	47.00	13.86	14.0	Dedicated Bladder Pump	None
MCO-7	Mortandad Canyon	8/21/98	41.29	69.00	30.50	14.0	Dedicated Bladder Pump	Sampled after first well volume purged and parameters stable.
MCO-7A	Mortandad Canyon	8/21/98	44.02	44.80	NC	0.0	Dedicated Bladder Pump	Not sampled - well was dry
MCO-7.5B	Mortandad Canyon	8/25/98	46.85	60.00	25.76	10.0	Dedicated Bladder Pump	Sampled after first well volume purged and parameters stable.
MCWB-6.5C	Montandad Conyon	8/24/98	44.53	49.70	5.69	0.0	Dedicated Bladder Pump	Not sampled - water below screened interval.
MCWB-6.5E	Mortandad Canyon	8/24/98	45.00	53.00	15.67	16.0	Dedicated Bladder Pump	None
MCWB-7B	Mortandad Canyon	8/25/98	43.00	47.50	4.95	0.0	Dedicated Bladder Pump	Not sampled - water reportedly below pump intake
MCWB-7A	Mortandad Canyon	8/24/98	42.67	54.20	12.69	6.5	Dedicated Bladder Pump	Not sampled - well recovery slow and water very turbid.
MCWB-7.7B	Mortandad Canyon	8/26/98	60.47	70.00	10.49	10.5	Dedicated Bladder Pump	None
MT-2	Mortandad Canyon	8/26/98	66.35	66.35	0.00	0.0	Dedicated Bladder Pump	Not sampled - well was dry.
MT-3	Mortandad Canyon	8/27/98	47.28	74.00	13.06	9.0	Dedicated Bladder Pump	Replaced bladder pump prior to purging and sampling. Sampled after two well volumes purged and parameters stable.

TABLE 3 (continued)

Well No	Location	Date Sampled	Water Level (feet)	Total Well Depth (feet)	Calculated Purge Volume (gallons)	Volume Purged (gallons)	Purge/Sample Method	Comments
MT-4	Mortandad Canyon	8/26/98	60.16	75.34	7.42	7.5	Dedicated Bladder Pump	None
LAO-B	Los Alamos Canyon	8/31/98	8.78	29.51	40.61	41.0	Dedicated Bladder Pump	None
LAO-0.3	Los Alamos Canyon	9/1/98	8.57	13.35	9.36	12.0	Dedicated Bladder Pump	None
LAO-0.6	Los Alamos Canyon	8/31/98	7.25	15.91	16.96	20.0	Dedicated Bladder Pump	None
LAO-0.91	Los Alamos Canyon	9/3/98	10.31	18.48	16.00	16.0	Peristaltic Pump	None
LAO-1.2	Los Alamos Canyon	8/31/98	9.16	29.5	22.39	34.3	Peristaltic Pump	None
LAO-1.6g	Los Alamos Canyon	9/1/98	14.17	33.62	38.10	40.0	Dedicated Bladder Pump	None
LAO-2	Los Alamos Canyon	8/31/98	15.45	32.00	18.22	18.5	Dedicated Bladder Pump	None
LAO-3A	Los Alamos Canyon	8/31/98	8.37	14.20	2.85	3.0	Dedicated Bladder Pump	None
LAO-4.5C	Los Alamos Canyon	8/31/98	12.66	23.30	5.20	5.5	Dedicated Bladder Pump	None
LAO-5	Los Alamos Canyon	8/31/98	12.60	23.30	20.96	11.0	Peristaltic Pump	Sampled after 1.5 well volumes purged and parameters stable.
LAO-6	Los Alamos Canyon	8/31/98	15.22	16.00	0.86	0.0	Dedicated Bladder Pump	Not sampled - water level below pump intake.
LAO-6A	Los Alamos Canyon	8/31/98	14.20	14.20	0.00	0.0	Dedicated Bladder Pump	Not sampled - well was dry.
LAUZ-1	DP Canyon	9/4/98	5.62	12.95	14.35	15.0	Peristaltic Pump	None
LAUZ-2	DP Canyon	9/4/98	6.11	12.82	13.14	14.0	Peristaltic Pump	None
LLAO-2	Los Alamos Canyon	9/9/98	26.80	32.21	10.59	4.0	Impeller Pump	Not sampled due to slow recharge.
LLAO-5	Los Alamos Canyon	9/8/98	14.32	23.77	18.51	23.0	Impeller Pump	None
APCO-1	Pueblo Canyon	9/3/98	6.50	19.70	6.45	7.0	Dedicated Bladder Pump	None

TABLE 3 (continued)

Well No	Location	Date Sampled	Water Level (feet)	Total Well Depth (feet)	Calculated Purge Volume (gallons)	Volume Purged (gallons)	Purge/Sample Method	Comments
POI-4	Pueblo Canyon	9/2/98	161.61	179.00	34.06	20.0	Dedicated Bladder Pump	Sampled after approx. 2 well volumes purged and parameters stable.
TW-1	Pueblo Canyon	9/1/98	548	642	736.30	1386.0	Dedicated Pump	Well was purged overnight.
TW-1A	Pueblo Canyon	9/1/98	NA	225	NC	NA	Dedicated Pump	Not sampled - not enough water volume.
TW-2	Pueblo Canyon	9/1/98	NA	834	NC	0.0	Dedicated Pump	Not sampled - pump not working.
TW-2A	Pueblo Canyon	9/1/98	113	133	156.66	Unknown	Dedicated Pump	Well went dry during purging.
TW-3	Los Alamos Canyon	9/1/98	780	815	428.40	1741	Dedicated Pump	Well was purged overnight.
TW-4	Pueblo Canyon	9/1/98	1176	1205	127.80	430.5	Dedicated Pump	Well was purged overnight.
TW-8	Mortandad Canyon	9/2/98	993	1065	563.97	1065	Dedicated Pump	Well was purged continuously for 7 hours and 6 minutes at 1 liter every 6 seconds.

NA Information not available
NC Not Calculated

TABLE 4: Field Parameter Measurements

Well No.	Location	Water Quality Parameter				
		pH[a]	Temperature[b]	Dissolved Oxygen[c]	Specific Conductivity[d]	Turbidity[e]
MCO-2	Mortandad Canyon	6.20	13.5	NA	0.32	75.2
MCO-3	Mortandad Canyon	7.13	14.7	NA	0.83	0.76
MCO-4B	Mortandad Canyon	7.10	8.5	NA	0.47	1.92
MCO-5	Mortandad Canyon	6.96	10.7	NA	0.50	5.94
MCO-6	Mortandad Canyon	7.02	9.4	NA	0.53	11.5
MCO-7	Mortandad Canyon	6.91	10.5	NA	0.52	18.5
MCO-7.5B	Mortandad Canyon	6.90	10.8	NA	0.49	3.05
MCWB-6.5E	Mortandad Canyon	6.61	9.9	NA	0.43	3.38
MCWB-7.7B	Mortandad Canyon	6.87	11.8	NA	Err	3.48
MT-3	Mortandad Canyon	7.06	15.9	NA	Err	7.27
MT-4	Mortandad Canyon	6.95	17.5	NA	Err	1.70
LAO-B	Los Alamos Canyon	6.26	10.2	13.23	0.115	Err
LAO-0.3	Los Alamos Canyon	6.48	16.0	11.62	0.260	Err
LAO-0.6	Los Alamos Canyon	6.54	15.1	12.69	0.340	Err
LAO-0.91	Los Alamos Canyon	6.83	17.8	12.53	0.233	Err
LAO-1.2	Los Alamos Canyon	6.41	10.4	NA	0.26	12.7
LAO-1.6g	Los Alamos Canyon	6.44	11.0	12.97	0.228	Err
LAO-2	Los Alamos Canyon	6.24	14.0	NA	Err	7.34
LAO-3A	Los Alamos Canyon	6.65	13.6	NA	Err	5.18
LAO-4.5C	Los Alamos Canyon	6.56	11.6	NA	0.27	4.40
LAO-5	Los Alamos Canyon	6.70	12.2	NA	0.25	22.3
LAUZ-1	DP Canyon	7.08	18.0	13.05	0.264	Err
LAUZ-2	DP Canyon	NR	NR	NR	NR	Err
APCO-1	Pueblo Canyon	6.99	17.3	NA	0.50	3.57
POI-4	Pueblo Canyon	7.96	13.4	14.55	0.433	Err
TW-1	Pueblo Canyon	7.74	13.6	NA	Err	6.56
TW-2A	Pueblo Canyon	6.88	14.8	NA	Err	3.79
TW-3	Los Alamos Canyon	7.60	21.2	NA	Err	1.71

TABLE 4 (continued)

Well No.	Location	Water Quality Parameter				
		pH[a]	Temperature[b]	Dissolved Oxygen[c]	Specific Conductivity[d]	Turbidity[e]
TW-4	Pueblo Canyon	7.66	16.1	NA	Err	7.33
TW-8	Mortandad Canyon	7.69	20.9	NA	Err	1.77
LLAO-5	Los Alamos Canyon	6.53	17.4	15.72	0.582	Err

a pH measured in standard units.
b Temperature measured in degrees Celcius (°C).
c Dissolved oxygen measured in milligrams per liter (mg/ℓ)
d Specific conductivity measured in milli-Seimens per centimeter (mS/cm).
e Turbidity measured in national turbidity units (NTUs)
NA Not available due to instrument limitations.
Err Parameter not measured due to an equipment error.
NR Not recorded

Table 5 Summary: Summary of Volatile Organic Results

I. Introduction

Samples were collected and analyzed for volatile organic compounds (VOCs) according to SW846, Method 8260. Water quality standards set by the U.S. Environmental Protection Agency (EPA) and the State of New Mexico are included on each of the tables for easy comparison and reference. EPA guidelines included for reference and comparison include the EPA Maximum Contaminant Levels (EPA MCL) for organic chemicals in the water supply and the EPA Region 6 Human Health Medium-Specific Screening Levels (EPA SL) for organic chemicals in tap water. State guidelines included for reference and comparison include the New Mexico Maximum Contaminant Levels (NM MCL) for organic chemicals in community and non-transient, non-community water systems and the New Mexico Water Quality Control Commission (NM WQCC) standards for groundwater of less than 10,000 mg/ℓ total dissolved solids (TDS) concentration or less. All concentrations are reported in micrograms per liter (μg/ℓ). These data have not been validated and should be considered as preliminary. Sample results that exceeded any of the referenced water quality standards are noted below.

II. Results

Water quality standards were exceeded by the following sample results:

<u>EPA MCL</u>

None

<u>EPA SL</u>

MT-3 (methylene chloride)

<u>NM MCL</u>

None

<u>NM WQCC</u>

None

TABLE 5: Summary of Volatile Organic Results*

Compound	Sample Location, Result, and Date Collected								
	Reference				Montandad Canyon				
	EPA MCL[a]	EPA SL[b]	NM MCL[c]	NM WQCC[d]	TA-50 (8/19/98)	TA-502A (8/28/98)	TA-502B (8/28/98)	MCO-2 (8/19/98)	MCO-3 (8/20/98)
Acetone	--	610	--	--	18 JB	49 B	29 B	<20	21 B
Benzene	5	0.39	5	10	<5	<5	<5	<5	<5
Bromodichloromethane	--	0.18	--	--	<5	<5	<5	<5	<5
Bromoform	--	8.5	--	--	<5	<5	<5	<5	<5
Bromomethane	--	8.7	--	--	<10	<10	<10	<10	<10
2-Butanone	--	1900	--	--	<20	<20	<20	<20	<20
Carbon Disulfide	--	1000	--	--	<5	<5	<5	<5	<5
Carbon Tetrachloride	5	0.17	5	10	<5	<5	<5	<5	<5
Chlorobenzene	--	39	--	--	<5	<5	<5	<5	<5
Chlorodibromomethane	--	0.8	--	--	<5	<5	<5	<5	<5
Chloroethane	--	--	--	--	<10	<10	<10	<10	<10
Chloroform	--	0.16	--	100	<5	<5	<5	<5	<5
Chloromethane	--	1.5	--	--	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	--	0.081	--	--	<5	<5	<5	<5	<5
1,1-Dichloroethane	--	810	--	25	<5	<5	<5	<5	<5
1,2-Dichloroethane	5	0.12	5	10	<5	<5	<5	<5	<5
1,1-Dichloroethene	7	0.46	7	5	<5	<5	<5	<5	<5
1,2-Dichloroethene	--	61	70	--	<5	<5	<5	<5	<5
1,2-Dichloropropane	5	0.16	5	--	<5	<5	<5	<5	<5
Ethylbenzene	700	1300	700	750	<5	<5	<5	<5	<5
2-Hexanone	--	--	--	--	<20	<20	<20	<20	<20
4-Methyl-2-pentanone	--	160	--	--	<20	<20	<20	<20	<20
Methylene Chloride	--	4.3	--	100	3 JB	2 J	<5	2 JB	<5
Styrene	100	1600	100	--	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	--	0.55	--	10	<5	<5	<5	<5	<5
Tetrachloroethene	5	1.1	5	--	<5	<5	<5	<5	<5

TABLE 5 (continued)

Compound	Sample Location, Result, and Date Collected								
	Reference				Montandad Canyon				
	EPA MCL[a]	EPA SL[b]	NM MCL[c]	NM WQCC[d]	TA-50 (8/19/98)	TA-502A (8/28/98)	TA-502B (8/28/98)	MCO-2 (8/19/98)	MCO-3 (8/20/98)
trans-1,3-Dichloropropene	--	0.081	--	--	<5	<5	<5	<5	<5
Toluene	1000	720	1000	750	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	200	790	200	60	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5	0.2	5	10	<5	<5	<5	<5	<5
Trichloroethene	5	1.6	5	100	<5	<5	<5	<5	<5
Vinyl Chloride	2	0.02	2	1	<10	<10	<10	<10	<10
Xylenes (total)	10000	1400	10000	620	<5	<5	<5	<5	<5

TABLE 5 (continued)

Compound	Sample Location and Date Collected							
	Reference				Montandad Canyon			
	EPA MCL	EPA SL	NM MCL	NM WQCC	MCO-4B (8/20/98)	MCO-5 (8/20/98)	MCO-5X (8/20/98)	MCO-6 (8/21/98)
Acetone	--	610	--	--	12 JB	<20	<20	<20
Benzene	5	0.39	5	10	<5	<5	<5	<5
Bromodichloromethane	--	0.18	--	--	<5	<5	<5	<5
Bromoform	--	8.5	--	--	<5	<5	<5	<5
Bromomethane	--	8.7	--	--	<10	<10	<10	<10
2-Butanone	--	1900	--	--	<20	<20	<20	<20
Carbon Disulfide	--	1000	--	--	<5	<5	<5	<5
Carbon Tetrachloride	5	0.17	5	10	<5	<5	<5	<5
Chlorobenzene	--	39	--	--	<5	<5	<5	<5
Chlorodibromomethane	--	0.8	--	--	<5	<5	<5	<5
Chloroethane	--	--	--	--	<10	<10	<10	<10
Chloroform	--	0.16	--	100	<5	<5	<5	<5
Chloromethane	--	1.5	--	--	<10	<10	<10	<10
cis-1,3-Dichloropropene	--	0.081	--	--	<5	<5	<5	<5
1,1-Dichloroethane	--	810	--	25	<5	<5	<5	<5
1,2-Dichloroethane	5	0.12	5	10	<5	<5	<5	<5
1,1-Dichloroethene	7	0.46	7	5	<5	<5	<5	<5
1,2-Dichloroethene	--	61	70	--	<5	<5	<5	<5
1,2-Dichloropropane	5	0.16	5	--	<5	<5	<5	<5
Ethylbenzene	700	1300	700	750	<5	<5	<5	<5
2-Hexanone	--	--	--	--	<20	<20	<20	<20
4-Methyl-2-pentanone	--	160	--	--	<20	<20	<20	<20
Methylene Chloride	--	4.3	--	100	<5	<5	<5	<5
Styrene	100	1600	100	--	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	--	0.55	--	10	<5	<5	<5	<5

TABLE 5 (continued)

Compound	Sample Location and Date Collected							
	Reference				Montandad Canyon			
	EPA MCL	EPA SL	NM MCL	NM WQCC	MCO-4B (8/20/98)	MCO-5 (8/20/98)	MCO-5X (8/20/98)	MCO-6 (8/21/98)
Tetrachloroethene	5	1.1	5	--	<5	<5	<5	<5
trans-1,3-Dichloropropene	--	0.081	--	--	<5	<5	<5	<5
Toluene	1000	720	1000	750	<5	<5	<5	<5
1,1,1-Trichloroethane	200	790	200	60	<5	<5	<5	<5
1,1,2-Trichloroethane	5	0.2	5	10	<5	<5	<5	<5
Trichloroethene	5	1.6	5	100	<5	<5	<5	<5
Vinyl Chloride	2	0.02	2	1	<10	<10	<10	<10
Xylenes (total)	10000	1400	10000	620	<5	<5	<5	<5

TABLE 5 (continued)

Compound	Sample Location and Date Collected							
	Reference				Montandad Canyon			
	EPA MCL	EPA SL	NM MCL	NM WQCC	MCO-7 (8/21/98)	MCO-7.5B (8/25/98)	MCWB-6.5E (8/24/98)	MCWB-7.7B (8/26/98)
Acetone	--	610	--	--	8 JB	10 JB	<20	<20
Benzene	5	0.39	5	10	<5	<5	<5	<5
Bromodichloromethane	--	0.18	--	--	<5	<5	<5	<5
Bromoform	--	8.5	--	--	<5	<5	<5	<5
Bromomethane	--	8.7	--	--	<10	<10	<10	<10
2-Butanone	--	1900	--	--	<20	<20	<20	<20
Carbon Disulfide	--	1000	--	--	<5	<5	<5	<5
Carbon Tetrachloride	5	0.17	5	10	<5	<5	<5	<5
Chlorobenzene	--	39	--	--	<5	<5	<5	<5
Chlorodibromomethane	--	0.8	--	--	<5	<5	<5	<5
Chloroethane	--	--	--	--	<10	<10	<10	<10
Chloroform	--	0.16	--	100	<5	<5	<5	<5
Chloromethane	--	1.5	--	--	<10	<10	<10	<10
cis-1,3-Dichloropropene	--	0.081	--	--	<5	<5	<5	<5
1,1-Dichloroethane	--	810	--	25	<5	<5	<5	<5
1,2-Dichloroethane	5	0.12	5	10	<5	<5	<5	<5
1,1-Dichloroethene	7	0.46	7	5	<5	<5	<5	<5
1,2-Dichloroethene	--	61	70	--	<5	<5	<5	<5
1,2-Dichloropropane	5	0.16	5	--	<5	<5	<5	<5
Ethylbenzene	700	1300	700	750	<5	<5	<5	<5
2-Hexanone	--	--	--	--	<20	<20	<20	<20
4-Methyl-2-pentanone	--	160	--	--	<20	<20	<20	<20
Methylene Chloride	--	4.3	--	100	<5	2 J	<5	<5
Styrene	100	1600	100	--	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	--	0.55	--	10	<5	<5	<5	<5

TABLE 5 (continued)

Compound	Sample Location and Date Collected							
	Reference				Montandad Canyon			
	EPA MCL	EPA SL	NM MCL	NM WQCC	MCO-7 (8/21/98)	MCO-7.5B (8/25/98)	MCWB-6.5E (8/24/98)	MCWB-7.7B (8/26/98)
Tetrachloroethene	5	1.1	5	--	<5	<5	<5	<5
trans-1,3-Dichloropropene	--	0.081	--	--	<5	<5	<5	<5
Toluene	1000	720	1000	750	<5	<5	<5	<5
1,1,1-Trichloroethane	200	790	200	60	<5	<5	<5	<5
1,1,2-Trichloroethane	5	0.2	5	10	<5	<5	<5	<5
Trichloroethene	5	1.6	5	100	<5	<5	<5	<5
Vinyl Chloride	2	0.02	2	1	<10	<10	<10	<10
Xylenes (total)	10000	1400	10000	620	<5	<5	<5	<5

TABLE 5 (continued)

Compound	Sample Location and Date Collected							
	Reference				Montandad Canyon		DP Canyon	
	EPA MCL	EPA SL	NM MCL	NM WQCC	MT-3 (8/27/98)	MT-4 (8/26/98)	LAUZ-1 (9/04/98)	LAUZ-2 (9/04/98)
Acetone	--	610	--	--	15 JB	<20	<20	<20
Benzene	5	0.39	5	10	<5	<5	<5	<5
Bromodichloromethane	--	0.18	--	--	<5	<5	<5	<5
Bromoform	--	8.5	--	--	<5	<5	<5	<5
Bromomethane	--	8.7	--	--	<10	<10	<10	<10
2-Butanone	--	1900	--	--	<20	<20	<20	<20
Carbon Disulfide	--	1000	--	--	<5	<5	<5	<5
Carbon Tetrachloride	5	0.17	5	10	<5	<5	<5	<5
Chlorobenzene	--	39	--	--	<5	<5	<5	<5
Chlorodibromomethane	--	0.8	--	--	<5	<5	<5	<5
Chloroethane	--	--	--	--	<10	<10	<10	<10
Chloroform	--	0.16	--	100	<5	<5	<5	<5
Chloromethane	--	1.5	--	--	<10	<10	<10	<10
cis-1,3-Dichloropropene	--	0.081	--	--	<5	<5	<5	<5
1,1-Dichloroethane	--	810	--	25	<5	<5	<5	<5
1,2-Dichloroethane	5	0.12	5	10	<5	<5	<5	<5
1,1-Dichloroethene	7	0.46	7	5	<5	<5	<5	<5
1,2-Dichloroethene	--	61	70	--	<5	<5	<5	<5
1,2-Dichloropropane	5	0.16	5	--	<5	<5	<5	<5
Ethylbenzene	700	1300	700	750	<5	<5	<5	<5
2-Hexanone	--	--	--	--	<20	<20	<20	<20
4-Methyl-2-pentanone	--	160	--	--	<20	<20	<20	<20
Methylene Chloride	--	4.3	--	100	**6 B**	2 JB	<5	2 JB
Styrene	100	1600	100	--	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	--	0.55	--	10	<5	<5	<5	<5

TABLE 5 (continued)

Compound	Sample Location and Date Collected							
	Reference				Montandad Canyon		DP Canyon	
	EPA MCL	EPA SL	NM MCL	NM WQCC	MT-3 (8/27/98)	MT-4 (8/26/98)	LAUZ-1 (9/04/98)	LAUZ-2 (9/04/98)
Tetrachloroethene	5	1.1	5	--	<5	<5	<5	<5
trans-1,3-Dichloropropene	--	0.081	--	--	<5	<5	<5	<5
Toluene	1000	720	1000	750	<5	<5	<5	<5
1,1,1-Trichloroethane	200	790	200	60	<5	<5	<5	<5
1,1,2-Trichloroethane	5	0.2	5	10	<5	<5	<5	<5
Trichloroethene	5	1.6	5	100	<5	<5	<5	<5
Vinyl Chloride	2	0.02	2	1	<10	<10	<10	<10
Xylenes (total)	10000	1400	10000	620	<5	<5	<5	<5

* All results are reported in micrograms per liter ($\mu g/\ell$).

a EPA Maximum Contaminant Levels for organic chemicals in the water supply.

b EPA Region 6 Human Health Medium-Specific Screening Levels for organic chemicals in tap water.

c New Mexico Maximum Contaminant Levels for organic chemicals in community and nontransient, non-community water systems.

d New Mexico Water Quality Control Commission standards for groundwater of less than 10,000 mg/ℓ total dissolved solids (TDS) concentration or less.

TABLE 5 (continued)

Compound	Quality Control Sample Results				
	Sample Number				
	TP-01	TB#2	TB#3	TB#4	TRP-5
Acetone	52	21 B	13 JB	<20	<20
Benzene	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5
Bromomethane	<10	<10	<10	<10	<10
2-Butanone	32	<20	<20	<20	<20
Carbon Disulfide	<5	<5	<5	<5	<5
Carbon Tetrachloride	<5	<5	<5	<5	<5
Chlorobenzene	1 J	<5	<5	<5	<5
Chlorodibromomethane	<5	<5	<5	<5	<5
Chloroethane	<10	<10	<10	<10	<10
Chloroform	<5	<5	<5	<5	<5
Chloromethane	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5
1,1-Dichloroethene	<5	<5	<5	<5	<5
1,2-Dichloroethene	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5
2-Hexanone	<20	<20	<20	<20	<20
4-Methyl-2-pentanone	<20	<20	<20	<20	<20
Methylene Chloride	4 J	6 B	4 JB	3 JB	5 B
Styrene	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5
Tetrachloroethene	<5	<5	<5	<5	<5

TABLE 5 (continued)

Compound	Quality Control Sample Results				
	Sample Number				
	TP-01	TB#2	TB#3	TB#4	TRP-5
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5
Vinyl Chloride	<10	<10	<10	<10	<10
Xylenes (total)	<5	<5	<5	<5	<5

TABLE 5 (continued)

Compound	Quality Control Sample Results				
	Sample Number				
	TB#6	TB#7	TRPBLK8	TRPBLK12	LANLFB1
Acetone	14 JB	18 J	68 B	35 B	35 B
Benzene	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5
Bromomethane	<10	<10	<10	<10	<10
2-Butanone	<20	<20	<20	<20	<20
Carbon Disulfide	<5	<5	<5	<5	<5
Carbon Tetrachloride	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5
Chlorodibromomethane	<5	<5	<5	<5	<5
Chloroethane	<10	<10	<10	<10	<10
Chloroform	<5	<5	<5	<5	<5
Chloromethane	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5
1,1-Dichloroethene	<5	<5	<5	<5	<5
1,2-Dichloroethene	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5
2-Hexanone	<20	<20	<20	<20	<20
4-Methyl-2-pentanone	<20	<20	<20	<20	<20
Methylene Chloride	4 J	4 JB	43	28 B	20 B
Styrene	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5
Tetrachloroethene	<5	<5	<5	<5	<5

TABLE 5 (continued)

Compound	Quality Control Sample Results				
	Sample Number				
	TB#6	TB#7	TRPBLK8	TRPBLK12	LANLFB1
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5
Vinyl Chloride	<10	<10	<10	<10	<10
Xylenes (total)	<5	<5	<5	<5	<5

Summary for Table 6: Summary of Inorganic Analysis Results

I. Introduction

Samples collected for inorganic analysis were analyzed for total metals (fourteen analytes) and dissolved metals (thirteen analytes) according to SW846, Method 6010 and Method 7470 (mercury). Water quality standards set by the U.S. Environmental Protection Agency (EPA) and the State of New Mexico are included on each of the tables for easy comparison and reference. EPA guidelines included for reference and comparison include the National Pollutant Discharge Elimination System (NPDES) permit limits for discharges from the TA-50 Radioactive Wastewater Treatment Plant, the EPA Maximum Contaminant Levels (EPA MCL) for inorganic chemicals in the water supply, and the EPA Region 6 Human Health Medium-Specific Screening Levels (EPA SL) for inorganic chemicals in tap water. State guidelines included for reference and comparison include the New Mexico Maximum Contaminant Levels (NM MCL) for inorganic chemicals in community and non-transient, non-community water systems, the New Mexico Standards for Interstate and Intrastate Streams for Wildlife Habitat Limits (NM WHL), and the New Mexico Water Quality Control Commission (NM WQCC) standards for groundwater of less than 10,000 mg/ℓ total dissolved solids (TDS) concentration or less. All concentrations are reported in micrograms per liter (μg/ℓ). These data have not been validated and should be considered as preliminary. Sample results that exceeded any of the referenced water quality standards are noted below.

II. Results

The following samples exceeded the limits for:

<u>NPDES Limits</u>

None (for TA-50 effluent samples only)

<u>EPA MCL</u>

TA-502B (iron and manganese), MCO-2 (aluminum, iron, and manganese), MCO-6 (lead), MCO-7 (iron), MCO-7.5B (lead), MT-3 (lead), MT-4 (iron), LAO-0.3 (iron and lead), LAO-0.6 (manganese), LAO-0.91 (iron), LAO-1.2 (iron), LAO-1.6g (iron), LAO-2 (iron and manganese), LAO-2F (iron), LAO-5 (iron), LAUZ-1 (manganese and mercury), LAUZ-2 (iron and manganese), APCO-1 (iron and manganese), TW-2A (iron, lead, and manganese), TW-4 (iron and lead), La Mesita Spring (iron), Bayo-1 (iron), and Bayo-2 (iron and manganese).

EPA SL

MCO-2 (iron, manganese, and molybdenum), MCO-6 (lead), MCO-7.5B (lead), MT-3 (lead), LAO-0.3 (lead), LAO-1.6g (molybdenum), LAO-3A (molybdenum), TW-2A (iron), and TW-4 (lead)

NM MCL

LAUZ-1 (mercury)

NM WHL

TA-502A (mercury) and TA-502B (mercury)

NM WQCC

MCO-2 (chromium), LAO-0.3 (lead), and LAUZ-1 (mercury)

TABLE 6: Summary of Inorganic Analysis Results*

Analyte	Sample Location, Result, and Date																	
	Reference						Mortandad Canyon											
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	TA-50 (8/19/98)		TA-50-2A (8/28/98)		TA-50-2B (8/28/98)		MCO-2 (8/19/98)		MCO-3 (8/20/98)		MCO-4B (8/20/98)	
							Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved
Aluminum	5000		37000			5000	49.6	57.0	305	312	2330	177	**14900**	**6080**	65.8	61.0	152	150
Arsenic	40	50		50	100	200	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	9.2	6.8	2.30	2.0	<2.0	<2.0
Barium		2000	2600	2000	1000		34.6	35	7.6	9.1	44.4	30.6	173	128	62.7	62.4	77.0	78.8
Beryllium		4	73	4			0.67	0.68	<0.60	0.64	<0.60	<0.60	1.90	1.0	<0.60	<0.60	<0.60	<0.60
Boron	5000		3300			5000	192	222	105	106	119	103	84.0	93.4	179	220	70.8	113
Chromium	5100	100		100	50	1000	<4.2	<4.2	4.5	5.2	6.4	<4.2	**77.31**	30.6	<4.2	<4.2	<4.2	<4.2
Copper	1600	1300[†]/ 1000[‡]	1400			500	41.4	41.1	145	155	110	100	13.9	<6.2	14.9	17.0	<6.2	<6.2
Iron		300[‡]	11000				73.4	61.2	113	123	**1780**	103	**14900**	**9090**	58.1	34.7	82.2	71.5
Lead	400	15[†]	15		50	100	<1.6	<1.6	6.9	6.1	2.9	2.7	5.6	<1.6	<1.6	<1.6	<1.6	<1.6
Manganese		50[‡]	1700				10.8	11.2	5.0	6.4	**77.2**	10.6	**13200**	**1240**	5.4	3.9	2.4	2.5
Mercury	10	2	11	2	2	0.012	<0.10	<0.10	**0.26**	**0.29**	**0.16**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum			180				28.8	24.4	117	118	151	143	**1040**	**962**	153	156	124	127
Selenium	50	50	180	50	50	2	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR

TABLE 6 (continued)

Analyte	Sample Location, Result, and Date																	
	Reference						Mortandad Canyon											
	NPDES limits	EPA MCL	EPA SL	NM MCL	NM WQCC	NM WHL	MCO-5 (8/20/98)		MCO-5X (8/20/98)		MCO-6 (8/21/98)		MCO-7 (8/21/98)		MCO-7.5B (8/25/98)		MCWB-6.5E (8/24/98)	
							Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved
Aluminum	5000		37000			5000	152	121	139	108	213	96.8	2310	365	51.7	136	64.2	36.8
Arsenic	40	50		50	100	200	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.5	<2.0	<2.0	<2.0	<2.0	<2.0
Barium		2000	2600	2000	1000		93.8	91.6	91.2	89.4	88.4	88.4	195	187	166	160	179	182
Beryllium		4	73	4			<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	0.62	<0.60	<0.60	<0.60	<0.60	<0.60
Boron	5000		3300			5000	111	114	106	122	91.7	90.9	107	107	115	86.8	80.4	104
Chromium	5100	100		100	50	1000	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	4.5	<4.2	4.2	4.2
Copper	1600	1300†/ 1000‡	1400			500	7.0	9.0	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	13.0	6.2	6.2
Iron		300‡	11000				107	56.6	93.1	180	204	63.3	**1390**	213	71.2	128	50.1	45.0
Lead	400	15†	15		50	100	<1.6	<1.6	<1.6	<1.6	<1.6	**43.3**	<1.6	11.1	**22.3**	<1.6	1.6	1.6
Manganese		50‡	1700				2.5	2.9	2.3	2.6	6.1	2.4	26.9	2.9	1.3	2.2	1.0	0.86
Mercury	10	2	11	2	2	0.012	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.10
Molybdenum			180				113	110	109	106	126	126	114	117	80.4	79.8	85.7	86.8
Selenium	50	50	180	50	50	2	<2.6	NR	2.6	NR	<2.6	NR	4.2	NR	2.6	NR	<2.6	NR

TABLE 6 (continued)

Analyte	Sample Location, Result, and Date																	
	Reference						Mortandad Canyon						Los Alamos Canyon					
	NPDES limits	EPA MCL	EPA SL	NM MCL	NM WQCC	NM WHL	MCWB-7.7B (8/26/98)		MT-3 (8/27/98)		MT-4 (8/26/98)		LAO-B (8/31/98)		LAO-0.3 (9/1/98)		LAO-0.6 (8/31/98)	
							Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved
Aluminum	5000		37000			5000	91.0	40.0	237	87.8	623	85.2	225	218	936	978	<23.6	<23.6
Arsenic	40	50		50	100	200	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Barium		2000	2600	2000	1000		126	134	147	146	109	105	28.4	29.1	39.3	44.1	48.6	49.7
Beryllium		4	73	4			<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60
Boron	5000		3300			5000	91.6	97.2	109	102	105	125	25.6	34.4	44.2	39.2	54.6	44.0
Chromium	5100	100		100	50	1000	<4.2	<4.2	6.1	<4.2	<4.2	4.5	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
Copper	1600	1300†/ 1000‡	1400			500	7.7	<6.2	9.3	<6.2	16.6	8.2	<6.2	7.0	<6.2	<6.2	<6.2	<6.2
Iron		300‡	11000				49.0	74.5	228	60.3	**385**	277	119	112	**479**	14.0	40.2	16.8
Lead	400	15†	15		50	100	<1.6	3.2	<1.6	**15.2**	3.5	10.5	<1.6	6.6	<1.6	**480**	<1.6	7.6
Manganese		50‡	1700				1.4	0.94	3.5	1.0	6.5	3.0	1.3	<2.0	3.4	6.6	**138**	114
Mercury	10	2	11	2	2	0.012	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum			180				32.1	30.0	60.0	58.5	33.0	33.9	7.3	7.3	<7.3	8.3	<7.3	<7.3
Selenium	50	50	180	50	50	2	<2.6	NR	<2.6	NR	<2.6	NR	2.6	NR	<2.6	NR	<2.6	NR

TABLE 6 (continued)

Analyte	Sample Location, Result, and Date													
	Reference						Los Alamos Canyon							
	NPDES limits	EPA MCL	EPA SL	NM MCL	NM WQCC	NM WHL	LAO-0.91 (9/3/98)		LAO-1.2 (8/31/98)		LAO-1.6g (9/1/98)		LAO-2 (8/31/98)	
							Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved
Aluminum	5000		37000			5000	818	612	731	152	953	912	746	577
Arsenic	40	50		50	100	200	2.1	2.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Barium		2000	2600	2000	1000		36.5	36.0	41.4	39.0	49.5	49.0	54.4	52.6
Beryllium		4	73	4			<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60
Boron	5000		3300			5000	33.4	40.3	38.9	31.9	48.6	63.8	64.5	103
Chromium	5100	100		100	50	1000	<4.2	<4.2	12.6	12.0	<4.2	<4.2	<4.2	<4.2
Copper	1600	1300†/ 1000‡	1400			500	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2
Iron		300‡	11000				**481**	**329**	**471**	72.9	**475**	**446**	**403**	5.0
Lead	400	15†	15		50	100	<1.6	5.9	<1.6	4.0	<1.6	7.0	<1.6	2.6
Manganese		50‡	1700				33.3	2.4	19.0	0.94	3.1	3.0	3.8	**149**
Mercury	10	2	11	2	2	0.012	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum			180				<7.3	9.2	<7.3	8.5	**183**	**182**	151	149
Selenium	50	50	180	50	50	2	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR

TABLE 6 (continued)

Analyte	Sample Location, Result, and Date													
	Reference						Los Alamos Canyon							
	NPDES limits	EPA MCL	EPA SL	NM MCL	NM WQCC	NM WHL	LAO-2F (8/31/98)		LAO-3A (8/31/98)		LAO-4.5C (8/31/98)		LAO-5 (8/31/98)	
							Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved
Aluminum	5000		37000			5000	781	587	247	195	361	248	2520	320
Arsenic	40	50		50	100	200	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Barium		2000	2600	2000	1000		54.2	53.2	47.3	47.1	40.8	40.2	36.0	27.7
Beryllium		4	73	4			<0.60	<0.60	<0.60	<0.60	0.64	<0.60	<0.60	<0.60
Boron	5000		3300			5000	88.7	78.6	62.1	57.0	61.8	77.3	69.0	64.7
Chromium	5100	100		100	50	1000	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
Copper	1600	1300†/ 1000‡	1400			500	<6.2	<6.2	<6.2	<6.2	8.2	<6.2	<6.2	<6.2
Iron		300‡	11000				**415**	**315**	141	111	204	139	**1340**	143
Lead	400	15†	15		50	100	<1.6	3.1	<1.6	3.2	<1.6	5.7	3.5	4.5
Manganese		50‡	1700				4.0	2.6	1.3	2.0	3.4	13.7	19.6	1.9
Mercury	10	2	11	2	2	0.012	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum			180				148	149	**315**	**317**	11.0	16.2	10.1	10.4
Selenium	50	50	180	50	50	2	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR

TABLE 6 (continued)

Analyte	Sample Location, Result, and Date																	
	Reference						DP Canyon						Pueblo Canyon					
	NPDES limits	EPA MCL	EPA SL	NM MCL	NM WQCC	NM WHL	LAUZ-1 (9/4/98)		LAUZ-2 (9/4/98)		DP Spring (9/2/98)		APCO-1 (9/3/98)		POI-4 (9/2/98)		TW-2A (9/1/98)	
							Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved
Aluminum	5000		37000			5000	273	115	41.8	<23.6	1170	707	60.5	33.8	<23.6	<23.6	36.0	<23.6
Arsenic	40	50		50	100	200	<2.0	<2.0	3.6	3.2	2.2	2.0	5.3	6.6	2.8	3.1	<2.0	<2.0
Barium		2000	2600	2000	1000		75.8	74.2	97.4	95.2	42.1	40.8	44.9	43.3	94.6	89.4	40.8	53.6
Beryllium		4	73	4			<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<6.0	<0.60
Boron	5000		3300			5000	76.2	55.7	90.7	79.0	96.2	62.9	334	314	210	197	114	136
Chromium	5100	100		100	50	1000	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
Copper	1600	1300†/ 1000‡	1400			500	<6.2	<6.2	<6.2	<6.2	7.1	<6.2	7.4	<6.2	8.0	8.3	<6.2	<6.2
Iron		300‡	11000				161	72.0	**1190**	**879**	596	376	**460**	**452**	10.8	6.4	**21300**	**4850**
Lead	400	15†	15		50	100	<1.6	1.7	<1.6	1.8	<1.6	7.2	<1.6	7.1	<1.6	5.3	**28.4**	6.2
Manganese		50‡	1700				**50.8**	48.8	**627**	**577**	4.5	8.3	**925**	**942**	1.6	1.5	**377**	**128**
Mercury	10	2	11	2	2	0.012	**3.0**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum			180				<7.3	7.7	<8.4	<7.3	<7.3	<7.3	8.0	<7.3	<7.3	<7.3	<7.3	<7.3
Selenium	50	50	180	50	50	2	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR

TABLE 6 (continued)

Analyte	Sample Location, Result, and Date																	
	Reference						San Ildefonso Well and Springs											
	NPDES limits	EPA MCL	EPA SL	NM MCL	NM WQCC	NM WHL	LLAO-5 (9/8/98)		Basalt Spring (9/9/98)		Sacred Spring (9/8/98)		Otowi Spring (9/8/98)		La Mesita Sp. (9/8/98)		LA Spring (9/9/98)	
							Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved
Aluminum	5000		37000			5000	150	34.9	62.3	31.2	417	28.3	32.6	26.0	253	28.8	31.9	<20.6
Arsenic	40	50		50	100	200	<1.8	<1.8	4.5	3.7	2.1	<1.8	2.4	3.2	<1.8	<1.8	<1.8	<1.8
Barium		2000	2600	2000	1000		238	228	62.8	62.6	72.9	72.4	146	144	111	99.5	38.6	37.7
Beryllium		4	73	4			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron	5000		3300			5000	106	103	269	262	60.6	70.5	86.6	119	80.0	71.4	42.2	36.2
Chromium	5100	100		100	50	1000	<2.7	<2.7	<2.7	<2.7	<2.7	3.0	<2.7	<2.7	<2.7	<2.7	<5.1	3.8
Copper	1600	1300†/ 1000‡	1400			500	<2.9	<2.9	10.9	14.8	<2.9	<2.9	<2.9	<2.9	<2.9	<2.9	<2.9	<2.9
Iron		300‡	11000				131	32.6	54.2	38.1	284	28.0	28.4	33.8	**425**	34.2	30.9	22.7
Lead	400	15†	15		50	100	<0.90	5.8	<0.90	5.1	<0.90	4.4	<0.90	4.5	2.0	4.3	<0.90	5.7
Manganese		50‡	1700				33.6	2.3	49.4	0.91	13.4	6.4	2.0	1.7	13.5	1.7	0.75	2.2
Mercury	10	2	11	2	2	0.012	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10
Molybdenum			180				<8.4	<8.4	<8.4	<8.4	<8.4	<8.4	<8.4	<8.4	<8.4	<8.4	<8.4	<8.4
Selenium	50	50	180	50	50	2	<2.2	NR	<2.2	NR	<2.2	NR	<2.2	NR	<2.2	NR	<2.2	NR

TABLE 6 (continued)

Analyte	Sample Location, Results, and Date																
	Reference					Main Aquifer Wells								Bayo Wastewater and Sewage Treatment Effluent			
	EPA MCL	EPA SL	NM MCL	NM WQCC	NM WHL	TW-1 (9/1/98)		TW-3 (9/1/98)		TW-4 (9/1/98)		TW-8 (9/2/98)		Bayo-1 (9/1/98)		Bayo-2 (9/3/98)	
						Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved	Total	Dis-solved
Aluminum		37000			5000	<23.6	<23.6	<23.6	<23.6	<23.6	<23.6	<23.6	<23.6	306	167	41.2	<23.6
Arsenic	50		50	100	200	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	5.6	5.4	8.8	9.0
Barium	2000	2600	2000	1000		74.4	72.7	23.4	23.9	58.2	55.8	7.0	6.8	12.8	8.6	20.9	18.3
Beryllium	4	73	4			<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60
Boron		3300			5000	112	84.1	51.0	49.6	40.2	24.5	36.6	36.0	298	257	328	324
Chromium	100		100	50	1000	<4.2	<4.2	16.8	4.2	49.0	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
Copper	1300†/ 1000‡	1400			500	<6.2	<6.2	<6.2	<6.2	13.0	<6.2	<6.2	<6.2	29.4	23.2	7.3	8.2
Iron	300‡	11000				44.1	31.0	221	99.6	**659**	178	141	57.8	**301**	243	**754**	**614**
Lead	15†	15		50	100	4.0	11.9	<1.6	5.7	**19.4**	12.1	4.1	4.8	<1.6	6.4	<1.6	2.4
Manganese	50‡	1700				41.3	33.5	8.7	8.4	37.7	33.8	3.6	3.7	18.7	16.9	**306**	**299**
Mercury	2	11	2	2	0.012	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10
Molybdenum		180				<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3
Selenium	50	180	50	50	2	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR	<2.6	NR

* All results reported in micrograms per liter ($\mu g/\ell$).
† Action level (value at which treatment for constituent must occur)
‡ Secondary water standard
a National Pollutant Discharge Elimination System (NPDES) permit limits for discharges from the TA-50 Radioactive Wastewater Treatment Plant.
b EPA Maximum Contaminant Levels (EPA MCL) for inorganic chemicals in the water supply.
c EPA Region 6 Human Health Medium-Specific Screening Levels (EPA SL) for inorganic chemicals in tap water.
d New Mexico Maximum Contaminant Levels (NM MCL) for inorganic chemicals in community and nontransient, non-community water systems.
e New Mexico Water Quality Control Commission (NM WQCC) standards for groundwater of less than 10,000 mg/ℓ total dissolved solids (TDS) concentration or less.
f New Mexico Standards for Interstate and Intrastate Streams for Livestock Watering Limits (NM LWL).

TABLE 6 (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Quality Control/Quality Assurance Data					
	NPDES limits	EPA MCL	EPA SL	NM MCL	NM WQCC	NM WHL	LANL-FB-1 (8/27/98)		LANL-FB-2 (9/3/98)		LANL-FB-3 (9/9/98)	
							Total	Dis-solved	Total	Dis-solved	Total	Dis-solved
Aluminum	5000		37000			5000	<23.6	<23.6	<23.6	<23.6	34.5	30.0
Arsenic	40	50		50	100	200	<2.0	<2.0	<2.0	<2.0	<1.8	<1.8
Barium		2000	2600	2000	1000		<0.90	<0.90	<0.90	<0.90	1.1	0.77
Beryllium		4	73	4			<0.60	<0.60	<0.60	<0.60	<0.50	<0.50
Boron	5000		3300			5000	27.4	18.7	20.7	18.4	27.0	22.1
Chromium	5100	100		100	50	1000	<4.2	<4.2	<4.2	<4.2	<2.7	<2.7
Copper	1600	1300†/ 1000‡	1400			500	<6.2	<6.2	<6.2	<6.2	<2.9	<2.9
Iron		300‡	11000				<6.4	<6.4	114	14.4	17.8	19.8
Lead	400	15†	15		50	100	<1.6	<1.6	<1.6	2.3	<0.90	<2.8
Manganese		50‡	1700				<0.80	<0.80	0.86	<0.80	0.75	<0.50
Mercury	10	2	11	2	2	0.012	<0.10	<0.10	7.6	<0.10	<0.10	<0.10
Molybdenum			180				<7.3	<7.3	<7.3	<7.3	<8.4	<8.4
Selenium	50	50	180	50	50	2	<2.6	NR	<2.6	NR	<2.2	NR

Table 7 Summary: Summary of General Chemistry Results

I. Introduction

Samples were collected and analyzed for chloride, fluoride, sulfate, bicarbonate alkalinity, total suspended solids (TSS), total dissolved solids (TDS), total Kjedahl nitrogen (TKN), total phosphorous, nitrate/nitrite nitrogen, ammonia nitrogen, and stable nitrogen isotope ratios. Water quality standards set by the U.S. Environmental Protection Agency (EPA) and the State of New Mexico are included on each of the tables for easy comparison and reference. EPA guidelines included for reference and comparison include the EPA Maximum Contaminant Levels (EPA MCL) for inorganic chemicals in the water supply. State guidelines included for reference and comparison include the New Mexico Maximum Contaminant Levels (NM MCL) for inorganic chemicals in community and non-transient, non-community water systems and the New Mexico Water Quality Control Commission (NM WQCC) standards for groundwater of less than 10,000 mg/ℓ TDS concentration or less and for domestic water supply. These data have not been validated and should be considered as preliminary. Sample results that exceeded any of the referenced water quality standards are noted below.

II. Results

Water quality standards were exceeded by the following sample results:

<u>EPA MCL</u>

TA-50 (TDS), MCO-3 (TDS), TW-1 (TDS), and LLAO-5 (TDS)

<u>NM MCL</u>

TA-50 (nitrate/nitrite), TA-502A (nitrate/nitrite), TA-502B (nitrate/nitrite), MCO-3 (nitrate/nitrite), MCO-4B (nitrate/nitrite), MCO-5 (nitrate/nitrite), MCO-5X (nitrate/nitrite), MCO-6 (nitrate/nitrite), MCO-7 (nitrate/nitrite), MCO-7.5B (nitrate/nitrite), MCWB-6.5E (nitrate/nitrite), MCWB-7.7B (nitrate/nitrite), and MT-4 (nitrate/nitrite)

<u>NM WQCC</u>

TA-502A (fluoride), and TA-502B (fluoride)

TABLE 7: Summary of General Chemistry Results

Parameter	Sample Location, Result, and Date										
	Reference			Mortandad Canyon							
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	TA-50 (8/19/98)	TA-502A (8/28/98)	TA-502B (8/28/98)	MCO-2 (8/19/98)	MCO-3 (8/20/98)	MCO-4B (8/20/98)	MCO-5 (8/20/98)	MCO-5X (8/20/98)
Chloride (mg/ℓ)	250		250	14.7	20.8	20.2	20.5	24.2	17.4	18.8	19.0
Fluoride (mg/ℓ)	4	4	1.6	0.93	**3.09**	**2.69**	0.73	1.06	1.15	1.27	1.26
Sulfate (mg/ℓ)	500		600	53.2	125	109	14.3	25.2	14.7	16.4	16.4
Alkalinity (mg/ℓ)				398	90.9	129	101	226	156	172	166
TSS (mg/ℓ)				4.0	61.0	122	91.0	4.0	<1.00	10.0	5.0
TDS (mg/ℓ)	500		1000	**678**	426	380	405	**538**	340	404	324
TKN (μg/ℓ)				18600	2430	2200	679	344	128	<50	220
Total Phosphorus (μg/ℓ)				86.3	288	327	146	178	85.9	119	115
Nitrate/Nitrite (μg/ℓ)		10000		**14900**	**17700**	**15400**	<50	**37800**	**13200**	**15400**	**15500**
Ammonia (μg/ℓ)				1960	3860	2690	<50	<50	<50	<50	<50
$\delta^{15}N_{air}$ - NH_3 (no units)				13.0	8.4	8.0	--	--	--	--	--
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				5.0	2.3	2.1	--	2.3	-4.7	-4.5	NA

TABLE 7 (continued)

Parameter	Sample Location, Result, and Date									
	Reference			Mortandad Canyon						
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	MCO-6 (8/21/98)	MCO-7 (8/21/98)	MCO-7.5B (8/25/98)	MCWB-6.5E (8/24/98)	MCWB-7.7B (8/26/98)	MT-3 (8/27/98)	MT-4 (8/26/98)
Chloride (mg/ℓ)	250		250	21.0	18.7	18.8	18.1	19.2	18.8	19.5
Fluoride (mg/ℓ)	4	4	1.6	1.46	1.56	1.51	0.96	1.03	1.58	0.89
Sulfate (mg/ℓ)	500		600	17.7	16.3	16.7	15.9	17.8	16.6	17.1
Alkalinity (mg/ℓ)				154	176	178	139	172	174	164
TSS (mg/ℓ)				14.0	47.0	9.0	3.0	5.0	4.0	9.0
TDS (mg/ℓ)	500		1000	374	381	413	355	386	405	377
TKN (μg/ℓ)				165	57.5	105	123	110	99.2	101
Total Phosphorus (μg/ℓ)				143	388	127	929	119	134	133
Nitrate/Nitrite (μg/ℓ)		10000		**17500**	**18200**	**13700**	**17000**	**22400**	6720	**20700**
Ammonia (μg/ℓ)				<50	<50	<50	<50	<50	<50	<50
$\delta^{15}N_{air}$ - NH_3 (no units)				--	--	--	--	--	--	--
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				-4.9	-9.2	-12.1	-8.5	-37.9	-15.7	-29.5

TABLE 7 (continued)

Parameter	Sample Location, Result, and Date										
	Reference			Los Alamos Canyon							
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	LAO-B (8/31/98)	LAO-0.3 (9/01/98)	LAO-0.6 (8/31/98)	LAO-0.91 (9/03/98)	LAO-1.2 (8/31/98)	LAO-1.6g (9/01/98)	LAO-2 (8/31/98)	LAO-2F (8/31/98)
Chloride (mg/ℓ)	250		250	9.77	44.7	73.6	39.1	45.6	27.3	21.3	21.4
Fluoride (mg/ℓ)	4	4	1.6	0.10	0.17	0.25	0.20	0.26	0.30	0.53	0.53
Sulfate (mg/ℓ)	500		600	3.33	4.14	5.70	4.41	5.68	6.14	8.49	8.56
Alkalinity (mg/ℓ)				56.6	60.6	92.9	74.7	62.6	68.7	94.9	90.9
TSS (mg/ℓ)				1.0	3.0	2.0	1.0	35.0	1.0	9.0	5.0
TDS (mg/ℓ)	500		1000	141	188	113	184	125	194	166	198
TKN (μg/ℓ)				<50	145	140	77.7	89.5	107	<50	<50
Total Phosphorus (μg/ℓ)				<50	114	160	167	131	268	167	162
Nitrate/Nitrite (μg/ℓ)		10000		<50	<50	310	149	138	624	602	605
Ammonia (μg/ℓ)				<50	<50	<50	<50	<50	<50	<50	<50
$\delta^{15}N_{air}$ - NH_3 (no units)				--	--	--	--	--	--	--	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				--	--	7.6	--	--	-1.3	1.4	NA

TABLE 7 (continued)

Parameter	Sample Location, Result, and Date											
	Reference			Los Alamos Canyon			DP Canyon			Pueblo Canyon		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	LAO-3A (8/31/98)	LAO-4.5C (8/31/98)	LAO-5 (8/31/98)	LAUZ-1 (9/04/98)	LAUZ-2 (9/04/98)	DP Spring (9/02/98)	APCO-1 (9/03/98)	POI-4 (9/02/98)	TW-2A (9/01/98)
Chloride (mg/ℓ)	250		250	21.0	32.8	40.5	17.7	41.4	28.6	37.6	40.9	69.9
Fluoride (mg/ℓ)	4	4	1.6	0.64	0.58	0.45	0.91	1.34	1.06	0.45	0.29	0.24
Sulfate (mg/ℓ)	500		600	9.77	6.45	7.83	4.81	1.21	5.77	14.3	20.6	8.82
Alkalinity (mg/ℓ)				109	64.6	78.8	133	176	86.9	158	162	56.6
TSS (mg/ℓ)				6.0	9.0	30.0	1.0	3.0	4.0	4.0	2.0	45.0
TDS (mg/ℓ)	500		1000	151	193	208	203	299	178	359	326	220
TKN (μg/ℓ)				58.3	<50	59.0	112	332	125	1210	173	695
Total Phosphorus (μg/ℓ)				272	60.2	75.7	111	148	178	278	630	151
Nitrate/Nitrite (μg/ℓ)		10000		617	61.6	<50	<50	<50	275	473	3750	767
Ammonia (μg/ℓ)				<50	<50	<50	<50	111	<50	771	<50	306
$\delta^{15}N_{air}$ - NH_3 (no units)				--	--	--	--	--	--	24.3	--	11.0
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				-3.5	--	--	--	--	2.9	25.4	19.5	0.8

TABLE 7 (continued)

Parameter	Sample Location and Date										
	Reference			Main Aquifer Wells				San Ildefonso Well and Springs			
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	TW-1 (9/01/98)	TW-3 (9/01/98)	TW-4 (9/01/98)	TW-8 (9/02/98)	LLAO-5 (9/08/98)	Basalt Spring (9/09/98)	Sacred Spring (9/08/98)	Otowi Spring (9/08/98)
Chloride (mg/ℓ)	250		250	36.3	3.15	1.98	2.07	70.6	35.2	3.12	32.3
Fluoride (mg/ℓ)	4	4	1.6	0.35	0.35	0.18	0.16	0.36	0.37	0.44	0.48
Sulfate (mg/ℓ)	500		600	23.2	2.92	2.09	2.03	35.9	23.6	7.68	22.2
Alkalinity (mg/ℓ)				111	103	72.7	74.7	259	113	105	170
TSS (mg/ℓ)				3.0	2.0	6.0	3.0	29.0	1.0	11.0	10.0
TDS (mg/ℓ)	500		1000	777	162	125	127	508	346	211	321
TKN (μg/ℓ)				113	120	<50	<50	100	332	<50	<50
Total Phosphorus (μg/ℓ)				85.3	167	132	130	133	3580	85.6	168
Nitrate/Nitrite (μg/ℓ)		10000		5570	569	285	226	1530	3470	269	352
Ammonia (μg/ℓ)				<50	<50	<50	<50	<50	<50	<50	<50
$\delta^{15}N_{air}$ - NH_3 (no units)				--	--	--	--	--	--	--	--
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				14.9	-3.2	-2.5	-0.8	7.3	30.2	-4.0	-1.6

TABLE 7 (continued)

Parameter	Sample Location, Result, and Date						
	Reference			San Ildefonso Well and Springs		Bayo Wastewater and Sewage Treatment Effluent	
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	La Mesita Spring (9/08/98)	LA Spring (9/09/98)	Bayo-1 (outfall) (9/01/98)	Bayo-2 (intersection w/Route 4) (8/28/98)
Chloride (mg/ℓ)	250		250	7.73	19.6	39.8	39.4
Fluoride (mg/ℓ)	4	4	1.6	0.27	0.90	0.35	0.63
Sulfate (mg/ℓ)	500		600	14.3	34.8	24.6	20.6
Alkalinity (mg/ℓ)				137	94.9	158	170
TSS (mg/ℓ)				63.0	3.0	21.0	3.0
TDS (mg/ℓ)	500		1000	206	261	312	358
TKN (μg/ℓ)				87.9	<50	225000	529
Total Phosphorus (μg/ℓ)				134	53.5	215	230
Nitrate/Nitrite (μg/ℓ)		10000		2950	3180	3010	1250
Ammonia (μg/ℓ)				<50	<50	11500	145
$\delta^{15}N_{air}$ - NH_3 (no units)				--	--	11.9	14.4
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				-1.0	3.6	2.9	29.7

a	EPA Maximum Contaminant Levels for inorganic chemicals in the water supply.
b	New Mexico Maximum Contaminant Levels for inorganic chemicals in community water systems.
c	New Mexico Water Quality Control Commission standards for maximum allowable concentration of contaminants in groundwater and domestic water supply.
$\delta^{15}N_{air}$ - NH_3	Stable nitrogen isotope ratio found in the ammonia fraction of the sample.
$\delta^{15}N_{air}$ - NO_3/NO_2	Stable nitrogen isotope ratio found in the nitrate/nitrite fraction of the sample.
--	Not determined due to insufficient concentration within the water sample.
NA	Not Analyzed.

Table 8 Summary: Summary of Radionuclide Results

I. Introduction

Samples were collected and analyzed for Isotopic Uranium (U), Gross Alpha (α), Gross Beta (β), Strontium 90 (Sr-90), and Tritium (H^3). Water quality standards set by the U.S. Environmental Protection Agency (EPA), State of New Mexico, and Department of Energy (DOE) are included on each of the tables for easy comparison and reference. EPA guidelines included for reference and comparison include the EPA proposed Maximum Contaminant Levels (EPA MCLs) and proposed Screening Levels (EPA SLs) for radiochemicals in the water supply. State guidelines included for reference and comparison include the New Mexico Maximum Contaminant Levels (NM MCLs) for beta particle and photon radioactivity from manmade radionuclides in community water systems and the New Mexico Standards for Interstate and Intrastate Streams for Wildlife Habitat Limits (NM WHL). DOE guidelines included for reference and comparison include the DOE Derived Concentration Guides (DOE DCG) for drinking water systems and for water ingestion in uncontrolled areas. All concentrations are reported in pico Curies per liter (pCi/L). These data have not been validated and should be considered as preliminary. Sample results that exceeded any of the referenced water quality standards are noted below.

II. Results

Water quality standards were exceeded by the following sample results:

<u>EPA MCLs</u>

TA-50 (α and Sr-90), TA-502A (α), TA-502B (α), MCO-3 (α and Sr-90), MCO-4B (Sr-90), MCO-5 (α and Sr-90), MCO-5X (Sr-90), MCO-6 (α and Sr-90), MCWB-7.7B (H^3), LAO-3A (Sr-90), LAUZ-1 (Sr-90), LAUZ-2 (Sr-90), and DP Spring (Sr-90)

<u>EPA SLs</u>

TA-50 (α and β), TA-502A (α and β), TA-502B (α and β), MCO-3 (α and β), MCO-4B (α and β), MCO-5 (α and β), MCO-5X (α and β), MCO-6 (α and β), MCO-7 (α), MT-3 (α), LAO-B (α), LAO-0.6 (α), LAO-1.2 (α), LAO-3A (α and β), LAUZ-1 (α and β), LAUZ-2 (β), DP Spring (β), TW-2A (α), TW-1 (α), and La Mesita Spring (α)

<u>NM MCLs</u>

TA-50 (α and Sr-90), TA-502A (α), TA-502B (α), MCO-3 (α and Sr-90), MCO-4B (Sr-90), MCO-5 (α and Sr-90), MCO-5X (Sr-90), MCO-6 (α and Sr-90), MCWB-7.7B (H^3), LAO-3A (Sr-90), LAUZ-1 (Sr-90), LAUZ-2 (Sr-90), and DP Spring (Sr-90)

NM WHL

TA-50 (α), TA-502A (α), TA-502B (α)

DOE DCG (drinking water systems)

MCO-5X (Sr-90), MCO-6 (Sr-90), LAUZ-1 (Sr-90), LAUZ-2 (Sr-90), DP Spring (Sr-90)

DOE DCG (water ingestion in uncontrolled areas)

None

TABLE 8: Summary of Radionuclide Results*

Parameter	Sample Location and Date Collected														
	Reference						Mortandad Canyon								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	TA-50 (8/19/98)			TA-502A (8/28/98)			TA-502B (8/28/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.44	0.24	0.26	0.95	0.66	0.74	1.04	0.41	0.18
Uranium-238					600	24	0.29	0.19	0.24	0.79	0.54	0.21	0.84	0.36	0.18
Uranium-235/236					600	24	-0.017	0.064	0.24	<0.72	0.24	0.72	0.11	0.14	0.24
Gross Alpha	15	5	15	15			**31.9**	5.3	2.89	**133**	17	3.18	**49.5**	7.7	2.45
Gross Beta		50					**141**	14	1.74	**489**	49	2.76	**410**	41	2.49
Strontium-90	8		8		1000	40	**9.83**	2.13	1.03	0.39	0.45	0.75	2.12	0.59	0.59
Tritium (H^3)	20000		20000	20000	2000000	80000	8170	710	17.5	4800	420	18.4	4290	380	18.4

Parameter	Sample Location and Date Collected														
	Reference						Mortandad Canyon								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	MCO-2 (8/19/98)			MCO-3 (8/20/98)			MCO-4B (8/20/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.75	0.34	0.20	5.62	1.52	0.38	1.43	0.53	0.19
Uranium-238					600	24	0.67	0.32	0.18	2.07	0.70	0.33	0.36	0.23	0.22
Uranium-235/236					600	24	0.17	0.16	0.17	0.34	0.28	0.41	0.030	0.076	0.18
Gross Alpha	15	5	15	15			3.30	2.05	3.12	**19.7**	4.1	3.67	**12.7**	3.0	2.5
Gross Beta		50					5.36	1.35	1.78	**148**	15	2.24	**118**	12	2.29
Strontium-90	8		8		1000	40	0.44	0.38	0.62	**28.1**	5.6	0.46	**32.4**	6.4	0.47
Tritium (H^3)	20000		20000	20000	2000000	80000	105	20	17.5	19200	140	21.5	8720	760	21.5

TABLE 8 (continued)

Parameter	Sample Location and Date Collected														
	Reference						Mortandad Canyon								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	MCO-5 (8/20/98)			MCO-5X (8/20/98)			MCO-6 (8/21/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.59	0.37	0.30	1.12	0.43	0.076	3.23	0.90	0.14
Uranium-238					600	24	0.37	0.28	0.23	0.41	0.24	0.13	0.93	0.37	0.16
Uranium-235/236					600	24	0.15	0.21	0.33	0.06	0.10	0.20	0.08	0.11	0.17
Gross Alpha	15	5	15	15			**15.1**	3.5	3.30	**14.4**	3.3	2.85	**14.2**	3.1	2.31
Gross Beta		50					**104**	11	2.25	**107**	11	1.78	**111**	11	1.72
Strontium-90	8		8		1000	40	**19.0**	3.8	0.47	**41.1**	8.1	0.62	**63.5**	12.6	1.11
Tritium (H^3)	20000		20000	20000	2000000	80000	11600	1000	17.5	12300	1100	17.5	13300	1100	17.5

Parameter	Sample Location and Date Collected														
	Reference						Mortandad Canyon								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	MCO-7 (8/21/98)			MCO-7.5B (8/25/98)			MCWB-6.5E (8/24/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.84	0.39	0.25	0.54	0.29	0.27	1.14	0.40	0.15
Uranium-238					600	24	0.32	0.22	0.088	0.41	0.25	0.26	0.47	0.23	0.14
Uranium-235/236					600	24	0.08	0.11	0.11	0.12	0.14	0.22	0.16	0.14	0.07
Gross Alpha	15	5	15	15			**7.29**	2.39	2.59	1.02	1.29	2.15	2.28	1.45	2.02
Gross Beta		50					40.4	4.5	1.76	30.9	3.6	1.81	31.8	3.7	1.78
Strontium-90	8		8		1000	40	0.58	0.30	0.44	0.28	0.27	0.44	1.66	0.66	0.88
Tritium (H^3)	20000		20000	20000	2000000	80000	17200	1500	17.5	17800	1500	21.5	12600	1100	21.5

TABLE 8 (Continued)

Parameter	Sample Location and Date Collected														
	Reference						Mortandad Canyon								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	MCWB-7.7B (8/26/98)			MT-3 (8/27/98)			MT-4 (8/26/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.65	0.45	0.40	0.60	0.28	0.18	0.38	0.31	0.27
Uranium-238					600	24	0.44	0.35	0.17	0.83	0.34	0.15	0.53	0.38	0.32
Uranium-235/236					600	24	0.08	0.16	0.21	0.10	0.12	0.21	0.12	0.20	0.33
Gross Alpha	15	5	15	15			2.92	1.51	1.92	**5.52**	2.02	2.13	4.62	2.01	2.53
Gross Beta		50					38.4	4.39	1.99	32.7	3.8	1.87	35.8	4.1	1.98
Strontium-90	8		8		1000	40	0.12	0.57	0.98	0.01	0.28	0.49	-0.05	0.46	0.80
Tritium (H^3)	20000		20000	20000	2000000	80000	**27900**	2400	21.5	17500	1500	21.5	19200	1700	17.5

Parameter	Sample Location and Date Collected														
	Reference						Los Alamos Canyon								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	LAO-B (8/31/98)			LAO-0.3 (9/01/98)			LAO-0.6 (8/31/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.21	0.21	0.33	0.28	0.22	0.29	0.24	0.27	0.46
Uranium-238					600	24	0.47	0.29	0.22	0.16	0.16	0.21	0.32	0.29	0.42
Uranium-235/236					600	24	0.10	0.16	0.30	0.05	0.11	0.26	0.12	0.24	0.50
Gross Alpha	15	5	15	15			**5.23**	1.41	1.15	-0.42	0.91	1.86	**6.94**	2.32	2.46
Gross Beta		50					6.13	1.45	1.89	3.70	1.23	1.77	7.65	1.54	1.81
Strontium-90	8		8		1000	40	0.51	0.34	0.53	0.31	0.33	0.55	0.29	0.29	0.48
Tritium (H^3)	20000		20000	20000	2000000	80000	85.1	19	18.4	68.5	18	18.4	3100	280	17.5

TABLE 8 (continued)

Parameter	Sample Location and Date Collected														
	Reference						Los Alamos Canyon								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	LAO-0.91 (9/03/98)			LAO-1.2 (8/31/98)			LAO-1.6g (9/01/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.26	0.24	0.38	0.14	0.16	0.22	0.71	0.39	0.43
Uranium-238					600	24	0.14	0.19	0.35	0.12	0.16	0.27	0.38	0.26	0.29
Uranium-235/236					600	24	0.04	0.13	0.35	0.038	0.098	0.23	0.02	0.16	0.45
Gross Alpha	15	5	15	15			0.31	1.17	2.10	**11.9**	2.8	2.20	0.32	0.74	1.35
Gross Beta		50					6.26	1.60	2.18	8.75	1.59	1.72	3.94	1.27	1.83
Strontium-90	8		8		1000	40	1.29	0.44	0.54	0.31	0.35	0.57	0.12	0.56	0.97
Tritium (H^3)	20000		20000	20000	2000000	80000	127	25	21.5	L	L	L	149	24	18.4

Parameter	Sample Location and Date Collected														
	Reference						Los Alamos Canyon								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	LAO-2 (8/31/98)			LAO-2F (8/31/98)			LAO-3A (8/31/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA[i]	Result	Sigma Error	MDA
Uranium-234					500	20	0.90	0.30	0.15	0.22	0.21	0.35	0.07	0.12	0.24
Uranium-238					600	24	0.16	0.12	0.16	0.25	0.21	0.31	0.22	0.20	0.26
Uranium-235/236					600	24	0.13	0.11	0.13	-0.02	0.12	0.38	-0.008	0.091	0.32
Gross Alpha	15	5	15	15			3.42	1.50	1.72	3.27	1.84	2.62	**11.2**	2.8	2.55
Gross Beta		50					37.1	4.2	1.82	35.2	4.0	1.92	**80.4**	8.4	1.73
Strontium-90	8		8		1000	40	7.21	1.51	0.55	5.82	1.23	0.46	**15.2**	3.1	0.54
Tritium (H^3)	20000		20000	20000	2000000	80000	134	23	18.4	126	22	18.4	99.8	20	17.5

TABLE 8 (Continued)

Parameter	Sample Location and Date Collected											
	Reference						Los Alamos Canyon					
							LAO-4.5C (8/31/98)			LAO-5 (8/31/98)		
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA
Uranium-234					500	20	0.31	0.25	0.37	0.22	0.18	0.16
Uranium-238					600	24	0.98	0.42	0.25	0.32	0.22	0.16
Uranium-235/236					600	24	0.17	0.21	0.39	0.11	0.14	0.19
Gross Alpha	15	5	15	15			2.86	1.34	1.68	1.35	1.39	2.25
Gross Beta		50					9.71	1.72	1.86	7.07	1.48	1.79
Strontium-90	8		8		1000	40	0.91	0.41	0.57	0.60	0.41	0.57
Tritium (H^3)	20000		20000	20000	2000000	80000	169	26	18.4	161	26	18.4

Parameter	Sample Location and Date Collected														
	Reference						DP Canyon								
							LAUZ-1 (9/04/98)			LAUZ-2 (9/04/98)			DP Spring (9/02/98)		
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.50	0.27	0.16	0.82	0.45	0.49	1.14	0.47	0.19
Uranium-238					600	24	0.32	0.21	0.18	0.31	0.28	0.43	0.26	0.19	0.089
Uranium-235/236					600	24	0.06	0.10	0.20	-0.08	0.13	0.53	0.10	0.15	0.26
Gross Alpha	15	5	15	15			**9.15**	2.37	2.17	2.89	1.38	1.67	3.94	1.27	1.20
Gross Beta		50					**175**	18	1.74	**174**	18	1.81	**112**	12	1.87
Strontium-90	8		8		1000	40	**43.2**	8.5	0.67	**45.7**	9.0	0.63	**40.7**	8.1	0.56
Tritium (H^3)	20000		20000	20000	2000000	80000	B	B	B	186	29	21.5	156	25	18.4

TABLE 8 (continued)

Parameter	Sample Location and Date Collected														
	Reference						Pueblo Canyon								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	APCO-1 (9/03/98)			POI-4 (9/02/98)			TW-2A (9/01/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.40	0.24	0.19	3.35	1.06	0.34	0.15	0.18	0.30
Uranium-238					600	24	0.31	0.21	0.19	1.11	0.49	0.11	0.19	0.18	0.10
Uranium-235/236					600	24	0.04	0.11	0.25	0.49	0.33	0.13	0.00	0.00	0.13
Gross Alpha	15	5	15	15			4.20	1.78	2.09	1.55	1.20	1.76	**7.96**	2.91	3.71
Gross Beta		50					12.0	1.9	1.92	8.97	1.70	1.95	4.72	1.53	2.24
Strontium-90	8		8		1000	40	0.06	0.40	0.69	0.35	0.36	0.59	0.02	0.27	0.48
Tritium (H^3)	20000		20000	20000	2000000	80000	31.2	18	21.5	65.1	17	18.4	1380	130	17.5

Parameter	Sample Location and Date Collected											
	Reference						Main Aquifer Wells					
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	TW-1 (9/01/98)			TW-3 (9/01/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA
Uranium-234					500	20	2.31	0.82	0.19	0.53	0.30	0.16
Uranium-238					600	24	0.92	0.44	0.19	0.40	0.25	0.16
Uranium-235/236					600	24	0.01	0.11	0.34	0.033	0.085	0.20
Gross Alpha	15	5	15	15			**6.16**	2.02	2.17	1.62	1.67	2.73
Gross Beta		50					13.9	2.2	2.26	4.60	1.51	2.23
Strontium-90	8		8		1000	40	0.81	0.64	1.02	0.25	0.31	0.52
Tritium (H^3)	20000		20000	20000	2000000	80000	191	27	17.5	3.14	12	17.5

TABLE 8 (Continued)

Parameter	Sample Location and Date Collected											
	Reference						Main Aquifer Wells					
							TW-4 (9/01/98)			TW-8 (9/02/98)		
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA
Uranium-234					500	20	0.49	0.33	0.38	0.66	0.33	0.15
Uranium-238					600	24	0.30	0.24	0.26	0.47	0.27	0.15
Uranium-235/236					600	24	0.01	0.11	0.35	0.07	0.11	0.19
Gross Alpha	15	5	15	15			1.84	1.25	1.86	1.07	0.79	1.18
Gross Beta		50					4.02	1.23	1.72	2.28	1.16	1.81
Strontium-90	8		8		1000	40	0.44	0.32	0.51	-0.15	0.33	0.58
Tritium (H^3)	20000		20000	20000	2000000	80000	2.07	12	17.5	18.5	14	18.4

Parameter	Sample Location and Date Collected														
	Reference						San Ildefonso Wells and Springs								
							LLAO-5 (9/08/98)			Basalt Spring (9/09/98)			Sacred Spring (9/08/98)		
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	1.78	0.40	0.038	0.29	0.10	0.055	1.26	0.30	0.015
Uranium-238					600	24	1.26	0.30	0.038	0.20	0.09	0.083	0.55	0.16	0.051
Uranium-235/236					600	24	0.057	0.050	0.068	0.022	0.033	0.054	0.067	0.045	0.018
Gross Alpha	15	5	15	15			3.25	1.61	1.98	1.54	1.31	2.01	3.55	1.34	1.45
Gross Beta		50					5.28	1.37	1.81	7.25	1.67	2.19	4.70	1.27	1.71
Strontium-90	8		8		1000	40	0.26	0.36	0.60	NA	NA	NA	NA	NA	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	123	18	10.5	42.1	12	10.5	34.1	11	10.5

TABLE 8 (continued)

Parameter	Sample Location and Date Collected														
	Reference						San Ildefonso Wells and Springs								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	Otowi Spring (9/08/98)			La Mesita Spring (9/08/98)			LA Spring (9/09/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.78	0.20	0.080	5.12	1.06	0.013	0.066	0.063	0.095
Uranium-238					600	24	1.00	0.24	0.093	3.36	0.71	0.059	0.077	0.064	0.090
Uranium-235/236					600	24	-0.012	0.063	0.12	0.16	0.07	0.045	-0.022	0.049	0.11
Gross Alpha	15	5	15	15			2.45	1.56	2.16	12.1	2.6	1.74	3.42	1.82	2.54
Gross Beta		50					5.91	1.44	1.87	4.92	1.31	1.76	5.43	1.36	1.80
Strontium-90	8		8		1000	40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	72.5	14	10.5	54.5	13	10.5	2.70	9.3	10.5

Parameter	Sample Location and Date Collected											
	Reference						Bayo Wastewater and Sewage Treatment Effluent					
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	Bayo-1 (outfall) (9/01/98)			Bayo-2 (intersection w/Route 502) (8/28/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA
Uranium-234					500	20	0.23	0.24	0.40	1.00	0.45	0.18
Uranium-238					600	24	0.38	0.27	0.26	0.18	0.17	0.18
Uranium-235/236					600	24	0.15	0.24	0.47	-0.037	0.038	0.32
Gross Alpha	15	5	15	15			3.39	1.90	2.65	1.08	1.20	1.94
Gross Beta		50					13.2	2.0	1.77	8.04	1.61	1.91
Strontium-90	8		8		1000	40	-0.18	0.39	0.69	0.34	0.32	0.52
Tritium (H^3)	20000		20000	20000	2000000	80000	26	14	17.5	22.3	17	21.5

TABLE 8 (tinued)

Parameter	Sample Location and Date Collected														
	Reference						Quality Control Samples								
	EPA MCLs[a]	EPA SLs[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	LANL-FB-1 (8/27/98)			LANL-FB-2 (9/03/98)			LANL-FB-3 (9/09/98)		
							Result	Sigma Error	MDA[g]	Result	Sigma Error	MDA	Result	Sigma Error	MDA
Uranium-234					500	20	0.20	0.30	0.59	0.52	0.33	0.26	0.069	0.050	0.062
Uranium-238					600	24	0.15	0.24	0.47	0.28	0.25	0.33	0.15	0.08	0.075
Uranium-235/236					600	24	-0.099	0.079	0.58	0.09	0.15	0.25	0.014	0.035	0.066
Gross Alpha	15	5	15	15			0.31	0.40	0.66	0.32	0.55	0.96	2.81	0.82	0.77
Gross Beta		50					0.93	0.98	1.63	1.09	1.05	1.74	7.07	1.41	1.64
Strontium-90	8		8		1000	40	0.24	0.29	0.47	-0.14	0.31	0.55	0.17	0.28	0.47
Tritium (H^3)	20000		20000	20000	2000000	80000	34.5	20.0	21.5	36.7	18.0	21.5	27.4	11.0	10.5

* All results are reported in pico Curies per liter (pCi/L).
a EPA proposed Maximum Contaminant Levels for Radiochemicals in the water supply.
b EPA proposed Screening Levels for Radiochemicals in the water supply.
c New Mexico Maximum Contaminant Levels for Beta Particle and Photon Radioactivity from manmade radionuclides in community water systems.
d New Mexico Standards for Interstate and Intrastate Streams for Wildlife Habitat Limits.
e Department of Energy Derived Concentration Guides for water ingestion in uncontrolled areas.
f Department of Energy Derived Concentration Guides for drinking water systems.
g Minimum Detected Activity.
L Laboratory lost sample.
B Sample container broken during shipment.

FIGURES

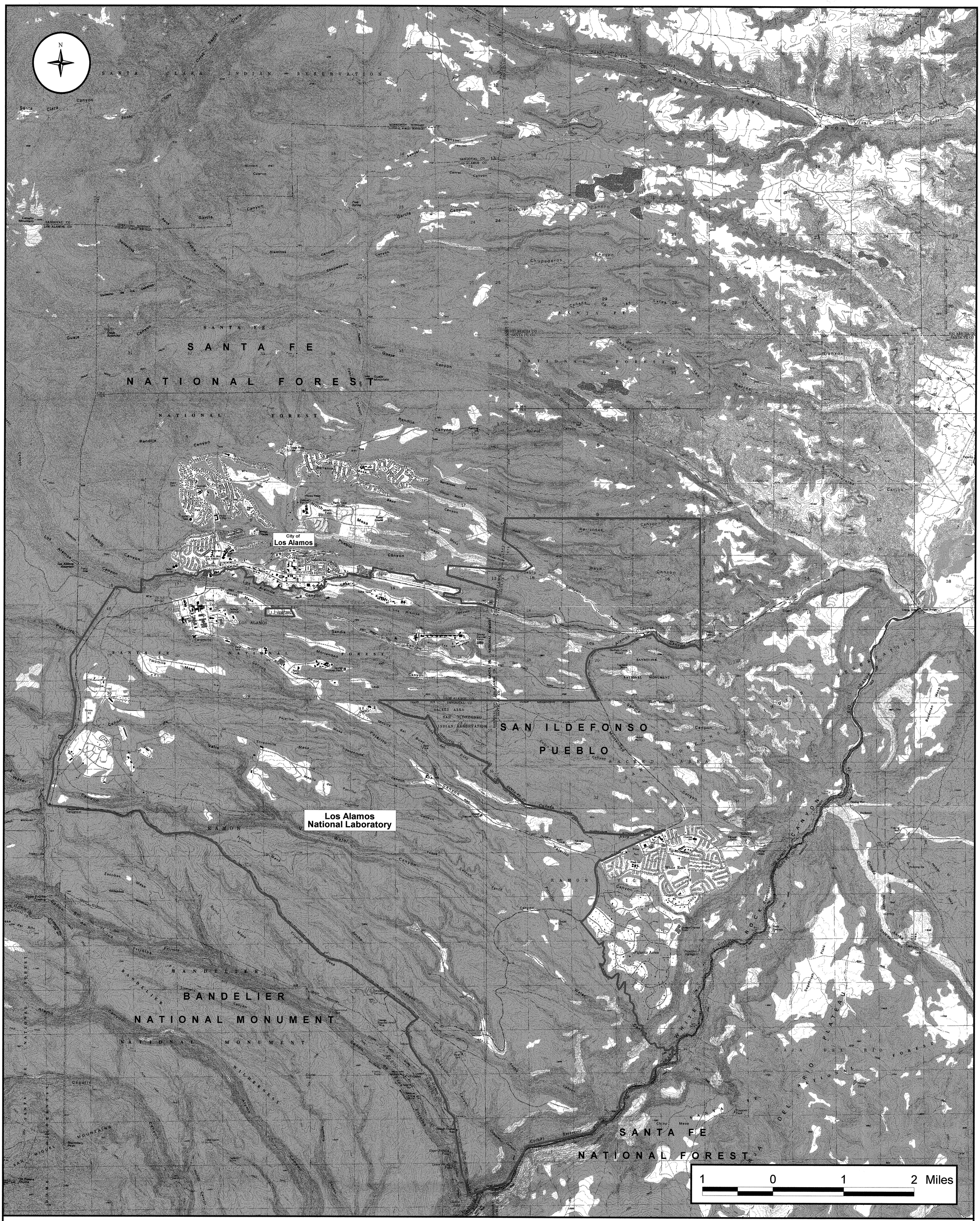


Figure 1: Site Location Map

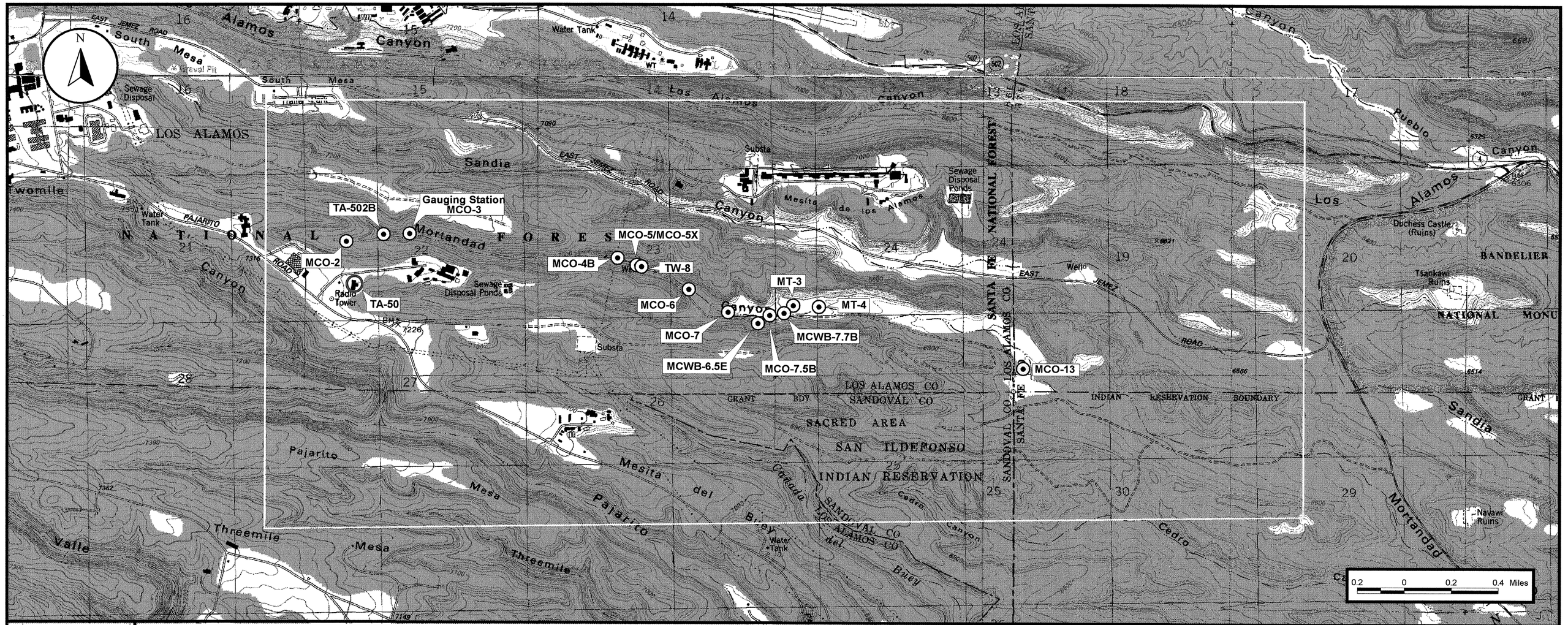
Los Alamos National Laboratory
Los Alamos, New Mexico

Derived from USGS topographic maps of Frijoles, Guaje Mountain, Puye, and White Rock Quadrangles.

Prepared for: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

13277 – A

Prepared by: TECHLAW, INC.
August 1999



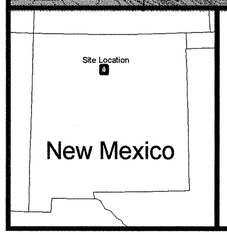


Figure 2: Locations Sampled Within Mortandad Canyon

Los Alamos National Laboratory
Los Alamos, New Mexico

Coordinates provided by the Los Alamos National Laboratory
Derived from USGS topographic maps of Frijoles, Guaje Mountain, Puye, and White Rock Quadrangles.

13277 – B

Prepared by:

TECHLAW, INC.
August 1999

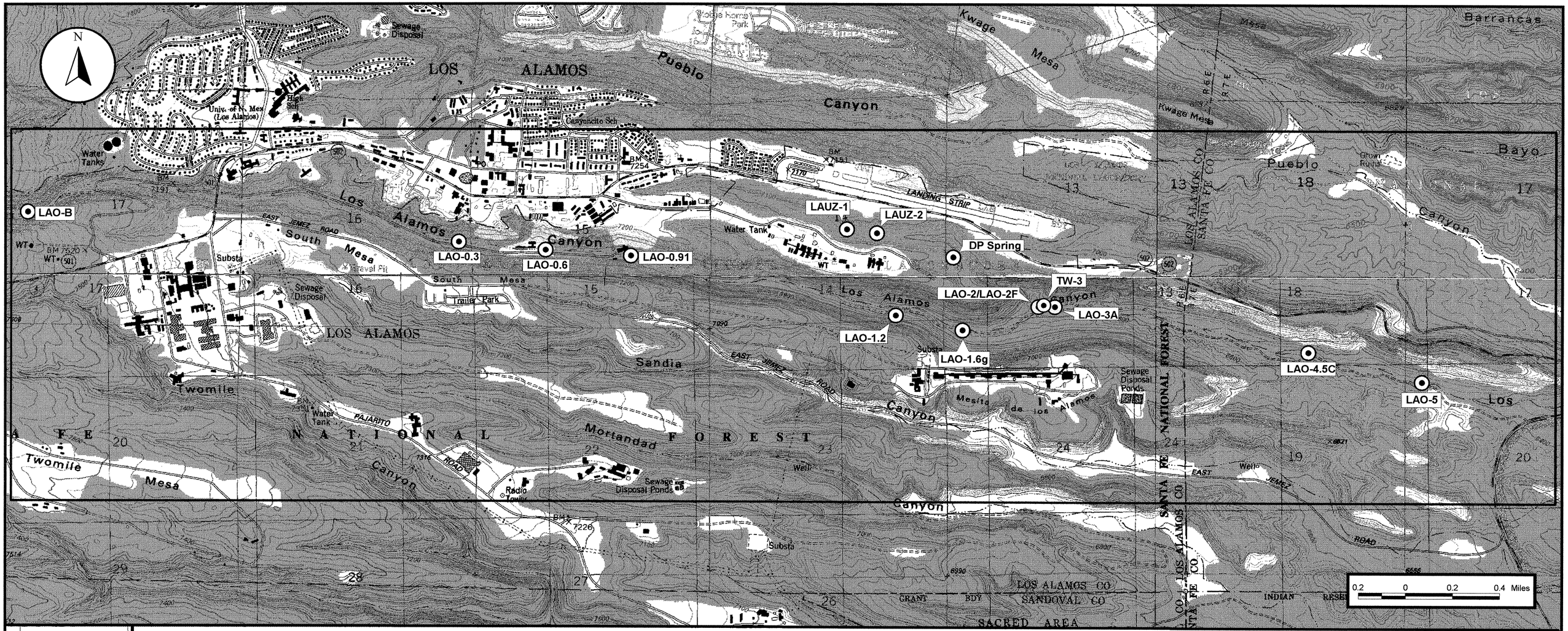


Figure 3: Locations Sampled Within Los Alamos and DP Canyons

Los Alamos National Laboratory
Los Alamos, New Mexico

Coordinates provided by the Los Alamos National Laboratory
Derived from USGS topographic maps of Frijoles, Guaje Mountain, Puye, and White Rock Quadrangles.

13277 -C

Prepared by:

TECHLAW, INC.
August 1999

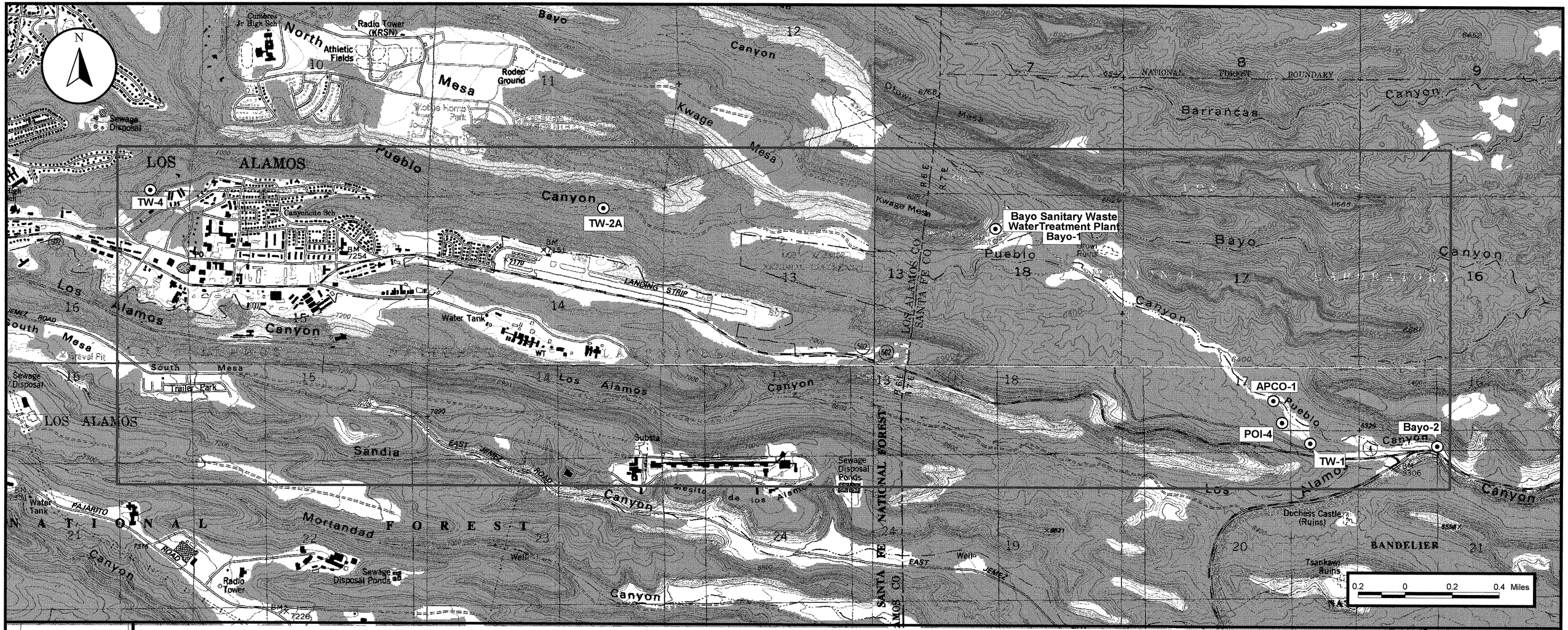


Figure 4: Locations Sampled Within Pueblo Canyon

Los Alamos National Laboratory
Los Alamos, New Mexico

Coordinates provided by the Los Alamos National Laboratory

Derived from USGS topographic maps of Frijoles, Guaje Mountain, Puye, and White Rock Quadrangles.

13277

Prepared by:

TECHLAW, INC.
August 1999

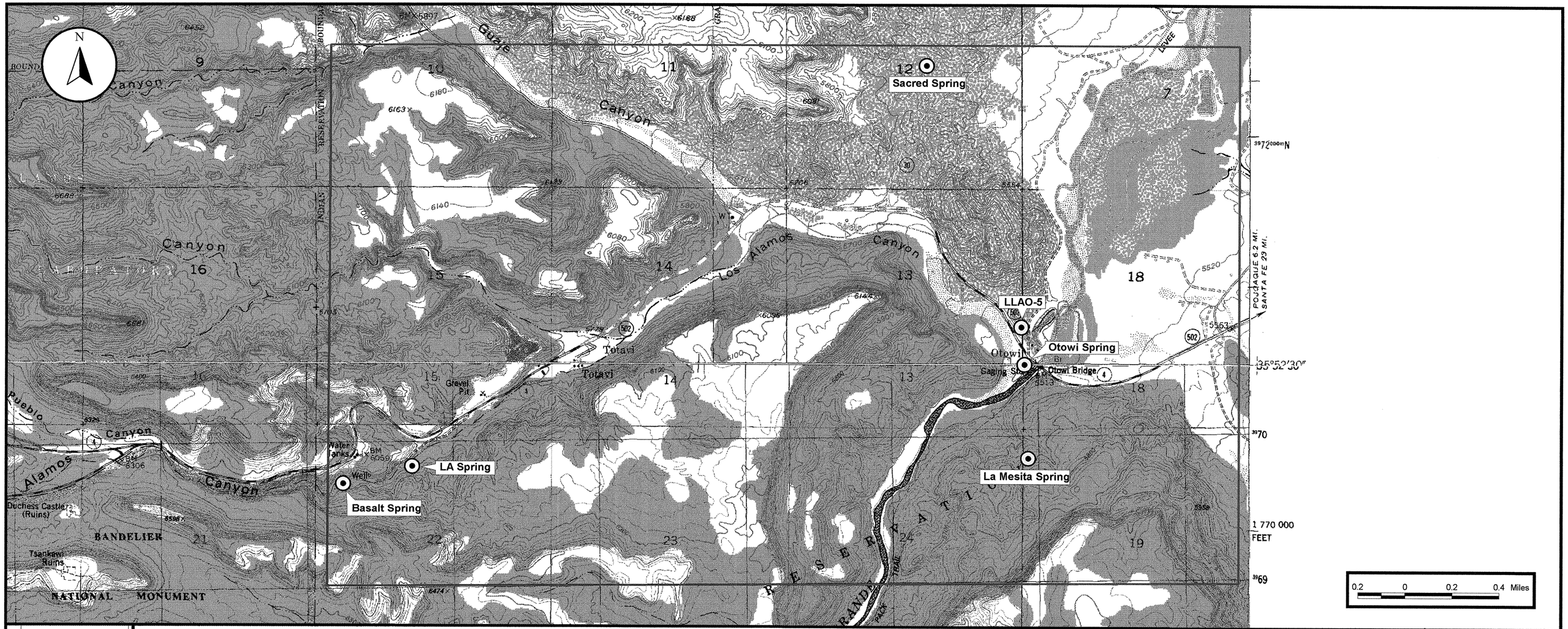


Figure 5: Locations Sampled Within San Ildefonso Pueblo

Los Alamos National Laboratory
Los Alamos, New Mexico

Coordinates provided by the Los Alamos National Laboratory
Derived from USGS topographic maps of Puye, and White Rock Quadrangles.

13277 -E

Prepared by:

TECHLAW, INC.
August 1999

APPENDIX A

Field Logbooks

Logbook 1

...nce Gallahon (LANL) (505) 667-3040
...r Longmire (LANL) (505) 665-1264
...chael Dale (NMED) (505) 672-0449 wk
(505) 662-0443 hm
...antera Lab (Environmental Services)
3715 Rider Trail North
Earth City, MO 63045
(314) 298-8566; (314) 298-8757 FAX
Attn: Allen Field.
...ex# 1997-2354-5
...l phone# (214) 632-6493
...bra Hall (waste treat) 667-4301
check by Thurs. +-6904
...ly Crowder (ER-LANL) 662-1338
660-1695 cell phone for M. Dale

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Field logbook for

Los Alamos National Laboratory
Sampling Activities
Los Alamos, Los Alamos County, NM
WA # 002BT065G.

Begin: 8/19/98
End: 9/8/98

WA #

02 Photo Log - LANL Sampling

Time	Roll	Fr.	Dir.	Desc.	P/W
1115	1	1	S	View of TL Sample being collected by LANL plant operators, using 45 micron filter.	CVM
1413	1	2	Down-NW	View of well MCO-2 being purged - Mortandad Canyon	
1422	1	3	NW	View of purged water @ well MCO-2.	
1433	1	4	N-Down	View of 50 ml bottle being collected from well MCO-2	
0903	1	5	N	View of purged water from MCO-3 —	
0935	1	6	N	View of TL sample being collected @ MCO-3 well by LANL	
1129	1	7	N-NE	View of water being purged from MCO-4B using bladder pump.	
1230	1	8	NE	View of sample collection at MCO-4B —	
1400	1	9	NE	View of well MCO-5, water being purge by bladder pump.	
1450	1	10	NE	View of VOC sampling @ MCO-5 —	
0857	1	11	N	View of MCO-6 being purged.	
0954	1	12	W	View of MCO-6 sampled.	

*Note: Continued onto pg 86, logbook #

03

PHOTOLOG - LANL Sampling WA #

Date	Time	Roll	Fr.	Dir	Desc.	P/W
8/21	1218	1	13	E	View of MCO-7 being sampled	
8/24	1040	1	14	N	View of MCWB 6.5E being sampled	
8/25	1028	1	15	W	View of Well MCO-7.5B.	
8/25	1349	1	16	NW	View of MCO-13, taking H_2O level.	
8/26	1008	1	17	NW	View of well MT-4, Mortandad Canyon	
8/26	1340	1	18	NW	View of Mor. well MCWB-7.7B	
8/27	1330	1	19	NE	View of well MT-3	
8/31	1028	2	1	NE	View of LAO-5 well after sampling —	cvm
8/31	1155	2	2	N	Well # LAO-4.5C.	
8/31	1219	2	3	Down	Well LAO-1.2 close up	
8/31	1220	2	4	W	" " far	
8/31	1502	2	5	SW	Well # LAO-3A.	
8/31	1702	2	6	SW	Well # LAO-2, dry creekbed in background —	
9/1/98	0902	2	7	SE	Well TW-4, Jewish Center in background —	
9/1/98	0912	2	8	W	View of TW-1	
9/1/98	1038	2	9	N	View of TW-2A	
9/1/98	1254	2	10	Down E	Bayo effluent, sampling set-up	
9/1/98	1059	2	11	Down	far off of Bayo 1 effluent flowmeter	
9/1/98	1406	2	12	W	View of TW-3	
9/2/98	1110	2	13	W	View of DP Spring - distance	
9/2/98	1120	2	14	N	Close-up of sampling DP Spring	
	1155	2	15-A		DP Spring Source - NMED took photo	

1/19/98 (WED.) LANL Sampling WA# 002BT0065G

0745 : TechLaw Christa Morrow and Brett Kendrick arrive @ TA-59, Bldg 117 - Hydrology Bldg at Los Alamos National Labs (LANL) to meet with Bruce Gallaher, Rich Mayer, the EPA-WAM, NMED, and sampling crew (LANL) to discuss logistics and safety issues prior to the sampling event. Coolers ~~from~~ with bottles have not arrived from the Quanterra Lab in St. Louis, due to a mistake with the Los Alamos zip code. Airbill # (for Airborne express) is 5289688865. Coolers are enroute, possible arrive this evening. cm

0800: All participants sit down for a pre-sampling meeting, include:

- Bruce Gallaher — LANL - P.D. (proj. dir.)
- Lorie Hall — LANL Health physicist
- Max Maes — Lead LANL Tech.
- Randy Lujan — LANL Tech
- Rich Mayer — EPA-WAM
- Steve ~~Rave~~ Rave — LANL
- Mic[illegible] Dale — NMED-OB

[illegible] 8/19/98

08/19/98 (WED.) LANL Sampling WA# 002BT0065G

0800 (cont.):
- Steve Yanicek — NMED-OB
- Brett Kendrick — TechLaw (TL)
- Christa Morrow — TL
- Bonnie Koch — DOE

Bonnie Koch arrived @ meeting @ approx. 0830. Meeting went over safety issues including rem levels. Background mrem levels → 20-40 mrem/yr., keep dust low. LANL offered to supply TechLaw w/ bottles until bottles arrive. Sampling will begin with wells and effluent associated with Mortandat Canyon. Most of radiation in that canyon from gamma ray from cessium in sediment. Meeting concluded at approx. 0900. cm

0905. B. Kendrick called lab, got volume requirements for all analysis, coordinated w/ NMED in regards to bottle requirements for todays sampling. Loaned Bottles will be supplied by LANL.

Christa V. Morrow 8/19/98

8/19/98 (WED) LANL Sampling WA# 002BT0065G

0950: Sampling team arrives @ TA-50, sign-in, met w/ David Moss @ the rad treatment PLANT (TA-50). This plant recieves all chemistry water - NOT Hazardous, not necessarily all radioactive, recieve about 25,000 gals/day - is current average. Built in 1963. Plant also does not treat sanitary water. Can't treat ~~tritium~~ tritium. Average reding for radiation is 40 pico curies. Will rad screen a sample as a representative of all samples collected at that time. Can use an in line filter for dissolved analytes.

1034: Meeting ended, go into plant to sampling. Samples will be collected as such:

- 1 gal. poly for dissolved metals (pres.: HNO_3) dissolved U
  Gross alpha & beta
  Dissolved Sr^{90}
- 1 gal poly (H_2SO_4) Stable N
- 2 voa vials (HCl) VOC
- 1 L (HNO_3) total metals
- 500 ml (—) tritium

Chuck V. Marrow 8/19/98

8/19/98 (WED.) LANL Sampling. WA# 002BT0065G

Table 1A Samples Collected on 8/19/98

Sam. #	time	Volume*	photo (ref.)	collectors
TA 50-1	start 1115 end 1140	(2) gals, (3) L (2) vials, (1) 500 ml	1/1	TL; LANL
MCO-2	start: 1430 end: 1514	Same as above	1/4	TL, NMED

No other samples collected on 8/19/98

Chuck V. Marrow 8/19/98

* Volume collected only TL amounts

1034 (cont.) 1L (H_2SO_4) NH_3
total phos.
TKN
Nitrate/Nitrite

— 1L (–) Anion
bicarb
TDS, TSS

1100: Dressed out, went through safety before entering the treatment floor (w/ clarifier tanks) - Rm 116. All bottles will be pre-preserved. All dissolved samples filtered w/ an in-line 45 µ filter - from LANL. —— cm

1110: Team enters the treatment floor, plant employees begin collecting samples for both LANL and TL —— cm

1140 Sampling complete, team exits room, TL accompany samples to acidify and seal all bottles (8 total) Bottles will be left with plant in order to screen for radiation, will complete in 1 hour. —— cm

Christa V. Monroe 8/19/98

1200: Entire sampling team broke for lunch depart plant. —— cm

1300. NMED, EPA & TechLaw arrive @ TA-59 - Bruce Gallaher office, C. Monroe called Airborne - coolers arrived, called Hotel to confirm - all coolers placed in B. Kendricks room, meet up other members - continue to sample MCO-2.

1355 Sampling Team arrives at MCO-2 sampling location -> upper reaches of Mortandad Canyon - will sample a monitoring well - has no well pad made of 2" black plastic, perforated from the top down, put in around the 1960's. Well had a locking cap with a lock and was locked. Cap was scanned w/ a micro R meter, reading was below at background. Top of well casing (the lip) is cracked. The same number of bottles as for TA-50. —— cm

1406 Begin LANL began taking water level with a water level indicator w/ an alarm. Water level @ 6.42 from TOP of Casing (TOC). —— cm

8/19/98 (WED.) LANL Sampling WA # 0002BT0656

1406 Total depth is 9.25 TOC. Pipe is 2 inches in diameter - total volume of water to purge is 1.39 gallons. LANL uses a bar code leader - used to calculate water purge volume. Well name is MCO-2. Dia Casing volume is 0.46 - LANL trying to purge 3 volumes.

1419 Began purging well using a Peristaltic pump powered by a Car battery. Water is light brown - looks to have some suspension. pH meter reads 6.59 @ 14.0°C according to Fisher Scientific Acumet Portable AP.25 instrument (LANL's) — cm

1425: NMED arrives @ sampling location, LANL reports that turbity is high. LANL is taking pH, temperature, turbidity, and electric conductivity. — cm

1430: TL begins sampling - same amount as for TA-50.

— Christe V. Morrow 8/19/98

8/19/98 (WED) ~~(WED.)~~ LANL Sampling WA # 0002BT0656

1433 All samples screened w/ the micro R meter - ~~no detections~~ cm No detectable activity. All extra / purged water collected in a carboy. Flow Rate through the peristaltic pump is 1min 5sec for 1 Liter. → LANL did not collect any samples, only took readings mentioned above. — cm

1442: Stopped sampling - well dried up, waited for it to recharge — cm

1445: Began sampling again - collected (1) gallon and filtered gallon, and NMED 2 L sample — cm

1514: Completed sampling @ well MCO-2.

1530: Departed Mortandad Canyon enroute to TA-50 to pick up morning samples.

1609: C. Morrow and B. Kendrick in presence of LANL B. Gallaher had TA-50 samples screened, added acid (HNO_3 & H_2SO_4 respectively) w/ assistance of LANL plant David Sulazar.

1619: TechLaw team departed the Laboratory.

— Christe V. Morrow 8/19/98

8/19/98 (WED.) ~~(THURS)~~ LANL Sampling WA# 002BT065G

1640: TechLaw arrives @ Hotel from TA-50, begin packaging samples. Change in one of the analysis => instead of analyzing for nitrite/nitrate - just analyze for nitrate -> 28 day holding time as opposed to 48 hr.; Samples will be packaged and iced, w/ COC Forms ready, coolers sealed w/ COC seal, sent via Fedex next day - samples collected next day will be packaged & sent day after. — cm

LATE NOTE: WEATHER: low 80's, overcast, rained around 1500, while collecting filtered 1gal for MCO-2. — cm

1840: Completed packing samples - iced both coolers, ~~placed a signed custody seal on eo.~~ cm.

Christa V. Munoz

8/19/98 (WED.) LANL Sampling WA# 002BT065G

Table of Analysis w/ volume & pres. requirements

Analysis	Volume/Type	Preserv.
Anion Bicarb. TSS, TDS	1L poly	None
NH_3 Total P, TKN Nitrate	1L poly	H_2SO_4
Dissolved Metals	1L poly	HNO_3
Total Metals	1L poly	HNO_3
Isotopic Uranium	1L poly	HNO_3
Tritium	500 ml glass	None
Gross α, β	500 ml glass	HNO_3
Dissolved Sr^{90}	1L poly	HNO_3
VOC	(2) 40ml vials	HCl
Stable N isotope	(3) 1L poly	H_2SO_4

Christa V. Munoz 8/1 '98

9/20/98 (Thurs). LANL Sampling WA# 002BT0065G

0745: C. Morrow & B. Kendrick depart Hotel, sealed both sample coolers (from yesterdays collection) w/ signed custody seals. Enroute to TA 59 to meet w/ LANL —— cm

0800: Arrived @ TA-59 to group up w/ LANL sampling team.

WEATHER: ~~Mid~~ Low 70's, clear skies.

Proposed work: Sample MCO-3, MCO-4B, MCO-5, MCO-6 - wells associated with Mortandad Canyon. —— cm

0827: Sampling Team arrives at the upper reaches of Mortandad Canyon to sample well # MCO-3. The well is located at the bottom of a steep-walled ravine in the upper reaches of Mortandad Canyon. —— cm

Well Description: There is a rough concrete support up around the base of the casing. The casing is a steel w/ a diameter of 3". Casing was locked. The well is right along what looks like a creek bed, the area flooded

Chrsta. V Morrow 9/20/98

9/20/98 (Thurs) LANL Sampling WA# 002BT0065G

around the well 1993, took out MCO-4, well was put in about 1967. There is a dedicated bailer.

B. Kend. micro-R rdg	~~Well depth~~ water level	~~Well volume~~ depth	well vol.	purged vol
30 mrem.	5.55 (TOC)	10.83 (TD)	1.93 gal.	5.82 gal.

—— cm

→ Initial readings taken by LANL.

time	well name	temp	pH	turbidity	e. conduct.
0902	MCO-3	15.1°C	7.28	13.1	0.84
1424	MCO-2 (8/19)	13.3	6.3	219	0.36

0900: LANL began purging well w/ a peristaltic pump - tube changed out from yesterday (according to B. Gallaher)

Peristaltic flow rate: 1L / 1min 10sec.

→ Stable readings taken by LANL (Final)

time	well name	temp	pH	turbidity	e cond.
1012	MCO-3	14.7	7.13	0.76	0.83
1451	MCO-2 (8/19)	13.2	6.21	~~0~~64.4	0.33

0912 Water level is 5.58 feet. —— cm

0919 Water level is 5.58 feet, water volume is maintaining —— cm

0930 Began sampling, note: all purged water tossed out @ site-sample location. Collecting unfiltered 1L sample first. —— cm

Chrsta. V. Morrow 9/20/98

/20/98 (Thurs.) LANL Sampling WA# 002BT0065G

TABLE 2A: Samples collected on 8/20/98

m.#	TIME	volume collected*	photo	collectors
0-3	Start: 0930 END: 1010	(9) 1L poly (2) 500ml poly/glass (2) 40-ml vials	1/6	LANL, TL NMED†
MCO-4B	Start: 1233 END: 1302	(9) 1L poly (2) 500ml poly (2) 40-ml vials	1/8	TL
00-5	Start: 1447 END: 1515	(9) 1L poly (2) 500 ml poly/glass (2) 40ml vials Duplicates: (6) 1L poly (2) 500 ml (2) 40ml vials	1/10	TL, NMED

Christa V. Mason 8/21/98

* Volumes collected include only TL's samples.
† Sample collected by LANL, kept w/ TL until NMED arrives
Christa V. Mason 8/20/98

8/20/98 (Thurs.) LANL Sampling WA# 002BT0065G

1010: Sampling complete casing locked
NOTE: the creek bed reads 50mrem
Note: LANL tech Penny Gomez assisting sampling in addition to M. Maes and R. Lujan

1040: Sampling team departs site enroute to ~~Sam~~ next sampling location, Bruce Gallaher will not attend. Note: purged water from MCO-2 that was put into carboy, remains at MCO-2 until results of analysis recieved. —cm

1116: Team (LANL & TL) arrive @ MCO-4B, located on the eastern side of A bottle-neck in Mortandad Canyon - accessed from a road going through the lower reaches of Mortandad Canyon, beginning @ TA-52. —cm

Well Description: There is A foot square concrete pad w/a brass & survey marker - unstamped. Casing ~~is Aan~~ There is A black metal well housing that protects a 2" diameter PVC casing w/a.

Christa V. Mason 8/20/98

1116 (cont.) bladder pump, well put in ~~8/90~~ Aug. 1990. Was locked. This well is a replacement for MCO-4, which was destroyed during a flood.

Well Name	Water level	Total Water depth	Vol water	purge water
MCO-4B	22.15 (TOC)	33.9	1.92 gal	5.75 gal

* Well has a dedicated pump, do NOT wish to agitate so total depth taken from records.

Initial/Final Parameter Readings (LANL) MCO4B

	TIME	TEMP	pH	turbidity	e.conduct
(initial)	11:33	8.4°C	7.15	6.75	0.47
(FINAL)	1305	~~8.9°C~~ 8.5	7.1	~~2.73~~ 1.92	~~0.46~~ 0.47

* Flow Rates 1L / 2 min 15 sec OR 9 minutes per gallon (for bladder pump). Purged water tossed out at sample site.

Note: LANL Team rounded up and will purge 6.0 gallons.

1152: Flow Rate 1L / 2 min 30 sec.

begin purging at 1130

Christa V. Morrow 8/20/98

1204 Parameters collected by LANL are done so using following instruments:

- Turbidity: HACH instrument, 2100P Turbidimeter
- pH meter/temp: Fisher Scientific - Accumet portable AP25
- Conductivity: GLA Agricultural Electronics - instant EC, salinity, drop tester

1210: water level is 22.15 feet, Background RAD reading is 50 mrem.

1233 Began sampling for TL

1302: Sampling complete, performing final parameters

1307: Final water level is 22.12 ft.

1310: Sampling Team breaks for lunch, eats @ site.

1340: Team moves to next sampling location, MCO-5, located further down the Mortandad Canyon ~100 ft down (east) from MCO-4B

Well Description: There is no well pad, there is a gray metal well housing protecting a 3" diam Plastic Casing

Christa V. Morrow 8/20/98

8/20/98 (Thurs) LANL Sampling WA# 002BT0605G

1340 (cont) There is A gray cap that was locked on. There is A 25 foot screen on the well. —— cm

1350 Began taking water volume

Well Name	water level	Total Depth	water vol.	purged vol.
MCO-5	24.62 ft (TOC	46.0'	7.8 gal	23.5

—— cm

1353: Setting up to purge, will purge 3 well volumes, as with all other wells, using a bladder pump - pump already in place, total depth determined by records, well constructed in March 1960.

→ Initial/Final Parameter Readings (LANL)

	time	temp	pH	turbidity	conductiv
(initial)	1358	10.6°C	7.25	9.85	0.52
(final)	1515	10.7	6.96	5.94	0.50

1355 Began Purging: Flow Rate: 1L/53 sec, should take approx 28min to purge well. Well is right along creek bed - dried, creek bed crosses over road - ~~sandy~~ Sandy —— cm

All water purged, tossed out —— cm

Background rad is 62 μrem - along creek bed (which crosses road) —— cm

[illegible] 8/20/98

8/20/98 (Thurs) LANL Sampling WA# 002BT0605G

1410: NOTE: All rad readings are in micro (μ) rem, not mrem - as written in this book. —— cm

1411 NMED M. Dale ~~and S. Yun~~ arrive @ MCO-5 sampling location —— cm

1447 Sampling begins - little over one borehole was purged - waited for parameters to stabilize.

1505: NMED M. Dale departed the site.

1515: Completed Sampling —— cm

1519: Water level is 24.63 ft. —— cm

1530: Sampling team departs the site —— cm

1600: Return to Hotel, —— cm

1700 Began prepare samples in coolers, end of day —— cm

Chuck V. [illegible]
8/20/98

8/21/98 (FRI) LANL Sampling WA# 002BT0656

0830: Sampling Team meeting, Will be several visitors on attendance for this morning activities. LANL has requested that sampling activities end at noon today.

Attendees	Agency
Kim Hill	EPA
Rich Mayer	EPA-WPM
Steve Rae	LANL
John Young	NMED
Michael Dale	NMED
Hank	Citizen
Bonnie Koch	DOE
Bruce Gallaher	LANL

The above stayed behind to be briefed, Sampling team went on

0839: Sampling Team arrived at sample location MCO-6 on

Weather: Overcast, low 70's, high 60's

Proposed Work: Sample MCO-6, MCO-7A.

Team began preparing well # MCO-6. Well Description: There is no well pad or support, there is a gray metal protector

Christa R. Morrow 8/21/98

8/21/98 (FRI) LANL Sampling WA# 002BT0656

0839 (cont) present with 4" diam. plastic well constructed in March 1974. There is a dedicated bladder pump

→

Well Name	Water Level	Total Depth	well vol.	purge vol
MCO-6	39.92 ft TOC	47 ft.	4.6 gal	13.7 gal

* Due to dedicated pump, total depth determined from records.

0845 Sampling team consists of

Brett Kendrick	TL
Christa Morrow	TL
Max Maes	LANL-tech
Penny Gomez	LANL-tech
Randy Lujan	LANL-tech
Darrel Stafford	LANL Health Physics
Chuck Ribe	LANL

0846 Sampling team began purging,

Joe Hill ~~D. Stafford~~ and C. Ribe arrived on-site at 0844

0849 NMED M. Dale and J. Young arrive on-site with EPA Kim Hill.

→ Initial / Final Parameters Readings

	Time	Temp	pH	turbidity	conduct
initial	8:52	7.0°C	7.22	4.99	0.56
final	10:30	9.4°C	7.02	11.5	0.53

* Flow rate: 1L / 1 minute

Christa R. Morrow 8/21/98

9/21/98 (Fri) LANL Sampling WA# 002BT0065G

TABLE: 3A Samples collected on 9/21/98

Sam#	TIME	Vol. collected	photo	collectors
MCO-6	Start: 0945	(9) 1L poly		NMED,
	End: 1028	(2) 500ml poly/glass	1/12	TL
		(2) 40 ml vials		
		MS/MSD:		
		(4) 1L poly*		
		(2) 1L poly+		
		(4) 500ml poly		
		(4) 500ml glass		
		(4) 40 ml		
MCO-7 replaced MCO-7A	Start: 1214	(9) 1L poly	1/13	NMED,
	END 1233	(2) 500ml poly/glass		TL
		(2) 40ml vials		

Christa V. Mynar

* metals: MS/MSD QC is triple volume, also VOC
+ Rad: S[illegible] & U is double volume, gross α, β is double vol & tritium.

9/21/98 (Fri) LANL Sampling WA# 002BT0065G

0850. D. Stafford and C. Rice of LANL left the site at approx. this time in separate vehicles. —— cm

0858 TL has PID running during well sampling activities, readings are background —— cm

0918: All purged water is tossed out, LANL has approval from State to do so. Background RAD is 60 μrem —— cm

0945: Begin sampling after 3 well volumes purged. —— cm

0950 LANL B. Gallegos, DOE B. Koch, EPA R. Mayer and a rep from a local citizens board Hank Dameman on-site —— cm

1028: Sampling complete, Flow Rate: 1L/1 min 2 sec
Water level is 39.97 ft. —— cm
Note: Collected MS/MSD @ MCO-6 —— cm

1042: Arrive @ MCO-7 (MCWB-65) approx. 100 ft down from MCO-6 —— cm

Well Description: 3 ft squared well pad w/ a white metal Housing. Not bolted to the pad. Housing is locked - no key - will sample this well later —— cm

Christa V. Mynar 9/21/98

1054: Arrived at well # MCO-7, about 100 ft further down (east) the road. ——— cm

Well Description: rough concrete support, approx ~1 ft square w/ a gray metal housing protecting 3" diam pvc casing, there is a sediment trap @ base of housing - bladder pump dedicated to the well ——— cm

Well Name	Water Level	Total Depth	water vol	purge vol
MCO-7	41.29'	69'	10.2 gal	30.6

* Total depth determined from records, due to dedicated pump. ——— cm

1103: Begin to purge the well.

* Flow RATE: 1L / 1.04 minutes

→ Initial / Final Parameters

	TIME	Temp	pH	turbid.	conduct
initial:	1113	9.3°C	7.18	10.7	0.53
Final:	1233	10.5	6.91	18.5	0.52

1211: All purged water tossed at sample location ——— cm

1214: Sampling begins - parameters stable, about 1 1/3 boreholes purged.

Christa V. Marrow 8/21/98

1230: NMED, EPA (R. Mayer and K. Hill) depart the site, ——— cm

1233: Completed sampling, Final water level is 41.41 ft. ——— cm

1240 Departed site. ——— cm

1350: Arrived at the NMED - White Rock office to send off 5 coolers via Fedex to the Laboratory.

1435: Fedex picked up all sealed coolers, Airbill # 4795032291.

1500 Returned to Hotel ——— cm

Christa V. Marrow

1

8/24/98 (Mon.) LANL Sampling WA# 0002BT0065

0740: C. Morrow and Wallace O'Rear who is subbing in for B. Kendrick, arrive @ TA-59, review Health & Safety. Met with LANL Max Maes and Penny Gomez, noted that EPA-WAM Allan Chang (subbing for R. Mayor) has not checked into Los Alamos inn (662-7211), made arrangements to leave cell phone # so he can contact us when he arrives.

Weather: Clear, low 70's —— cm

Proposed work: Sample wells ~~MCOB-6.5m~~ MCWB-6.5C, MCWB-6.5E,

0850: Sampling Team arrives @ the first sampling location. well # MCWB-6.5E: —— cm

Well Description: Has a 3-ft square well pad w/ an unstamped brass ~~pad~~ marker. There is a white metal Housing not bolted to the pad. The Housing was locked; there is a beige metal pipe Housing w/ a locked cap protecting approx

—— cm — initials V. Morrow 8/24/98

8/24/98 (Mon.) LANL Sampling WA# 0002BT0065

OBSERVATION) 4" PVC casing. There is a a dedicated bladder pump. (3x)

	well name	water level	Total Depth	water vol	purged volume
0900	MCWB-6.5E	45'	53'	5.22 gal	15.67 gal

* Total Depth determined using the water level indicator —— cm

0907: Note: People in Attendance today:

Max Maes — LANL-Sample
Penny Gomez — LANL-Sample
Bob Elliot — LANL-Health physicist
Christa Morrow — TL
Wally O'Rear — TL

Note: All purged water will be contained and left here until results come in.

0917: Began purging the well

* Flow Rates 1L / 65 sec.

→ Initial / Final Parameter Readings

	TIME	TEMP	pH	turbidity	conduct.
initial	0920	10.1°C	6.76	62	0.50
Final	1104	9.9C	6.61	3.38	0.43

1012 Well constructed in 1994, under RCRA standards, M. Maes thinks that well has never been sampled before - uncertain —— cm

—— cm — V. Morrow 8/24/98

8/24/98 (Mon.) LANL Sampling WA# 002BT0656

TABLE 4A: Samples Collected on 8/24/98

SAM #	TIME	Vol Collected	photo	collectors
MCWB-6.5E	Start: 1048 END: 1102	(9) 1L poly (2) 500 ml poly/glass (2) 40 ml vials	1/14	TL
MCWB-6.5C	Start N/A END N/A	(9) 1L poly (2) 500 ml poly/glass (2) 40 ml		TL
(NO Sample)				
MCWB-7A (NO Sample)	Start: END:	(9) 1L poly (2) 500 ml (2) VOC		

Chuck V. Minter 8/25/98

8/24/98 (Mon.) LANL Sampling WA# 002BT0656

1048 Began Sampling — am

1102 Sampling Complete, take final parameters, water level is

1112 Departed sample site enroute to second well, across the road from MCWB-6.5E — am

Well Description for MCWB-6.5C. is the well that ~~basem~~ was inaccessible last Friday (8/21/98), 3' ~~Concrete~~ Square concrete well pad w/ a white metal "house-like" shelter, Shelter is locked, well casing is a light brown metal pipe, capped, 3", PVC, constructed 12/8/94, RCRA std.

1145 Sample team breaks for lunch, LANL B. Gallaher arrives on-site — am

* NOTE Well MCWB-6.5E is 3" Not 4", Changes volume — am

well name	H2O level	total Depth	water vol	purged vol
MCWB-6.5C	44.53'	49.7	1.9 gal	5.69 gal

Total Depth taken from records, well has a dedicated water pump

* Flow rate: Water pumped ~~is~~ NO water flow above the bottom of the screen, eventually dry. — am

Chuck V. Minter — 8/24/98

8/24/98 (Mon.) LANL Sampling WA# 002BT026SG

~~Initial/Final Parameter Readings~~

~~Time Temp pH Turbidity Conduct~~

1235: Departed well # MCWB-6.5C since well not producing water

1242: Arrived at well MCWB-7A, Well Description: There is a 3' ft. Square concrete pad w/ a white metal "House-like" casing that protects a metal casing around a 3" PVC pipe made to RCRA Stds, constructed in 12/9/94, LANL checking water level to see if "dry".

Well Name	Water Level	Total Depth	H_2O Vol	Purged Vol
MCWB-7A	42.67'	54.2	4.23g	12.69g

Flow Rate: 1L/5 sec.

1255: Began purging well, Note: rainclouds coming in, thunder.

Initial/Final Parameter Readings

	Time	Temp	pH	turbidity	cond
(Initial)	1257	9.0°C	7.27	3/4	0.50
(Final)	N/A				

1317: Stopped work, Flow Rate slow ~~dropped to 2L/30 sec~~, very turbid

1325: Sample Team departs Site. — CM

Christa V. Morrow 8/24/98

8/24/98 (Mon.) LANL Sampling WA# 002BT026SG

1407: Arrived at TA-5G, all members decided on an early Start, to meet @ 0700 to try to avoid delay from afternoon showers; decided to check water level @ MCWB-7B as a replacement for MCWB-7A; Total Depth for MCWB-7B is 47.5' Screen depth is 32-42', bladder pump is roughly at 41' - will check to see if water ~~level~~ level above or below the pump level. This will the first thing to do in morning. — CM

1430: Return to Hotel, begin packaging todays samples. C. Morrow received message that Quantera is shipping 15 coolers, to arrive 8/25/98 by 1700. — CM

1600: Completed packaging and organizing gear for next day.

Christa V. Morrow 8/24/98

8/25/98 (Tues) LANL Sampling WA#002BTR6656

0710: Arrived at TA-59 to meet w/ LANL sampling Techs. Called EPA-Wm Allan Chang - arranged for him to come by TA-59 and meet with Bruce Gallaher, will meet rest of sampling team @ lower Mortandad Canyon.

0730: Departed TA-59 en route to Mortandad Canyon. —— cm

0730: Sampling Team stopped to pick up Joe Hill, today's health physicist —— cm.

0800: Arrived at well MCWB-7B, will take ~~both the~~ cm water level to see if the well is worth sampling. Water level is @ 43 ft, below level of pump (TOC) so not worth sampling. Will move to MT-series

0826 Have departed MCWB-7B, now arrived at MT-2, will check water level. Water level is at 45.62 ft, bottom of screen is about 64 ft. - Mistake, this is MT-01 well —— cm

—— Christa V. Munson 8/24/98 ——

8/25/98 (Tues) LANL Sampling WA#002BTR6656

0849: Arrived at Well MCO-7.5B, water level 46.85 ft., bottom of screen is @ 60 ft., can sample the well —— cm

Well Description: Has a flat squared concrete support w/ a gray metal casing protecting a ~~3" diam. PVC~~ cm pipe, ~~constructed in 1974~~ cm 4" diam plastic pipe, constructed in 1974 to replace well MCO-7A, destroyed by a tree —— cm

Well name	water level	TD	water vol	purged vol
* MCO-7A 7.5B cm	46.85'	60 ft.	8.59 gal	25.76 gal

0900 Begin purging the well, testing the Flow Rate: 1L / 1 minute, all purged water tossed out @ sample site. —— cm

Initial / Final Parameter Reading

	Time	Temp	pH	turbidity	conduct.
(initial)	0903	10.6°C	6.88	3.05	0.53
(final)	1035	10.8 ~~6.9~~ °C cm	6.9	3.05	0.49

1008: A little over one well volume has been purged, All parameters are stable, will begin sampling —— cm

1010: Begin Sampling. —— cm

—— Christa V. Munson 8/25/98 ——

8/25/98 (Tues) LANL Sampling WA# 00RBT065G

1035: Sampling Complete - difficulty w/ collecting VOA sampling, tubing set high so water arched out, collected sample @ arch of water w/ vial tilted so water hit the side

1039 TOOK Sample Flow Rate; none taken, pressure low. Water level @ 46.93 ft.

1055: Departed MCO-7.5B, enroute to next well, latenote: EPA-van blew a tire, TL W. O'Rear and LANL B. Gallaher departed site @ approx 0915 to fix the tire,

1105: TL W. O'Rear and LANL B. Gallaher arrive @ the site, NMED arrived soon after. C. Munroe met w/ NMED. M. Dale and S. Yanecek to discuss future well sampling. They suggested that well MCOB-4.5C should have water - maybe measure

V. Munroe 8/25/98

8/25/98 (Tues) LANL Sampling WA# 00RBT065G

TABLE 5A: Samples Collected @ 8/25/98

Sm#	Time#	vol collected	photo	collectors
MCO-7.5B	start 1010	(9) 1L poly	1/15	TL,
	stop 1035	(2) 500ml		↓
		(2) VOA		

V. Munroe 8/25/98

8/25/98 (Tues) LANL Sampling WA# 0002BT0005G
1105 again (NOT necessary, No water pumped up after running bladder pump for 5 minutes), as well as for MCWB-7B. Was informed by LANL that MT2 well was dry, water level @ * ——— am
1105 (cont). NMED Suggested that after complete Sampling Martinez Canyon (possibly done tomorrow morning) to sample discharge tank & gauging station.
1130. Broke for lunch ——— am
1200: Began work @ MT-3 well.
Well Description: A Gray metal casing protecting 2" ~~plastic~~ PVC pipe. There is A dedicated bladder pump which is not situated well in the pipe. Casing is supported by some concrete. Casing was capped & locked.

Well Name	water level	TD	water vol	purge vol
MT-3	47.36' *	~~74.6~~	~~27.24~~ gm	~~81.72~~ am
		108	4.4	13.3 2

Total Depth taken from measurements

Chris V. Moran 8/25/98

* See Pg 46. water level NOT recorded, recorded on 8/24/98

8/25/98 (Tues) LANL Sampling WA# 0002BT0005G
1200 (cont) taken by LANL on 8/4/98, documented in LANL logbook.
1230: Pump is not working, All agreed to pull the pump for LANL to work on this afternoon. Will recheck ~~MW~~ am MCWB-7B w/ pump, and check water level @ MCO-13. Will knock off early in Martinez. ——— am
1253: Corrections: Pulled bladder out of well, tube not well connected, reconnected and put back in well, we are trying to pump well again. Did not work, pulled pump out and bagged it. Preparing to depart sample location
1319: Arrived @ MCWB-7B well to reconfirm dryness by pumping, As suggested by NMED ——— am
1327: Confirmed that well is dry, No water
1343: Arrived at MCO-13 to take water level - 0, TD: 108.1' (TOC)
Well description: ft. square concrete support to a pale brown metal casing that protects a 2" PVC pipe.

Chris V. Moran 8/25/98

8/25/98 (Thos) LANL Sampling WA#0002BT0605G

1430: Departed MCO-13, enroute to TA-50 —— cm

1450: C. Morrow, W. O'Rear, and LANL B. Gallaher met w/ TA-50 WMT-water D. Moss and Debra Hill in regards to sampling both the discharge tank and also the effluent @ the water gauge in upper Mortandad Canyon. It was suggested that our TL team split up - one person to collect discharge water prior to discharge, in the plant while the other person, stationed @ the gauge and within radio contact to collect samples when waste-water discharged. TL to coordinate w/ Deborah Hill at 667-4301 (or 7-4301) tomorrow afternoon, to schedule for Thursday morning sample collection —— cm

1530: Arrived at NMED, spoke w/ NMED Michael Dale.

Chrs to V. Morrow 8/25/98

8/25/98 (Thos) LANL Sampling WA#0002BT0605G

1530 (cont) regarding Thursday collection, he said he will be available Thursday morning to collect water @ gauge, and to please coordinate with him regarding scheduled times. C. Morrow, W. O'Rear & M. Dale discussed final wells in lower Mortandad Canyon - TL agreed to collect 2 samples @ each well & for NMED. M. Dale will be home tomorrow, left TL his phone. TL will drop off coolers tomorrow to ship out. LANL M. Moss called for C. Morrow at the NMED office - said pump NOT fixable, requested that TL be lead samples if want to bail, TL agreed. NMED gave TL a topo map w/ all well locations to TL, coordinated w/ TL regarding Thursday samples, and to call Andy Crowder w/ ER (Pat Longmire's Group) @ (505) 662-1338 to begin

Chrs to V. Morrow 8/25/98

8/25/98 (Tues) LANL Sampling WA#002BT865G

1530 (pst) Coordinating sampling effort for Los Alamos & DP Canyons, tentatively ready to do so Thurs. afternoon & Friday. Ask Andy to go with Max Maes or a person named Skolski in regards to pumps and sampling methods. —cm

1615: Departed Site NMED, Have NMED sample jars, nitric acid contaminized in smaller volumes, and rope for bailers.

1640. Arrive @ Hotel, called Andy Crowder, left msg re: sampling, left name & Hotel number. Began prepping samples and organizing for tomorrow.

1900. Completed work for the day.

Christa V. Minor
8-26-98

8/26/98 (Wed.) LANL Sampling WA#002BT865G

0715. Met @ TA-59, sampling crew today includes: —cm

Max Maes	LANL Lead Tech (ES&H)
Penny Gomez	LANL Tech (ES&H)
Jovie Hale	LANL Health Phys. (ES&H)
Alan Chang	EPA-WAM
Wally O'Roar	TL
Christa Marrow	TL

Proposed Work: Sample well MT-3 (bailer), MT-4, and MCWB 7.7B, ship coolers —cm

Weather: High 60's, damp from severe thunderstorms the night before, expected storms this afternoon.

0740. Stopped @ top of Mortandad Canyon Road - Road looks too rough for EPA van, loaded necessary gear into one of two LANL trucks to go rest of way into lower Canyon.

0810 Arrive @ MT-3, begin setting up

0816: Water level @ 47.27'

Well	water level	Total Depth	water vol	Purge vol
MT-3	47.27	74.4	4.42 gal	13.27 ~ 14 gal

Since no pump, TD is actual reading. See pg. 38 for well description

—Christa V. Minor 8/26/98

8/26/98 (Wed). LANL Sampling WA# 0002BT005G.

0821: Began purging w/ bailer, will containerize all purged water.

Initial/Final Parameters @ MT-3

	TIME	Temp	pH	turbidity	conduct.
(Initial)	None taken - due to complication,				
(Final)	See below				

bailed water poured into a carboy (5 gal.) w/ a funnel w/ a 1L wide mouth poly sitting in the funnel to collect parameters. TL is taking lead bailing.

0843: Problem in bailing, there is some sort of obstruction in the pipe that is stopping bailer (coupling?) (a disposable bailer) from going straight down the pipe, cannot get bailer to the bottom. Decision made, to have Timco, a company that constructs bailer pumps, to ship a tested bladder pump out as soon as possible.

0900 LANL M. Mues called Timco via TL cell phone - pump will be here tomorrow, can possibly sample Friday.

Auth V. Maier 8/26/98

8/26/98 (Wed.) LANL Sampling WA#0002

0920: Arrived @ MT-4

Well Description: Has a concrete support @ the base of a gray metal casing protecting a 2" diam. PVC/plastic pipe, constructed in 1974

Well	water level	TD	water vol.	purge vol.
MT-4	60.16'	74'	~~2.18~~ 2.47 gal	7.42 gal
	(TOC	75.34' (TOC)		(LANL ~7 gals)

Bottom of screen is @ 64', Total Depth taken from LANL Reference

LATE Note: All containerized carboys sealed by LANL, included well MT-3, partially filled carboy from ~~attem~~ bailer attempt.

0930: Began purging, Flow Rate: 1L/80sec.

Initial/Final Parameter Readings

	TIME	Temp	pH	turbidity	conduct
(initial)	0942	11.2°C	4.98	13.9	—
(final)	1101	17.5°C	6.95	1.70	—

*Note the electric conductivity instrument is not ~~opm~~ operating, no conductivity will be taken today

Note: All purged water tossed out @ site.

Note: LANL takes parameters every min for first 5 minutes, then every 5 minutes

Auth V. Maier 8/26/98

8/26/98 (Wed) LANL Sampling WA# 0002BT0065G

0957: Water Level is 60.22 feet. — cm

1014: Began Sampling — cm

1054: NMED D cm Neelam Dawhan and Lee Winn HRMB Division (Haz Waste Division) — cm

1055: End Sampling — cm

1057: Flow Rate: 1 Liter / 4.09 minutes.

1114: Depart site, enroute to MT-2 to retake water level (see pg. 38)

EPA WAM Alan Chang departed with NMED to view sampling occuring elsewhere in LANL.

1117: Arrived at MT-2, water level taken on 8/25/98, but not recorded. Water level: 66.35 ft. @ bottom of well - Total Depth also @ 66.35 ft. — cm

1120: Broke for lunch.

1200: Began Sampling preparations at well MCWB-7.7B, & replacement well for MT-02 — cm

1211:

Well	water level	TD	water vol	purged water
MCWB 7.7B	60.47 (TOC)	70	3.53 gal	10.6 gal

TD from LANL records — cm

Christa V. Moran 9/3/98

8/26/98 (Wed) LANL Sampling WA# 0002BT0065G

Table 6A Samples collected on 8/26/98

Sam#	Time	Vol Collected	Photo	Collectors
MT-4	Start: 1014 END: 1055	(9) 1L poly (2) 500 ml (2) 40 ml	1/17	TL NMED*
MCWB-7.7B	Start: 1315 END: 1355	(9) 1L poly (2) 500 ml (2) 40 ml	1/18	TL NMED*

Christa V. Moran 8-26-98

* Collected (2) 1-L poly jars for NMED - TL

Christa V. Moran

8/26/98 (Wed) LANL Sampling WA#002BTR65G

1220: Began purging well —— cm

Flow Rate: 1L / 1.02 minute

Well Description: A 3 ft. square concrete well pad supporting a white metal "House" the protects A light brown casing around a 3" diam. PVC pipe —— cm

* All purged water will be contamenized

Initial / Final Reding Parameters

	Time	temp	pH	turbid.	conduct
(initial)	1209	11.5°C	6.87	2.08	—
(Final)	1337	11.4°C	6.87	3.48	

—— cm

Sampling Time for MCWB-7.7B

1315 Began Sampling

1335 End Sampling

Flow Rate

1340 Photo 1/18 Monitoring well MCWB 7.7B

1350 Left MCWB-7.7B

—— cm

Water level 60.68

Flow rate: 1L / 1.02 minutes

8/26 2050 LATE Note. C. Morrow departed the Site @ 1250 enroute to NMED's office to send off (2) coolers.

—— cm 2 V. Morrow 9/3/98

8/26/98 (Wed) LANL Sampling WA#002BTR65G

Prepared coolers for Shipment and relinquished Coolers to NMED office @ 1400. Airbill #

. At 1405 called Debra Hall, arranged to be at TA-50 at 0900 tomorrow to collect waste-water samples, Called NMED M. Dale @ 1408 to inform him of time, he will meet Team @ TA-50. Departed NMED @ approx 1420 enroute to TA-59. Arrived at approx 1450, met w/ W. O'Rear, coordinated w/ M. Maes regarding tomorrow morning. M. Maes attempting to get new pumps for tomorrow afternoon Sample. Returned to Hotel @ 1515, prepared Samples. Called A. Crowder, no answer, called Pat Longmire of ER, left msg w/ name, Hotel #, need to coordinate for Sampling —— cm

2045 Called EPA A. Chang, informed of tomorrows Schedule —— cm

Cmts V. Morrow 8/26/98

8/27/98 (Thurs.) LANL Sampling WA# 002 BT-0056

0830 (0730): Met at TA-59 w/ Max Maes and Penny Gomez of LANL. TL asked LANL if there was any area to store 30-40 coolers, LANL has a small metal bldg., just down the road from TA-59, labeled as bldg 64-19. Max Maes would make a copy of his key for TL; bldg would be locked - but TL would not be the only one w/ a key. Bldg is empty - has a lab bench.

0810: Sample Team arrives at TA-50, was told that radiation count too high to discharge water - unusual event - so not discharge water. Plant will contact team when count is down and water can be discharged. NMED arrived, informed NMED, gave Plant & TL cell phone; TL told NMED would contact them when know.

0845: Talked w/ Plant Dave Moss about rescheduling for next week. Will sample MT-3 today.

Chris V. Morrow - 8/27/98

8/27/98 (Thurs.) LANL Sampling WA# 002 BT-0056

0845 (cont) Note: Today's count (alpha) was about 2000 dpm (disintegration per minute) - upper limit to discharge is 1000 dpm - usually have 100 dpm.

LATE NOTE: Got in touch w/ Pat Longmire, He gave me two other #s for Andy Crowder: (505) 699-2762 (cell phone) and (505) 699-1069. Also said to be sure to collect an extra 1L, unfiltered, unpreserved for oxyhalate/chlorate - has a lab that can analyze for those.

0930: Andy Crowder called BACK, said would coordinate w/ Joe Skolski and Max Maes to get hold of compressor & peristaltic pump. C. Morrow said would call back this afternoon to solidify logistics mentioned that Max Maes suggested that we can sample the ES wells in Los Alamos canyon tomorrow.

1000: Dropped off majority of coolers in designated LANL bldg.

1010: Arrived @ TA-59, waiting for Max Maes

Chris V. Morrow 8/28/98

9/27/98 (Thurs) (Fri) LANL Sampling WA# 0002BT0655

1030: Max Maes arrives, Sample team ~~depart~~ gets ready to depart TA-59. Pat Longmire of the ER group @ LANL called TL via cell phone, arranged to meet @ TA-59 @ 0800 tomorrow morning. —— em

1140: Arrive @ well MT-3 @ lower Mortandad Canyon, LANL attempting to put together new bladder pump. —— em

1240: Have installed pump, weather is mid-high 80's, slight breeze, dark rain clouds moving in.

1243

well	water level	TD	water vol	purge vol
MT-3	47.20'	74'	4.36 gal	13.06 gal.

1253: Begin purging water. —— em

Flow Rate 1L/ 67 sec

~~Initial/Final parameters reding~~ —— em

	Time	Temp	pH	turbid	conduct.
	1310: Water level is 47.59 ft. —— em				
	All water is being containerize —— em				
	1322: Water level is 47.61 ft. —— em				
	Conductivity still not working				

—— Christa V. Rhinn 9/3/98

9/27/98 (Thurs) (Fri) LANL Sampling WA# 0002BT0655

Initial / Final Reding

	Time	Temp	pH	turbid	conduct.
(initial)	1301	11.4°C	7.07	47.1	—
(Final)	1406	15.9°C	7.06	7.27	—

TABLE 7A: Samples Collected on 7/27/98

Sam #	time	Vol collected	photo	collectors
MT-3	Start: 1342	(9) 1L poly	1/19	TL, NMED
	End: 1405	(2) 500 ml		
		(2) 40 ml Vials		

1342: Begin Sampling, parameters stable - 2 well volumes, or 9 gallons, purged —— em

1405 End Sampling, ran out of carboys to containerize purged water, LANL using used water bottles as option rather than dumping on ground. NMED samples collected by TL. Note: A total of 2 carboys and 5 water bottles were left @ site containing purged water.

1417: Unable to lock well - pump to high for cap to fit flush on well casing. —— em

1430: Depart the site —— em

—— Christa V. Rhinn 9/3/98

8/28/98 (~~FRI~~ THURS) LANL Sampling WA #002BT2265G

1529: At TA-59 discussed future sampling
ESH DIV. will sample:
LAO-0.3, LAO-3, LAO-12 (replace LAO-1.8), LAO-4.5C, LAO-6A, LAO-2, & APCO-1

1540: Depart TA59, enroute to hotel

1555: Arrive @ Hotel, began prepping samples

20:00 Completed sample prep and coordination for tomorrows activities

Christa V. Morrow 9-3-98

8/28/98 (FRI) LANL Sampling WA #002BT2265G

0740: TL meets @ TA-59 for scheduling meeting. Those to attend include

Alan Chong	EPA-WAM
Rich Mayer	EPA-WAM-Conference
Christa Morrow	TL
Wally O'Rear	TL
Brett Kendrick	TL-Conference
Max Maes	LANL
Ken Mullin ~~DAVID~~ ~~Mike Saladen~~	LANL Group Leader
Penny Gomez	LANL
Janie Hill	LANL Health Phys
Andy Crowder	ER contractor
Pat Longmire	ER Group Leader
Mike Dale	NMED
John Young	NMED

0815 Meeting began, Andy Crowder not present, NMED not yet present.

0817. Andy Crowder arrived, EPA Rich Mayer dialed in. PAT Longmire suggested starting in LAO-B in west and going eastward. Andy will assist w/ field parameters - provide compressor & controller. Sr^90 contain LAO-0.9, LAUZ 1,2

Christa V. Morrow 9/3/98

8/28/98 (Fri) LANL Sampling WA# 0002BT0065G

So water will be containerized
Pat Longmire said would
provide water containers most
wells max depth @ ~25 ft,
4" diam. pipes. Other wells
does not need to Containerize.
Pat brought up collecting
1L for chlorate/oxylate -
unfiltered, unacidified.
Brett Kendrick brought up
point regarding reimbursement
TO LANL. PAT said not to
be concerned. Pat said team
can start @ 7Am work
through until 4-5 pm in
afternoon. Possibly complete
2-3 wells per day. Meet @
skating rink @ 6:45 am on
Monday. Planned to go to
San Ildefonso on Sept. 8,
2 wells and 1 springs.
Prioritized some wells.
NMED suggested doing APCO-1
and not sample PAO-4. Discussed

chrysta V. Morrow 9/3/98

8/28/98 (Fri) LANL Sampling WA# 0002BT0065G

dividing up into (2) groups -
ER and ES w/ a TL person
w/ each. Have two teams doing
San I pueblo - one team doing
springs and one team doing wells.

0925: Arrive @ TA-50, met w/ D. Hred,
TL. W. O'Rear picked up radio
to be informed when release
occurs. O'Rear will be at water
gauge w/ NMED and team LANL
M. Maes and P. Gomez

0955: Began Sampling @ TA-50 plant
water discharged to Canyon

1020: End sampling. About this
time W. O'Rear called via
radio, just saw water arrive
@ gauge.

1115: Met up w/ rest of sample
team in TA-50 parking lot,
EPA A. Chang also in attendance.
C. Morrow recieved call
from B. Kendrick - who requested
name & number of a vendor - in
red folder w/ TL team. C. Morrow

chrysta V. Morrow 9/3/98

WA # 002 BTCLS

LANL Sampling

Sam.	Time	volume	photo	collectors
TA-50-2A	Start 0955 End 1020	(9) 1L	None	TL, NMED*
		(2) 500ml		LANL
		(2) 40ml		
		(1) 4L - ~~LANL~~ NMED		*(Sampled by TL)
TA-50-2B	Start: 1025 End: 1058	(9) 1L	1/20	TL, NMED
		(2) 500ml		LANL
		(2) 40ml		

1115 (cont.) suggested that one of two teams be M. Maes so that M. Maes can complete all ES&H wells and perhaps all test wells that need to purge overnight. B. Kendrick can be w/ the ER group and assist ER w/ sample locations (ER sites). B. Kendrick agreed w/ suggestion. C. Morrow brought it up to sampling team, all members, including NMED, amenable. Note: Sampling in plant, VOC's were not taken first. Was told that sample sink pipe has

Chris V. Throw 8/28/98

been cycling through for about 45 minutes so doesn't matter for volatiles - water all turbulent now.

1137 LATE Entry: notes from W. O'Rear regarding sampling at water gauge:

0942: Arrive at Mortandad @ GS-1.
0955: Arrived at gauging station.
1025: Began Sampling
1058: Completed sampling.

Samples were collected by using a peristaltic pump, there is a pool right after water gauge where discharged water collects. Team waited for pool to overflow - then put in teflon tube from peristaltic pump - began sampling - collected all samples except VOC. VOC collected by using a bottle to collect water befor gauge stn, then transfer to VOC vials - this way to avoid splash.

Chris V. Throw 8/28/98

8/28/98 (Fri) LANL Sampling WA#002 BT0656

1200 Broke for lunch

1300: Called into office, reported vendor name to be Kendrick, enroute to NMED office to send off (3) coolers

1400: C. Morrow relinquished custody of (3) coolers, Air bill #8058797462/65

1525: Arrive (C. Morrow) @ TA-50, picked up plant samples - both plant samples and Canyon rep sample were screened - results passed on to C. Morrow. Canyon sample is EPAC0898.28

Gross α 330 ± 79 pCi/l
β <100 pCi/l
γ <5 nCi/l
^{3}H 8 ± 5 nCi/l

Plant sample → EPA 0898.28
Gross α 390 ± 85 pCi/l
β <100 pCi/l
γ <5 nCi/l
^{3}H 10 ± 5 nCi/l

1550: Arrive @ Compound, prepped samples (today's

1700: Completed prep, departed compound

Chuck V. Morrow 9/3/98

8/31/98 (Mon.) LANL Sampling WA#002 BT0656

0645: TL C. Morrow & B. Kendrick arrive @ ice rink near LA Canyon, LANL ER Jenny Harris & Contractor (Morrissan Knudsen) w/ the ER group @ ice rink

0700: NMED M. Dales arrives, Health physicist Darryl Stuford on-site.

0719: ES M. Maes and P. Gomez arrive on-site, A. Crowder arrived @ ~0710.

Proposed Work: Maes Team will begin w/ LAO-6, LAO-4.5C, LAO-3, LAO-2, LAO1.2. Will try to sample test wells tomorrow. NMED suggested that TL ask for flow volume @ each well prior to sampling test wells will purge all night, take flow to determine flow regular or fluctuated. Need beginning flow. This way can verify if 3 well-volumes were purged.

Weather: late 60's mild overcast.

0743: Arrive @ LAO-6 - eastern end of Los Alamos Canyon.

Chuck V. Morrow 9/3/98

8/31/98 (mon) LANL Sampling WA# BT0656

Well description: 3' square concrete well pad supporting a light brown well casing - locked. Has a 3" diam plastic pipe, TD 14.6 Has a dedicated Bladder pump. Constructed 2/66

0750 Began set up for pump

0756

Well	H_2O level	TD	H_2O vol	purge vol
LAO-6	15.22'	~~14.6'~~ 16.0'	0.28 gal	0.86 gal

* TD taken from records from LANL -

0900 Began purging - dried well out, water level possibly below bladder. Will try LAO-6A

Well Description (LAO-6A):
1 ft square concrete pad/support, w/ a metal Housing on two wood supports sitting across pad. Constructed on 8/99, TD 14.2 (Depth completed) Screen set from 4.2 - 14.2

Well	H_2O level
LAO-6A	—

Cannot sample - replace LAO-6 w/ LAO-5 then →

Anita V. Maron 9/3/98

08/31/98 (mon) LANL Sampling WA# BT0656

0911: Move to LAO-5, nearby

Well Description: 1 foot square well support - No well casing, lip of well flush w/ support pad. TD of 25', constructed 2/66, 3" diam plastic.

	Well	H_2O level	TD	H_2O vol.	purge vol
0911	LAO-5	12.6	~~25~~ 23.3	~~4.6~~ 6.98 gal	~~13.7~~ 21 gal

TD is measured w/ NMED water level indicator. Pipe measures as ~3.5" - round up to 4", use this to get purge level. No dedicated Bladder pump, will use a peristaltic pump

0921: Began pumping, Flow Rate: 1L/1.25

Initial/Final Rdings taken by LANL

	Time	temp	pH	turbid	conduct.
(Initial)	0933	12.2	4.63	5.55	0.24
(Final)					

0933: Well went dry, water level @ 13.5 ft.

0941: Problem w/ pump - stopped producing water, tube maybe too short, added on more length - shortened exit line.

0946: Started pumping again, water

Anita V. Maron 9/3/98

8/31/98 (Mon.) LANL Sampling WA#0002BT0605G

TABLE: Samples collected began on 8/31/98

Sample#	Time	Vol collected	photo	collectors
LAO-5	0943	(9) 1L	2/1	TL, NMED,
↓	1027	(2) 500 ml	↓	
		+ 1L - Oxy/Chlor		
LAO-4.5C	1104	(9) 1L	2/2	TL, NMED
↓	1114	(2) 500 ml	↓	
		(1L) Oxy/Chlor		
LAO-1.2	S. 1155	(9) 1L	2/3,	TL, NMED
↓	E 1215	(2) 500ml	2/4	↓
		(1L) Oxy/chlor.	↓	
LAO-3A	1434	(9) 1L	2/5	TL, NMED* LANL
↓	1455	(2) 500ml		
		(1L) Oxy/Chlor		
LAO-2	1611	(9) 1L poly	2/6	TL, NMED LANL
↓	1659	(2) 500 ml	↓	
		(1) L oxylate/chlor		

Chester V. Mann
8/31/98

* Collected by TL (4L filtered)

08/31/98 (Mon) LANL Sampling WA#0002BT0605G.

0946 tossed out, NOT contamerized.

0959: Water level @ 15.30 feet.

0902: Pump stopped - no water coming up, waiting for well to recharge, added more tubing, retook flow rate: 1L/1.50, started up again ~ 0911 — cm

0916 NMED & ES Darryl Stoffard depart enroute to LAO 1.2 to begin set-up and purging to facilitate speedy collection, Will get water level. ——— cm

0919: Water level is 16.5 ft. ——— cm

0932. Water level is 18.25 ——— cm

0943: Well seldom sampled, began sampling - parameters stable, roughly about 1.5 well bores purged. ——— cm

1027 End Sampling, water level @ 21.75 cm

1030: Deported to well LAO-5, 57

Note: LANL has been taking water level @ the surface casing which is higher than well casing. ——— cm

1041: Team arrived @ well LAO-4.5C to begin set-up. TL uses NMED's logbook to catch-up w/ set-up

Chester V. Mann 9/3/98

8/31/98 (Mon.) LANL Sampling WA# KX02BT0X6SG

* for LAO-1.2 which is now purging. Team will set-up this well, let it purge, then go to well LAO1.2 to sample, will only take turb, conduct. maybe pH @ LAO1.2.

From NMED's logbook:

Arrived @ LAO-1.2 @ 0930, 6.16' took water level (DTW): ~~9.16'~~ BTOC @ 0930, TD = 29.5' BTOC (@ 0931)

Well description: 3" diam pipe

Began purging @ 0943 w/ Flow Rate: 1L/1.13 = 0.26 gpm so purge time in 85 min for 3 well volumes.

well	H2O level	TD	H2O vol	Purge vol
LAO-5	9.16'	29.5	7.46g	22.4 gal

1048 @ LAO-4.5C setting up

Well Description 1 foot square well pad w/ metal casing. Casing surrounded by a metal box. well set up w/ a transducer & a bladder pump. 3" plastic pipe, constructed in 11/89.

Christa V. Munn 9/3/98

8/31/98 (Mon). LANL Sampling

water volume taken w/ water level indicators

well	water level	TD	water vol	purge vol
LAO-4.5C	12.66 (TOC) surface casing	23.3*	1.73g	5.2 gal → 6 gal.

1050: Began purging Flow Rate: 1L/0.23 Used TD - from records.

Initial / Final Rdings

	Time	Temp	pH	turb.	cond.
(initial)	1057	11.0	6.3	8.34	8
(final)	1116	11.6	6.56	4.40	—

All purged water will be tossed out

1106: Began Sampling

1114 End Sampling

1114 1133 Depart site enroute to LAO-1.2

1146: Arrived @ LAO-1.2, has been pumping water for over two hours. - Water tossed, over 3 well vol.

initial / final Rdings

	time	temp	pH	conduct.
(initial)	1154	10.3°C	6.47	~~0.27~~
(final)	1218	10.4°C	6.41	0.27 mS/cm 0.26 (10.5)

Christa V. Munn 9/3/98

8/31/98 (Mon.) LANL Sampling. WA #0002BTX065G

1155 Began Sampling, parameters taken by NMED, LANL off-site parameters taken during sampling time. Water level is → 6.25 feet ——— cm

1215: Completed sampling, water level is 6.28 feet ——— cm

1222 ~~1212~~: Departed the site ——— cm

1229 Surface Water flow along belt stopped west (200 ft) of LAO-1.6g - NO flow @ LAO-5 or 4.5C ——— cm

surface water @ LAO-1.2
Time: 1215
pH · 7.59 SU @ 19.8°C
Sp cond. : 227 µS/cm @ 19.9°C
TDS · 133 ppm

1400 Team returning to site - TL had to get more bottles, broke for lunch. Began @ LAO-3A - instead of LAO-3; LAO-3A is newer.

well	water level	TD	water vol	purge vol
LAO-3A	8.37 (TOC)	14.7	1.03 gal	3.09 gal

Chris V. Flores 8/31/98

8/31/98 (Mon.) LANL Sampling WA# 0002BTX065G

Well Description ~ 1 ft Square concrete support, constructed in 9/89. Screen: 4.7' to 14.7'. There is a short metal casing protecting a 2" diam. plastic pipe ——— cm

1425: Began Purging. Flow Rate: 1L/16 sec. Can dump water @ this site, not containerize ——— cm

Initial/Final Reading

	time	temp	pH	cond	turbid
(initial)	~~2~~ 1428	13.7	6.67	N/A	6.21
(final)	1455	13.6	6.65	N/A	

~~1243~~ 1434 Began Sampling - approx 3.12 min to purge 3 well volumes

1455: End Sampling, taking final parameters ——— cm

1458: Water Level 8.39 ft ——— cm

Late Note: LANL: ES Harvey Decker stopped by, looking for ER sampling team. ——— cm

1505: Depart site enroute to LAO-2. Harvey Decker goes on to meet w/ ER team.

Esq. Arrive @ well LAO-2, located uphill alongside dry creekbed

Chris V. Flores 8/31/98

8/31/98 (Mon). LANL Sampling WA#002BT006SG

Well Description A foot square concrete pad w/ gray metal casing protecting A 3" plastic pipe, Constructed 2/66 cm

Well	water level	TD	water vol	purge vol
MW-2	15.45'	32'	6.07 gal	18.2 gal. ~19

1520 Began purging. Flow Rate: 1L/50sec
*Using recorded TD instead of measuring cm

Initial/Final Reding Parameters

	time	temp	pH	turbid
(initial)	1525	11.1°C	6.49	14.3
(final)	1700	14.0	6.24	

1611 Began Sampling. NMED arrived @ ~1600 cm

1615: NMED M. Dale & LANL M. Moos
* started up nearby testwell 3 ⇒ got initial parameters.
pump on @ 1624
Flow Rate: 1L/8 sec ~ 7L/min.

Initial Parameters

	time	temp	pH	turb.
(initial)	1624	11.9 ~~10.4~~ cm	7.81	11.9 cm 6.4

* For TW-3 cm

1640: NMED depart site cm

Christa V. Marrow 8/31/98

8/31/98 (Mon). LANL Sampling WA#002BT006SG

1655: End Sampling, ~~Flow Rate~~ cm
End Flow Rate: 1L/~~45 sec~~ 60sec

1725: Depart site enroute to compound to unload ⇒ M. Moos of LANL to stay behind, turn on test wells, take initial parameters cm

1802: Change of plans, dropped cooler off @ compound - w/ B. Kendrick. C. Marrow went w/ M. Moos to assist w/ test well parameters. arrived @ Testwell 4 (TW-4)

1805 Turned on pump. Began to set up for parameters. Testwell 4 is in town, off of Trinity @ the Los Alamos Jewish Center

1807: Flow Rate 1L/15sec or 1gal/1min

	Time	Temp	pH	turbidity
(initial)	1808	12.3°C	8.55	17.0 ntu

1813 Departed Testwell 4 site. cm

1820: Arrived @ Testwell 1 and 1A

1825 Started pump. (Note: all wells surrounded by tall fence & locked). Flow Rate: 1L/8sec; 3gal/min

Time	Temp	pH	turbid
1828	14.2°C	8.24	131 ntu

Christa V. Marrow 8/31/98

8/31/98 (Mon) LANL Sampling WA# 002BT0165G

1825: TA-[illegible] TW-1A began pumping
Also-, left gate unlocked.
TW-1, 1A, TW 2, 2A by
SR 501, where road south
branches off to White Rock
along Pueblo Canyon —cm
TW-2, 2A is further in —cm
1845 Arrive @ TW-2, 2A —cm
1847: Began the TW-2 pump
Flow Rate:
initial parameters

TIME	Temp	pH	turbid.

1705: No water from well, team
departed site —cm
1708: Depart site, —cm
1735: Met w/ B Kendrick @ compound.
returned to Kendrick Hotel,
prepped samples —cm
2130: End of Day —cm

Chris V. Morrow
9/1/98

9/1/98 (Tues) LANL Sampling WA# 002BT0165G

0630: TL team drove to NMED office,
dropped off 4 coolers for shipment,
Air bill # Fedex —cm
0730 TL Team enroute to TA-59 from
NMED office. TL team will split
again today, B. Kendrick w/
ER team; C. Morrow w/ ES team.
Proposed ES Work: Do testwells
1-4, including 1a, and 2a —cm
Weather: Mild overcast, High 60's,
chance for rain —cm
0750, Arrive @ TA-59, meet w/ LANL
Crew, included M. Maes, P. Gomez -
samplers, and D. Stafford. Health
physicist. Go to compound —cm
0805 Depart compound, enroute to
TW-4 @ LA Jewish Center —cm
0820. Set up for sampling, water
still running @ low flow.
Flow Rate: 1L/28 sec. —cm

Time	Temp	pH	turbidity
0843	10.1	7.74	

0831 LANL Began Sampling —cm
0834 Began unfiltered sampling. —cm
0857 End Sampling All —cm
Chris V. Morrow 8/31/98 cm

9/1/98 (Thos) LANL Sampling WA# 002BT06SG

TABLE Samples collected on 9/1/98

Sam #1	Time	volume	photo	collectors
TW-4	S: 0834	(9) 1L poly	2/7	NMED*, TL,
	E 0957	(1) 500ml glass		LANL
		(1) 500ml poly		
		(1) L oxy/chlor		
TW-1	S: 0949	(9) 1L poly	2/8	TL, NMED*
	E: 1008	(1) 500 ml glass		
		(1) 500 ml poly		
		(1) L oxy/chlor		
TW-2A	S 1051	(9) 1L poly	2/9	TL, NMED*
	E 1132	(1) 500ml poly		LANL
		(1) 500ml glass		
		(1) L poly-oxy/chlor		
TW-2	NOT	Sampled - NO Pumping		
BAYO-1	S 1217	(9) 1L poly	2/10,	TL, NMED
	E 1254	(1) 500ml glass	2/11	
		(1) 500ml poly		
		(1) L oxy/chlor		
TW-3	S 1350	(9) 1L poly	2/12	TL, NMED,
	E 1405	(1) 500ml glass		LANL
		(1) 500ml poly		
		(1) L oxy/chlor		

Ans by V. Moore

* (collected by TL (4L - filtered))

9/1/98 (Thos) LANL Sampling WA# 002BT06SG

0900 Well Information:

Total Depth 1205 ft

water level ~~4.7~~ 1176 ft.

Difference: 29 ft

Diam siz: 6" coeff: 1.469 gal/ft.

purged vol:

0901: — Temp pH turbid —

16.1 7.66 7.33

Last parameters —

0903: Filtered samples were collected using a dedicated 1L poly for well water to run into, and pumping water from there through 45μ filter (in-line) using peristaltic pump. —

0905: Pump shut off (Main TW pump)

0933: Depart TW-4, enroute to TW-1

0937: Arrive @ TW-1, off ~~Hwy~~ SR-501.

pump still running, Flow Rate: 1L/10 Sec.

Time	Temp	pH	turbidity
0948	13.6°C	7.65	7.99
1009	13.6	7.74	6.56

0949 Begin sampling —

1000 End sampling —

1010 Flow Rate 1L/9sec —

Ans by V. Moore 9/3/98

Well (TW-1) Information.

0947 Complet. Depth: 642 feet

Water level: 548 feet

Difference: 94 feet

Pipe diam: 8" Coeff/ 2.61 gal/foot

purge vol: 736 gallons. Drawdown

Total Volume purged:

1017: Departed TW-1, will let TW-1A recharge, attempt to sample after sample TW-2, TW-2A

1035: Arrived @ TW-2, 2A

1038: Turned on pump for TW-2A.

Flow Rate: 1L/6 sec.

Well Information:

Well depth: 133 feet

Water level 113 feet

Difference: 20 feet

Pipe diameter: 8"

Drawdown: 2.611 gal/feet

Purge vol: 156 gallons

1043: Quick producing water, Well did not purge 156 gal OR (3) well bores, due to low water, team, instead

Christa V. Munoz 9/3/98

1043 (cont.) drained well (3) times, let it recharged.

1045: Pump back on, producing water, water looks a little brown.

Parameters

	Time	Temp	pH	turbid
(initial)	1045	11.0°C	7.56	336
(final)	1133	14.8°C	6.88	3.79

1046 Pump off - water ran down.

1048 Pump back on, producing water.

1049 Pump off

1051 Pump on, began collecting all unfiltered samples, except oxygate - will use that has dedicated tubing to pump for filtered, then collect oxy/other samples

1053 Pump off

1057 ~~1051~~ Pump on, LANL noted that pump

~~1058~~ TW-2 did not pump, possibly a faulty electrical system, LANL will look into, but TL will not be able to sample TW-2 today.

1103 Began sampling, pump on

1104 Pump off - Stop sampling

1110 Began pumping/sampling.

Christa V. Munoz 9/3/98

9/1/98 (Tues) LANL Sampling WA#002BTR6Sc

1111 Pump off, need to finish collecting Dissolved metals, & NMED - 1 L Container.

1116: Pump on, completed sampling for Dissolved Metals, part of NMED.

1117: Pump off, Stop Sampling.

1120: Pump on, Sampling.

1124: Pump off - filtered Sampling Complete

1130: Pump on - low flow, collected oxylate/Chlorate sample, Samples collected from a galvanized pipe

1133: Finished collecting

1141 Depart site enroute to ~~TW~~ TW-1A

1200 Stopped @ BAYO Plant to take outfall sample, spoke w/ Plant rep. Jeff Crowder who directed us to the flow meter which is down below on east side of plant, Water flowing through a culvert 11 feet below, protected above by cement wall and metal grill

Chris Morrow 9/1/98

9/1/98 (Tues) LANL Sampling WA#002BTR6Sc

1214: Began to set up for Sampling Plant informed us that they were discharging right now.

1217 Began Sampling

1254: End Sampling, used (3) 45 µm filters

1300 Plant Rep requested that TL send copy of results; C. Morrow gave business card to Plant rep Jeff Crowder, w/ B. Kendrick's name printed on it, Asked for Mr. Crowder to contact B. Kendrick

1310 Departed the site

1315: Arrive @ TW 1A - tested the stream, came out O.K. - but @ low flow/volume, will sample tomorrow; will collect TW-3 NOW.

1324 Depart site enroute to TW-3

1342 Arrived @ TW-3

well still running

+ Well Info:

Completed depth: 815' purge vol:

Water level: 780 Drawdown: 4,080 gal/hr.

Difference: 35' Total vol purged.

Pipe diam: 10"

Chris Morrow 9/3/98

9/1/98 (Tues) LANL Sampling WA# 002BT0605G

Parameters @ TW-3

	TIME	Temp	pH	turbidity	ec
(initial)	1340	21.2°C	7.6	2.47	—
(final)	1405	21.2°C	7.60	1.71	—

1350 Began Sampling ——— cm

1405 End Sampling

LATE Note: Flow Rate: 1 gal / 45 sec

1415 Departed the site, end of sampling ——— cm

1500: Returned to Compound, began prepping samples ——— cm

1730: Returned to Hotel iced samples, done for the day ——— cm

Charlie Williams 9/2/98

* ~~Note: TL work that TW-2, TW-1, & BAYO Plant in Pueblo Canyon not correct~~ → cm

9/2/98 (Wed) LANL Sampling WA# 002BT0605G

0700: TL team meet, began writing C.o.C forms for 5 coolers to go out, under airbill # 805877762100, Fedex ——— cm

0800 Met w/ ER (LANL) contractor Jenny Harris, went on to NMED office ——— cm

0915: Relinquished (5) coolers to NMED.

0925: M. Maes of LANL-ES group called NMED office to speak w/ C. Morrow (TL), said P. Gomez & D. Stafford (Sampler & Health physicist) would pick up TL's ready made coolers w/ sample bottles from compound & would be down within 20-30 min. At that point, NMED, LANL, & TL will go to DP Springs to sample ——— cm

Proposed Work: Sample DP-Springs, APCO-1, TW-8 ——— cm

Weather Mid-70's ——— cm

1020: LANL P. Gomez (Sampler), D. Stafford (Health Physicist), and Ken Mullen (oversite) arrive, awaiting M. Maes to bring bottles

——— cm Ann Az V. Mena 9/2/98 ———

9/2/98 (WED.) LANL Sampling WA# [illegible]

TABLE Samples Collected on 9/2/98

Sam #	TIME	Volumes	photo	Collectors
DP-Spring	S 1115	(9) 1L poly	2/13,	NMED, TL,
	E 1142	(1) 500ml poly	2/14	LANL
		(1) 500ml glass		
		(1) oxy/chlor		
TW-8	S 1556	(9) 1L poly	2/	TL, NMED*
	E 1620	(1) 1L oxy/chlor		LANL
		(1) 500ml glass		
		(1) 500ml poly		

Charlotte V. Morrow 9/3/98

*Collected by TL (4L-filtered

9/2/98 (Wed) LANL Sampling WA# [illegible]

1032: NMED, LANL, and TL depart NMED White Rock office en route to DP-Springs, will park by test well #3. —— CM

1111 Arrived @ DP-Springs after a 20 minute hike from TW-3.

1115: Began Sampling, Spring flowing down side of rockface in ravine, samples collected using (1) L dedicated poly held against rock (wide mouth poly) then poured into sample containers. Rock face muddy mossy - Not @ source, source is approx 30'-40' above where samples collected. —— CM

Note background RAD @ trucks - 200 cpm, @ sample location ~~3000~~ 300 cpm, beta, gamma —— CM

Note: Only unfiltered samples collected in bulk 4L jugs collected - to be filtered @ truck using a peristaltic pump. —— CM

1142: End all sampling, NMED taking parameters using their instruments, (2) pH meters: B & C —— CM

Charlotte V. Morrow 9/2/98

9/2/98 (WED.) LANL Sampling WA# 0002BT0065G

TIME	TEMP	pH (B)	pH (C)	cond
1151	N/A see, meters	8.17	8.00 @	244 µm/S
		8.07 @ 15.7°C	14.3°C	@ 14.3°C

TDS: 145

1200 Departed Site

1225 Arrived @ trucks after the hike - meet w/ filter @ White Rock Visitor Center,

1225 Depart TW-3 enroute to NMED office, C. Morrow rode w/ M. Dale. M. Dale noted spring that he suggested TL/EPA sample → LA 5.19, pointed out location - along road in LA canyon

1250 Arrive @ NMED office, begin filtering designated samples

1303 Completed (TL) filtering TL & NMED samples, LANL now filtering samples

1330 Completed, LANL & TL depart NMED office, enroute to TA-59.

1350 Meet w/ M. Maes @ TA-59, agree to go sample well TW-8 in Mortandad at 1530 → According to M. Maes

Chris V. Morrow 9/3/98

9/2/98 (WED.) LANL Sampling WA# 0002BT0065G

pump started @ TW-8 @ ~~0800~~ ~0900 needs to pump for approx 8 hrs to purge (3) bore holes. Team will meet @ TW-3, take parameters for half an hour, if stable, can sample well

1515 TL C. Morrow & LANL M. Maes depart TA-59, enroute to TW-8 in Mortandad Canyon

1545 Arrive @ TW-8 - on east side of bottle-rock in Mortandad Canyon, LANL D. Stafford already @ the site.

Well Info:

Depth complete: 1065 purge vol: 562 gal

Water level: 993 ft. Total purge: Difference: 72

pipe diam: 8"

drawdown 2.6 gal/ft

Flow rate: 1L/6sec, LANL

Pump started: 0850

According to LANL - Flow rate this morning was also 1L/6sec, @ this moment, have purged 1200 gall. Needed to purge 562 gal

Christ V. Morrow 9/3/98

* 9/9/98 1003 3-16 SE View of LA spring sampling

PHOTO-LOG.

DATE	TIME	ROLL	FR	DIR	Description	P/L
9/2/98	1600	2	20	Down	View (Close-up) of TW-B	
9/2/98	1632	2	21	S	" " far off - inside fence	
9/3/98	0936	3	1	W	View of well APCO-1	
9/3	1403	3	2	SE	View of Bayo effluent sample location @ culvert and SR 502	
9/3/98	1405	3	3	Down	View of Bayo-2 sample set-up, LANL sampling	
9/8/98	0850	3	4	SE	View of LAUZ-1,	
9/4	1234	3	5	N-NE	View of LAUZ2, Dry Creek in background	
9/8/98	0958	3	6	S	View (Close-up) of La Mesita Springs, LANL sampling	
9/8/98	1014	3	7	S	View of La Mesita Springs	
9/8/98	1400	3	8	W	View of sampling (LANL) @ Sacred Springs (Close-up)	
9/8/98	1415	3	9	W	View of Sacred Spring looking upstream, sampling pool just below log	
9/8/98	1544	3	10	W	View of Otowi Spring (Close-up) along west side of Rio Grande	
9/8/98	1546	3	11	SE	View of Otowi Spring Situation, Spring by car battery, Rio Grande in bkgd	
9/9/98	0908	3	12	SE	Close-up of LA spring	
9/9/98	0908	3	13	SE	View of area of LA Spring	
9/9/98	0951	3	14	ESE	Spring-Basalt, through corroded pipe	
9/9/98	0951	3	15	NNW	Area access from spring (see pg 62 logbook 3)	

9/3/98 (Wed) LANL Sampling WARREN STROBL

1553 Set up for parameters

	TIME	Temp	pH	turbid	conduct.
*(initial)	1554	21.4°C	7.73	1.96	N/A
†(final)	1632	20.9°C	7.69	1.77	N/A

1556 Began Sampling, filtered dissolved samples w/ hand held filter - gravity filter pumps. Water pumped @ out of metal (galvanized?) pipe, rusted @ the end

1620: End Sampling

Note: Pump ran by portable gas-fueled generators

1633: Depart the site

1730: Meet up w/ B. Kendrick, began to prep samples, prepare for tomorrow's sampling

1930 2000: Complete all work, 5 coolers ready for shipment tomorrow

Chuck V. Nunez 9/3/98

* prior to sampling.

† after sampling

9/3/98 (Thurs) LANL Sampling

0730 C. Marrow & B. Kendrick load coolers, ice, depart hotel enroute to NMED office

0840 Relinquish (4) coolers to NMED - taped up, for Fedex shipment. Airbill# 805879762095

0855: LANL M. Moos, P. Gomez arrive @ NMED office, depart enroute to APCO-1

0912: Arrived at APCO-1. Team includes LANL crew: D. Stafford, P. Gomez, M. Moos, TL: C. Marrow

Well Description rusted looking metal casing, cap was off - NOT locked on. Platform is a foot square gravel pad support by wood sides, there is a metal housing on it's side next to the well. The well is in the middle of an active fire-ant hill. Pipe diam: 2 inches

~~Constructed in~~

Well	Water level	TD	Well vol.	Purge vol
APCO-1	6.50	19.7*	2.15	6.45 gal ~7 gal

* From records

C. Marrow 9/3/98

9/3/98 (Thurs). LANL Sampling

Water level taken from Top of Surface casing.

0926: Began Purging, Flow Rate: 1L/22sec

Initial/Final Parameters

	Time	Temp	pH	turbid	ec
(Initial)	0937	12.2	6.97	3.41	0.47
(Final)	0957	17.3	6.99	3.57 ntu	0.50

0940 Began Sampling.

0948 TL and sampling

0958. Flow Rate: 1L/22 sec.

1012 Departed the site

1105: Arrived @ LAO-0.9 well, right below LA Canyon reactor - ER Team consisting of TL B. Kendrick ER contractor J. Harris and ES&H Harvey Decker all present

1159. Departed well LAO-0.9 site for lunch.

1334: Arrived @ area to collect Bayo-2 effluent @ SR 502, Route 4 intersection, w/ C. Marrow w/ ES&H crew

1352: Arrive @ Sample site - stream close to culvert under SR 502, on north side.

C. Marrow 9/3/98

9/3/98 (Thurs.) LANL Sampling WA# [illegible]

TABLE Samples collected on 9/3/98

Sample	Time	Volume	photo	collectors
APCO-1	S 0940	(9) 1L poly	3/1	TL, LANL
	E 0948	(1) 500 ml glass		
		(1) 500 ml poly		
		(1) 1L chlor/oxylate		
BAYO-2	S: 1415	(9) 1L poly	3/2,	TL, NMED LANL
	E: 1435	(1) 500 ml glass	3/3	
		(1) 500 ml poly		
		(1) 1L chlor/oxylate		

* Note: For well APCO-1, purged water NOT containerized

Chuck V. Thum
9/10/98

* Collected by TL (2-1L)

9/3/98 (Thurs). LANL Sampling WA# [illegible]

1353: LANL begins sampling. Water collected @ base of culvert using a peristaltic pump, LANL collecting duplicates here

1415 TL began sampling

1435: End TL sampling

Parameters

Time	Temp	pH	turbid	EC
1445	17.8	7.00	2.68	0.48

Sampler sampling only once - stable, not a dynamic system like a recharging well

1456 Depart site

1630 Arrive @ Hotel, via the compound, begin prepping samples for shipment

1800/1730: Completed sample prep, done for the day

Chuck V. Thum

9/4/98 (Fri) LANL Sampling WA# 002BTZU5G

0700 TL C. Morrow & B. Kendrick meet LANL Health physicist/RCT D. Stafford & LANL-ER contractor J. Harris; depart hotel enroute to well LAUZ-1 in upper DP Canyon. There is reported high Sr^{90} concentrations in this area; & Cs^{137}

0740: Arrive @ well # LAUZ-1

Well Description: There is a square metal casing (all other ES&H wells have had round metal surface casings) supported by 1 ft. square concrete well pad. There is a 4" PVC pipe nearly flush w/ surface casing. Well was locked on arrival. There is a drum near the well. In an overpack, all purged water will be containerized.

Well	H_2O level	TD	water vol	purg vol
LAUZ-1	5.62'	12.95	4.8 gal	14.4

TD measured w/ water level indicator

insta V. Morrow 9/4/98

9/4/98 (Fri) LANL Sampling WA# 002BTZU5G

0750 There is no dedicated pump, water will be purged using geo-pump peristaltic pump (using ER vehicle battery, parked close-by). Well is located first south of a narrow creek channel. No water running but bed is damp

0807 Began Purging water (into a 5 gal. plastic bucket) - No flow rate required since will use 5 gal. bucket as means to measure purged volume

Initial / Final Parameters (No Turb)

	TIME	Temp	pH	turbidity (GAL)	ec
*(initial)	0843	16.4°C	6.58	4	0.305 mS/cm
(Final)	1014	18.0	7.08	14	0.264

* Taken after 5 gallons purged

parameters measured using an Arica → sample collected in a cup - then instrument w/ param. attachments inserted.

DO is 11.84 (initial); 13.05 (final)

NOTE: This well has 3 protective posts.

1018: Began sampling, dumped 3 buckets of 4 gallons, 1 bucket of 2-3 gallons.

chrono V. Morrow 9/4/98

9/4/98 (Fri) LANL Sampling WA# 0002BT0656G

1050 Completed sampling, including collecting NMED filtered (2) 1L samples

1055 Departed the site

1059 Arrived @ LAUZ-2

Well Description: Square metal casing (locked) supported by a 1 ft square concrete pad in good condition. PVC pipe is 4" diam. There are two support posts @ 2 corners, and a charred stump @ the third corner. There is a dry/damp creek bed 15 ft. north of well. There is a barrel w/ an overpack for containerizing purged water

Well	H_2O level	TD	H_2O vol	purge
LAUZ-2	6.11 ft. (TOC)	12.82* ft	3.98 gal.	12 or 11.69 gal

* Total Depth measured w/ water level indicator; no dedicated pump - a peristaltic pump will be used. Purged water will be measured using a 5-gallon bucket - purging water into the bucket.

Christa V. Morrow 9/4/98

9/4/98 (Fri) LANL Sampling WA# 0002BT0656G

TABLE Samples collected on 9/4/98

SAM	TIME	Volume	photo	Collectors
LAUZ-1	S: 1018 E: 1050	(9) 1L poly (2) 40ml glass (1) 500ml poly (1) 500 ml glass (2) 1L poly NMED (1) 1L acrylate	3/4	TL, NMED*
LAUZ-2	S: 1207 E: 1233	(9) 1L poly (2) 40ml glass (1) 500 ml poly (1) 500 ml glass (1) L acrylate/chlor. (1) 1L poly NMED	3/5	TL, NMED*

1110: Began purging LAUZ-2

1119: NMED M. Dale arrived on site

Initial / Final Parameters (GAL)

	Time	Temp	pH	turbidity	conduct.
(initial)	1127	19.5	7.41	4	0.383
(Final)					

Turbidity not collected, instrument not giving good readings.

1145: NMED departed the site

1207: Began sampling purged (3) bucket fulls

* Collected by TL

Christa V. Morrow 9/4/98

9/4/98 (Fri) LANL Sampling WA#[illegible]

1233: End sampling

1240: Departed the site enroute to the NMED office

1430: Relenquished custody of coolers, Airbill #

departed Los Alamos enroute to Albuquerque, end of week, break for labor day

Christa V. Morrow

9/8/98 (Tues) LANL Sampling WA#[illegible]

0780: TL team C. Morrow, B. Kendrick met, departed hotel enroute to meeting place - will meet w/ State (NMED), LANL and go on to sample springs & wells on San Ildefonso ~~pueblo~~ property → pueblo land

Weather: Sunny, high sixties, showers expected later in day.

0835: All team members @ meeting place. Members included:

Bret Kendrick	TL
Christa Morrow	TL
John Young	NMED - HRMB
Max Maes	LANL - ESH
Penny Gomez	LANL - ESH
Darril Stafford	LANL - RCT
Jenny Harris	LANL - ER
Chris Hanlon-Meyer	NMED DOE
Dave Sarracino	Pueblo - enviro
Cindy Abeyta	USGS
Bob ~~Green~~ McBree	USGS
Naomi Archuleta	Water Quality Pueblo San I.
Noah Kaniatobe	GIS tech San I Pueblo.

Christa V. Morrow 9/01

9/8/98 (Thurs) LANL Sampling WA# 0002BTR05G

0915: ESH sampling team arrive @ roadside to La Mesita spring (hike-in) Team includes: M. Maes, P. Gomez, D.S. Byford, J. Young, C. Hanlon-Meyer, C. Marrow, N. Archuleta

0934 Team arrives @ source of spring spring above east side of Rio Grande River.

Time	Temp	pH	turb	ec
0935	25°C	6.94	16.9	0.31
1022	16.5	6.9	—	—

0939: Begin sampling, using oxylate wide mouth jar. poured into other sample bottles, Sr^{90} not collected

1012 End sampling, samples will be filtered @ car, NMED measured pH, conductivity, temp., there is a corroded/rusted pipe running along spring

1045: Departed site, met with TL sampling team @ well

1146: Pueblo Enviro Office rep. Dave Sarracino requested that state samples not be collected since NMED-PUE did not clear sampling w/ the San. I pueblo. C. Marrow will filter La Mesita

Christopher V. Marrow 9/10/98

9/8/98 (Thurs) LANL Sampling WA# 0002BTR05G

Samples collected on 9/8/98

SAM.	TIME	Volume	photo	collectors
La Mesita Spring	S: 0935	(8) 1L poly	3/6	NMED & LANL
	E: 1012	(1) 500 ml poly	3/7	TL
		(1) 500 ml glass		
		(1) oxylate		
		(1) 4L NMED		
Sacred Spring	S: 1342	(8) 1L poly	3/3,	LANL, TL
	E: 1413	(1) 500 ml poly	3/9	
		(1) 500 ml glass		
		(1) L oxylate		
Pueblo Spring (see logbook 2 for details)	S:	(8) 1L poly	3/10	LANL, TL
	E:	(1) 500 ml poly	3/11	USGS/Pueblo
		(1) 500 ml glass		
		(1) L oxylate		

Christopher V. Marrow 9/10/98

9/8/98 (Tues) LANL Sampling WA#[illegible]
Sample and give to Dave
to hold while issue is cleared up.
1124: NMED departed the site
1321: ESH team departs LLAO-5
location enroute to Sacred Springs.
1335: Arrive @ Sacred Springs, found
running water north (down) from
a stagnant pool along what looks
like storm drainage.
1342: Began Sampling, I sampled
using oxylate bottle to transfer
to unfiltered - slow moving stream
over silt/soil, a pool was hollowed
out in soil prior to sampling.
LANL set up peristaltic - tubes
in small pool, collected their sample
w/ peristaltic; oxylate & filtered collected
w/ peristaltic.
1413: End Sampling.
Parameters

TIME	TEMP	pH	turbid	conduct.
1355	16.2	7.00	13.8	024

1430: Depart Sacred Springs Site.
14[illegible]: Returned to LLAO-5 site, EPA R Mayer
- on-site

Note: 3.78 L = 1 gal

Hilltop House 662-2441
ABC Auto (505) 256-1169
LA Inn (505) 662-7211

Logbook 2

Field Log Book

for

Los Alamos National Lab.

By: TechLaw, Inc.
750 N. St. Paul
Suite 600
Dallas, TX 75201

For: U.S. EPA
1445 Ross Ave.
Dallas, TX 75202

LANL Los Alamos, NM

Aug. 31, 1998 K015

0730 TechLaw sampling team split into two groups. Team member Christa Morrow went with Los Alamos sampling group and Mr. Michael Dale of NMED. Bret Kendrick went with Los Alamos contractor Morrison-Knudsen member Andy Crowder and Sonny Harris to sample ER monitoring wells.

0735 Arrived at monitoring well LAO-B. Water Level was 8.78 feet to top of casing (TOC). Total depth of well was approximately 29.51 to TOC. Calculations for well volume indicate 13.5 gallons for one well volume. Three well volumes for LAO-B equal 40.6 gallons.

0810 Begin pumping (purging) LAO-B

0855 Purged 5 gallons from LAO-B

BKendrick 8/31/98

LANL Los Alamos, NM

Aug 31, 1998 K015

0850 Parameter readings were as follows:

Cond: 0.152 mS/cm

pH: 6.31

DO: 13.04

Temp: 11.4 °C

0925 10 gallons purged. Parameter readings were as follows:

pH: 6.45

cond: 0.118 mS/cm

DO: 12.49

Temp: 11.0 °C

Turb: 2

Sampling team adjusted pumping rate of bladder pump to minimize purging time. LAO-B is located approximately 20 feet south of the canyon road in Los Alamos Canyon. The well had four protective posts painted red. The well had a 2 foot square

BKandi 8/31/98

LANL Los Alamos, NM

Aug 31, 1998 K015

concrete block base, elevated approximately 8 inches above the ground surface. The well was constructed of 4 inch PVC pipe with a steel protective casing which was locked upon arrival at the well location

0940 Purged 15 gallons. Parameters were as follows

pH : 6.48

cond : 0.113

DO : 12.98

Temp : 10.7

Turb : 22 ?

0950 Purged 20 gallons. Parameters were as follows:

pH : 6.48

cond : 0.112

DO : 13.07

Temp : 10.6

Turb : 50 ?

Readings from the turbidity meter were suspect. Purge water was visibly clear

TBKeil 8/31/98

LANL Los Alamos, NM

Aug 31, 1998 K015

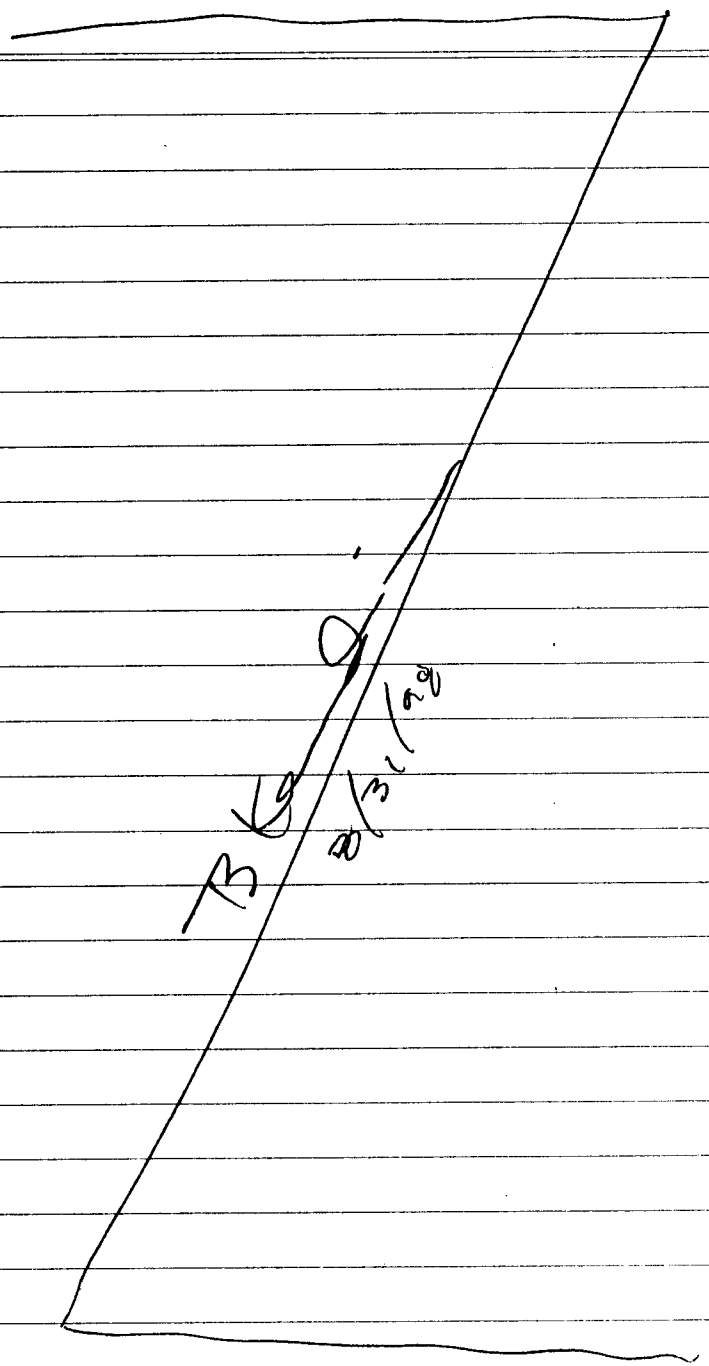
1000 Purged 25 gallons
Parameters were as follows:
pH : 6.49
cond : 0.111 mS/cm
DO : 12.99
Temp : 10.5 °C
Turb : 49 ?

1010 Purged 30 gallons
Parameters were as follows:
pH : 6.15
cond : 0.120 mS/cm
DO : 13.32
Temp : 10.3°C
Turb : —

1020 Purged 35 gallons
Parameters were as follows:
pH : 6.21
Cond : 0.116
DO : 13.25
Temp : 10.3
Turb : —

1030 Purged 40 gallons
Parameters were as follows:
pH : 6.26

TSKarl 8/31/98



LANL Los Alamos, NM

Aug 31, 1998 K015

Cond: 0.115

DO: 13.27

Temp: 10.2

Turb: —

1035 Begin sampling

1050 Pause in sampling. Waiting on different filter.

1110 M. Dale arrived at LAO-B location w/ filters. M. Dale then departed.

1120 Completed sampling of LAO-B. Sample time will be noted on sample tags as 1100 hours.

1125 Pat Longmire arrived at LAO-B location.

1130 Depart LAO-B site in route to LAO-0.6 location

1140 Arrive at LAO-0.6 location.

1150 Andy Crowder departed for another project.

1205 Pat Longmire departed LAO-0.6. Remaining

TJKowal 8/31/98

LANL Los Alamos, NM

Aug 31, 1998 K015

sampling personnel setup to begin purging operations.

1210 Began purging LAO-0.6 First several bladder pump volumes were silty with the following bladder volumes decreasing in visual turbidity LAO-0.6 was constructed of 4 inch PVC with a 2-foot square concrete pad and steel protective casing. The protective steel casing was locked.

1216 Measured parameters were as follows:

pH : 6.68

cond : 0.373

DO : 12.01

Temp : 15.2

Turb : —

1220 Purged 5 gallons. Prior to beginning purging activities, water level was measured as ~~12~~ 7.25 feet below TOC

BK 8/31/98

LANL Los Alamos, NM

Aug 31, 1998 K015

and total depth was measured as 15.91 feet below TOC.
One well volume was calculated to be approximately 5.7 gallons.
Three well volumes was estimated to be approximately 17.1 gallons

1240 Parameters measurements were as follows:
pH : 6.63
Cond : 0.345
DO : 12.84
Temp : 15.4
Turb. : 9

1255 Parameters measurements were as follows:
pH : 6.51
Cond : 0.373
DO : 12.82
Temp : 15.4
Turb : —

1300 Purged 15 gallons

1305 Measured parameters were as follows:

TS Kendall 8/31/98

LANL Los Alamos, NM

Aug 31, 1998 K015

pH : 6.54

cond : 0.340

DO : 12.69

Temp : 15.1

Turb : —

1315 Purged 20 gallons.
Began sample collection.

1335 Completed sampling LAO-0.6. Sample time on sample tags will be 1330 hours.

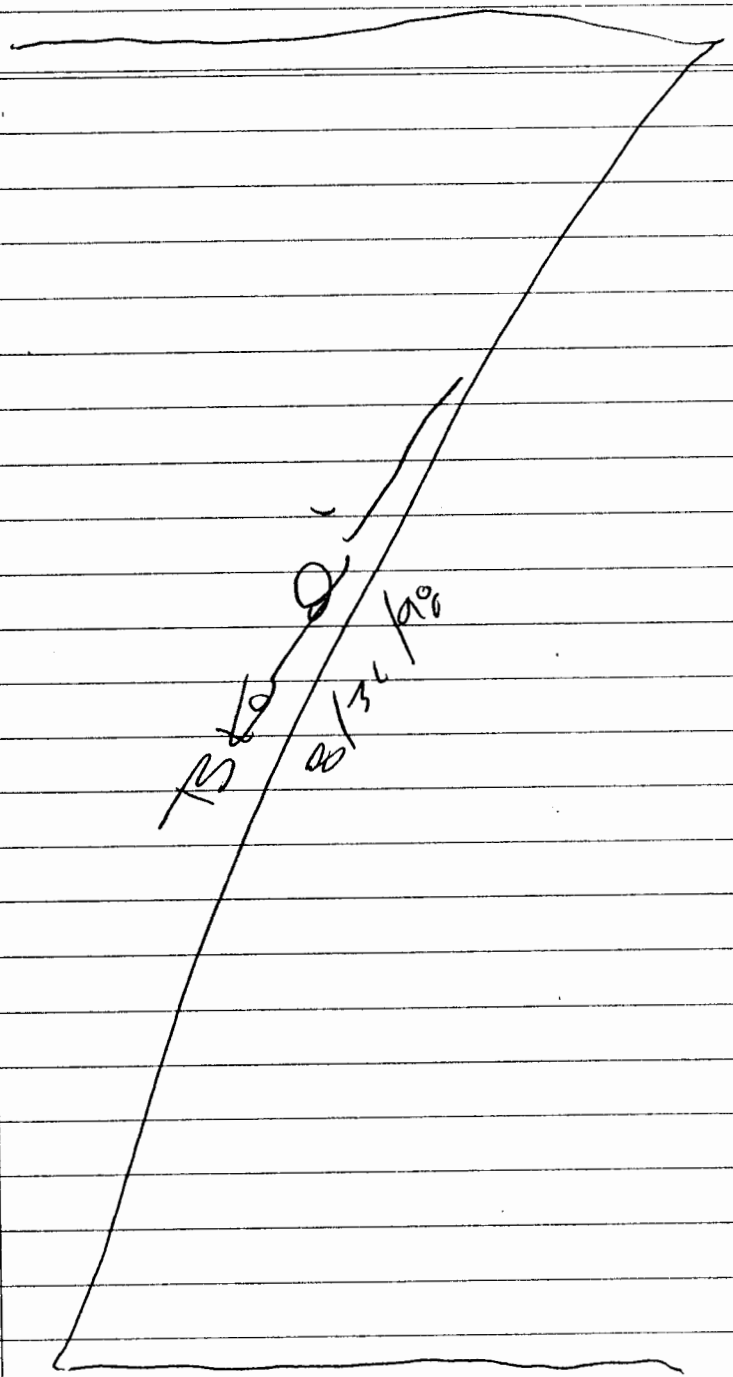
1345 Depart LAO-0.6 location

1350 Arrive at LAO-0.91

1408 Water level measured from TOC was 10.37 ft
Total depth from TOC was measured to be 18.48 feet.
One calculated volume was BK 5.11 gallons. Three well volume was estimated to be approximately 16 gallons.

1420 Began purging activities

BK 8/31/98



LANL Los Alamos, NM

Aug 31, 1998 K015

LAO-Ø.91 is constructed of 4-inch diameter PVC with 4 protective posts and a steel protective case. The well has a 2 foot concrete pad with a brass survey marker. The protective casing was locked.

1510 Purged 5 gallons. Team decided to cease purging activities due to low purging qualities of LAO-Ø.91. Bladder pump may be defective or water level may be such that the pump intake is at or close to water table. Team will investigate these possibilities with Pat Longmire. Harvey Decker, UC arrived.

1530 Depart LAO-Ø.91 area.

BKarl 8/31/98

B Kaufman 8/31/98

LANL: Los Alamos, NM

Aug 31, 1998 K015

1545 Arrive at sample equipment storage area. Prepared coolers and sample bottle set-ups.

End of Day

BKaufman 8/31/98

LANL Los Alamos, NM

Sept 1, 1998 K015

0800 Met with Ms. Jenny Harris of MK. Proceeded to LAO-0.91 location.

0810 Arrived at LAO-0.91 Team pulled bladder pump to determine its placement relative to the well screen. The screened interval for LAO-0.91 was from 13 to 18 feet. The bottom of the bladder pump was estimated to be at approximately 14 feet below TOC. The team decided to sample LAO-0.91 later using a peristaltic pump. Mr. Harvey Decker arrived. The team then began to pack up to mobilize to the next well location LAO-1.6g. Ms. Harris called Pat Longmire to inform him of the activities.

0825 Depart LAO-0.91 site

0837 Arrive at LAO-1.6g site Well was located on so -

9/1/98

BKG 9/1/98

LANL Los Alamos, NM

Sept. 1, 1998 K015

side of Los Alamos Canyon. The well had 4 steel protective posts and a steel protective casing. The well had an approximately 2 foot square concrete pad. The protective casing was locked.

0850 Began purging activities. Prior to purging, the water level was measured to be 14.17 feet below TOC and the total depth was measured to be 33.62 feet below TOC. One well volume was calculated to be 12.7 gallons and the 3 purge volumes is estimated to be 38.1 gallons.

0858 Parameters were as follows:

pH: 6.76

cond: 0.262

DO: 13.10

Temp: 11.6 °C

Turb.: 2

BKG 9/1/98

BK 9/1/98

LANL Los Alamos, NM

Sept. 1, 1998 K015

0910 Parameters at 10 gallons were as follows:

pH: 6.24

Cond: 0.235

DO: 13.10

Temp: 11.4°C

Turb: 1

0917 Parameters at 15 gallons were as follows

pH: 6.49

Cond: 0.230

DO: 13.03

Temp: 11.1

Turb: —

0927 Photo 01-BK of LAO-1.6, being purged. Facing SE by B Kendrick. Parameters at 20 gallons were as follows

pH: 6.46

Cond: 0.229

DO: 12.73

Temp: 11.0

Turb: —

BKendrick 9/1/98

BK 9/1/98

LANL Los Alamos, NM

Sept. 1, 1998 K015

0932 Parameters at 25 gallons were as follows:

pH: 6.43

Cond: 0.228

DO: 12.76

Temp: 11.1

Turb: 2

0938 Photo 02-BK of Well Wizard controller used to control pumping of bladder pumps. Facing downward by B. Kendrick.

0940 Parameters at 30 gallons were as follows:

pH: 6.45

Cond: 0.228

DO: 12.93

Temp: 11.1

Turb: —

0948 Parameters at 35 gallons were as follows:

pH: 6.41 Temp: 10.9

Cond: 0.228 Turb: —

DO: 13.08

BKendrick 9/1/98

LANL Los Alamos, NM

Sept. 1, 1998 K015

0955 Parameters at 40 gallons purge were as follows:

pH: 6.44

Cond: 0.228

DO: 12.97

Temp: 11.0

Turb: —

1000 Begin sampling activities.

1010 End sampling activities. Sample times on sample labels will be recorded as 1000 hours.

1025 Depart LAO-1.6g location. Mr. Decker also departed. He stated that he had other things to do, but would return later this day.

1037 Arrived back at LAO-0.99 location. Team waited to find out if tubing for peristaltic pump was available.

1055 Ms. Harris called Pat Longmire. Mr. Longmire directed the team to proceed to LAO-0.3 and sample while waiting for

TSKendall 9/1/98

LANL Los Alamos, NM

Sept. 1, 1998 K015

tubing for peristaltic pump.

1108 Arrival at LAO-0.3.

Well was located on the north side of Los Alamos Canyon. The well has a concrete pad approximately 1.5 feet square and a steel protective casing. The casing was locked.

1118 Measured water level to be 8.57 feet below TOC and total depth to be 13.35 feet below TOC. One well volume was calculated to be approximately 2.7 gallons. Purge volume for this well is estimated to be 8.1 gallons

1125 Begin purging activities

1148 Parameter reading at 2.5 gallons purged were as follows:

pH: 6.63 Temp: 15.9

Cond: 0.248 Turb: —

DO: 11.39

BKinder 9/1/98

LANL Los Alamos, NM

Sept 1, 1998 K015

1230 Parameter readings at 5 gallons purged were as follows:

pH: 6.24

Cond: 0.387 mS/cm

DO: 10.99

Temp: 15.4 °C

Turb: —

1315 Parameter readings at 8 gallons purged were as follows:

pH: 6.48

Cond: 0.260

DO: 11.62

Temp: 16.0

Turb: —

1325 Ms Harris left LAO-Ø.3 location to get filters. B Kendrick also left site to get another bottle set-up.

1340 B. Kendrick returned to LAO-Ø.3 location. Mr. Harvey Decker was present at location.

B Kendrick 9/1/98

LANL Los Alamos, NM

Sept. 1, 1998 K015

1355 Ms. Harris arrived back at LAO-Ø.3 location

1400 Begin sample time

1455 End sample time.

i Sample time recorded on sample tages will be 1430 hours. Pat Longmire arrived. Discussed potential sample locations for tomorrow. Decided to sample

1550 Photo 03-BK of LAO-Ø.3 well. Facing NW by B Kendrick.

1555 Depart LAO-Ø.3 site.

1557 Arrive at LAO-Ø.6 site. Photo 04-BK of LAO-Ø.6 well. Facing NW by B Kendrick.

End of Day
B Kendrick

B Kendrick 9/1/98

LANL Los Alamos, NM

Sept 2, 1998 KDCS

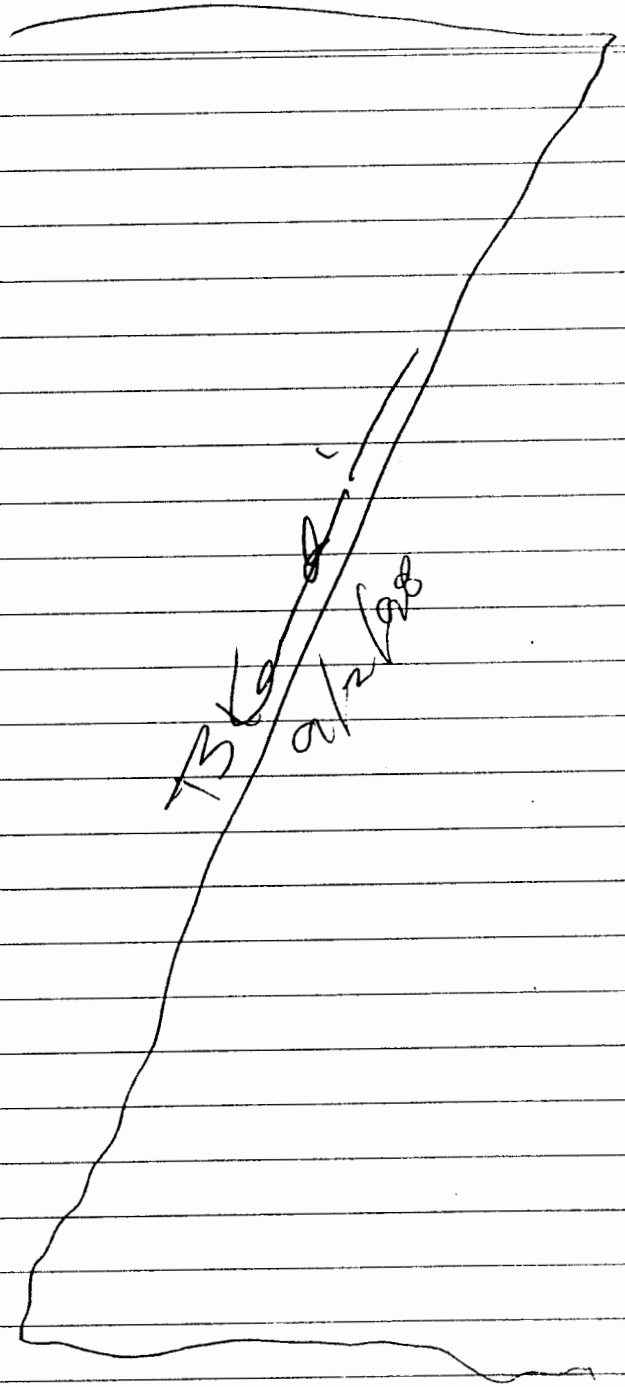
1000 Met with Ms. Jenny Harris. Weather was clear, sunny, slight breeze, and approximately 70°F. Proceeded to POI-4 location

1010 Arrive at POI-4 well location. Well is located in lower Pueblo Canyon near the county road maintenance facility.

1025 Measured water level in POI-4 to be 161.61 feet below top of casing. The total depth of the well is approximately 182 feet below the TOC. The calculated well volume for this well is 13.3 gallons. The estimated purge volume for POI-4 is 40 gallons.

1040 Began purging activities. Based on new information from Pat Longmire, the total depth for POI-4 is 179 ft from

TBK 9/2/98



LANL Los Alamos, NM

Sept. 2, 1998 K015

ground surface. This new information should not effect previous calculations.

1133 Purged 5 gallons.

Parameter readings were as follows:

pH: 7.62

Cond: 0.496

DO: 14.12

Temp: 19.5

Turb. —

POT-4 has 4 steel protective posts. The well had a locked steel protective casing. The well was constructed of 4-inch PVC. The well had an approximately 2.5 foot square concrete pad. The pad was completely cracked all the way through which appeared to have occurred due to wash-out on the upgradient side of the well pad. The well pad had separated slightly

TSK 9/2/98

BK 9/2/98

LANL: Los Alamos, NM

Sept. 2, 1998 K015

from the protective well casing

1200 Ms. Harris departed site to get lunch for sampling team

1210 Photo 05-BK of POI-4 Facing SW by BKendrick.

1215 Photo 06-BK of crack on south side of well pad. Facing NE by BKendrick

1218 Photo 07-BK of crack on east side of well pad Facing SW by BKendrick

1245 Purged 10 gallons Parameters reading were as follows:

pH : 7.92

Cond : 0.432

DO : 14.31

Temp : 13.9

Turb : —

Ms. Harris arrived back at site.

1355 Purged 15 gallons. Parameter readings were as follows:

BKendrick 9/2/98

B Lund
9/2/98

LANL Los Alamos, NM
Sept. 2, 1998 15015

pH: 7.94
Cond: 0.431
DO: 14.87
Temp: 14.7°C
Turb: —

Determined to begin measuring parameters every gallon purged until stable, at which time, the team will begin collecting samples.

1411 Purged 16 gallons. Parameter readings were as follows:
pH: 7.91
Cond: 0.430
DO: 14.83
Temp: 13.9
Turb: —

1424 Purged 17 gallons. Parameter readings were as follows:
pH: 7.95
Cond: 0.428
DO: 14.90
Temp: 13.3
Turb: —

LANL Los Alamos, NM

Sept 2, 1998 K015

1435 Purged 18 gallons. Parameters readings were as follows:

pH: 7.94

Cond: 0.430

DO: 14.37

Temp: 14.2

Turb: —

1448 Purged 19 gallons. Parameter readings were as follows:

pH: 8.00

Cond: 0.434

DO: 14.76

Temp: 13.7

Turb: —

1502 Purged 20 gallons. Parameter reading were as follows:

pH: 7.96

Cond: 0.433

DO: 14.55

Temp: 13.4

Turb: —

1510 Begin sample time

1620 End sample time

Sample time recorded

BKendall 9/2/98

9/2/98

LANL Los Alamos, NM

Sept. 2, 1998 KOIC

the sample collected at POI-4 will be 1600.

1630 Depart ~~K~~ RK POI ~4 site

9/2/98

End of Day

BKendall 9/2/98

LANL Los Alamos, NM

Sept. 3, 1998 15015

0900 Met with Ms. Jenny Harris and Mr. Harvey Decker. Weather was partly cloudy, slight breeze, and approximately 70°F. The team proceeded to LAO-0.91.

0905 Arrive at LAO-0.91 location.

0915 Water level was measured to be 10.31 below TOC. The calculated volume of water standing in the well was 5.1 gallons. The purge volume for this well will be approximately 16 gallons. The well will be purged using a GeoPump 2 peristaltic pump.

0950 Begin purging activities

1010 Measured flow rate. Flow rate from peristaltic pump was approximately 1 liter every 2 min 11 sec.

TSK 9/3/98

LANL Los Alamos, NM

Sept. 3, 1998 KO15

1022 Purged 5 gallons. Parameter readings were as follows:

pH: 6.60

Cond: 0.274

DO: 10.22

Temp: 16.5

Turb: 1

1050 Purged approximately 7 gallons. Parameter readings were as follows:

pH: 6.84

Cond: 0.278

DO: 10.76

Temp: 16.7

Turb: 0

1105 Surveilance Group (Sampling) arrived at LAO-0.91 site. Group included Mark M, Benny, and Darryl S. and Christa Merrow.

1115 Purged 10 gallons (approximately) Parameter reading were as follows:

LANL Los Alamos, NM

Sept. 3, 1998 15015

pH: 6.89

Cond: 0.235

DO: 11.92

Temp: 17.3

Turb: —

1140 Purged 12 gallons (approximately)

Parameter readings were as follows:

pH: 6.82

Cond: 0.238

DO: 12.77

Temp: 18.00

Turb.: —

1200 Purged 14 gallons (approximately)

Parameter readings were as follows:

pH: 6.83

Cond: 0.236

DO: 12.77

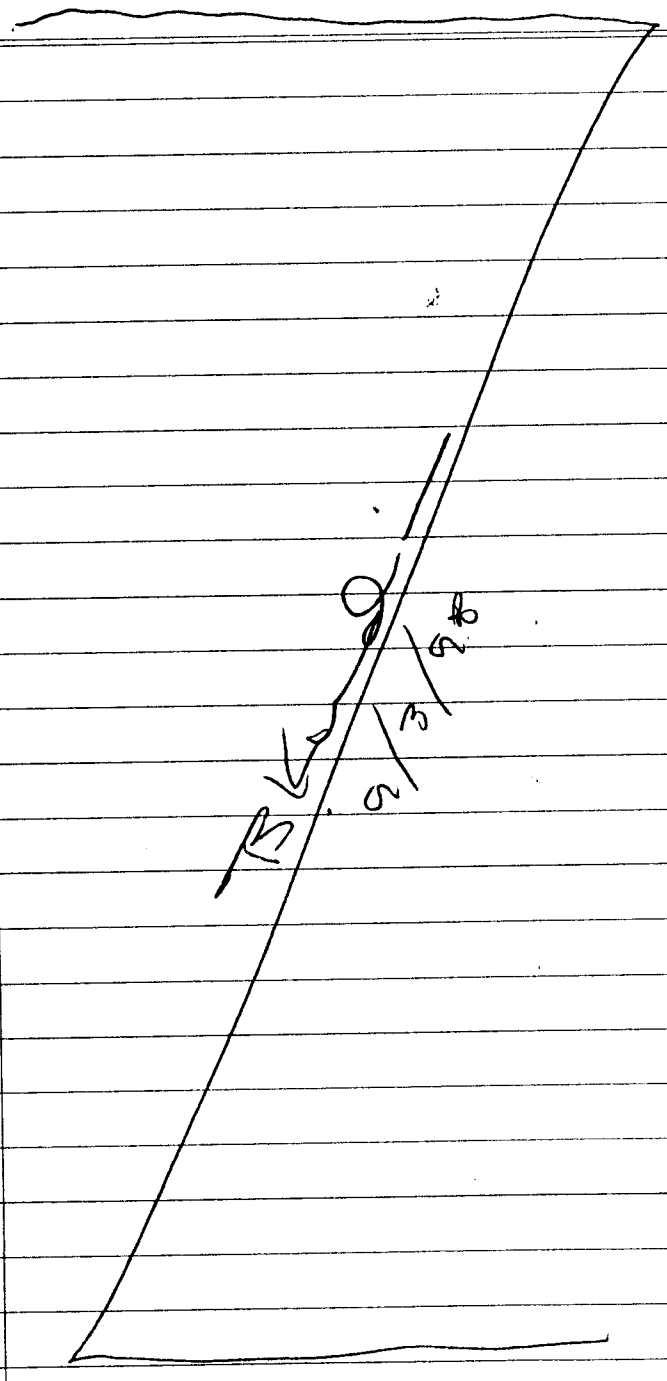
Temp: 17.8

Turb.: —

1215 Purged 16 gallons (approximately)

Parameter readings were as follows:

TS Kendall 9/3/98



LANL Los Alamos NM

Sept. 3, 1998 KO15

pH : 6.83

Cond : 0.233

DO : 12.53

Temp : 17.8 °C

Turb : —

1220 Begin sample time.

1330 End sample time. Sample time for this sample will be recorded on sample tags and Chain of Custody forms as 1300 hours. ——

1400 Collected Field Blank at LAO-0.91 location. Did not include Oxylate and Stable N Isotope analyses in field blank. ——

1404 Photo 08-BK of LAO-0.91 well location Facing E by B Kendrick

1408 Depart LAO-0.91 site.

1417 Arrive at LAO-B site.

1420 Photo 09-BK of LAO-B well location. Facing SE by B Kendrick.

BKendrick 9/3/98

LANL Los Alamos, NM

Sept. 3, 1998 K015

K123 Depart LAO-B site.

1440 Arrive at Pueblo Complex where ER offices are located. Met with Mr. Danny Katzman about ER wells LAUZ-1 and LAUZ-2. Mr. Katzman said that there would be no problem with the Technical sampling team sampling the wells.

1508 Depart Pueblo Complex.

End of Day

BKandi 9/3/98

LANL Los Alamos, NM

Sept. 8, 1998 K015

0904 Arrive at LLAO-2 location. Team consisted of Jenny Harris, MK, Dave Sarmiento of San Ildefonso, Noah Kawiatobe, San Ildefonso, Bob McBrun, USGS Cindy Abeyta, USGS. Weather was clear, slight breeze, and approximately 68°F.

0910 Measured water level to be 26.76 feet below TOC. The total depth of the well was measured to by 32.21 feet below TOC. The well volume was calculated to be approximately 3.5 gallons. The estimated purge volume is 10.5 gallons.

0930 Attempted to begin purging LLAO-2. However, the peristaltic pump was unable to draw water up the well. The intake for the pump was set at 28 feet below TOC. Also attempted to use peristaltic

BKmel 9/8/98

B Kedar 9/8/98

LANL Los Alamos, NM
Sept. 8, 1998 K015

pump provided by USGS personnel. This attempt also failed. Ms. Harris stated that her office had an impeller type pump which could be used to sample and purge the well

1000 The team departed LLAO-2 location.

1008 Arrive at LLAO-5 well location. LLAO-5 was a flush-mount well. Measured water level in LLAO-5 to be 14.32 feet below TOC. Total depth was measured to be 23.77 feet below TOC. One well volume was calculated to be 6.2 gallons. The estimated purge volume is 18.6 feet.

1045 Began purging activities. Two types of tubing were attempted and both types collapsed.

1106 Ms. Harris departed

B Kedar 9/8/98

LANL Los Alamos, NM

Sept 8, 1998 K015

LLAO-5 location to go to her office and get a different type of pump. The sampling team continued to purge LLAO-5.

1135 Purged 5 gallons.

1145 Ms. Harris arrived back at LLAO-5 location.

1202 Parameter readings at 8 gallons purged were as follows:

pH: 6.70

Cond: .679

DO: 14.87

Temp: 19.3

Turb: 7

1210 Parameter readings at 10 gallons purged were as follows:

pH: 6.78

Cond: .608

DO: 15.90

Temp: ~~15.90~~ 17.4

Turb: 8

1228 Parameter readings at 14 gallons were as follows:

pH: 6.77

[illegible] 9/8/98

9/8/98

LANL Los Alamos, NM

Sept. 8, 1998 K015

Cond: 0.608

DO: 17.31

Temp: 17.5

Turb: 6

1238 Parameter readings at 16 gallons were as follows:

pH: 6.74

Cond: 0.590

DO: 17.98

Temp: 17.3

Turb: 0

1251 Parameters readings at 17.5 gallons were as follows:

pH: 6.68

Cond: 0.575

DO: 16.50

Temp: 17.4

Turb: 2

1300 Parameters readings at 20 gallons were as follows:

pH: 6.57

Cond: 0.587

DO: 16.06

Temp: 17.0

[illegible] 9/8/98

LANL Los Alamos, NM

Sept. 8, 1998 K015

Turb: 2

1315 Parameter readings at 23 gallons were as follows:

pH: 6.53

Cond: 0.582

DO: 15.72

Temp: 17.4

Turb: —

1330 Begin sampling activities. USGS split samples at this location.

1500 End sampling

1532 Depart LLAO-5 site

1540 Arrive at Otowi Spring which is located on the west side of Otowi Bridge which spans the Rio Grande River

1550 Begin sampling

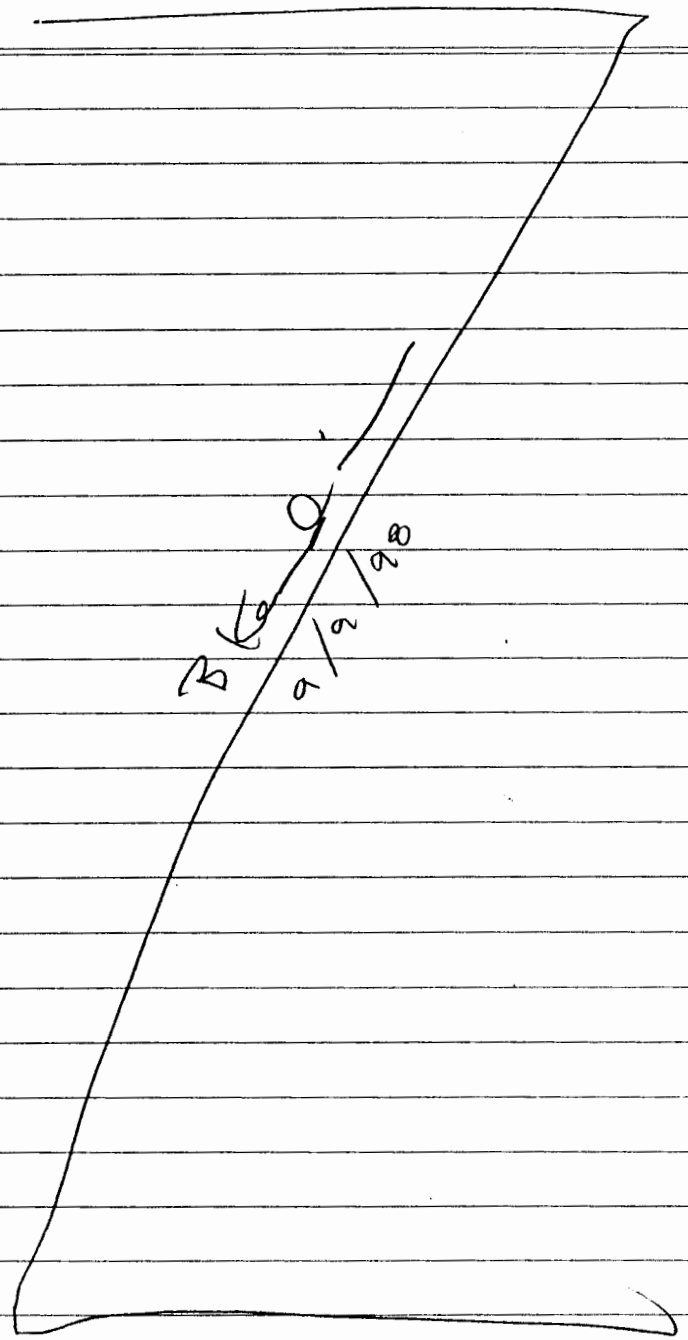
1655 End sample team

1704 Depart Otowi Spring location.

End of Day

B Kowalski

B Kowalski 9/8/98



LANL Los Alamos, NM

Sept. 9, 1998 15015

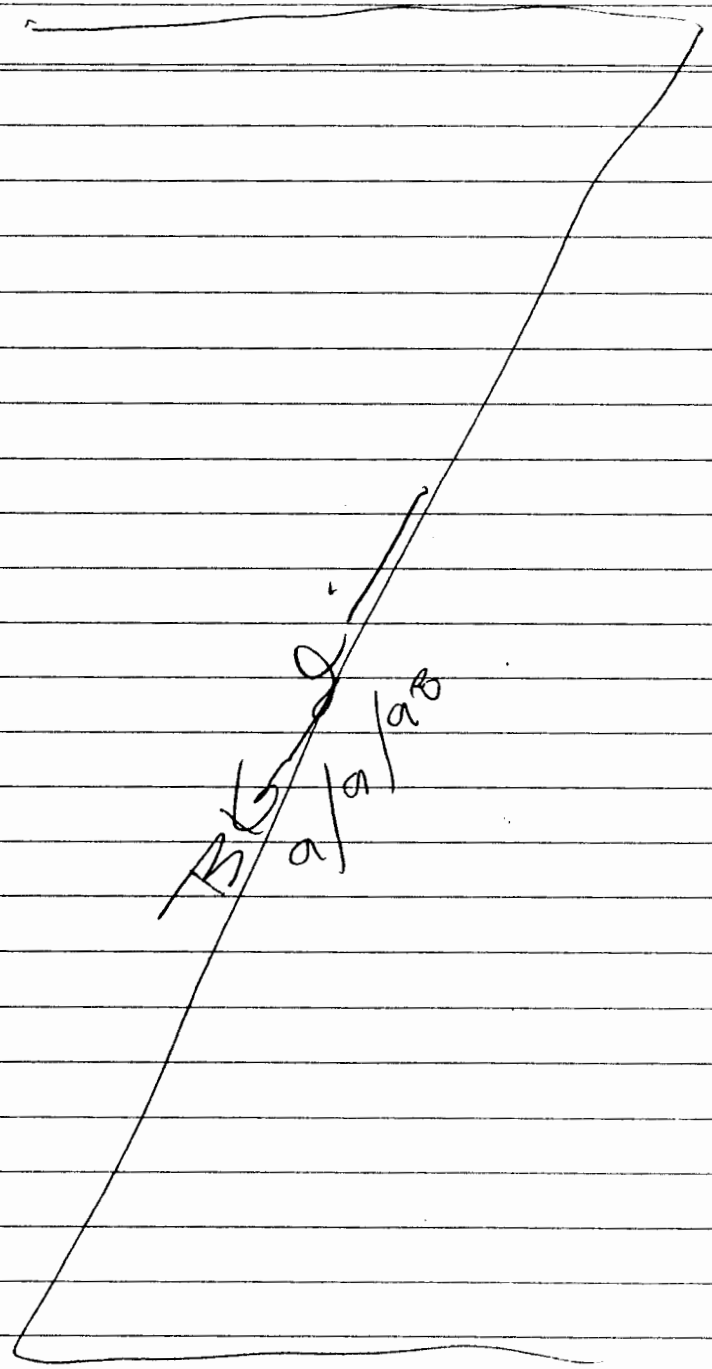
0805 Arrive at Tatavia location within San Ildefonso Pueblo Reservation. Gerald Stafford, Max Maez, and Sonny Harris were present. Weather was partly cloudy, slight breeze, and approximately 58°F.

0827 USGS personnel arrival to collect split samples

0830 Arrival at LLAO-2 location. Water level was measured to be 26.80 feet below the TOC. One well volume was calculated to be 3.5 gallons. Purge volume will be 10.5 gallons. Ms Harris will attempt to use a submersible pump (impeller) to purge and sample LLAO-2. The pump is set at 28 feet

0858 Pump did not work so Ms Harris placed the series of pumps used on LLAO-5 to purge and sample.

B Stone 9/9/98



LANL Los Alamos, NM

Sept. 9, 1998 K015

0904 Began purging activities. Pumps purge approximately 1.5 gallons before going dry. LAO-2 is a monument type well with one steel protective post and a steel protective outer case. The well is constructed out of 4-inch diameter PVC casing. The well has an approximately 2.5 foot square concrete pad. The well was locked upon arrival. A brass marker was embedded in the concrete pad.

0925 Parameter readings at approximately 2 gallons purged were as follows:

pH: 6.90

Cond: 0.490

DO: 14.27

Temp: 10.3

Turb: —

TSkandi 9/9/98

LANL Los Alamos, NM

Sept. 9, 1998 K015

0935 Parameter readings at approximately 2.5 gallons purged were as follows:

pH: 7.68

Cond: 0.444

DO: 15.31

Temp: 14.1

Turb: ✓

1020 Parameter readings at approximate 2.75 gallons purged were as follows:

pH: 7.67

Cond: 0.435

DO: 14.93

Temp: 15.3

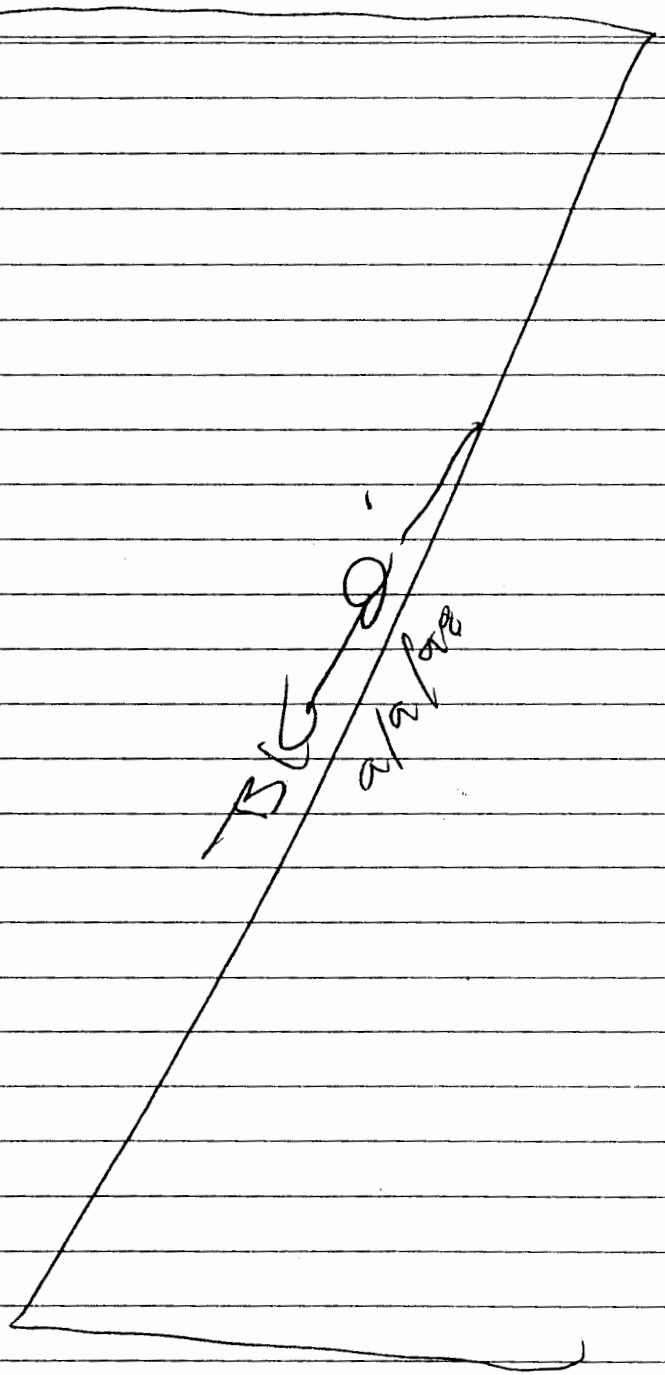
Turb: —

1030 Purged the well dry by lowering the series of pumps to the bottom of the well. Purged a total of approximately 4 gallons.

1116 Team leader decided that based on the recharge rate of the LLAO-2 well

[illegible] 9/9/98

[illegible] 9/9/98



LANL Los Alamos, NM
Sept. 9, 1998 KO15

not enough water would be available to completely sample the LLAO-2 well. Water was recharging into the well at a rate of 1 inch every 6 minutes.

1140 USGS personnel attempted to collect a sample. No sample was collected because not enough water was available. Ms. Harris stated that it took approximately 45 minutes for the well to recharge 1 foot.

1230 Filtered the appropriate sample allocated from Basalt Springs and LA Springs.

1250 Photo 10-BK of LLAO-2 Facing S by BKendrick.

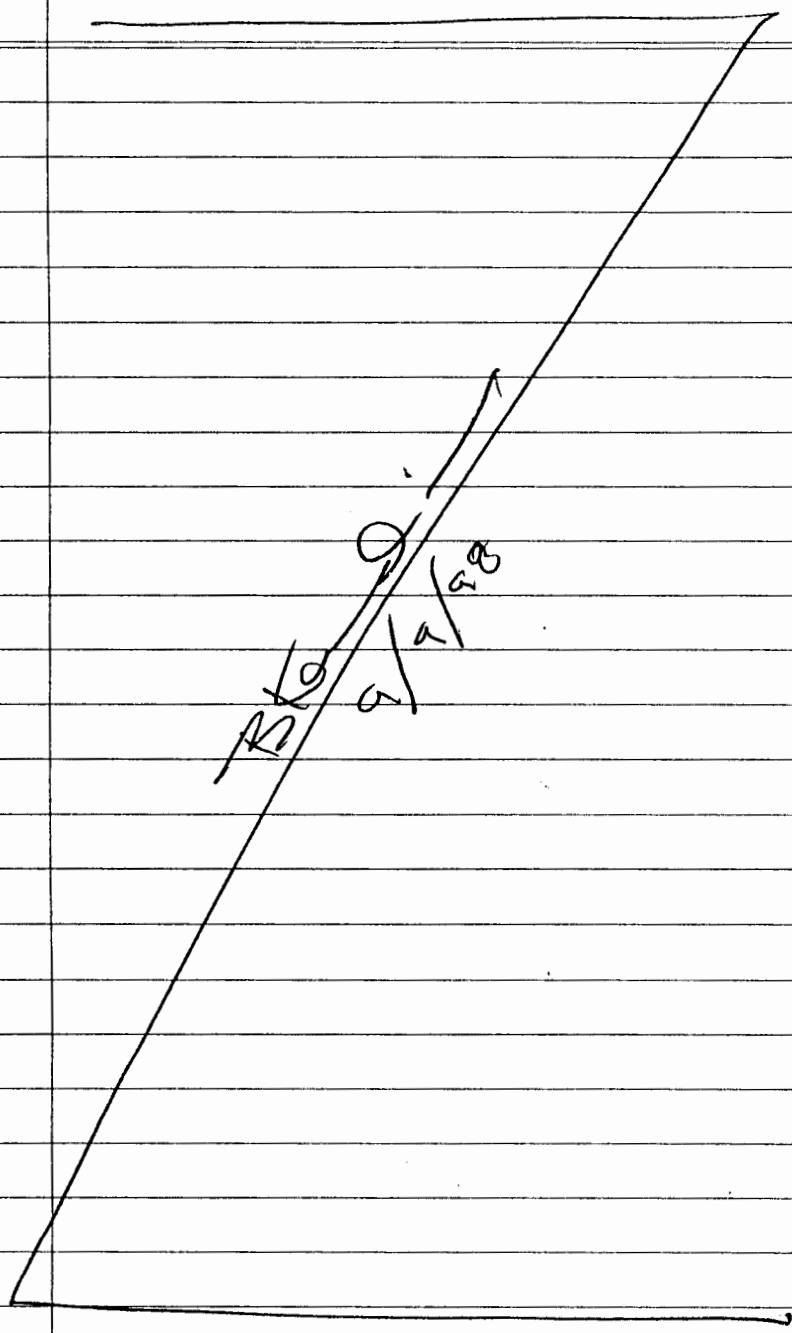
1303 Depart LLAO-2 location

1308 Arrive at LLAO-5 location.

1309 Photo 11-BK of LLAO-5 location Facing W by BKendrick.

1311 Photo 12-BK of close-up

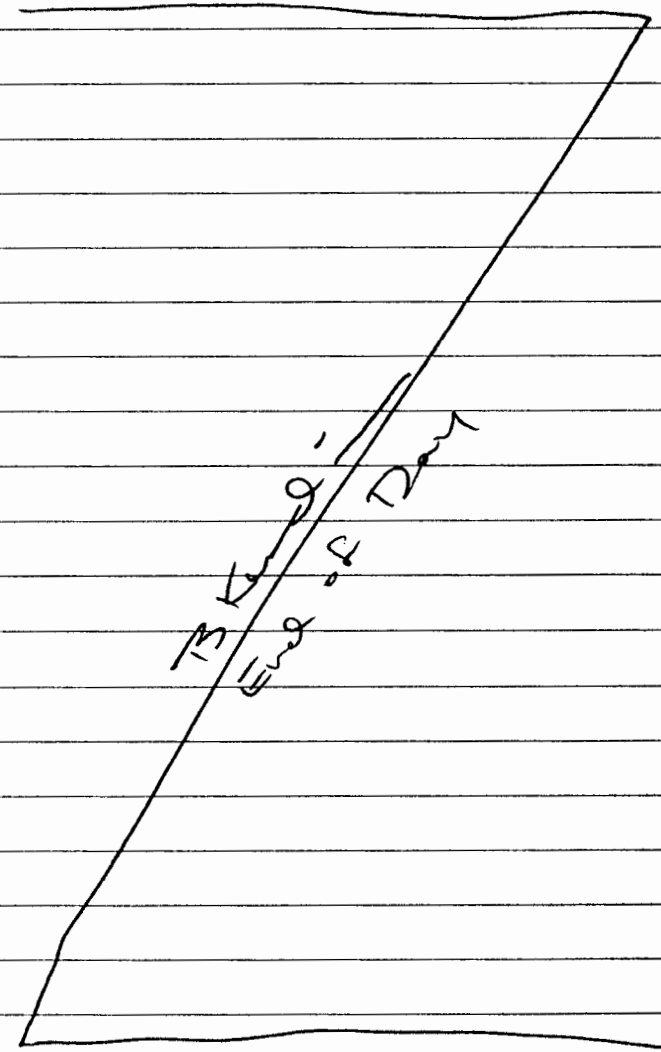
BKendrick 9/9/98



LANL Los Alamos, NM

Sept. 9, 1998 KOIS

of LLAO-5 location, facing downward by B Kendrick, 1315 Depart LLAO-5 location.



BKendrick 9/9/98

Logbook 3

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ANL-E41)

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LANL Sample Logbook #3

RECYCLED ACCOUNT BOOKS

A 1750 SERIES

A 1750-50	Record
A 1750-51	Single Entry Ledger
A 1750-52	Journal
A 1750-53	Cash
A 1750-54	Double Entry Ledger

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9/9/98 (Wed) LANL Sampling WA# 0002BTX05G

0000: Met with M. Maes, P. Stafford & LANL, J Harris ER-LANL contractor @ designated meeting place. Will split up into 2 teams - EST1 team will collect BASALT and L.A. Springs water, including filtered - but bring water to be filtered BACK to ER team to filter in one place, TL will collect to-be filtered water in State provided 4L (dedicated) containers. No parameters will be taken @ the springs, EST1 team not equipped w/meters today.

Weather: Sunny, slight breeze, high 60's some storm clouds visible

Proposed work: EST1-LANL team to collect BASALT & L.A. Spring water, ER-LANL to collect LLAO-2 well water with USGS. This should complete sampling event.

Note: M. Maes confirmed that Test Well 2 (TW-2) will not be fixed (pump) in time for TL to sample

*Note, photo taken today noted in logbook #1, on page 86

0845: Arrive @ parking area for both basalt & LA, south of SR 502 BASALT

0900: Arrived @ Source seep of ~~Basalt~~ Los Alamos (LA) began sampling

0908 Completed collected samples @ seep - BASALT. (0709 3/12, 3/13, photo, c log samp/for)

9/9/98 (WED) LANL Sampling WA#0002BT0065G

0950: Found LA ~~Basalt~~ Springs – very hidden and unmarked, took two photos: LA

0951: 3/14 E-SE, Springs coming through a corroded pipe – in a very overgrown area

0951 3/15 N-NW directly behind photographer of 3/14, shows tanks that can be seen from SR502

0952 Began sampling out of pipe – just collecting unfiltered, will filter out of state provided 4L containers. – @ LA springs

1003: 3/16 SE – sampling from pipe @ ~~Basalt~~ LA Springs

1025: End Sampling

1031: Depart site enroute to return to ER Sampling team @ well LLAO-2

1230: Depart site, completed sampling, ER stayed behind with USGS, Notation regarding well described in logbook #2

Chester V. Mann
9/10/98

9/10/98 (WED). LANL Sampling WA#0002BT0065G

Samples collected on 9/9/98

SAM	TIME	volume	photo	collectors
Basalt springs	S: 0900 E: 0900	(8) 1L poly (1) 500ml poly (1) 500ml glass (1) oxylate/Chlorate	3/12, 3/13	TL
LA Springs	S: 0952 E:	(8) 1L poly (1) 500ml poly (1) 500ml glass (1) oxylate/Chlorate	3/14, 3/15,	TL
LLAO-2	* mentioned in logbook #2.			

Chester V. Mann
9/10/98

09/10/96 (Thurs). LANL Sampling WA# 0002B7R6G

1000: Arrived @ NMED office, dropped off/ relinquished (4) sample coolers of all samples collected this week & (2) misc. coolers for shipment via Fedex: Airbill#

1040: Departed NMED white rock office, enroute to compound to clean out all coolers & equipment

1100: Met @ TA-59, with LANL Steve Rae, M. Maes, P. Gomez, EPA R. Mayer, TL B. Kendrick, C. Morrow to wrap up any questions/issues

→ LANL suggested/offered to look @ EPA data (unvalidated-preliminary) prior to publishing - LANL would provide comments.

→ Possibly have follow-up sampling, LANL asked, EPA said there is a possibility

→ A table will be provided w/ all split sample results.

→ Ken Mullins w/ ESH-18 (LANL) will be part of contract.

→ possibly do follow-up sampling when do SMU sampling

→ LANL requested list of all samples collected, analysis performed.

→ LANL asked about QA/QC procedures

ch to V. Morrow 9/10/96

9/10/96 (Thurs). LANL Sampling WA# 0002B7R6G

- that EPA follows CFR

→ EPA brought up wanting to collect @ SMU's, noted that LANL-ER did not respond, S. Rae noted that

→ M. Maes suggested that EPA & LANL can coordinate sampling events when LANL usually samples - in the future

APPENDIX B

Chronological Summary of Field Activities

Chronological Summary
1998 Groundwater Sampling Mission
Los Alamos National Laboratory

This section provides a brief summary of all sampling activities that were conducted by TechLaw (TL) staff from August 19, 1998 through September 9, 1998 at Los Alamos National Laboratory (LANL). With the exception of duplicate samples, the TL team members used the monitoring well numbers to designate sample numbers. Well water parameters monitored by the LANL Environmental Surveillance and Compliance Program team members included pH, temperature, turbidity, and conductivity. Instruments used for parameters include the following:

Turbidity:	Hach 2100P Turbidimeter
pH/temp:	Fisher Scientific Accumet portable AP25
Conductivity:	GLA Agricultural Electronics instant EC, salinity droptester

Well water parameters monitored by the LANL Environmental Restoration Program team members included pH, temperature, dissolved oxygen, turbidity, and conductivity. The instruments used to measure these parameters was a Horiba U-10 Water Quality Checker.

The water level was determined using a water level indicator. This summary is based on TechLaw's daily logbooks and does not include all recorded details. Copies of the logbooks are included in Appendix A.

August 19, 1998 (Wednesday)

Weather: Temperature low 80's, overcast, 1500 hours rain began
Proposed work: Begin sampling in upper Mortandad Canyon.
In Attendance (sampling): R. Mayer, EPA-WAM; B. Kendrick, TL-WAM; C. Morrow, TL Team Member; B. Gallaher, LANL; M. Maes, LANL; R. Lujan, LANL; J. Hill, LANL; M. Dale NMED; S. Yanicak NMED; J. Young, NMED

Bret Kendrick, TL-WAM and Christa Morrow, TL team member arrived at TA-59 Building 117 to meet with the Environmental Safety and Health (ESH-18) Division personnel to discuss safety issues and sampling logistics prior to the sampling event. In attendance at the meeting were LANL ESH-18 representatives; a U.S. Department of Energy (DOE) representative; Rich Mayer, U.S. Environmental Protection Agency (EPA) Region 6; New Mexico Environment Department (NMED) DOE-Oversight Division representatives; a NMED Hazardous & Radioactive Materials Bureau (HRMB) representative; and TL team members. LANL personnel stated that a radioactive contamination technician (RCT) would be present in the appropriate canyons during sampling activities to monitor for radioactive material which may be present in the environment. Due to a late shipment of sampling containers from TL's contracted laboratory, TL personnel used LANL sampling containers during the initial day of sampling. Sampling activities began in Mortandad Canyon.

Samples of the TA-50 Radioactive Waste Water Treatment Plant effluent were collected while being discharged into Motandad Canyon. The sampling team met with the TA-50 facility director, David Moss, prior to sampling and he answered questions regarding facility operations and outlined safety issues. Split samples were collected by LANL and TL personnel (Photograph 1-1). All dissolved metals and radioactive material analyte samples (except tritium) were filtered using a 0.45 micrometer in-line filter provided by LANL. All collected samples were sealed using EPA custody seals and left at the TA-50 complex to be screened by facility personnel for gross alpha, gross-beta and gamma radiation and tritium prior to release to the TL sampling team.

Samples were collected at monitoring well MCO-2 (Photographs 1-2 through 1-4) located in upper Mortandad Canyon. The locked monitoring well was constructed in the 1960's and was made of two-inch diameter black plastic pipe. There was a crack at the top of the well casing and no well pad was observed. The samples were collected using a battery powered peristaltic pump. Samples were collected by TL and NMED personnel. All purged water at MCO-2 was containerized in a 5-gallon container.

August 20, 1998 (Thursday)

Weather: Temperature in low 70's, clear skies.
Proposed Work: Sample monitoring wells MCO-3, MCO-4B, MCO-5, and MCO-6
In Attendance: R. Mayer, EPA-WAM; B. Kendrick, TL-WAM; C. Morrow, TL team member; B. Gallaher, LANL; M. Maes, LANL; R. Lujan, LANL; P. Gomez, LANL; and M. Dale, NMED

Activities: TL team members met with LANL sampling team members at TA-59 at 0800 hours. Ms. Penny Gomez, LANL employee, joined the sampling team. The sampling team proceeded to well MCO-3, located near the TA-50 wastewater treatment facility in upper Mortandad Canyon. MCO-3 was located at base of a steep ravine and along a creek bed. Split samples were collected by LANL, TL and NMED personnel (Photographs 1-5 and 1-6). The well was constructed of three-inch diameter black plastic pipe and was protected by a locked steel outer protective casing. The outer protective casing was secured in place by the use of concrete. Water was collected using a battery powered peristaltic pump. Purged water was not containerized and was discharged directly onto the ground surface. This disposal method had been agreed to by NMED prior to this sampling event. The creek bed registered 50 μrem.

The team then proceeded to well MCO-4B in lower Mortandad Canyon. This well was installed in 1990 and was constructed of two-inch diameter polyvinyl chloride (PVC) pipe (Photographs 1-7 and 1-8). The well had a one-foot square concrete well pad and a locked, steel outer protective casing. The well was purged and sampled using a dedicated bladder pump. Samples were collected by TL. Purged water was not containerized and was discharged directly onto the ground surface.

The team then proceeded to well MCO-5 in lower Mortandad Canyon along a dry creek bed that crosses the dirt road. This well was installed in 1960 and was constructed of three-inch black plastic pipe (Photographs 1-9 and 1-10). No well pad was observed and a locked, steel protective outer casing was secured in placed by concrete. The well was purged and sampled using a dedicated bladder pump. Due to low water flow and limited recharge, samples were collected after one borehole volume was purged and measured parameters had stabilized prior to sampling. Samples were collected by TL and NMED. Purged water was not containerized and was discharged directly onto the ground surface.

Unless otherwise noted in this summary of activities, all purged water was discharged directly to the ground surface based on a previous agreement with the NMED. In addition, all remaining wells described in this summary were purged and sampled using dedicated bladder pumps, unless noted otherwise. Because of the extensive use on dedicated bladder pumps in the wells sampled during this sampling event, total depths of the wells were determined based on published well logs/construction diagrams provided by LANL.

August 21, 1998 (Friday)
Weather: Temperature in low 70's, overcast.
Proposed work: Sample MCO-6, MCO-7A.
In Attendance: R. Mayer, EPA-WAM; K. Hill, EPA; B. Kendrick, TL-WAM; C. Morrow, TL team member; B. Gallaher, LANL; M. Maes, LANL; R. Lujan, LANL; P. Gomez, LANL; D. Stafford, LANL; J. Hill, LANL; M. Dale, NMED; J. Young, NMED; B. Koch, DOE; and H. Daneman, citizen.

Activities: The TL team members met with the LANL sampling team at TA-59 at 0800 hours. Personnel from EPA, NMED, DOE and the citizens advisory board observed a portion of the sampling activities. The team sampled water from well MCO-6 (Photograph 1-11 and 1-12), which was installed in March 1974. The well was constructed of four-inch diameter plastic pipe. It has a locked, steel outer protective casing with no well pad present. The TL team took continuous PID readings at this location but detected no readings above background. Three well volumes were purged prior to sampling. A matrix spike/matrix spike duplicate was collected at this location. TL and NMED team members collected samples.

The sampling team attempted to sample monitoring well MCWB-6.5C, but did not have a key to open the lock, therefore, sampling at this location was rescheduled for the next day.

The sampling team then proceeded to well MCO-7A; however, this well was essentially dry. Due to lack of water, a decision was made by NMED personnel to change the sample location to monitoring well MCO-7. The sampling team then proceeded to well MCO-7. Well MCO-7 was installed in 1960 and is constructed of three-inch black plastic pipe. The well had a locked, steel protective outer casing which was secured by concrete. No well pad was observed (Photograph 1-13). Due to low water flow and limited recharge, samples were collected after one borehole volume was purged and measured parameters had stabilized prior to sampling. Samples were collected by TL and NMED.

After sampling activites were completed, the TL team relinquished custody of five sealed coolers containing groundwater samples at the NMED Oversight Bureau Whiterock office for FedEx pick-up. The coolers contained all samples collected from August 19 through August 21, 1998.

August 24, 1998 (Monday)
Weather: Clear, low 70's
Proposed Work: Sample wells MCWB-6.5C and MCWB-6.5E.
In Attendance: Wally O'Rear, TL team member; C. Morrow, TL team member; M. Maes, LANL; P. Gomez, LANL; Bob Elliot, LANL; B. Gallaher, LANL.

Activities: Sampling team member Wally O'Rear, TL was a temporary replacement on-site for B. Kendrick. The TL team arrived at TA-59 at 0740 hours to meet with the LANL team. After the meeting, the team proceeded to lower Mortandad Canyon for sampling activities. The team stopped at monitoring well MCWB-6.5E (Photograph 1-14). The well had a locked, steel protective outer casing covering a three-inch diameter PVC pipe. The well had a three-foot square concrete well pad. The well was installed in 1994. TL team members collected samples at this site. All purged water was containerized.

The team then proceeded to monitoring well MCWB-6.5C. The monitoring well was unlocked and the field team attempted to purge the well. The well was dry and samples were not collected from this well.

The team then proceeded to well MCWB-7A which was installed in December 1994. The well was constructed of three-inch diameter PVC pipe and was protected by a locked, steel outer protective casing. There was a three-foot square concrete well pad. The monitoring well was purged dry. The water purged from the well was very turbid and as a result the well was not sampled.

August 25, 1998 (Tuesday)

Weather: Clear, low 70's
Proposed Work: Check MCWB-7B as a possible replacement for MCWB-7A
In Attendance: W. O'Rear, TL team member; C. Morrow, TL team member; B. Gallaher, LANL; M. Maes, LANL; P. Gomez, LANL; and J. Hill, LANL

Activities: Met with LANL personnel at 0710 hours at TA-59. The TL and LANL sampling team proceeded to well MCWB-7B located in lower Mortandad Canyon. TL and LANL personnel attempted to sample well MCWB-7B; however, the water level within the well was below the pump intake. The sampling team then proceeded to well MCO-7B (Photograph 1-15). MCO-7B was installed in 1974 and was constructed of four-inch diameter plastic pipe. The well had a locked, steel protective outer casing and a one-foot square concrete well pad. Due to limited recharge, samples were collected after one borehole volume was purged and measured

parameters had stabilized prior to sampling. Samples were only collected by the TL team. The sampling team then proceeded to Well MT-3. However, the well could not be sampled because of a problem with the well's dedicated bladder pump. The dedicated bladder pump was removed from the well and examined by LANL team leader M. Maes.

The sampling team then proceeded to well MCO-13 to measure the water level within the well as requested by EPA Region 6. The well was constructed of two-inch PVC pipe and was protected by a locked, steel protective outer casing (Photograph 1-16). The well had a small concrete well pad. No additional samples were collected for the day so that the dedicated bladder pump at MT-3 could be examined to determine if replacement would be necessary.

TL team members met with LANL personnel B. Gallaher, D. Moss and Debra Hill at TA-50 to discuss coordinating sampling efforts of the discharge from the effluent tanks into upper Mortandad Canyon. It was decided that TL would contact Debra Hill to schedule sampling for the morning of Thurday, August 27, 1998. The TL team then met with M. Dale, NMED at the White Rock office to discuss groundwater sampling progress and the effluent sampling. TL team members agreed to collect samples for NMED at the next sampling locations. NMED also gave TL a phone number to contact Dr. Pat Longmire of LANL, to begin coordinating upcoming sampling activities at specified locations.

August 26, 1998 (Wednesday)

Weather: High 60's, damp from overnight thunder storms
Proposed Work: Sample MT-3, MT-4, and MCWB-7.7B.
In Attendance: Allan Chang, EPA; W. O'Rear, TL team member; C. Morrow, TL team member; M. Maes, LANL; P. Gomez, LANL and J. Hill, LANL

Activities: Met with LANL sampling team at 0715 hours. The TL and LANL sampling team proceeded to well MT-3 located in lower Mortandad Canyon. Team members began purging well MT-3 using a disposable bailer. Purged water was containerized in a five gallon container. The purging activities were discontinued when the effort was made difficult by a possible obstruction inside the well casing. LANL team personnel called the bladder pump company, and arranged for a replacement pump to be sent to LANL. The sampling effort would be completed once the replacement pump arrived.

The sampling team then proceeded to well MT-4. This well was installed in 1988 and is constructed of two-inch diameter PVC pipe. The well had a locked steel outer protective casing which was secured by concrete (Photograph 1-17). Samples were collected by TL for EPA Region 6 and NMED. LANL personnel were not able to determine the conductivity of the well water due to a malfunction with the field instrument. LANL collected parameter information each minute for the first five minutes, then at every five minutes throughout the purging and sampling.

The sampling team then proceeded to well MT-2. After measuring the water level in well MT-2, it was determined that the water level in the well was below the bottom of the pump. The sampling team decided to substitute MCWB-7.7B for well MT-2. The team members proceeded to well MCWB-7.7B. This well was installed in 1994 and is constructed of three-inch diameter PVC pipe. The well had a locked, steel protective outer casing and a three-feet square well pad (Photograph 1-18). All purged water was containerized. Samples were collected for both EPA and NMED by the TL sampling team.

The TL sampling team then prepared samples for shipment and relinquished custody of sealed coolers to NMED Oversight Bureau at the White Rock Office for FedEx pick-up. Arrangements were made to sample TA-50 effluent on Thursday, August 27, 1998.

August 27, 1998 (Thursday)

Weather: Mid to high 80's, slight breeze, dark rain clouds in the area
Proposed Work: Sample TA-50 effluent, MT-3
In Attendance: Allan Chang, EPA; W. O'Rear, TL team member; C. Morrow, TL team member; M. Maes, LANL; P. Gomez, LANL and J. Hill, LANL

Activities: Met the LANL sampling team at 0730 hours at TA-59. TL and LANL team members then proceeded to the TA-50 Radioactive Wastewater Treatment Plant. The TL team arranged with LANL personnel to use a lockable storage area to store empty sample coolers, equipment and preservatives. LANL provided TL with a small metal trailer (Building No. 64-19). TL was the only group to use and have access to the trailer. TL team moved the majority of their equipment into the building.

Pat Longmire of LANL suggested that TL team members contact the ER sampling contractor Morrison Knudson, Inc. to coordinate sample collection at ER Program wells. TL team members called Andy Crowder, Morrison Knudson, Inc. to coordinate sampling activities at ER Progam wells.

The TL and LANL team members were informed that effluent at TA-50 could not be sampled due to a high radiation count (the alpha count was 2000 disintegrations per minute [dpm], and the upper limit for discharging the effluent is 1000 dpm. The usual count is 100 dpm). Effluent would not be discharged until the count was lowered. The plant personnel said the sampling team would be contacted when the effluent was ready to be discharged.

The team then proceeded to well MT-3. LANL had received the new bladder pump for MT-3. The LANL team successfully installed the bladder pump into the well. This was the third attempt to sample this well. MT-3 was installed in 1988 and was constructed of two-inch diameter PVC pipe. The well had a locked, steel protective outer casing which was secured with concrete (Photograph 1-19). Purged water was containerized in plastic five-gallon. The conductivity meter was inoperable. Samples were collected after two well volumes were purged

and all measured parameters were stable. EPA and NMED samples were collected by the TL sampling team. The LANL team was not able to lock the well after completing sampling activities because the newly installed pump was placed too high for the cap to fit completely over well.

August 28, 1998 (Friday)

Weather: Not recorded
Proposed Work: Sample TA-50 effluent and discharged water.
In Attendance: Allan Chang, EPA; R. Mayer (via phone), EPA-WAM; B. Kendrick (via phone), TL-WAM; W. O'Rear, TL team member; C. Morrow, TL team member; Ken Mullin, LANL-ESH; M. Maes, LANL-ESH; P. Gomez, LANL-ESH; J. Hill, LANL-ESH; Pat Longmire, LANL; A. Crowder (MK); M. Dale, NMED; J. Young, NMED

Activities: Arrived at TA-59 at 0740 hours. EPA, TL, LANL, and NMED personnel discussed how to reorganize the sampling schedule in order to complete all the proposed sampling locations in the budgeted time frame, and to discuss logistics for sampling with the ER sampling personnel. The result of the meeting was that there would be two teams, the ESH team that will complete sampling ESH wells, and an ER team that will be responsible for sampling ER wells. One TL team member will be with each team. In addition, both teams will collect a one-liter, unfiltered, unpreserved sample for chlorate/oxylate to be analyzed by LANL. Pat Longmire of LANL stated that EPA would not need to reimburse LANL for the cost of the analysis. Both teams would meet at the skating rink at 0700 on Monday, August 31, 1998. San Ildefonso wells and springs would be sampled during the final week of sampling. The meeting ended and TL, LANL and NMED personnel proceeded to TA-50 to sample effluent.

Upon arrival at TA-50, the team split into two groups. One group remained at the plant to collect a sample of effluent from an interior plant valve, and another group proceeded to the water gauging station in upper Mortandad Canyon to collect effluent water discharged into the canyon. The canyon team was informed of the release via a hand-held radio. Samples were collected for LANL, EPA and NMED. NMED personnel were present for the sample collection. Note: VOC's were not collected first within the facility; however, effluent sampled had been cycled through the internal pipe system for approximately 45 minutes.

Samples at the gauging station were collected using a peristaltic pump (Photograph 1-20). The team lowered a teflon tube into the flowing streambed and collected all samples except VOC's. VOC's were collected in a dedicated one-liter bottle and then transferred into the VOC vials.

After sample collection activities were completed, the TL sampling team prepared sample coolers and relinquished custody of three sealed coolers of samples to the NMED Oversight Bureau office personnel for FedEx pick-up. Samples collected that morning were not included since the TA-50 facility had to screen sample containers for radiation count prior to releasing to custody to TL personnel.

August 31, 1998 (Monday)

Weather: High 60's, overcast.
Team 1 (LANL-ESH) Proposed Work: Sample LAO-6, LAO-4.5C, LAO-3, LAO-2, LAO-1.2.
In Attendance: Team 1 - C. Morrow, TL team member; M. Maes, LANL; P. Gomez, LANL; D. Stafford, LANL and M. Dale, NMED.

Activities: TL Sampling team arrived at the Los Alamos Ice Skating Rink at 0645 hours. Teams split into the ESH team (Team 1) and ER team (Team 2). All wells sampled were located in Los Alamos Canyon.

Team 1 proceeded to well LAO-6 at the eastern end of Los Alamos Canyon. M. Dale, NMED was present to assist with sampling activities. The team discovered that the water level inside the well was below the bladder pump intake. The team decided to substitute well LAO-6A for well LAO-6.

The team proceeded to well LAO-6A. After measuring the water level in well LAO-6A, the sampling team members determined that the water level inside the well was below the bladder pump intake and could not be sampled. The sampling team decided to substitute well LAO-5 for LAO-6.

The sampling team members then proceeded to well LAO-5. This well was installed in 1966 and is constructed of three-inch diameter plastic pipe. The top of the well was flush with the one foot square concrete pad (Photograph 2-1). LAO-5 was not equipped with a dedicated pump and was purged and sampled using a peristaltic pump. The well was purged dry several times during purging activities. Due to limited recharge, samples were collected after approximately one and a half well volumes were purged and parameters had stabilized. Samples were collected for EPA and NMED only. While TL collected the water samples, M. Dale, NMED and D. Stafford, LANL departed well site to begin set-up and purging activities for well LAO-1.2. This was done in an effort to expedite sampling activities. Note: LANL has been determining the water level with the indicator from the surface casing, not the well casing.

LANL and TL team members then proceeded to well LAO-4.5C to purge and sample the well while LAO-1.2 was being purged. TL recorded information about LAO-1.2 from NMED's logbook. Well LAO-4.5C contains a dedicated pump and a transducer. The well was installed in 1989 and is constructed of two-inch diameter PVC pipe. There was a locked, steel protective outer casing and a one foot square concrete well pad (Photograph 2-2). Three well volumes were purged prior to sampling. Samples were collected for EPA and NMED by TL.

The sampling team then proceeded to well LAO-1.2. LAO-1.2 was installed in 1969 and constructed of three-inch diameter plastic pipe. The well had a locked, steel protective outer casing and a two-foot square concrete pad (Photographs 2-3 and 2-4). Over three well volumes were purged prior to collecting samples. Samples were collected by TL for EPA and NMED.

All parameters were collected by NMED personnel. There is surface water present near LAO-1.2.

The sampling team then proceeded to well LAO-3A. Well LAO-3A was sampled instead of LAO-3 since LAO-3A was installed (1989) prior to LAO-3. The well was constructed of two-inch diameter PVC pipe. The well had a locked, steel protective outer casing and a one and a half-foot square concrete pad (Photograph 2-5). Approximately three well volumes were purged prior to sampling this well. Samples were collected for EPA, NMED and LANL.

The sampling team then proceeded to well LAO-2 which was located alongside a dry creekbed. The well was installed in 1966 and was constructed of four-inch diameter plastic pipe. The well had a locked, steel protective outer casing and a one-foot square concrete well pad. Three well volumes were purged prior to sample collection. Samples were collected for EPA, NMED and LANL. During sample collection NMED and LANL personnel went to TW-3 to collect initial parameters.

After sample collection activities were completed for the day, all samples were transported back to Building 64-19 and relinquished to B. Kendrick for shipment preparation while C. Morrow assisted LANL personnel with turning on test well pumps and collecting initial parameters and flow rates at wells TW-4, TW-1, TW-1A, TW-2 and TW-2A. Monitoring well TW-2 had no water.

Team 2 (LANL-ER) Proposed Work: Sample LAO-B, LAO-0.6, and LAO-0.91
In Attendance: Team 2 - B. Kendrick, TL team member; Jenny Harris, MK and A. Crowder, MK

Activities: After departing the ice skating rink, the Team 2 sampling members proceeded to well LAO-B located in Los Alamos Canyon. The team arrived at well LAO-B at 0735 hours. The well was installed in 1994 and was constructed of four-inch diameter PVC pipe. The well had a locked, steel protective outer casing and a two-feet square concrete well pad (Photograph 09-BK). Water quality parameters were measured every five gallons purged. Turbidity readings were suspect. The team purged approximately three well volumes prior to collecting samples. Samples were collected for EPA. Dr. Pat Longmire arrived at the conclusion of sampling activities and suggested that the team sample well LAO-0.6 next.

Team 2 then proceeded to well LAO-0.6. The well was installed in 1994 and was constructed of four-inch diameter PVC pipe. The well had a locked, steel protective outer casing and a two-feet square concrete well pad (Photograph 04-BK). Mr. Crowder and Dr. Longmire departed. After purging approximately 20 gallons, the well was sampled. Samples were collected for EPA.

Team 2 then proceeded to well LAO-0.91, located immediately east of TA-2. The team ceased purging activities after only five gallons were purged. The team suspected that either the dedicated bladder pump was defective, or that the intake on the bladder pump was set near the

top of the water within the well. The team decided to investigate these possibilities and return to this well and possibly use a peristaltic pump to complete purging and sampling activities.

September 1, 1998 (Tuesday)

Weather: High 60's, mild overcast
Team 1(LANL-ESH) Proposed Work: Sample test wells 1, 1A, 2, 2A, 3, and 4.
In Attendance: Team 1 - C. Morrow, TL team member; M. Maes, LANL; P. Gomez, LANL; D. Stafford, LANL.

Activities: Team 1 began sampling well TW-4. The well is located within the city limits, next to the Los Alamos Jewish Center. The pump assembly is protected by a locked chain-linked fence (Photograph 2-7). The team recorded water quality parameters and flow rate, but did not determine conductivity since that instrument was not functioning. Unfiltered samples were collected at the well valve, while filtered samples were collected using a dedicated one-liter poly bottle to collect the water from the well valve and using the peristaltic pump to collect the filtered samples from the bottle. All filtered samples for the other test wells were collected in the same manner. Samples were collected by TL for EPA and NMED. LANL collected their own samples. The pump was shut off prior to the team departing the site.

Team 1 then proceeded to monitoring well TW-1 and TW-1A (Photograph 2-8). Well TW-1 was a deep well and TW-1A was a more shallow well. Water was purged from both wells during the night and was not containerized. TL personnel collected samples from TW-1 for EPA and NMED. LANL did not collect samples. Wells TW-1 and TW-1A were surrounded by a locked chain linked fence and is located just off of SR-50, along a dirt road into Pueblo Canyon. There was only a trickle of water from TW-1A.

Team 1 then proceeded to well TW-2 and well TW-2A. These wells were protected by a locked chain linked fence (Photograph 2-9). Well TW-2 was not sampled due to an inoperable pump. Well TW-2A was sampled. Due to low water amounts three well volumes of water were not purged. The sampling team personnel drained the well three times then allowed the well to recharge prior to sampling. Water was collected at valve which appeared to be galvanized metal. Water from TW-2A appeared slightly brownish in color. A one-liter bottle was used to collect filtered samples.

While traveling back to wells TW-1 and TW-1A it was decided to sample effluent from the municipal waste water treatment facility in Bayo Canyon. The Bayo plant is located midway between wells TW-1 and TW-2. The team met with plant representative Jeff Crowder who allowed the team members to sample the outfall and directed the team to the flow meter located on the east side of the plant (Photographs 2-10 and 2-11). The team collected effluent directly from the outfall using a peristaltic pump. While collecting the dissolved sample parameters, the sampling team had to replace the filter cartridge three times. Plant representatives requested a copy of results.

Team 1 then proceeded to well TW-1A. Water flow was extremely low. It was decided to attempt to sample the well the next day after the well had fully recharged. The team then proceeded to TW-3, located near to LAO-2 in Los Alamos Canyon. The team collected samples in same manner as described before. The well is surrounded by a locked chain link fence (Photograph 2-12). Water was purged during the night and was not containerized.

Team 2 (LANL-ER) Proposed Work: Sample LAO-0.3, LAO-0.91, and LAO-1.6g
In Attendance: Team 2 - B. Kendrick, TL team member; Jenny Harris, MK

Activity: Met Ms. Jenny Harris at 0800 hours at the Los Alamos Ice Skating Rink in Los Alamos Canyon. Team 2 proceeded to well LAO-0.91. Mr. Harvey Decker of LANL met Team 2 at the well LAO-0.91 location. The team pulled the dedicated bladder pump in order to determine its placement relative to the water inside the well and to the well screen. The team decided to use a peristaltic pump to purge and sample this well; however, tubing for the pump had not arrived. The team decided to sample another well and return to this well location at a later time.

Team 2 then proceeded to well LAO-1.6g. This well was installed in 1996 and is constructed of four-inch PVC pipe. The well had a locked, steel protective outer casing and a three-feet square concrete well pad (Photograph 01-BK). Approximately 40 gallons were purged from this well prior to sampling. Samples were collected for EPA. Mr. Decker left the sampling team.

Team 2 then proceeded to well LAO-0.3. This well was installed in 1994 and is constructed of four-inch PVC pipe. The well had a locked, steel protective outer casing and a 1.5-feet square concrete well pad (Photograph 03-BK). Approximately 13 gallons were purged from this well prior to sampling. Samples were collected for EPA.

At the completion of sampling activities, Dr. Longmire arrived at well LAO-0.3. He discussed the next day's sampling activities and suggested that Team 2 proceed to Pueblo Canyon to collect samples from well POI-4.

September 2, 1998 (Wednesday)

Weather: Mid-70's.
Team 1(LANL-ESH) Proposed Work: Sample DP Spring, APCO-1, TW-8.
In Attendance: Team 1 - C. Morrow, TL team member; M. Maes, LANL; P. Gomez, LANL; D. Stafford, LANL; K. Mullin, LANL; M. Dale, NMED.

Met with LANL sampling team at 0925 hours. Team proceeded to NMED Oversight Bureau White Rock Office to meet with Mr. Dale. Team 1 proceeded to DP Springs at 1032 hours. Team 1 hiked in to sample DP Spring located in DP Canyon, an approximately 20 minute hike from well LAO-2. DP Springs is a seep above a rocky cliff face. The source of the seep is approximately 30 to 40 feet above where the samples were collected (Photographs 2-13 through

2-19). The samples were collected from the cliff face as the water ran down the side of the cliff. Unfiltered samples were collected for NMED, EPA and LANL. Samples were collected using a dedicated one-liter poly bottle pressed against the rock face, then transferred to the appropriate labeled sample container. Water was collected in 4, one-liter containers and then taken back to the NMED Oversight Bureau office and filtered using a peristaltic pump.

Team 1 then proceeded to well TW-8 in lower Mortandad Canyon. Monitoring well TW-8 is surrounded by a locked fence (Photograph 2-20 and 2-21). Samples were collected for EPA, NMED, and LANL using the same methods as described for the other test wells. Water was pumped using a gas-generated compressor that was set up to purge well water. Over three well volumes were purged. Filtered samples were filtered using gravity filter pumps as oppossed to the in-line filters that have been used for other wells.

Team 2 (LANL-ER) Proposed Work: Sample POI-4
In Attendance: Team 2 - B. Kendrick, TL team member; Jenny Harris, MK

Activities: After dropping off samples at the NMED Oversight Bureau White Rock Office for shipment via FedEx to Quanterra Laboratory, TL sampling team member Bret Kendrick met with Ms. Harris at 1000 hours. Team 2 then proceeded to well POI-4 located in lower Pueblo Canyon. This well was constructed or four-inch PVC pipe. The well had a locked, steel protective outer casing with three-feet square concrete well pad (Photograph 05-BK). However, it was noted that the concrete well pad was broken (Photographs 06-BK and 07-BK). Due to the slow purging rate of the dedicated bladder pump, samples were collected after only approximately 1.5 well volumes were purged and water quality parameters were stabilized. Samples were collected for EPA and NMED.

September 3, 1998 (Thursday)

Weather: Partly cloudy and approximately 70°F
Team 1(LANL-ESH) Proposed Work: Sample well APCO-1.
In Attendance: Team 1 - C. Morrow, TL team member; M. Maes, LANL; P. Gomez, LANL; D. Stafford, LANL.

TL sampling team relinquished sample coolers at NMED Oversight Bureau White Rock Office for shipment via FedEx to Quanterra Laboratory at 0840 hours. B. Kendrick then proceeded back to LANL to meet with LANL-ER sampling team. C. Morrow stayed at the NMED Office to meet with LANL-ESH sampling team.

LANL-ESH sampling team arrived at the NMED Office at 0855 hours. Team 1 then proceeded to well APCO-1 located in Pueblo Canyon. This well was installed in 1990 and was constructed of two-inch diameter PVC pipe. The well had a locked, steel protective outer casing and a one-foot square concrete well pad (Photograph 3-1). No well cap was observed for this well. The well was in the middle of an active fire ant hill. Approximately three well volumes were purged prior to sampling. Samples were collected for EPA and NMED.

Team 1 then met briefly with Team 2 while sampling well LAO-0.91 in Los Alamos Canyon. The team then proceeded to the intersection of SR 502 and the discharge from the Bayo Sanitary Waste Water Treatment Plant. Team 1 collected samples (Bayo-2) at the culvert under the north side of SR 502, which is located close to the Route 4 intersection (Photograph 3-2). The samples were collected from a stream at the base of the culvert using a peristaltic pump (Photograph 3-3). Parameters were only measured once at this sample location.

Team 2 (LANL-ER) Proposed Work: Sample LAO-0.91 and receive permission to sample LAUZ wells
In Attendance: Team 2 - B. Kendrick, TL team member; Jenny Harris, MK

Activities: After dropping off samples for shipment at the NMED White Rock Office, B. Kendrick met Ms. Harris and Mr. Decker at 0900 hours at TA-2. Team 2 then proceeded to well LAO-0.91. This well was installed in 1994 and is constructed of four-inch diameter PVC pipe. The well had a locked, steel protective outer casing and a two-foot square concrete well pad (Photograph 08-BK). This well was purged and sampled using a peristaltic pump. Approximately 16 gallons were purged from this well prior to sampling. All purged water was containerized in a steel 55-gallon drum. Samples were collected for EPA and NMED.

Team 2 then proceeded to LANL Pueblo Complex offices to meet with Mr. Danny Katzman to obtain permission to sample well LAUZ-1 and well LAUZ-2. After a brief discussion, Mr. Katzman provided verbal permission for the TL team to collect samples from well LAUZ-1 and LAUZ-2.

September 4, 1998 (Friday)

Weather: Not reported.
Proposed Work: Sample LAUZ-1 and LAUZ-2.
In Attendance: B. Kendrick, TL team member; C. Morrow, TL team member; D. Stafford, LANL; Jenny Harris, MK

TL sampling team met with LANL sampling personnel at 0700 hours. The sampling team then proceeded to well LAUZ-1 located in DP Canyon. Sample collection activities were performed by LANL-ER in DP canyon where there is reportedly high concentrations of Sr-90 and Cs-137. LAUZ-1 was installed in 1994 and is constructed of four-inch PVC pipe. The well had a locked, steel protective outer casing and a one-foot square concrete well pad (Photograph 3-4). There were three protective posts around the well pad. All purged water was containerized in a steel 55-gallon drum placed inside a steel overpack drum. The well was purged and sampled using a peristaltic pump. The well is located adjacent to a narrow creek channel that had no running water, but the creekbed was damp. Samples were collected for EPA and NMED.

The sampling team then proceeded to well LAUZ-2 which is located close to LAUZ-1 along the same creekbed. This well was also installed in 1994 and is constructed of four-inch PVC pipe. The well had a locked, steel protective outer casing and a one-foot square concrete well pad. The well pad had two protective posts at two corners with a charred tree stump at the third corner (Photograph 3-5). The well was purged and sampled using a peristaltic pump. The purged water volume was determined using a five gallon bucket. Three well volumes were purged prior to sampling. All purged water was placed inside a steel 55-gallon drum which was placed inside a steel overpack drum. Samples were collected for EPA and NMED.

At the conclusion of sampling activities, the TL team proceeded to the NMED Oversight Bureau White Rock Office to relinquish custody of sample coolers to the NMED office for FedEx pick-up.

September 8, 1998 (Tuesday)

Weather: Sunny, high 60's
Team 1 (LANL-ESH) Proposed Work: Sample springs on San Ildedfonso Pueblo land
In Attendance: Team 1 - C. Morrow, TL team member; M. Maes, LANL-ESH; P. Gomez, LANL-ESH; D. Stafford, LANL; Chris Hanlon-Meyer, NMED; J. Young, NMED; Dave Sarracino, Pueblo Rep.; Naomi Archuleta, Pueblo-Water Quality.

Activities: All team members met at Totavi along the roadside of SR-502. The personnel split into two teams; Team 1, the ESH sampling group, were to sample springs and Team 2, the ER sampling group, were to sample wells LLAO-2 and LLAO-5. Team 1 departed to sample La Mesita Spring, located just east of the Rio Grande River. Samples were collected in the same manner as DP Spring using a dedicated one-liter poly to collect water just downstream from the source of the seep along the streambed, then transfer the sample to the appropriate sample bottles (Photographs 3-6 and 3-7). Filtered samples were colllected at the seep and then filtered using a peristaltic pump and in-line filter. It was observed that a rusted pipe runs along side the spring. Water quality parameters were measured prior to and after the samples were collected. Samples were collected for EPA, NMED and LANL.

When informed that the NMED had collected a sample, D. Sarracino, Pueblo Representative requested that NMED relinquish the sample to the Pueblo and not collect any other samples since the Pueblo had not recieved a written request from NMED to sample on Pueblo lands. NMED representatives complied with the request and shortly thereafter departed the site.

Team 1 then proceeded to the Sacred Springs, located along SR 502. The spring flows into a stagnant pool. The sampling team collected the sample from the streambed prior to its confluence with the stagnant pool (Photographs 3-8 and 3-9). Samples were collected in the same manner as for La Mesita Spring. Water quality parameters were measured after sampling was completed. Samples were collected for LANL and EPA.

Team 1 then proceeded to well LLAO-5 to meet with Team 2. Upon completion of sample collection activities at well LLAO-5, both Team 1 and Team 2 proceeded to Otowi Spring, located near the west bank of the Rio Grande River near SR 502 (Photographs 3-10 and 3-11). The sample was collected using a peristaltic pump. The intake for the peristaltic pump was placed directly in a small pool at the spring's point of origin. Samples were collected for EPA, LANL, and the San Ildefonso Pueblo.

Team 2 (LANL-ER) Proposed Work: Sample wells LLAO-2 and LLAO-5
In Attendance: Team 2 - R. Mayer, EPA-WAM; B. Kendrick, TL-WAM; Jenny Harris, MK; Noah Kaniatobe, Pueblo GIS Tech; Cindy Abeyta, USGS and Bob McBree, USGS

Activities: Team 2 proceeded to well LLAO-2 located immediately east of Totavi. This well was not equipped with a dedicated pump, so the sampling team would attempt to purge and sample the well using a peristaltic pump. This attempt failed since the depth of the water inside the well exceeded the pump's performance capabilities. The team attempted to purge the well using a different peristaltic pump provided by the USGS team members; however, this attempt also failed. Ms. Harris stated that her office had an impeller pump which would be capable of purging and sampling the well, but it would take extra time to obtain the pump. It was decided that the team would return to this well at a later time.

The team then proceeded to well LLAO-5 located west of the Rio Grande River near the intersection of SR 502 and the Rio Grande River. This well was not equipped with a dedicated pump, so the sampling team would attempt to purge and sample the well using a peristaltic pump. This attempt failed since the depth of the water inside the well exceeded the pump's performance capabilities. The team attempted to purge the well using a different peristaltic pump provided by the USGS team members; however, this attempt also failed. Ms. Harris departed to retrieve an impeller pump that would be capable of purging and sampling the well.

Upon the return of Ms. Harris, the sampling team began purging well LLAO-5 using a series of small battery operated impeller pumps. This well was installed in 1996 and is constructed of four-inch diameter PVC pipe. The well was completed flush with the ground surface with a concrete well pad, steel well cover, and locking well cap (Photographs 11-BK and 12-BK). After purging activities were completed, the team collected samples for EPA and the San Ildefonso Pueblo.

September 9, 1998 (Wednesday)

Weather: Sunny, high 60's, slight breeze, storm clouds visible.
Team 1 (LANL-ESH) Proposed Work: Sample Basalt and L.A. Springs.
In Attendance: Team 1 - C. Morrow, TL team member; M. Maes, LANL-ESH; D. Stafford, LANL; Naomi Archuleta, Pueblo-Water Quality.

Activities: All team members met at Totavi along the roadside of SR-502. The personnel split into two teams; Team 1, the ESH sampling group, was to sample springs and Team 2, the ER sampling group, was to sample well LLAO-2. Team 1 proceeded to Basalt Springs. Basalt Springs was located south of SR 502 in a deep, narrow canyon. The source of the spring was unmarked (Photographs 3-12 and 3-13). No water quality parameters were measured. Samples were collected using a dedicated container to transfer sample material to the appropriate sample bottles. Samples for dissolved analyses were filtered later at the well LLAO-2 location. Samples were collected only for EPA.

Team 1 then proceeded to L.A. Springs. L.A. Springs was located in the same canyon southeast of Basalt Springs, but at a higher ground elevation. This spring was hidden and consisted of a metal pipe driven into a rock-face and hidden by dense foliage (Photographs 3-14, 3-15, and 3-16). No water quality parameters were measured. Samples were collected by filling sample bottles directly from the metal pipe. Samples for dissolved analyses were filtered later at the well LLAO-2 location. Samples were collected only for EPA.

Team 2 (LANL-ER) Proposed Work: Sample well LLAO-2
In Attendance: Team 2 - B. Kendrick, TL-WAM; Jenny Harris, MK; Dave Sarracino, Pueblo Rep.; Noah Kaniatobe, Pueblo GIS tech; Cindy Abeyta, USGS; Bob McBree, USGS

Activities: Team 2 proceeded to well LLAO-2 located immediately east of Totavi (Photograph 10-BK). The team began purging activities at 0904 hours. The well was purged using a series of small battery operated impeller pumps. At 1030 hours, the total amount of water purged from the well was four gallons. The well was purged dry each time the pumps were cycled. At 1116 hours, B. Kendrick decided to not sample this well because of the slow recharge rate and the poor visible quality of the water. Ms. Harris stated that it took approximately 45 minutes for the well to recharge 0.6 gallons. Pueblo representatives stated that this well produces more water during the early spring months of each year.

Team 1 returned to the well LLAO-2 location. The dissolved samples were filtered for Baslt Springs and L.A. Springs. TL sampling team departed the location. The sampling team from the USGS decided to stay and attempt to collect samples from well LLAO-2.

September 10, 1998 (Thursday)

Weather: Unrecorded
Proposed Work: Ship off the remaining sample coolers, equipment, meet with EPA and LANL
In Attendance: R. Mayer, EPA-WAM; B. Kendrick, TL-WAM; C. Morrow, TL team member; Steve Ray, LANL-ESH; M. Maes, LANL-ESH; P. Gomez, LANL-ESH

Activities: The TL team relinquished custody of four sample coolers and two miscellaneous coolers at the NMED Oversight Bureau office for FedEx pick-up. All remaining equipment was packaged and moved out of the Building 64-19 and shipped TL's Dallas office. Keys to Building 64-19 were returned to LANL.

The TL team and Mr. Rich Mayer then met with the LANL-ESH group to discuss any questions or issues regarding the recently completed sampling mission. LANL offered to review the EPA data and provide comments prior to publishing. The question of future sampling missions was discussed.

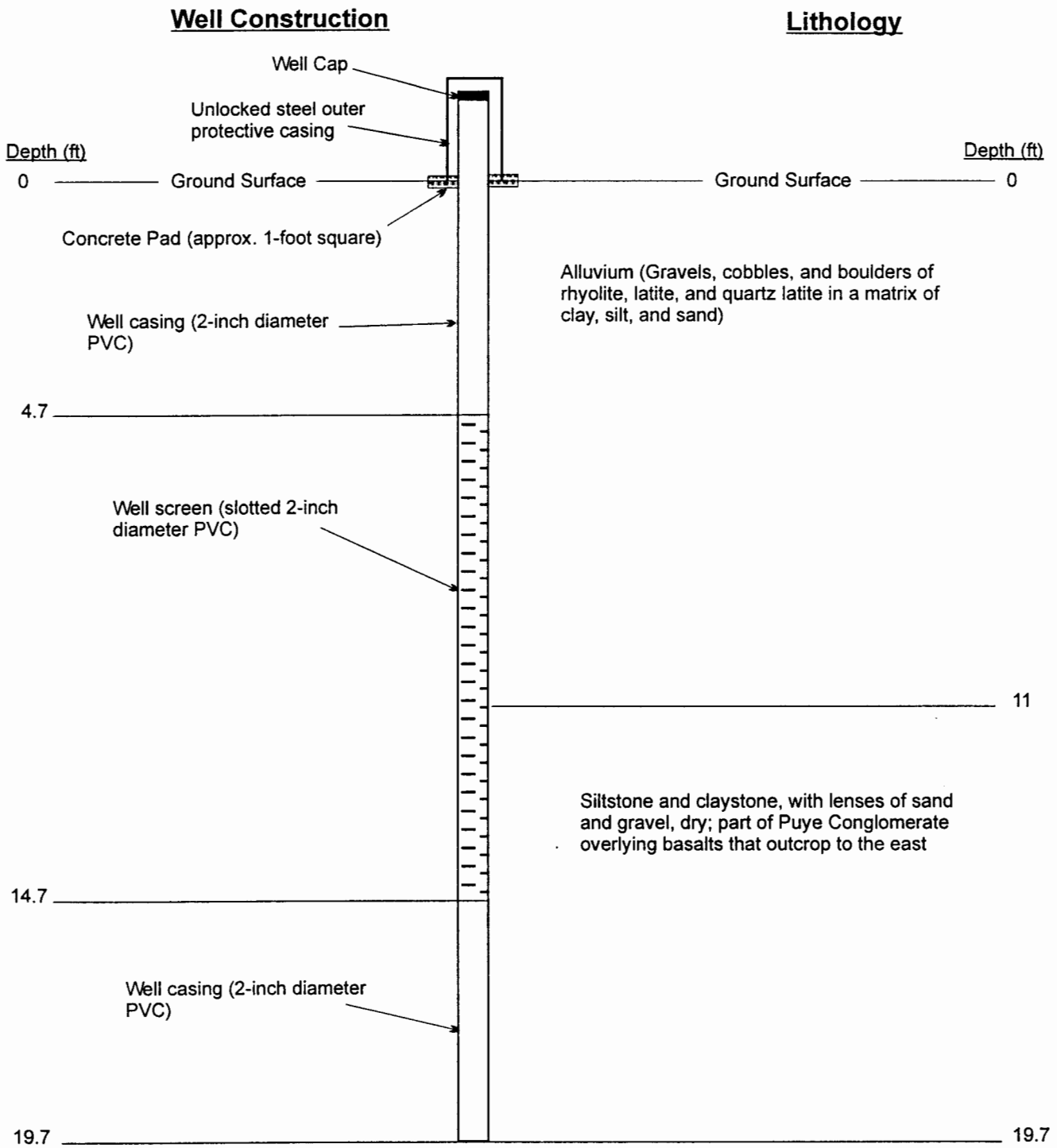
APPENDIX C

Generalized Well Construction and Lithologic Descriptions

Generalized Well Construction and Lithologic Description

Well Designation: APCO-1
Date Completed: August 1990
Location: Pueblo Canyon

Well Diameter: 2 inches
Length of Well Screen: 10 feet
Total Depth of Well: 19.7 feet



Generalized Well Construction and Lithologic Description

Well Designation: LAO-B

Date Completed: April 1994

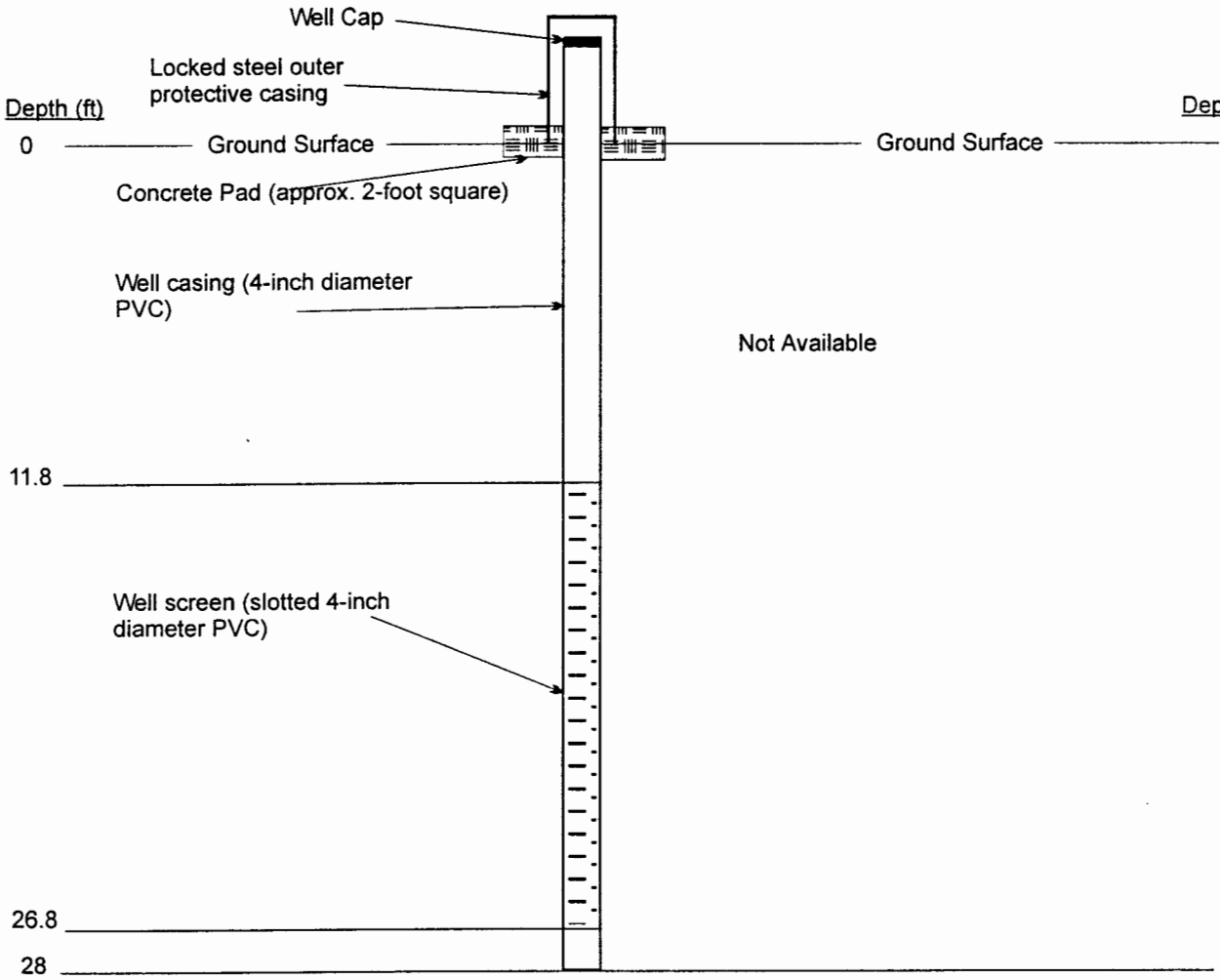
Location: Los Alamos Canyon

Well Diameter: 4 inches

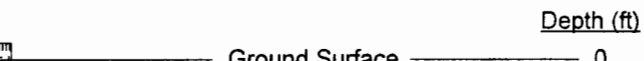
Length of Well Screen: 15 feet

Total Depth of Well: 28 feet

Well Construction



Lithology



Not Available

Generalized Well Construction and Lithologic Description

Well Designation: LAO-0.3

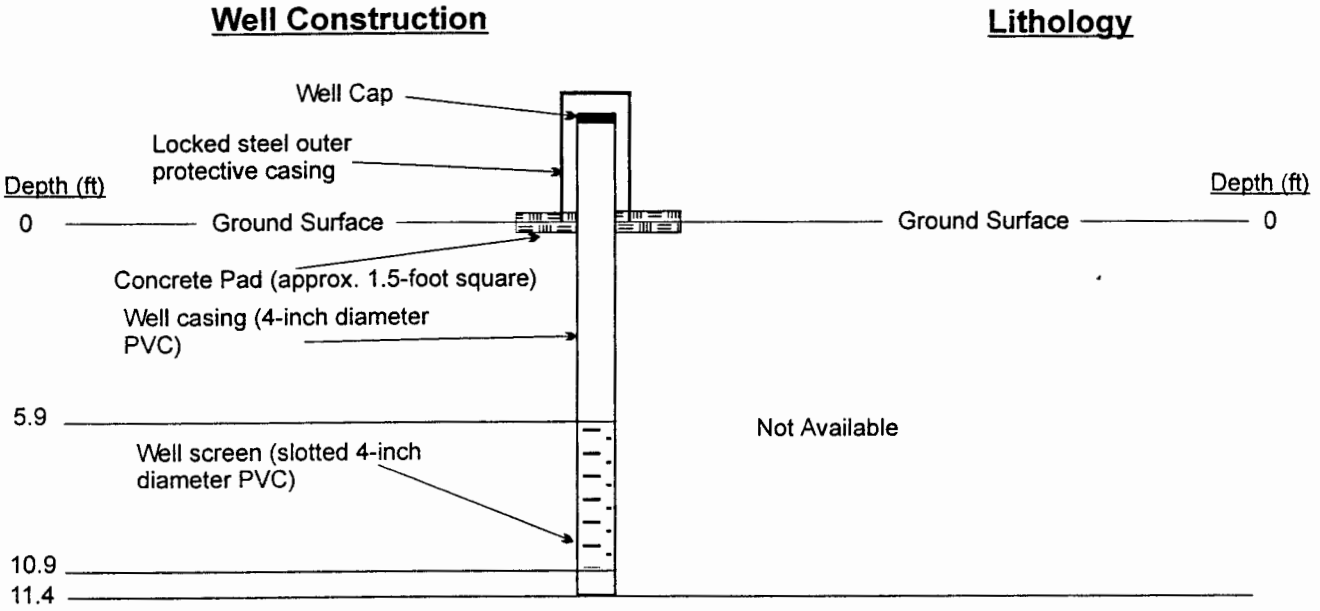
Date Completed: May 1994

Location: Los Alamos Canyon

Well Diameter: 4 inches

Length of Well Screen: 5 feet

Total Depth of Well: 11.4 feet



Generalized Well Construction and Lithologic Description

Well Designation: LAO-0.6

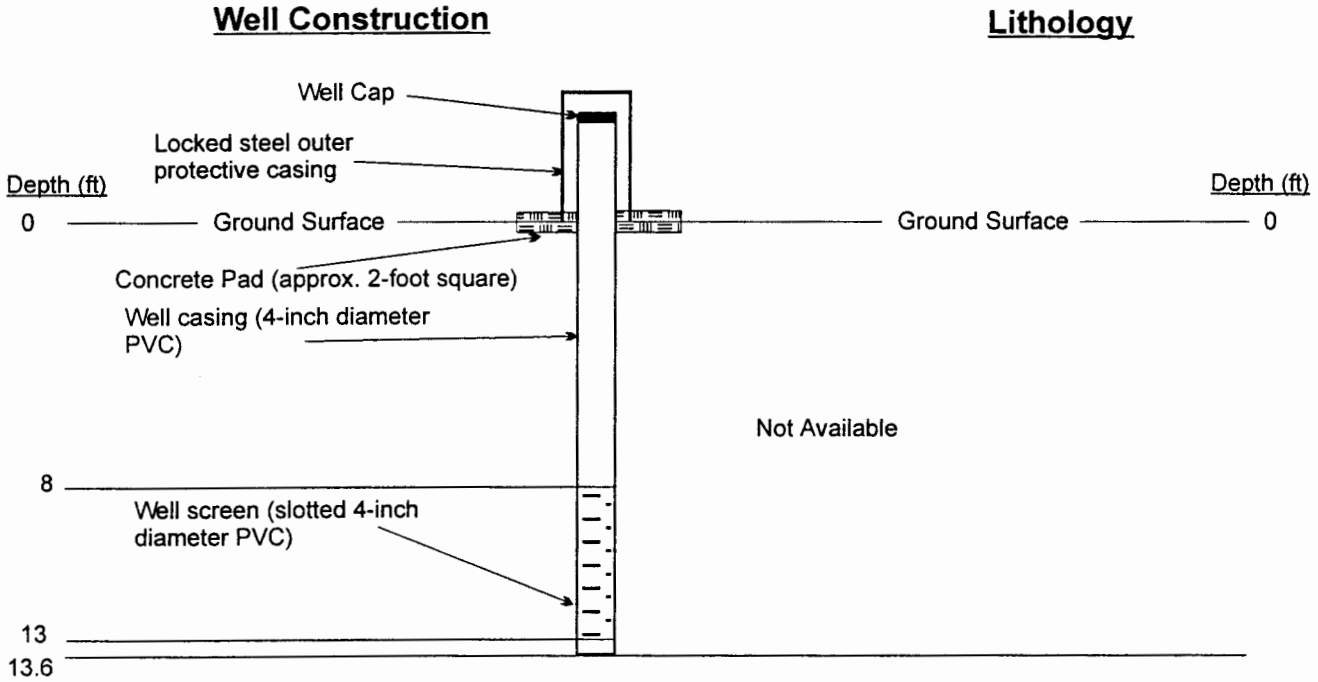
Date Completed: May 1994

Location: Los Alamos Canyon

Well Diameter: 4 inches

Length of Well Screen: 5 feet

Total Depth of Well: 13.6 feet



Generalized Well Construction and Lithologic Description

Well Designation: LAO-0.91

Date Completed: May 1994

Location: Los Alamos Canyon

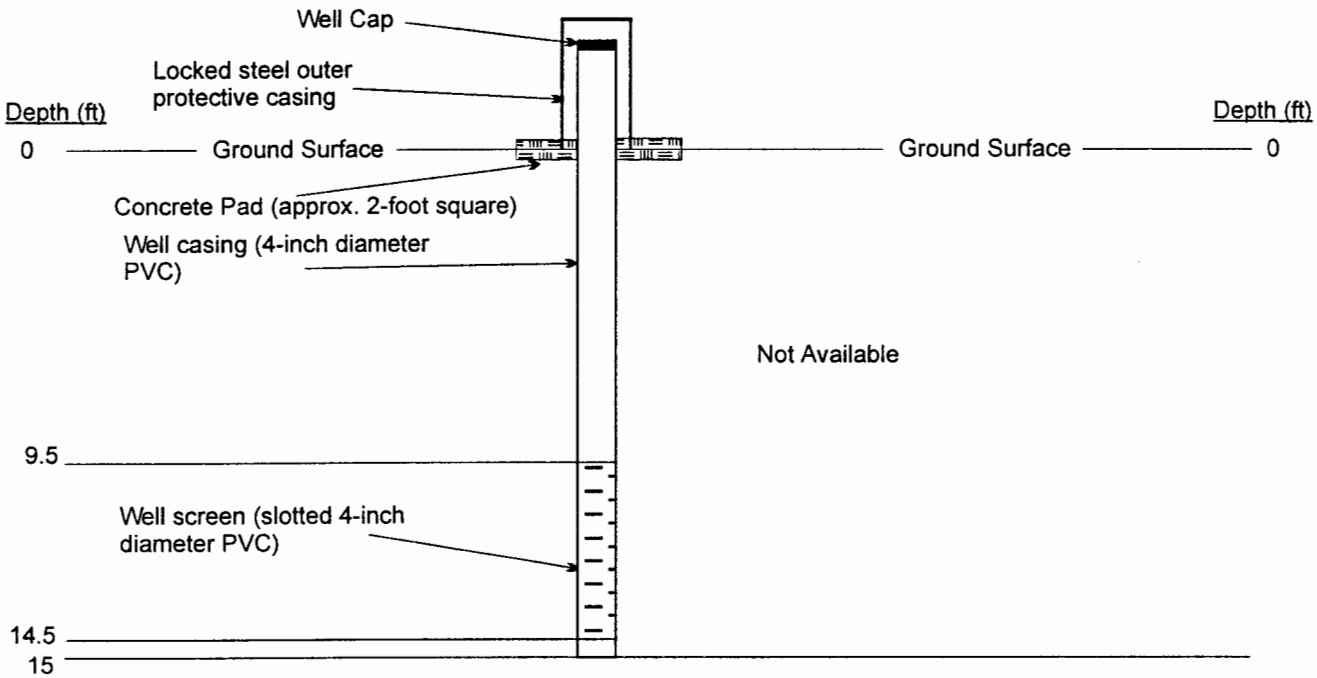
Well Diameter: 4 inches

Length of Well Screen: 5 feet

Total Depth of Well: 15 feet

Well Construction

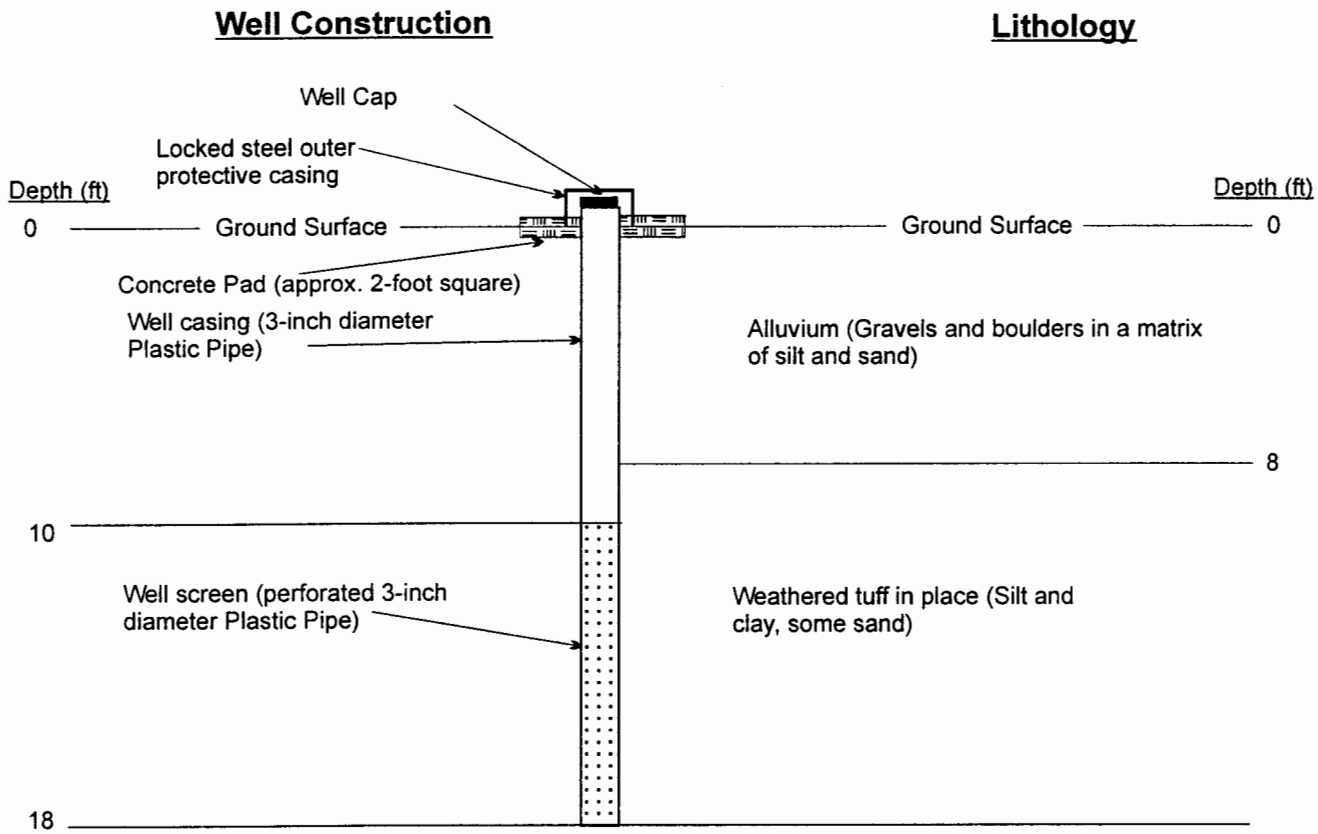
Lithology



Generalized Well Construction and Lithologic Description

Well Designation: LAO-1.2
Date Completed: August 1969
Location: Los Alamos Canyon

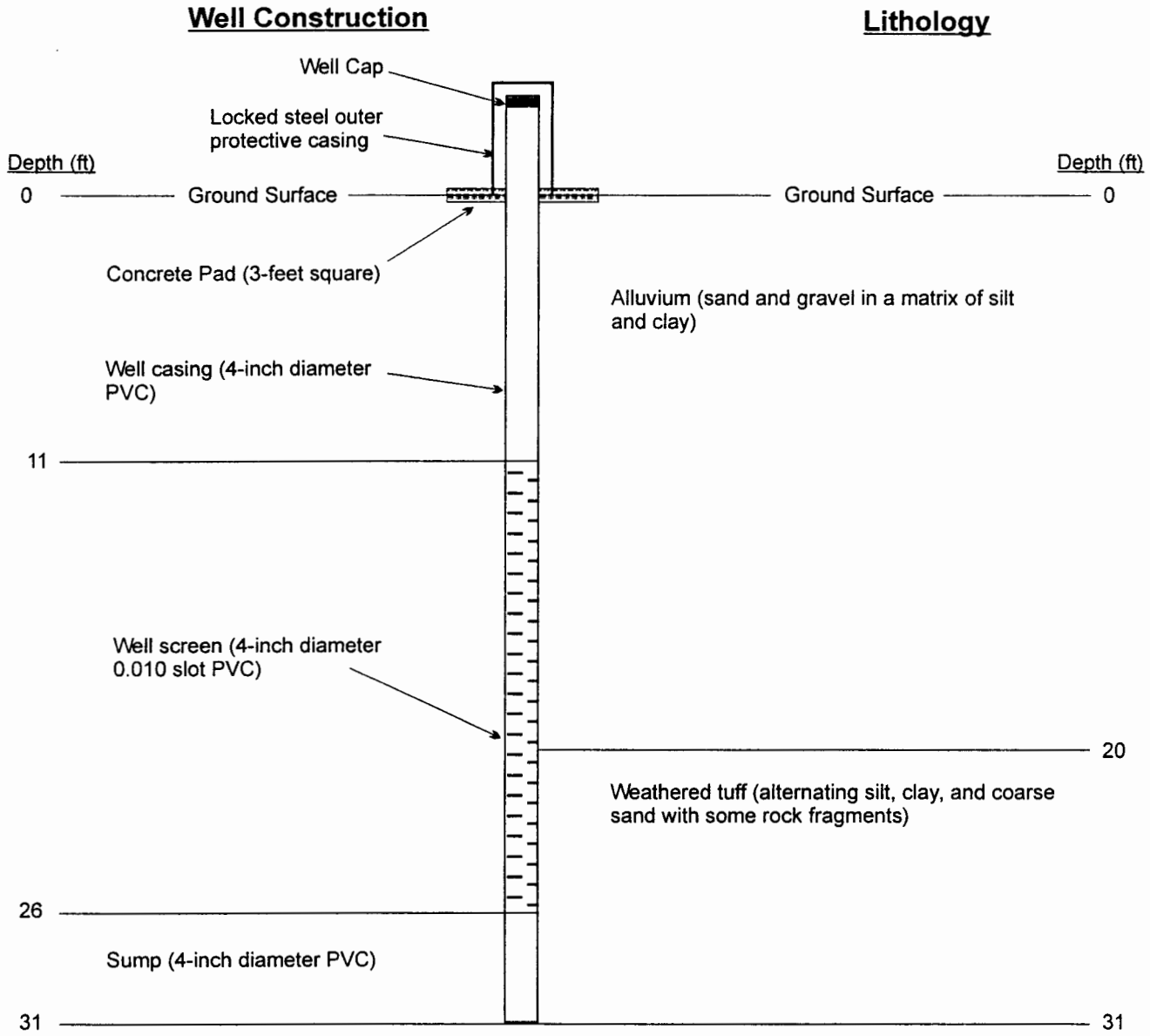
Well Diameter: 3 inches
Length of Well Screen: 10 feet
Total Depth of Well: 18 feet



Generalized Well Construction and Lithologic Description

Well Designation: LAO-1.6g
Date Completed: March 1996
Location: Los Alamos Canyon

Well Diameter: 4 inches
Length of Well Screen: 15 feet
Total Depth of Well: 31 feet



Generalized Well Construction and Lithologic Description

Well Designation: LAO-2

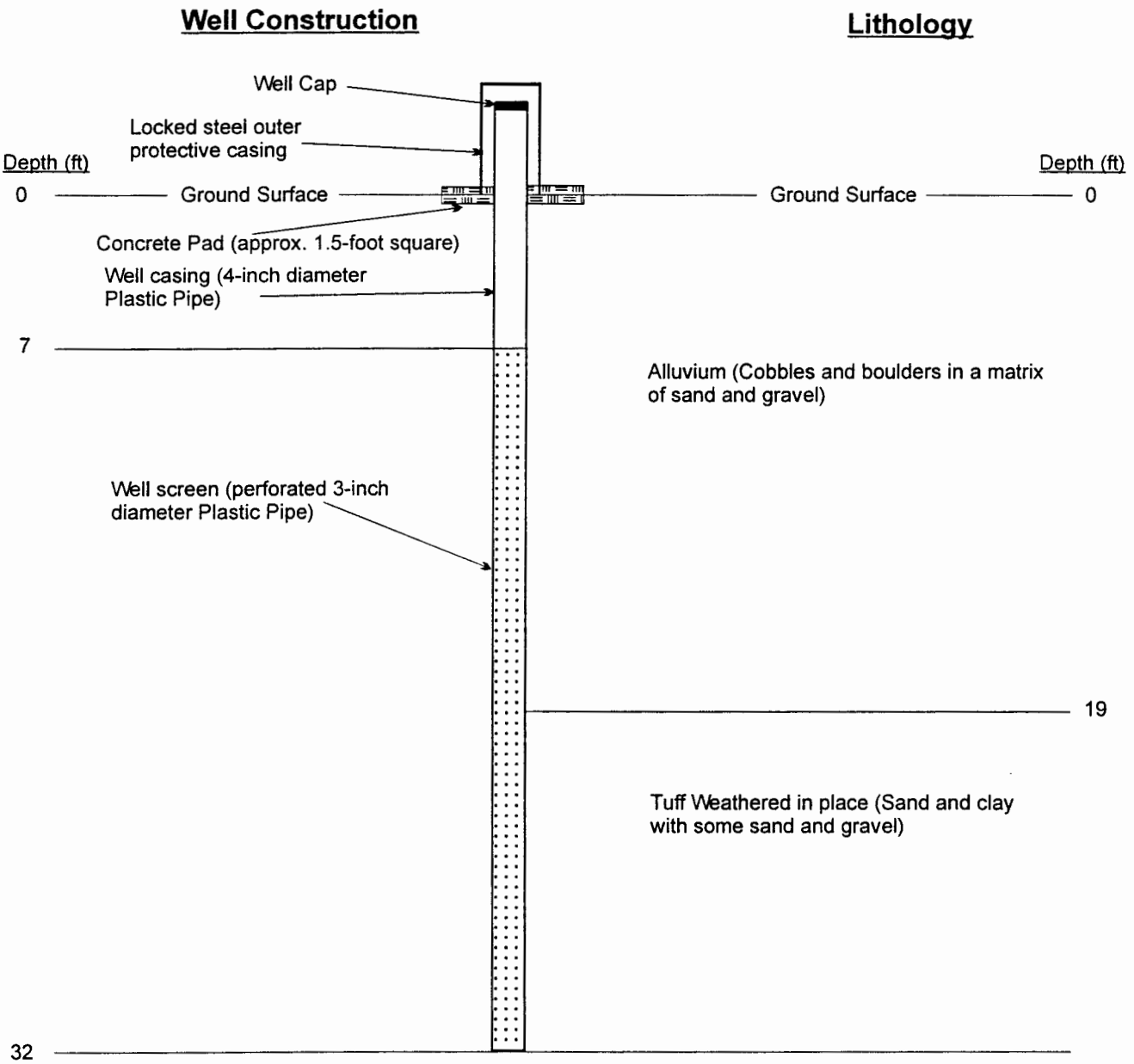
Date Completed: February 1966

Location: Los Alamos Canyon

Well Diameter: 3 inches

Length of Well Screen: 25 feet

Total Depth of Well: 32 feet



Generalized Well Construction and Lithologic Description

Well Designation: LAO-3A

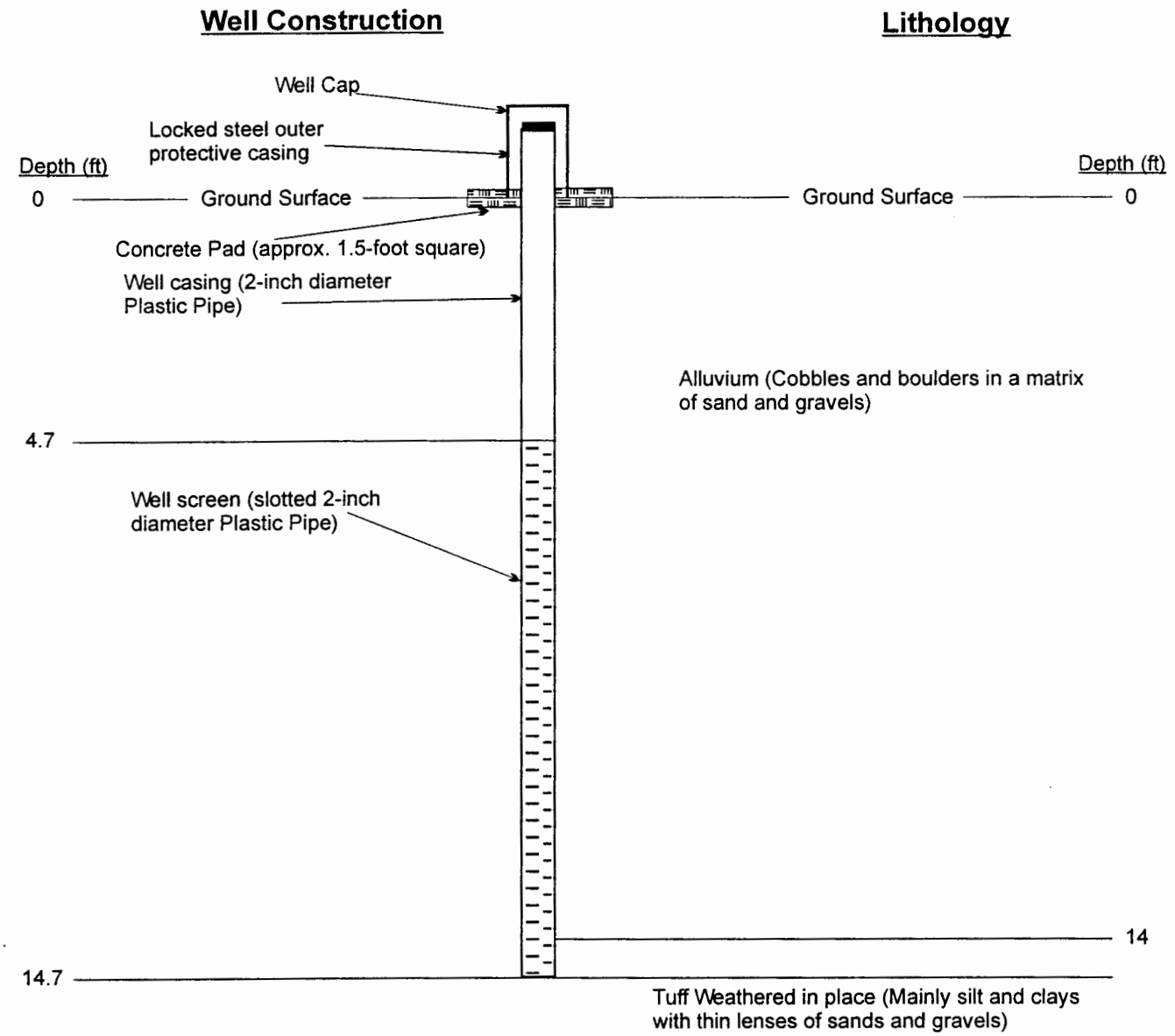
Date Completed: September 1989

Location: Los Alamos Canyon

Well Diameter: 2 inches

Length of Well Screen: 10 feet

Total Depth of Well: 14.7 feet



Generalized Well Construction and Lithologic Description

Well Designation: LAO-4.5C

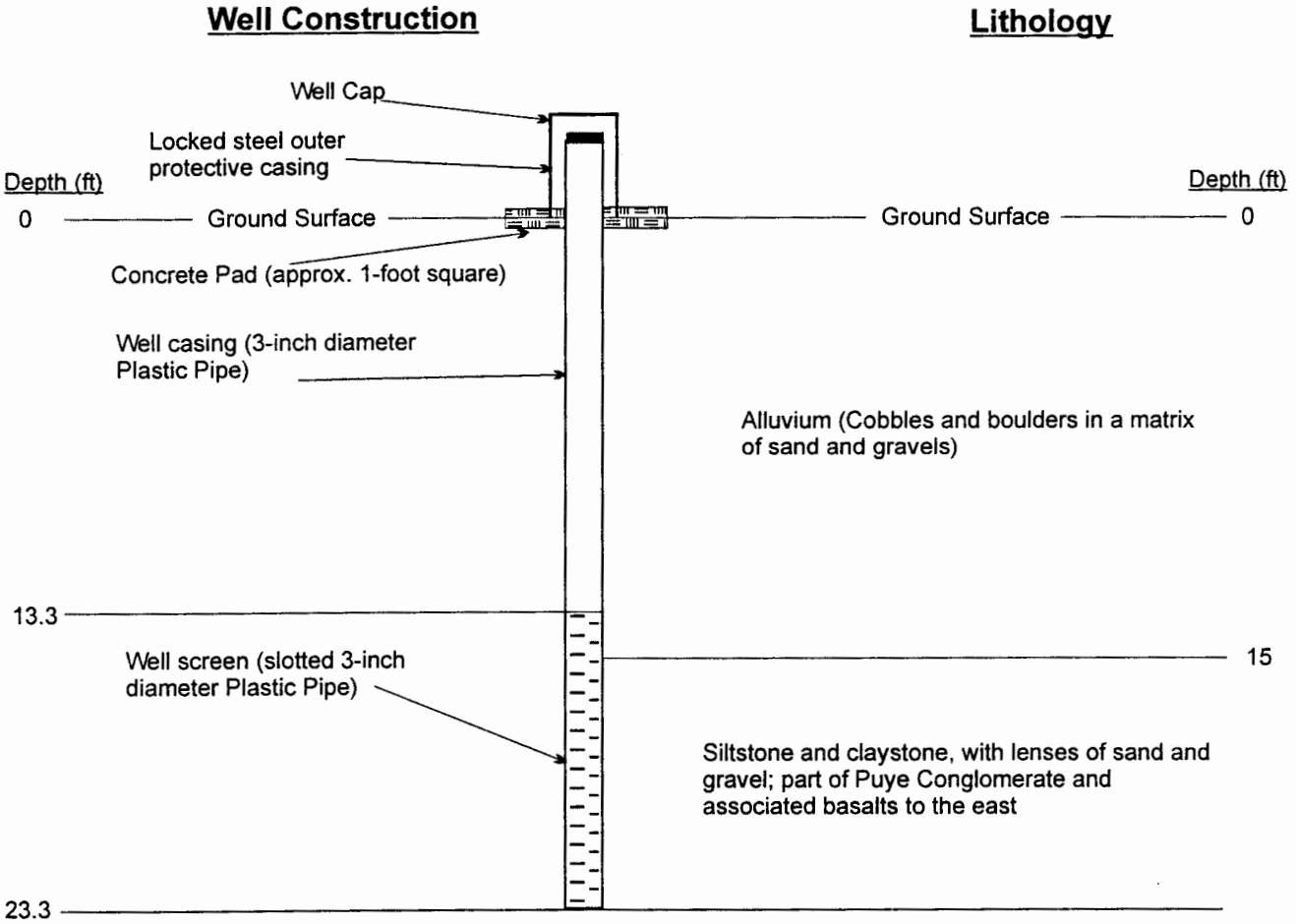
Date Completed: November 1989

Location: Los Alamos Canyon

Well Diameter: 3 inches

Length of Well Screen: 10 feet

Total Depth of Well: 23.3 feet



Generalized Well Construction and Lithologic Description

Well Designation: LAO-5

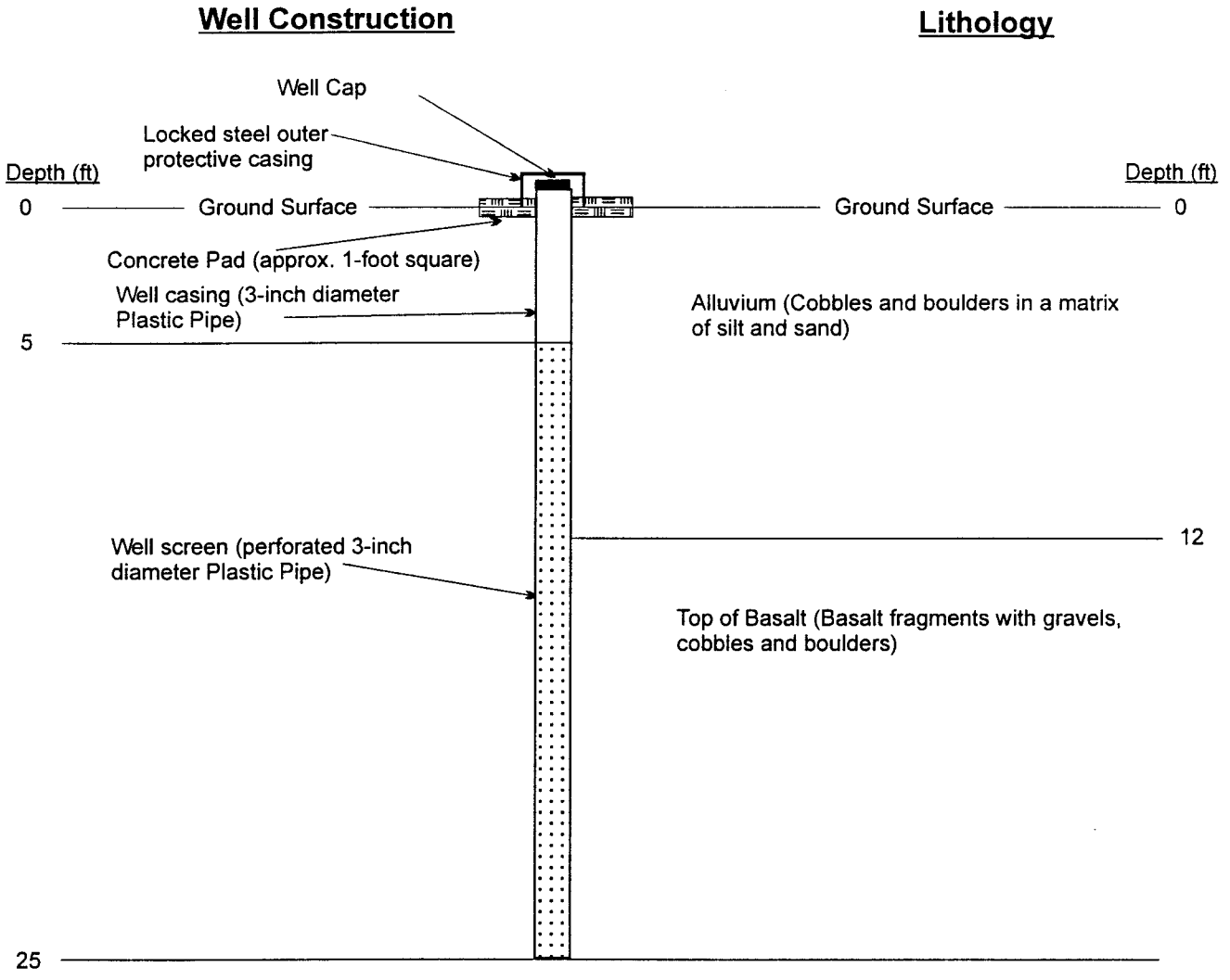
Date Completed: February 1966

Location: Los Alamos Canyon

Well Diameter: 3 inches

Length of Well Screen: 20 feet

Total Depth of Well: 25 feet



Generalized Well Construction and Lithologic Description

Well Designation: LLAO-5

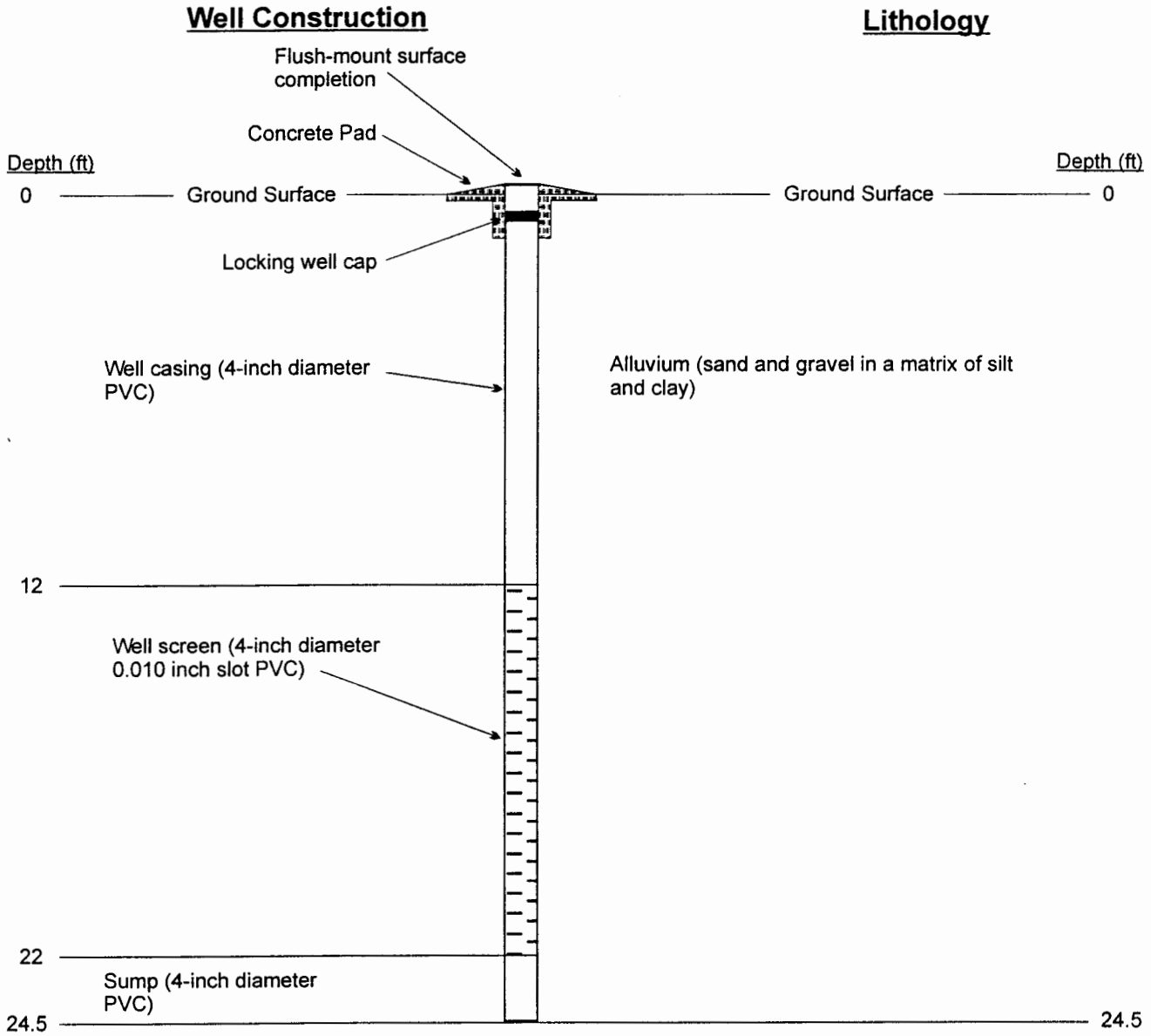
Date Completed: June 1996

Location: San Ildefonso Pueblo

Well Diameter: 4 inches

Length of Well Screen: 10 feet

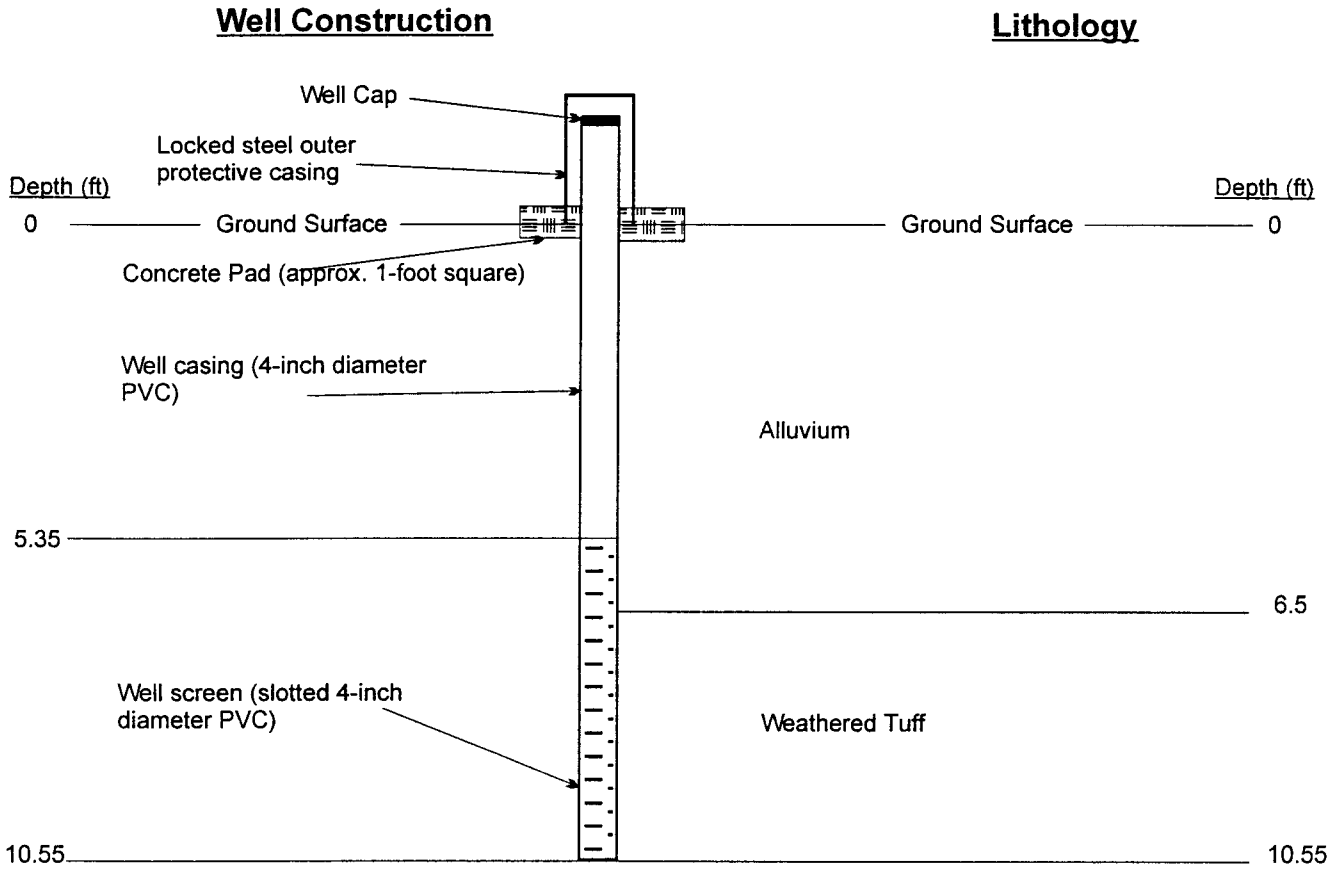
Total Depth of Well: 24.5 feet



Generalized Well Construction and Lithologic Description

Well Designation: LAUZ-1
Date Completed: 1994
Location: DP Canyon

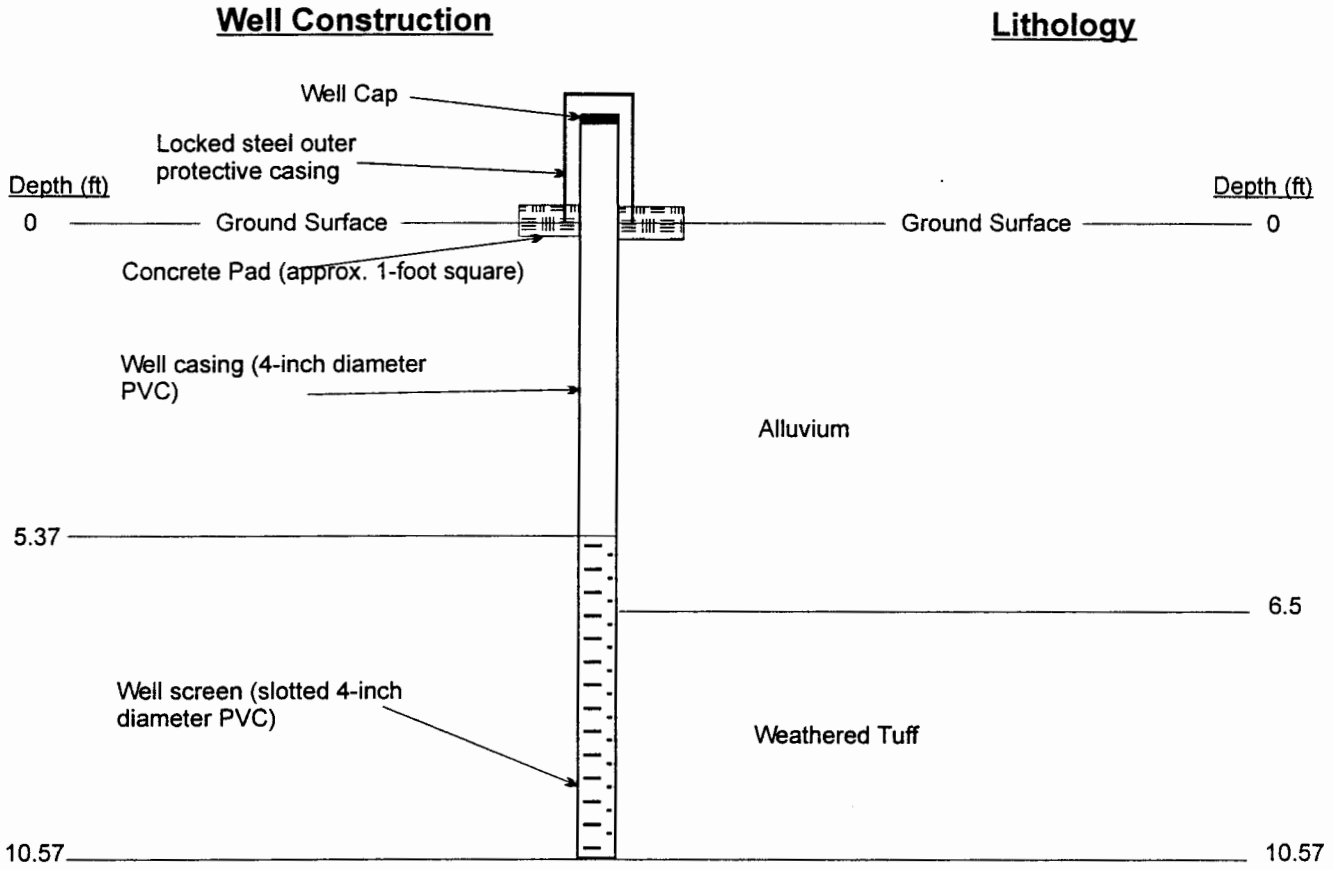
Well Diameter: 4 inches
Length of Well Screen: 5.2 feet
Total Depth of Well: 10.55 feet



Generalized Well Construction and Lithologic Description

Well Designation: LAUZ-2
Date Completed: 1994
Location: DP Canyon

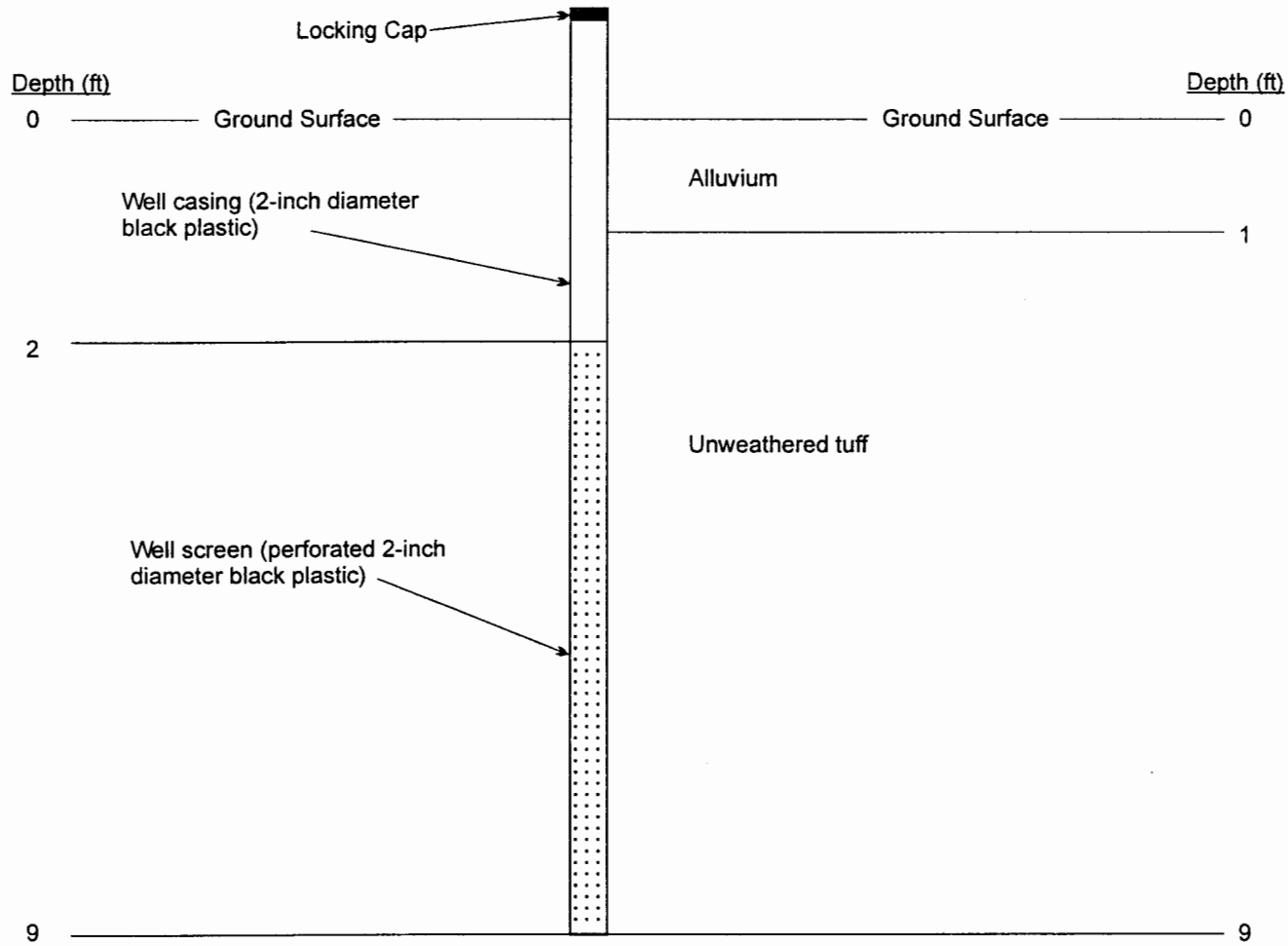
Well Diameter: 4 inches
Length of Well Screen: 5.2 feet
Total Depth of Well: 10.57 feet



Generalized Well Construction and Lithologic Description

Well Designation: MCO-2
Date Completed: November 1960
Location: Mortandad Canyon

Well Diameter: 2 inches
Length of Well Screen: 7 feet
Total Depth of Well: 9 feet



Generalized Well Construction and Lithologic Description

Well Designation: MCO-3

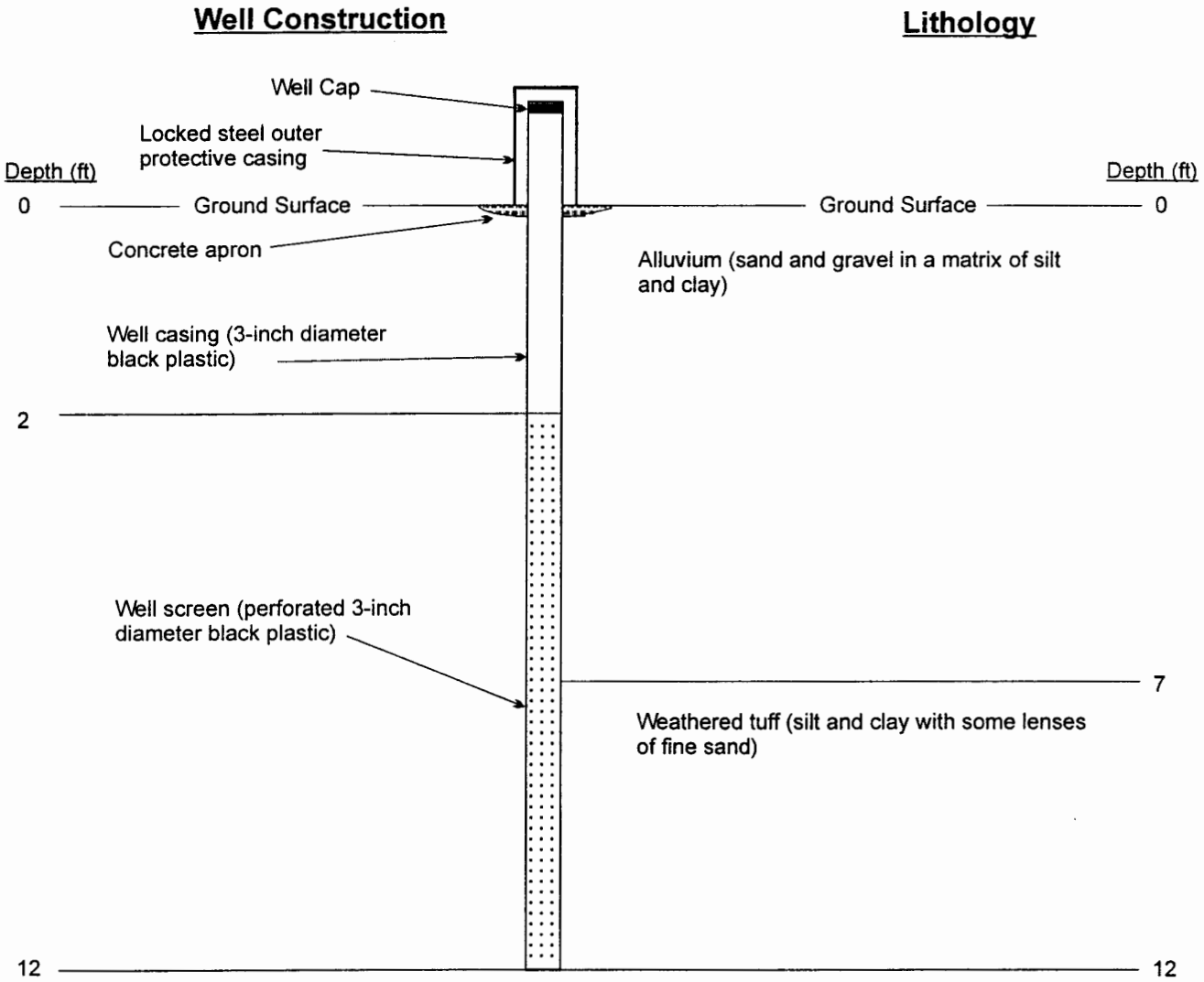
Date Completed: March 1967

Location: Mortandad Canyon

Well Diameter: 3 inches

Length of Well Screen: 10 feet

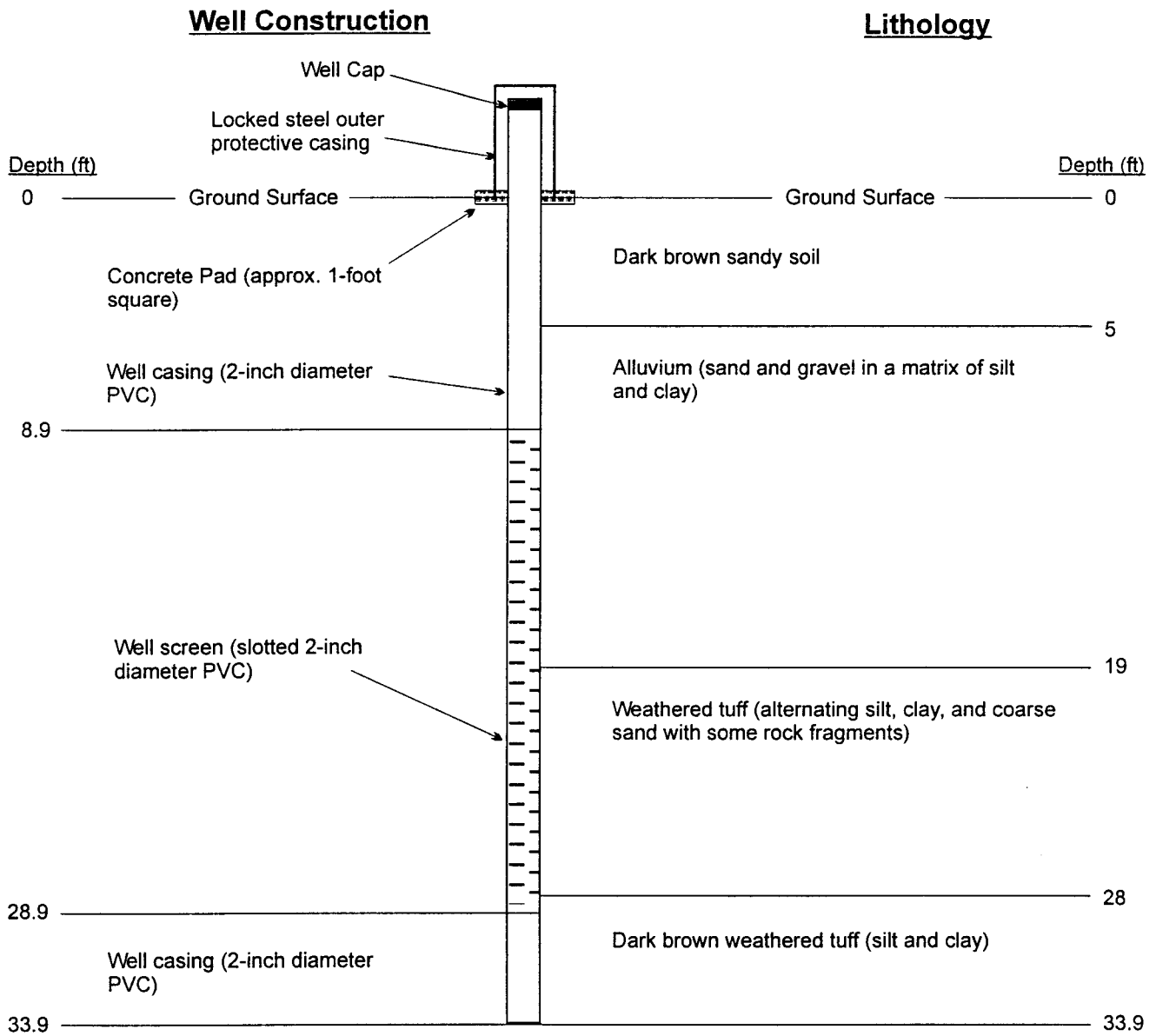
Total Depth of Well: 12 feet



Generalized Well Construction and Lithologic Description

Well Designation: MCO-4B
Date Completed: August 1990
Location: Mortandad Canyon

Well Diameter: 2 inches
Length of Well Screen: 20 feet
Total Depth of Well: 33.9 feet



Generalized Well Construction and Lithologic Description

Well Designation: MCO-5

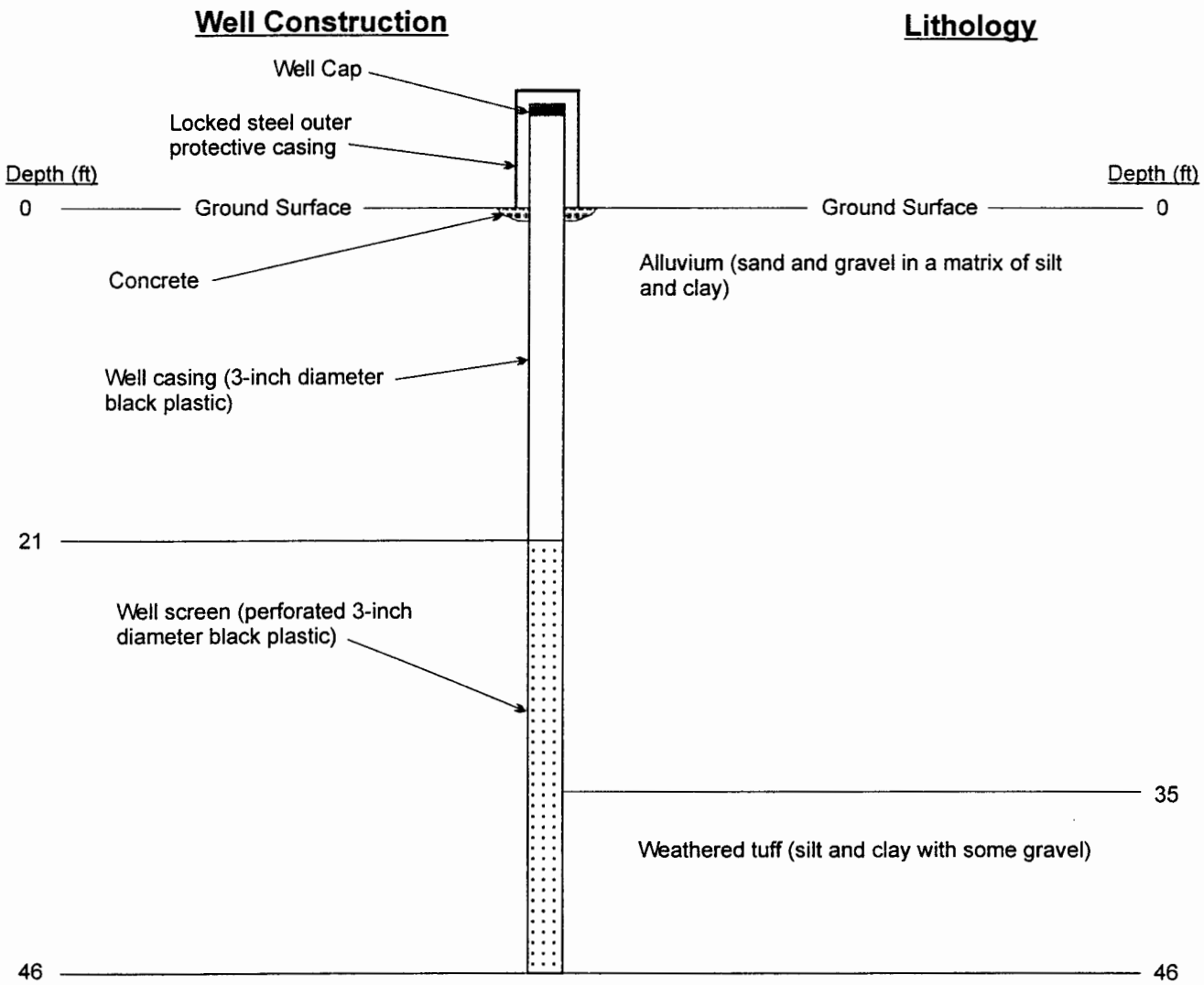
Date Completed: October 1960

Location: Mortandad Canyon

Well Diameter: 3 inches

Length of Well Screen: 25 feet

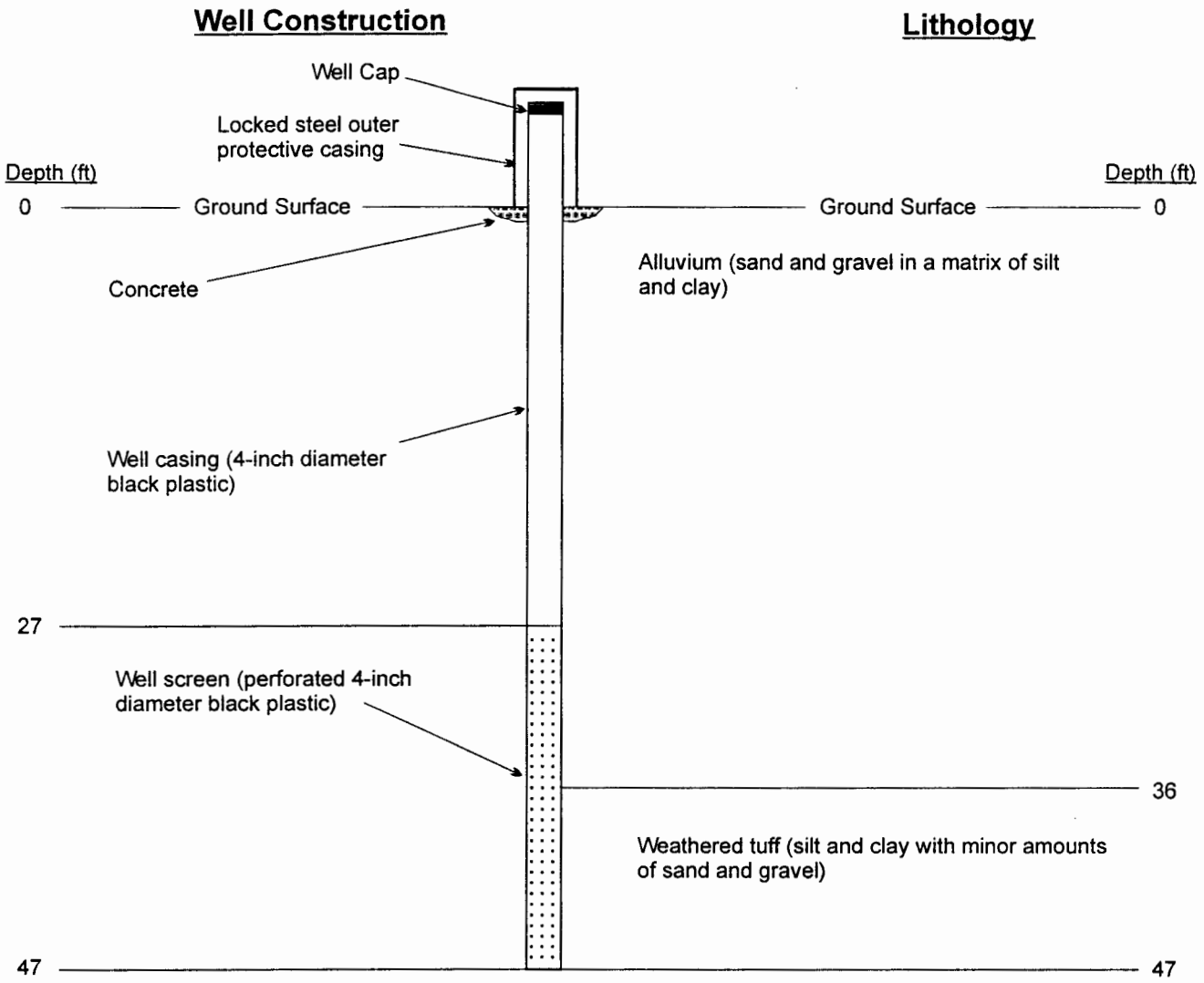
Total Depth of Well: 46 feet



Generalized Well Construction and Lithologic Description

Well Designation: MCO-6
Date Completed: March 1974
Location: Mortandad Canyon

Well Diameter: 4 inches
Length of Well Screen: 20 feet
Total Depth of Well: 47 feet



Generalized Well Construction and Lithologic Description

Well Designation: MCO-7

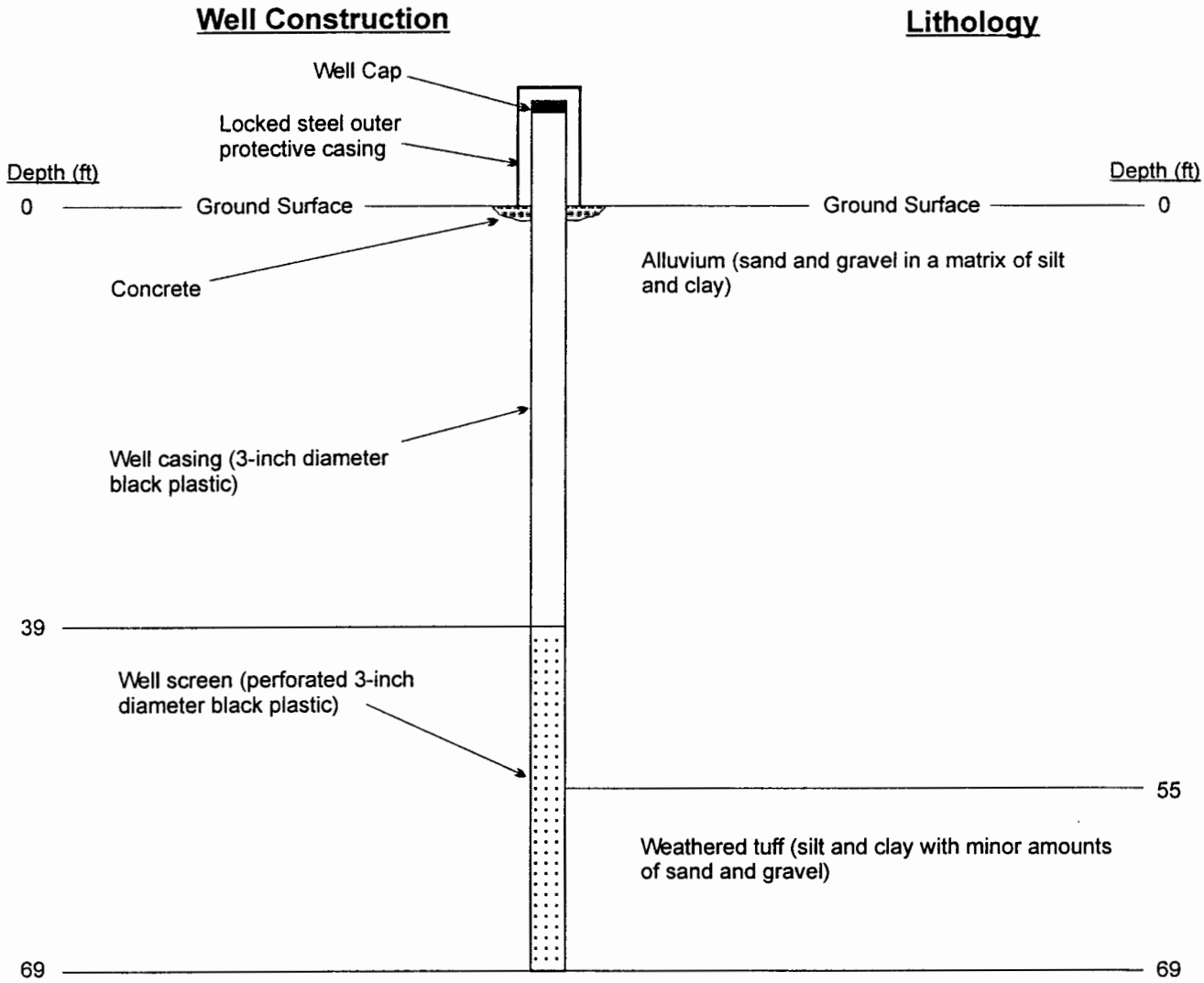
Date Completed: October 1960

Location: Mortandad Canyon

Well Diameter: 3 inches

Length of Well Screen: 30 feet

Total Depth of Well: 69 feet



Generalized Well Construction and Lithologic Description

Well Designation: MCO-7.5B

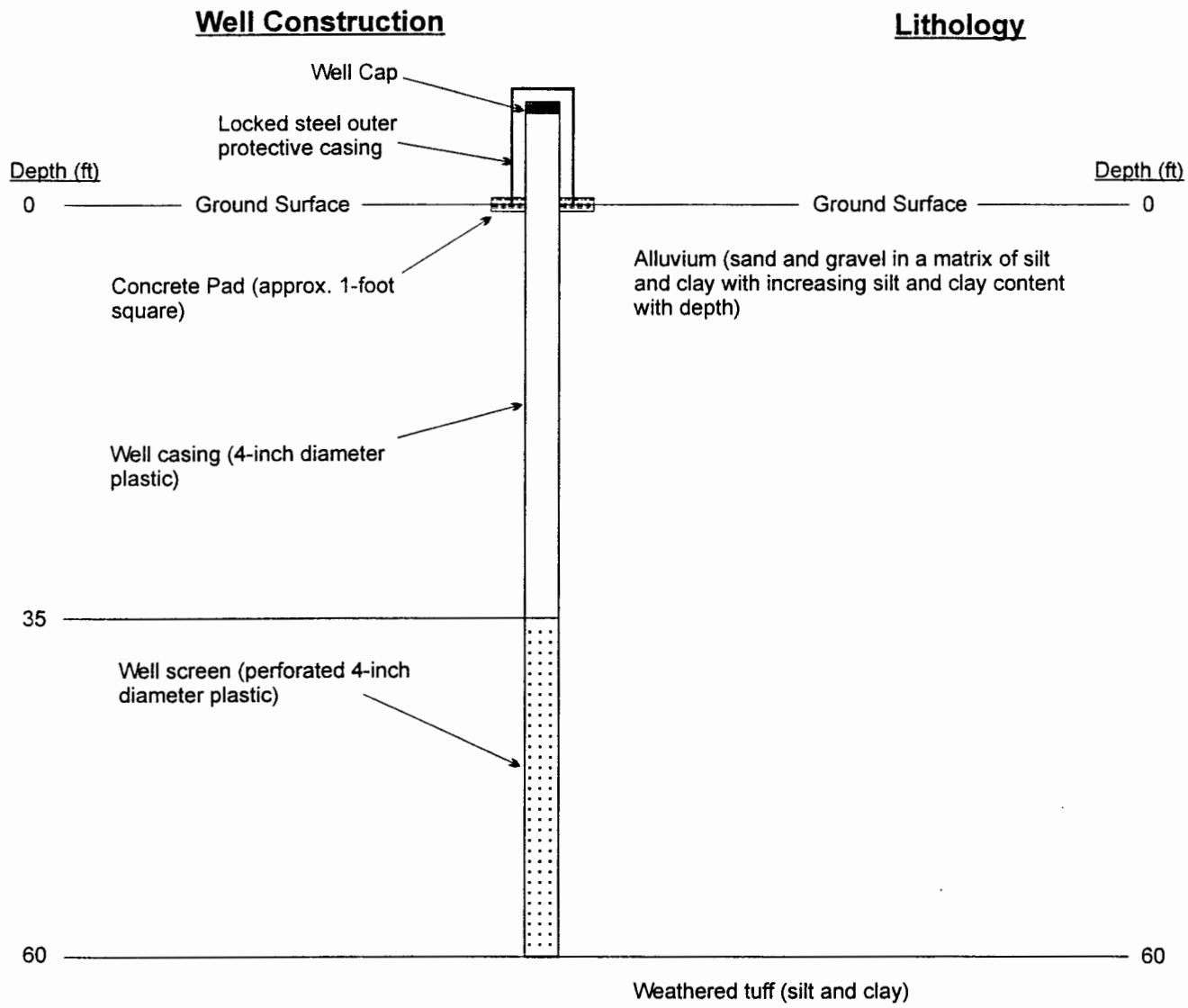
Date Completed: April 1974

Location: Mortandad Canyon

Well Diameter: 4 inches

Length of Well Screen: 25 feet

Total Depth of Well: 60 feet



Generalized Well Construction and Lithologic Description

Well Designation: MCWB-6.5E

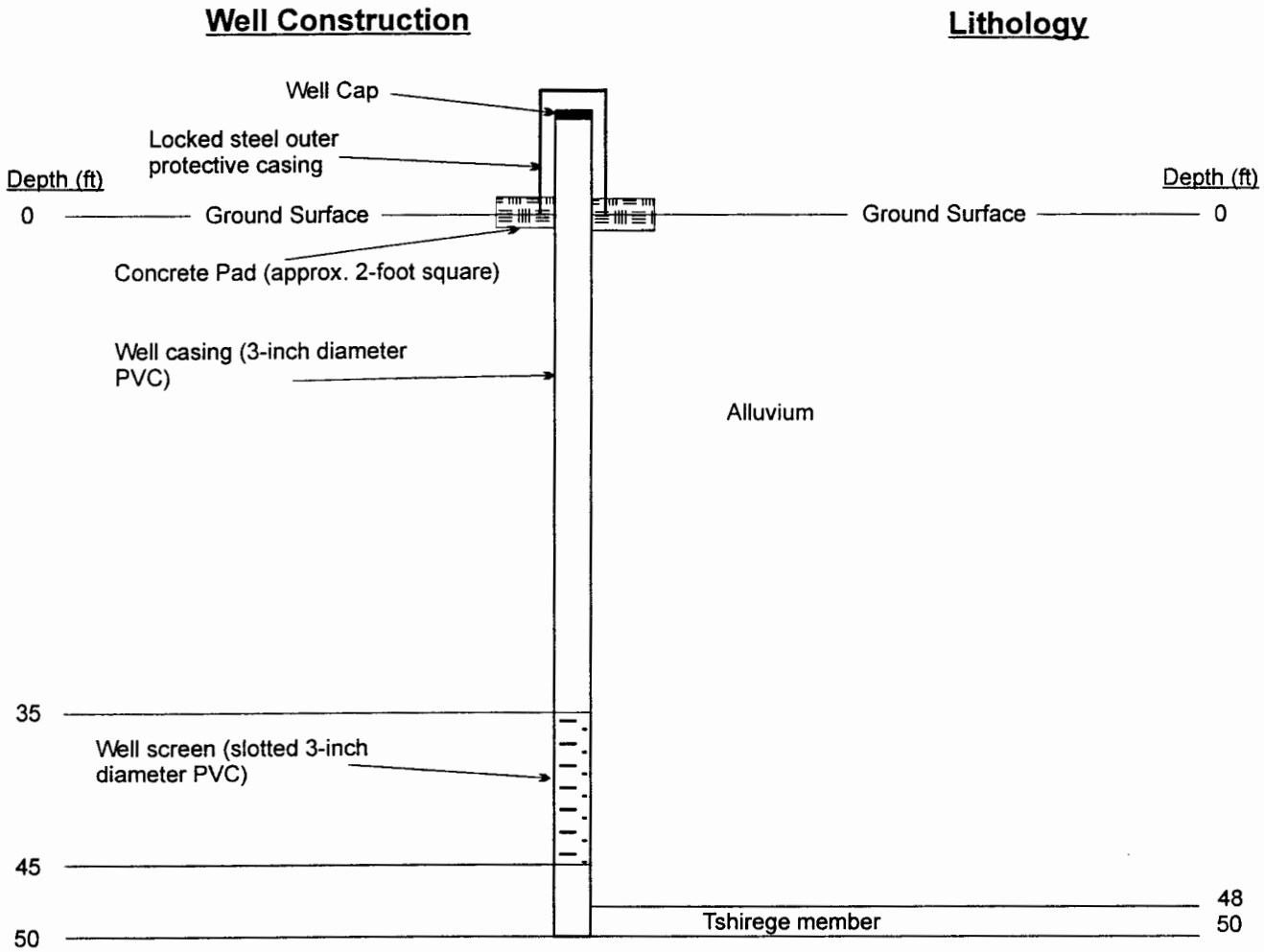
Date Completed: December 1994

Location: Mortandad Canyon

Well Diameter: 3 inches

Length of Well Screen: 10 feet

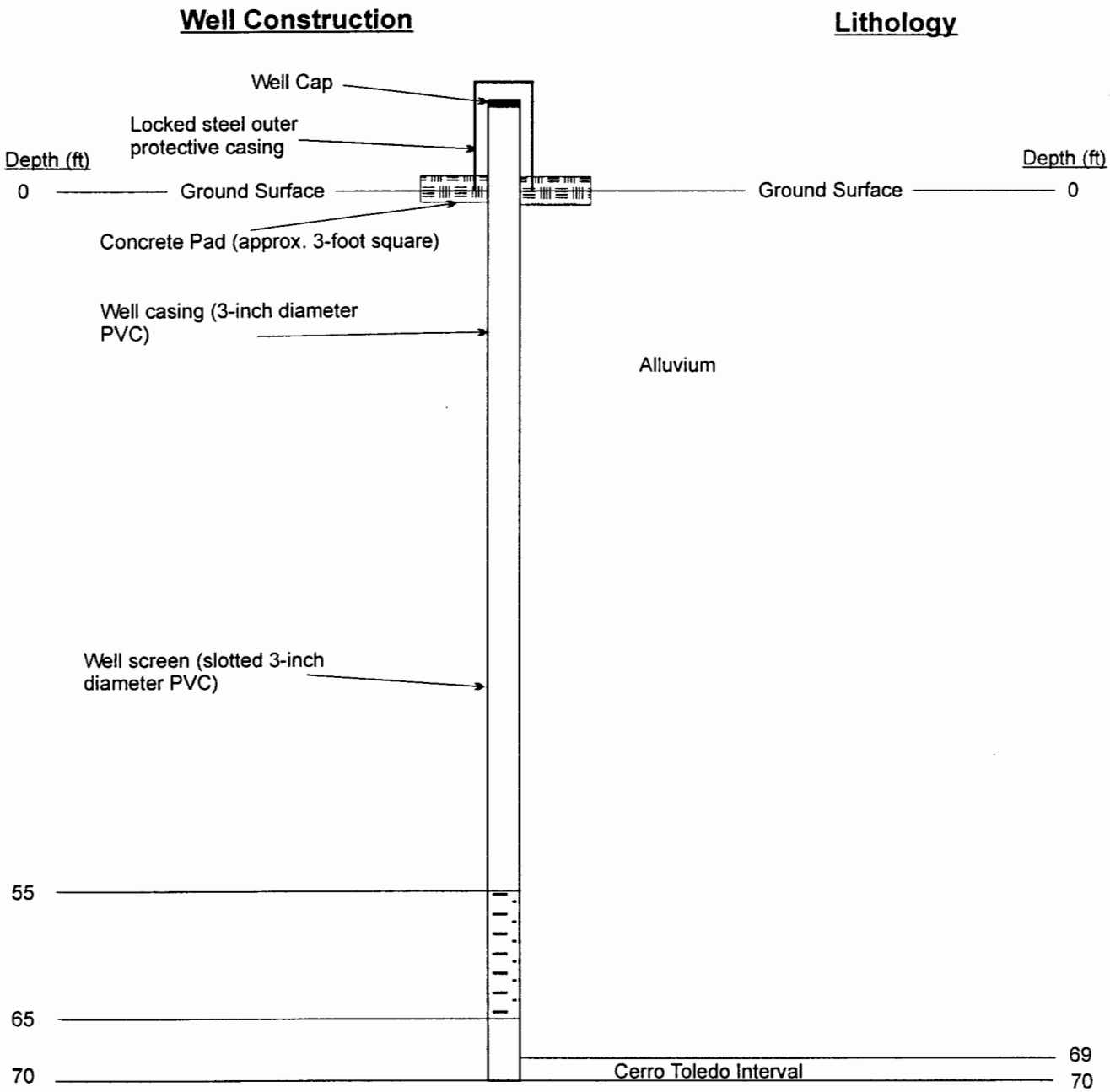
Total Depth of Well: 50 feet



Generalized Well Construction and Lithologic Description

Well Designation: MCWB-7.7B
Date Completed: December 1994
Location: Mortandad Canyon

Well Diameter: 3 inches
Length of Well Screen: 10 feet
Total Depth of Well: 70 feet



Generalized Well Construction and Lithologic Description

Well Designation: MT-3

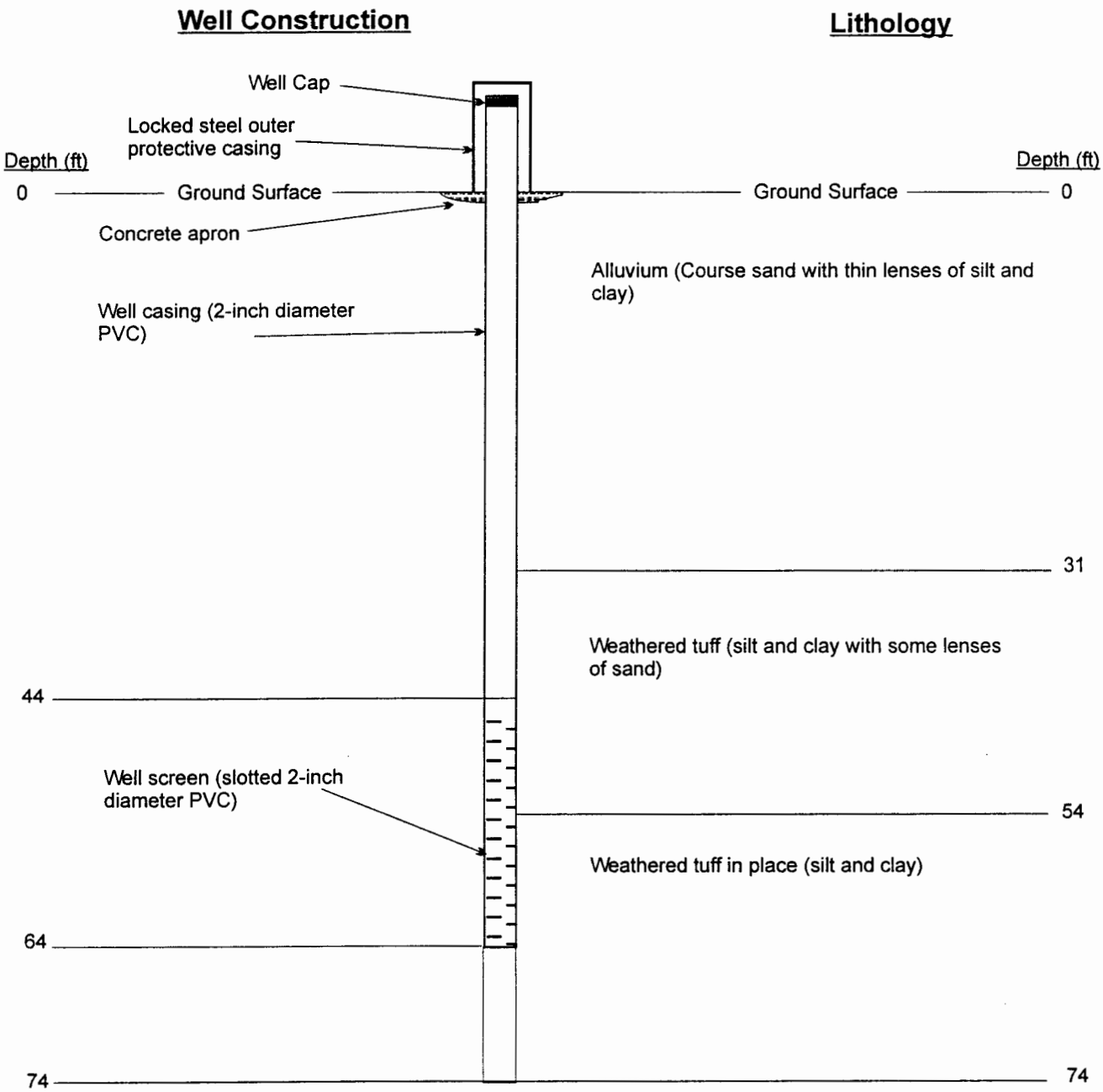
Date Completed: November 1988

Location: Mortandad Canyon

Well Diameter: 2 inches

Length of Well Screen: 20 feet

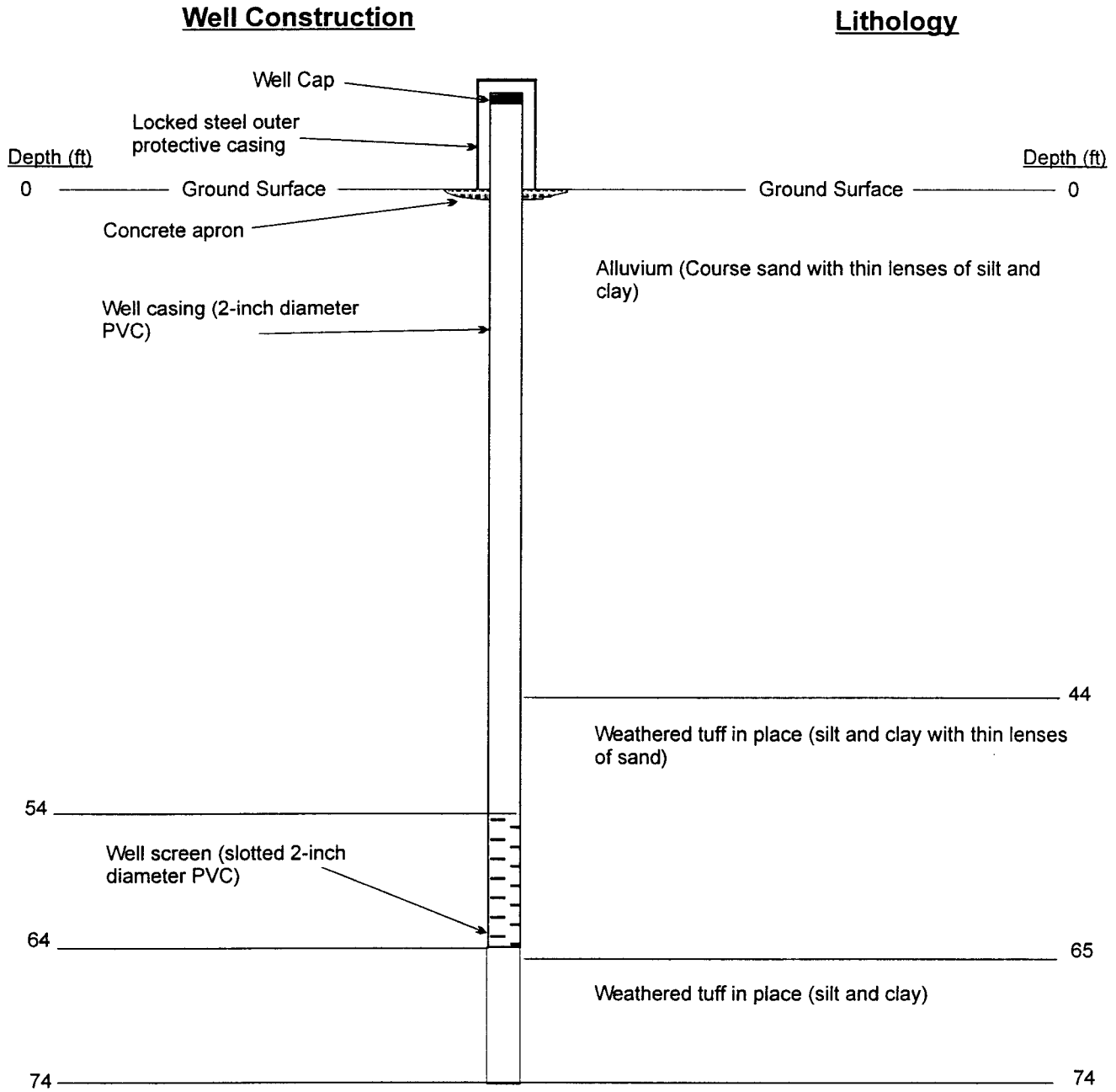
Total Depth of Well: 74 feet



Generalized Well Construction and Lithologic Description

Well Designation: MT-4
Date Completed: November 1988
Location: Mortandad Canyon

Well Diameter: 2 inches
Length of Well Screen: 10 feet
Total Depth of Well: 74 feet



Generalized Well Construction and Lithologic Description

Well Designation: POI-4

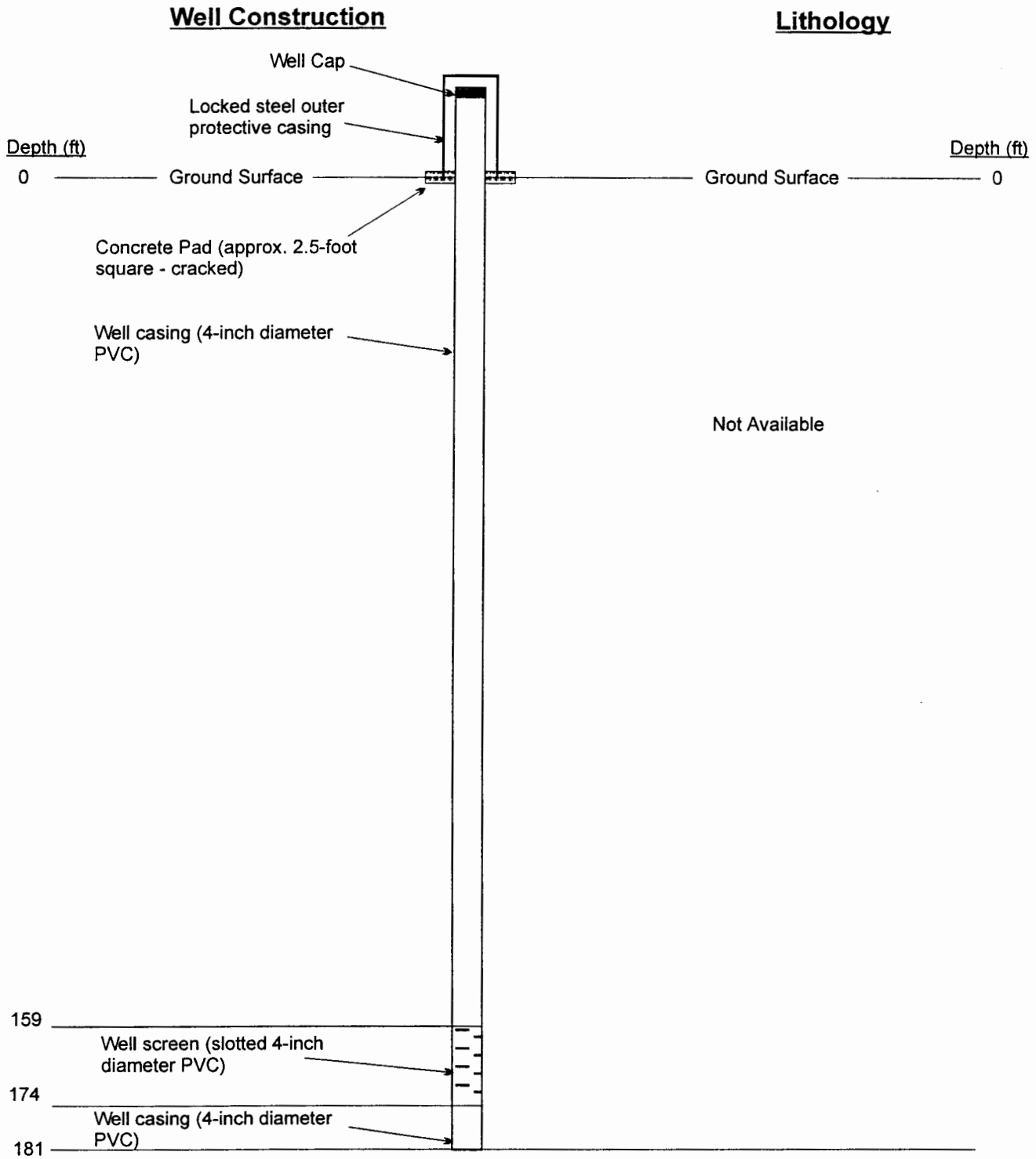
Date Completed: Unknown

Location: Pueblo Canyon

Well Diameter: 4 inches

Length of Well Screen: 15 feet

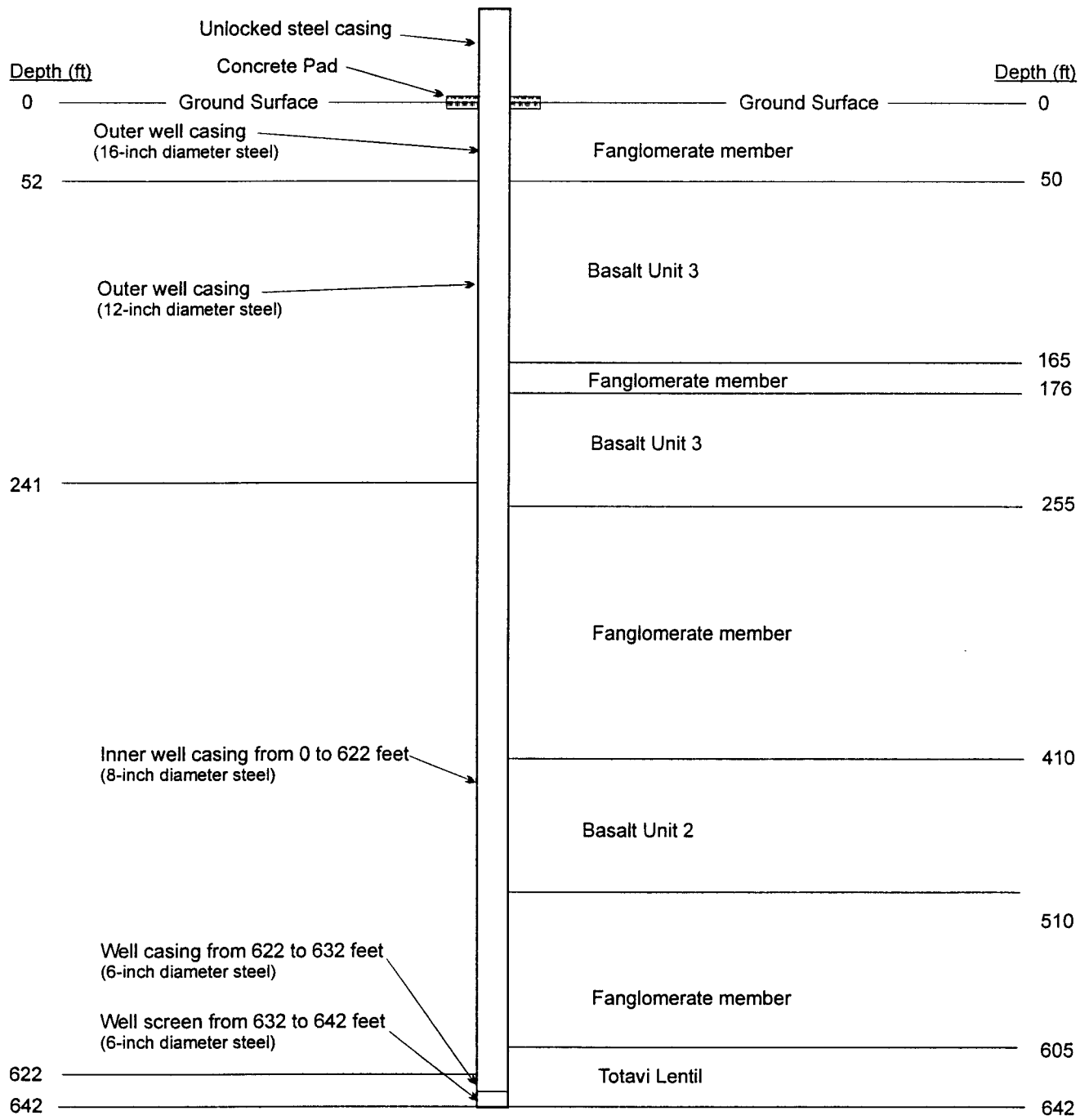
Total Depth of Well: 181 feet



Generalized Well Construction and Lithologic Description

Well Designation: TW-1
Date Completed: January 1950
Location: Pueblo Canyon

Well Diameter: 8 inches
Length of Well Screen: Not Available
Total Depth of Well: 642 feet



Generalized Well Construction and Lithologic Description

Well Designation: TW-2A

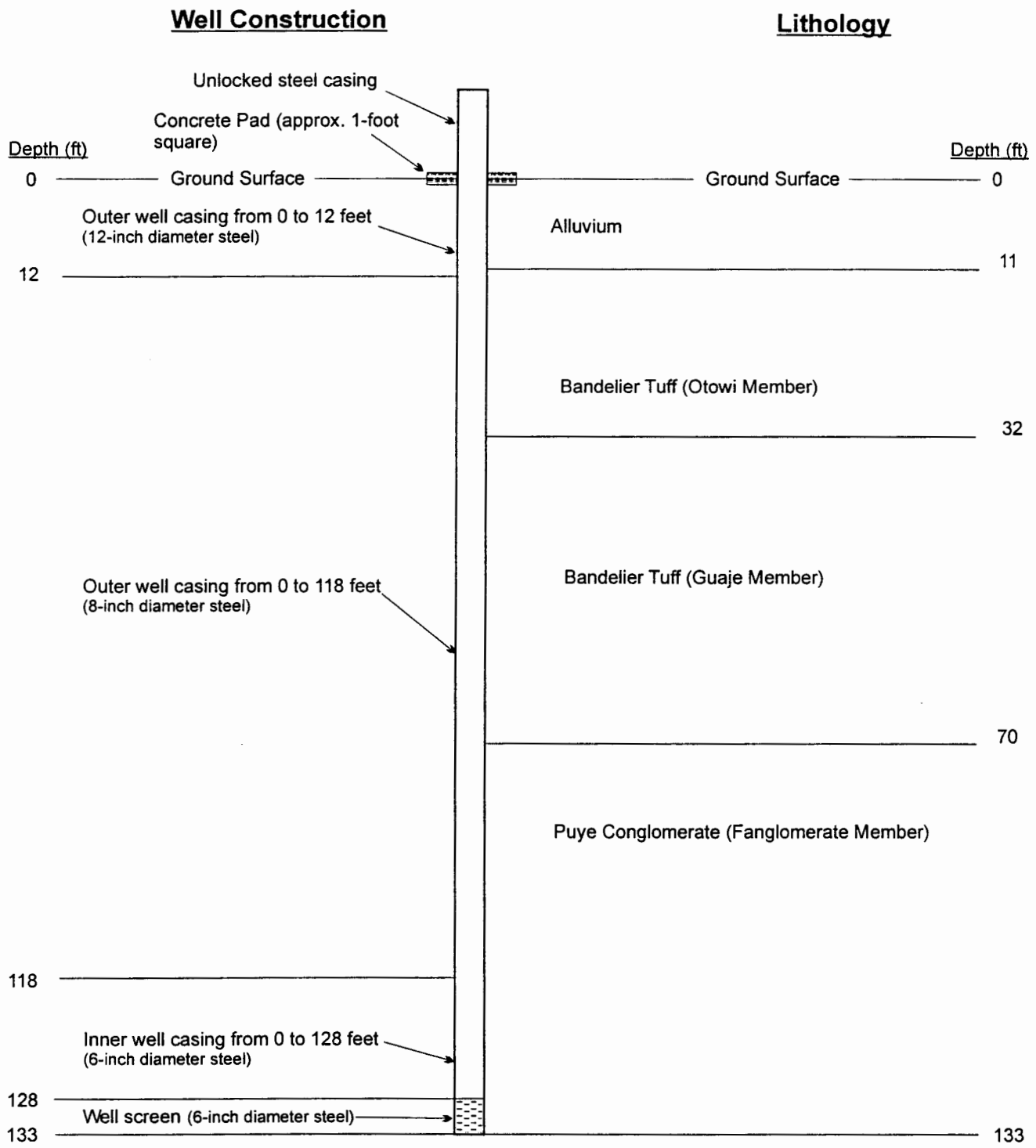
Date Completed: November 1949

Location: Pueblo Canyon

Well Diameter: 6 inches

Length of Well Screen: 5 feet

Total Depth of Well: 133 feet



Generalized Well Construction and Lithologic Description

Well Designation: TW-3

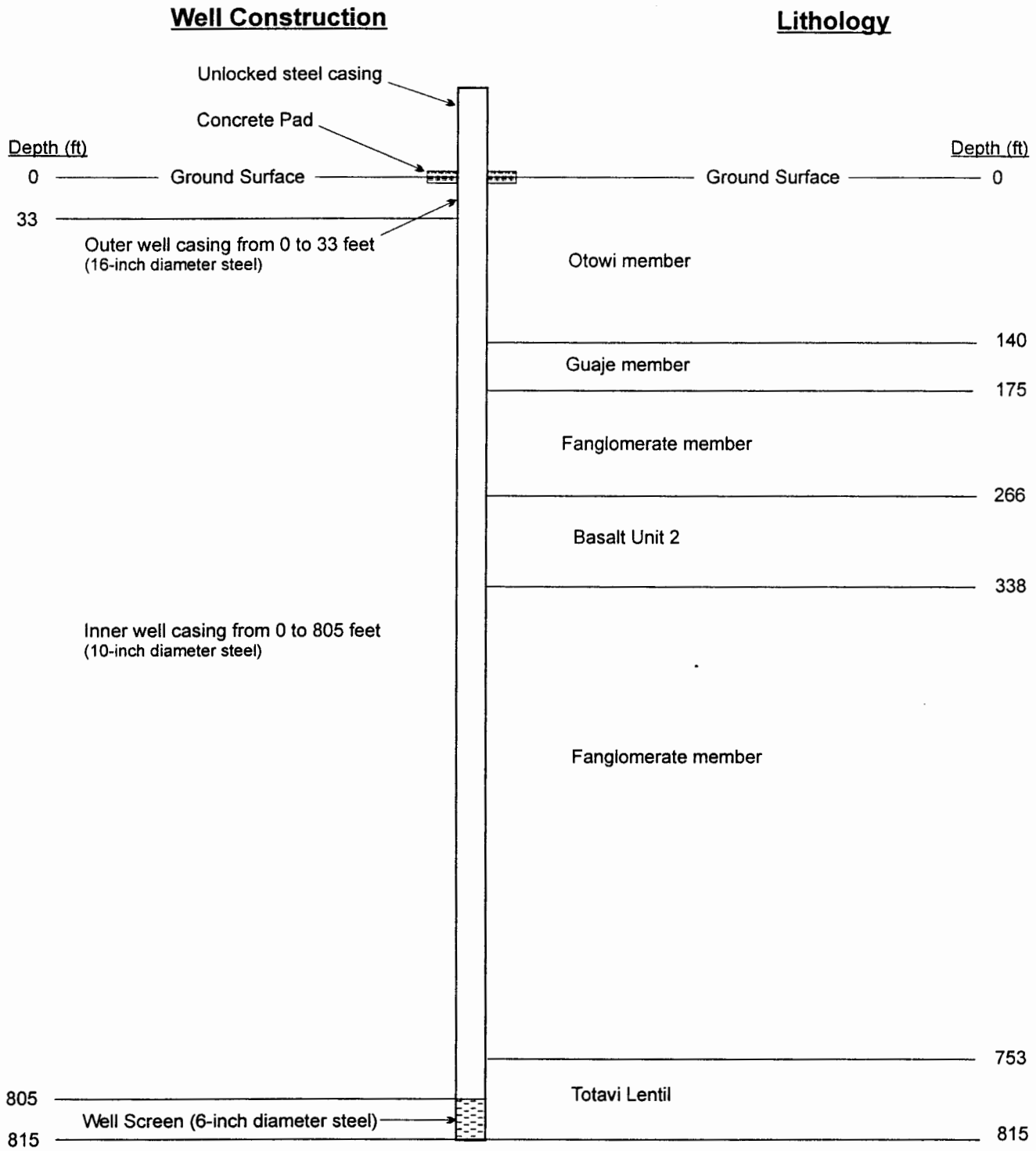
Date Completed: November 1949

Location: Los Alamos Canyon

Well Diameter: 10 inches

Length of Well Screen: Not Available

Total Depth of Well: 815 feet



Generalized Well Construction and Lithologic Description

Well Designation: TW-4

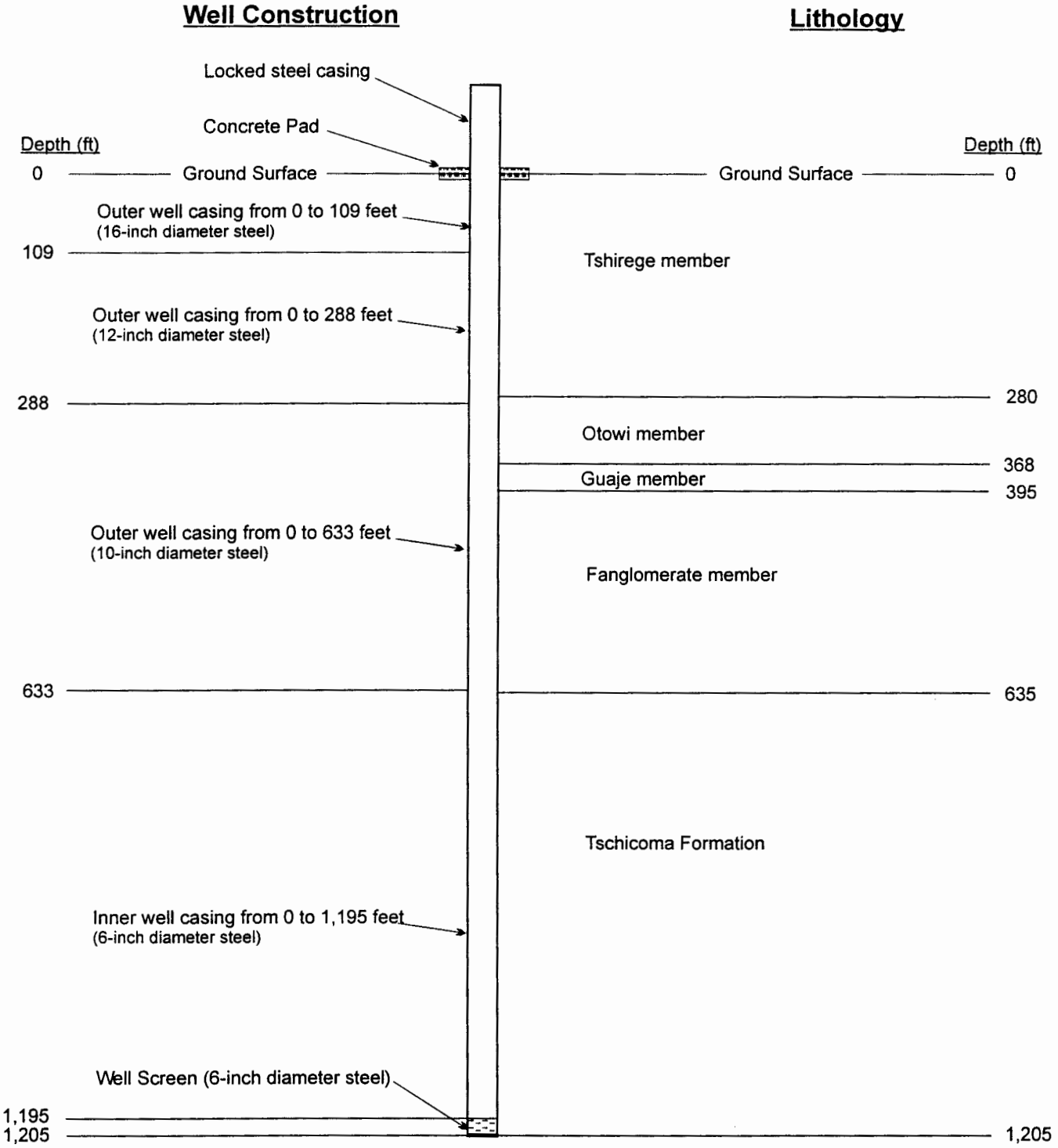
Date Completed: March 1950

Location: Pueblo Canyon

Well Diameter: 6 inches

Length of Well Screen: Not Available

Total Depth of Well: 1,205 feet



TECHLAW, INC.

Regional Oversight Contract
No. 68-W6-0063

Generalized Well Construction and Lithologic Description

Well Designation: TW-8

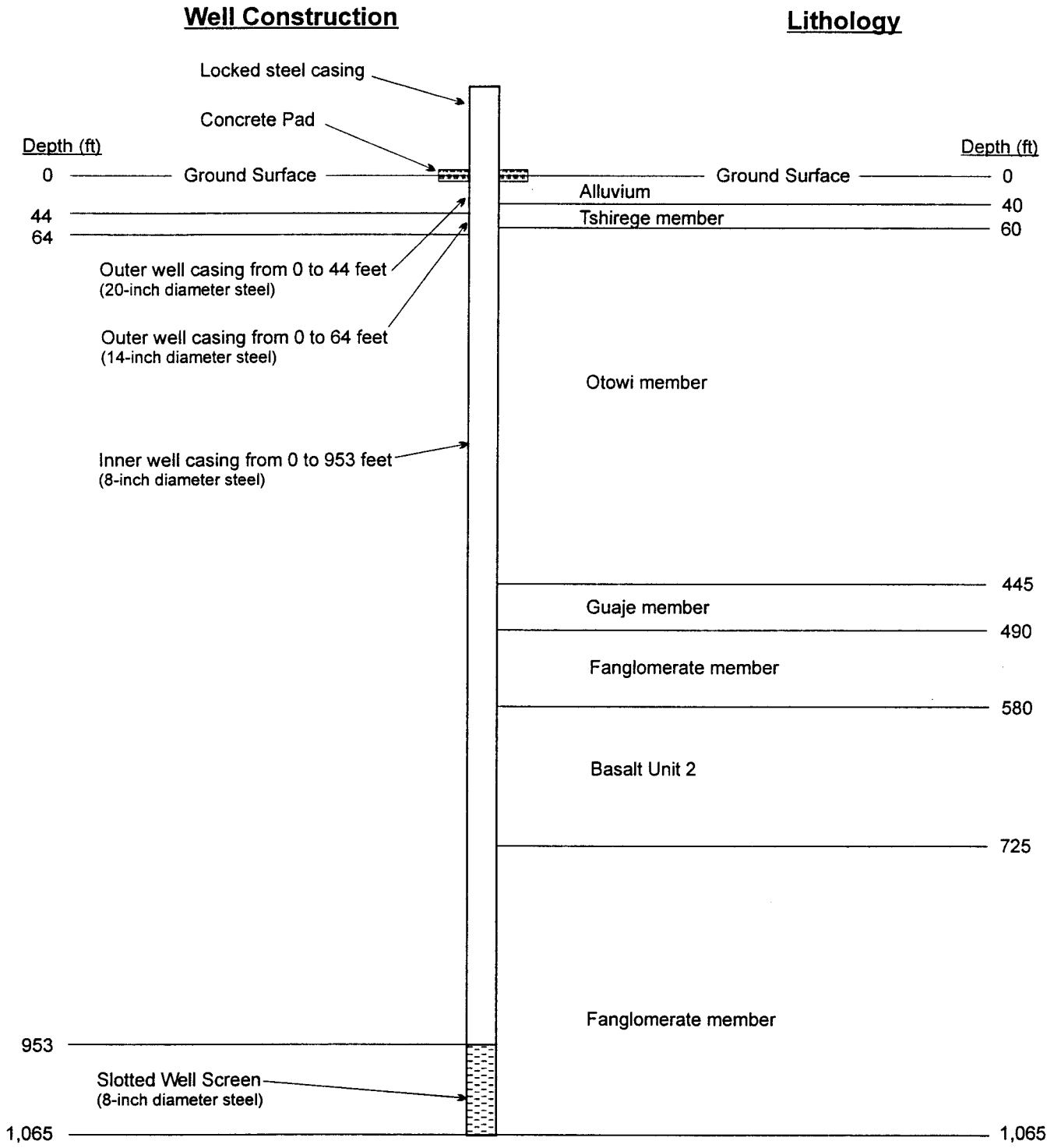
Date Completed: December 1960

Location: Mortandad Canyon

Well Diameter: 8 inches

Length of Well Screen: Not Available

Total Depth of Well: 1,065 feet



APPENDIX D

Comparative Standards Description

COMPARATIVE STANDARDS DESCRIPTION

The following is a description of the U.S. Environmental Protection Agency (EPA), New Mexico Environment Department (NMED), and U.S. Department of Energy (DOE) water quality standards, guidelines, and limits used for comparison in Tables 5, 6, 7, 8, and Appendix E of this report. These standards, guidelines, and limits do not necessarily apply to the analytical results for samples collected during the sampling event, but have been included as a point of reference for the reader.

EPA Maximum Contaminant Levels (EPA MCL)

EPA MCLs are defined as the maximum permissible level of a contaminant in water which is delivered to any user of a public water system. A public water system means a system which has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year.

EPA MCLs also include secondary maximum contaminant levels which apply to public water systems. These secondary MCLs are defined as the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of public water system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition.

Finally, there are action levels for lead and copper contained in the EPA MCLs. The action levels are defined as the concentration of lead or copper in water in a public water system which requires treatment specified in Subpart I of 40 CFR 141 prior to distribution to users.

EPA Region 6 Human Health Medium-Specific Screening Levels (EPA SL)

EPA SL values are chemical concentrations that correspond to fixed levels of risk (i.e., either a one-in-one million [10^{-6}] cancer risk or a noncarcinogenic hazard quotient of one, whichever occurs at a lower concentration). The EPA SL values used for comparison to the analytical results are based on use of the water as residential tap water.

National Pollutant Discharge Elimination System (NPDES) Permit Limits

NPDES permits are a means to regulate and limit elements and compounds regularly discharged from outfalls associated with facility processes. These permits are issued by State and/or Federal regulatory agencies. The NPDES permit establishes limits and monitoring and reporting requirements for facilities with regulated outfalls.

New Mexico Maximum Contaminant Levels (NM MCL)

Except for arsenic, fluoride, gross alpha particle radioactivity, strontium-90, and tritium, the NM MCLs apply to community water systems and non-transient, non-community water systems. NM MCLs only apply to community water systems for arsenic, fluoride, gross alpha particle radioactivity, strontium-90, and tritium. A community water system is defined as any water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. A non-transient, non-community water system is defined as a public water supply system that is not a "community water system" and that regularly serves at least 25 of the same persons for more than six months per year, including but limited to schools and factories.

New Mexico Water Quality Control Commission (NM WQCC) Standards

The NM WQCC standards referred to in this report apply to groundwater of 10,000 milligrams per liter (mg/L) total dissolved solids (TDS) concentration or less. The standards apply to the dissolved portion of the contaminants except for mercury, organic compounds, and non-aqueous phase liquids.

New Mexico Standards for Interstate and Intrastate Streams for Wildlife Habitat Limits (NM NWL)

Wildlife habitat water is defined as water of the State used by plants and animals. This water is not considered pathogenic to humans or domesticated livestock and plants. The NM NWLs applies to all discharges to the surface.

DOE Derived Concentration Guides (DOE DCG)

DOE DCG values are divided into two categories: 1) water ingestion in uncontrolled areas and 2) water ingestion from drinking water systems. The DCG values for water ingestion in uncontrolled areas are based on a committed effective dose equivalent of 100 mrem per year for each individual radionuclide. The DOE DCG values do not take into account the additive effects of radionuclides. Water ingestion in uncontrolled areas refers to drinking water sources other than public drinking water systems.

The DOE DCG values for water ingestion from drinking water systems applies to public water systems which have at least fifteen service connections or regularly serve an average of at least twenty-five individuals daily at least 60 days out of the year. The DOE DCG values for water ingestion from drinking water systems is calculated by taking 4 percent of the DCG values for water ingestion in uncontrolled areas. The DCG values for water ingestion from drinking water systems are based on a committed effective dose equivalent of 4 mrem per year for each individual radionuclide.

APPENDIX E

Comparison Tables

Summary of General Chemistry Results

I. Introduction

Samples were collected and analyzed for chloride, fluoride, sulfate, bicarbonate alkalinity, total suspended solids (TSS), total dissolved solids (TDS), total Kjedahl nitrogen (TKN), total phosphorous, nitrate/nitrite nitrogen, ammonia nitrogen, and stable nitrogen isotope ratios. Water quality standards set by the U.S. Environmental Protection Agency (EPA) and the State of New Mexico are included on each of the tables for easy comparison and reference. EPA guidelines included for reference and comparison include the EPA Maximum Contaminant Levels (EPA MCL) for inorganic chemicals in the water supply. State guidelines included for reference and comparison include the New Mexico Maximum Contaminant Levels (NM MCL) for inorganic chemicals in community and non-transient, non-community water systems and the New Mexico Water Quality Control Commission (NM WQCC) standards for groundwater of less than 10,000 mg/ℓ TDS concentration or less and for domestic water supply. Also included on each table are the analytical results for samples collected by the New Mexico Environment Department (NMED) Oversight Bureau and by Los Alamos National Laboratory (LANL). These data have not been validated and should be considered as preliminary. Sample results that exceeded any of the referenced water quality standards are noted below.

II. Results

Water quality standards were exceeded by the following sample results:

<u>EPA MCL</u>

TA-50 (TDS), MCO-3 (TDS), TW-1 (TDS), and LLAO-5 (TDS)

<u>NM MCL</u>

TA-50 (nitrate/nitrite), TA-502A (nitrate/nitrite), TA-502B (nitrate/nitrite), MCO-3 (nitrate/nitrite), MCO-4B (nitrate/nitrite), MCO-5 (nitrate/nitrite), MCO-5X (nitrate/nitrite), MCO-6 (nitrate/nitrite), MCO-7 (nitrate/nitrite), MCO-7.5B (nitrate/nitrite), MCWB-6.5E (nitrate/nitrite), MCWB-7.7B (nitrate/nitrite), and MT-4 (nitrate/nitrite)

<u>NM WQCC</u>

TA-502A (fluoride), and TA-502B (fluoride)

Summary of General Chemistry Results

Parameter	Sample Location, Result, and Date											
	Reference			TA-50 Effluent (Mortandad Canyon)								
				TA-50 (outfall)			TA-502A (outfall)			TA-502B (Gauging Station 1)		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (8/19/98)	NMED	LANL	EPA (8/28/98)	NMED (8/28/98)	LANL	EPA (8/28/98)	NMED	LANL
Chloride (mg/ℓ)	250		250	14.7	NA	NA	20.8	20.0	NA	20.2	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	0.93	NA	NA	**3.09**	2.50	NA	**2.69**	NA	NA
Sulfate (mg/ℓ)	500		600	53.2	NA	NA	125	98	NA	109	NA	NA
Alkalinity (mg/ℓ)				398	NA	NA	90.9	NA	NA	129	NA	NA
TSS (mg/ℓ)				4.0	NA	NA	61.0	NA	NA	122	NA	NA
TDS (mg/ℓ)	500		1000	**678**	NA	NA	426	NA	NA	380	NA	NA
TKN (μg/ℓ)				18600	NA	NA	2430	NA	NA	2200	NA	NA
Total Phosphorus (μg/ℓ)				86.3	NA	NA	288	NA	NA	327	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		**14900**	NA	NA	**17700**	NA	NA	**15400**	NA	NA
Ammonia (μg/ℓ)				1960	NA	NA	3860	NA	NA	2690	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				13.0	NA	NA	8.4	NA	NA	8.0	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				5.0	NA	NA	2.3	NA	NA	2.1	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date								
	Reference			Bayo Canyon Sanitary Waste Water Treatment Plant Effluent					
				Bayo-1 (outfall)			Bayo-2 (Intersection w/SR 502)		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (9/01/98)	NMED (9/01/98)	LANL	EPA (9/03/98)	NMED	LANL
Chloride (mg/ℓ)	250		250	39.8	36.4	NA	39.4	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	0.35	1.08	NA	0.63	NA	NA
Sulfate (mg/ℓ)	500		600	24.6	24.1	NA	20.6	NA	NA
Alkalinity (mg/ℓ)				158	NA	NA	170	NA	NA
TSS (mg/ℓ)				21.0	NA	NA	3.0	NA	NA
TDS (mg/ℓ)	500		1000	312	NA	NA	358	NA	NA
TKN (μg/ℓ)				225000	15000	NA	529	NA	NA
Total Phosphorus (μg/ℓ)				215	NA	NA	230	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		3010	2600	NA	1250	NA	NA
Ammonia (μg/ℓ)				11500	11000	NA	145	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				11.9	NA	NA	14.4	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				2.9	NA	NA	29.7	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date											
	Reference			Mortandad Canyon								
				MCO-2			MCO-3			MCO-4B		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (8/19/98)	NMED (8/19/98)	LANL	EPA (8/20/98)	NMED (8/20/98)	LANL (8/20/98)	EPA (8/20/98)	NMED	LANL (5/27/98)
Chloride (mg/ℓ)	250		250	20.5	NA	NA	24.2	NA	NA	17.4	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	0.73	NA	NA	1.06	NA	NA	1.15	NA	NA
Sulfate (mg/ℓ)	500		600	14.3	NA	NA	25.2	NA	NA	14.7	NA	NA
Alkalinity (mg/ℓ)				101	NA	NA	226	NA	NA	156	NA	NA
TSS (mg/ℓ)				91.0	<20	NA	4.0	<20	<1.0	<1.0	NA	8.0
TDS (mg/ℓ)	500		1000	405	400	NA	**538**	**560**	NA	340	NA	NA
TKN (μg/ℓ)				679	NA	NA	344	NA	NA	128	NA	NA
Total Phosphorus (μg/ℓ)				146	NA	NA	178	NA	NA	85.9	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		<50	NA	NA	**37800**	NA	NA	**13200**	NA	NA
Ammonia (μg/ℓ)				<50	NA	NA	<50	NA	NA	<50	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				--	NA	NA	2.3	NA	NA	-4.7	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date											
	Reference			Mortandad Canyon								
				MCO-5			MCO-6			MCO-7		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (8/20/98)	NMED (8/20/98)	LANL (5/27/98)	EPA (8/21/98)	NMED (8/21/98)	LANL	EPA (8/21/98)	NMED (8/21/98)	LANL
Chloride (mg/ℓ)	250		250	18.8	20.0	NA	21.0	20.0	NA	18.7	18.0	NA
Fluoride (mg/ℓ)	4	4	1.6	1.27	1.40	NA	1.46	1.60	NA	1.56	1.80	NA
Sulfate (mg/ℓ)	500		600	16.4	16.0	NA	17.7	17.0	NA	16.3	16.0	NA
Alkalinity (mg/ℓ)				172	NA	NA	154	NA	NA	176	NA	NA
TSS (mg/ℓ)				10.0	<20	1.0	14.0	<20	NA	47.0	59.0	NA
TDS (mg/ℓ)	500		1000	404	350	NA	374	370	NA	381	380	NA
TKN (μg/ℓ)				<50	1400	NA	165	1500	NA	57.5	1100	NA
Total Phosphorus (μg/ℓ)				119	NA	NA	143	NA	NA	388	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		**15400**	**13000**	NA	**17500**	**14000**	NA	**18200**	**15000**	NA
Ammonia (μg/ℓ)				<50	<500	NA	<50	<500	NA	<50	<500	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				-4.5	NA	NA	-4.9	NA	NA	-9.2	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date											
	Reference			Mortandad Canyon								
				MCO-7.5B			MCWB-6.5E			MCWB-7.7B		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (8/25/98)	NMED	LANL	EPA (8/24/98)	NMED	LANL	EPA (8/26/98)	NMED	LANL
Chloride (mg/ℓ)	250		250	18.8	NA	NA	18.1	NA	NA	19.2	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	1.51	NA	NA	0.96	NA	NA	1.03	NA	NA
Sulfate (mg/ℓ)	500		600	16.7	NA	NA	15.9	NA	NA	17.8	NA	NA
Alkalinity (mg/ℓ)				178	NA	NA	139	NA	NA	172	NA	NA
TSS (mg/ℓ)				9.0	NA	NA	3.0	NA	NA	5.0	NA	NA
TDS (mg/ℓ)	500		1000	413	NA	NA	355	NA	NA	386	NA	NA
TKN (μg/ℓ)				105	NA	NA	123	NA	NA	110	NA	NA
Total Phosphorus (μg/ℓ)				127	NA	NA	929	NA	NA	119	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		**13700**	NA	NA	**17000**	NA	NA	**22400**	NA	NA
Ammonia (μg/ℓ)				<50	NA	NA	<50	NA	NA	<50	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				-12.1	NA	NA	-8.5	NA	NA	-37.9	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date								
	Reference			Mortandad Canyon					
				MT-3			MT-4		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (8/27/98)	NMED	LANL (9/04/98)	EPA (8/26/98)	NMED	LANL (5/14/98)
Chloride (mg/ℓ)	250		250	18.8	NA	NA	19.5	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	1.58	NA	NA	0.89	NA	NA
Sulfate (mg/ℓ)	500		600	16.6	NA	NA	17.1	NA	NA
Alkalinity (mg/ℓ)				174	NA	NA	164	NA	NA
TSS (mg/ℓ)				4.0	NA	1.0	9.0	NA	4.0
TDS (mg/ℓ)	500		1000	405	NA	NA	377	NA	NA
TKN (μg/ℓ)				99.2	NA	NA	101	NA	NA
Total Phosphorus (μg/ℓ)				134	NA	NA	133	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		6720	NA	NA	**20700**	NA	NA
Ammonia (μg/ℓ)				<50	NA	NA	<50	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				-15.7	NA	NA	-29.5	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date											
	Reference			Los Alamos Canyon								
				LAO-B			LAO-0.3			LAO-0.6		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (8/31/98)	NMED	LANL	EPA (9/01/98)	NMED	LANL	EPA (8/31/98)	NMED	LANL
Chloride (mg/ℓ)	250		250	9.77	NA	NA	44.7	NA	NA	73.6	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	0.10	NA	NA	0.17	NA	NA	0.25	NA	NA
Sulfate (mg/ℓ)	500		600	3.33	NA	NA	4.14	NA	NA	5.70	NA	NA
Alkalinity (mg/ℓ)				56.6	NA	NA	60.6	NA	NA	92.9	NA	NA
TSS (mg/ℓ)				1.0	NA	NA	3.0	NA	NA	2.0	NA	NA
TDS (mg/ℓ)	500		1000	141	NA	NA	188	NA	NA	113	NA	NA
TKN (μg/ℓ)				<50	NA	NA	145	NA	NA	140	NA	NA
Total Phosphorus (μg/ℓ)				<50	NA	NA	114	NA	NA	160	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		<50	NA	NA	<50	NA	NA	310	NA	NA
Ammonia (μg/ℓ)				<50	NA	NA	<50	NA	NA	<50	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				--	NA	NA	--	NA	NA	7.6	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date											
	Reference			Los Alamos Canyon								
				LAO-0.91			LAO-1.2			LAO-1.6g		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (9/03/98)	NMED	LANL	EPA (8/31/98)	NMED	LANL	EPA (9/01/98)	NMED	LANL
Chloride (mg/ℓ)	250		250	39.1	NA	NA	45.6	NA	NA	27.3	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	0.20	NA	NA	0.26	NA	NA	0.30	NA	NA
Sulfate (mg/ℓ)	500		600	4.41	NA	NA	5.68	NA	NA	6.14	NA	NA
Alkalinity (mg/ℓ)				74.7	NA	NA	62.6	NA	NA	68.7	NA	NA
TSS (mg/ℓ)				1.0	NA	NA	35.0	NA	NA	1.0	NA	NA
TDS (mg/ℓ)	500		1000	184	NA	NA	125	NA	NA	194	NA	NA
TKN (μg/ℓ)				77.7	NA	NA	89.5	NA	NA	107	NA	NA
Total Phosphorus (μg/ℓ)				167	NA	NA	131	NA	NA	268	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		149	NA	NA	138	NA	NA	624	NA	NA
Ammonia (μg/ℓ)				<50	NA	NA	<50	NA	NA	<50	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				--	NA	NA	--	NA	NA	-1.3	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date											
	Reference			Los Alamos Canyon								
				LAO-2			LAO-3A			LAO-4.5C		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (8/31/98)	NMED	LANL (8/31/98)	EPA (8/31/98)	NMED	LANL (8/31/98)	EPA (8/31/98)	NMED	LANL (5/14/98)
Chloride (mg/ℓ)	250		250	21.3	NA	NA	21.0	NA	NA	32.8	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	0.53	NA	NA	0.64	NA	NA	0.58	NA	NA
Sulfate (mg/ℓ)	500		600	8.49	NA	NA	9.77	NA	NA	6.45	NA	NA
Alkalinity (mg/ℓ)				94.9	NA	NA	109	NA	NA	64.6	NA	NA
TSS (mg/ℓ)				9.0	NA	<1.0	6.0	NA	<1.0	9.0	NA	9.0
TDS (mg/ℓ)	500		1000	166	NA	NA	151	NA	NA	193	NA	NA
TKN (μg/ℓ)				<50	NA	NA	58.3	NA	NA	<50	NA	NA
Total Phosphorus (μg/ℓ)				167	NA	NA	272	NA	NA	60.2	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		602	NA	NA	617	NA	NA	61.6	NA	NA
Ammonia (μg/ℓ)				<50	NA	NA	<50	NA	NA	<50	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				1.4	NA	NA	-3.5	NA	NA	--	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date								
	Reference			Los Alamos Canyon					
				LAO-5			LLAO-5		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (8/31/98)	NMED	LANL	EPA (9/08/98)	NMED	LANL
Chloride (mg/ℓ)	250		250	40.5	NA	NA	70.6	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	0.45	NA	NA	0.36	NA	NA
Sulfate (mg/ℓ)	500		600	7.83	NA	NA	35.9	NA	NA
Alkalinity (mg/ℓ)				78.8	NA	NA	259	NA	NA
TSS (mg/ℓ)				30.0	NA	NA	29.0	NA	NA
TDS (mg/ℓ)	500		1000	208	NA	NA	**508**	NA	NA
TKN (μg/ℓ)				59.0	NA	NA	100	NA	NA
Total Phosphorus (μg/ℓ)				75.7	NA	NA	133	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		<50	NA	NA	1530	NA	NA
Ammonia (μg/ℓ)				<50	NA	NA	<50	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				--	NA	NA	7.3	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date								
	Reference			DP Canyon					
				LAUZ-1			LAUZ-2		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (9/04/98)	NMED	LANL	EPA (9/04/98)	NMED	LANL
Chloride (mg/ℓ)	250		250	17.7	NA	NA	41.4	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	0.91	NA	NA	1.34	NA	NA
Sulfate (mg/ℓ)	500		600	4.81	NA	NA	1.21	NA	NA
Alkalinity (mg/ℓ)				133	NA	NA	176	NA	NA
TSS (mg/ℓ)				1.0	NA	NA	3.0	NA	NA
TDS (mg/ℓ)	500		1000	203	NA	NA	299	NA	NA
TKN (μg/ℓ)				112	NA	NA	332	NA	NA
Total Phosphorus (μg/ℓ)				111	NA	NA	148	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		<50	NA	NA	<50	NA	NA
Ammonia (μg/ℓ)				<50	NA	NA	111	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				--	NA	NA	--	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date											
	Reference			Pueblo Canyon								
				APCO-1			POI-4			TW-2A		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (9/03/98)	NMED	LANL (9/03/98)	EPA (9/02/98)	NMED	LANL	EPA (9/01/98)	NMED	LANL (9/01/98)
Chloride (mg/ℓ)	250		250	37.6	NA	NA	40.9	NA	NA	69.9	NA	60.0
Fluoride (mg/ℓ)	4	4	1.6	0.45	NA	NA	0.29	NA	NA	0.24	NA	0.20
Sulfate (mg/ℓ)	500		600	14.3	NA	NA	20.6	NA	NA	8.82	NA	7.0
Alkalinity (mg/ℓ)				158	NA	NA	162	NA	NA	56.6	NA	57.0
TSS (mg/ℓ)				4.0	NA	2.0	2.0	NA	NA	45.0	NA	45.0
TDS (mg/ℓ)	500		1000	359	NA	NA	326	NA	NA	220	NA	**740**
TKN (μg/ℓ)				1210	NA	NA	173	NA	NA	695	NA	NA
Total Phosphorus (μg/ℓ)				278	NA	NA	630	NA	NA	151	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		473	NA	NA	3750	NA	NA	767	NA	NA
Ammonia (μg/ℓ)				771	NA	NA	<50	NA	NA	306	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				24.3	NA	NA	--	NA	NA	11.0	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				25.4	NA	NA	19.5	NA	NA	0.8	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date								
	Reference			Main Aquifer Wells					
				TW-1 (Pueblo Canyon)			TW-3 (Los Alamos Canyon)		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (9/01/98)	NMED (9/01/98)	LANL (5/28/98)	EPA (9/01/98)	NMED	LANL (9/01/98)
Chloride (mg/ℓ)	250		250	36.3	NA	34.0	3.15	NA	3.90
Fluoride (mg/ℓ)	4	4	1.6	0.35	NA	0.42	0.35	NA	0.36
Sulfate (mg/ℓ)	500		600	23.2	NA	22.0	2.92	NA	4.0
Alkalinity (mg/ℓ)				111	NA	109	103	NA	80
TSS (mg/ℓ)				3.0	NA	8.0	2.0	NA	<1.0
TDS (mg/ℓ)	500		1000	777	304	NA	162	NA	238
TKN (μg/ℓ)				113	<100	NA	120	NA	NA
Total Phosphorus (μg/ℓ)				85.3	NA	NA	167	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		5570	4900	NA	569	NA	NA
Ammonia (μg/ℓ)				<50	340	NA	<50	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				14.9	NA	NA	-3.2	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date								
	Reference			Main Aquifer Wells					
				TW-4 (Pueblo Canyon)			TW-8 (Mortandad Canyon)		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (9/01/98)	NMED	LANL (9/01/98)	EPA (9/02/98)	NMED (9/02/98)	LANL (9/02/98)
Chloride (mg/ℓ)	250		250	1.98	NA	3.10	2.07	2.20	3.60
Fluoride (mg/ℓ)	4	4	1.6	0.18	NA	0.18	0.16	0.13	0.15
Sulfate (mg/ℓ)	500		600	2.09	NA	3.0	2.03	2.1	3.0
Alkalinity (mg/ℓ)				72.7	NA	64.0	74.7	NA	65.0
TSS (mg/ℓ)				6.0	NA	5.0	3.0	NA	<1.0
TDS (mg/ℓ)	500		1000	125	NA	202	127	NA	144
TKN (μg/ℓ)				<50	NA	NA	<50	1700	NA
Total Phosphorus (μg/ℓ)				132	NA	NA	130	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		285	NA	NA	226	280	NA
Ammonia (μg/ℓ)				<50	NA	NA	<50	<500	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				-2.5	NA	NA	-0.8	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date											
	Reference			Springs								
				DP Spring (DP Canyon)			Basalt Spring (San Ildefonso land)			La Mesita Spring (San Iledfonso Land)		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (9/02/98)	NMED (9/02/98)	LANL (9/02/98)	EPA (9/09/98)	NMED	LANL (6/04/98)	EPA (9/08/98)	NMED	LANL (9/08/98)
Chloride (mg/ℓ)	250		250	28.6	25.7	NA	35.2	NA	NA	7.73	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	1.06	1.53	NA	0.37	NA	NA	0.27	NA	NA
Sulfate (mg/ℓ)	500		600	5.77	6.85	NA	23.6	NA	NA	14.3	NA	NA
Alkalinity (mg/ℓ)				86.9	NA	NA	113	NA	NA	137	NA	NA
TSS (mg/ℓ)				4.0	NA	1.0	1.0	NA	9.0	63.0	NA	49.0
TDS (mg/ℓ)	500		1000	178	NA	NA	346	NA	NA	206	NA	NA
TKN (μg/ℓ)				125	200	NA	332	NA	NA	87.9	NA	NA
Total Phosphorus (μg/ℓ)				178	NA	NA	3580	NA	NA	134	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		275	360	NA	3470	NA	NA	2950	NA	NA
Ammonia (μg/ℓ)				<50	60	NA	<50	NA	NA	<50	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				2.9	NA	NA	30.2	NA	NA	-1.0	NA	NA

Summary of General Chemistry Results (continued)

Parameter	Sample Location, Result, and Date											
	Reference			Springs								
				LA Spring (San Ildefonso Land)			Otowi Spring (San Ildefonso Land)			Sacred Spring (San Ildefonso Land)		
	EPA MCL[a]	NM MCL[b]	NM WQCC[c]	EPA (9/09/98)	NMED	LANL	EPA (9/08/98)	NMED	LANL (9/08/98)	EPA (9/08/98)	NMED	LANL (9/8/98)
Chloride (mg/ℓ)	250		250	19.6	NA	NA	32.3	NA	NA	3.12	NA	NA
Fluoride (mg/ℓ)	4	4	1.6	0.90	NA	NA	0.48	NA	NA	0.44	NA	NA
Sulfate (mg/ℓ)	500		600	34.8	NA	NA	22.2	NA	NA	7.68	NA	NA
Alkalinity (mg/ℓ)				94.9	NA	NA	170	NA	NA	105	NA	NA
TSS (mg/ℓ)				3.0	NA	NA	10.0	NA	5.0	11.0	NA	5.0
TDS (mg/ℓ)	500		1000	261	NA	NA	321	NA	NA	211	NA	NA
TKN (μg/ℓ)				<50	NA	NA	<50	NA	NA	<50	NA	NA
Total Phosphorus (μg/ℓ)				53.5	NA	NA	168	NA	NA	85.6	NA	NA
Nitrate/Nitrite (μg/ℓ)		10000		3180	NA	NA	352	NA	NA	269	NA	NA
Ammonia (μg/ℓ)				<50	NA	NA	<50	NA	NA	<50	NA	NA
$\delta^{15}N_{air}$ - NH_3 (no units)				--	NA	NA	--	NA	NA	--	NA	NA
$\delta^{15}N_{air}$ - NO_3/NO_2 (no units)				3.6	NA	NA	-1.6	NA	NA	-4.0	NA	NA

a	EPA Maximum Contaminant Levels for inorganic chemicals in the water supply.
b	New Mexico Maximum Contaminant Levels for inorganic chemicals in community water systems.
c	New Mexico Water Quality Control Commission standards for maximum allowable concentration of contaminants in groundwater and domestic water supply.
$\delta^{15}N_{air}$ - NH_3	Stable nitrogen isotope ratio found in the ammonia fraction of the sample.
$\delta^{15}N_{air}$ - NO_3/NO_2	Stable nitrogen isotope ratio found in the nitrate/nitrite fraction of the sample.
--	Not determined due to insufficient concentration within the water sample.
NA	Not Analyzed.

Summary of Unfiltered Inorganic Analysis Results

I. Introduction

Samples collected for inorganic analysis were analyzed for total metals (fourteen analytes) according to SW-846, Method 6010 and Method 7470 (mercury). Water quality standards set by the U.S. Environmental Protection Agency (EPA) and the State of New Mexico are included on each of the tables for easy comparison and reference. EPA guidelines included for reference and comparison include the National Pollutant Discharge Elimination System (NPDES) permit limits for discharges from the TA-50 Radioactive Wastewater Treatment Plant, the EPA Maximum Contaminant Levels (EPA MCL) for inorganic chemicals in the water supply, and the EPA Region 6 Human Health Medium-Specific Screening Levels (EPA SL) for inorganic chemicals in tap water. State guidelines included for reference and comparison include the New Mexico Maximum Contaminant Levels (NM MCL) for inorganic chemicals in community and non-transient, non-community water systems, the New Mexico Water Quality Control Commission (NM WQCC) standards for groundwater of less than 10,000 mg/ℓ total dissolved solids (TDS) concentration or less, and the New Mexico Standards for Interstate and Intrastate Streams for Wildlife Habitat Limits (NM WHL). Also included on each table are the analytical results for samples collected by the New Mexico Environment Department (NMED) Oversight Bureau and by Los Alamos National Laboratory (LANL). All concentrations are reported in micrograms per liter (μg/ℓ). These data have not been validated and should be considered as preliminary. Sample results that exceeded any of the referenced water quality standards are noted below.

II. Results

The following samples exceeded the limits for:

<u>NPDES Limits</u>

None (for TA-50 effluent samples only)

<u>EPA MCL</u>

TA-502B (iron and manganese), MCO-2 (iron and manganese), MCO-7 (iron), MCO-7.5B (lead), MT-4 (iron), LAO-0.3 (iron), LAO-0.6 (manganese), LAO-0.91 (iron), LAO-1.2 (iron), LAO-1.6g (iron), LAO-2 (iron), LAUZ-1 (manganese and mercury), LAUZ-2 (iron and manganese), APCO-1 (iron and manganese), TW-2A (iron, lead, and manganese), TW-4 (iron and lead), La Mesita Spring (iron), Bayo-1 (iron), and Bayo-2 (iron and manganese).

EPA SL

MCO-2 (iron, manganese, and molybdenum), MCO-7.5B (lead), LAO-1.6g (molybdenum), LAO-3A (molybdenum), TW-2A (iron and lead), and TW-4 (lead)

NM MCL

LAUZ-1 (mercury)

NM WQCC

MCO-2 (chromium) and LAUZ-1 (mercury)

NM WHL

TA-502A (mercury) and TA-502B (mercury)

Summary of Unfiltered Inorganic Analysis Results*

Analyte	Sample Location, Result, and Date														
	Reference						TA-50 Effluent (Mortandad Canyon)								
							TA-50			TA-502A			TA-502B		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/19/98)	NMED	LANL	EPA (8/28/98)	NMED	LANL	EPA (8/28/98)	NMED	LANL
Aluminum	5000		37000				49.6	NA	NA	305	NA	NA	2330	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<2.0	NA	NA	<2.0	NA	NA	<2.0	NA	NA
Barium		2000	2600	2000	1000		34.6	NA	NA	7.6	NA	NA	44.4	NA	NA
Beryllium		4	73	4			0.67	NA	NA	<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300				192	NA	NA	105	NA	NA	119	NA	NA
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	NA	4.5	NA	NA	6.4	NA	NA
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				41.4	NA	NA	145	NA	NA	110	NA	NA
Iron		300[‡]	11000				73.4	NA	NA	113	NA	NA	**1780**	NA	NA
Lead	400	15[†]	15		50		<1.6	NA	NA	6.9	NA	NA	2.9	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				10.8	NA	NA	5.0	NA	NA	**77.2**	NA	NA
Mercury	10	2	11	2	2	0.012	<0.10	NA	NA	**0.26**	NA	NA	**0.16**	NA	NA
Molybdenum			180				28.8	NA	NA	117	NA	NA	151	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	NA	<2.6	NA	NA	<2.6	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Bayo Canyon Sanitary Waste Water Treatment Plant Effluent					
							Bayo-1 (outfall)			Bayo-2 (intersection w/SR-502)		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/01/98)	NMED	LANL	EPA (9/03/98)	NMED	LANL
Aluminum	5000		37000				306	NA	NA	41.2	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		5.6	NA	NA	8.8	NA	NA
Barium		2000	2600	2000	1000		12.8	NA	NA	20.9	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300				298	NA	NA	328	NA	NA
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	NA	<4.2	NA	NA
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				29.4	NA	NA	7.3	NA	NA
Iron		300[‡]	11000				**301**	NA	NA	**754**	NA	NA
Lead	400	15[†]	15		50		<1.6	NA	NA	<1.6	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				18.7	NA	NA	**306**	NA	NA
Mercury	10	2	11	2	2	0.012	<0.20	NA	NA	<0.10	NA	NA
Molybdenum			180				<7.3	NA	NA	<7.3	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	NA	<2.6	NA	NA
Silicon							NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Mortandad Canyon								
							MCO-2			MCO-3			MCO-4B		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/19/98)	NMED (8/19/98)	LANL	EPA (8/20/98)	NMED (8/20/98)	LANL (8/20/98)	EPA (8/20/98)	NMED	LANL (5/27/98)
Aluminum	5000		37000				14900	8100	NA	65.8	<200	359	152	NA	305
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		9.2	<10	NA	2.30	<10	<2	<2.0	NA	<2
Barium		2000	2600	2000	1000		173	200	NA	62.7	<100	65	77.0	NA	88
Beryllium		4	73	4			1.90	<5	NA	<0.60	<5	<3	<0.60	NA	<3
Boron	5000		3300				84.0	<100	NA	179	100	173	70.8	NA	69
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		**77.31**	NA	NA	<4.2	NA	<7	<4.2	NA	<7
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				13.9	NA	NA	14.9	NA	18	<6.2	NA	<10
Iron		300[‡]	11000				**14900**	**11000**	NA	58.1	<100	<40	82.2	NA	176
Lead	400	15[†]	15		50		5.6	3	NA	<1.6	<3	<3	<1.6	NA	<3
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				**13200**	**1300**	NA	5.4	<10	<2	2.4	NA	2
Mercury	10	2	11	2	2	0.012	<0.10	NA	NA	<0.10	NA	<0.20	<0.10	NA	<0.20
Molybdenum			180				**1040**	NA	NA	153	NA	158	124	NA	121
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	NA	<2.6	NA	<2	<2.6	NA	<2
Silicon							NA	48000	NA	NA	22000	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	90	NA	NA	120	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Mortandad Canyon								
							MCO-5			MCO-6			MCO-7		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/20/98)	NMED (8/20/98)	LANL (5/27/98)	EPA (8/21/98)	NMED	LANL	EPA (8/21/98)	NMED	LANL
Aluminum	5000		37000				152	<200	180	213	NA	NA	2310	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<2.0	<10	<2	<2.0	NA	NA	2.5	NA	NA
Barium		2000	2600	2000	1000		93.8	<100	90	88.4	NA	NA	195	NA	NA
Beryllium		4	73	4			<0.60	<5	<3	<0.60	NA	NA	0.62	NA	NA
Boron	5000		3300				111	<100	73	91.7	NA	NA	107	NA	NA
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	21	<4.2	NA	NA	<4.2	NA	NA
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[f]/ 1000[g]	1400				7.0	NA	<10	<6.2	NA	NA	<6.2	NA	NA
Iron		300[g]	11000				107	<100	92	204	NA	NA	**1390**	NA	NA
Lead	400	15[f]	15		50		<1.6	<3	<3	<1.6	NA	NA	<1.6	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[g]	1700				2.5	<10	<2	6.1	NA	NA	26.9	NA	NA
Mercury	10	2	11	2	2	0.012	<0.10	NA	<0.20	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				113	NA	127	126	NA	NA	114	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	<2	<2.6	NA	NA	4.2	NA	NA
Silicon							NA	16000	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorga Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Mortandad Canyon								
							MCO-7.5B			MCWB-6.5E			MCWB-7.7B		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/25/98)	NMED	LANL	EPA (8/24/98)	NMED	LANL	EPA (8/26/98)	NMED	LANL
Aluminum	5000		37000				51.7	NA	NA	64.2	NA	NA	91.0	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<2.0	NA	NA	<2.0	NA	NA	<2.0	NA	NA
Barium		2000	2600	2000	1000		166	NA	NA	179	NA	NA	126	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300				115	NA	NA	80.4	NA	NA	91.6	NA	NA
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		4.5	NA	NA	4.2	NA	NA	<4.2	NA	NA
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				<6.2	NA	NA	6.2	NA	NA	7.7	NA	NA
Iron		300[‡]	11000				71.2	NA	NA	50.1	NA	NA	49.0	NA	NA
Lead	400	15[†]	15		50		**22.3**	NA	NA	1.6	NA	NA	<1.6	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				1.3	NA	NA	1.0	NA	NA	1.4	NA	NA
Mercury	10	2	11	2	2	0.012	<0.10	NA	NA	0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				80.4	NA	NA	85.7	NA	NA	32.1	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	2.6	NA	NA	<2.6	NA	NA	<2.6	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Mortandad Canyon					
							MT-3			MT-4		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/27/98)	NMED	LANL (9/04/98)	EPA (8/26/98)	NMED	LANL (5/14/98)
Aluminum	5000		37000				237	NA	<50	623	NA	330
Antimony		6	15	6			NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<2.0	NA	<2	<2.0	NA	<2
Barium		2000	2600	2000	1000		147	NA	150	109	NA	110
Beryllium		4	73	4			<0.60	NA	<3	<0.60	NA	<3
Boron	5000		3300				109	NA	82	105	NA	57
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		6.1	NA	NA	<4.2	NA	9
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				9.3	NA	<10	16.6	NA	<10
Iron		300[‡]	11000				228	NA	<40	385	NA	73
Lead	400	15[†]	15		50		<1.6	NA	<3	3.5	NA	<3
Lithium			730				NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				3.5	NA	<2	6.5	NA	3
Mercury	10	2	11	2	2	0.012	<0.10	NA	<0.20	<0.10	NA	<0.20
Molybdenum			180				60.0	NA	NA	33.0	NA	<30
Nickel		100	730	100			NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	<2	<2.6	NA	<2
Silicon							NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorga Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Los Alamos Canyon								
							LAO-B			LAO-0.3			LAO-0.6		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/31/98)	NMED	LANL	EPA (9/01/98)	NMED	LANL	EPA (8/31/98)	NMED	LANL
Aluminum	5000		37000				225	NA	NA	936	NA	NA	<23.6	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<2.0	NA	NA	<2.0	NA	NA	<2.0	NA	NA
Barium		2000	2600	2000	1000		28.4	NA	NA	39.3	NA	NA	48.6	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300				25.6	NA	NA	44.2	NA	NA	54.6	NA	NA
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	NA	<4.2	NA	NA	<4.2	NA	NA
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				<6.2	NA	NA	<6.2	NA	NA	<6.2	NA	NA
Iron		300[‡]	11000				119	NA	NA	**479**	NA	NA	40.2	NA	NA
Lead	400	15[†]	15		50		<1.6	NA	NA	<1.6	NA	NA	<1.6	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				1.3	NA	NA	3.4	NA	NA	**138**	NA	NA
Mercury	10	2	11	2	2	0.012	<0.10	NA	NA	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				7.3	NA	NA	<7.3	NA	NA	<7.3	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	2.6	NA	NA	<2.6	NA	NA	<2.6	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Los Alamos Canyon								
							LAO-0.91			LAO-1.2			LAO-1.6g		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/03/98)	NMED	LANL	EPA (8/31/98)	NMED	LANL	EPA (9/01/98)	NMED	LANL
Aluminum	5000		37000				818	NA	NA	731	NA	NA	953	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		2.1	NA	NA	<2.0	NA	NA	<2.0	NA	NA
Barium		2000	2600	2000	1000		36.5	NA	NA	41.4	NA	NA	49.5	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300				33.4	NA	NA	38.9	NA	NA	48.6	NA	NA
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	NA	12.6	NA	NA	<4.2	NA	NA
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[g]/ 1000[h]	1400				<6.2	NA	NA	<6.2	NA	NA	<6.2	NA	NA
Iron		300[h]	11000				**481**	NA	NA	**471**	NA	NA	**475**	NA	NA
Lead	400	15[g]	15		50		<1.6	NA	NA	<1.6	NA	NA	<1.6	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[h]	1700				33.3	NA	NA	19.0	NA	NA	3.1	NA	NA
Mercury	10	2	11	2	2	0.012	<0.10	NA	NA	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				<7.3	NA	NA	<7.3	NA	NA	**183**	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	NA	<2.6	NA	NA	<2.6	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorga Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Los Alamos Canyon								
							LAO-2			LAO-3A			LAO-4.5C		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/31/98)	NMED	LANL (8/31/98)	EPA (8/31/98)	NMED	LANL (8/31/98)	EPA (8/31/98)	NMED	LANL (5/14/98)
Aluminum	5000		37000				746	NA	423	247	NA	394	361	NA	1200
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<2.0	NA	2	<2.0	NA	2	<2.0	NA	<2
Barium		2000	2600	2000	1000		54.4	NA	56	47.3	NA	54	40.8	NA	39
Beryllium		4	73	4			<0.60	NA	<3	<0.60	NA	<3	0.64	NA	<3
Boron	5000		3300				64.5	NA	58	62.1	NA	47	61.8	NA	<20
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	<7	<4.2	NA	<7	<4.2	NA	12
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				<6.2	NA	<10	<6.2	NA	<10	8.2	NA	<10
Iron		300[‡]	11000				**403**	NA	282	141	NA	187	204	NA	**420**
Lead	400	15[†]	15		50		<1.6	NA	<3	<1.6	NA	**16**	<1.6	NA	<3
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				3.8	NA	2	1.3	NA	<2	3.4	NA	3
Mercury	10	2	11	2	2	0.012	<0.10	NA	<0.20	<0.10	NA	<0.20	<0.10	NA	<0.20
Molybdenum			180				151	NA	166	**315**	NA	**335**	11.0	NA	<30
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	<2	<2.6	NA	<3	<2.6	NA	<2
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Los Alamos Canyon					
							LAO-5			LLAO-5		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/31/98)	NMED	LANL	EPA (9/08/98)	NMED	LANL
Aluminum	5000		37000				2520	NA	NA	150	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<2.0	NA	NA	<1.8	NA	NA
Barium		2000	2600	2000	1000		36.0	NA	NA	238	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.50	NA	NA
Boron	5000		3300				69.0	NA	NA	106	NA	NA
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	NA	<2.7	NA	NA
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				<6.2	NA	NA	<2.9	NA	NA
Iron		300[‡]	11000				1340	NA	NA	131	NA	NA
Lead	400	15[†]	15		50		3.5	NA	NA	<0.90	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				19.6	NA	NA	33.6	NA	NA
Mercury	10	2	11	2	2	0.012	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				10.1	NA	NA	<8.4	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	NA	<2.2	NA	NA
Silicon							NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorga Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						DP Canyon					
							LAUZ-1			LAUZ-2		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/04/98)	NMED	LANL	EPA (9/04/98)	NMED	LANL
Aluminum	5000		37000				273	NA	NA	41.8	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<2.0	NA	NA	3.6	NA	NA
Barium		2000	2600	2000	1000		75.8	NA	NA	97.4	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300				76.2	NA	NA	90.7	NA	NA
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	NA	<4.2	NA	NA
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				<6.2	NA	NA	<6.2	NA	NA
Iron		300[‡]	11000				161	NA	NA	**1190**	NA	NA
Lead	400	15[†]	15		50		<1.6	NA	NA	<1.6	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				**50.8**	NA	NA	**627**	NA	NA
Mercury	10	2	11	2	2	0.012	**3.0**	NA	NA	<0.10	NA	NA
Molybdenum			180				<7.3	NA	NA	<8.4	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	NA	<2.6	NA	NA
Silicon							NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Pueblo Canyon								
							APCO-1			POI-4			TW-2A		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/03/98)	NMED	LANL (9/03/98)	EPA (9/02/98)	NMED	LANL	EPA (9/01/98)	NMED	LANL (9/01/98)
Aluminum	5000		37000				60.5	NA	<50.0	<23.6	NA	NA	36.0	NA	<50
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		5.3	NA	7	2.8	NA	NA	<2.0	NA	<2
Barium		2000	2600	2000	1000		44.9	NA	57	94.6	NA	NA	40.8	NA	42
Beryllium		4	73	4			<0.60	NA	<3	<0.60	NA	NA	<6.0	NA	<3
Boron	5000		3300				334	NA	290	210	NA	NA	114	NA	85
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	<7	<4.2	NA	NA	<4.2	NA	<7
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				7.4	NA	<10	8.0	NA	NA	<6.2	NA	<10
Iron		300[‡]	11000				**460**	NA	**735**	10.8	NA	NA	**21300**	NA	**21405**
Lead	400	15[†]	15		50		<1.6	NA	<3	<1.6	NA	NA	**28.4**	NA	**53**
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				**925**	NA	**1008**	1.6	NA	NA	**377**	NA	**370**
Mercury	10	2	11	2	2	0.012	<0.10	NA	<0.20	<0.10	NA	NA	<0.10	NA	<0.2
Molybdenum			180				8.0	NA	<30	<7.3	NA	NA	<7.3	NA	<30
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	<2	<2.6	NA	NA	<2.6	NA	<2
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorga Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Main Aquifer Wells					
							TW-1 (Pueblo Canyon)			TW-3 (Los Alamos Canyon)		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/01/98)	NMED	LANL (5/28/98)	EPA (9/01/98)	NMED	LANL (9/01/98)
Aluminum	5000		37000				<23.6	NA	612	<23.6	NA	<50
Antimony		6	15	6			NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<2.0	NA	<2	<2.0	NA	2
Barium		2000	2600	2000	1000		74.4	NA	87	23.4	NA	26
Beryllium		4	73	4			<0.60	NA	<3	<0.60	NA	<3
Boron	5000		3300				112	NA	62	51.0	NA	47
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	<7	16.8	NA	<7
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				<6.2	NA	<10	<6.2	NA	<10
Iron		300[‡]	11000				44.1	NA	**1902**	221	NA	**384**
Lead	400	15[†]	15		50		4.0	NA	**97**	<1.6	NA	3
Lithium			730				NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				41.3	NA	**65**	8.7	NA	13
Mercury	10	2	11	2	2	0.012	<0.10	NA	<0.20	<0.10	NA	<0.20
Molybdenum			180				<7.3	NA	<30	<7.3	NA	<30
Nickel		100	730	100			NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	<2	<2.6	NA	<2
Silicon							NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Main Aquifer Wells					
							TW-4 (Pueblo Canyon)			TW-8 (Mortandad Canyon)		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/01/98)	NMED	LANL (9/01/98)	EPA (9/02/98)	NMED	LANL (9/02/98)
Aluminum	5000		37000				<23.6	NA	85	<23.6	NA	<50
Antimony		6	15	6			NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<2.0	NA	<2	<2.0	NA	<2
Barium		2000	2600	2000	1000		58.2	NA	63	7.0	NA	8
Beryllium		4	73	4			<0.60	NA	<3	<0.60	NA	<3
Boron	5000		3300				40.2	NA	<20	36.6	NA	33
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		49.0	NA	<7	<4.2	NA	<7
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				13.0	NA	31	<6.2	NA	<10
Iron		300[‡]	11000				**659**	NA	**1520**	141	NA	117
Lead	400	15[†]	15		50		**19.4**	NA	**46**	4.1	NA	5
Lithium			730				NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				37.7	NA	45	3.6	NA	4
Mercury	10	2	11	2	2	0.012	<0.10	NA	<0.20	<0.10	NA	<0.20
Molybdenum			180				<7.3	NA	<30	<7.3	NA	<30
Nickel		100	730	100			NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	<2	<2.6	NA	<2
Silicon							NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorga[illegible] Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Springs								
							DP Spring (DP Canyon)			Basalt Spring (San Ildefonso Land)			La Mesita Spring (San Idefonso Land)		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/02/98)	NMED	LANL (9/02/98)	EPA (9/09/98)	NMED	LANL (6/04/98)	EPA (9/08/98)	NMED	LANL (9/08/98)
Aluminum	5000		37000				1170	NA	NA	62.3	NA	NA	253	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		2.2	NA	NA	4.5	NA	NA	<1.8	NA	NA
Barium		2000	2600	2000	1000		42.1	NA	NA	62.8	NA	NA	111	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.50	NA	NA	<0.50	NA	NA
Boron	5000		3300				96.2	NA	NA	269	NA	NA	80.0	NA	NA
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<4.2	NA	NA	<2.7	NA	NA	<2.7	NA	NA
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[g]/ 1000[i]	1400				7.1	NA	NA	10.9	NA	NA	<2.9	NA	NA
Iron		300[i]	11000				596	NA	NA	54.2	NA	NA	425	NA	NA
Lead	400	15[j]	15		50		<1.6	NA	NA	<0.90	NA	NA	2.0	NA	<3
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[i]	1700				4.5	NA	NA	49.4	NA	NA	13.5	NA	NA
Mercury	10	2	11	2	2	0.012	<0.10	NA	<0.20	<0.10	NA	<0.20	<0.10	NA	NA
Molybdenum			180				<7.3	NA	NA	<8.4	NA	NA	<8.4	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.6	NA	<2	<2.2	NA	<2	<2.2	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Unfiltered Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Springs								
							LA Spring (San Ildefonso Land)			Otowi Spring (San Ildefonso Land)			Sacred Spring (San Idefonso Land)		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/08/98)	NMED	LANL	EPA (9/08/98)	NMED	LANL (9/08/98)	EPA (9/08/98)	NMED	LANL (9/08/98)
Aluminum	5000		37000				31.9	NA	NA	32.6	NA	NA	417	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100		<1.8	NA	NA	2.4	NA	NA	2.1	NA	NA
Barium		2000	2600	2000	1000		38.6	NA	NA	146	NA	NA	72.9	NA	NA
Beryllium		4	73	4			<0.50	NA	NA	<0.50	NA	NA	<0.50	NA	NA
Boron	5000		3300				42.2	NA	NA	86.6	NA	NA	60.6	NA	NA
Cadmium	200	5	18	5	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50		<5.1	NA	NA	<2.7	NA	NA	<2.7	NA	NA
Cobalt	1000		2200				NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400				<2.9	NA	NA	<2.9	NA	NA	<2.9	NA	NA
Iron		300[‡]	11000				30.9	NA	NA	28.4	NA	NA	284	NA	NA
Lead	400	15[†]	15		50		<0.90	NA	NA	<0.90	NA	NA	<0.90	NA	<3
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				0.75	NA	NA	2.0	NA	NA	13.4	NA	NA
Mercury	10	2	11	2	2	0.012	<0.10	NA	NA	<0.10	NA	<0.20	<0.10	NA	NA
Molybdenum			180				<8.4	NA	NA	<8.4	NA	NA	<8.4	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50	2	<2.2	NA	NA	<2.2	NA	2	<2.2	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260				NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000				NA	NA	NA	NA	NA	NA	NA	NA	NA

*	All results reported in micrograms per liter ($\mu g/\ell$).
†	Action level (value at which treatment for constituent must occur)
‡	Secondary water standard
a	National Pollutant Discharge Elimination System (NPDES) permit limits for discharges from the TA-50 Radioactive Wastewater Treatment Plant.
b	EPA Maximum Contaminant Levels (EPA MCL) for inorganic chemicals in the water supply.
c	EPA Region 6 Human Health Medium-Specific Screening Levels (EPA SL) for inorganic chemicals in tap water.
d	New Mexico Maximum Contaminant Levels (NM MCL) for inorganic chemicals in community and nontransient, non-community water systems.
e	New Mexico Water Quality Control Commission (NM WQCC) standards for groundwater of less than 10,000 mg/ℓ total dissolved solids (TDS) concentration or less.
f	New Mexico Standards for Interstate and Intrastate Streams for Wildlife Habitat Limits (NM WHL)
NA	Not Analyzed

Summary of Dissolved Inorganic Analysis Results

I. Introduction

Samples collected for inorganic analysis were analyzed for dissolved metals (thirteen analytes) according to SW-846, Method 6010 and Method 7470 (mercury). Water quality standards set by the U.S. Environmental Protection Agency (EPA) and the State of New Mexico are included on each of the tables for easy comparison and reference. EPA guidelines included for reference and comparison include the National Pollutant Discharge Elimination System (NPDES) permit limits for discharges from the TA-50 Radioactive Wastewater Treatment Plant, the EPA Maximum Contaminant Levels (EPA MCL) for inorganic chemicals in the water supply, and the EPA Region 6 Human Health Medium-Specific Screening Levels (EPA SL) for inorganic chemicals in tap water. State guidelines included for reference and comparison include the New Mexico Maximum Contaminant Levels (NM MCL) for inorganic chemicals in community and non-transient, non-community water systems, the New Mexico Water Quality Control Commission (NM WQCC) standards for groundwater of less than 10,000 mg/ℓ total dissolved solids (TDS) concentration or less, and the New Mexico Standards for Interstate and Intrastate Streams for Wildlife Habitat Limits (NM WHL). Also included on each table are the analytical results for samples collected by the New Mexico Environment Department (NMED) Oversight Bureau and by Los Alamos National Laboratory (LANL). All concentrations are reported in micrograms per liter (μg/ℓ). These data have not been validated and should be considered as preliminary. Sample results that exceeded any of the referenced water quality standards are noted below.

II. Results

The following samples exceeded the limits for:

<u>NPDES Limits</u>

None (for TA-50 effluent samples only)

<u>EPA MCL</u>

MCO-2 (iron and manganese), MCO-6 (lead), MCO-7.5B (lead), MT-3 (lead), LAO-0.3 (lead), LAO-0.6 (manganese), LAO-0.91 (iron), LAO-1.6g (iron), LAO-2 (manganese), LAUZ-2 (iron and manganese), APCO-1 (iron and manganese), TW-2A (iron and manganese), DP Spring (iron), and Bayo-2 (iron and manganese).

<u>EPA SL</u>

MCO-2 (molybdenum), MCO-6 (lead), MT-3 (lead), LAO-0.3 (lead), LAO-1.6g (molybdenum), and LAO-3A (molybdenum).

NM MCL

None

NM WQCC

LAO-0.3 (lead)

NM WHL

MCO-2 (aluminum), LAO-0.3 (lead)

Summary of Dissolved Inorganic Analysis Results*

Analyte	Sample Location, Result, and Date														
	Reference						TA-50 Effluent (Mortandad Canyon)								
							TA-50			TA-502A			TA-502B		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/19/98)	NMED	LANL	EPA (8/28/98)	NMED (8/28/98)	LANL	EPA (8/28/98)	NMED (8/28/98)	LANL (8/28/98)
Aluminum	5000		37000			5000	57.0	NA	NA	312	200	NA	177	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	<20	NA	NA	NA	NA
Arsenic	40	50		50	100	200	<2.0	NA	NA	<2.0	<10	NA	<2.0	NA	NA
Barium		2000	2600	2000	1000		35	NA	NA	9.1	<100	NA	30.6	<100	30
Beryllium		4	73	4			0.68	NA	NA	0.64	<5	NA	<0.60	<5	<3
Boron	5000		3300			5000	222	NA	NA	106	<100	NA	103	<100	66
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	<5	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	NA	NA	5.2	<10	NA	<4.2	<10	<7
Cobalt	1000		2200			1000	NA	NA	NA	NA	<10	NA	NA	<100	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	41.1	NA	NA	155	110	NA	100	100	101
Iron		300[‡]	11000				61.2	NA	NA	123	100	NA	103	**<100**	<40
Lead	400	15[†]	15		50	100	<1.6	NA	NA	6.1	<3	NA	2.7	<3	4
Lithium			730				NA	NA	NA	NA	130	NA	NA	NA	NA
Manganese		50[‡]	1700				11.2	NA	NA	6.4	<10	NA	10.6	**<10**	8
Mercury	10	2	11	2	2		<0.10	NA	NA	0.29	NA	NA	<0.10	NA	NA
Molybdenum			180				24.4	NA	NA	118	80	NA	143	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	40	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	15000	NA	NA	14000	NA
Silver			180		50		NA	NA	NA	NA	<10	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	50	NA	NA	70	NA
Thallium		2		2			NA	NA	NA	NA	<10	NA	NA	<10	NA
Tin			22000				NA	NA	NA	NA	<20	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	<10	NA	NA	<10	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	<20	NA	NA	<20	NA

Summary of Dissolved Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Bayo Canyon Sanitary Waste Water Treatment Plant Effluent					
							Bayo-1 (outfall)			Bayo-2 (intersection w/SR-502)		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/01/98)	NMED	LANL	EPA (9/03/98)	NMED (9/03/98)	LANL (9/03/98)
Aluminum	5000		37000			5000	167	NA	NA	<23.6	200	<50
Antimony		6	15	6			NA	NA	NA	NA	<10	NA
Arsenic	40	50		50	100	200	5.4	NA	NA	9.0	20	8
Barium		2000	2600	2000	1000		8.6	NA	NA	18.3	28	20
Beryllium		4	73	4			<0.60	NA	NA	<0.60	<1	<3
Boron	5000		3300			5000	257	NA	NA	324	360	303
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	<1	NA
Chromium	5100	100		100	50	1000	<4.2	NA	NA	<4.2	<50	<7
Cobalt	1000		2200			1000	NA	NA	NA	NA	7	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	23.2	NA	NA	8.2	<20	<10
Iron		300[‡]	11000				243	NA	NA	**614**	**800**	**593**
Lead	400	15[†]	15		50	100	6.4	NA	NA	2.4	<5	3
Lithium			730				NA	NA	NA	NA	23	NA
Manganese		50[‡]	1700				16.9	NA	NA	**299**	**330**	**299**
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				<7.3	NA	NA	<7.3	<10	<30
Nickel		100	730	100			NA	NA	NA	NA	10	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	<20	NA
Silicon							NA	NA	NA	NA	36400	NA
Silver			180		50		NA	NA	NA	NA	<0.5	NA
Strontium			22000				NA	NA	NA	NA	90	NA
Thallium		2		2			NA	NA	NA	NA	<20	NA
Tin			22000				NA	NA	NA	NA	<300	NA
Vanadium	100		260			100	NA	NA	NA	NA	10	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	20	NA

Summary of Dissolved Inorg Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Mortandad Canyon								
							MCO-2			MCO-3			MCO-4B		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/19/98)	NMED	LANL	EPA (8/20/98)	NMED	LANL (8/20/98)	EPA (8/20/98)	NMED	LANL (5/27/98)
Aluminum	5000		37000			5000	**6080**	NA	NA	61.0	NA	387	150	NA	<50
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	6.8	NA	NA	2.0	NA	<2	<2.0	NA	<2
Barium		2000	2600	2000	1000		128	NA	NA	62.4	NA	65	78.8	NA	87
Beryllium		4	73	4			1.0	NA	NA	<0.60	NA	<3	<0.60	NA	<3
Boron	5000		3300			5000	93.4	NA	NA	220	NA	170	113	NA	64
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	30.6	NA	NA	<4.2	NA	<7	<4.2	NA	<7
Cobalt	1000		2200			1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<6.2	NA	NA	17.0	NA	15	<6.2	NA	<10
Iron		300[‡]	11000				**9090**	NA	NA	34.7	NA	<40	71.5	NA	<40
Lead	400	15[†]	15		50	100	<1.6	NA	NA	<1.6	NA	<3	<1.6	NA	<3
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				**1240**	NA	NA	3.9	NA	<2	2.5	NA	<2
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				**962**	NA	NA	156	NA	157	127	NA	122
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Dissolved Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Mortandad Canyon								
							MCO-5			MCO-6			MCO-7		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/20/98)	NMED	LANL (5/27/98)	EPA (8/21/98)	NMED (8/21/98)	LANL	EPA (8/21/98)	NMED (8/21/98)	LANL
Aluminum	5000		37000			5000	121	NA	61	96.8	<200	NA	365	<200	NA
Antimony		6	15	6			NA	NA	NA	NA	<20	NA	NA	<20	NA
Arsenic	40	50		50	100	200	<2.0	NA	<2	<2.0	<10	NA	<2.0	<10	NA
Barium		2000	2600	2000	1000		91.6	NA	87	88.4	<100	NA	187	200	NA
Beryllium		4	73	4			<0.60	NA	<3	<0.60	<5	NA	<0.60	<5	NA
Boron	5000		3300			5000	114	NA	77	90.9	<100	NA	107	<100	NA
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	<5	NA	NA	<5	NA
Chromium	5100	100		100	50	1000	<4.2	NA	<7	<4.2	<10	NA	<4.2	<10	NA
Cobalt	1000		2200			1000	NA	NA	NA	NA	<10	NA	NA	<10	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	9.0	NA	<10	<6.2	<10	NA	<6.2	<10	NA
Iron		300[‡]	11000				56.6	NA	<40	63.3	<100	NA	213	**<100**	NA
Lead	400	15[†]	15		50	100	<1.6	NA	<3	**43.3**	<3	NA	11.1	<3	NA
Lithium			730				NA	NA	NA	NA	20	NA	NA	**<10**	NA
Manganese		50[‡]	1700				2.9	NA	<2	2.4	<10	NA	2.9	**<10**	NA
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				110	NA	129	126	120	NA	117	100	NA
Nickel		100	730	100			NA	NA	NA	NA	<20	NA	NA	<20	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	<5	NA	NA	<5	NA
Silicon							NA	NA	NA	NA	16000	NA	NA	16000	NA
Silver			180		50		NA	NA	NA	NA	<10	NA	NA	<10	NA
Strontium			22000				NA	NA	NA	NA	110	NA	NA	130	NA
Thallium		2		2			NA	NA	NA	NA	<10	NA	NA	<10	NA
Tin			22000				NA	NA	NA	NA	<20	NA	NA	<20	NA
Vanadium	100		260			100	NA	NA	NA	NA	<10	NA	NA	<10	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	<20	NA	NA	<20	NA

Summary of Dissolved Inorg[illegible] Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Mortandad Canyon								
							MCO-7.5B			MCWB-6.5E			MCWB-7.7B		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/25/98)	NMED	LANL	EPA (8/24/98)	NMED	LANL	EPA (8/26/98)	NMED	LANL
Aluminum	5000		37000			5000	136	NA	NA	36.8	NA	NA	40.0	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	<2.0	NA	NA	<2.0	NA	NA	<2.0	NA	NA
Barium		2000	2600	2000	1000		160	NA	NA	182	NA	NA	134	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300			5000	86.8	NA	NA	104	NA	NA	97.2	NA	NA
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	NA	NA	4.2	NA	NA	<4.2	NA	NA
Cobalt	1000		2200			1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	13.0	NA	NA	6.2	NA	NA	<6.2	NA	NA
Iron		300[‡]	11000				128	NA	NA	45.0	NA	NA	74.5	NA	NA
Lead	400	15[†]	15		50	100	<1.6	NA	NA	1.6	NA	NA	3.2	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				2.2	NA	NA	0.86	NA	NA	0.94	NA	NA
Mercury	10	2	11	2	2		<0.10	NA	NA	0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				79.8	NA	NA	86.8	NA	NA	30.0	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Dissolved Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Mortandad Canyon					
							MT-3			MT-4		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/27/98)	NMED	LANL (9/04/98)	EPA (8/26/98)	NMED	LANL (5/14/98)
Aluminum	5000		37000			5000	87.8	NA	66	85.2	NA	250
Antimony		6	15	6			NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	<2.0	NA	<2	<2.0	NA	<2
Barium		2000	2600	2000	1000		146	NA	148	105	NA	110
Beryllium		4	73	4			<0.60	NA	<3	<0.60	NA	<3
Boron	5000		3300			5000	102	NA	86	125	NA	81
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	NA	<7	4.5	NA	<7
Cobalt	1000		2200			1000	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<6.2	NA	<10	8.2	NA	<10
Iron		300[‡]	11000				60.3	NA	250	277	NA	74
Lead	400	15[†]	15		50	100	**15.2**	NA	<3	10.5	NA	<3
Lithium			730				NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				1.0	NA	12	3.0	NA	3
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				58.5	NA	68	33.9	NA	<30
Nickel		100	730	100			NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	NA	NA

Summary of Dissolved Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Los Alamos Canyon								
							LAO-B			LAO-0.3			LAO-0.6		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/31/98)	NMED	LANL	EPA (9/01/98)	NMED	LANL	EPA (8/31/98)	NMED	LANL
Aluminum	5000		37000			5000	218	NA	NA	978	NA	NA	<23.6	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	<2.0	NA	NA	<2.0	NA	NA	<2.0	NA	NA
Barium		2000	2600	2000	1000		29.1	NA	NA	44.1	NA	NA	49.7	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300			5000	34.4	NA	NA	39.2	NA	NA	44.0	NA	NA
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	NA	NA	<4.2	NA	NA	<4.2	NA	NA
Cobalt	1000		2200			1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	7.0	NA	NA	<6.2	NA	NA	<6.2	NA	NA
Iron		300[‡]	11000				112	NA	NA	14.0	NA	NA	16.8	NA	NA
Lead	400	15[†]	15		50	100	6.6	NA	NA	**480**	NA	NA	7.6	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				<2.0	NA	NA	6.6	NA	NA	**114**	NA	NA
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				7.3	NA	NA	8.3	NA	NA	<7.3	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Dissolved Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Los Alamos Canyon								
							LAO-0.91			LAO-1.2			LAO-1.6g		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/03/98)	NMED (9/03/98)	LANL	EPA (8/31/98)	NMED (8/31/98)	LANL	EPA (9/01/98)	NMED	LANL
Aluminum	5000		37000			5000	612	500	NA	152	200	NA	912	NA	NA
Antimony		6	15	6			NA	<10	NA	NA	<10	NA	NA	NA	NA
Arsenic	40	50		50	100	200	2.3	20	NA	<2.0	<10	NA	<2.0	NA	NA
Barium		2000	2600	2000	1000		36.0	48	NA	39.0	45	NA	49.0	NA	NA
Beryllium		4	73	4			<0.60	<1	NA	<0.60	<1	NA	<0.60	NA	NA
Boron	5000		3300			5000	40.3	<50	NA	31.9	190	NA	63.8	NA	NA
Cadmium	200	5	18	5	10	50	NA	<1	NA	NA	<1	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	<50	NA	12.0	<50	NA	<4.2	NA	NA
Cobalt	1000		2200			1000	NA	<10	NA	NA	<1	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<6.2	<20	NA	<6.2	<20	NA	<6.2	NA	NA
Iron		300[‡]	11000				**329**	100	NA	72.9	<100	NA	**446**	NA	NA
Lead	400	15[†]	15		50	100	5.9	<5	NA	4.0	5	NA	7.0	NA	NA
Lithium			730				NA	10	NA	NA	5	NA	NA	NA	NA
Manganese		50[‡]	1700				2.4	<3	NA	0.94	<3	NA	3.0	NA	NA
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				9.2	<10	NA	8.5	<10	NA	**182**	NA	NA
Nickel		100	730	100			NA	<5	NA	NA	5	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	<20	NA	NA	<20	NA	NA	NA	NA
Silicon							NA	21200	NA	NA	17600	NA	NA	NA	NA
Silver			180		50		NA	<0.5	NA	NA	<0.5	NA	NA	NA	NA
Strontium			22000				NA	100	NA	NA	110	NA	NA	NA	NA
Thallium		2		2			NA	<20	NA	NA	<20	NA	NA	NA	NA
Tin			22000				NA	<300	NA	NA	<300	NA	NA	NA	NA
Vanadium	100		260			100	NA	<10	NA	NA	<10	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	<20	NA	NA	<20	NA	NA	NA	NA

Summary of Dissolved Inorg Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Los Alamos Canyon								
							LAO-2			LAO-3A			LAO-4.5C		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/31/98)	NMED	LANL (8/31/98)	EPA (8/31/98)	NMED	LANL (8/31/98)	EPA (8/31/98)	NMED	LANL (5/14/98)
Aluminum	5000		37000			5000	577	NA	495	195	NA	250	248	NA	270
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	<2.0	NA	<2	<2.0	NA	2	<2.0	NA	<2
Barium		2000	2600	2000	1000		52.6	NA	53	47.1	NA	49	40.2	NA	35
Beryllium		4	73	4			<0.60	NA	<3	<0.60	NA	<3	<0.60	NA	<3
Boron	5000		3300			5000	103	NA	59	57.0	NA	60	77.3	NA	<20
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	NA	<7	<4.2	NA	<7	<4.2	NA	8
Cobalt	1000		2200			1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<6.2	NA	<10	<6.2	NA	<10	<6.2	NA	<10
Iron		300[‡]	11000				5.0	NA	250	111	NA	112	139	NA	54
Lead	400	15[†]	15		50	100	2.6	NA	<3	3.2	NA	**61**	5.7	NA	<3
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				**149**	NA	<2	2.0	NA	<2	13.7	NA	<2
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				149	NA	153	**317**	NA	**328**	16.2	NA	<30
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Dissolved Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Los Alamos Canyon					
							LAO-5			LLAO-5		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (8/31/98)	NMED	LANL	EPA (9/08/98)	NMED	LANL
Aluminum	5000		37000			5000	320	NA	NA	34.9	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	<2.0	NA	NA	<1.8	NA	NA
Barium		2000	2600	2000	1000		27.7	NA	NA	228	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.50	NA	NA
Boron	5000		3300			5000	64.7	NA	NA	103	NA	NA
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	NA	NA	<2.7	NA	NA
Cobalt	1000		2200			1000	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<6.2	NA	NA	<2.9	NA	NA
Iron		300[‡]	11000				143	NA	NA	32.6	NA	NA
Lead	400	15[†]	15		50	100	4.5	NA	NA	5.8	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				1.9	NA	NA	2.3	NA	NA
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				10.4	NA	NA	<8.4	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	NA	NA

Summary of Dissolved Inorg Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						DP Canyon					
							LAUZ-1			LAUZ-2		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/04/98)	NMED	LANL	EPA (9/04/98)	NMED	LANL
Aluminum	5000		37000			5000	115	NA	NA	<23.6	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	<2.0	NA	NA	3.2	NA	NA
Barium		2000	2600	2000	1000		74.2	NA	NA	95.2	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300			5000	55.7	NA	NA	79.0	NA	NA
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	NA	NA	<4.2	NA	NA
Cobalt	1000		2200			1000	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<6.2	NA	NA	<6.2	NA	NA
Iron		300[‡]	11000				72.0	NA	NA	**879**	NA	NA
Lead	400	15[†]	15		50	100	1.7	NA	NA	1.8	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				48.8	NA	NA	**577**	NA	NA
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				7.7	NA	NA	<7.3	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	NA	NA

Summary of Dissolved Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Pueblo Canyon								
							APCO-1			POI-4			TW-2A		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/03/98)	NMED	LANL (9/03/98)	EPA (9/02/98)	NMED	LANL	EPA (9/01/98)	NMED	LANL
Aluminum	5000		37000			5000	33.8	NA	<50	<23.6	NA	NA	<23.6	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	6.6	NA	7	3.1	NA	NA	<2.0	NA	NA
Barium		2000	2600	2000	1000		43.3	NA	45	89.4	NA	NA	53.6	NA	NA
Beryllium		4	73	4			<0.60	NA	<3	<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300			5000	314	NA	273	197	NA	NA	136	NA	NA
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	NA	<7	<4.2	NA	NA	<4.2	NA	NA
Cobalt	1000		2200			1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<6.2	NA	<10	8.3	NA	NA	<6.2	NA	NA
Iron		300[‡]	11000				**452**	NA	**455**	6.4	NA	NA	**4850**	NA	NA
Lead	400	15[†]	15		50	100	7.1	NA	<3	5.3	NA	NA	6.2	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				**942**	NA	**967**	1.5	NA	NA	**128**	NA	NA
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				<7.3	NA	<30	<7.3	NA	NA	<7.3	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Dissolved Inorg[illegible] Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Main Aquifer Wells					
							TW-1 (Pueblo Canyon)			TW-3 (Los Alamos Canyon)		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/01/98)	NMED	LANL	EPA (9/01/98)	NMED	LANL
Aluminum	5000		37000			5000	<23.6	NA	NA	<23.6	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	<2.0	NA	NA	<2.0	NA	NA
Barium		2000	2600	2000	1000		72.7	NA	NA	23.9	NA	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.60	NA	NA
Boron	5000		3300			5000	84.1	NA	NA	49.6	NA	NA
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	NA	NA	4.2	NA	NA
Cobalt	1000		2200			1000	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<6.2	NA	NA	<6.2	NA	NA
Iron		300[‡]	11000				31.0	NA	NA	99.6	NA	NA
Lead	400	15[†]	15		50	100	11.9	NA	NA	5.7	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				33.5	NA	NA	8.4	NA	NA
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				<7.3	NA	NA	<7.3	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	NA	NA

Summary of Dissolved Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date											
	Reference						Main Aquifer Wells					
							TW-4 (Pueblo Canyon)			TW-8 (Mortandad Canyon)		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/01/98)	NMED	LANL	EPA (9/02/98)	NMED (9/02/98)	LANL
Aluminum	5000		37000			5000	<23.6	NA	NA	<23.6	<200	NA
Antimony		6	15	6			NA	NA	NA	NA	<20	NA
Arsenic	40	50		50	100	200	<2.0	NA	NA	<2.0	<10	NA
Barium		2000	2600	2000	1000		55.8	NA	NA	6.8	<100	NA
Beryllium		4	73	4			<0.60	NA	NA	<0.60	<5	NA
Boron	5000		3300			5000	24.5	NA	NA	36.0	<100	NA
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	<5	NA
Chromium	5100	100		100	50	1000	<4.2	NA	NA	<4.2	<10	NA
Cobalt	1000		2200			1000	NA	NA	NA	NA	<10	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<6.2	NA	NA	<6.2	<10	NA
Iron		300[‡]	11000				178	NA	NA	57.8	<100	NA
Lead	400	15[†]	15		50	100	12.1	NA	NA	4.8	<3	NA
Lithium			730				NA	NA	NA	NA	20	NA
Manganese		50[‡]	1700				33.8	NA	NA	3.7	<10	NA
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				<7.3	NA	NA	<7.3	<10	NA
Nickel		100	730	100			NA	NA	NA	NA	<20	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	30000	NA
Silver			180		50		NA	NA	NA	NA	<10	NA
Strontium			22000				NA	NA	NA	NA	50	NA
Thallium		2		2			NA	NA	NA	NA	<20	NA
Tin			22000				NA	NA	NA	NA	<20	NA
Vanadium	100		260			100	NA	NA	NA	NA	<10	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	740	NA

Summary of Dissolved Inorganic Analysis Results (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Springs								
							DP Spring (DP Canyon)			Basalt Spring (San Ildefonso Land)			La Mesita Spring (San Idefonso Land)		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/02/98)	NMED (9/02/98)	LANL (9/02/98)	EPA (9/09/98)	NMED	LANL (6/04/98)	EPA (9/08/98)	NMED	LANL
Aluminum	5000		37000			5000	707	1600	272	31.2	NA	<50	28.8	NA	NA
Antimony		6	15	6			NA	<10	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	2.0	<10	2	3.7	NA	4	<1.8	NA	NA
Barium		2000	2600	2000	1000		40.8	51	41	62.6	NA	70	99.5	NA	NA
Beryllium		4	73	4			<0.60	<1	<3	<0.50	NA	<3	<0.50	NA	NA
Boron	5000		3300			5000	62.9	<50	43	262	NA	228	71.4	NA	NA
Cadmium	200	5	18	5	10	50	NA	<1	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	<4.2	<50	<7	<2.7	NA	<7	<2.7	NA	NA
Cobalt	1000		2200			1000	NA	<1	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<6.2	<20	<10	14.8	NA	<10	<2.9	NA	NA
Iron		300[‡]	11000				376	600	177	38.1	NA	130	34.2	NA	NA
Lead	400	15[†]	15		50	100	7.2	<5	<3	5.1	NA	<3	4.3	NA	NA
Lithium			730				NA	11	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				8.3	4	5	0.91	NA	4	1.[illegible]	NA	NA
Mercury	10	2	11	2	2		<0.10	NA	NA	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				<7.3	<10	<30	<8.4	NA	<30	<8.4	NA	NA
Nickel		100	730	100			NA	<5	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	<20	NA	NA	NA	NA	NA	NA	NA
Silicon							NA	9200	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	<0.5	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	100	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	<20	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	<300	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	<10	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	<20	NA	NA	NA	NA	NA	NA	NA

Summary of Dissolved Inorganic Analysis Results* (continued)

Analyte	Sample Location, Result, and Date														
	Reference						Springs								
							LA Spring (San Ildefonso Land)			Otowi Spring (San Ildefonso Land)			Sacred Spring (San Idefonso Land)		
	NPDES limits[a]	EPA MCL[b]	EPA SL[c]	NM MCL[d]	NM WQCC[e]	NM WHL[f]	EPA (9/08/98)	NMED	LANL	EPA (9/08/98)	NMED	LANL (9/08/98)	EPA (9/08/98)	NMED	LANL
Aluminum	5000		37000			5000	<20.6	NA	NA	26.0	NA	<50	28.3	NA	NA
Antimony		6	15	6			NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	40	50		50	100	200	<1.8	NA	NA	3.2	NA	3	<1.8	NA	NA
Barium		2000	2600	2000	1000		37.7	NA	NA	144	NA	144	72.4	NA	NA
Beryllium		4	73	4			<0.50	NA	NA	<0.50	NA	<3	<0.50	NA	NA
Boron	5000		3300			5000	36.2	NA	NA	119	NA	57	70.5	NA	NA
Cadmium	200	5	18	5	10	50	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5100	100		100	50	1000	3.8	NA	NA	<2.7	NA	<7	3.0	NA	NA
Cobalt	1000		2200			1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1600	1300[†]/ 1000[‡]	1400			500	<2.9	NA	NA	<2.9	NA	<10	<2.9	NA	NA
Iron		300[‡]	11000				22.7	NA	NA	33.8	NA	<40	28.0	NA	NA
Lead	400	15[†]	15		50	100	5.7	NA	NA	4.5	NA	<3	4.4	NA	NA
Lithium			730				NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		50[‡]	1700				2.2	NA	NA	1.7	NA	<2	6.4	NA	NA
Mercury	10	2	11	2	2		0.10	NA	NA	<0.10	NA	NA	<0.10	NA	NA
Molybdenum			180				<8.4	NA	NA	<8.4	NA	<30	<8.4	NA	NA
Nickel		100	730	100			NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	50	50	180	50	50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Silicon							NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver			180		50		NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		2		2			NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin			22000				NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	100		260			100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	95400		11000			25000	NA	NA	NA	NA	NA	NA	NA	NA	NA

*	All results reported in micrograms per liter ($\mu g/\ell$).
†	Action level (value at which treatment for constituent must occur)
‡	Secondary water standard
a	National Pollutant Discharge Elimination System (NPDES) permit limits for discharges from the TA-50 Radioactive Wastewater Treatment Plant.
b	EPA Maximum Contaminant Levels (EPA MCL) for inorganic chemicals in the water supply.
c	EPA Region 6 Human Health Medium-Specific Screening Levels (EPA SL) for inorganic chemicals in tap water.
d	New Mexico Maximum Contaminant Levels (NM MCL) for inorganic chemicals in community and nontransient, non-community water systems.
e	New Mexico Water Quality Control Commission (NM WQCC) standards for groundwater of less than 10,000 mg/ℓ total dissolved solids (TDS) concentration or less.
f	New Mexico Standards for Interstate and Intrastate Streams for Wildlife Habitat (NM WHL).
NA	Not Analyzed

Summary of Radionuclide Results

I. Introduction

Samples were collected and analyzed for Isotopic Uranium (U), Gross Alpha (α), Gross Beta (β), Strontium 90 (Sr-90), and Tritium (H^3). Water quality standards set by the U.S. Environmental Protection Agency (EPA), State of New Mexico, and Department of Energy (DOE) are included on each of the tables for easy comparison and reference. EPA guidelines included for reference and comparison include the EPA proposed Maximum Contaminant Levels (EPA MCLs) and proposed Screening Levels (EPA SLs) for radiochemicals in the water supply. State guidelines included for reference and comparison include the New Mexico Maximum Contaminant Levels (NM MCLs) for beta particle and photon radioactivity from manmade radionuclides in community water systems and the New Mexico Standards for Interstate and Intrastate Streams for Wildlife Habitat Limits (NM WHL). DOE guidelines included for reference and comparison include the DOE Derived Concentration Guides (DOE DCG) for drinking water systems and for water ingestion in uncontrolled areas. Also included on each table are the analytical results of samples collected by the New Mexico Environment Department (NMED) Oversight Bureau and by Los Alamos National Laboratory (LANL). All concentrations are reported in pico Curies per liter (pCi/L). These data have not been validated and should be considered as preliminary. Sample results that exceeded any of the referenced water quality standards are noted below.

II. Results

Water quality standards were exceeded by the following sample results:

<u>EPA MCLs</u>

TA-50 (α and Sr-90), TA-502A (α), TA-502B (α), MCO-3 (α and Sr-90), MCO-4B (Sr-90), MCO-5 (α and Sr-90), MCO-6 (α and Sr-90), MCWB-7.7B (H^3), LAO-3A (Sr-90), LAUZ-1 (Sr-90), LAUZ-2 (Sr-90), and DP Spring (Sr-90)

<u>EPA SLs</u>

TA-50 (α and β), TA-502A (α and β), TA-502B (α and β), MCO-3 (α and β), MCO-4B (α and β), MCO-5 (α and β), MCO-6 (α and β), MCO-7 (α), MT-3 (α), LAO-B (α), LAO-0.6 (α), LAO-1.2 (α), LAO-3A (α and β), LAUZ-1 (α and β), LAUZ-2 (β), DP Spring (β), TW-2A (α), TW-1 (α), and La Mesita Spring (α)

NM MCLs

TA-50 (α and Sr-90), TA-502A (α), TA-502B (α), MCO-3 (α and Sr-90), MCO-4B (Sr-90), MCO-5 (α and Sr-90), MCO-6 (α and Sr-90), MCWB-7.7B (H^3), LAO-3A (Sr-90), LAUZ-1 (Sr-90), LAUZ-2 (Sr-90), and DP Spring (Sr-90)

NM WHL

TA-50 (α), TA-502A (α), TA-502B (α)

DOE DCG (drinking water systems)

TA-502A (Americium-241, Plutonium-238, Plutonium-239/240), TA-502B (Americium-241, Plutonium-238, Plutonium-239/240), MCO-6 (Sr-90), LAUZ-1 (Sr-90), LAUZ-2 (Sr-90), and DP Spring (Sr-90)

DOE DCG (water ingestion in uncontrolled areas)

TA-502A (Americium-241, Plutonium-238, Plutonium-239/240)

Summary of Radionuclide Results*

Parameter	Sample Location and Date Collected														
	Reference						TA-50 Radioactive Waste Water Treatment Plant Effluent (Mortandad Canyon)								
							TA-50			TA-502A			TA-502B		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (8/19/98)	NMED	LANL	EPA (8/28/98)	NMED (8/28/98)	LANL	EPA (8/28/98)	NMED (8/28/98)	LANL (8/28/98)
Uranium-234					500	20	0.44	NA	NA	0.95	1.03	NA	1.04	NA	NA
Uranium-238					600	24	0.29	NA	NA	0.79	1.10	NA	0.84	NA	NA
Uranium-235/236					600	24	-0.017	NA	NA	<0.72	0.034	NA	0.11	NA	NA
Gross Alpha	15	5	15	15			**31.9**	NA	NA	**133**	**160**	NA	**49.5**	**20.9**	**200.413**
Gross Beta		50					**141**	NA	NA	**489**	**391**	NA	**410**	**479**	**294.318**
Strontium-90	8		8		1000	40	**9.83**	NA	NA	0.39	**14.7**	NA	2.12	**12.0**	**10.985**
Tritium (H^3)	20000		20000	20000	2000000	80000	8170	NA	NA	4800	NA	NA	4290	4640	NA
Actinium-227							NA	NA	NA	NA	NA	NA	NA	NA	NA
Americium-241					30	1.2	NA	NA	NA	NA	**58.7**	NA	NA	**4.2**	NA
Neptunium-237							NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	**216**	NA	NA	**10.7**	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	**72.7**	NA	NA	**2.96**	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected											
	Reference						Bayo Canyon Sanitary Waste Water Treatment Plant Effluent					
							Bayo-1 (outfall)			Bayo-2 (Intersection w/SR 502)		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (9/01/98)	NMED (9/01/98)	LANL	EPA (9/03/98)	NMED	LANL
Uranium-234					500	20	0.23	NA	NA	1.00	NA	NA
Uranium-238					600	24	0.38	NA	NA	0.18	NA	NA
Uranium-235/236					600	24	0.15	NA	NA	-0.037	NA	NA
Gross Alpha	15	5	15	15			3.39	<2.2	NA	1.08	NA	NA
Gross Beta		50					13.2	14.2	NA	8.04	NA	NA
Strontium-90	8		8		1000	40	-0.18	NA	NA	0.34	NA	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	26	NA	NA	22.3	NA	NA
Actinium-227							NA	0.3	NA	NA	<1.1	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA

Summary of Radionuclude Results* (continued)

Parameter	Sample Location and Date Collected														
	Reference						Mortandad Canyon								
							MCO-2			MCO-3			MCO-4B		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (8/19/98)	NMED (8/19/98)	LANL	EPA (8/20/98)	NMED (8/20/98)	LANL (8/20/98)	EPA (8/20/98)	NMED	LANL (5/27/98)
Uranium-234					500	20	0.75	0.35	NA	5.62	5.67	NA	1.43	NA	NA
Uranium-238					600	24	0.67	0.36	NA	2.07	2.25	NA	0.36	NA	NA
Uranium-235/236					600	24	0.17	0.046	NA	0.34	0.177	NA	0.030	NA	NA
Gross Alpha	15	5	15	15			3.30	NA	NA	**19.7**	NA	8.093	**12.7**	NA	-5.027
Gross Beta		50					5.36	NA	NA	**148**	NA	**89.417**	**118**	NA	**264.318**
Strontium-90	8		8		1000	40	0.44	0.79	NA	**28.1**	**47.2**	**45.925**	**32.4**	NA	**48.385**
Tritium (H^3)	20000		20000	20000	2000000	80000	105	11	NA	19200	19900	19211.25	8720	NA	12711.25
Actinium-227							NA	NA	NA	NA	NA	NA	NA	NA	NA
Americium-241					30	1.2	NA	0.028	NA	NA	0.425	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	0.011	NA	NA	0.70	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	0.034	NA	NA	0.145	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected														
	Reference						Mortandad Canyon								
							MCO-5			MCO-6			MCO-7		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (8/20/98)	NMED (8/20/98)	LANL (5/27/98)	EPA (8/21/98)	NMED (8/21/98)	LANL	EPA (8/21/98)	NMED (8/21/98)	LANL
Uranium-234					500	20	0.59	1.18	NA	3.23	1.46	NA	0.84	NA	NA
Uranium-238					600	24	0.37	0.48	NA	0.93	0.40	NA	0.32	NA	NA
Uranium-235/236					600	24	0.15	0.03	NA	0.08	0.059	NA	0.08	NA	NA
Gross Alpha	15	5	15	15			**15.1**	NA	-1.567	**14.2**	NA	NA	**7.29**	NA	NA
Gross Beta		50					**104**	NA	**162.318**	**111**	NA	NA	40.4	NA	NA
Strontium-90	8		8		1000	40	**19.0**	**35.1**	**35.955**	**63.5**	**31.7**	NA	0.58	0.89	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	11600	11800	14011.25	13300	13600	NA	17200	16800	NA
Actinium-227							NA	NA	NA	NA	NA	NA	NA	NA	NA
Americium-241					30	1.2	NA	1.10	NA	NA	**1.20**	NA	NA	NA	NA
Neptunium-237							NA	0.021	NA	NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	0.006	NA	NA	0.021	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	0.034	NA	NA	0.021	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected														
	Reference						Mortandad Canyon								
							MCO-7.5B			MCWB-6.5E			MCWB-7.7B		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (8/25/98)	NMED	LANL	EPA (8/24/98)	NMED	LANL	EPA (8/26/98)	NMED (8/26/98)	LANL
Uranium-234					500	20	0.54	NA	NA	1.14	NA	NA	0.65	0.90	NA
Uranium-238					600	24	0.41	NA	NA	0.47	NA	NA	0.44	0.74	NA
Uranium-235/236					600	24	0.12	NA	NA	0.16	NA	NA	0.08	0.023	NA
Gross Alpha	15	5	15	15			1.02	NA	NA	2.28	NA	NA	2.92	NA	NA
Gross Beta		50					30.9	NA	NA	31.8	NA	NA	38.4	NA	NA
Strontium-90	8		8		1000	40	0.28	NA	NA	1.66	NA	NA	0.12	<0.50	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	17800	NA	NA	12600	NA	NA	**27900**	NA	NA
Actinium-227							NA	NA	NA	NA	NA	NA	NA	NA	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected											
	Reference						Mortandad Canyon					
							MT-3			MT-4		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (8/27/98)	NMED (8/27/98)	LANL (9/04/98)	EPA (8/26/98)	NMED	LANL (5/14/98)
Uranium-234					500	20	0.60	0.83	NA	0.38	NA	NA
Uranium-238					600	24	0.83	0.85	NA	0.53	NA	NA
Uranium-235/236					600	24	0.10	0.053	NA	0.12	NA	NA
Gross Alpha	15	5	15	15			**5.52**	NA	1.483	4.62	NA	-0.747
Gross Beta		50					32.7	NA	27.217	35.8	NA	25.617
Strontium-90	8		8		1000	40	0.01	<0.55	0.465	-0.05	NA	0.439
Tritium (H^3)	20000		20000	20000	2000000	80000	17500	NA	18511.25	19200	NA	17811.25
Actinium-227							NA	NA	NA	NA	1.7	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected														
	Reference						Los Alamos Canyon								
							LAO-B			LAO-0.3			LAO-0.6		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (8/31/98)	NMED (8/31/98)	LANL	EPA (9/01/98)	NMED (9/01/98)	LANL	EPA (8/31/98)	NMED (8/31/98)	LANL
Uranium-234					500	20	0.21	NA	NA	0.28	NA	NA	0.24	NA	NA
Uranium-238					600	24	0.47	NA	NA	0.16	1.0	NA	0.32	1.2	NA
Uranium-235/236					600	24	0.10	NA	NA	0.05	NA	NA	0.12	NA	NA
Gross Alpha	15	5	15	15			**5.23**	NA	NA	-0.42	NA	NA	**6.94**	NA	NA
Gross Beta		50					6.13	NA	NA	3.70	NA	NA	7.65	NA	NA
Strontium-90	8		8		1000	40	0.51	NA	NA	0.31	NA	NA	0.29	NA	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	85.1	NA	NA	68.5	NA	NA	3100	NA	NA
Actinium-227							NA	1.2	NA	NA	NA	NA	NA	NA	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected														
	Reference						Los Alamos Canyon								
							LAO-0.91			LAO-1.2			LAO-1.6g		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (9/03/98)	NMED (9/03/98)	LANL	EPA (8/31/98)	NMED (8/31/98)	LANL	EPA (9/01/98)	NMED (9/01/98)	LANL
Uranium-234					500	20	0.26	NA	NA	0.14	NA	NA	0.71	NA	NA
Uranium-238					600	24	0.14	NA	NA	0.12	NA	NA	0.38	NA	NA
Uranium-235/236					600	24	0.04	NA	NA	0.038	NA	NA	0.02	NA	NA
Gross Alpha	15	5	15	15			0.31	NA	NA	**11.9**	<1.4	NA	0.32	NA	NA
Gross Beta		50					6.26	NA	NA	8.75	5.8	NA	3.94	NA	NA
Strontium-90	8		8		1000	40	1.29	NA	NA	0.31	NA	NA	0.12	NA	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	127	NA	NA	L	NA	NA	149	NA	NA
Actinium-227							NA	<1.1	NA	NA	0.7	NA	NA	<1.1	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected														
	Reference						Los Alamos Canyon								
							LAO-2			LAO-3A			LAO-4.5C		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (8/31/98)	NMED (8/31/98)	LANL (8/31/98)	EPA (8/31/98)	NMED (8/31/98)	LANL (8/31/98)	EPA (8/31/98)	NMED (8/31/98)	LANL (5/14/98)
Uranium-234					500	20	0.90	NA	NA	0.07	NA	NA	0.31	NA	NA
Uranium-238					600	24	0.16	NA	NA	0.22	NA	NA	0.98	NA	NA
Uranium-235/236					600	24	0.13	NA	NA	-0.008	NA	NA	0.17	NA	NA
Gross Alpha	15	5	15	15			3.42	NA	-0.327	**11.2**	NA	-0.717	2.86	NA	0.613
Gross Beta		50					37.1	NA	30.517	**80.4**	NA	**72.517**	9.71	NA	5.807
Strontium-90	8		8		1000	40	7.21	**14.1**	**13.57**	**15.2**	**35.1**	**33.88**	0.91	3.0	2.015
Tritium (H^3)	20000		20000	20000	2000000	80000	134	NA	461.25	99.8	NA	351.25	169	NA	221.25
Actinium-227							NA	1.5	NA	NA	0.8	NA	NA	0.3	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected											
	Reference						Los Alamos Canyon					
							LAO-5			LLAO-5		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (8/31/98)	NMED (8/31/98)	LANL	EPA (9/08/98)	NMED	LANL
Uranium-234					500	20	0.22	NA	NA	1.78	NA	NA
Uranium-238					600	24	0.32	0.8	NA	1.26	NA	NA
Uranium-235/236					600	24	0.11	NA	NA	0.057	NA	NA
Gross Alpha	15	5	15	15			1.35	NA	NA	3.25	NA	NA
Gross Beta		50					7.07	NA	NA	5.28	NA	NA
Strontium-90	8		8		1000	40	0.60	NA	NA	0.26	NA	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	161	NA	NA	123	NA	NA
Actinium-227							NA	NA	NA	NA	NA	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected											
	Reference						DP Canyon					
							LAUZ-1			LAUZ-2		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (9/04/98)	NMED (9/04/98)	LANL	EPA (9/04/98)	NMED (9/04/98)	LANL
Uranium-234					500	20	0.50	NA	NA	0.82	NA	NA
Uranium-238					600	24	0.32	NA	NA	0.31	NA	NA
Uranium-235/236					600	24	0.06	NA	NA	-0.08	NA	NA
Gross Alpha	15	5	15	15			**9.15**	NA	NA	2.89	NA	NA
Gross Beta		50					**175**	NA	NA	**174**	NA	NA
Strontium-90	8		8		1000	40	**43.2**	NA	NA	**45.7**	NA	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	B	NA	NA	186	NA	NA
Actinium-227							NA	1.0	NA	NA	0.7	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA °

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected														
	Reference						Pueblo Canyon								
							APCO-1			POI-4			TW-2A		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (9/03/98)	NMED	LANL (9/03/98)	EPA (9/02/98)	NMED (9/02/98)	LANL	EPA (9/01/98)	NMED (9/01/98)	LANL (9/01/98)
Uranium-234					500	20	0.40	NA	NA	3.35	NA	NA	0.15	NA	NA
Uranium-238					600	24	0.31	NA	NA	1.11	NA	NA	0.19	NA	NA
Uranium-235/236					600	24	0.04	NA	NA	0.49	NA	NA	0.00	NA	NA
Gross Alpha	15	5	15	15			4.20	NA	0.723	1.55	NA	NA	7.96	NA	-0.837
Gross Beta		50					12.0	NA	9.007	8.97	NA	NA	4.72	NA	1.288
Strontium-90	8		8		1000	40	0.06	NA	0.065	0.35	NA	NA	0.02	1.20	0.295
Tritium (H^3)	20000		20000	20000	2000000	80000	31.2	NA	521.25	65.1	NA	NA	1380	NA	3301.25
Actinium-227							NA	NA	NA	NA	<1.1	NA	NA	2.0	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected											
	Reference						Main Aquifer Wells					
							TW-1 (Pueblo Canyon)			TW-3 (Los Alamos Canyon)		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (9/01/98)	NMED (9/01/98)	LANL (5/28/98)	EPA (9/01/98)	NMED (9/01/98)	LANL (9/01/98)
Uranium-234					500	20	2.31	1.70	NA	0.53	NA	NA
Uranium-238					600	24	0.92	0.90	NA	0.40	NA	NA
Uranium-235/236					600	24	0.01	0.10	NA	0.033	NA	NA
Gross Alpha	15	5	15	15			**6.16**	NA	1.973	1.62	NA	0.073
Gross Beta		50					13.9	NA	4.328	4.60	NA	2.148
Strontium-90	8		8		1000	40	0.81	NA	-0.025	0.25	0.6	0.465
Tritium (H^3)	20000		20000	20000	2000000	80000	191	NA	11.25	3.14	NA	441.25
Actinium-227							NA	0.8	NA	NA	0.7	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected											
	Reference						Main Aquifer Wells					
							TW-4 (Pueblo Canyon)			TW-8 (Mortandad Canyon)		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (9/01/98)	NMED (9/01/98)	LANL (9/01/98)	EPA (9/02/98)	NMED (9/02/98)	LANL (9/02/98)
Uranium-234					500	20	0.49	NA	NA	0.66	0.50	NA
Uranium-238					600	24	0.30	NA	NA	0.47	0.175	NA
Uranium-235/236					600	24	0.01	NA	NA	0.07	0.02	NA
Gross Alpha	15	5	15	15			1.84	NA	0.323	1.07	NA	0.573
Gross Beta		50					4.02	NA	2.008	2.28	NA	1.707
Strontium-90	8		8		1000	40	0.44	1.0	0.065	-0.15	<0.58	0.615
Tritium (H^3)	20000		20000	20000	2000000	80000	2.07	NA	231.25	18.5	NA	311.25
Actinium-227							NA	1.1	NA	NA	NA	NA
Americium-241					30	1.2	NA	NA	NA	NA	0.028	NA
Neptunium-237							NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	0.004	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	0.004	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected														
	Reference						Springs								
							DP Spring			Basalt Spring			Sacred Spring		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (9/02/98)	NMED (9/02/98)	LANL (9/02/98)	EPA (9/09/98)	NMED	LANL (6/04/98)	EPA (9/08/98)	NMED	LANL (9/08/98)
Uranium-234					500	20	1.14	1.0	NA	0.29	NA	NA	1.26	NA	NA
Uranium-238					600	24	0.26	0.1	NA	0.20	NA	NA	0.55	NA	NA
Uranium-235/236					600	24	0.10	<0.1	NA	0.022	NA	NA	0.067	NA	NA
Gross Alpha	15	5	15	15			3.94	NA	NA	1.54	NA	NA	3.55	NA	NA
Gross Beta		50					**112**	NA	NA	7.25	NA	NA	4.70	NA	NA
Strontium-90	8		8		1000	40	**40.7**	**51.6**	NA	NA	NA	NA	NA	NA	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	156	NA	361.25	42.1	NA	21.25	34.1	NA	-98.75
Actinium-227							NA	1.4	NA	NA	NA	NA	NA	NA	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Radionuclide Results* (continued)

Parameter	Sample Location and Date Collected														
	Reference						Springs								
							Otowi Spring			La Mesita Spring			LA Spring		
	EPA MCLs[a]	EPA SL[b]	NM MCLs[c]	NM WHL[d]	DOE DCG1[e]	DOE DCG2[f]	EPA (9/08/98)	NMED	LANL	EPA (9/08/98)	NMED	LANL (9/08/98)	EPA (9/09/98)	NMED	LANL
Uranium-234					500	20	0.78	NA	NA	5.12	NA	NA	0.066	NA	NA
Uranium-238					600	24	1.00	NA	NA	3.36	NA	NA	0.077	NA	NA
Uranium-235/236					600	24	-0.012	NA	NA	0.16	NA	NA	-0.022	NA	NA
Gross Alpha	15	5	15	15			2.45	NA	NA	**12.1**	NA	NA	3.42	NA	NA
Gross Beta		50					5.91	NA	NA	4.92	NA	NA	5.43	NA	NA
Strontium-90	8		8		1000	40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tritium (H^3)	20000		20000	20000	2000000	80000	72.5	NA	NA	54.5	NA	21.25	2.70	NA	NA
Actinium-227							NA	NA	NA	NA	NA	NA	NA	NA	NA
Americium-241					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Neptunium-237							NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-238					40	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Plutonium-239/240					30	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA

* All results are reported in pico Curies per liter (pCi/L).
a EPA proposed Maximum Contaminant Levels for Radiochemicals in the water supply.
b EPA proposed Screening Levels for Radiochemicals in the water supply.
c New Mexico Maximum Contaminant Levels for Beta Particle and Photon Radioactivity from manmade radionuclides in community water systems.
d New Mexico Standards for Interstate and Intrastate Streams for Wildlife Habitat Limits.
e Department of Energy Derived Concentration Guides for water ingestion in uncontrolled areas.
f Department of Energy Derived Concentration Guides for drinking water systems.
NA Not Analyzed
L Laboratory lost sample.
B Sample container broken during shipment.

APPENDIX F

Analytical Data

VOC Data

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TA-50

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-008

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4364

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/01/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	JB
67-64-1	Acetone	18	JB
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TA502A

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix: (soil/water) WATER Lab Sample ID: 18777-004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5348

Level: (low/med) LOW Date Received: 09/02/98

% Moisture: not dec. _____ Date Analyzed: 09/07/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	49	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TA502B

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix: (soil/water) WATER Lab Sample ID: 18777-005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5349

Level: (low/med) LOW Date Received: 09/02/98

% Moisture: not dec. _____ Date Analyzed: 09/07/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	29	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MCO-2

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-009

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4365

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/01/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	JB
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MCO3

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4383

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/02/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	21	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MC04B

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4384

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/02/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	12	JB
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MC05

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4381

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/02/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MCO5X

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4382

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/02/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MCO6

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-007

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5264

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/02/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MCO7

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4380

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/02/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	8	JB
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MCO75B

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18711-001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4490

Level: (low/med) LOW Date Received: 08/27/98

% Moisture: not dec. _____ Date Analyzed: 09/05/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	10	JB
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MCWB65E

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18711-002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5247

Level: (low/med) LOW Date Received: 08/27/98

% Moisture: not dec. _____ Date Analyzed: 09/02/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MCWB77B

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18741-005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5344

Level: (low/med) LOW Date Received: 08/29/98

% Moisture: not dec. _____ Date Analyzed: 09/07/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MT3

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18741-001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4429

Level: (low/med) LOW Date Received: 08/29/98

% Moisture: not dec. _____ Date Analyzed: 09/03/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	B
67-64-1	Acetone	15	JB
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MT4

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18741-003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5301

Level: (low/med) LOW Date Received: 09/29/98

% Moisture: not dec. _____ Date Analyzed: 09/04/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	JB
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LAVZ1

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix: (soil/water) WATER Lab Sample ID: 18806-005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4593

Level: (low/med) LOW Date Received: 09/05/98

% Moisture: not dec. _____ Date Analyzed: 09/11/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LAVZ2

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix: (soil/water) WATER Lab Sample ID: 18806-003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4592

Level: (low/med) LOW Date Received: 09/05/98

% Moisture: not dec. _____ Date Analyzed: 09/11/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	JB
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TP01

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18711-003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5248

Level: (low/med) LOW Date Received: 08/27/98

% Moisture: not dec. _____ Date Analyzed: 09/02/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	52	
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	32	
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	1	J
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB#2

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-010

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4366

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/01/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	B
67-64-1	Acetone	21	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB#3

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-011

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4385

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/02/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	JB
67-64-1	Acetone	13	JB
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB#4

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18680-012

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5263

Level: (low/med) LOW Date Received: 08/22/98

% Moisture: not dec. _____ Date Analyzed: 09/02/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	JB
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRP-5

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18711-004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5298

Level: (low/med) LOW Date Received: 08/27/98

% Moisture: not dec. _____ Date Analyzed: 09/04/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	B
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB#6

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18741-006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5345

Level: (low/med) LOW Date Received: 08/29/98

% Moisture: not dec. _____ Date Analyzed: 09/07/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	14	JB
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB#7

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18741-004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5302

Level: (low/med) LOW Date Received: 09/29/98

% Moisture: not dec. _____ Date Analyzed: 09/04/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	JB
67-64-1	Acetone	18	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRPBLK8

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix: (soil/water) WATER Lab Sample ID: 18777-008

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: BSMP5350

Level: (low/med) LOW Date Received: 09/02/98

% Moisture: not dec. _____ Date Analyzed: 09/07/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	43	
67-64-1	Acetone	68	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRPBLK12

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix: (soil/water) WATER Lab Sample ID: 18806-006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4647

Level: (low/med) LOW Date Received: 09/05/98

% Moisture: not dec. _____ Date Analyzed: 09/13/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	28	B
67-64-1	Acetone	35	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LANLFB1

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix: (soil/water) WATER Lab Sample ID: 18741-002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: ESMP4430

Level: (low/med) LOW Date Received: 08/29/98

% Moisture: not dec. _____ Date Analyzed: 09/03/98

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	20	B
67-64-1	Acetone	35	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Chlorodibromomethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

Total Metals Data

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TA-50

Lab Name: QUANTERRA_MO_____ Contract: 810.01____
Lab Code: ITMO___ Case No.:_____ SAS No.:_____ SDG No.: 18680_____
Matrix (soil/water): WATER Lab Sample ID: 18680-008
Level (low/med): LOW__ Date Received: 08/22/98
% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	49.6	B		P
7440-38-2	Arsenic__	2.0	U		P
7440-39-3	Barium___	34.6	B		P
7440-41-7	Beryllium	0.67	B		P
7440-47-3	Chromium_	4.2	U		P
7440-50-8	Copper___	41.4			P
7439-89-6	Iron_____	73.4	B		P
7439-92-1	Lead_____	1.6	U		P
7439-96-5	Manganese	10.8	B		P
7439-97-6	Mercury__	0.10	U		CV
7782-49-2	Selenium_	2.6	U		P
7440-42-8	Boron____	192	B		P
7439-98-7	Molybdenu	28.8	B		P

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TA-50-2A

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: 18777-004

Level (low/med): LOW Date Received: 09/02/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	305			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	7.6	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.5	B		P
7440-50-8	Copper	145			P
7439-89-6	Iron	113			P
7439-92-1	Lead	6.9			P
7439-96-5	Manganese	5.0	B		P
7439-97-6	Mercury	0.26			CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	105	B		P
7439-98-7	Molybdenu	117			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TA-50-2B ✓✓

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: 18777-005
Level (low/med): LOW Date Received: 09/02/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2330			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	44.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	6.4	B		P
7440-50-8	Copper	110			P
7439-89-6	Iron	1780			P
7439-92-1	Lead	2.9	B		P
7439-96-5	Manganese	77.2			P
7439-97-6	Mercury	0.16	B		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	119	B		P
7439-98-7	Molybdenu	151			P

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FORM I - IN

SW-846

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EPA SAMPLE NO.

MCO-2 ✓✓

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: 18680-009
Level (low/med): LOW Date Received: 08/22/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14900			P
7440-38-2	Arsenic	9.2	B		P
7440-39-3	Barium	173	B		P
7440-41-7	Beryllium	1.9	B		P
7440-47-3	Chromium	77.3			P
7440-50-8	Copper	13.9	B		P
7439-89-6	Iron	14900			P
7439-92-1	Lead	5.6			P
7439-96-5	Manganese	1320			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	84.0	B		P
7439-98-7	Molybdenu	1040			P

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FORM I - IN

SW-846

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCO-3

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix (soil/water): WATER Lab Sample ID: 18680-004

Level (low/med): LOW Date Received: 08/22/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	65.8	B		P
7440-38-2	Arsenic	2.3	B		P
7440-39-3	Barium	62.7	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	14.9	B		P
7439-89-6	Iron	58.1	B		P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	5.4	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	179	B		P
7439-98-7	Molybdenu	153			P

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCO-4B

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: 18680-005
Level (low/med): LOW Date Received: 08/22/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	152	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	77.0	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	82.2	B		P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	2.4	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	70.8	B		P
7439-98-7	Molybdenu	124			P

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MC0-5

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: 18680-002
Level (low/med): LOW Date Received: 08/22/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	152	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	93.8	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	7.0	B		P
7439-89-6	Iron	107			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	2.5	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	111	B		P
7439-98-7	Molybdenu	113			P

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FORM I - IN

SW-846

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EPA SAMPLE NO.

MCO-5X

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix (soil/water): WATER Lab Sample ID: 18680-003

Level (low/med): LOW Date Received: 08/22/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	139	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	91.2	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	93.1	B		P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	2.3	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	B		P
7440-42-8	Boron	106	B		P
7439-98-7	Molybdenu	109			P

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FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCO-6 / /

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix (soil/water): WATER Lab Sample ID: 18680-007

Level (low/med): LOW Date Received: 08/22/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	213			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	88.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	204			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	6.1	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	91.7	B		P
7439-98-7	Molybdenu	126			P

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MC0-7 ✓

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: 18680-001
Level (low/med): LOW Date Received: 08/22/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2310			P
7440-38-2	Arsenic	2.5	B		P
7440-39-3	Barium	195	B		P
7440-41-7	Beryllium	0.62	B		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	1390			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	26.9			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	4.2	B		P
7440-42-8	Boron	107	B		P
7439-98-7	Molybdenu	114			P

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCO-75B ✓ ✓

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: 18711-001
Level (low/med): LOW Date Received: 08/27/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	51.7	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	166	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.5	B		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	71.2	B		P
7439-92-1	Lead	22.3			P
7439-96-5	Manganese	1.3	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	B		P
7440-42-8	Boron	115	B		P
7439-98-7	Molybdenu	80.4			P

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCWB-65E

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: 18711-002
Level (low/med): LOW Date Received: 08/27/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	64.2	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	179	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	50.1	B		P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	1.0	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	80.4	B		P
7439-98-7	Molybdenu	85.7			P

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCWB-7.7B

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: 18741-005
Level (low/med): LOW Date Received: 08/29/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	91.0	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	126	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	7.7	B		P
7439-89-6	Iron	49.0	B		P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	1.4	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	91.6	B		P
7439-98-7	Molybdenu	32.1	B		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MT-3

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: 18741-001
Level (low/med): LOW Date Received: 08/29/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	237			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	147	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	6.1	B		P
7440-50-8	Copper	9.3	B		P
7439-89-6	Iron	228			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	3.5	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	109	B		P
7439-98-7	Molybdenu	60.0			P

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MT-4

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: 18741-003
Level (low/med): LOW Date Received: 08/29/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	623			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	109	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	16.6	B		P
7439-89-6	Iron	385			P
7439-92-1	Lead	3.5			P
7439-96-5	Manganese	6.5	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	105	B		P
7439-98-7	Molybdenu	33.0	B		P

Color Before: Clarity Before: Texture:
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FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-B

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: 18777-003

Level (low/med): LOW Date Received: 09/02/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	225			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	28.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	119			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	1.3	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	25.6	B		P
7439-98-7	Molybdenu	7.3	U		P

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-0.3

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: 18794-004
Level (low/med): LOW Date Received: 09/04/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	936			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	39.3	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	479			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	3.4	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	44.2	B		P
7439-98-7	Molybdenu	7.3	U		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-0.6

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: 18788-006

Level (low/med): LOW Date Received: 09/03/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	48.6	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	40.2	B		P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	138			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	54.6	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:

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FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-0.91

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix (soil/water): WATER Lab Sample ID: 18806-007

Level (low/med): LOW Date Received: 09/05/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	818			P
7440-38-2	Arsenic	2.1	B		P
7440-39-3	Barium	36.5	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	481			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	3.3	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	33.4	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-1.2

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: 18788-007
Level (low/med): LOW Date Received: 09/03/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	731			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	41.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	12.6			P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	471			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	19.0			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	3.0	B		P
7440-42-8	Boron	38.9	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

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1
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EPA SAMPLE NO.

LAO-1.6G

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: 18794-002
Level (low/med): LOW Date Received: 09/04/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	953			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	49.5	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	475			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	3.1	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	48.6	B		P
7439-98-7	Molybdenu	183			P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

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1
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EPA SAMPLE NO.

LAO-2 ✓✓

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: 18777-006
Level (low/med): LOW Date Received: 09/02/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	746			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	54.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	403			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	3.8	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	64.5	B		P
7439-98-7	Molybdenu	151			P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-2F

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: 18777-007

Level (low/med): LOW Date Received: 09/02/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	781			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	54.2	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	415			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	4.0	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	88.7	B		P
7439-98-7	Molybdenu	148			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-3A

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: 18788-008

Level (low/med): LOW Date Received: 09/03/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	247			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	47.3	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	141			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	1.3	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	62.1	B		P
7439-98-7	Molybdenu	315			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-4.5C

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: 18777-001

Level (low/med): LOW Date Received: 09/02/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	361			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	40.8	B		P
7440-41-7	Beryllium	0.64	B		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	8.2	B		P
7439-89-6	Iron	204			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	3.4	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	61.8	B		P
7439-98-7	Molybdenu	11.0	B		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-5

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: 18777-002

Level (low/med): LOW Date Received: 09/02/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2520			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	36.0	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	7.3	B		P
7439-89-6	Iron	1340			P
7439-92-1	Lead	3.5			P
7439-96-5	Manganese	19.6			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	69.0	B		P
7439-98-7	Molybdenu	10.1	B		P

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Color After: Clarity After: Artifacts:

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FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAVZ-1

Lab Name: QUANTERRA_MO_____ Contract: 810.01____

Lab Code: ITMO__ Case No.:_____ SAS No.:_____ SDG No.: 18794_____

Matrix (soil/water): WATER Lab Sample ID: 18806-005

Level (low/med): LOW__ Date Received: 09/05/98

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	273			P
7440-38-2	Arsenic__	2.0	U		P
7440-39-3	Barium___	75.8	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium_	4.2	U		P
7440-50-8	Copper___	6.2	U		P
7439-89-6	Iron_____	161			P
7439-92-1	Lead_____	1.6	U		P
7439-96-5	Manganese	50.8			P
7439-97-6	Mercury__	3.0			CV
7782-49-2	Selenium_	2.6	U		P
7440-42-8	Boron____	76.2	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: _____ Clarity Before: _____ Texture: _____

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

✓LAVZ-2✓

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: 18806-003
Level (low/med): LOW Date Received: 09/05/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	41.8	B		P
7440-38-2	Arsenic	3.6	B		P
7440-39-3	Barium	97.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	1190			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	627			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	90.7	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DP SPRINGS

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix (soil/water): WATER Lab Sample ID: 18794-001

Level (low/med): LOW Date Received: 09/04/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1170			P
7440-38-2	Arsenic	2.2	B		P
7440-39-3	Barium	42.1	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	7.1	B		P
7439-89-6	Iron	596			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	4.5	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	96.2	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

APCO-1

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: 18806-001
Level (low/med): LOW Date Received: 09/05/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	60.5	B		P
7440-38-2	Arsenic	5.3	B		P
7440-39-3	Barium	44.9	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	7.4	B		P
7439-89-6	Iron	460			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	925			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	334			P
7439-98-7	Molybdenu	8.0	B		P

Color Before: Clarity Before: Texture:
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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

POI-4

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: 18794-006
Level (low/med): LOW Date Received: 09/04/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.8	B		P
7440-39-3	Barium	94.6	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	8.0	B		P
7439-89-6	Iron	10.8	B		P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	1.6	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	210			P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TW-2A

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: 18788-004
Level (low/med): LOW Date Received: 09/03/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	36.0	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	40.8	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	21300			P
7439-92-1	Lead	28.4			P
7439-96-5	Manganese	377			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	114	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TW-1

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: 18788-005

Level (low/med): LOW Date Received: 09/03/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	74.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	44.1	B		P
7439-92-1	Lead	4.0			P
7439-96-5	Manganese	41.3			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	112	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TW-3

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: 18788-002

Level (low/med): LOW Date Received: 09/03/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	23.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	16.8			P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	221			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	8.7	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	51.0	B		P
7439-98-7	Molybdenu	7.3	U		P

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TW-4

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: 18788-003
Level (low/med): LOW Date Received: 09/03/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	58.2	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	49.0			P
7440-50-8	Copper	13.0	B		P
7439-89-6	Iron	659			P
7439-92-1	Lead	19.4			P
7439-96-5	Manganese	37.7			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	40.2	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TW-8

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: 18794-003
Level (low/med): LOW Date Received: 09/04/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	7.0	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	141			P
7439-92-1	Lead	4.1			P
7439-96-5	Manganese	3.6	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	36.6	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

VLA0-5

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865

Matrix (soil/water): WATER Lab Sample ID: 18865-007

Level (low/med): LOW Date Received: 09/11/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	150	B		P
7440-38-2	Arsenic	1.8	U		P
7440-39-3	Barium	238			P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	131			P
7439-92-1	Lead	0.90	U		P
7439-96-5	Manganese	33.6		E	P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.2	U		P
7440-42-8	Boron	106	B		P
7439-98-7	Molybdenu	8.4	U		P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BASALT SPRIN

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865
Matrix (soil/water): WATER Lab Sample ID: 18865-002
Level (low/med): LOW Date Received: 09/11/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	62.3	B		P
7440-38-2	Arsenic	4.5	B		P
7440-39-3	Barium	62.8	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	10.9	B		P
7439-89-6	Iron	54.2	B		P
7439-92-1	Lead	0.90	U		P
7439-96-5	Manganese	49.4		E	P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.2	U		P
7440-42-8	Boron	269			P
7439-98-7	Molybdenu	8.4	U		P

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LA SPRINGS

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865

Matrix (soil/water): WATER Lab Sample ID: 18865-003

Level (low/med): LOW Date Received: 09/11/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	31.9	B		P
7440-38-2	Arsenic	1.8	U		P
7440-39-3	Barium	38.6	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	5.1	B		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	30.9	B		P
7439-92-1	Lead	0.90	U		P
7439-96-5	Manganese	1.7	B	E	P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	3.1	B		P
7440-42-8	Boron	42.2	B		P
7439-98-7	Molybdenu	8.4	U		P

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAMESITA SPR

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865
Matrix (soil/water): WATER Lab Sample ID: 18865-005
Level (low/med): LOW Date Received: 09/11/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	253			P
7440-38-2	Arsenic	1.8	U		P
7440-39-3	Barium	111	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	425			P
7439-92-1	Lead	2.0	B		P
7439-96-5	Manganese	13.5	B	E	P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.2	U		P
7440-42-8	Boron	80.0	B		P
7439-98-7	Molybdenu	8.4	U		P

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OTOWI SPRING

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865

Matrix (soil/water): WATER Lab Sample ID: 18865-006

Level (low/med): LOW Date Received: 09/11/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	32.6	B		P
7440-38-2	Arsenic	2.4	B		P
7440-39-3	Barium	146	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	28.4	B		P
7439-92-1	Lead	0.90	U		P
7439-96-5	Manganese	2.0	B	E	P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.2	U		P
7440-42-8	Boron	86.6	B		P
7439-98-7	Molybdenu	8.4	U		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SACRED SPRIN

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865
Matrix (soil/water): WATER Lab Sample ID: 18865-001
Level (low/med): LOW Date Received: 09/11/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	417			P
7440-38-2	Arsenic	2.1	B		P
7440-39-3	Barium	72.9	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	284			P
7439-92-1	Lead	0.90	U		P
7439-96-5	Manganese	13.4	B	E	P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.2	U		P
7440-42-8	Boron	60.6	B		P
7439-98-7	Molybdenu	8.4	U		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BAYO-1

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: 18788-001

Level (low/med): LOW Date Received: 09/03/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	306			P
7440-38-2	Arsenic	5.6	B		P
7440-39-3	Barium	12.8	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	29.4			P
7439-89-6	Iron	301			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	18.7			P
7439-97-6	Mercury	0.20			CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	298			P
7439-98-7	Molybdenu	7.3	U		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BAY0-2

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix (soil/water): WATER Lab Sample ID: 18806-002

Level (low/med): LOW Date Received: 09/05/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	41.2	B		P
7440-38-2	Arsenic	8.8	B		P
7440-39-3	Barium	20.9	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	7.3	B		P
7439-89-6	Iron	754			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	306			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	328			P
7439-98-7	Molybdenu	7.3	U		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LANL-FB-1

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: 18741-002
Level (low/med): LOW Date Received: 08/29/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	0.90	U		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	6.4	U		P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	0.80	U		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	27.4	B		P
7439-98-7	Molybdenu	7.3	U		P

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LANL-FB-2

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: 18806-004
Level (low/med): LOW Date Received: 09/05/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	0.90	U		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	114			P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	0.86	B		P
7439-97-6	Mercury	7.6			CV
7782-49-2	Selenium	2.6	U		P
7440-42-8	Boron	20.7	B		P
7439-98-7	Molybdenu	7.3	U		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LANL-FB-3

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865

Matrix (soil/water): WATER Lab Sample ID: 18865-004

Level (low/med): LOW Date Received: 09/11/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	34.5	B		P
7440-38-2	Arsenic	1.8	U		P
7440-39-3	Barium	1.1	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	17.8	B		P
7439-92-1	Lead	0.90	U		P
7439-96-5	Manganese	0.75	B	E	P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.2	U		P
7440-42-8	Boron	27.0	B		P
7439-98-7	Molybdenu	8.4	U		P

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FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TA-50 ✓✓

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix (soil/water): WATER Lab Sample ID: D18680-008

Level (low/med): LOW Date Received: 08/22/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	57.0	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	35.0	B		P
7440-41-7	Beryllium	0.68	B		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	41.1			P
7439-89-6	Iron	61.2	B	*	P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	11.2	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	222			P
7439-98-7	Molybdenu	24.4	B		P

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TA-50-2A

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: D18777-004
Level (low/med): LOW Date Received: 09/02/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	312			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	9.1	B		P
7440-41-7	Beryllium	0.64	B		P
7440-47-3	Chromium	5.2	B		P
7440-50-8	Copper	155			P
7439-89-6	Iron	123			P
7439-92-1	Lead	6.1			P
7439-96-5	Manganese	6.4	B		P
7439-97-6	Mercury	0.29			CV
7782-49-2	Selenium				NR
7440-42-8	Boron	106	B		P
7439-98-7	Molybdenu	118			P

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FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TA-50-2B

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: D18777-005

Level (low/med): LOW Date Received: 09/02/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	177	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	30.6	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	100			P
7439-89-6	Iron	103			P
7439-92-1	Lead	2.7	B		P
7439-96-5	Manganese	10.6	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	103	B		P
7439-98-7	Molybdenu	143			P

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCO-2 ✓✓

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: D18680-009
Level (low/med): LOW Date Received: 08/22/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6080			P
7440-38-2	Arsenic	6.8	B		P
7440-39-3	Barium	128	B		P
7440-41-7	Beryllium	1.0	B		P
7440-47-3	Chromium	30.6		*	P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	9090		*	P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	1240			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	93.4	B		P
7439-98-7	Molybdenu	962			P

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCO-3 ✓

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: D18680-004
Level (low/med): LOW Date Received: 08/22/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	61.0	B		P
7440-38-2	Arsenic	2.0	B		P
7440-39-3	Barium	62.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	17.0	B		P
7439-89-6	Iron	34.7	B	*	P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	3.9	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	220			P
7439-98-7	Molybdenu	156			P

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCO-4B

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix (soil/water): WATER Lab Sample ID: D18680-005

Level (low/med): LOW Date Received: 08/22/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	150	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	78.8	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	71.5	B	*	P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	2.5	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	113	B		P
7439-98-7	Molybdenu	127			P

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MC0-5 ✓

ab Name: QUANTERRA_MO Contract: 810.01
ab Code: ITMO Case No.: SAS No.: SDG No.: 13680
atrix (soil/water): WATER Lab Sample ID: D18680-002
evel (low/med): LOW Date Received: 08/22/98
Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	121	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	91.6	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	9.0	B		P
7439-89-6	Iron	56.6	B	*	P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	2.9	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	114	B		P
7439-98-7	Molybdenu	110			P

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCO-5X

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: D18680-003
Level (low/med): LOW Date Received: 08/22/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	108	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	89.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	180		*	P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	2.6	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	122	B		P
7439-98-7	Molybdenu	106			P

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCO-6

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: D18680-007
Level (low/med): LOW Date Received: 08/22/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96.8	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	88.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	63.3	B	*	P
7439-92-1	Lead	43.3			P
7439-96-5	Manganese	2.4	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	90.9	B		P
7439-98-7	Molybdenu	126			P

Color Before: Clarity Before: Texture:
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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCO-75B ✓✓

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: D18711-001
Level (low/med): LOW Date Received: 08/27/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	136	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	160	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	13.0	B		P
7439-89-6	Iron	128		*	P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	2.2	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	86.8	B		P
7439-98-7	Molybdenu	79.8			P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCWB-65E

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix (soil/water): WATER Lab Sample ID: D18711-002

Level (low/med): LOW Date Received: 08/27/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	36.8	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	182	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	45.0	B	*	P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	0.86	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	104	B		P
7439-98-7	Molybdenu	86.8			P

Color Before: Clarity Before: Texture:

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCWB-7.7B

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: D18741-005
Level (low/med): LOW Date Received: 08/29/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	134	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	74.5	B	*	P
7439-92-1	Lead	3.2			P
7439-96-5	Manganese	0.94	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	97.2	B		P
7439-98-7	Molybdenu	30.3	B		P

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Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

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1
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EPA SAMPLE NO.

MC0-7

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: D18680-001
Level (low/med): LOW Date Received: 08/22/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	365			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	187	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	213		*	P
7439-92-1	Lead	11.1			P
7439-96-5	Manganese	2.9	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	107	B		P
7439-98-7	Molybdenu	117			P

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FORM I - IN

SW-846

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1
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EPA SAMPLE NO.

MT-3 ✓✓

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: D18741-001
Level (low/med): LOW Date Received: 08/29/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	87.8	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	146	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	60.3	B	*	P
7439-92-1	Lead	15.2			P
7439-96-5	Manganese	1.0	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	102	B		P
7439-98-7	Molybdenu	58.5			P

Color Before: Clarity Before: Texture:
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Comments:

FORM I - IN

SW-846

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1
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EPA SAMPLE NO.

MT-4

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680
Matrix (soil/water): WATER Lab Sample ID: D18741-003
Level (low/med): LOW Date Received: 08/29/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	85.2	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	105	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.5	B	*	P
7440-50-8	Copper	8.2	B		P
7439-89-6	Iron	277		*	P
7439-92-1	Lead	10.5			P
7439-96-5	Manganese	3.0	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	125	B		P
7439-98-7	Molybdenu	33.9	B		P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-B

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: D18777-003
Level (low/med): LOW Date Received: 09/02/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	218			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	29.1	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	7.0	B		P
7439-89-6	Iron	112			P
7439-92-1	Lead	6.6			P
7439-96-5	Manganese	2.0	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	34.4	B		P
7439-98-7	Molybdenu	7.3	U		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-0.3

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix (soil/water): WATER Lab Sample ID: D18794-004

Level (low/med): LOW Date Received: 09/04/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	978			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	44.1	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	14.0	B		P
7439-89-6	Iron	480			P
7439-92-1	Lead	6.6			P
7439-96-5	Manganese	5.0	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	39.2	B		P
7439-98-7	Molybdenu	8.3	B		P

Color Before: Clarity Before: Texture:

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-0.6

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: D18788-006
Level (low/med): LOW Date Received: 09/03/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	49.7	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	16.8	B		P
7439-92-1	Lead	7.6			P
7439-96-5	Manganese	114			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	44.0	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-0.91

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: D18806-007
Level (low/med): LOW Date Received: 09/05/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	612			P
7440-38-2	Arsenic	2.3	B		P
7440-39-3	Barium	36.0	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-3	Copper	6.2	U		P
7439-89-6	Iron	329			P
7439-92-1	Lead	5.9			P
7439-96-5	Manganese	2.4	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	40.3	B		P
7439-98-7	Molybdenu	9.2	B		P

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Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-1.2

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: D18788-007

Level (low/med): LOW Date Received: 09/03/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	152	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	39.0	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	12.0			P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	72.9	B		P
7439-92-1	Lead	4.0			P
7439-96-5	Manganese	0.94	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	31.9	B		P
7439-98-7	Molybdenu	8.5	B		P

Color Before: Clarity Before: Texture:

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FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-1.6G

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix (soil/water): WATER Lab Sample ID: D18794-002

Level (low/med): LOW Date Received: 09/04/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	912			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	49.0	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.4	B		P
7439-89-6	Iron	446			P
7439-92-1	Lead	7.0			P
7439-96-5	Manganese	3.0	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	63.8	B		P
7439-98-7	Molybdenu	182			P

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FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-2 ✓✓

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: D18777-006

Level (low/med): LOW Date Received: 09/02/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	577			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	52.6	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	297			P
7439-92-1	Lead	5.0			P
7439-96-5	Manganese	2.6	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	103	B		P
7439-98-7	Molybdenu	149			P

Color Before: Clarity Before: Texture:

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-2F

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: D18777-007

Level (low/med): LOW Date Received: 09/02/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	587			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	53.2	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	315			P
7439-92-1	Lead	3.1			P
7439-96-5	Manganese	2.6	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	78.6	B		P
7439-98-7	Molybdenu	149			P

Color Before: Clarity Before: Texture:

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-3A

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: D18788-008

Level (low/med): LOW Date Received: 09/03/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	195	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	47.1	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	111			P
7439-92-1	Lead	3.2			P
7439-96-5	Manganese	2.0	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	57.0	B		P
7439-98-7	Molybdenu	317			P

Color Before: Clarity Before: Texture:

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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-4.5C

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: D18777-001
Level (low/med): LOW Date Received: 09/02/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	248			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	40.2	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	139			P
7439-92-1	Lead	5.7			P
7439-96-5	Manganese	13.7	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	77.3	B		P
7439-98-7	Molybdenu	16.2	B		P

Color Before: Clarity Before: Texture:
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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAO-5 ✓

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: D18777-002
Level (low/med): LOW Date Received: 09/02/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	320			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	27.7	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	143			P
7439-92-1	Lead	4.5			P
7439-96-5	Manganese	1.9	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	64.7	B		P
7439-98-7	Molybdenu	10.4	B		P

Color Before: Clarity Before: Texture:
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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAVZ-1

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix (soil/water): WATER Lab Sample ID: D18806-005

Level (low/med): LOW Date Received: 09/05/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	115	B		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	74.2	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	72.0	B		P
7439-92-1	Lead	1.7	B		P
7439-96-5	Manganese	48.8			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	55.7	B		P
7439-98-7	Molybdenu	7.7	B		P

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FORM I - IN

SW-846

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1
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EPA SAMPLE NO.

LAVZ-2

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: D18806-003
Level (low/med): LOW Date Received: 09/05/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	3.2	B		P
7440-39-3	Barium	95.2	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	879			P
7439-92-1	Lead	1.8	B		P
7439-96-5	Manganese	577			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	79.0	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
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FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DP SPRINGS

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix (soil/water): WATER Lab Sample ID: D18794-001

Level (low/med): LOW Date Received: 09/04/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	707			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	40.8	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	376			P
7439-92-1	Lead	7.2			P
7439-96-5	Manganese	8.3	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	62.9	B		P
7439-98-7	Molybdenu	7.3	U		P

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FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

APCO-1

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794

Matrix (soil/water): WATER Lab Sample ID: D18806-001

Level (low/med): LOW Date Received: 09/05/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	33.8	B		P
7440-38-2	Arsenic	6.6	B		P
7440-39-3	Barium	43.3	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	452			P
7439-92-1	Lead	7.1			P
7439-96-5	Manganese	942			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	314			P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:

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FORM I - IN

SW-846

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1
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EPA SAMPLE NO.

POI-4

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: D18794-006
Level (low/med): LOW Date Received: 09/04/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	3.1	B		P
7440-39-3	Barium	89.4	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	8.3	B		P
7439-89-6	Iron	6.4	U		P
7439-92-1	Lead	5.3			P
7439-96-5	Manganese	1.5	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	197	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
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FORM I - IN

SW-846

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EPA SAMPLE NO.

TW-2A ✓✓

Lab Name: QUANTERRA_MO_____ Contract: 810.01____
Lab Code: ITMO__ Case No.:_____ SAS No.:_____ SDG No.: 18777_____
Matrix (soil/water): WATER Lab Sample ID: D18788-004
Level (low/med): LOW__ Date Received: 09/03/98
% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	23.6	U		P_
7440-38-2	Arsenic__	2.0	U		P_
7440-39-3	Barium___	53.6	B		P_
7440-41-7	Beryllium	0.60	U		P_
7440-47-3	Chromium_	4.2	U		P_
7440-50-8	Copper___	6.2	U		P_
7439-89-6	Iron_____	4850	_		P_
7439-92-1	Lead_____	6.2	_		P_
7439-96-5	Manganese	128	_		P_
7439-97-6	Mercury__	0.10	U		CV
7782-49-2	Selenium_		_		NR
7440-42-8	Boron____	136	B		P_
7439-98-7	Molybdenu	7.3	U		P_

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

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FORM I - IN

SW-846

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1

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EPA SAMPLE NO.

TW-1 ✓✓

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777

Matrix (soil/water): WATER Lab Sample ID: D18788-005

Level (low/med): LOW Date Received: 09/03/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	72.7	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	31.0	B		P
7439-92-1	Lead	11.9			P
7439-96-5	Manganese	33.5			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	84.1	B		P
7439-98-7	Molybdenu	7.3	U		P

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FORM I - IN

SW-846

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1
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EPA SAMPLE NO.

TW-3

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: D18788-002
Level (low/med): LOW Date Received: 09/03/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	23.9	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	B		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	99.6	B		P
7439-92-1	Lead	5.7			P
7439-96-5	Manganese	8.4	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	49.6	B		P
7439-98-7	Molybdenu	7.3	U		P

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FORM I - IN

SW-846

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EPA SAMPLE NO.

TW-4

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: D18788-003
Level (low/med): LOW Date Received: 09/03/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	55.8	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	178			P
7439-92-1	Lead	12.1			P
7439-96-5	Manganese	33.8			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	24.5	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
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FORM I - IN

SW-846

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EPA SAMPLE NO.

TW-8

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: D18794-003
Level (low/med): LOW Date Received: 09/04/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	6.8	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	57.8	B		P
7439-92-1	Lead	4.8			P
7439-96-5	Manganese	3.7	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	36.0	B		P
7439-98-7	Molybdenu	7.3	U		P

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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LLA0-5

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865
Matrix (soil/water): WATER Lab Sample ID: D18865-007
Level (low/med): LOW Date Received: 09/11/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	34.9	B		P
7440-38-2	Arsenic	1.8	U		P
7440-39-3	Barium	228			P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	32.6	B		P
7439-92-1	Lead	5.8			P
7439-96-5	Manganese	2.3	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	103	B		P
7439-98-7	Molybdenu	8.4	U		P

Color Before: Clarity Before: Texture:
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FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BASALT SPRIN

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865
Matrix (soil/water): WATER Lab Sample ID: D18865-002
Level (low/med): LOW Date Received: 09/11/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	31.2	B		P
7440-38-2	Arsenic	3.7	B		P
7440-39-3	Barium	62.6	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	14.8	B		P
7439-89-6	Iron	38.1	B		P
7439-92-1	Lead	5.1			P
7439-96-5	Manganese	0.91	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	262			P
7439-98-7	Molybdenu	8.4	B		P

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FORM I - IN

SW-846

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LA SPRINGS

Lab Name: QUANTERRA MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865

Matrix (soil/water): WATER Lab Sample ID: D18865-003

Level (low/med): LOW Date Received: 09/11/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20.6	U		P
7440-38-2	Arsenic	1.8	U		P
7440-39-3	Barium	37.7	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	3.8	B		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	22.7	B		P
7439-92-1	Lead	5.7			P
7439-96-5	Manganese	2.2	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				P
7440-42-8	Boron	36.2	B		P
7439-98-7	Molybdenu	8.4	U		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LAMESITA SPR

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865
Matrix (soil/water): WATER Lab Sample ID: D18865-005
Level (low/med): LOW Date Received: 09/11/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	28.8	B		P
7440-38-2	Arsenic	1.8	U		P
7440-39-3	Barium	99.5	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	34.2	B		P
7439-92-1	Lead	4.3			P
7439-96-5	Manganese	1.7	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	71.4	B		P
7439-98-7	Molybdenu	8.4	U		P

Color Before: Clarity Before: Texture:
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Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OTOWI SPRING

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865
Matrix (soil/water): WATER Lab Sample ID: D18865-006
Level (low/med): LOW Date Received: 09/11/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	26.0	B		P
7440-38-2	Arsenic	3.2	B		P
7440-39-3	Barium	144	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	33.8	B		P
7439-92-1	Lead	4.5			P
7439-96-5	Manganese	1.7	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	119	B		P
7439-98-7	Molybdenu	8.4	U		P

Color Before: Clarity Before: Texture:
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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SACRED SPRIN

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865
Matrix (soil/water): WATER Lab Sample ID: D18865-001
Level (low/med): LOW Date Received: 09/11/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	28.3	B		P
7440-38-2	Arsenic	1.8	U		P
7440-39-3	Barium	72.4	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	3.0	B		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	28.0	B		P
7439-92-1	Lead	4.4			P
7439-96-5	Manganese	6.4	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	70.5	B		P
7439-98-7	Molybdenu	8.4	U		P

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FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BAYO-1

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18777
Matrix (soil/water): WATER Lab Sample ID: D18788-001
Level (low/med): LOW Date Received: 09/03/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	167	B		P
7440-38-2	Arsenic	5.4	B		P
7440-39-3	Barium	8.6	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	23.2	B		P
7439-89-6	Iron	243			P
7439-92-1	Lead	6.4			P
7439-96-5	Manganese	16.9			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	257			P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
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Comments:

FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BAY0-2

Lab Name: QUANTERRA MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: D18806-002
Level (low/med): LOW Date Received: 09/05/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	9.0	B		P
7440-39-3	Barium	18.3	B		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	8.2	B		P
7439-89-6	Iron	614			P
7439-92-1	Lead	2.4	B		P
7439-96-5	Manganese	299			P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	324			P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LANL-FB-1

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18680

Matrix (soil/water): WATER Lab Sample ID: D18741-002

Level (low/med): LOW Date Received: 08/29/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	0.90	U		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U	*	P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	6.4	U	*	P
7439-92-1	Lead	1.6	U		P
7439-96-5	Manganese	0.80	U		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	18.7	B		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LANL-FB-2

Lab Name: QUANTERRA_MO Contract: 810.01
Lab Code: ITMO Case No.: SAS No.: SDG No.: 18794
Matrix (soil/water): WATER Lab Sample ID: D18806-004
Level (low/med): LOW Date Received: 09/05/98
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.6	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	0.90	U		P
7440-41-7	Beryllium	0.60	U		P
7440-47-3	Chromium	4.2	U		P
7440-50-8	Copper	6.2	U		P
7439-89-6	Iron	14.4	B		P
7439-92-1	Lead	2.3	B		P
7439-96-5	Manganese	0.80	U		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	18.4	U		P
7439-98-7	Molybdenu	7.3	U		P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

LANL-FB-3

Lab Name: QUANTERRA_MO Contract: 810.01

Lab Code: ITMO Case No.: SAS No.: SDG No.: 18865

Matrix (soil/water): WATER Lab Sample ID: D18865-004

Level (low/med): LOW Date Received: 09/11/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	30.0	B		P
7440-38-2	Arsenic	1.8	U		P
7440-39-3	Barium	0.77	B		P
7440-41-7	Beryllium	0.50	U		P
7440-47-3	Chromium	2.7	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	19.8	B		P
7439-92-1	Lead	2.8	B		P
7439-96-5	Manganese	0.50	U		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium				NR
7440-42-8	Boron	22.1	B		P
7439-98-7	Molybdenu	8.4	U		P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

General Chemistry Data

Quanterra
Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 08/31/98
Receipt Date : 09/02/98
Report Date : 10/30/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
LAO-4.5C	18777-001	Chloride	16887-00-6	QCBLK184023-1	09/10/98	09/10/98	32.8	MG/L		2.00	10
LAO-5	18777-002	Chloride	16887-00-6	QCBLK184023-1	09/10/98	09/10/98	40.5	MG/L		2.00	10
LAO-8	18777-003	Chloride	16887-00-6	QCBLK184023-1	09/10/98	09/10/98	9.77	MG/L		1.00	5
TA-50-2A	18777-004	Chloride	16887-00-6	QCBLK184023-1	09/10/98	09/10/98	20.8	MG/L		2.00	10
TA-50-2B	18777-005	Chloride	16887-00-6	QCBLK184023-1	09/10/98	09/10/98	20.2	MG/L		2.00	10
LAO-2	18777-006	Chloride	16887-00-6	QCBLK184023-1	09/10/98	09/10/98	21.3	MG/L		2.00	10
LAO-2F	18777-007	Chloride	16887-00-6	QCBLK184023-1	09/10/98	09/10/98	21.4	MG/L		2.00	10
BAYO-1	18788-001	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	39.8	MG/L		4.00	20
TW-3	18788-002	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	3.15	MG/L		0.20	1
TW-4	18788-003	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	1.98	MG/L		0.20	1
TW-2A	18788-004	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	69.9	MG/L		4.00	20
TW-1	18788-005	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	36.3	MG/L		2.00	10
[illegible].5	18788-006	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	73.6	MG/L		4.00	20
LA[illegible].2	18788-007	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	45.6	MG/L		4.00	20
LAO-3A	18788-008	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	21.0	MG/L		1.00	5
NA	QCBLK184023-1	Chloride	16887-00-6	QCBLK184023-1	09/10/98	09/10/98	0.20	MG/L	U	0.20	1
NA	QCBLK186052-1	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	0.20	MG/L	U	0.20	1
NA	QCLCS184023-1	Chloride	16887-00-6	QCBLK184023-1	09/10/98	09/10/98	99	%REC			1
NA	QCLCS186052-1	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	98	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 08/31/98
Receipt Date : 09/02/98
Report Date : 10/30/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
LAO-4.5C	18777-001	Fluoride	16984-48-8	QCBLK184023-1	09/10/98	09/10/98	0.58	MG/L		0.10	1
LAO-5	18777-002	Fluoride	16984-48-8	QCBLK184023-1	09/10/98	09/10/98	0.45	MG/L		0.10	1
LAO-B	18777-003	Fluoride	16984-48-8	QCBLK184023-1	09/10/98	09/10/98	0.10	MG/L	U	0.10	1
TA-50-2A	18777-004	Fluoride	16984-48-8	QCBLK184023-1	09/10/98	09/10/98	3.09	MG/L		0.10	1
TA-50-2B	18777-005	Fluoride	16984-48-8	QCBLK184023-1	09/10/98	09/10/98	2.69	MG/L		0.10	1
LAO-2	18777-006	Fluoride	16984-48-8	QCBLK184023-1	09/10/98	09/10/98	0.53	MG/L		0.10	1
LAO-2F	18777-007	Fluoride	16984-48-8	QCBLK184023-1	09/10/98	09/10/98	0.53	MG/L		0.10	1
BAYO-1	18788-001	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.35	MG/L		0.10	1
TW-3	18788-002	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.35	MG/L		0.10	1
TW-4	18788-003	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.18	MG/L		0.10	1
TW-2A	18788-004	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.24	MG/L		0.10	1
TW-1	18788-005	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.35	MG/L		0.10	1
LAO-0.6	18788-006	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.25	MG/L		0.10	1
LAO-1.2	18788-007	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.26	MG/L		0.10	1
LAO-3A	18788-008	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.64	MG/L		0.10	1
NA	QCBLK184023-1	Fluoride	16984-48-8	QCBLK184023-1	09/10/98	09/10/98	0.10	MG/L	U	0.10	1
NA	QCBLK186052-1	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.10	MG/L	U	0.10	1
NA	QCLCS184023-1	Fluoride	16984-48-8	QCBLK184023-1	09/10/98	09/10/98	91	%REC			1
NA	QCLCS186052-1	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	91	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Quanterra Environmental Services

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 08/31/98
Receipt Date : 09/02/98
Report Date : 10/30/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
LAO-4.5C	18777-001	Sulfate	14808-79-8	QCBLK184023-1	09/10/98	09/10/98	6.45	MG/L		0.50	1
LAO-5	18777-002	Sulfate	14808-79-8	QCBLK184023-1	09/10/98	09/10/98	7.83	MG/L		0.50	1
LAO-8	18777-003	Sulfate	14808-79-8	QCBLK184023-1	09/10/98	09/10/98	3.33	MG/L		0.50	1
IA-50-2A	18777-004	Sulfate	14808-79-8	QCBLK184023-1	09/10/98	09/10/98	125	MG/L		5.00	10
IA-50-2B	18777-005	Sulfate	14808-79-8	QCBLK184023-1	09/10/98	09/10/98	109	MG/L		5.00	10
LAO-2	18777-006	Sulfate	14808-79-8	QCBLK184023-1	09/10/98	09/10/98	8.49	MG/L		0.50	1
LAO-2F	18777-007	Sulfate	14808-79-8	QCBLK184023-1	09/10/98	09/10/98	8.56	MG/L		0.50	1
BAYO-1	18788-001	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	24.6	MG/L		1.00	2
TW-3	18788-002	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	2.92	MG/L		0.50	1
TW-4	18788-003	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	2.09	MG/L		0.50	1
TW-2A	18788-004	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	8.32	MG/L		0.50	1
TW-1	18788-005	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	23.2	MG/L		5.00	10
LA[illegible]5	18788-006	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	5.70	MG/L		0.50	1
LA[illegible]2	18788-007	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	5.68	MG/L		0.50	1
LAO-3A	18788-008	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	9.77	MG/L		0.50	1
NA	QCBLK184023-1	Sulfate	14808-79-8	QCBLK184023-1	09/10/98	09/10/98	0.50	MG/L	U	0.50	1
NA	QCBLK186052-1	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	0.50	MG/L	U	0.50	1
NA	QCLCS184023-1	Sulfate	14808-79-8	QCBLK184023-1	09/10/98	09/10/98	93	%REC			1
NA	QCLCS186052-1	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	92	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: ALKALINITY
Method: EPA 310.1
Matrix: Water

Sample Date : 08/31/98
Receipt Date : 09/02/98
Report Date : 10/30/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
LAO-4.5C	18777-001	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	64.6	MG/L		5.00	1
LAO-5	18777-002	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	78.8	MG/L		5.00	1
LAO-B	18777-003	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	56.6	MG/L		5.00	1
TA-50-2A	18777-004	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	90.9	MG/L		5.00	1
TA-50-2B	18777-005	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	129	MG/L		5.00	1
LAO-2	18777-006	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	94.9	MG/L		5.00	1
LAO-2F	18777-007	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	90.9	MG/L		5.00	1
BAYO-1	18788-001	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	158	MG/L		5.00	1
TW-3	18788-002	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	103	MG/L		5.00	1
TW-4	18788-003	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	72.7	MG/L		5.00	1
TW-2A	18788-004	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	56.6	MG/L		5.00	1
TW-1	18788-005	Bicarbonate	71-52-3	QCBLK184671-1	09/14/98	09/14/98	111	MG/L		5.00	1
LAO-0.6	18788-006	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	92.9	MG/L		5.00	1
LAO-1.2	18788-007	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	62.6	MG/L		5.00	
LAO-3A	18788-008	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	109	MG/L		5.00	1
NA	QCBLK184034-2	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	5.00	MG/L	U	5.00	1
NA	QCBLK184034-3	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	5.00	MG/L	U	5.00	1
NA	QCBLK184671-1	Bicarbonate	71-52-3	QCBLK184671-1	09/14/98	09/14/98	5.00	MG/L	U	5.00	1
NA	QCLCS184034-2	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	88	%REC			1
NA	QCLCS184034-3	Bicarbonate	71-52-3	QCBLK184034-3	09/10/98	09/10/98	89	%REC			1
NA	QCLCS184671-1	Bicarbonate	71-52-3	QCBLK184671-1	09/14/98	09/14/98	82	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Quanterra Environmental Services

Category: TSS
Method: EPA 160.2
Matrix: Water

Sample Date : 08/31/98
Receipt Date : 09/02/98
Report Date : 10/30/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
LAO-4.5C	18777-001	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	9.0	MG/L		1.00	1
LAO-5	18777-002	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	30.0	MG/L		1.00	1
LAO-B	18777-003	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	1.00	MG/L	U	1.00	1
TA-50-2A	18777-004	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	61.0	MG/L		1.00	1
TA-50-2B	18777-005	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	122	MG/L		1.00	1
LAO-2	18777-006	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	9.0	MG/L		1.00	1
LAO-2F	18777-007	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	5.0	MG/L		1.00	1
BAYO-1	18788-001	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	21.0	MG/L		1.00	1
TW-3	18788-002	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	2.0	MG/L		1.00	1
TW-4	18788-003	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	6.0	MG/L		1.00	1
TW-2A	18788-004	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	45.0	MG/L		1.00	1
TW-1	18788-005	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	3.0	MG/L		1.00	1
LAO [illegible].6	18788-006	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	2.0	MG/L		1.00	1
L[illegible].2	18788-007	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	35.0	MG/L		1.00	1
LAO-3A	18788-008	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	6.0	MG/L		1.00	1
NA	QCBLK183604-1	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	1.00	MG/L	U	1.00	1
NA	QCLCS183604-1	Total Suspended	C-009	QCBLK183604-1	09/04/98	09/04/98	91	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: TDS
Method: EPA 160.1
Matrix: Water

Sample Date : 08/31/98
Receipt Date : 09/02/98
Report Date : 10/30/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
LAO-4.5C	18777-001	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	193	MG/L		5.00	1
LAO-5	18777-002	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	208	MG/L		5.00	1
LAO-B	18777-003	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	141	MG/L		5.00	1
TA-50-2A	18777-004	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	426	MG/L		5.00	1
TA-50-2B	18777-005	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	380	MG/L		5.00	1
LAO-2	18777-006	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	166	MG/L		5.00	1
LAO-2F	18777-007	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	198	MG/L		5.00	1
BAYO-1	18788-001	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	312	MG/L		5.00	1
TW-3	18788-002	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	162	MG/L		5.00	1
TW-4	18788-003	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	125	MG/L		5.00	1
TW-2A	18788-004	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	220	MG/L		5.00	1
TW-1	18788-005	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	777	MG/L		5.00	1
LAO-0.6	18788-006	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	113	MG/L		5.00	
LAO-1.2	18788-007	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	125	MG/L		5.00	1
LAO-3A	18788-008	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	151	MG/L		5.00	1
NA	QCBLK183603-1	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	5.00	MG/L	U	5.00	1
NA	QCLCS183603-1	Total Dissolved	C-010	QCBLK183603-1	09/04/98	09/04/98	94	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Total Phosphorous
Method: EPA 365.1
Matrix: Water

Sample Date : 08/31/98
Receipt Date : 09/02/98
Report Date : 10/30/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
LAO-4.5C	18777-001	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/21/98	60.2	UG/L		50.0	1
LAO-5	18777-002	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/21/98	75.7	UG/L		50.0	1
LAO-B	18777-003	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/21/98	50.0	UG/L	U	50.0	1
TA-50-2A	18777-004	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/21/98	288	UG/L		50.0	1
TA-50-2B	18777-005	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/21/98	327	UG/L		50.0	1
LAO-2	18777-006	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/21/98	167	UG/L		50.0	1
LAO-2F	18777-007	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/21/98	162	UG/L		50.0	1
BAYO-1	18788-001	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	215	UG/L		50.0	1
TW-3	18788-002	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	167	UG/L		50.0	1
TW-4	18788-003	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	132	UG/L		50.0	1
TW-2A	18788-004	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	151	UG/L		50.0	1
TW-1	18788-005	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	85.3	UG/L		50.0	1
I 6	18788-006	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	160	UG/L		50.0	1
LAO-1.2	18788-007	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	131	UG/L		50.0	1
LAO-3A	18788-008	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	272	UG/L		50.0	1
NA	QCBLK185210-1	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/21/98	50.0	UG/L	U	50.0	1
NA	QCBLK185729-1	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	50.0	UG/L	U	50.0	1
NA	QCLCS185210-1	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/21/98	96	%REC			1
NA	QCLCS185729-1	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	100	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Total Kjeldahl Nitrogen
Method: EPA 351.2
Matrix: Water

Sample Date : 08/31/98
Receipt Date : 09/02/98
Report Date : 10/30/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
LAO-4.5C	18777-001	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	50.0	UG/L	U	50.0	1
LAO-5	18777-002	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	59.0	UG/L		50.0	1
LAO-8	18777-003	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	50.0	UG/L	U	50.0	1
TA-50-2A	18777-004	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	2430	UG/L		500	10
TA-50-2B	18777-005	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	2200	UG/L		500	10
LAO-2	18777-006	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	50.0	UG/L	U	50.0	1
LAO-2F	18777-007	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	50.0	UG/L	U	50.0	1
BAYO-1	18788-001	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	225000	UG/L		25000	500
TW-3	18788-002	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	120	UG/L		50.0	1
TW-4	18788-003	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	50.0	UG/L	U	50.0	1
TW-2A	18788-004	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	695	UG/L		50.0	1
TW-1	18788-005	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	113	UG/L		50.0	1
LAO-0.6	18788-006	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	140	UG/L		50.0	1
LAO-1.2	18788-007	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	89.5	UG/L		50.0	
LAO-3A	18788-008	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	58.3	UG/L		50.0	1
NA	QCBLK185431-1	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	50.0	UG/L	U	50.0	1
NA	QCBLK185790-1	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	50.0	UG/L	U	50.0	1
NA	QCLCS185431-1	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	98	%REC			1
NA	QCLCS185790-1	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	100	%REC			1

Quanterra
Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: AMMONIA
Method: EPA 350.1
Matrix: Water

Sample Date : 08/31/98
Receipt Date : 09/02/98
Report Date : 10/30/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
LAO-4.5C	18777-001	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
LAO-5	18777-002	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
LAO-B	18777-003	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
TA-50-2A	18777-004	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	3860	UG/L		1000	20
TA-50-2B	18777-005	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	2690	UG/L		1000	20
LAO-2	18777-006	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
LAO-2F	18777-007	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
BAYO-1	18788-001	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	11500	UG/L		2500	50
TW-3	18788-002	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
TW-4	18788-003	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
TW-2A	18788-004	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	306	UG/L		50.0	1
TW-1	18788-005	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
L[illegible]	18788-006	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
LAO-1.2	18788-007	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
LAO-3A	18788-008	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
NA	QCBLK184622-1	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	50.0	UG/L	U	50.0	1
NA	QCLCS184622-1	Ammonia	7664-41-7	QCBLK184622-1	09/15/98	09/15/98	92	%REC			1

Quanterra
Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Nitrate/Nitrite
Method: EPA 353.1
Matrix: Water

Sample Date : 08/31/98
Receipt Date : 09/02/98
Report Date : 10/30/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
LAO-4.5C	18777-001	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	61.6	UG/L		50.0	1
LAO-5	18777-002	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	50.0	UG/L	U	50.0	1
LAO-B	18777-003	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	50.0	UG/L	U	50.0	1
TA-50-2A	18777-004	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	17700	UG/L		2500	50
TA-50-2B	18777-005	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	15400	UG/L		2500	50
LAO-2	18777-006	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	602	UG/L		100	2
LAO-2F	18777-007	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	605	UG/L		100	2
BAYO-1	18788-001	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	3010	UG/L		500	10
TW-3	18788-002	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	569	UG/L		50.0	1
TW-4	18788-003	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	285	UG/L		50.0	1
TW-2A	18788-004	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	767	UG/L		50.0	1
TW-1	18788-005	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	5570	UG/L		1000	20
LAO-0.6	18788-006	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	310	UG/L		50.0	1
LAO-1.2	18788-007	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	138	UG/L		50.0	1
LAO-3A	18788-008	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	617	UG/L		50.0	1
NA	QCBLK185196-1	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	50.0	UG/L	U	50.0	1
NA	QCLCS185196-1	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	101	%REC			1

Quanterra

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 09/02/98
Receipt Date : 09/04/98
Report Date : 11/04/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
DP SPRINGS	18794-001	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	28.6	MG/L		2.00	10
LAO-1.6G	18794-002	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	27.3	MG/L		2.00	10
TW-8	18794-003	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	2.07	MG/L		0.20	1
LAO-0.3	18794-004	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	44.7	MG/L		4.00	20
POI-4	18794-006	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	40.9	MG/L		4.00	20
APCO-1	18806-001	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	37.6	MG/L		4.00	20
BAYO-2	18806-002	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	39.4	MG/L		4.00	20
LAVZ-2	18806-003	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	41.4	MG/L		4.00	20
LANL-FB-2	18806-004	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	0.20	MG/L	U	0.20	1
LAVZ-1	18806-005	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	17.7	MG/L		1.00	5
LAO-0.91	18806-007	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	39.1	MG/L		4.00	20
LAO-0.91	18806-007DUP	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	37.7	MG/L		4.00	20
LAO-0.91	18806-007MS	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	90	%REC			20
NA	QCBLK186052-1	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	0.20	MG/L	U	0.20	1
NA	QCBLK186329-1	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	0.20	MG/L	U	0.20	1
NA	QCLCS186052-1	Chloride	16887-00-6	QCBLK186052-1	09/14/98	09/14/98	98	%REC			1
NA	QCLCS186329-1	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	96	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 09/02/98
Receipt Date : 09/04/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
DP SPRINGS	18794-001	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	1.06	MG/L		0.10	1
LAO-1.6G	18794-002	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.30	MG/L		0.10	1
TW-8	18794-003	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.16	MG/L		0.10	1
LAO-0.3	18794-004	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.17	MG/L		0.10	1
POI-4	18794-006	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.29	MG/L		0.10	1
APCO-1	18806-001	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.45	MG/L		0.10	1
BAYO-2	18806-002	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.63	MG/L		0.10	1
LAVZ-2	18806-003	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	1.34	MG/L		0.10	1
LANL-FB-2	18806-004	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.10	MG/L	U	0.10	1
LAVZ-1	18806-005	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.91	MG/L		0.10	1
LAO-0.91	18806-007	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.20	MG/L		0.10	1
LAO-0.91	18806-007DUP	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.21	MG/L		0.10	20
LAO-0.91	18806-007MS	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	97	%REC			1
NA	QCBLK186052-1	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	0.10	MG/L	U	0.10	1
NA	QCBLK186329-1	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.10	MG/L	U	0.10	1
NA	QCLCS186052-1	Fluoride	16984-48-8	QCBLK186052-1	09/14/98	09/14/98	91	%REC			1
NA	QCLCS186329-1	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	102	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 09/02/98
Receipt Date : 09/04/98
Report Date : 11/04/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
DP SPRINGS	18794-001	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	5.77	MG/L		0.50	1
LAO-1.6G	18794-002	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	6.14	MG/L		0.50	1
TW-8	18794-003	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	2.03	MG/L		0.50	1
LAO-0.3	18794-004	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	4.14	MG/L		0.50	1
POI-4	18794-006	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	20.8	MG/L		1.00	2
APCO-1	18806-001	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	14.3	MG/L		0.50	1
BAYO-2	18806-002	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	20.6	MG/L		1.00	2
LAVZ-2	18806-003	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	1.21	MG/L		0.50	1
LANL-FB-2	18806-004	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	0.50	MG/L	U	0.50	1
LAVZ-1	18806-005	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	4.81	MG/L		0.50	1
LAO-0.91	18806-007	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	4.41	MG/L		0.50	1
LAO-0.91	18806-007DUP	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	4.37	MG/L		0.50	1
LAO-0.91	18806-007MS	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	100	%REC			2
NA	QCBLK186052-1	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	0.50	MG/L	U	0.50	1
NA	QCBLK186329-1	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	0.50	MG/L	U	0.50	1
NA	QCLCS186052-1	Sulfate	14808-79-8	QCBLK186052-1	09/14/98	09/14/98	92	%REC			1
NA	QCLCS186329-1	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	92	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: ALKALINITY
Method: EPA 310.1
Matrix: Water

Sample Date : 09/02/98
Receipt Date : 09/04/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
DP SPRINGS	18794-001	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	86.9	MG/L		5.00	1
LAO-1.6G	18794-002	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	68.7	MG/L		5.00	1
TW-8	18794-003	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	74.7	MG/L		5.00	1
LAO-0.3	18794-004	Bicarbonate	71-52-3	QCBLK184671-1	09/14/98	09/14/98	60.6	MG/L		5.00	1
POI-4	18794-006	Bicarbonate	71-52-3	QCBLK184671-1	09/14/98	09/14/98	162	MG/L		5.00	1
APCO-1	18806-001	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	158	MG/L		5.00	1
BAYO-2	18806-002	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	170	MG/L		5.00	1
LAVZ-2	18806-003	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	176	MG/L		5.00	1
LANL-FB-2	18806-004	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	5.00	MG/L	U	5.00	1
LAVZ-1	18806-005	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	133	MG/L		5.00	1
LAO-0.91	18806-007	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	74.7	MG/L		5.00	1
LAO-0.91	18806-007DUP	Bicarbonate	71-52-3	QCBLK184671-1	09/14/98	09/14/98	62.6	MG/L		5.00	1
NA	QCBLK184034-1	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	5.00	MG/L	U	5.00	1
NA	QCBLK184034-2	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	5.00	MG/L	U	5.00	1
NA	QCBLK184671-1	Bicarbonate	71-52-3	QCBLK184671-1	09/14/98	09/14/98	5.00	MG/L	U	5.00	1
NA	QCLCS184034-1	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	93	%REC			1
NA	QCLCS184034-2	Bicarbonate	71-52-3	QCBLK184034-2	09/10/98	09/10/98	88	%REC			1
NA	QCLCS184671-1	Bicarbonate	71-52-3	QCBLK184671-1	09/14/98	09/14/98	82	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: TSS
Method: EPA 160.2
Matrix: Water

Sample Date : 09/02/98
Receipt Date : 09/04/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
CP SPRINGS	18794-001	Total Suspended	C-009	QCBLK183829-1	09/08/98	09/08/98	4.0	MG/L		1.00	1
LAO-1.6G	18794-002	Total Suspended	C-009	QCBLK183829-1	09/08/98	09/08/98	1.0	MG/L		1.00	1
TW-8	18794-003	Total Suspended	C-009	QCBLK183829-1	09/08/98	09/08/98	3.0	MG/L		1.00	1
LAO-0.3	18794-004	Total Suspended	C-009	QCBLK183829-1	09/08/98	09/08/98	3.0	MG/L		1.00	1
POI-4	18794-006	Total Suspended	C-009	QCBLK183829-1	09/08/98	09/08/98	2.0	MG/L		1.00	1
APCO-1	18806-001	Total Suspended	C-009	QCBLK183935-1	09/09/98	09/09/98	4.0	MG/L		1.00	1
BAYO-2	18806-002	Total Suspended	C-009	QCBLK183935-1	09/09/98	09/09/98	3.0	MG/L		1.00	1
LAVZ-2	18806-003	Total Suspended	C-009	QCBLK183935-1	09/09/98	09/09/98	3.0	MG/L		1.00	1
LANL-FB-2	18806-004	Total Suspended	C-009	QCBLK183935-1	09/09/98	09/09/98	1.00	MG/L	U	1.00	1
LAVZ-1	18806-005	Total Suspended	C-009	QCBLK183935-1	09/09/98	09/09/98	1.00	MG/L	U	1.00	1
LAO-0.91	18806-007	Total Suspended	C-009	QCBLK183935-1	09/09/98	09/09/98	1.00	MG/L	U	1.00	1
LAO-0.91	18806-007DUP	Total Suspended	C-009	QCBLK183935-1	09/09/98	09/09/98	1.00	MG/L	U	1.00	1
NA	QCBLK183829-1	Total Suspended	C-009	QCBLK183829-1	09/08/98	09/08/98	1.00	MG/L	U	1.00	1
NA	QCBLK183935-1	Total Suspended	C-009	QCBLK183935-1	09/09/98	09/09/98	1.00	MG/L	U	1.00	1
NA	QCLCS183829-1	Total Suspended	C-009	QCBLK183829-1	09/08/98	09/08/98	96	%REC			1
NA	QCLCS183935-1	Total Suspended	C-009	QCBLK183935-1	09/09/98	09/09/98	96	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: TDS
Method: EPA 160.1
Matrix: Water

Sample Date : 09/02/98
Receipt Date : 09/04/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
OP SPRINGS	18794-001	Total Dissolved	C-010	QCBLK183827-1	09/08/98	09/08/98	178	MG/L		5.00	1
LAO-1.6G	18794-002	Total Dissolved	C-010	QCBLK183827-1	09/08/98	09/08/98	194	MG/L		5.00	1
TW-8	18794-003	Total Dissolved	C-010	QCBLK183827-1	09/08/98	09/08/98	127	MG/L		5.00	1
LAO-0.3	18794-004	Total Dissolved	C-010	QCBLK183827-1	09/08/98	09/08/98	188	MG/L		5.00	1
POI-4	18794-006	Total Dissolved	C-010	QCBLK183827-1	09/08/98	09/08/98	326	MG/L		5.00	1
APCO-1	18806-001	Total Dissolved	C-010	QCBLK183936-1	09/09/98	09/09/98	359	MG/L		5.00	1
BAYO-2	18806-002	Total Dissolved	C-010	QCBLK183936-1	09/09/98	09/09/98	358	MG/L		5.00	1
LAVZ-2	18806-003	Total Dissolved	C-010	QCBLK183936-1	09/09/98	09/09/98	299	MG/L		5.00	1
LANL-FB-2	18806-004	Total Dissolved	C-010	QCBLK183936-1	09/09/98	09/09/98	14.0	MG/L		5.00	1
LAVZ-1	18806-005	Total Dissolved	C-010	QCBLK183936-1	09/09/98	09/09/98	203	MG/L		5.00	1
LAO-0.91	18806-007	Total Dissolved	C-010	QCBLK183936-1	09/09/98	09/09/98	184	MG/L		5.00	1
LAO-0.91	18806-007DUP	Total Dissolved	C-010	QCBLK183936-1	09/09/98	09/09/98	189	MG/L		5.00	1
NA	QCBLK183827-1	Total Dissolved	C-010	QCBLK183827-1	09/08/98	09/08/98	5.00	MG/L	U	5.00	1
NA	QCBLK183936-1	Total Dissolved	C-010	QCBLK183936-1	09/09/98	09/09/98	5.00	MG/L	U	5.00	1
NA	QCLCS183827-1	Total Dissolved	C-010	QCBLK183827-1	09/08/98	09/08/98	100	%REC			1
NA	QCLCS183936-1	Total Dissolved	C-010	QCBLK183936-1	09/09/98	09/09/98	102	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Total Phosphorous
Method: EPA 365.1
Matrix: Water

Sample Date : 09/02/98
Receipt Date : 09/04/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
CP SPRINGS	18794-001	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	178	UG/L		50.0	1
LAO-1.6G	18794-002	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	268	UG/L		50.0	1
TW-8	18794-003	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	130	UG/L		50.0	1
LAO-0.3	18794-004	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	114	UG/L		50.0	1
POI-4	18794-006	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	630	UG/L		50.0	1
APCO-1	18806-001	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	278	UG/L		50.0	1
BAYO-2	18806-002	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	230	UG/L		50.0	1
LAVZ-2	18806-003	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	148	UG/L		50.0	1
LANL-FB-2	18806-004	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	50.0	UG/L	U	50.0	1
LAVZ-1	18806-005	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	111	UG/L		50.0	1
LAO-0.91	18806-007	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	167	UG/L		50.0	1
LAO-0.91	18806-007DUP	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	158	UG/L		50.0	1
[illegible] 0.91	18806-007MS	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	10	%REC			1
[illegible]	QCBLK185729-1	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	50.0	UG/L	U	50.0	1
NA	QCLCS185729-1	Phosphorus, Tot	7723-14-0	QCBLK185729-1	09/24/98	09/25/98	100	%REC			1

Quanterra

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Total Kjeldahl Nitrogen
Method: EPA 351.2
Matrix: Water

Sample Date : 09/02/98
Receipt Date : 09/04/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
DP SPRINGS	18794-001	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	125	UG/L		50.0	1
LAO-1.6G	18794-002	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	107	UG/L		50.0	1
TW-8	18794-003	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	50.0	UG/L	U	50.0	1
LAO-0.3	18794-004	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	145	UG/L		50.0	1
POI-4	18794-006	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	173	UG/L		50.0	1
APCO-1	18806-001	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	1210	UG/L		100	2
BAYO-2	18806-002	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	529	UG/L		50.0	1
LAVZ-2	18806-003	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	332	UG/L		50.0	1
LANL-FB-2	18806-004	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	50.0	UG/L	U	50.0	1
LAVZ-1	18806-005	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	112	UG/L		50.0	1
LAO-0.91	18806-007	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	77.7	UG/L		50.0	1
LAO-0.91	18806-007DUP	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	78.4	UG/L		50.0	1
LAO-0.91	18806-007MS	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	103	%REC			1
NA	QCBLK185790-1	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	50.0	UG/L	U	50.0	1
NA	QCBLK186145-1	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	50.0	UG/L	U	50.0	[illegible]
NA	QCLCS185790-1	TKN	C-021	QCBLK185790-1	09/26/98	09/26/98	100	%REC			1
NA	QCLCS186145-1	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	98	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: AMMONIA
Method: EPA 350.1
Matrix: Water

Sample Date : 09/02/98
Receipt Date : 09/04/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
DP SPRINGS	18794-001	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	50.0	UG/L	U	50.0	1
LAO-1.6G	18794-002	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	50.0	UG/L	U	50.0	1
TW-8	18794-003	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	50.0	UG/L	U	50.0	1
LAO-0.3	18794-004	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	50.0	UG/L	U	50.0	1
POI-4	18794-006	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	50.0	UG/L	U	50.0	1
APCO-1	18806-001	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	771	UG/L		50.0	1
BAYO-2	18806-002	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	145	UG/L		50.0	1
LAVZ-2	18806-003	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	111	UG/L		50.0	1
LANL-FB-2	18806-004	Ammonia	7664-41-7	QCBLK186031-1	09/29/98	09/29/98	50.0	UG/L	U	50.0	1
LAVZ-1	18806-005	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	50.0	UG/L	U	50.0	1
LAO-0.91	18806-007	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	50.0	UG/L	U	50.0	1
LAO-0.91	18806-007DUP	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	50.0	UG/L	U	50.0	1
LAO-0.91	18806-007MS	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	108	%REC			1
	QCBLK185008-1	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	50.0	UG/L	U	50.0	1
NA	QCBLK186031-1	Ammonia	7664-41-7	QCBLK186031-1	09/29/98	09/29/98	50.0	UG/L	U	50.0	1
NA	QCLCS185008-1	Ammonia	7664-41-7	QCBLK185008-1	09/17/98	10/17/98	96	%REC			1
NA	QCLCS186031-1	Ammonia	7664-41-7	QCBLK186031-1	09/29/98	09/29/98	103	%REC			1

Quanterra

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Nitrate/Nitrite
Method: EPA 353.1
Matrix: Water

Sample Date : 09/02/98
Receipt Date : 09/04/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
DP SPRINGS	18794-001	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	275	UG/L		50.0	1
LAO-1.6G	18794-002	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	624	UG/L		50.0	1
TW-8	18794-003	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	226	UG/L		50.0	1
LAO-0.3	18794-004	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	50.0	UG/L	U	50.0	1
POI-4	18794-006	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	3750	UG/L		1000	20
APCO-1	18806-001	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	473	UG/L		50.0	1
BAYO-2	18806-002	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	1250	UG/L		250	5
LAVZ-2	18806-003	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	50.0	UG/L	U	50.0	1
LANL-FB-2	18806-004	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	50.0	UG/L	U	50.0	1
LAVZ-1	18806-005	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	50.0	UG/L	U	50.0	1
LAO-0.91	18806-007	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	149	UG/L		50.0	1
LAO-0.91	18806-007DUP	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	150	UG/L		50.0	1
LAO-0.91	18806-007MS	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	92	%REC			1
NA	QCBLK185196-1	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	50.0	UG/L	U	50.0	1
NA	QCBLK186284-1	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	50.0	UG/L	U	50.0	1
NA	QCLCS185196-1	Nitrate/Nitrite	C-005	QCBLK185196-1	09/21/98	09/21/98	101	%REC			1
NA	QCLCS186284-1	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	98	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 09/08/98
Receipt Date : 09/11/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
SACRED SPRINGS	18865-001	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	3.12	MG/L		0.20	1
BASALT SPRINGS	18865-002	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	35.2	MG/L		4.00	20
LA SPRINGS	18865-003	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	19.6	MG/L		1.00	5
LANL-FB-3	18865-004	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	0.20	MG/L	U	0.20	1
LAMESITA SPRINGS	18865-005	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	7.73	MG/L		0.40	2
OTOWI SPRINGS	18865-006	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	32.3	MG/L		2.00	10
LLA0-5	18865-007	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	70.6	MG/L		4.00	20
LLA0-5	18865-007DUP	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	70.6	MG/L		4.00	20
LLA0-5	18865-007MS	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	86	%REC			25
NA	QCBLK186329-1	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	0.20	MG/L	U	0.20	1
NA	QCLCS186329-1	Chloride	16887-00-6	QCBLK186329-1	09/28/98	09/28/98	96	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 09/08/98
Receipt Date : 09/11/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
SACRED SPRINGS	18865-001	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.44	MG/L		0.10	1
BASALT SPRINGS	18865-002	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.37	MG/L		0.10	1
LA SPRINGS	18865-003	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.90	MG/L		0.10	1
LANL-FB-3	18865-004	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.10	MG/L	U	0.10	1
LAMESITA SPRINGS	18865-005	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.27	MG/L		0.10	1
OTOWI SPRINGS	18865-006	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.48	MG/L		0.10	1
LLA0-5	18865-007	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.36	MG/L		0.10	1
LLA0-5	18865-007DUP	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.36	MG/L		0.10	1
LLA0-5	18865-007MS	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	95	%REC			1
NA	QCBLK186329-1	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	0.10	MG/L	U	0.10	1
NA	QCLCS186329-1	Fluoride	16984-48-8	QCBLK186329-1	09/28/98	09/28/98	102	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 09/08/98
Receipt Date : 09/11/98
Report Date : 11/04/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
SACRED SPRINGS	18865-001	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	7.68	MG/L		0.50	1
BASALT SPRINGS	18865-002	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	23.6	MG/L		1.00	2
LA SPRINGS	18865-003	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	34.8	MG/L		2.50	5
LANL-FB-3	18865-004	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	0.50	MG/L	U	0.50	1
LAMESITA SPRINGS	18865-005	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	14.3	MG/L		0.50	1
OTOWI SPRINGS	18865-006	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	22.2	MG/L		1.00	2
LLA0-5	18865-007	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	35.9	MG/L		1.00	2
LLA0-5	18865-007DUP	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	35.8	MG/L		1.00	2
LLA0-5	18865-007MS	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	84	%REC			10
NA	QCBLK186329-1	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	0.50	MG/L	U	0.50	1
NA	QCLCS186329-1	Sulfate	14808-79-8	QCBLK186329-1	09/28/98	09/28/98	92	%REC			1

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: ALKALINITY
Method: EPA 310.1
Matrix: Water

Sample Date : 09/08/98
Receipt Date : 09/11/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
SACRED SPRINGS	18865-001	Bicarbonate	71-52-3	QCBLK184626-1	09/15/98	09/15/98	105	MG/L		5.00	1
BASALT SPRINGS	18865-002	Bicarbonate	71-52-3	QCBLK184626-1	09/15/98	09/15/98	113	MG/L		5.00	1
LA SPRINGS	18865-003	Bicarbonate	71-52-3	QCBLK184626-1	09/15/98	09/15/98	94.9	MG/L		5.00	1
LANL-FB-3	18865-004	Bicarbonate	71-52-3	QCBLK184626-1	09/15/98	09/15/98	5.00	MG/L	U	5.00	1
LAMESITA SPRINGS	18865-005	Bicarbonate	71-52-3	QCBLK184626-1	09/15/98	09/15/98	137	MG/L		5.00	1
OTOWI SPRINGS	18865-006	Bicarbonate	71-52-3	QCBLK184626-1	09/15/98	09/15/98	170	MG/L		5.00	1
LLA0-5	18865-007	Bicarbonate	71-52-3	QCBLK184626-1	09/15/98	09/15/98	259	MG/L		5.00	1
LLA0-5	18865-007DUP	Bicarbonate	71-52-3	QCBLK186030-1	09/22/98	09/22/98	216	MG/L		5.00	1
NA	QCBLK184626-1	Bicarbonate	71-52-3	QCBLK184626-1	09/15/98	09/15/98	5.00	MG/L	U	5.00	1
NA	QCBLK186030-1	Bicarbonate	71-52-3	QCBLK186030-1	09/22/98	09/22/98	5.00	MG/L	U	5.00	1
NA	QCLCS184626-1	Bicarbonate	71-52-3	QCBLK184626-1	09/15/98	09/15/98	89	%REC			1
NA	QCLCS186030-1	Bicarbonate	71-52-3	QCBLK186030-1	09/22/98	09/22/98	88	%REC			1

Quanterra

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: TDS
Method: EPA 160.1
Matrix: Water

Sample Date : 09/08/98
Receipt Date : 09/11/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
EACRED SPRINGS	18865-001	Total Dissolved	C-010	QCBLK184772-1	09/15/98	09/15/98	211	MG/L		5.00	1
BASALT SPRINGS	18865-002	Total Dissolved	C-010	QCBLK184772-1	09/15/98	09/15/98	346	MG/L		5.00	1
LA SPRINGS	18865-003	Total Dissolved	C-010	QCBLK184772-1	09/15/98	09/15/98	261	MG/L		5.00	1
LANL-FB-3	18865-004	Total Dissolved	C-010	QCBLK184772-1	09/15/98	09/15/98	36.0	MG/L		5.00	1
LAMESITA SPRINGS	18865-005	Total Dissolved	C-010	QCBLK184772-1	09/15/98	09/15/98	206	MG/L		5.00	1
OTOWI SPRINGS	18865-006	Total Dissolved	C-010	QCBLK184772-1	09/15/98	09/15/98	321	MG/L		5.00	1
LLA0-5	18865-007	Total Dissolved	C-010	QCBLK184772-1	09/15/98	09/15/98	508	MG/L		5.00	1
LLA0-5	18865-007DUP	Total Dissolved	C-010	QCBLK184772-1	09/15/98	09/15/98	507	MG/L		5.00	1
NA	QCBLK184772-1	Total Dissolved	C-010	QCBLK184772-1	09/15/98	09/15/98	5.00	MG/L	U	5.00	1
NA	QCLCS184772-1	Total Dissolved	C-010	QCBLK184772-1	09/15/98	09/15/98	100	%REC			1

Quanterra

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: TSS
Method: EPA 160.2
Matrix: Water

Sample Date : 09/08/98
Receipt Date : 09/11/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
SACRED SPRINGS	18865-001	Total Suspended	C-009	QCBLK184773-1	09/15/98	09/15/98	11.0	MG/L		1.00	1
BASALT SPRINGS	18865-002	Total Suspended	C-009	QCBLK184773-1	09/15/98	09/15/98	1.0	MG/L		1.00	1
LA SPRINGS	18865-003	Total Suspended	C-009	QCBLK184773-1	09/15/98	09/15/98	3.0	MG/L		1.00	1
LANL-FB-3	18865-004	Total Suspended	C-009	QCBLK184773-1	09/15/98	09/15/98	1.00	MG/L	U	1.00	1
LAMESITA SPRINGS	18865-005	Total Suspended	C-009	QCBLK184773-1	09/15/98	09/15/98	63.0	MG/L		1.00	1
OTOWI SPRINGS	18865-006	Total Suspended	C-009	QCBLK184773-1	09/15/98	09/15/98	10.0	MG/L		1.00	1
LLA0-5	18865-007	Total Suspended	C-009	QCBLK184773-1	09/15/98	09/15/98	29.0	MG/L		1.00	1
LLA0-5	18865-007DUP	Total Suspended	C-009	QCBLK184773-1	09/15/98	09/15/98	27.0	MG/L		1.00	1
NA	QCBLK184773-1	Total Suspended	C-009	QCBLK184773-1	09/15/98	09/15/98	1.00	MG/L	U	1.00	1
NA	QCLCS184773-1	Total Suspended	C-009	QCBLK184773-1	09/15/98	09/15/98	99	%REC			1

Quanterra

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Total Phosphorous
Method: EPA 365.1
Matrix: Water

Sample Date : 09/08/98
Receipt Date : 09/11/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
SACRED SPRINGS	18865-001	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	85.6	UG/L		50.0	1
BASALT SPRINGS	18865-002	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	3580	UG/L		500	10
LA SPRINGS	18865-003	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	53.5	UG/L		50.0	1
LANL-FB-3	18865-004	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	50.0	UG/L	U	50.0	1
LAMESITA SPRINGS	18865-005	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	134	UG/L		50.0	1
OTOWI SPRINGS	18865-006	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	168	UG/L		50.0	1
LLA0-5	18865-007	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	133	UG/L		50.0	1
LLA0-5	18865-007DUP	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	125	UG/L		50.0	1
LLA0-5	18865-007MS	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	100	%REC			1
NA	QCBLK186314-1	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	50.0	UG/L	U	50.0	1
NA	QCLCS186314-1	Phosphorus, Tot	7723-14-0	QCBLK186314-1	10/01/98	10/02/98	102	%REC			1

Quanterra

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Total Kjeldahl Nitrogen
Method: EPA 351.2
Matrix: Water

Sample Date : 09/08/98
Receipt Date : 09/11/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
SACRED SPRINGS	18865-001	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	50.0	UG/L	U	50.0	1
BASALT SPRINGS	18865-002	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	332	UG/L		50.0	1
LA SPRINGS	18865-003	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	50.0	UG/L	U	50.0	1
LANL-FB-3	18865-004	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	50.0	UG/L	U	50.0	1
LAMESITA SPRINGS	18865-005	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	87.9	UG/L		50.0	1
OTOWI SPRINGS	18865-006	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	50.0	UG/L	U	50.0	1
LLA0-5	18865-007	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	100	UG/L		50.0	1
LLA0-5	18865-007DUP	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	99.1	UG/L		50.0	1
LLA0-5	18865-007MS	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	98	%REC			1
NA	QCBLK186145-1	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	50.0	UG/L	U	50.0	1
NA	QCLCS186145-1	TKN	C-021	QCBLK186145-1	09/30/98	10/01/98	98	%REC			1

Quanterra

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: AMMONIA
Method: EPA 350.1
Matrix: Water

Sample Date : 09/08/98
Receipt Date : 09/11/98
Report Date : 11/03/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
SACRED SPRINGS	18865-001	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	50.0	UG/L	U	50.0	1
BASALT SPRINGS	18865-002	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	50.0	UG/L	U	50.0	1
LA SPRINGS	18865-003	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	50.0	UG/L	U	50.0	1
LANL-FB-3	18865-004	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	50.0	UG/L	U	50.0	1
LAMESITA SPRINGS	18865-005	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	50.0	UG/L	U	50.0	1
OTOWI SPRINGS	18865-006	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	50.0	UG/L	U	50.0	1
LLA0-5	18865-007	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	50.0	UG/L	U	50.0	1
LLA0-5	18865-007DUP	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	50.0	UG/L	U	50.0	1
LLA0-5	18865-007MS	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	104	%REC			1
NA	QCBLK185012-1	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	50.0	UG/L	U	50.0	1
NA	QCLCS185012-1	Ammonia	7664-41-7	QCBLK185012-1	09/17/98	09/17/98	96	%REC			1

Quanterra

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Nitrate/Nitrite
Method: EPA 353.1
Matrix: Water

Sample Date : 09/08/98
Receipt Date : 09/11/98
Report Date : 11/04/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
SACRED SPRINGS	18865-001	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	269	UG/L		50.0	1
BASALT SPRINGS	18865-002	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	3470	UG/L		500	10
LA SPRINGS	18865-003	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	3180	UG/L		500	10
LANL-FB-3	18865-004	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	50.0	UG/L	U	50.0	1
LAMESITA SPRINGS	18865-005	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	2950	UG/L		500	10
OTOWI SPRINGS	18865-006	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	352	UG/L		50.0	1
LLA0-5	18865-007	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	1530	UG/L		250	5
LLA0-5	18865-007DUP	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	1590	UG/L		250	5
LLA0-5	18865-007MS	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	144	%REC			10
NA	QCBLK186284-1	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	50.0	UG/L	U	50.0	1
NA	QCLCS186284-1	Nitrate/Nitrite	C-005	QCBLK186284-1	10/01/98	10/01/98	98	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 08/21/98
Receipt Date : 08/22/98
Report Date : 10/28/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
CO-7	18680-001	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	18.7	MG/L		5.00	25
CO-5	18680-002	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	18.8	MG/L		4.00	20
CO-5X	18680-003	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	19.0	MG/L		4.00	20
CO-3	18680-004	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	24.2	MG/L		2.00	10
CO-4B	18680-005	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	17.4	MG/L		4.00	20
CO-6	18680-007	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	21.0	MG/L		4.00	20
CO-6	18680-007DUP	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	21.0	MG/L		4.00	20
CO-6	18680-007MS	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	100	%REC			10
A-50	18680-008	Chloride	16887-00-6	QCBLK182862-1	08/26/98	08/26/98	14.7	MG/L		1.00	5
CO-2	18680-009	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	20.5	MG/L		2.00	10
CO-75B	18711-001	Chloride	16887-00-6	QCBLK183545-1	09/03/98	09/03/98	18.8	MG/L		1.00	5
CWB-65E	18711-002	Chloride	16887-00-6	QCBLK183545-1	09/03/98	09/03/98	18.1	MG/L		1.00	5
T	18741-001	Chloride	16887-00-6	QCBLK183860-1	09/08/98	09/08/98	18.4	MG/L		1.00	5
ANL-FB-1	18741-002	Chloride	16887-00-6	QCBLK183860-1	09/08/98	09/08/98	ND	MG/L		0.20	1
T-4	18741-003	Chloride	16887-00-6	QCBLK183860-1	09/08/98	09/08/98	19.5	MG/L		1.00	5
CWB-7.7B	18741-005	Chloride	16887-00-6	QCBLK183860-1	09/08/98	09/08/98	19.2	MG/L		1.00	5
A	QCBLK182676-1	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	ND	MG/L		0.20	1
A	QCBLK182862-1	Chloride	16887-00-6	QCBLK182862-1	08/26/98	08/26/98	ND	MG/L		0.20	1
A	QCBLK183545-1	Chloride	16887-00-6	QCBLK183545-1	09/03/98	09/03/98	ND	MG/L		0.20	1
A	QCBLK183860-1	Chloride	16887-00-6	QCBLK183860-1	09/08/98	09/08/98	ND	MG/L		0.20	1
A	QCLCS182676-1	Chloride	16887-00-6	QCBLK182676-1	08/22/98	08/22/98	98	%REC			1
A	QCLCS182862-1	Chloride	16887-00-6	QCBLK182862-1	08/26/98	08/26/98	96	%REC			1
	QCLCS183545-1	Chloride	16887-00-6	QCBLK183545-1	09/03/98	09/03/98	100	%REC			1
	QCLCS183860-1	Chloride	16887-00-6	QCBLK183860-1	09/08/98	09/08/98	95	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 08/21/98
Receipt Date : 08/22/98
Report Date : 10/27/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
MCO-7	18680-001	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	1.56	MG/L		0.10	1
MCO-5	18680-002	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	1.27	MG/L		0.10	1
MCO-5X	18680-003	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	1.26	MG/L		0.10	1
MCO-3	18680-004	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	1.06	MG/L		0.10	1
MCO-4B	18680-005	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	1.15	MG/L		0.10	1
MCO-6	18680-007	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	1.46	MG/L		0.10	1
MCO-6	18680-007DUP	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	1.50	MG/L		0.10	1
MCO-6	18680-007MS	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	102	%REC			1
TA-50	18680-008	Fluoride	16984-48-8	QCBLK182862-1	08/26/98	08/26/98	0.93	MG/L		0.50	5
MCO-2	18680-009	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	0.73	MG/L		0.10	1
MCO-75B	18711-001	Fluoride	16984-48-8	QCBLK183443-1	09/02/98	09/02/98	1.51	MG/L		0.10	1
MCWB-65E	18711-002	Fluoride	16984-48-8	QCBLK183443-1	09/02/98	09/02/98	0.96	MG/L		0.10	1
MT-3	18741-001	Fluoride	16984-48-8	QCBLK183860-1	09/08/98	09/08/98	1.58	MG/L		0.10	1
LANL-FB-1	18741-002	Fluoride	16984-48-8	QCBLK183860-1	09/08/98	09/08/98	ND	MG/L		0.10	1
MT-4	18741-003	Fluoride	16984-48-8	QCBLK183860-1	09/08/98	09/08/98	0.89	MG/L		0.10	1
MCWB-7.7B	18741-005	Fluoride	16984-48-8	QCBLK183860-1	09/08/98	09/08/98	1.03	MG/L		0.10	1
NA	QCBLK182676-1	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	ND	MG/L		0.10	1
NA	QCBLK182862-1	Fluoride	16984-48-8	QCBLK182862-1	08/26/98	08/26/98	ND	MG/L		0.10	1
NA	QCBLK183443-1	Fluoride	16984-48-8	QCBLK183443-1	09/02/98	09/02/98	ND	MG/L		0.10	1
NA	QCBLK183860-1	Fluoride	16984-48-8	QCBLK183860-1	09/08/98	09/08/98	ND	MG/L		0.10	1
NA	QCLCS182676-1	Fluoride	16984-48-8	QCBLK182676-1	08/22/98	08/22/98	92	%REC			1
NA	QCLCS182862-1	Fluoride	16984-48-8	QCBLK182862-1	08/26/98	08/26/98	85	%REC			1
NA	QCLCS183443-1	Fluoride	16984-48-8	QCBLK183443-1	09/02/98	09/02/98	87	%REC			1
NA	QCLCS183860-1	Fluoride	16984-48-8	QCBLK183860-1	09/08/98	09/08/98	88	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Anions
Method: EPA 300.0
Matrix: Water

Sample Date : 08/21/98
Receipt Date : 08/22/98
Report Date : 10/27/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
CO-7	18680-001	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	16.3	MG/L		0.50	1
MCO-5	18680-002	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	16.4	MG/L		0.50	1
MCO-5X	18680-003	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	16.4	MG/L		0.50	1
MCO-3	18680-004	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	25.2	MG/L		5.00	10
MCO-4B	18680-005	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	14.7	MG/L		0.50	1
MCO-6	18680-007	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	17.7	MG/L		0.50	1
MCO-6	18680-007DUP	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	17.7	MG/L		0.50	1
MCO-6	18680-007MS	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	97	%REC			10
TA-50	18680-008	Sulfate	14808-79-8	QCBLK182862-1	08/26/98	08/26/98	53.2	MG/L		2.50	5
MCO-2	18680-009	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	14.3	MG/L		0.50	1
MCO-75B	18711-001	Sulfate	14808-79-8	QCBLK183443-1	09/02/98	09/02/98	16.7	MG/L		0.50	1
MCWB-65E	18711-002	Sulfate	14808-79-8	QCBLK183443-1	09/02/98	09/02/98	15.9	MG/L		0.50	1
MT	18741-001	Sulfate	14808-79-8	QCBLK183860-1	09/08/98	09/08/98	16.6	MG/L		0.50	1
LANL-FB-1	18741-002	Sulfate	14808-79-8	QCBLK183860-1	09/08/98	09/08/98	ND	MG/L		0.50	1
MT-4	18741-003	Sulfate	14808-79-8	QCBLK183860-1	09/08/98	09/08/98	17.1	MG/L		0.50	1
MCWB-7.7B	18741-005	Sulfate	14808-79-8	QCBLK183860-1	09/08/98	09/08/98	17.8	MG/L		0.50	1
NA	QCBLK182676-1	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	ND	MG/L		0.50	1
NA	QCBLK182862-1	Sulfate	14808-79-8	QCBLK182862-1	08/26/98	08/26/98	ND	MG/L		0.50	1
NA	QCBLK183443-1	Sulfate	14808-79-8	QCBLK183443-1	09/02/98	09/02/98	ND	MG/L		0.50	1
NA	QCBLK183860-1	Sulfate	14808-79-8	QCBLK183860-1	09/08/98	09/08/98	ND	MG/L		0.50	1
NA	QCLCS182676-1	Sulfate	14808-79-8	QCBLK182676-1	08/22/98	08/22/98	96	%REC			1
NA	QCLCS182862-1	Sulfate	14808-79-8	QCBLK182862-1	08/26/98	08/26/98	92	%REC			1
NA	QCLCS183443-1	Sulfate	14808-79-8	QCBLK183443-1	09/02/98	09/02/98	94	%REC			1
NA	QCLCS183860-1	Sulfate	14808-79-8	QCBLK183860-1	09/08/98	09/08/98	94	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: ALKALINITY
Method: EPA 310.1
Matrix: Water

Sample Date : NA
Receipt Date : NA
Report Date : 10/27/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
NA	QCBLK183967-1	Bicarbonate	71-52-3	QCBLK183967-1	09/09/98	09/09/98	ND	MG/L		5.00	1
NA	QCLCS183967-1	Bicarbonate	71-52-3	QCBLK183967-1	09/09/98	09/09/98	93	%REC			1
MCO-7	18680-001	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	176	MG/L		5.00	1
MCO-5	18680-002	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	172	MG/L		5.00	1
MCO-5X	18680-003	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	166	MG/L		5.00	1
MCO-3	18680-004	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	226	MG/L		5.00	1
MCO-4B	18680-005	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	156	MG/L		5.00	1
MCO-6	18680-007	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	154	MG/L		5.00	1
MCO-6	18680-007DUP	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	154	MG/L		5.00	1
TA-50	18680-008	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	398	MG/L		5.00	1
MCO-2	18680-009	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	101	MG/L		5.00	1
MCO-75B	18711-001	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	178	MG/L		5.00	1
MCWB-65E	18711-002	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	139	MG/L		5.00	1
MT-3	18741-001	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	174	MG/L		5.00	1
LANL-FB-1	18741-002	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	12.1	MG/L		5.00	1
MT-4	18741-003	Bicarbonate	71-52-3	QCBLK183967-1	09/09/98	09/09/98	164	MG/L		5.00	1
MCWB-7.7B	18741-005	Bicarbonate	71-52-3	QCBLK183967-1	09/09/98	09/09/98	172	MG/L		5.00	1
NA	QCBLK183465-1	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	ND	MG/L		5.00	1
NA	QCBLK184034-1	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	ND	MG/L		5.00	1
NA	QCLCS183465-1	Bicarbonate	71-52-3	QCBLK183465-1	08/28/98	08/28/98	88	%REC			1
NA	QCLCS184034-1	Bicarbonate	71-52-3	QCBLK184034-1	09/10/98	09/10/98	93	%REC			1

Quanterra
Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: TSS
Method: EPA 160.2
Matrix: Water

Sample Date : 08/21/98
Receipt Date : 08/22/98
Report Date : 10/27/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
MCO-7	18680-001	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	47.0	MG/L		1.00	1
MCO-5	18680-002	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	10.0	MG/L		1.00	1
MCO-5X	18680-003	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	5.0	MG/L		1.00	1
MCO-3	18680-004	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	4.0	MG/L		1.00	1
MCO-4B	18680-005	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	ND	MG/L		1.00	1
MCO-6	18680-007	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	14.0	MG/L		1.00	1
MCO-6	18680-007DUP	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	15.0	MG/L		1.00	1
TA-50	18680-008	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	4.0	MG/L		1.00	1
MCO-2	18680-009	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	91.0	MG/L		1.00	1
MCO-75B	18711-001	Total Suspended	C-009	QCBLK182886-1	08/28/98	08/28/98	9.0	MG/L		1.00	1
MCWB-65E	18711-002	Total Suspended	C-009	QCBLK182886-1	08/28/98	08/28/98	3.0	MG/L		1.00	1
MT	18741-001	Total Suspended	C-009	QCBLK183279-1	09/01/98	09/01/98	4.0	MG/L		1.00	1
LAN[illegible]B-1	18741-002	Total Suspended	C-009	QCBLK183279-1	09/01/98	09/01/98	4.0	MG/L		1.00	1
MT-4	18741-003	Total Suspended	C-009	QCBLK183279-1	09/01/98	09/01/98	9.0	MG/L		1.00	1
MCWB-7.7B	18741-005	Total Suspended	C-009	QCBLK183279-1	09/01/98	09/01/98	5.0	MG/L		1.00	1
NA	QCBLK182691-1	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	ND	MG/L		1.00	1
NA	QCBLK182886-1	Total Suspended	C-009	QCBLK182886-1	08/28/98	08/28/98	ND	MG/L		1.00	1
NA	QCBLK183279-1	Total Suspended	C-009	QCBLK183279-1	09/01/98	09/01/98	ND	MG/L		1.00	1
NA	QCLCS182691-1	Total Suspended	C-009	QCBLK182691-1	08/26/98	08/26/98	98	%REC			1
NA	QCLCS182886-1	Total Suspended	C-009	QCBLK182886-1	08/28/98	08/28/98	98	%REC			1
NA	QCLCS183279-1	Total Suspended	C-009	QCBLK183279-1	09/01/98	09/01/98	96	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: TDS
Method: EPA 160.1
Matrix: Water

Sample Date : 08/21/98
Receipt Date : 08/22/98
Report Date : 10/27/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
MCO-7	18680-001	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	381	MG/L		5.00	1
MCO-5	18680-002	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	404	MG/L		5.00	1
MCO-5X	18680-003	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	324	MG/L		5.00	1
MCO-3	18680-004	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	538	MG/L		5.00	1
MCO-4B	18680-005	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	340	MG/L		5.00	1
MCO-6	18680-007	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	374	MG/L		5.00	1
MCO-6	18680-007DUP	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	377	MG/L		5.00	1
TA-50	18680-008	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	678	MG/L		5.00	1
MCO-2	18680-009	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	405	MG/L		5.00	1
MCO-75B	18711-001	Total Dissolved	C-010	QCBLK182885-1	08/28/98	08/28/98	413	MG/L		5.00	1
MCWB-65E	18711-002	Total Dissolved	C-010	QCBLK182885-1	08/28/98	08/28/98	355	MG/L		5.00	1
MT-3	18741-001	Total Dissolved	C-010	QCBLK183277-1	09/01/98	09/01/98	405	MG/L		5.00	1
LANL-FB-1	18741-002	Total Dissolved	C-010	QCBLK183277-1	09/01/98	09/01/98	34.0	MG/L		5.00	
MT-4	18741-003	Total Dissolved	C-010	QCBLK183277-1	09/01/98	09/01/98	377	MG/L		5.00	1
MCWB-7.7B	18741-005	Total Dissolved	C-010	QCBLK183277-1	09/01/98	09/01/98	386	MG/L		5.00	1
NA	QCBLK182690-1	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	ND	MG/L		5.00	1
NA	QCBLK182885-1	Total Dissolved	C-010	QCBLK182885-1	08/28/98	08/28/98	ND	MG/L		5.00	1
NA	QCBLK183277-1	Total Dissolved	C-010	QCBLK183277-1	09/01/98	09/01/98	ND	MG/L		5.00	1
NA	QCLCS182690-1	Total Dissolved	C-010	QCBLK182690-1	08/26/98	08/26/98	115	%REC			1
NA	QCLCS182885-1	Total Dissolved	C-010	QCBLK182885-1	08/28/98	08/28/98	99	%REC			1
NA	QCLCS183277-1	Total Dissolved	C-010	QCBLK183277-1	09/01/98	09/01/98	91	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Total Kjeldahl Nitrogen
Method: EPA 351.2
Matrix: Water

Sample Date : 08/21/98
Receipt Date : 08/22/98
Report Date : 10/27/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
MCO-7	18680-001	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	57.5	UG/L		50.0	1
MCO-5	18680-002	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	ND	UG/L		50.0	1
MCO-5X	18680-003	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	220	UG/L		50.0	1
MCO-3	18680-004	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	344	UG/L		50.0	1
MCO-4B	18680-005	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	128	UG/L		50.0	1
MCO-6	18680-007	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	165	UG/L		50.0	1
MCO-6	18680-007DUP	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	168	UG/L		50.0	1
MCO-6	18680-007MS	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	25	%REC			1
TA-50	18680-008	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	18600	UG/L		1250	25
MCO-2	18680-009	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	679	UG/L		50.0	1
MCO-75B	18711-001	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	105	UG/L		50.0	1
MC[illegible]65E	18711-002	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	123	UG/L		50.0	1
M[illegible]	18741-001	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	99.2	UG/L		50.0	1
LANL-FB-1	18741-002	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	ND	UG/L		50.0	1
MT-4	18741-003	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	101	UG/L		50.0	1
MCWB-7.7B	18741-005	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	110	UG/L		50.0	1
NA	QCBLK183361-1	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	ND	UG/L		50.0	1
NA	QCBLK185431-1	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	ND	UG/L		50.0	1
NA	QCLCS183361-1	TKN	C-021	QCBLK183361-1	09/03/98	09/04/98	90	%REC			1
NA	QCLCS185431-1	TKN	C-021	QCBLK185431-1	09/22/98	09/22/98	98	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Total Phosphorous
Method: EPA 365.1
Matrix: Water

Sample Date : 08/21/98
Receipt Date : 08/22/98
Report Date : 10/27/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
MCO-7	18680-001	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	388	UG/L		50.0	1
MCO-5	18680-002	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	119	UG/L		50.0	1
MCO-5X	18680-003	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	115	UG/L		50.0	1
MCO-3	18680-004	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	178	UG/L		50.0	1
MCO-4B	18680-005	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	85.9	UG/L		50.0	1
MCO-6	18680-007	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	143	UG/L		50.0	1
MCO-6	18680-007DUP	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	147	UG/L		50.0	1
MCO-6	18680-007MS	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	91	%REC			1
TA-50	18680-008	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	86.3	UG/L		50.0	1
MCO-2	18680-009	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	146	UG/L		50.0	1
MCO-75B	18711-001	Phosphorus, Tot	7723-14-0	QCBLK183961-1	09/10/98	09/10/98	127	UG/L		50.0	1
MCWB-65E	18711-002	Phosphorus, Tot	7723-14-0	QCBLK183961-1	09/10/98	09/10/98	929	UG/L		50.0	1
MT-3	18741-001	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/23/98	134	UG/L		50.0	1
LANL-FB-1	18741-002	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/23/98	ND	UG/L		50.0	1
MT-4	18741-003	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/23/98	133	UG/L		50.0	1
MCWB-7.7B	18741-005	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/23/98	119	UG/L		50.0	1
NA	QCBLK182755-1	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	ND	UG/L		50.0	1
NA	QCBLK183961-1	Phosphorus, Tot	7723-14-0	QCBLK183961-1	09/10/98	09/10/98	ND	UG/L		50.0	1
NA	QCBLK185210-1	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/23/98	ND	UG/L		50.0	1
NA	QCLCS182755-1	Phosphorus, Tot	7723-14-0	QCBLK182755-1	08/27/98	08/27/98	93	%REC			1
NA	QCLCS183961-1	Phosphorus, Tot	7723-14-0	QCBLK183961-1	09/10/98	09/10/98	98	%REC			1
NA	QCLCS185210-1	Phosphorus, Tot	7723-14-0	QCBLK185210-1	09/21/98	09/23/98	96	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Nitrate/Nitrite
Method: EPA 353.1
Matrix: Water

Sample Date : 08/21/98
Receipt Date : 08/22/98
Report Date : 10/27/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
MCO-7	18680-001	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	18200	UG/L		1000	20
MCO-5	18680-002	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	15400	UG/L		1000	20
MCO-5X	18680-003	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	15500	UG/L		1000	20
MCO-3	18680-004	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	37800	UG/L		2000	40
MCO-4B	18680-005	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	13200	UG/L		1000	20
MCO-6	18680-007	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	17500	UG/L		1000	20
MCO-6	18680-007DUP	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	17700	UG/L		1000	20
MCO-6	18680-007MS	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	18	%REC			20
TA-50	18680-008	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	14900	UG/L		1000	20
MCO-2	18680-009	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	ND	UG/L		50.0	1
MCO-75B	18711-001	Nitrate/Nitrite	C-005	QCBLK182977-1	09/01/98	09/01/98	13700	UG/L		1000	20
MCWB-65E	18711-002	Nitrate/Nitrite	C-005	QCBLK182977-1	09/01/98	09/01/98	17000	UG/L		1000	20
MT[illegible]	18741-001	Nitrate/Nitrite	C-005	QCBLK182977-1	09/01/98	09/01/98	6720	UG/L		1250	25
LANL-FB-1	18741-002	Nitrate/Nitrite	C-005	QCBLK182977-1	09/01/98	09/01/98	63.3	UG/L		50.0	1
MT-4	18741-003	Nitrate/Nitrite	C-005	QCBLK182977-1	09/01/98	09/01/98	20700	UG/L		2000	40
CWB-7.7B	18741-005	Nitrate/Nitrite	C-005	QCBLK182977-1	09/01/98	09/01/98	22400	UG/L		2000	40
A	QCBLK182976-1	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	ND	UG/L		50.0	1
A	QCBLK182977-1	Nitrate/Nitrite	C-005	QCBLK182977-1	09/01/98	09/01/98	ND	UG/L		50.0	1
A	QCLCS182976-1	Nitrate/Nitrite	C-005	QCBLK182976-1	09/01/98	09/01/98	101	%REC			1
A	QCLCS182977-1	Nitrate/Nitrite	C-005	QCBLK182977-1	09/01/98	09/01/98	101	%REC			1

Quanterra Environmental Services

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: AMMONIA
Method: EPA 350.1
Matrix: Water

Sample Date : 08/21/98
Receipt Date : 08/22/98
Report Date : 10/27/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
MC0-7	18680-001	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	ND	UG/L		50.0	1
MC0-5	18680-002	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	ND	UG/L		50.0	1
MCO-5X	18680-003	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	ND	UG/L		50.0	1
MCO-3	18680-004	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	ND	UG/L		50.0	1
MCO-4B	18680-005	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	ND	UG/L		50.0	1
MCO-6	18680-007	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	ND	UG/L		50.0	1
MCO-6	18680-007DUP	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	ND	UG/L		50.0	1
MCO-6	18680-007MS	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	99	%REC			1
TA-50	18680-008	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	1960	UG/L		500	10
MCO-2	18680-009	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	ND	UG/L		50.0	1
MCO-75B	18711-001	Ammonia	7664-41-7	QCBLK182995-1	09/01/98	09/01/98	ND	UG/L		50.0	1
MCWB-65E	18711-002	Ammonia	7664-41-7	QCBLK182995-1	09/01/98	09/01/98	ND	UG/L		50.0	1
MT-3	18741-001	Ammonia	7664-41-7	QCBLK183015-1	09/02/98	09/02/98	ND	UG/L		50.0	1
LANL-FB-1	18741-002	Ammonia	7664-41-7	QCBLK183015-1	09/02/98	09/02/98	ND	UG/L		50.0	1
MT-4	18741-003	Ammonia	7664-41-7	QCBLK183015-1	09/02/98	09/02/98	ND	UG/L		50.0	1
MCWB-7.7B	18741-005	Ammonia	7664-41-7	QCBLK183015-1	09/02/98	09/02/98	ND	UG/L		50.0	1
NA	QCBLK182711-1	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	ND	UG/L		50.0	1
NA	QCBLK182995-1	Ammonia	7664-41-7	QCBLK182995-1	09/01/98	09/01/98	ND	UG/L		50.0	1
NA	QCBLK183015-1	Ammonia	7664-41-7	QCBLK183015-1	09/02/98	09/02/98	ND	UG/L		50.0	1
NA	QCLCS182711-1	Ammonia	7664-41-7	QCBLK182711-1	08/27/98	08/27/98	103	%REC			1
NA	QCLCS182995-1	Ammonia	7664-41-7	QCBLK182995-1	09/01/98	09/01/98	90	%REC			1
NA	QCLCS183015-1	Ammonia	7664-41-7	QCBLK183015-1	09/02/98	09/02/98	95	%REC			1

Radionuclide Data

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Isotopic Uranium
Method: NAS-NS-3050

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
LAO-4.5C	18777-001	Water	08/31/98	09/02/98	09/15/98	09/17/98	Uranium-234	0.31	0.25	0.37	PCI/L
							Uranium-238	0.98	0.42	0.25	PCI/L
							Uranium-235/236	0.17	0.21	0.39	PCI/L
LAO-5	18777-002	Water	08/31/98	09/02/98	09/15/98	09/17/98	Uranium-234	0.22	0.18	0.16	PCI/L
							Uranium-238	0.32	0.22	0.16	PCI/L
							Uranium-235/236	0.11	0.14	0.19	PCI/L
LAO-B	18777-003	Water	08/31/98	09/02/98	09/15/98	09/17/98	Uranium-234	0.21	0.21	0.33	PCI/L
							Uranium-238	0.47	0.29	0.22	PCI/L
							Uranium-235/236	0.10	0.16	0.30	PCI/L
TA-50-2A	18777-004	Water	08/28/98	09/02/98	10/21/98	10/23/98	Uranium-234	0.95	0.66	0.74	PCI/L
							Uranium-238	0.79	0.54	0.21	PCI/L
							Uranium-235/236	<0.72	0.24	0.72	PCI/L
TA-50-2B	18777-005	Water	08/28/98	09/02/98	09/15/98	09/17/98	Uranium-234	1.04	0.41	0.18	PCI/L
							Uranium-238	0.84	0.36	0.18	PCI/L
							Uranium-235/236	0.11	0.14	0.24	PCI/L
LAO-2	18777-006	Water	08/31/98	09/02/98	10/21/98	10/23/98	Uranium-234	0.90	0.30	0.15	PCI/L
							Uranium-238	0.16	0.12	0.16	PCI/L
							Uranium-235/236	0.13	0.11	0.13	PCI/L
LAO-2F	18777-007	Water	08/31/98	09/02/98	09/15/98	09/17/98	Uranium-234	0.22	0.21	0.35	PCI/L
							Uranium-238	0.25	0.21	0.31	PCI/L
							Uranium-235/236	-0.02	0.12	0.38	PCI/L
BAYO-1	18788-001	Water	09/01/98	09/03/98	09/23/98	09/25/98	Uranium-234	0.23	0.24	0.40	PCI/L
							Uranium-238	0.38	0.27	0.26	PCI/L
							Uranium-235/236	0.15	0.24	0.47	PCI/L

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Isotopic Uranium
Method: NAS-NS-3050

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
TW-3	18788-002	Water	09/01/98	09/03/98	09/23/98	09/25/98	Uranium-234	0.53	0.30	0.16	PCI/L
							Uranium-238	0.40	0.25	0.16	PCI/L
							Uranium-235/236	0.033	0.085	0.20	PCI/L
TW-4	18788-003	Water	09/01/98	09/03/98	09/23/98	09/25/98	Uranium-234	0.49	0.33	0.38	PCI/L
							Uranium-238	0.30	0.24	0.26	PCI/L
							Uranium-235/236	0.01	0.11	0.35	PCI/L
TW-2A	18788-004	Water	09/01/98	09/03/98	09/23/98	09/25/98	Uranium-234	0.15	0.18	0.30	PCI/L
							Uranium-238	0.19	0.18	0.10	PCI/L
							Uranium-235/236	0.00	0.00	0.13	PCI/L
TW-1	18788-005	Water	09/01/98	09/03/98	09/23/98	09/25/98	Uranium-234	2.31	0.82	0.19	PCI/L
							Uranium-238	0.92	0.44	0.19	PCI/L
							Uranium-235/236	0.01	0.11	0.34	PCI/L
LAO-0.6	18788-006	Water	08/31/98	09/03/98	09/23/98	09/25/98	Uranium-234	0.24	0.27	0.46	PCI/L
							Uranium-238	0.32	0.29	0.42	PCI/L
							Uranium-235/236	0.12	0.24	0.50	PCI/L
LAO-1.2	18788-007	Water	08/31/98	09/03/98	09/23/98	09/25/98	Uranium-234	0.14	0.16	0.22	PCI/L
							Uranium-238	0.12	0.16	0.27	PCI/L
							Uranium-235/236	0.038	0.098	0.23	PCI/L
LAO-3A	18788-008	Water	08/31/98	09/03/98	09/23/98	09/25/98	Uranium-234	0.07	0.12	0.24	PCI/L
							Uranium-238	0.22	0.20	0.26	PCI/L
							Uranium-235/236	-0.008	0.091	0.32	PCI/L
NA	QCBLK184492-1	Water	NA	NA	09/15/98	09/17/98	Uranium-234	0.80	0.35	0.18	PCI/L
							Uranium-238	1.42	0.51	0.078	PCI/L

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Isotopic Uranium
Method: NAS-NS-3050

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
NA	QCBLK184492-1	Water	NA	NA	09/15/98	09/17/98	Uranium-235/236	0.16	0.17	0.20	PCI/L
NA	QCBLK185317-1	Water	NA	NA	09/23/98	09/25/98	Uranium-234	0.51	0.17	0.088	PCI/L
							Uranium-238	0.56	0.18	0.022	PCI/L
							Uranium-235/236	<0.094	0.040	0.094	PCI/L
NA	QCBLK188156-1	Water	NA	NA	10/21/98	10/23/98	Uranium-234	0.57	0.41	0.50	PCI/L
							Uranium-238	0.50	0.34	0.13	PCI/L
							Uranium-235/236	0.09	0.24	0.52	PCI/L
NA	QCLCS184492-1	Water	NA	NA	09/15/98	09/17/98	Uranium-234	79	---	---	%REC
							Uranium-238	87	---	---	%REC
NA	QCLCS185317-1	Water	NA	NA	09/23/98	09/25/98	Uranium-234	95	---	---	%REC
							Uranium-238	100	---	---	%REC
NA	QCLCS188156-1	Water	NA	NA	10/21/98	10/23/98	Uranium-234	107	---	---	%REC
							Uranium-238	131	---	---	%REC

Quanterra
30 October 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Gross Alpha/Beta
Method: EPA 9310

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
LAO-4.5C	18777-001	Water	08/31/98	09/02/98	09/23/98	09/25/98	Gross Alpha	2.86	1.34	1.68	PCI/L
							Gross Beta	9.71	1.72	1.86	PCI/L
LAO-5	18777-002	Water	08/31/98	09/02/98	09/23/98	09/25/98	Gross Alpha	1.35	1.39	2.25	PCI/L
							Gross Beta	7.07	1.48	1.79	PCI/L
LAO-B	18777-003	Water	08/31/98	09/02/98	09/23/98	09/25/98	Gross Alpha	5.23	1.41	1.15	PCI/L
							Gross Beta	6.13	1.45	1.89	PCI/L
TA-50-2A	18777-004	Water	08/28/98	09/02/98	09/23/98	09/25/98	Gross Alpha	133	17	3.18	PCI/L
							Gross Beta	489	49	2.76	PCI/L
TA-50-2B	18777-005	Water	08/28/98	09/02/98	09/23/98	09/25/98	Gross Alpha	49.5	7.7	2.45	PCI/L
							Gross Beta	410	41	2.49	PCI/L
LAO-2	18777-006	Water	08/31/98	09/02/98	09/23/98	09/25/98	Gross Alpha	3.42	1.50	1.72	PCI/L
							Gross Beta	37.1	4.2	1.82	PCI/L
LAO-2F	18777-007	Water	08/31/98	09/02/98	09/23/98	09/25/98	Gross Alpha	3.27	1.84	2.62	PCI/L
							Gross Beta	35.2	4.0	1.92	PCI/L
BAYO-1	18788-001	Water	09/01/98	09/03/98	09/23/98	09/25/98	Gross Alpha	3.39	1.90	2.65	PCI/L
							Gross Beta	13.2	2.0	1.77	PCI/L
TW-3	18788-002	Water	09/01/98	09/03/98	09/23/98	09/25/98	Gross Alpha	1.62	1.67	2.73	PCI/L
							Gross Beta	4.60	1.51	2.23	PCI/L
TW-4	18788-003	Water	09/01/98	09/03/98	09/23/98	09/25/98	Gross Alpha	1.84	1.25	1.86	PCI/L
							Gross Beta	4.02	1.23	1.72	PCI/L
TW-2A	18788-004	Water	09/01/98	09/03/98	09/23/98	09/25/98	Gross Alpha	7.96	2.91	3.71	PCI/L
							Gross Beta	4.72	1.53	2.24	PCI/L
TW-1	18788-005	Water	09/01/98	09/03/98	09/23/98	09/25/98	Gross Alpha	6.16	2.02	2.17	PCI/L
							Gross Beta	13.9	2.2	2.26	PCI/L

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Gross Alpha/Beta
Method: EPA 9310

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
LAO-0.6	18788-006	Water	08/31/98	09/03/98	09/23/98	09/25/98	Gross Alpha	6.94	2.32	2.46	PCI/L
							Gross Beta	7.65	1.54	1.81	PCI/L
LAO-1.2	18788-007	Water	08/31/98	09/03/98	09/23/98	09/25/98	Gross Alpha	11.9	2.8	2.20	PCI/L
							Gross Beta	8.75	1.59	1.72	PCI/L
LAO-3A	18788-008	Water	08/31/98	09/03/98	09/23/98	09/25/98	Gross Alpha	11.2	2.8	2.55	PCI/L
							Gross Beta	80.4	8.4	1.73	PCI/L
NA	QCBLK184995-1	Water	NA	NA	09/23/98	09/25/98	Gross Alpha	5.48	1.19	0.98	PCI/L
							Gross Beta	3.37	1.13	1.63	PCI/L
NA	QCLCS184995-1	Water	NA	NA	09/23/98	09/25/98	Gross Alpha	116	---	---	%REC
							Gross Beta	116	---	---	%REC

Quanterra
30 October 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Strontium 90
Method: STD METHOD

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
LAO-4.5C	18777-001	Water	08/31/98	09/02/98	10/22/98	10/22/98	Strontium 90	0.91	0.41	0.57	PCI/L
LAO-5	18777-002	Water	08/31/98	09/02/98	10/22/98	10/22/98	Strontium 90	0.60	0.41	0.63	PCI/L
LAO-B	18777-003	Water	08/31/98	09/02/98	10/22/98	10/22/98	Strontium 90	0.51	0.34	0.53	PCI/L
TA-50-2A	18777-004	Water	08/28/98	09/02/98	10/22/98	10/22/98	Strontium 90	0.39	0.45	0.75	PCI/L
TA-50-2B	18777-005	Water	08/28/98	09/02/98	10/22/98	10/22/98	Strontium 90	2.12	0.59	0.59	PCI/L
LAO-2	18777-006	Water	08/31/98	09/02/98	10/22/98	10/22/98	Strontium 90	7.21	1.51	0.55	PCI/L
LAO-2F	18777-007	Water	08/31/98	09/02/98	10/22/98	10/22/98	Strontium 90	5.82	1.23	0.46	PCI/L
BAYO-1	18788-001	Water	09/01/98	09/03/98	10/22/98	10/22/98	Strontium 90	-0.18	0.39	0.69	PCI/L
TW-3	18788-002	Water	09/01/98	09/03/98	10/22/98	10/22/98	Strontium 90	0.25	0.31	0.52	PCI/L
TW-4	18788-003	Water	09/01/98	09/03/98	10/22/98	10/22/98	Strontium 90	0.44	0.32	0.51	PCI/L
TW-2A	18788-004	Water	09/01/98	09/03/98	10/22/98	10/22/98	Strontium 90	0.02	0.27	0.48	PCI/L
TW-1	18788-005	Water	09/01/98	09/03/98	10/22/98	10/22/98	Strontium 90	0.81	0.64	1.02	PCI/L
LAO-0.6	18788-006	Water	08/31/98	09/03/98	10/22/98	10/22/98	Strontium 90	0.29	0.29	0.48	PCI/L
LAO-1.2	18788-007	Water	08/31/98	09/03/98	10/22/98	10/22/98	Strontium 90	0.31	0.35	0.57	PCI/L
LAO-3A	18788-008	Water	08/31/98	09/03/98	10/22/98	10/22/98	Strontium 90	15.2	3.1	0.54	PCI/L
NA	QCBLK184985-1	Water	NA	NA	10/22/98	10/22/98	Strontium 90	-0.24	0.30	0.54	PCI/L
NA	QCLCS184985-1	Water	NA	NA	10/22/98	10/22/98	Strontium 90	118	---	---	%REC

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28 October 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Isotopic Uranium
Method: NAS-NS-3050

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
MCO-7	18680-001	Water	08/21/98	08/22/98	09/03/98	09/09/98	Uranium-234	0.84	0.39	0.25	PCI/L
							Uranium-238	0.32	0.22	0.088	PCI/L
							Uranium-235/236	0.08	0.11	0.11	PCI/L
MCO-5	18680-002	Water	08/20/98	08/22/98	09/03/98	09/09/98	Uranium-234	0.59	0.37	0.30	PCI/L
							Uranium-238	0.37	0.28	0.23	PCI/L
							Uranium-235/236	0.15	0.21	0.33	PCI/L
MCO-5X	18680-003	Water	08/20/98	08/22/98	09/03/98	09/09/98	Uranium-234	1.12	0.43	0.076	PCI/L
							Uranium-238	0.41	0.24	0.13	PCI/L
							Uranium-235/236	0.06	0.10	0.20	PCI/L
MCO-3	18680-004	Water	08/20/98	08/22/98	09/03/98	09/09/98	Uranium-234	5.62	1.52	0.38	PCI/L
							Uranium-238	2.07	0.70	0.33	PCI/L
							Uranium-235/236	0.34	0.28	0.41	PCI/L
MCO-4B	18680-005	Water	08/20/98	08/22/98	09/03/98	09/09/98	Uranium-234	1.43	0.53	0.19	PCI/L
							Uranium-238	0.36	0.23	0.22	PCI/L
							Uranium-235/236	0.030	0.076	0.18	PCI/L
MCO-6	18680-007	Water	08/21/98	08/22/98	09/03/98	09/09/98	Uranium-234	3.23	0.90	0.14	PCI/L
							Uranium-238	0.93	0.37	0.16	PCI/L
							Uranium-235/236	0.08	0.11	0.17	PCI/L
TA-50	18680-008	Water	08/19/98	08/22/98	09/03/98	09/09/98	Uranium-234	0.44	0.24	0.26	PCI/L
							Uranium-238	0.29	0.19	0.24	PCI/L
							Uranium-235/236	-0.017	0.064	0.24	PCI/L
MCO-2	18680-009	Water	08/19/98	08/22/98	09/03/98	09/09/98	Uranium-234	0.75	0.34	0.20	PCI/L
							Uranium-238	0.67	0.32	0.18	PCI/L
							Uranium-235/236	0.17	0.16	0.17	PCI/L

Quanterra
28 October 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Isotopic Uranium
Method: NAS-NS-3050

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
MCO-75B	18711-001	Water	08/25/98	08/27/98	09/03/98	09/09/98	Uranium-234	0.54	0.29	0.27	PCI/L
							Uranium-238	0.41	0.25	0.26	PCI/L
							Uranium-235/236	0.12	0.14	0.22	PCI/L
MCWB-65E	18711-002	Water	08/24/98	08/27/98	09/03/98	09/09/98	Uranium-234	1.14	0.40	0.15	PCI/L
							Uranium-238	0.47	0.23	0.14	PCI/L
							Uranium-235/236	0.16	0.14	0.07	PCI/L
MT-3	18741-001	Water	08/27/98	08/29/98	09/03/98	09/09/98	Uranium-234	0.60	0.28	0.18	PCI/L
							Uranium-238	0.83	0.34	0.15	PCI/L
							Uranium-235/236	0.10	0.12	0.21	PCI/L
LANL-FB-1	18741-002	Water	08/27/98	08/29/98	09/03/98	09/09/98	Uranium-234	0.20	0.30	0.59	PCI/L
							Uranium-238	0.15	0.24	0.47	PCI/L
							Uranium-235/236	-0.099	0.079	0.58	PCI/L
MT-4	18741-003	Water	08/26/98	08/29/98	09/03/98	09/09/98	Uranium-234	0.38	0.31	0.27	PCI/L
							Uranium-238	0.53	0.38	0.32	PCI/L
							Uranium-235/236	0.12	0.20	0.33	PCI/L
MCWB-7.7B	18741-005	Water	08/26/98	08/29/98	09/03/98	09/09/98	Uranium-234	0.65	0.45	0.40	PCI/L
							Uranium-238	0.44	0.35	0.17	PCI/L
							Uranium-235/236	0.08	0.16	0.21	PCI/L
NA	QCBLK183194-1	Water	NA	NA	09/03/98	09/09/98	Uranium-234	0.20	0.09	0.055	PCI/L
							Uranium-238	0.19	0.09	0.055	PCI/L
							Uranium-235/236	0.046	0.050	0.068	PCI/L
NA	QCLCS183194-1	Water	NA	NA	09/03/98	09/09/98	Uranium-234	94	---	---	%REC
							Uranium-238	95	---	---	%REC

Quanterra
28 October 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Gross Alpha/Beta
Method: EPA 9310

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
MCO-7	18680-001	Water	08/21/98	08/22/98	09/23/98	09/23/98	Gross Alpha	7.29	2.39	2.59	PCI/L
							Gross Beta	40.4	4.5	1.76	PCI/L
MCO-5	18680-002	Water	08/20/98	08/22/98	09/23/98	09/23/98	Gross Alpha	15.1	3.5	3.30	PCI/L
							Gross Beta	104	11	2.25	PCI/L
MCO-5X	18680-003	Water	08/20/98	08/22/98	09/23/98	09/23/98	Gross Alpha	14.4	3.3	2.85	PCI/L
							Gross Beta	107	11	1.78	PCI/L
MCO-3	18680-004	Water	08/20/98	08/22/98	09/23/98	09/23/98	Gross Alpha	19.7	4.1	3.67	PCI/L
							Gross Beta	148	15	2.24	PCI/L
MCO-4B	18680-005	Water	08/20/98	08/22/98	09/23/98	09/23/98	Gross Alpha	12.7	3.0	2.50	PCI/L
							Gross Beta	118	12	2.29	PCI/L
MCO-6	18680-007	Water	08/21/98	08/22/98	09/23/98	09/23/98	Gross Alpha	37.3	5.6	2.22	PCI/L
							Gross Beta	111	12	1.80	PCI/L
MCO-6	18680-007DUP	Water	08/21/98	08/22/98	09/23/98	09/23/98	Gross Alpha	14.2	3.1	2.31	PCI/L
							Gross Beta	111	11	1.72	PCI/L
TA-50	18680-008	Water	08/19/98	08/22/98	09/23/98	09/23/98	Gross Alpha	31.9	5.3	2.89	PCI/L
							Gross Beta	141	14	1.74	PCI/L
MCO-2	18680-009	Water	08/19/98	08/22/98	09/23/98	09/23/98	Gross Alpha	3.30	2.05	3.12	PCI/L
							Gross Beta	5.36	1.35	1.78	PCI/L
MCO-75B	18711-001	Water	08/25/98	08/27/98	09/25/98	09/28/98	Gross Alpha	1.02	1.29	2.15	PCI/L
							Gross Beta	30.9	3.6	1.81	PCI/L
MCWB-65E	18711-002	Water	08/24/98	08/27/98	09/25/98	09/28/98	Gross Alpha	2.28	1.45	2.02	PCI/L
							Gross Beta	31.8	3.7	1.78	PCI/L
MT-3	18741-001	Water	08/27/98	08/29/98	09/25/98	09/28/98	Gross Alpha	5.52	2.02	2.13	PCI/L
							Gross Beta	32.7	3.8	1.87	PCI/L

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Gross Alpha/Beta
Method: EPA 9310

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
LANL-FB-1	18741-002	Water	08/27/98	08/29/98	09/25/98	09/28/98	Gross Alpha	0.31	0.40	0.66	PCI/L
							Gross Beta	0.93	0.98	1.63	PCI/L
MT-4	18741-003	Water	08/26/98	08/29/98	09/25/98	09/28/98	Gross Alpha	4.62	2.01	2.53	PCI/L
							Gross Beta	35.8	4.1	1.98	PCI/L
MCWB-7.7B	18741-005	Water	08/26/98	08/29/98	09/25/98	09/28/98	Gross Alpha	2.92	1.51	1.92	PCI/L
							Gross Beta	38.4	4.39	1.99	PCI/L
NA	QCBLK185342-1	Water	NA	NA	09/23/98	09/23/98	Gross Alpha	1.33	0.57	0.65	PCI/L
							Gross Beta	1.46	1.04	1.69	PCI/L
NA	QCBLK185534-1	Water	NA	NA	09/25/98	09/28/98	Gross Alpha	0.68	0.56	0.86	PCI/L
							Gross Beta	0.51	1.21	2.06	PCI/L
NA	QCLCS185342-1	Water	NA	NA	09/23/98	09/23/98	Gross Alpha	113	---	---	%REC
							Gross Beta	107	---	---	%REC
NA	QCLCS185534-1	Water	NA	NA	09/25/98	09/28/98	Gross Alpha	102	---	---	%REC
							Gross Beta	90	---	---	%REC

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27 October 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Strontium 90
Method: STD METHOD

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
MCO-7	18680-001	Water	08/21/98	08/22/98	10/08/98	10/08/98	Strontium 90	0.58	0.30	0.44	PCI/L
MCO-5	18680-002	Water	08/20/98	08/22/98	10/08/98	10/08/98	Strontium 90	19.0	3.8	0.47	PCI/L
MCO-5X	18680-003	Water	08/20/98	08/22/98	10/08/98	10/08/98	Strontium 90	41.1	8.1	0.62	PCI/L
MCO-3	18680-004	Water	08/20/98	08/22/98	10/08/98	10/08/98	Strontium 90	28.1	5.6	0.46	PCI/L
MCO-4B	18680-005	Water	08/20/98	08/22/98	10/08/98	10/08/98	Strontium 90	32.4	6.4	0.47	PCI/L
MCO-6	18680-007	Water	08/21/98	08/22/98	10/08/98	10/08/98	Strontium 90	63.5	12.6	1.11	PCI/L
MCO-6	18680-007DUP	Water	08/21/98	08/22/98	10/08/98	10/08/98	Strontium 90	26.1	5.2	0.45	PCI/L
TA-50	18680-008	Water	08/19/98	08/22/98	10/08/98	10/08/98	Strontium 90	9.83	2.13	1.03	PCI/L
MCO-2	18680-009	Water	08/19/98	08/22/98	10/08/98	10/08/98	Strontium 90	0.44	0.38	0.62	PCI/L
MCO-75B	18711-001	Water	08/25/98	08/27/98	10/08/98	10/08/98	Strontium 90	0.28	0.27	0.44	PCI/L
MCWB-65E	18711-002	Water	08/24/98	08/27/98	10/08/98	10/08/98	Strontium 90	1.66	0.66	0.88	PCI/L
MT-3	18741-001	Water	08/27/98	08/29/98	10/08/98	10/08/98	Strontium 90	0.01	0.28	0.49	PCI/L
LANL-FB-1	18741-002	Water	08/27/98	08/29/98	10/08/98	10/08/98	Strontium 90	0.24	0.29	0.47	PCI/L
MT-4	18741-003	Water	08/26/98	08/29/98	10/08/98	10/08/98	Strontium 90	-0.05	0.46	0.80	PCI/L
MCWB-7.7B	18741-005	Water	08/26/98	08/29/98	10/08/98	10/08/98	Strontium 90	0.12	0.57	0.98	PCI/L
NA	QCBLK182717-1	Water	NA	NA	10/08/98	10/08/98	Strontium 90	0.63	0.81	1.34	PCI/L
NA	QCLCS182717-1	Water	NA	NA	10/08/98	10/08/98	Strontium 90	132	---	---	%REC

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Isotopic Uranium
Method: NAS-NS-3050

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
DP SPRINGS	18794-001	Water	09/02/98	09/04/98	09/25/98	10/01/98	Uranium-234	1.14	0.47	0.19	PCI/L
							Uranium-238	0.26	0.19	0.089	PCI/L
							Uranium-235/236	0.10	0.15	0.26	PCI/L
LAO-1.6G	18794-002	Water	09/01/98	09/04/98	09/25/98	10/01/98	Uranium-234	0.71	0.39	0.43	PCI/L
							Uranium-238	0.38	0.26	0.29	PCI/L
							Uranium-235/236	0.02	0.16	0.45	PCI/L
TW-8	18794-003	Water	09/02/98	09/04/98	09/25/98	10/01/98	Uranium-234	0.66	0.33	0.15	PCI/L
							Uranium-238	0.47	0.27	0.15	PCI/L
							Uranium-235/236	0.07	0.11	0.19	PCI/L
LAO-0.3	18794-004	Water	09/01/98	09/04/98	09/25/98	10/01/98	Uranium-234	0.28	0.22	0.29	PCI/L
							Uranium-238	0.16	0.16	0.21	PCI/L
							Uranium-235/236	0.05	0.11	0.26	PCI/L
POI-4	18794-006	Water	09/02/98	09/04/98	09/25/98	10/01/98	Uranium-234	3.35	1.06	0.34	PCI/L
							Uranium-238	1.11	0.49	0.11	PCI/L
							Uranium-235/236	0.49	0.33	0.13	PCI/L
APCO-1	18806-001	Water	09/03/98	09/05/98	09/25/98	10/01/98	Uranium-234	0.40	0.24	0.19	PCI/L
							Uranium-238	0.31	0.21	0.19	PCI/L
							Uranium-235/236	0.04	0.11	0.25	PCI/L
BAYO-2	18806-002	Water	09/03/98	09/05/98	09/25/98	10/01/98	Uranium-234	1.00	0.45	0.18	PCI/L
							Uranium-238	0.18	0.17	0.18	PCI/L
							Uranium-235/236	-0.037	0.038	0.32	PCI/L
LAVZ-2	18806-003	Water	09/04/98	09/05/98	09/25/98	10/01/98	Uranium-234	0.82	0.45	0.49	PCI/L
							Uranium-238	0.31	0.28	0.43	PCI/L
							Uranium-235/236	-0.08	0.13	0.53	PCI/L

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Isotopic Uranium
Method: NAS-NS-3050

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
LANL-FB-2	18806-004	Water	09/03/98	09/05/98	09/25/98	10/01/98	Uranium-234	0.52	0.33	0.26	PCI/L
							Uranium-238	0.28	0.25	0.33	PCI/L
							Uranium-235/236	0.09	0.15	0.25	PCI/L
LAVZ-1	18806-005	Water	09/04/98	09/05/98	09/25/98	10/01/98	Uranium-234	0.50	0.27	0.16	PCI/L
							Uranium-238	0.32	0.21	0.18	PCI/L
							Uranium-235/236	0.06	0.10	0.20	PCI/L
LAO-0.91	18806-007	Water	09/03/98	09/05/98	09/25/98	10/01/98	Uranium-234	0.26	0.24	0.38	PCI/L
							Uranium-238	0.14	0.19	0.35	PCI/L
							Uranium-235/236	0.04	0.13	0.35	PCI/L
LAO-0.91	18806-007DUP	Water	09/03/98	09/05/98	09/25/98	10/01/98	Uranium-234	0.33	0.20	0.12	PCI/L
							Uranium-238	0.21	0.16	0.16	PCI/L
							Uranium-235/236	0.057	0.091	0.15	PCI/L
NA	QCBLK185567-1	Water	NA	NA	09/25/98	10/01/98	Uranium-234	2.11	0.73	0.20	PCI/L
							Uranium-238	0.56	0.31	0.096	PCI/L
							Uranium-235/236	0.26	0.22	0.12	PCI/L
NA	QCLCS185567-1	Water	NA	NA	09/25/98	10/01/98	Uranium-234	96	---	---	%REC
							Uranium-238	100	---	---	%REC

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Gross Alpha/Beta
Method: EPA 9310

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
DP SPRINGS	18794-001	Water	09/02/98	09/04/98	09/25/98	09/28/98	Gross Alpha	3.94	1.27	1.20	PCI/L
							Gross Beta	112	12	1.87	PCI/L
LAO-1.6G	18794-002	Water	09/01/98	09/04/98	09/25/98	09/28/98	Gross Alpha	0.32	0.74	1.35	PCI/L
							Gross Beta	3.94	1.27	1.83	PCI/L
TW-8	18794-003	Water	09/02/98	09/04/98	09/25/98	09/28/98	Gross Alpha	1.07	0.79	1.18	PCI/L
							Gross Beta	2.28	1.16	1.81	PCI/L
LAO-0.3	18794-004	Water	09/01/98	09/04/98	09/25/98	09/28/98	Gross Alpha	-0.42	0.91	1.86	PCI/L
							Gross Beta	3.70	1.23	1.77	PCI/L
POI-4	18794-006	Water	09/02/98	09/04/98	09/25/98	09/28/98	Gross Alpha	1.55	1.20	1.76	PCI/L
							Gross Beta	8.97	1.70	1.95	PCI/L
APCO-1	18806-001	Water	09/03/98	09/05/98	09/25/98	09/28/98	Gross Alpha	4.20	1.78	2.09	PCI/L
							Gross Beta	12.0	1.9	1.92	PCI/L
BAYO-2	18806-002	Water	09/03/98	09/05/98	09/25/98	09/28/98	Gross Alpha	1.08	1.20	1.94	PCI/L
							Gross Beta	8.04	1.61	1.91	PCI/L
LAVZ-2	18806-003	Water	09/04/98	09/05/98	09/25/98	09/28/98	Gross Alpha	2.89	1.38	1.67	PCI/L
							Gross Beta	174	18	1.81	PCI/L
LANL-FB-2	18806-004	Water	09/03/98	09/05/98	09/25/98	09/28/98	Gross Alpha	0.32	0.55	0.96	PCI/L
							Gross Beta	1.09	1.05	1.74	PCI/L
LAVZ-1	18806-005	Water	09/04/98	09/05/98	09/25/98	09/28/98	Gross Alpha	9.15	2.37	2.17	PCI/L
							Gross Beta	175	18	1.74	PCI/L
LAO-0.91	18806-007	Water	09/03/98	09/05/98	09/25/98	09/28/98	Gross Alpha	0.31	1.17	2.10	PCI/L
							Gross Beta	6.26	1.60	2.18	PCI/L
LAO-0.91	18806-007DUP	Water	09/03/98	09/05/98	09/25/98	09/28/98	Gross Alpha	0.62	1.02	1.76	PCI/L
							Gross Beta	5.00	1.29	1.72	PCI/L

Quanterra
3 November 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Gross Alpha/Beta
Method: EPA 9310

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
NA	QCBLK185534-1	Water	NA	NA	09/25/98	09/28/98	Gross Alpha	0.68	0.56	0.86	PCI/L
							Gross Beta	0.51	1.21	2.06	PCI/L
NA	QCLCS185534-1	Water	NA	NA	09/25/98	09/28/98	Gross Alpha	102	---	---	%REC
							Gross Beta	90	---	---	%REC

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4 Novem 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Strontium 90
Method: STD METHOD

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
DP SPRINGS	18794-001	Water	09/02/98	09/04/98	10/28/98	10/28/98	Strontium 90	40.7	8.1	0.56	PCI/L
LAO-1.6G	18794-002	Water	09/01/98	09/04/98	10/28/98	10/28/98	Strontium 90	0.12	0.56	0.97	PCI/L
TW-8	18794-003	Water	09/02/98	09/04/98	10/28/98	10/28/98	Strontium 90	-0.15	0.33	0.58	PCI/L
LAO-0.3	18794-004	Water	09/01/98	09/04/98	10/28/98	10/28/98	Strontium 90	0.31	0.33	0.55	PCI/L
POI-4	18794-006	Water	09/02/98	09/04/98	10/28/98	10/28/98	Strontium 90	0.35	0.36	0.59	PCI/L
APCO-1	18806-001	Water	09/03/98	09/05/98	10/28/98	10/28/98	Strontium 90	0.06	0.40	0.69	PCI/L
BAYO-2	18806-002	Water	09/03/98	09/05/98	10/28/98	10/28/98	Strontium 90	0.34	0.32	0.52	PCI/L
LAVZ-2	18806-003	Water	09/04/98	09/05/98	10/28/98	10/28/98	Strontium 90	45.7	9.0	0.63	PCI/L
LANL-FB-2	18806-004	Water	09/03/98	09/05/98	10/28/98	10/28/98	Strontium 90	-0.14	0.31	0.55	PCI/L
LAVZ-1	18806-005	Water	09/04/98	09/05/98	10/28/98	10/28/98	Strontium 90	43.2	8.5	0.67	PCI/L
LAO-0.91	18806-007	Water	09/03/98	09/05/98	10/28/98	10/28/98	Strontium 90	1.29	0.44	0.54	PCI/L
LAO-0.91	18806-007DUP	Water	09/03/98	09/05/98	10/28/98	10/28/98	Strontium 90	0.90	0.46	0.68	PCI/L
NA	QCBLK185545-1	Water	NA	NA	10/28/98	10/28/98	Strontium 90	-0.02	0.32	0.56	PCI/L
NA	QCLCS185545-1	Water	NA	NA	10/28/98	10/28/98	Strontium 90	67	---	---	%REC

Quar .a
3 November 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Isotopic Uranium
Method: NAS-NS-3050

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
SACRED SPRINGS	18865-001	Water	09/08/98	09/11/98	10/05/98	10/06/98	Uranium-234	1.26	0.30	0.015	PCI/L
							Uranium-238	0.55	0.16	0.051	PCI/L
							Uranium-235/236	0.067	0.045	0.018	PCI/L
BASALT SPRINGS	18865-002	Water	09/09/98	09/11/98	10/05/98	10/06/98	Uranium-234	0.29	0.10	0.055	PCI/L
							Uranium-238	0.20	0.09	0.083	PCI/L
							Uranium-235/236	0.022	0.033	0.054	PCI/L
LA SPRINGS	18865-003	Water	09/09/98	09/11/98	10/05/98	10/06/98	Uranium-234	0.066	0.063	0.095	PCI/L
							Uranium-238	0.077	0.064	0.090	PCI/L
							Uranium-235/236	-0.022	0.049	0.11	PCI/L
LANL-FB-3	18865-004	Water	09/09/98	09/11/98	10/05/98	10/06/98	Uranium-234	0.069	0.050	0.062	PCI/L
							Uranium-238	0.15	0.08	0.075	PCI/L
							Uranium-235/236	0.014	0.035	0.066	PCI/L
LAMESITA SPRING	18865-005	Water	09/08/98	09/11/98	10/05/98	10/06/98	Uranium-234	5.12	1.06	0.013	PCI/L
							Uranium-238	3.36	0.71	0.059	PCI/L
							Uranium-235/236	0.16	0.07	0.045	PCI/L
OTOWI SPRINGS	18865-006	Water	09/08/98	09/11/98	10/05/98	10/06/98	Uranium-234	0.78	0.20	0.080	PCI/L
							Uranium-238	1.00	0.24	0.093	PCI/L
							Uranium-235/236	-0.012	0.063	0.12	PCI/L
LLA0-5	18865-007	Water	09/08/98	09/11/98	10/05/98	10/06/98	Uranium-234	1.78	0.40	0.038	PCI/L
							Uranium-238	1.26	0.30	0.038	PCI/L
							Uranium-235/236	0.057	0.050	0.068	PCI/L
LLA0-5	18865-007DUP	Water	09/08/98	09/11/98	10/05/98	10/06/98	Uranium-234	1.37	0.32	0.099	PCI/L
							Uranium-238	1.12	0.27	0.052	PCI/L
							Uranium-235/236	0.091	0.063	0.075	PCI/L

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3 November 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Isotopic Uranium
Method: NAS-NS-3050

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
NA	QCBLK186148-1	Water	NA	NA	10/05/98	10/06/98	Uranium-234	0.32	0.11	0.062	PCI/L
							Uranium-238	0.28	0.10	0.053	PCI/L
							Uranium-235/236	0.021	0.025	0.019	PCI/L
NA	QCLCS186148-1	Water	NA	NA	10/05/98	10/06/98	Uranium-234	84	---	---	%REC
							Uranium-238	95	---	---	%REC

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3 November 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Gross Alpha/Beta
Method: EPA 9310

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
SACRED SPRINGS	18865-001	Water	09/08/98	09/11/98	09/23/98	09/23/98	Gross Alpha	3.55	1.34	1.45	PCI/L
							Gross Beta	4.70	1.27	1.71	PCI/L
BASALT SPRINGS	18865-002	Water	09/09/98	09/11/98	09/23/98	09/23/98	Gross Alpha	1.54	1.31	2.01	PCI/L
							Gross Beta	7.25	1.67	2.19	PCI/L
LA SPRINGS	18865-003	Water	09/09/98	09/11/98	09/23/98	09/23/98	Gross Alpha	3.42	1.82	2.54	PCI/L
							Gross Beta	5.43	1.36	1.80	PCI/L
LANL-FB-3	18865-004	Water	09/09/98	09/11/98	09/23/98	09/23/98	Gross Alpha	2.81	0.82	0.77	PCI/L
							Gross Beta	7.07	1.41	1.64	PCI/L
LAMESITA SPRING	18865-005	Water	09/08/98	09/11/98	09/23/98	09/23/98	Gross Alpha	12.1	2.6	1.74	PCI/L
							Gross Beta	4.92	1.31	1.76	PCI/L
OTOWI SPRINGS	18865-006	Water	09/08/98	09/11/98	09/23/98	09/23/98	Gross Alpha	2.45	1.56	2.16	PCI/L
							Gross Beta	5.91	1.44	1.87	PCI/L
LLA0-5	18865-007	Water	09/08/98	09/11/98	09/23/98	09/23/98	Gross Alpha	3.25	1.61	1.98	PCI/L
							Gross Beta	5.28	1.37	1.81	PCI/L
LLA0-5	18865-007DUP	Water	09/08/98	09/11/98	09/23/98	09/23/98	Gross Alpha	1.75	1.67	2.66	PCI/L
							Gross Beta	6.42	1.53	1.99	PCI/L
NA	QCBLK185342-1	Water	NA	NA	09/23/98	09/23/98	Gross Alpha	1.33	0.57	0.65	PCI/L
							Gross Beta	1.46	1.04	1.69	PCI/L
NA	QCLCS185342-1	Water	NA	NA	09/23/98	09/23/98	Gross Alpha	113	---	---	%REC
							Gross Beta	107	---	---	%REC

Quanterra
3 November 1998

TECHLAW, INC.
750 N. St. Paul
Suite 600
Dallas, TX 75201

Project: 810.01

Category: Strontium 90
Method: STD METHOD

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Prep Date	Date Analyzed	Parameter	Result	Sigma Error (+/-)	MDA	Units
LANL-FB-3	18865-004	Water	09/09/98	09/11/98	10/28/98	10/28/98	Strontium 90	0.17	0.28	0.47	PCI/L
LLA0-5	18865-007	Water	09/08/98	09/11/98	10/28/98	10/28/98	Strontium 90	0.26	0.36	0.60	PCI/L
LLA0-5	18865-007DUP	Water	09/08/98	09/11/98	10/28/98	10/28/98	Strontium 90	0.21	0.41	0.70	PCI/L
NA	QCBLK185545-1	Water	NA	NA	10/28/98	10/28/98	Strontium 90	-0.02	0.32	0.56	PCI/L
NA	QCLCS185545-1	Water	NA	NA	10/28/98	10/28/98	Strontium 90	67	---	---	%REC

Tritium Data

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/19/98 11:15:00 AM
LAB SAMPLE ID:	80920732	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	TA-50	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	8.17E+03	9.2E+01	7.1E+02	1.75E+01	pCi/L	77.30%	(466.5)	(88.6)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0036

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/28/98 9:55:00 AM
LAB SAMPLE ID:	80920713	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	TA-502A	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	4.80E+03	7.0E+01	4.2E+02	1.84E+01	pCi/L	74.70%	(260.9)	(68.5)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0017

Comments

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/28/98 10:25:00 AM
LAB SAMPLE ID:	80920714	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	TA-502B	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	4.29E+03	6.6E+01	3.8E+02	1.84E+01	pCi/L	74.70%	(233.3)	(64.6)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0018

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/19/98 2:30:00 PM
LAB SAMPLE ID:	80920736	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MC0-2	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.05E+02	1.3E+01	2.0E+01	1.75E+01	pCi/L	77.30%	(6.)	(8.1)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0040

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/20/98 9:30:00 AM
LAB SAMPLE ID:	80920706	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MC0-3	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.92E+04	1.4E+02	1.6E+03	2.15E+01	pCi/L	74.70%	(896.8)	(136.)	9/30/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0010

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/20/98 12:33:00 PM
LAB SAMPLE ID:	80920707	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MC0-4B	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	8.72E+03	9.5E+01	7.6E+02	2.15E+01	pCi/L	74.70%	(406.3)	(91.3)	9/30/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0011

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/20/98 2:47:00 PM
LAB SAMPLE ID:	80920733	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MC0-5	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.16E+04	1.1E+02	1.0E+03	1.75E+01	pCi/L	77.30%	(663.7)	(106.9)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0037

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/20/98 3:00:00 PM
LAB SAMPLE ID:	80920734	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MC0-5X	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.23E+04	1.2E+02	1.1E+03	1.75E+01	pCi/L	77.30%	(704.9)	(104.3)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0038

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/21/98 9:45:00 AM
LAB SAMPLE ID:	80920735	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MC0-6	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.33E+04	1.2E+02	1.1E+03	1.75E+01	pCi/L	77.30%	(756.6)	(107.6)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0039

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/21/98 2:05:00 PM
LAB SAMPLE ID:	80920737	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MC0-7	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.72E+04	1.4E+02	1.5E+03	1.75E+01	pCi/L	77.30%	(983.6)	(118.9)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0041

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/25/98 10:10:00 AM
LAB SAMPLE ID:	80920705	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MC0-7.5B	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.78E+04	1.4E+02	1.5E+03	2.15E+01	pCi/L	74.70%	(829.9)	(131.4)	9/30/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

6000

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/24/98 10:48:00 AM
LAB SAMPLE ID:	80920704	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MCWB-6.5E	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.26E+04	1.1E+02	1.1E+03	2.15E+01	pCi/L	74.70%	(589.5)	(110.1)	9/30/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0008

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/26/98 1:15:00 PM
LAB SAMPLE ID:	80920703	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MCWB-7.7B	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	2.79E+04	2.2E+02	2.4E+03	2.15E+01	pCi/L	74.70%	(1301.6)	(127.8)	9/30/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0007

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/27/98 1:42:00 PM
LAB SAMPLE ID:	80920701	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MT-3	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.75E+04	1.3E+02	1.5E+03	2.15E+01	pCi/L	74.70%	(817.1)	(130.6)	9/30/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0005

Comment

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/26/98 10:14:00 AM
LAB SAMPLE ID:	80920738	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	MT-4	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.92E+04	1.5E+02	1.7E+03	1.75E+01	pCi/L	77.30%	(1097.5)	(130.3)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0042

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/31/98 11:00:00 AM
LAB SAMPLE ID:	80920717	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LA0-B	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	8.51E+01	1.2E+01	1.9E+01	1.84E+01	pCi/L	74.70%	(4.6)	(6.9)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0021

Comments

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/1/98 2:30:00 PM
LAB SAMPLE ID:	80920724	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LA0-0.3	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	6.85E+01	1.1E+01	1.8E+01	1.84E+01	pCi/L	74.70%	(3.7)	(6.)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0038

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/31/98 1:30:00 PM
LAB SAMPLE ID:	80920725	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	L0A-0.6	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	3.10E+03	5.9E+01	2.8E+02	1.75E+01	pCi/L	77.30%	(176.7)	(52.3)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0029

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/3/98 1:00:00 PM
LAB SAMPLE ID:	80920710	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LA0-0.91	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.27E+02	1.5E+01	2.5E+01	2.15E+01	pCi/L	74.70%	(5.9)	(8.7)	9/30/98	0.15001	L	LSC	RICHRC5024

Number of Results: 1

0014

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/1/98 10:00:00 AM
LAB SAMPLE ID:	80920722	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LA0-1.6G	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.49E+02	1.5E+01	2.4E+01	1.84E+01	pCi/L	74.70%	(8.1)	(10.2)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0026

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/31/98 4:11:00 PM
LAB SAMPLE ID:	80920715	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LAO-2	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.34E+02	1.4E+01	2.3E+01	1.84E+01	pCi/L	74.70%	(7.3)	(9.6)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0019

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/31/98 4:30:00 PM
LAB SAMPLE ID:	80920716	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LA0-2F	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.26E+02	1.4E+01	2.2E+01	1.84E+01	pCi/L	74.70%	(6.8)	(9.2)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0020

Comments

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/31/98 2:34:00 PM
LAB SAMPLE ID:	80920731	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LA0-3A	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	9.98E+01	1.2E+01	2.0E+01	1.75E+01	pCi/L	77.30%	(5.7)	(8.)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0035

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/31/98 11:06:00 AM
LAB SAMPLE ID:	80920719	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LA0-4.5C	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.69E+02	1.5E+01	2.6E+01	1.84E+01	pCi/L	74.70%	(9.2)	(11.1)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0023

Comment

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/31/98 9:43:00 AM
LAB SAMPLE ID:	80920718	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	L0A-5	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.61E+02	1.5E+01	2.6E+01	1.84E+01	pCi/L	74.70%	(8.8)	(10.5)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0022

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/4/98 12:07:00 PM
LAB SAMPLE ID:	80920708	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LAUZ-2	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.86E+02	1.7E+01	2.9E+01	2.15E+01	pCi/L	74.70%	(8.7)	(11.2)	9/30/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0012

Comments

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/2/98 11:15:00 AM
LAB SAMPLE ID:	80920721	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	DPSPRINGS	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.56E+02	1.5E+01	2.5E+01	1.84E+01	pCi/L	74.70%	(8.5)	(10.5)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0025

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/3/98 9:40:00 AM
LAB SAMPLE ID:	80920709	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	APC0-1	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	3.12E+01	1.1E+01	1.8E+01	2.15E+01	pCi/L	74.70%	(1.5)	(2.9)	9/30/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0013

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/2/98 4:00:00 PM
LAB SAMPLE ID:	80920723	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	P0I-4	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	6.51E+01	1.1E+01	1.7E+01	1.84E+01	pCi/L	74.70%	(3.5)	(5.8)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0027

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/1/98 10:51:00 AM
LAB SAMPLE ID:	80920726	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	TW-2A	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.38E+03	4.3E+01	1.3E+02	1.75E+01	pCi/L	77.30%	(78.9)	(31.8)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0030

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/1/98 9:49:00 AM
LAB SAMPLE ID:	80920727	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	TW-1	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.91E+02	1.5E+01	2.7E+01	1.75E+01	pCi/L	77.30%	(10.9)	(12.4)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0031

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/1/98 1:50:00 PM
LAB SAMPLE ID:	80920730	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	TW-3	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	3.14E+00	7.7E+00	1.2E+01	1.75E+01	pCi/L	77.30%	0.18	0.41	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0034

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/1/98 8:34:00 AM
LAB SAMPLE ID:	80920729	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	TW-4	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	2.07E+00	7.4E+00	1.2E+01	1.75E+01	pCi/L	77.30%	0.12	0.28	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0033

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/2/98 3:56:00 PM
LAB SAMPLE ID:	80920720	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	TW-8	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.85E+01	8.9E+00	1.4E+01	1.84E+01	pCi/L	74.70%	(1.)	(2.1)	10/7/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0024

Comments:

FORM I

Date: 12/10/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10936	COLLECTION DATE:	9/8/98 2:00:00 PM
LAB SAMPLE ID:	80941601	REPORT NBR:	6654	RECEIVED DATE:	9/25/98 12:00:00 PM
CLIENT ID:	LLAO-5	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	1.23E+02	7.9E+00	1.8E+01	1.05E+01	pCi/L	74.70%	(11.8)	(15.7)	12/8/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0004

Comments:

FORM I

Date: 12/10/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG:**	10936	**COLLECTION DATE:**	9/9/98 9:10:00 AM
LAB SAMPLE ID:	80941605	**REPORT NBR:**	6654	**RECEIVED DATE:**	9/25/98 12:00:00 PM
CLIENT ID:	BARK SPRINGS	**ORDER NBR:**		**MATRIX:**	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	4.21E+01	5.8E+00	1.2E+01	1.05E+01	pCi/L	74.70%	(4.)	(7.2)	12/8/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0008

Comments:

FORM I

Date: 12/10/98

SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG:**	10936	**COLLECTION DATE:**	9/8/98 1:42:00 PM
LAB SAMPLE ID:	80941604	**REPORT NBR:**	6654	**RECEIVED DATE:**	9/25/98 12:00:00 PM
CLIENT ID:	SACRED SPRINGS	**ORDER NBR:**		**MATRIX:**	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	3.41E+01	5.7E+00	1.1E+01	1.05E+01	pCi/L	74.70%	(3.2)	(6.)	12/8/98	0.15001	L	LSC	RICHRC5024

Number of Results: 1

0007

Comments:

FORM I

Date: 12/10/98

SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG:**	10936	**COLLECTION DATE:**	9/8/98 4:30:00 PM
LAB SAMPLE ID:	80941603	**REPORT NBR:**	6654	**RECEIVED DATE:**	9/25/98 12:00:00 PM
CLIENT ID:	OTOWI SPRINGS	**ORDER NBR:**		**MATRIX:**	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	7.25E+01	6.7E+00	1.4E+01	1.05E+01	pCi/L	74.70%	(6.9)	(10.8)	12/8/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0006

Comments:

FORM I

Date: 12/10/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG:**	10936	**COLLECTION DATE:**	9/8/98 10:35:00 AM
LAB SAMPLE ID:	80941602	**REPORT NBR:**	6654	**RECEIVED DATE:**	9/25/98 12:00:00 PM
CLIENT ID:	LAMESITA SPRINGS	**ORDER NBR:**		**MATRIX:**	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	5.45E+01	6.2E+00	1.3E+01	1.05E+01	pCi/L	74.70%	(5.2)	(8.8)	12/8/98	0.15001	L	LSC	RICHRC5024

Number of Results: 1

0005

Comments:

FORM I

Date: 12/10/98

SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG:**	10936	**COLLECTION DATE:**	9/9/98 9:52:00 AM
LAB SAMPLE ID:	80941606	**REPORT NBR:**	6654	**RECEIVED DATE:**	9/25/98 12:00:00 PM
CLIENT ID:	LA SPRINGS	**ORDER NBR:**		**MATRIX:**	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	2.70E+00	4.6E+00	9.3E+00	1.05E+01	pCi/L	74.70%	0.26	0.59	12/8/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0009

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/1/98 12:17:00 PM
LAB SAMPLE ID:	80920728	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	BAY0-1	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	2.60E+01	9.0E+00	1.4E+01	1.75E+01	pCi/L	77.30%	(1.5)	(2.9)	10/13/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0032

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/3/98 2:15:00 PM
LAB SAMPLE ID:	80920711	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	BAY0-2	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	2.23E+01	1.0E+01	1.7E+01	2.15E+01	pCi/L	74.70%	(1.)	(2.2)	9/30/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0015

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	8/27/98 5:30:00 PM
LAB SAMPLE ID:	80920702	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LANL-FB1	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	3.45E+01	1.2E+01	2.0E+01	2.15E+01	pCi/L	74.70%	(1.6)	(2.8)	9/30/98	0.15001	L	LSC	RICHRC5024

Number of Results: 1

9000

Comments:

FORM I

Date: 10/22/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	10854	COLLECTION DATE:	9/3/98 2:00:00 PM
LAB SAMPLE ID:	80920712	REPORT NBR:	6199	RECEIVED DATE:	9/11/98 10:30:00 AM
CLIENT ID:	LANL-FB2	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	3.67E+01	1.1E+01	1.8E+01	2.15E+01	pCi/L	74.70%	(1.7)	(3.3)	9/30/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0016

Comments:

FORM I

Date: 12/10/98

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG:**	10936	**COLLECTION DATE:**	9/9/98 12:00:00 PM
LAB SAMPLE ID:	80941607	**REPORT NBR:**	6654	**RECEIVED DATE:**	9/25/98 12:00:00 PM
CLIENT ID:	LANL-FB-3	**ORDER NBR:**		**MATRIX:**	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
ENRICH H	2.74E+01	5.5E+00	1.1E+01	1.05E+01	pCi/L	74.70%	(2.6)	(5.)	12/8/98	0.15	L	LSC	RICHRC5024

Number of Results: 1

0010

Comments:

Stable Nitrogen Isotope Data

STABLE NITROGEN ISOTOPE DATA FOR QUANTERRA LABS. ATTN: RON SWALLER, MARTY CAHILL

CSL Job ID	CSL Sample ID	Sample ID	$\delta^{15}N_{AIR}$ - NH_3	$\delta^{15}N_{AIR}$ - NO_3/NO_2
CR48	1	APCO-1	24.3, 25.4	25.4, 21.9
	2	BAYO-1	11.9	2.9
	3	BAYO-2	14.4	29.7
	4	DP SPRINGS	---	2.9
	5	LAO-0.3	---	---
	6	LAO-0.6	---	7.6
	7	LAO-0.91	---	---
	8	LAO-1.2	---	---
	9	LAO-1.6G	---	-1.3
	10	LAO-2	---	1.4
	11	LAO-3A	---	-3.5
	12	LAO-4.5C	---	---
	13	LAO-5	---	---
	14	LAO-B	---	---
	15	LAVZ-1	---	---
	16	LAVZ-2	---	---
	17	MCO-2	---	---
	18	MCO-3	---	2.3
	19	MCO-4B	---	-4.7
	20	MCO-5	---	-4.5, -4.6
	21	MCO-6	---	-4.9
	22	MCO-7	---	-9.2
	23	MCO-7.5B	---	-12.1
	24	MCWB-6.5E	---	-8.5
	25	MCWB-7.7B	---	-37.9, -37.3
	26	MT-3	---	-15.7, -15.4
	27	MT-4	---	-29.5, -29.9
	28	POI-4	---	19.5
	29	TA-50	13.0	5.0
	30	TA50-2A	8.4	2.3
	31	TA50-2B	8.0	2.1
	32	TW-1	---	14.9
	33	TW-2A	11.0	0.8
	34	TW-3	---	-3.2
	35	TW-4	---	-2.5
	36	TW-8	---	-0.8
CR55	1	LLAO-5	---	7.3
	2	OTOWI SPRINGS	---	-1.6
	3	LA MESITA SPRINGS	---	-1.0
	4	SACRED SPRINGS	---	-4.0
	5	BASALT SPRINGS	---	30.2, 30.2
	6	LA SPRINGS	---	3.6

--- = not determined, insufficient concentration.

APPENDIX G

Chain-of-Custody Forms

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc.	Brett Kendrick	8/19/98	33440
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
750 N. St. Paul, Suite 6000	(214) 953-0045		
City / State / Zip Code	**Site Contact**		
DALLAS / TX / 75201	Christa Morrow		
Project Name	**Carrier/Waybill Number**		
LANL, K015	4795032281 Fedex		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Dissolved metal	U Dissolved	Gross alpha/beta	Dissolved Sr 90	Stable N	VOC	Total Metals	Tritium	Anions	Bicarbonate	TDS, TSS cm 8/19/98	TSS
MCO-2, Mortandad Can.	8/19/98	1430	~~Dis. Metal~~ 8/19/98 water	1 gal.	poly	1	HNO_3		X	X	X	X								
MCO-2, Mortandad Can.	8/19/98	1430	water	1 gal.	poly	1	H_2SO_4						X							
MCO-2, Mortandad Can.	8/19/98	1430	water	1 L	poly	1	HNO_3								X					
MCO-2, Mortandad Can	8/19/98	1430	water	500 ml	poly/ice	1	—									X				
MCO-2, Mortandad Can.	8/19/98	1430	water	1 L	poly	1	—										X	X	X	X
MCO-2, Mortandad Can.	8/19/98	1430	water	40 ml	glass	2	HCl							X						
TA-50, Chemical Treatment	8/19/98	1115	water	40 ml	glass	2	HCl							X						
TA-50, Chemical Treatment	8/19/98	1115	water	1 L	poly	1	—										X	X	X	X
TRIP BLANK #2	8/19/98	—	water	40 ml	glass	2	HCl							X						
MCO-7, lower Mortandad	8/21/98	1214	water	1 L	poly	1	—										X	X	X	X
↓	↓	↓	↓	500 ml	poly	1	HNO_3				X									
				40 ml	glass	2	HCl							X						

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required	**QC Level**
☒ Normal ☐ Rush	☐ I. ☐ II. ☐ III.

Project Specific (Specify)

Relinquished By	Date	Time	Received By	Date	Time
Christa V. Morrow	8/21/98	1405	1. Fedex	8/21/98	1430
Relinquished By	Date	Time	2. Received By	Date	Time
Relinquished By	Date	Time	3. Received By	Date	Time

Comments

Quanterra

ody Record

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc.	Brett Kendrick	8/19/98	3344.
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	
750 N. St. Paul, Suite 600	(214) 953-0045		Page ____ of ____
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christa Morrow		
Project Name	**Carrier/Waybill Number**		
LANL, K015			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Dissolved metals	U Dissolved	Gross alpha/beta	Dissolved Sr90	Stable N	Total Metals	Tritium	Ammonia	total phos.	TKN	Nitrate
TA-50, Chemical treatment	8/19/98	1115	water	1 gal.	poly	1	HNO_3		X	X	X	X							
TA-50, Chemical Treatment	8/19/98	1115	water	1 gal.	poly	1	H_2SO_4						X						
TA-50, Chemical Treatment	8/19/98	1115	water	1 L	poly	1	HNO_3							X					
TA-50, Chemical Treatment	8/19/98	1115	water	500 ml	poly	1	—								X				
* TA-50, Chemical Treatment	8/19/98	1115	water	1 L	poly	1	H_2SO_4									X	X	X	X
MCO-2, Mortandad Can.	8/19/98	1430	water	1 L	poly	1	H_2SO_4									X	X	X	X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

* Anions, ~~Alkalinity also run - not on COC~~

North Canton, Ohio 44720

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technical Inc	[illegible]	[illegible]	33442
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
7[illegible] N. [illegible]	[illegible]		
City / State / Zip Code	**Site Contact**		
[illegible] / [illegible] / [illegible]	[illegible]		
Project Name	**Carrier/Waybill Number**		
LANL [illegible]			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis											
MW-3, upper Mortandad Can	[illegible]	[illegible]	water	1L	poly	1	[illegible]		✓	✓	✓									
MW-3, upper Mortandad Can	[illegible]	[illegible]	water	1L	poly	1	[illegible]					✓	✓	✓	✓					
MW-3, upper Mortandad Can	[illegible]	[illegible]	water	1L	poly	1	HNO3									✓				
MW-3, upper Mortandad Can	[illegible]	[illegible]	water	1L	poly	1	HNO3										✓			
MW-3, upper Mortandad Can	[illegible]	[illegible]	water	1L	poly	1	HNO3											✓		
MW-3, upper Mortandad Can	[illegible]	[illegible]	water	Second	poly	1	None												✓	
~~MW-3, upper Mortandad Can~~	~~[illegible]~~	~~[illegible]~~	~~water~~	~~Second~~	~~poly~~	~~1~~	~~HNO3~~													✓ VM
MW-4B, lower Mortandad Can	[illegible]	1233	water	1L	poly	1	None		✓	✓	✓									
MW-4B, lower Mortandad Can	[illegible]	1233	water	1L	poly	1	[illegible]					✓	✓	✓	✓					
MW-4B, lower Mortandad Can	[illegible]	1233	water	1L	poly	1	HNO3									✓				
MW-4B, lower Mortandad Can	[illegible]	1233	water	1L	poly	1	HNO3										✓			
MW-4B, lower Mortandad Can	[illegible]	1233	water	1L	poly	1	HNO3											✓		
MW-4B, lower Mortandad Can	[illegible]	1233	water	Second	poly	1	None												✓	
MW-4B, lower Mortandad Can	[illegible]	1233	water	40 ml	vial	2	HCl													✓
MW-3, upper Mortandad Can	[illegible]	[illegible]	water	40 ml	vial	2	HCl													✓
TRIP BLANK 2	[illegible]	—	water	40 ml	vial	2	HCl													✓

Special Instructions

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☒ Normal ☐ Rush

QC Level

☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: [illegible]	[illegible]	[illegible]	1. Received By: [illegible]	[illegible]	[illegible]
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Tetra Tech, Inc.	Brett Kodrick	8/20/98	33443
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N. St Paul, Suite 600	(214) 953-0045		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Charles Morrow

Project Name	Carrier/Waybill Number
LANL, K-015	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Gross alpha beta	Dissolved Sr90	Stable N isotopes
MCO-3, Upper Mortandad Can	8/20/98	0920	water	Quart	poly	1	HNO_3		✓		
↓	↓	↓	↓	1L	poly	1	HNO_3			✓	
↓	↓	↓	↓	1L	poly	3	H_2SO_4 pH<2 HCl				✓
MCO-4B, Lower Mortandad Can	8/20/98	1232	water	Quart	poly	1	HNO_3		✓		
↓	↓	↓	↓	1L	poly	1	HNO_3			✓	
↓	↓	↓	↓	1L	poly	3	HCl				✓

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By [illegible]	[illegible]	[illegible]	1. Received By [illegible]	[illegible]	[illegible]
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc	Bret Kendrick	8/21/98	33446
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of**
750 N. St Paul, Suite 400	(214) 953-0045		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Christa Marrow

Project Name	Carrier/Waybill Number
Los Alamos - K015	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis											
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		X	X	X									
												X	X	X	X	X				
																	X			
																		X		
																			X	

Special Instructions

[illegible]

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☒ Normal ☐ Rush

QC Level

☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number 33471
Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page ____ of ____
City / State / Zip Code	Site Contact		
Project Name	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis											
									X											
										X										
											X									

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☐ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By			1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw Inc	Scott Kendrick	8/24/98	33472
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
1500 N. Hall St. Suite 600	(214) 152-0845		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Marvin Morrow

Project Name	Carrier/Waybill Number
LANL	Fedex [illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Cyanide	Alkalinity	TPH TPO	NH_3	Total P	TN	Chloride	Dissolved metals	Total metals	Fluoride	Titrium	Bromide
[illegible]	1/24/98	[illegible]	[illegible]	1L	poly	1	None		X	X	X									
				1L	poly	1	H_2SO_4					X	X	X	X					
				1L	poly	1	HNO_3									X				
				1L	poly	1	HNO_3										X			
				1L	poly	1	HNO_3											X		
				[illegible]	[illegible]	1	None												X	
				[illegible]	poly	1	HNO_3													X

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required	**QC Level**
☑ Normal ☐ Rush	☐ I. ☐ II. ☐ III.
Project Specific (Specify)	

	Date	Time		Date	Time
1. Relinquished By: [illegible]	[illegible]	[illegible]	1. Received By: [illegible]	[illegible]	[illegible]
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc.	[illegible]	7/24/99	33447
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N St Paul [illegible]	(214) [illegible]		
City Dallas **State** TX **Zip Code** 75201	**Site Contact** [illegible] Marrow		
Project Name LANL KXIS	**Carrier/Waybill Number** Fedex [illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Dioxins/Furans	Analysis: VOC	Analysis: Simple N Blue
MW [illegible]	7/21/99	[illegible]	water	1L	poly	1	HNO3		X		
				40mL	[illegible]	2	HCl			X	
				1L	poly	1	H2SO4				X
Trip Blk [illegible]	7/21/99	—	water	40mL	[illegible]	1	HCl			X	

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required ☑ Normal ☐ Rush	**QC Level** ☐ I. ☐ II. ☐ III.
Project Specific (Specify)	

	Date	Time		Date	Time
1. Relinquished By [illegible]	7/21/99	1400	1. Received By [illegible]	7/21/99	1500
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
[illegible]	[illegible]	[illegible]	33469

Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page 1 of 2
[illegible]	[illegible]		

City	State	Zip Code	Site Contact
[illegible]	[illegible]	[illegible]	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Metals	[illegible]	[illegible]	Nitrate	Nitrite	Nitrate	Total Dissolved Solids	Total Suspended Solids	Total Alkalinity	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	1L	[illegible]	1	[illegible]		X	X	X							
				1L	[illegible]	1	[illegible]					X	X	X	X			
				1L	[illegible]	1	[illegible]									X		
				1L	[illegible]	1	[illegible]										X	
				1L	[illegible]	1	[illegible]											X
				[illegible]	[illegible]	1	[illegible]											X
				[illegible]	[illegible]	1	[illegible]											

Special Instructions

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☑ Normal ☐ Rush

QC Level

☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	15[illegible]
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
[illegible]	[illegible]	[illegible]	33470
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 2 **of** 2
[illegible]	[illegible]		

City	State	Zip Code	Site Contact
[illegible]	TX	[illegible]	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis										
[illegible]	[illegible]	[illegible]	[illegible]	1L	[illegible]	[illegible]	[illegible]		X										
↓	↓	↓	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			X									
[illegible]	↓	N/A	[illegible]	[illegible]	[illegible]	1	[illegible]			X	X								

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required ☑ Normal ☐ Rush	**QC Level** ☐ I. ☐ II. ☐ III.
Project Specific (Specify)	

	Date	Time		Date	Time
1. Relinquished By: [illegible]	[illegible]	[illegible]	1. Received By: [illegible]	[illegible]	[illegible]
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technology, Inc	[illegible]	[illegible]	33467
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
150 N [illegible]	[illegible]		

City	State	Zip Code	Site Contact
Albuquerque	NM	87201	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis											
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]		X	X	X	X								
↓	↓	↓	↓	[illegible]	[illegible]	1	[illegible]						X							
				[illegible]	[illegible]	1	[illegible]							X						
				[illegible]	[illegible]	1	[illegible]								X					
				[illegible]	[illegible]	1	[illegible]									X				
				[illegible]	[illegible]	1	[illegible]										X			
				[illegible]	[illegible]	1	[illegible]	[illegible]												
MT-3 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3	[illegible]									X				
↓	↓	↓	↓	[illegible]	[illegible]	1	[illegible]		X	X	X	X								
				[illegible]	[illegible]	1	[illegible]						X							
LANL-TB-1	5/27/96	1130	[illegible]	[illegible]	[illegible]	2	[illegible]									X				

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required ☑ Normal ☐ Rush	**QC Level** ☐ I. ☐ II. ☐ III.
Project Specific (Specify)	

	Date	Time		Date	Time
1. Relinquished By: Charles V. Mann	5/28/96	1400	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc	[illegible]	[illegible]	33448
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 of 2
[illegible]	[illegible]		

City	State	Zip Code	Site Contact
Dallas	TX	75201	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible] 8052[illegible]1165

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MT-4, [illegible]	[illegible]	[illegible]	[illegible]	1L	poly	1	None		X	X	X							
↓	↓	↓	↓	1L	poly	1	HNO3					X	X	X	X			
				1L	poly	1	[illegible]									X		
				1L	poly	1	[illegible]										X	
				1L	poly	1	[illegible]											X
				[illegible]	[illegible]	1	[illegible]											X
				[illegible]	poly	1	[illegible]											X
[illegible]	[illegible]	[illegible]	[illegible]	1L	poly	1	[illegible]									X		
				1L	poly	1	None		X	X	X							
↓	↓	↓	↓	[illegible]	[illegible]	1	[illegible]											X

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required	**QC Level**
☒ Normal ☐ Rush	☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
[illegible] Villano	[illegible]	[illegible]			
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Terra Libra, Inc	[illegible]	[illegible]/6/95	33468
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** [illegible] **of** [illegible]
750 N. [illegible]	[illegible]		

City	State	Zip Code	Site Contact
[illegible]	[illegible]	[illegible]	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: [illegible]	Analysis: VOC	Analysis: [illegible]
MW-4 [illegible]	[illegible]	[illegible]	[illegible]	1L	poly	1	[illegible]		X		
↓	↓	↓	↓	[illegible]	[illegible]	2	[illegible]			X	
[illegible]				1L	[illegible]	[illegible]	[illegible]				X
[illegible]				[illegible]	[illegible]	1	[illegible]			X	

Special Instructions

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☒ Normal ☐ Rush

QC Level

☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
[illegible]	[illegible]	[illegible]			
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technos Inc	[illegible]	9/[illegible]/96	33449
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
150 N [illegible]	(214) [illegible]		

City	State	Zip Code	Site Contact
Dallas	TX	75201	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Metals	[illegible]	TPH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MW-2, [illegible]	8/27/96	1542	[illegible]	1L	[illegible]	1	[illegible]		X	X	X									
↓	↓	↓	↓	1L	[illegible]	1	[illegible]					X	X	X	X	X				
				1L	[illegible]	1	[illegible]										X			
				[illegible]	[illegible]	1	[illegible]											X		
				[illegible]	[illegible]	1	[illegible]												X	
LANL-FB-1	8/27/96	1550	[illegible]	1L	[illegible]	1	[illegible]		X	X	X									
↓	↓	↓	↓	1L	[illegible]	1	[illegible]					X	X	X	X					
				1L	[illegible]	1	[illegible]									X				
				1L	[illegible]	1	[illegible]										X			
				1L	[illegible]	1	[illegible]											X		
				[illegible]	[illegible]	1	[illegible]												X	
				[illegible]	[illegible]	1	[illegible]													X

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☑ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
[illegible]	8/28/96	1400			
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technus Inc	[illegible]	8/27/98	33450
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N [illegible]	(214) 152 [illegible]		
City / **State** / **Zip Code**	**Site Contact**		
Dallas / TX / 75201	[illegible]		
Project Name	**Carrier/Waybill Number**		
LANL	Fedex # [illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis
~~LANL~~ MT-2, Mylar bag	8/27/98	1042	water	1L	poly	1	HNO3		X
LANL-TB-1	8/27/98	1700	water	1L	poly	1	HNO3		X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature] V. Mann	8/28/98	1400	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client: Techlaw Inc	Project Manager: [illegible]	Date: [illegible]	Chain Of Custody Number: 33458
Address: 750 N [illegible]	Telephone Number (Area Code)/Fax Number: [illegible]	Lab Number	Page 1 of 2
City: Dallas; State: TX; Zip Code: 75201	Site Contact: [illegible] Mina		
Project Name: LANL	Carrier/Waybill Number: [illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis											
[illegible]	[illegible]	[illegible]	[illegible]	1L	[illegible]	1	[illegible]		X	X	X									
				1L	[illegible]	1	[illegible]					X	X	X	X					
				1L	[illegible]	1	[illegible]									X				
				1L	[illegible]	1	[illegible]										X			
				1L	[illegible]	1	[illegible]											X		
				[illegible]	[illegible]	1	[illegible]													X
				[illegible]	[illegible]	1	[illegible]												X	
TM 5023B, [illegible]	[illegible]	[illegible]	[illegible]	1L	[illegible]	1	[illegible]		X	X	X									
				1L	[illegible]	1	[illegible]					X	X	X	X					
				1L	[illegible]	1	[illegible]									X				
				1L	[illegible]	1	[illegible]										X			
				1L	[illegible]	1	[illegible]											X		
				[illegible]	[illegible]	1	[illegible]												X	
				[illegible]	[illegible]	1	[illegible]													X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown		Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months	
Turn Around Time Required: ☑ Normal ☐ Rush	QC Level: ☐ I. ☐ II. ☐ III.	Project Specific (Specify)	
1. Relinquished By: [illegible]	Date: [illegible] / Time: [illegible]	1. Received By	Date / Time
2. Relinquished By	Date / Time	2. Received By	Date / Time
3. Relinquished By	Date / Time	3. Received By	Date / Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Tetra Tech, Inc.	[illegible]	9/31/95	33459
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N St. Paul Street	(214) [illegible]		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	[illegible]		
Project Name	**Carrier/Waybill Number**		
TANC	[illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: [illegible]	Analysis: VOC	Analysis: [illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]		X		
↓	↓	↓	↓	[illegible]	[illegible]	2	[illegible]			X	
↓	↓	↓	↓	[illegible]	[illegible]	[illegible]	[illegible]				X
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]		X		
↓	↓	↓	↓	[illegible]	[illegible]	2	[illegible]			X	
↓	↓	↓	↓	[illegible]	[illegible]	[illegible]	[illegible]				X
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]			X	

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☑ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

Relinquished By	Date	Time	Received By	Date	Time
1. [illegible]	1/1/95	0700	1.		
2.			2.		
3.			3.		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc.	Bret Kendrick	8/31/98	33462
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
750 N. St Paul, Suite 600	(214) 953-0045		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christa Morrow		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Anions	Bicarbonate	TSS, TDS	Ammonia	Total P	Nitrate	TKN	Total Metals	Dissolved Metals	Iso. Uranium	Low Level Tritium
LAO-B	8/31/98	1100	Water	1 L	Poly	1	None		X	X	X								
↓	↓	↓	↓	1 L	Poly	1	H_2SO_4					X	X	X	X				
				1 L	Poly	1	HNO_3									X			
				1 L	Poly	1	HNO_3										X		
				1 L	Poly	1	HNO_3											X	
				250 ml	Glass	1	None												X
LAO-5	8/31/98	0943	Water	1 L	Poly	1	HNO_3									X			
LAO-5	8/31/98	0943	Water	1 L	Poly	1	HNO_3											X	
LAO-5	8/31/98	0943	Water	250 ml	Glass	1	None												X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kendrick (BKendrick)	9/1/98	0700	FedEx		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Tech Law, Inc.	Bret Kendrick	8/31/98	33464
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N. St Paul, Suite 600	(214) 953-0005		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christa Morris		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Gross Alpha/Beta	Analysis: Dissolved Sr 90	Analysis: Stable Sr (water)
LAO-B	8/31/98	1100	Water	250 mL	Poly	1	HNO_3		X		
LAO-B	8/31/98	1100	Water	1 L	Poly	1	HNO_3			X	
LAO-B	8/31/98	1100	Water	3 L	Poly	3	HCl				X
LAO-5	8/31/98	0943	Water	1 L	Poly	1	HNO_3			X	
LAO-5	8/31/98	0943	Water	3 L	Poly	3	HCl				X

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kendrick (BKendrick)	9/1/98	0700	Fed Ex		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client: Technical Inc	Project Manager: [illegible]	Date: [illegible]/31/96	Chain Of Custody Number: 33460
Address: 750 N [illegible]	Telephone Number (Area Code)/Fax Number: [illegible]	Lab Number:	Page 1 of 2
City: [illegible] State: PA Zip Code: 15206	Site Contact: Charlie Mar[illegible]		
Project Name: LANL	Carrier/Waybill Number: [illegible]		
Contract/Purchase Order/Quote No.			

Analysis

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Anions	Fluoride	Br	Nitrate	TKN	Nitrite	Dissolved Mg	Dissolved Metals	TSS	Turbidity	Cl
LN02, [illegible]	[illegible]/96	[illegible]	[illegible]	1L	[illegible]	1	[illegible]		X	X	X								
↓	↓	↓	↓	1L	[illegible]	1	[illegible]					X	X	X	X				
				1L	[illegible]	1	[illegible]									X			
				1L	[illegible]	1	[illegible]										X		
				1L	[illegible]	1	[illegible]											X	
				[illegible]	[illegible]	1	[illegible]												X
↓	↓	↓	↓	[illegible]	[illegible]	1	[illegible]												X
LN02F, [illegible]	[illegible]/96	[illegible]	[illegible]	1L	[illegible]	1	[illegible]		X	X	X								
↓	↓	↓	↓	1L	[illegible]	1	[illegible]					X	X	X	X				
				1L	[illegible]	1	[illegible]									X			
				1L	[illegible]	1	[illegible]										X		
				1L	[illegible]	1	[illegible]											X	
				[illegible]	[illegible]	1	[illegible]												X
↓	↓	↓	↓	[illegible]	[illegible]	1	[illegible]												X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: [illegible]	[illegible]/1/96	[illegible]	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: [illegible] - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client: Techlaw Inc	Project Manager: [illegible]	Date: [illegible]/31/96	Chain Of Custody Number: 33461
Address: 750 N St Paul Suite 1300	Telephone Number (Area Code)/Fax Number: (214) 9[illegible] 3 [illegible]	Lab Number	Page 2 of 2
City: Dallas; State: TX; Zip Code: 75201	Site Contact: [illegible]		
Project Name: LANL	Carrier/Waybill Number: [illegible] 2 1571		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis										
[illegible]	[illegible]/31/[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		X										
↓	↓	↓	↓	[illegible]	[illegible]	[illegible]	[illegible]			X									
LN02F [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		X										
↓				[illegible]	[illegible]	[illegible]	[illegible]			X									

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown		Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months	
Turn Around Time Required: ☑ Normal ☐ Rush	QC Level: ☐ I. ☐ II. ☐ III.	Project Specific (Specify)	
1. Relinquished By: Chuck V [illegible]	Date: [illegible] / Time: [illegible]	1. Received By	Date / Time
2. Relinquished By	Date / Time	2. Received By	Date / Time
3. Relinquished By	Date / Time	3. Received By	Date / Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client: TechLaw Inc	Project Manager: [illegible]	Date: [illegible]/31/96	Chain Of Custody Number: 33463
Address: [illegible]	Telephone Number (Area Code)/Fax Number: [illegible]	Lab Number	Page 1 of 1
City: Dallas; State: TX; Zip Code: 75201	Site Contact: [illegible]		
Project Name: LANL	Carrier/Waybill Number: [illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
LAO 4.5C LM Cope	[illegible]	[illegible]	[illegible]	1 L	[illegible]	1	[illegible]		X	X	X							
				1 L	[illegible]	1	[illegible]					X	X	X	X			
				1 L	[illegible]	1	[illegible]									X		
				1 L	[illegible]	1	[illegible]										X	
				1 L	[illegible]	1	[illegible]											X
				[illegible]	[illegible]	1	[illegible]											X
				[illegible]	[illegible]	1	[illegible]											X
~~LAO 12~~ LM.5 LM Cope	9/31/96	[illegible]	[illegible]	1 L	[illegible]	1	[illegible]		X	X	X							
				1 L	[illegible]	1	[illegible]					X	X	X	X			
				1 L	[illegible]	1	[illegible]									X		
				[illegible]	[illegible]	1	[illegible]											X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: [illegible]	9/1/9[illegible]	[illegible]	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

Chain of Custody Record

Quanterra

QUA-4124

Client: Techlaw Inc	Project Manager: [illegible]	Date: 8/31/96	Chain Of Custody Number: 33465
Address: 750 N St Paul [illegible]	Telephone Number (Area Code)/Fax Number: (214) [illegible]	Lab Number	Page 2 of 2
City: Dallas; State: TX; Zip Code: 75201	Site Contact: [illegible]		
Project Name: LANL	Carrier/Waybill Number: [illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis	
LAO-1SC LM Composite	8/31/96	[illegible]	[illegible]	1L	poly	1	[illegible]		X	
				1L	poly	1	[illegible]			X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By: [illegible]	Date: 9/1/96	Time: [illegible]	1. Received By	Date	Time
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client: Tetra Tech, Inc.	Project Manager: [illegible]	Date: 9/2/96	Chain Of Custody Number: 33457
Address: [illegible]	Telephone Number (Area Code)/Fax Number: [illegible]	Lab Number	Page 1 of 2
City: [illegible] State: [illegible] Zip Code: [illegible]	Site Contact: [illegible]		
Project Name: LANL	Carrier/Waybill Number: [illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis											
LAC-3A, [illegible]	8/31/96	1434	[illegible]	1L	poly	1	[illegible]		X	X	X									
				1L	poly	1	HNO3					X	X	X	X					
				1L	poly	1	HNO3									X				
				1L	poly	1	HNO3										X			
				1L	poly	1	HNO3											X		
				1L	poly	1	HNO3												X	
				Second	Glass	1	[illegible]													X
LAC-45C, [illegible]	8/31/96	1155	[illegible]	1L	poly	1	HNO3									X				
				1L	poly	1	[illegible]		X	X	X									

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: [illegible]	9/2/96	[illegible]	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: [illegible] - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
[illegible]	[illegible]	9/2/96	16026
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
[illegible] N [illegible]	[illegible]		

City	State	Zip Code	Site Contact
[illegible]	[illegible]	[illegible]	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible] 8058 [illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis											
LAO-3A, [illegible]	8-1-96	1134	water	1L	poly	3	HCl		X											
↓	↓	↓	↓	[illegible]	poly	1	HNO_3			X										
LAO45C, [illegible]	8-1-96	1105	water	[illegible]	poly	1	HNO_3			X										

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☑ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
[illegible]	9/2/96	[illegible]			
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client: [illegible]	Project Manager: [illegible]	Date: 1/2/95	Chain Of Custody Number: 16730
Address: [illegible]	Telephone Number (Area Code)/Fax Number: [illegible]	Lab Number:	Page 1 of 2
City: [illegible] State: [illegible] Zip Code: [illegible]	Site Contact: [illegible]		
Project Name: LANL	Carrier/Waybill Number: [illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	1L	poly	1	[illegible]		X	X	X							
				1L	poly	1	[illegible]					X	X	X	X			
				1L	poly	1	[illegible]									X		
				1L	poly	1	[illegible]										X	
				1L	poly	1	[illegible]											X
				[illegible]	poly	1	[illegible]											X
				[illegible]	poly	1	[illegible]											X
[illegible]	[illegible]	[illegible]	[illegible]	1L	poly	1	[illegible]								X			
				1L	poly	1	[illegible]					X	X	X	X			
				1L	poly	1	[illegible]											

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown			Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required: ☒ Normal ☐ Rush	QC Level: ☐ I. ☐ II. ☐ III.		Project Specific (Specify)
1. Relinquished By: [illegible]	Date: 1/2/95	Time: [illegible]	1. Received By / Date / Time
2. Relinquished By	Date	Time	2. Received By / Date / Time
3. Relinquished By	Date	Time	3. Received By / Date / Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
[illegible]	[illegible]	1/2/95	16025
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
[illegible] N [illegible]	[illegible]		

City	State	Zip Code	Site Contact
[illegible]	[illegible]	[illegible]	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis	
LA-0.6, [illegible] LA	9/21/95	[illegible]	[illegible]	1L	poly	1	HNO_3		X	
↓	↓	↓	↓	1L	poly	3	H_2O			X
LA-1.2 [illegible]	[illegible]	[illegible]	[illegible]	1L	poly	1	HNO_3		X	
↓	↓	↓	[illegible]	1L	poly	2	H_2O			X

Special Instructions

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☑ Normal ☐ Rush

QC Level

☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
[illegible]	1/2/95	[illegible]			
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc	Bret Kendrick	9/2/98	33453
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	
750 N. St Paul, Suite 600	(214) 953-0045		Page 1 of 2

City	State	Zip Code	Site Contact
Dallas	TX	75201	Christa Morrow

Project Name	Carrier/Waybill Number
Los Alamos Sampling	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Anions	Bicarbonate	TSS, TDS	Ammonia	Total Phos.	Nitrate	TKN	Total Metals	Dissolved Metals	Gross Alpha/Beta	Isot. Uranium
Bayo-1	9/1/98	1217	Water	1 L	Poly	1	None		X	X	X								
				1 L	Poly	1	H_2SO_4					X	X	X	X				
				1 L	Poly	1	HNO_3									X			
				1 L	Poly	1	HNO_3										X		
				250 mL	Poly	1	HNO_3											X	
				1 L	Poly	1	HNO_3												X
Tru-3	9/1/98	1350	Water	1 L	Poly	1	None		X	X	X								
				1 L	Poly	1	H_2SO_4					X	X	X	X				
				1 L	Poly	1	HNO_3									X			
				1 L	Poly	1	HNO_3										X		
				1 L	Poly	1	HNO_3												X

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kendrick (BKendrick)	9/2/98	0800	Fed Ex		
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Tech Law, Inc.	Bret Kendrick		33454
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N. St Paul, Suite 600	(214) 953-0045		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Christa Marrow

Project Name	Carrier/Waybill Number
Los Alamos Sampling	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Dissolved Sr 90	Analysis: Low Level Tritium	Analysis: Stable Sr Isotopes
Bayo - 1	9/1/98	1217	Water	1L	Poly	1	HNO_3		X		
↓	↓	↓	↓	15 mL	Glass	1	None			X	
				3 L	Poly	3	HCl				X
TW-3	9/1/98	1350	Water	1L	Poly	1	HNO_3		X		

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kendrick (BKendrick)	9/2/98	0800	Fed Ex		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc.	Bret Kendrick	9/2/98	33451
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
750 N. St Paul, Suite 600	(214) 953-0045		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Christa Morrow

Project Name	Carrier/Waybill Number
Los Alamos Sampling	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Anions	Bicarbonate	TSS, TDS	Ammonia	Total Phos	Nitrate	TKN	Total Metals	Dissolved Metals	Gross Alpha/Beta	Iso. Uranium
TW-4	9/1/98	0834	Water	1 L	Poly	1	None		X	X	X								
				1 L	Poly	1	H_2SO_4					X	X	X	X				
				1 L	Poly	1	HNO_3									X			
				1 L	Poly	1	HNO_3										X		
				250 mL	Poly	1	HNO_3											X	
				1 L	Poly	1	HNO_3												X
TW-3	9/1/98	1350	Water	250 mL	Poly	1	HNO_3											X	

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kendrick (TSK)	9/2/98	0800	FedEx		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc	Bret Kendrick	9/2/98	33452
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N. St Paul, Suite 600	(214) 953-0045		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christa Morrow		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Dissolved Se 90	Analysis: Low Level Tritium	Analysis: Stabile N Isotopes
TW-4	9/1/98	0834	Water	1L	Poly	1	HNO_3		X		
				250 mL	Glass	1	None			X	
				3L	Poly	3	HCl				X
TW-3	9/1/98	1350	Water	250 mL	Glass	1	None			X	
				3L	Poly	3	HCl				X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kendrick (BKendrick)	9/2/98	0800	FedEx		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc	Bret Kendrick	9/2/98	16733
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
750 N. St Paul, Suite 600	(214) 953-0045		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Christa Morrow

Project Name	Carrier/Waybill Number
Los Alamos Sampling	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Anions	Bicarbonate	TSS, TDS	Ammonia	Total Phos	Nitrate	TKN	Total Metals	Dissolved Metals	Iso. Uranium	Gross Alpha/Beta
POI-4	9/2/98	1600	Water	1L	Poly	1	None		X	X	X								
↓	↓	↓	↓	1L	Poly	1	H_2SO_4					X	X	X	X				
				1L	Poly	1	HNO_3									X			
				1L	Poly	1	HNO_3										X		
				1L	Poly	1	HNO_3											X	
				250 mL	Poly	1	HNO_3												X
LAO-1.6g	9/1/98	1020	Water	1L	Poly	1	H_2SO_4					X	X	X	X				
↓	↓	↓	↓	1L	Poly	1	HNO_3									X			
				1L	Poly	1	HNO_3										X		
				1L	Poly	1	HNO_3											X	

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kendrick (Bkendrick)	9/3/98	0830	FedEx		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Techlaw, Inc.	Bret Kendrick	9/2/98	16734
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N. St Paul, Suite 600	(214) 953-0245		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Christa Morrow

Project Name	Carrier/Waybill Number
Los Alamos Sampling	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Dissolved Sr 90	Low Level Tritium	Stable N Isotopes
POI-4	9/2/98	1600	Water	1L	Poly	1	HNO_3		X		
↓	↓	↓	↓	250 ml	Glass	1	None			X	
				3L	Poly	3	HCl				X
LAO-1.6	9/1/98	1000	Water	1L	Poly	1	HNO_3		X		

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kendrick (BK)	9/3/98	0830	FedEx		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client: TechLaw, Inc	Project Manager: [illegible]	Date: 9/5/96	Chain Of Custody Number: 16029
Address: 750 N. St Paul, Suite 1200	Telephone Number (Area Code)/Fax Number: (214) 953-0040	Lab Number:	Page 1 of 2
City: Dallas; State: TX; Zip Code: 75201	Site Contact: Carl M Marou		
Project Name: LANL	Carrier/Waybill Number: Fedex [illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Anions	TDS	Turbidity	NH3	TKN	Total P	Nitrate	Nitrite	Alk (mg/L)	Total Hardness	Low Level Hg	Cyanide
TW-3, [illegible]	9/[illegible]	[illegible]	[illegible]	1L	poly	1	[illegible]		X	X	X									
				1L	poly	1	[illegible]					X	X	X	X					
				1L	poly	1	[illegible]									X				
				1L	poly	1	[illegible]										X			
				1L	poly	1	[illegible]											X		
				[illegible]	[illegible]	1	[illegible]													X
				[illegible]	[illegible]	1	[illegible]												X	

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: [illegible]	9/5/96	1230	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technos Inc.	[illegible]	9/2/98	16030
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
75 N. [illegible]	[illegible]		

City	State	Zip Code	Site Contact
Dallas	TX	75201	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Tritium	Analysis: [illegible]
MW-2, Lower Matrix	9/2/98	[illegible]	WG	1L	poly	1	HNO3		X	
				1L	poly	3	[illegible]			X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By			1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technos, Inc.	[illegible]	1/2/98	33455
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
750 N St. Paul [illegible]	(214) 755 [illegible]		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	[illegible]		
Project Name	**Carrier/Waybill Number**		
LANL	[illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
LANL [illegible]	1/1/98	[illegible]	[illegible]	[illegible]	poly	1	None		X	X	X							
				1L	poly	1	[illegible]					X	X	X	X			
				1L	poly	1	[illegible]									X		
				1L	[illegible]	1	[illegible]										X	
			1L	[illegible]	[illegible]	1	[illegible]											X
				[illegible]	[illegible]	1	[illegible]											X
					[illegible]	1	[illegible]											X
TMJ [illegible]	1/1/98	0149	[illegible]	1L	poly	1	[illegible]									X		

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required ☑ Normal ☐ Rush	**QC Level** ☐ I. ☐ II. ☐ III.
Project Specific (Specify)	

	Date	Time		Date	Time
1. Relinquished By: [illegible]	1/ /98	[illegible]	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
[illegible] Inc	[illegible]	7/2/93	33456
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N [illegible]	[illegible]		

City	State	Zip Code	Site Contact
Dallas	TX	75207	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: [illegible]	Analysis: [illegible]
[illegible]	7/1/93	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]		X	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			X
[illegible]	7/1/93	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			X

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☑ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
[illegible] V. Mann	7/1/93	[illegible]			
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc.	Bret Kenskill	9/2/98	16731
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
750 N. St. Paul, Suite 600	(214) 953-0045		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christa Morrow		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Anions	Bicarbonate	TSS, TDS	Ammonia	Total Phos	Nitrate	TKN	Total Metals	Dissolved Metals	Gross Alpha/Beta	Isotopic Uranium
TW-2A	9/1/98	1051	Water	1 L	Poly	1	None		X	X	X								
				1 L	Poly	1	H_2SO_4					X	X	X	X				
				1 L	Poly	1	HNO_3									X			
				1 L	Poly	1	HNO_3										X		
				250 mL	Poly	1	HNO_3											X	
				1 L	Poly	1	HNO_3												X
TW-1	9/1/98	0949	Water	1 L	Poly	1	None		X	X	X								
				1 L	Poly	1	H_2SO_4					X	X	X	X				
				1 L	Poly	1	HNO_3										X		
				250 mL	Poly	1	HNO_3											X	
				1 L	Poly	1	HNO_3												X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kenskill (BJKenskill)	9/2/98	0800	Fed Ex		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Techlaw, Inc	Bret Kendrick	9/2/98	16732
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N. St Paul, Suite 600	(214) 953-0245		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Christa Morrison

Project Name	Carrier/Waybill Number
Los Alamos Sampling	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Dissolved Sr 90	Analysis: Low Level Tritium	Analysis: Stable N Isotope
TW-2A	9/1/98	1051	Water	1L	Poly	1	HNO3		X		
↓	↓	↓	↓	250 mL	Glass	1	None			X	
				3L	Poly	3	HCl				X
TW-1	9/1/98	0949	Water	1L	Poly	1	HNO3		X		
↓	↓	↓	↓	250 mL	Glass	1	None			X	
				1L	Poly	1	HCl				X

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required	**QC Level**
☒ Normal ☐ Rush	☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Bret Kendrick (BKendrick)	9/2/98	0800	1. Received By: Fed Ex		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technology, Inc.	Bart Kendrick	9/3/98	16034
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
750 N. St Paul, Suite 600	(214) 953-0045		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christa Morrow		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Anions	Bicarbonate	TSS, TDS	Ammonia	Total Phos.	Nitrate	TKN	Total Metals	Dissolved Metals	Iso. Uranium	Gross Alpha/Beta
LAO-0.91 (MS/MSD)	9/3/98	1300	Water	2 L	Poly	2	None		X	X	X								
				2 L	Poly	2	H_2SO_4					X	X	X	X				
				3 L	Poly	3	HNO_3									X			
				3 L	Poly	3	HNO_3										X		
				2 L	Poly	2	HNO_3											X	
				500 mL	Poly	2	HNO_3												X

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bart Kendrick (BKendrick)	9/4/98	1400	Fed Ex		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Tetra Tech, Inc	Bert Kendrick	9/3/98	16035
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N St Paul Suite 1200	(214) 953-0455		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Christa Morrow

Project Name	Carrier/Waybill Number
Los Alamos Sampling	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Dissolved Sr 90	Analysis: Low Level Tritium
LAO-Ø.91 (MS/MSD)	9/3/98	1300	Water	2 L	Poly	2	HNO3		X	
↓ ↓	↓	↓	↓	500 mL	Glass	2	None			X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bert Kendrick (BKendrick)	9/4/98	1400	FedEx		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technimas, Inc	[illegible]	9/2/10	16032
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
[illegible]	(214) [illegible]		

City	State	Zip Code	Site Contact
Dallas	TX	75204	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: [illegible]	TSS	[illegible]	NH3	[illegible]	[illegible]	N	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Prop 2 [illegible]	1/[illegible]	[illegible]	[illegible]	1L	[illegible]	1	[illegible]											X		
↓	↓	↓	↓	[illegible]	[illegible]	1	[illegible]												X	
LANL Tr 2	1/[illegible]	[illegible]	[illegible]	1L	[illegible]	1	[illegible]											X		
				1L	[illegible]	1	[illegible]									X				
				1L	[illegible]	1	[illegible]					X	X	X	X					
				1L	[illegible]	1	[illegible]		X	X	X									
				1L	[illegible]	1	[illegible]										X			
				[illegible]	[illegible]	1	[illegible]													X
				[illegible]	[illegible]	1	[illegible]												X	

Special Instructions

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☑ Normal ☐ Rush

QC Level

☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: [illegible]	9/4/10	1400	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technology Inc	[illegible]	[illegible]	16033
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
[illegible]	[illegible]		

City	State	Zip Code	Site Contact
Dallas	TX	75201	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis											
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		X										
↓	↓	↓	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		X											
LANL Trip 2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		X											
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			X										

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☑ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
[illegible]	[illegible]	[illegible]			
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technical, Inc	[illegible]	7/3/[illegible]	16031
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 **of** 2
[illegible]	[illegible]		
City / **State** / **Zip Code**	**Site Contact**		
[illegible] / TX / [illegible]	[illegible]		
Project Name	**Carrier/Waybill Number**		
LANL	[illegible]		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Gross Alpha	Gross Beta	Gross Gamma	HNO3	HCl	HCl	HNO3	Dissolved Metals	Total Metals	Hardness	Total Hardness	Gross Gamma
[illegible]	[illegible]	[illegible]	[illegible]	1L	[illegible]	1	[illegible]		X	X	X									
				1L	[illegible]	1	[illegible]					X	X	X	X					
				1L	[illegible]	1	[illegible]									X				
				1L	[illegible]	1	[illegible]										X			
				1	[illegible]		[illegible]											X		
				[illegible]	[illegible]	1	[illegible]												X	
				[illegible]	[illegible]	1	[illegible]													X
BAP-2, [illegible]	[illegible]	[illegible]	[illegible]	1L	[illegible]	1	[illegible]		X	X	X									
				1L	[illegible]	1	[illegible]					X	X	X	X					
				1L	[illegible]	1	[illegible]									X				
				[illegible]	[illegible]	1	[illegible]													X
				1L	[illegible]	1	[illegible]											X		

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☑ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: [illegible]	[illegible]	[illegible]	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: [illegible] - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
			33466
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page ___ of ___**

City	State	Zip Code	Site Contact

Project Name	Carrier/Waybill Number
TINL	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis

Special Instructions

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☑ Normal ☐ Rush

QC Level

☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Techland, Inc.	Bret Kendrick	9/4/98	16039
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
750 N. St Paul Suite 600	(214) 953-0045		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christa Morrow		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Arsenic	Bicarbonate	TSS	TDS	Ammonia	Total Phos.	Nitrate	TKN	Total Metals	Dissolved Metals	Tot. Uranium	Gross Alpha/Beta
LAUZ-1	9/4/98	1012	Water	1 L	Poly	1	None		X	X	X									
↓	↓	↓	↓	1 L	Poly	1	H_2SO_4					X	X	X	X					
				1 L	Poly	1	HNO_3									X				
				1 L	Poly	1	HNO_3										X			
				1 L	Poly	1	HNO_3											X		
				250 mL	Poly	1	HNO_3												X	

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

Relinquished By	Date	Time	Received By	Date	Time
1. Bret Kendrick (BKendrick)	9/4/98	1400	1. Fed Ex		
2.			2.		
3.			3.		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc.	Bret Kendrick	9/4/96	16040
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N. St Paul, Suite 1200	(214) 979-0015		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christa Morrison		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Dissolved Sr 90	Analysis: Low level Tritium	Analysis: Stable H Isotopes	Analysis: VOCs
LAUE-1	9/4/96	1012	water	1L	Poly	1	HNO3		X			
				250 mL	Glass	1	None			X		
				3L	Poly	3	HCl				X	
				80 mL	Glass	2	HCl					X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Bret Kendrick (BKendrick)	9/4/96	1400	1. Received By: FedEx		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Techlaw, Inc	Bret Kendrick	4/4/93	16036
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
750 N St Paul, Ste 1200	(214) 953-0045		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christa Moore		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Ammonia	Bicarbonate/Carbonate	TDS	Ammonia	Total Phos	Nitrate	TKN	Total Metals	Dissolved Metals	Tox Organics	Gross Alpha/Beta
LAUZ-2	4/4/93	[illegible]	[illegible]	1L	Poly	1	[illegible]		X	X	X								
				1L	Poly	1	H2SO4					X	X	X	X				
				1L	Poly	1	HNO3									X			
				1L	Poly	1	HNO3										X		
				1L	Poly	1	NaOH											X	
				250 mL	Poly	1	NaOH												X

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required	**QC Level**
☒ Normal ☐ Rush	☐ I. ☐ II. ☐ III.
Project Specific (Specify)	

	Date	Time		Date	Time
1. Relinquished By: Bret Kendrick (BK Consulting)	4/4/93	1400	1. Received By: [illegible]		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TechLaw, Inc.	Brett Kendall	4/4/98	16041
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N. St Paul Suite 600	(214) 855-[illegible]		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Christe Murray

Project Name	Carrier/Waybill Number
Los Alamos Sampling	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Dissolved Sr 90	Analysis: Low Level Tritium	Analysis: Stron 90 + Tritium	Analysis: VOC								
LAU2-2	4/4/98	12:00	Liquid	1 L	Poly	1	HNO3		X											
				500 mL	Glass	1	None			X										
				3 L	Poly	3	HCl				X									
				40 mL	Glass	2	None					X								TRK

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required	**QC Level**	**Project Specific (Specify)**
☒ Normal ☐ Rush	☐ I. ☐ II. ☐ III.	

1. Relinquished By	Date	Time	1. Received By	Date	Time
Brett Kendall (TechLaw)	4/4/98	14:00	[illegible]		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Tetra Tech, Inc	[illegible]	9/9/98	34149
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
750 N. St Paul Suite [illegible]	(214) [illegible]		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christa Morris		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling	Fedex		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sacred Springs	9/8/98	1342	Water	1 L	Poly	1	None		X	X	X							
↓	↓	↓	↓	1 L	Poly	1	H_2SO_4					X	X	X	X			
				1 L	Poly	1	HNO_3									X		
				1 L	Poly	1	HNO_3										X	
				1 L	Poly	1	HNO_3											X
				250 mL	Poly	1	HNO_3											X
Basalt Springs	9/9/98	0910	Water	1 L	Poly	1	None		X	X	X							
↓	↓	↓	↓	1 L	Poly	1	H_2SO_4					X	X	X	X			
				1 L	Poly	1	HNO_3									X		
				1 L	Poly	1	HNO_3										X	
				1 L	Poly	1	HNO_3											X
				250 mL	Poly	1	HNO_3											X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: [illegible]	9/9/98	1400	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Tetra Tech, Inc.	[illegible]	9/9/98	34150
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N. St. Paul [illegible]	[illegible]		

City	State	Zip Code	Site Contact
Dallas	TX	75201	Chris M[illegible]

Project Name	Carrier/Waybill Number
Los Alamos Sampling	Fedex

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis	
Sacred Springs	9/8/98	1340	Water	250 ml	Glass	1	None		X	
↓	↓	↓	↓	3L	Poly	3	HCl			X
Basalt Springs	9/9/98	0910	Water	250 ml	Glass	1	None		X	
↓	↓	↓	↓	3L	Poly	3	HCl			X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: [illegible]	9/10/98	1000	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
[illegible]	[illegible]	[illegible]	34147
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
[illegible]	[illegible]		

City	State	Zip Code	Site Contact
[illegible]	[illegible]	[illegible]	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis											
La Mesita Springs	9/8/98	1035	Water	1 L	Poly	1	None		X	X	X									
↓	↓	↓	↓	1 L	Poly	1	H_2SO_4					X	X	X	X					
				1 L	Poly	1	HNO_3									X				
				1 L	Poly	1	HNO_3										X			
				1 L	Poly	1	HNO_3											X		
				250 mL	Poly	1	HNO_3												X	
				250 mL	Glass	1	None													X
Otowi Springs	9/8/98	1630	Water	1 L	Poly	1	None		X	X	X									
↓	↓	↓	↓	1 L	Poly	1	H_2SO_4					X	X	X	X					
				1 L	Poly	1	HNO_3									X				
				1 L	Poly	1	HNO_3										X			
				1 L	Poly	1	HNO_3											X		
				250 mL	Poly	1	HNO_3												X	
				250 mL	Glass	1	None													X

Special Instructions

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☑ Normal ☐ Rush

QC Level

☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kendrick (BKendrick)	9/10/98	1200	[illegible]		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
[illegible]	[illegible]	[illegible]	34148
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** [illegible] **of** [illegible]
[illegible]	[illegible]		

City	State	Zip Code	Site Contact
[illegible]	[illegible]	[illegible]	[illegible]

Project Name	Carrier/Waybill Number
[illegible]	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis
La Mesita Springs	9/8/92	1035	Industrial	3L	Poly	3	HCl		X
Otowi Springs	9/8/92	1630	Industrial	3L	Poly	3	HCl		X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☑ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
[illegible]	9/10/92	1000	FEDEX		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technology, Inc	Bret Kendrick	9/9/92	34145
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
750 N. St Paul Suite 600	(214) 953-0045		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christie Morris		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Arsenic	Silicon	TKS, TFS	Ammonia	Total Cl	Nitrate	TKN	Total Metals	Dissolved Metals	Fe, Uranium	Gross Alpha/Beta
LA Springs LLAO-5	9/8/92	14:00	water	2 L	Poly	2	None		X	X	X								
(MS/MSD)				2 L	Poly	2	H_2SO_4					X	X	X	X				
				2 L	Poly	2	HNO_3									X			
				2 L	Poly	2	HNO_3										X		
				2 L	Poly	2	HNO_3											X	
				500 mL	Poly	2	HNO_3												X

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Bret Kendrick (signature)	9/10/92	1000	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Technical, Inc	Bret Kendrick	9/9/95	34146
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
750 N. St Paul Suite 1000	(214) 953-[illegible]		
City / State / Zip Code	**Site Contact**		
Dallas / TX / 75201	Christie Morrow		
Project Name	**Carrier/Waybill Number**		
Los Alamos Sampling			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Dissolved Solids	Analysis: Total Solids	Analysis: [illegible]
LLAO-5 (MS/MSD)	9/8/95	1400	Water	2L	Poly	2	HNO3		X		
LLAO-5 (MS/MSD)	9/8/95	↓	↓	500 mL	Glass	2	None			X	
LLAO-5	9/8/95	↓	↓	3L	Poly	3	1-K.1				X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Bret Kendrick (signature)	9/10/95	1000	Fed Ex		
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
[illegible]	[illegible]	[illegible]	34151
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
[illegible]	[illegible]		

City	State	Zip Code	Site Contact
[illegible]	NM	[illegible]	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis											
LANL-[illegible]	[illegible]	[illegible]	[illegible]	1L	poly	1	[illegible]		X	X	X									
↓	↓	↓	↓	1L	poly	1	[illegible]					X	X	X	X					
				1L	poly	1	[illegible]									X				
				1L	poly	1	[illegible]										X			
				1L	poly	1	[illegible]											X		
				[illegible]	poly	1	[illegible]												X	
↓	↓	↓	↓	[illegible]	poly	1	[illegible]													X
LANL-FRS-3	1/9/90	12[illegible]	Water	1L	poly	1	[illegible]		X	X	X									
				1L	poly	1	[illegible]					X	X	X	X					
↓	↓	↓	↓	1L	poly	1	[illegible]									X				
				1L	poly	1	[illegible]										X			
				1L	poly	1	[illegible]											X		
				[illegible]	poly	1	[illegible]													X
↓	↓	↓	↓	[illegible]	[illegible]	1	None												X	

Special Instructions

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☒ Normal ☐ Rush

QC Level

☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Chris V. [illegible]	1/10/90	1000			
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
[illegible]	[illegible]	[illegible]	34152
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page ____ of ____**
[illegible]	[illegible]		

City	State	Zip Code	Site Contact
[illegible]	[illegible]	[illegible]	[illegible]

Project Name	Carrier/Waybill Number
LANL	[illegible]

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: [illegible]	Analysis: [illegible]	Analysis: [illegible]	Analysis: [illegible]	Analysis: [illegible]	Analysis: [illegible]	Analysis: [illegible]	Analysis: [illegible]	Analysis: [illegible]	Analysis: [illegible]
LA Springs	9/9/98	0952	Water	1L	poly	3	HCl		X									
LANL [illegible]	9/9/98	1200	[illegible]	1L	poly	1	HNO3			X								

Special Instructions

Possible Hazard Identification	Sample Disposal
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☑ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required	QC Level	Project Specific (Specify)
☑ Normal ☐ Rush	☐ I. ☐ II. ☐ III.	

1. Relinquished By	Date	Time	1. Received By	Date	Time
Christ V. Thomas	9/10/98	1000			
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Photograph No.:	1-1	**Facility:**	Los Alamos National Laboratory
Date:	August 19, 1998	**Time:**	1115
Photo By:	C. Morrow	**Direction:**	South
Description:	View of a TA-50 filtered effluent sample being collected by LANL personnel, using a 45 μm filter.		

Photograph No.:	1-2	**Facility:**	Los Alamos National Laboratory
Date:	August 19, 1998	**Time:**	1413
Photo By:	C. Morrow	**Direction:**	Northwest
Description:	View of well MCO-2 in upper Mortandad Canyon being purged by LANL personnel.		

Photograph No.:	1-3	**Facility:**	Los Alamos National Laboratory
Date:	August 19, 1998	**Time:**	1422
Photo By:	C. Morrow	**Direction:**	Northwest
Description:	View of purged water from well MCO-2.		

Photograph No.:	1-4	**Facility:**	Los Alamos National Laboratory
Date:	August 19, 1998	**Time:**	1433
Photo By:	C. Morrow	**Direction:**	North
Description:	View of a water sample being collected by LANL personnel at well MCO-2, in upper Mortandad Canyon.		

Photograph No.:	1-5	**Facility:**	Los Alamos National Laboratory
Date:	August 20, 1998	**Time:**	0903
Photo By:	C. Morrow	**Direction:**	North

Description: View of the well purging process using a perstaltic pump at MCO-3 in upper Mortandad Canyon.

Photograph No.:	1-6	**Facility:**	Los Alamos National Laboratory
Date:	August 20, 1998	**Time:**	0935
Photo By:	C. Morrow	**Direction:**	North

Description: View of a water sample being collected by LANL personnel at well MCO-3, in upper Mortandad Canyon.

Photograph No.:	1-7	**Facility:**	Los Alamos National Laboratory
Date:	August 20, 1998	**Time:**	1129
Photo By:	C. Morrow	**Direction:**	North-northeast
Description:	View of well MCO-4B being purged by LANL personnel using a bladder pump in lower Mortandad Canyon. The well casing and pad are visible in the background.		

Photograph No.:	1-8	**Facility:**	Los Alamos National Laboratory
Date:	August 20, 1998	**Time:**	1236
Photo By:	C. Morrow	**Direction:**	Northeast
Description:	View of a water sample collection by LANL personnel at well MCO-4B in lower Mortandad Canyon.		

Photograph No.:	1-9	**Facility:**	Los Alamos National Laboratory
Date:	August 20, 1998	**Time:**	1400
Photo By:	C. Morrow	**Direction:**	Northeast

Description: View of well purging using a bladder pump at well MCO-5 in lower Mortandad Canyon. There was no well pad at this well.

Photograph No.:	1-10	**Facility:**	Los Alamos National Laboratory
Date:	August 20, 1998	**Time:**	1450
Photo By:	C. Morrow	**Direction:**	Northeast
Description:	View of a VOC sample being collected by TechLaw personnel at well MCO-5, in lower Mortandad Canyon.		

Photograph No.:	1-11	**Facility:**	Los Alamos National Laboratory
Date:	August 21, 1998	**Time:**	0857
Photo By:	C. Morrow	**Direction:**	North
Description:	View of well MCO-6 being purged using a bladder pump. This well, located in lower Mortandad Canyon, does not have a well pad.		

Photograph No.:	1-12	**Facility:**	Los Alamos National Laboratory
Date:	August 21, 1998	**Time:**	0954
Photo By:	C. Morrow	**Direction:**	West
Description:	View of sample collection by TechLaw personnel at well MCO-6, located in lower Mortandad Canyon.		

Photograph No.:	1-13	**Facility:**	Los Alamos National Laboratory
Date:	August 21, 1998	**Time:**	1218
Photo By:	C. Morrow	**Direction:**	East
Description:	A view of sample collection by TechLaw personnel at well MCO-7, located in lower Mortandad Canyon.		

Photograph No.:	1-14	**Facility:**	Los Alamos National Laboratory
Date:	August 24, 1998	**Time:**	1048
Photo By:	C. Morrow	**Direction:**	North
Description:	View of sample collection by TechLaw personnel and well MCWB-6.5E, located in lower Mortandad Canyon. Well had a three foot square concrete pad and metal protective outer casing.		

Photograph No.:	1-15	**Facility:**	Los Alamos National Laboratory
Date:	August 25, 1998	**Time:**	1028
Photo By:	C. Morrow	**Direction:**	Northwest
Description:	View of well MCO-7.5B, located in lower Mortandad Canyon.		

Photograph No.:	1-16	**Facility:**	Los Alamos National Laboratory
Date:	August 25, 1998	**Time:**	1349
Photo By:	C. Morrow	**Direction:**	Northwest

Description: View of LANL personnel measuring the water level at well MCO-13, located in lower Mortandad Canyon.

Photograph No.:	1-17	**Facility:**	Los Alamos National Laboratory
Date:	August 26, 1998	**Time:**	1008
Photo By:	C. Morrow	**Direction:**	Northwest

Description: View of well MT-4 in Mortandad Canyon being purged using a bladder pump. The well had a small concrete pad around the well casing.

Photograph No.:	1-18	**Facility:**	Los Alamos National Laboratory
Date:	August 26, 1998	**Time:**	1340
Photo By:	C. Morrow	**Direction:**	Northwest

Description: View of well MCWB-7.7B in lower Mortandad Canyon. The well had a three foot square concrete pad and a metal protective outer casing.

Photograph No.:	1-19	**Facility:**	Los Alamos National Laboratory
Date:	August 27, 1998	**Time:**	1330
Photo By:	C. Morrow	**Direction:**	Northeast

Description: View of well MT-3 in lower Mortandad Canyon. Water is being purged with a newly installed bladder pump.

Photograph No.:	1-20	**Facility:**	Los Alamos National Laboratory
Date:	August 28, 1998	**Time:**	1025
Photo By:	C. Morrow	**Direction:**	Southeast

Description: View of sample collection of TA-50 effluent discharge at the water gauge in upper Mortandad Canyon.

Photograph No.:	2-1	**Facility:**	Los Alamos National Laboratory
Date:	August 31, 1998	**Time:**	1028
Photo By:	C. Morrow	**Direction:**	Northeast

Description: View of well LAO-5 in lower Los Alamos Canyon after sampling was completed using a peristaltic pump. The top of the well casing is flush with a foot square concrete pad.

Photograph No.:	2-2	**Facility:**	Los Alamos National Laboratory
Date:	August 31, 1998	**Time:**	1155
Photo By:	C. Morrow	**Direction:**	North
Description:	View of well LAO-4.5C, located in lower Los Alamos Canyon. The well had a one foot square concrete pad.		

Photograph No.:	2-3	**Facility:**	Los Alamos National Laboratory
Date:	August 31, 1998	**Time:**	1219
Photo By:	C. Morrow	**Direction:**	Downward
Description:	Close-up view of well LAO-1.2, located in lower Los Alamos Canyon, during sample collection using a peristaltic pump. The well was flush with a foot square concrete pad.		

Photograph No.:	2-4	**Facility:**	Los Alamos National Laboratory
Date:	August 31, 1998	**Time:**	1220
Photo By:	C. Morrow	**Direction:**	West
Description:	View of well LAO-1.2, located in lower Los Alamos Canyon.		

Photograph No.:	2-5	**Facility:**	Los Alamos National Laboratory
Date:	August 31, 1998	**Time:**	1502
Photo By:	C. Morrow	**Direction:**	Southwest
Description:	View of well LAO-3A, located in lower Los Alamos Canyon. The well had a one foot square concrete pad.		

Photograph No.:	2-6	**Facility:**	Los Alamos National Laboratory
Date:	August 31, 1998	**Time:**	1702
Photo By:	C. Morrow	**Direction:**	Southwest
Description:	View of well LAO-2, located in lower Los Alamos Canyon, during purging activities using a bladder pump. A dry creekbed is visible in the background.		

Photograph No.:	2-7	**Facility:**	Los Alamos National Laboratory
Date:	September 1, 1998	**Time:**	0902
Photo By:	C. Morrow	**Direction:**	Southeast
Description:	View of TW-4, located adjacent to the Los Alamos Jewish Community Center as seen in the background. TW-4 was surrounded by a locked chain-link fence and was purged overnight using an electric pump.		

Photograph No.:	2-8	**Facility:**	Los Alamos National Laboratory
Date:	September 1, 1998	**Time:**	0912
Photo By:	C. Morrow	**Direction:**	West
Description:	View of TW-1, located along SR 502. The well was surrounded by a locked chain-link fence.		

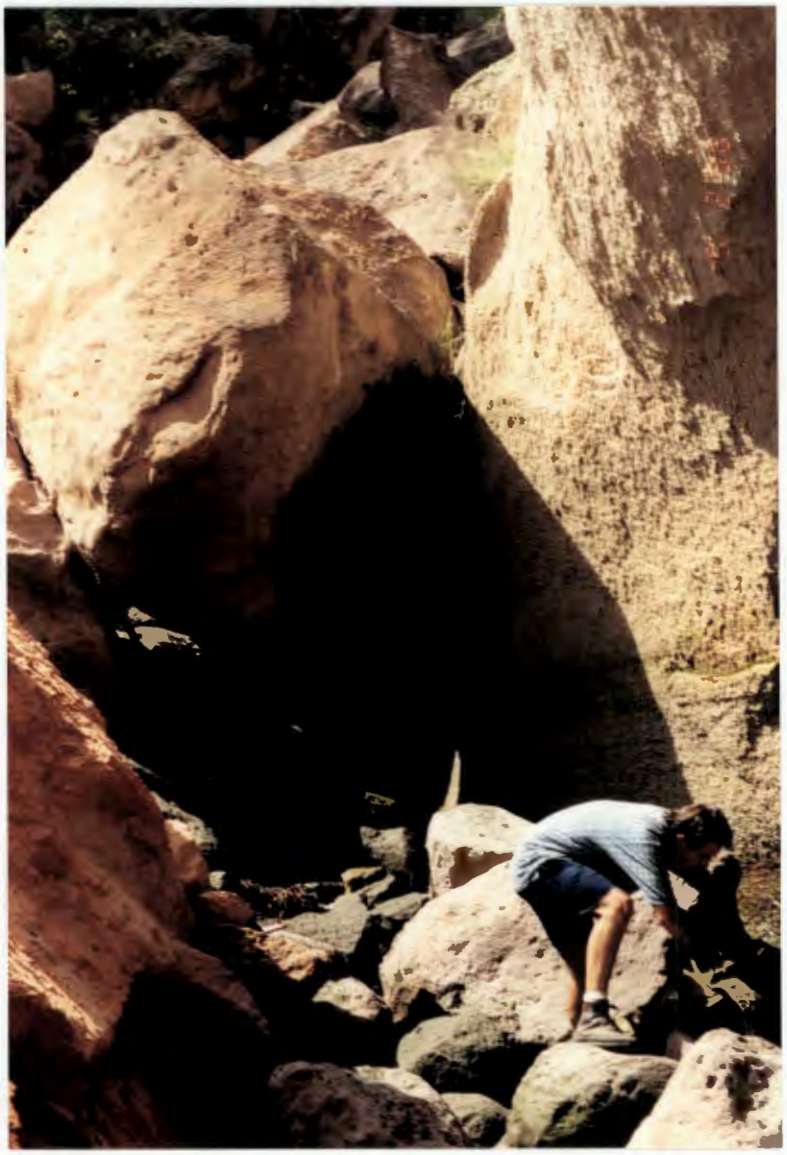
Photograph No.:	2-9	**Facility:**	Los Alamos National Laboratory
Date:	September 1, 1998	**Time:**	1038
Photo By:	C. Morrow	**Direction:**	North
Description:	View of TW-2A, located in Pueblo Canyon. The well was surrounded by a locked chain-link fence.		

Photograph No.:	2-10	**Facility:**	Los Alamos National Laboratory
Date:	September 1, 1998	**Time:**	1254
Photo By:	C. Morrow	**Direction:**	Downward
Description:	View of LANL personnel sampling the Bayo Sanitary Waste-Water Treatment Plant outfall using a peristaltic pump.		

Photograph No.:	2-11	**Facility:**	Los Alamos National Laboratory
Date:	September 1, 1998	**Time:**	1259
Photo By:	C. Morrow	**Direction:**	East
Description:	View of the Bayo Sanitary Waste-Water Treatment Plant outfall sample location.		

Photograph No.:	2-12	**Facility:**	Los Alamos National Laboratory
Date:	September 1, 1998	**Time:**	1406
Photo By:	C. Morrow	**Direction:**	West

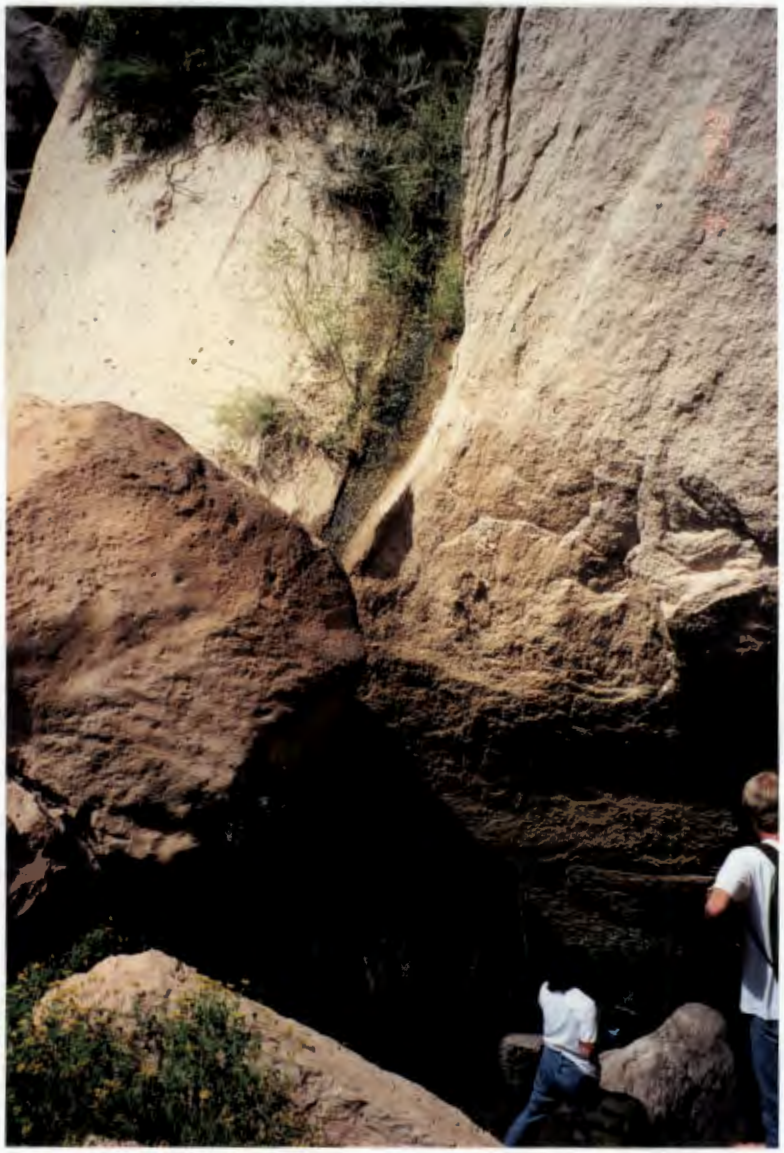
Description: View of TW-3 in Los Alamos Canyon. The well was purged overnight using an electric pump. The well and pump are secured within a locked chain-link fence.



Photograph No.:	2-13	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1110
Photo By:	C. Morrow	**Direction:**	West
Description:	View of NMED personnel collecting the DP Spring sample along a cliff face.		

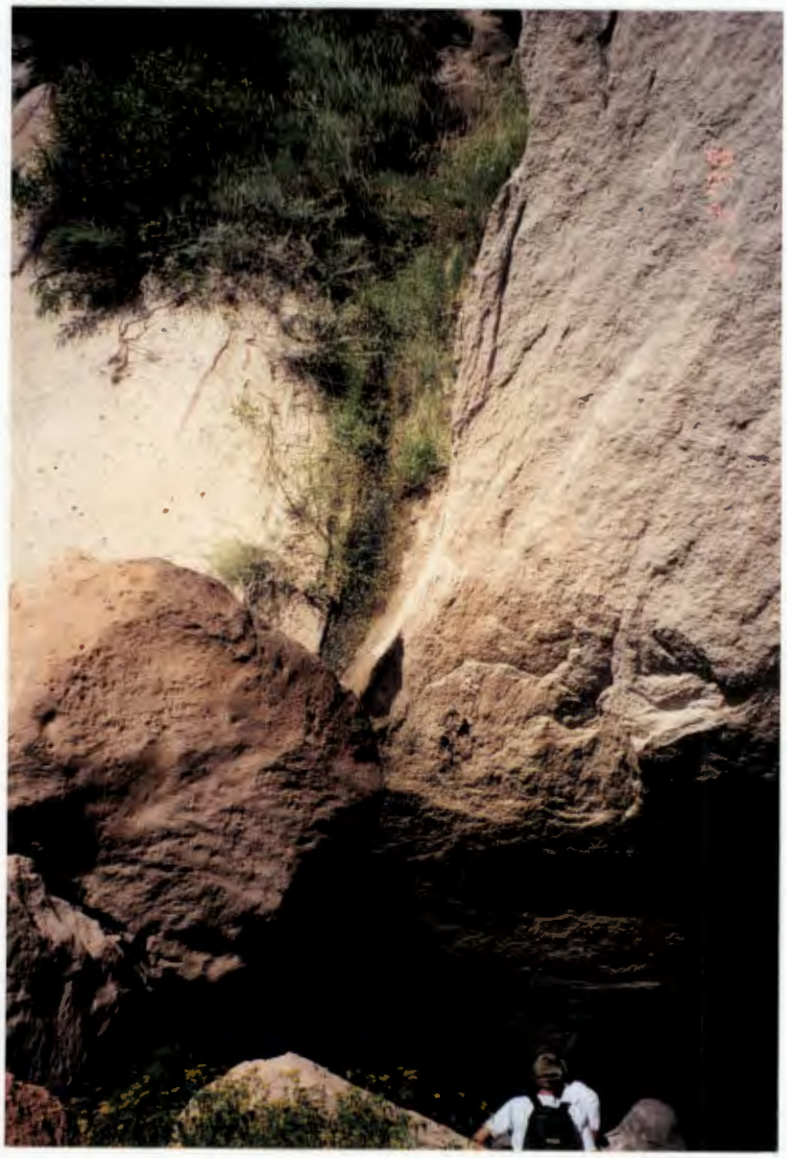
Photograph No.:	2-14	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1120
Photo By:	C. Morrow	**Direction:**	North
Description:	View of sample collection method employed by the sampling team. The collected water was then transferred to the appropriate sample containers.		

Photograph No.:	2-15	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1155
Photo By:	M. Dale, NMED	**Direction:**	North
Description:	Close-up view of the course of the spring water above the sample location for DP Spring located in DP Canyon.		



Photograph No.:	2-16	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1156
Photo By:	M. Dale, NMED	**Direction:**	North
Description:	View of the course of the spring water above the sample location for DP Spring Located in DP Canyon..		

Photograph No.:	2-17	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1157
Photo By:	M. Dale, NMED	**Direction:**	North-Northwest
Description:	View of the course of the spring water above the sample location for DP Spring located in DP Canyon.		



Photograph No.:	2-18	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1158
Photo By:	M. Dale, NMED	**Direction:**	North
Description:	View of the course of the spring water above the sample location for DP Spring.		

Photograph No.:	2-19	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1159
Photo By:	M. Dale, NMED	**Direction:**	North
Description:	Close-up view of the course of the spring water above the sample location for DP Spring in DP Canyon.		

Photograph No.:	2-20	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1600
Photo By:	C. Morrow	**Direction:**	Downward
Description:	Close-up view of the TW-8 valve, showing the rusted metal discharge pipe. The well, located in Mortandad Canyon, was purged during the morning using a gas-powered pump.		

Photograph No.:	2-21	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1632
Photo By:	C. Morrow	**Direction:**	South
Description:	View of TW-8 which was secured inside a locked chain-link fence.		

Photograph No.:	3-1	**Facility:**	Los Alamos National Laboratory
Date:	September 3, 1998	**Time:**	0936
Photo By:	C. Morrow	**Direction:**	West
Description:	View of well APCO-1 in Pueblo Canyon. Note the ant hill adjacent to the well pad. The well was not locked.		

Photograph No.:	3-2	**Facility:**	Los Alamos National Laboratory
Date:	September 3, 1998	**Time:**	1403
Photo By:	C. Morrow	**Direction:**	Southeast
Description:	View of the downstream Bayo plant effluent sample location at the culvert under SR 4.		

Photograph No.:	3-3	**Facility:**	Los Alamos National Laboratory
Date:	September 3, 1998	**Time:**	1405
Photo By:	C. Morrow	**Direction:**	Downward
Description:	View of the sample collection set-up for the downstream Bayo plant effluent sample (Bayo-2) along SR 4.		

Photograph No.:	3-4	**Facility:**	Los Alamos National Laboratory
Date:	September 4, 1998	**Time:**	0850
Photo By:	C. Morrow	**Direction:**	Southeast

Description: View of well LAUZ-1 located in DP Canyon. The well has a concrete pad. The overpacked drum is for the collection of purge water.

Photograph No.:	3-5	**Facility:**	Los Alamos National Laboratory
Date:	September 4, 1998	**Time:**	1234
Photo By:	C. Morrow	**Direction:**	North-Northeast

Description: View of well LAUZ-2 located in DP Canyon. The well has a concrete pad. The overpacked drum for purged water is visible in the foreground.

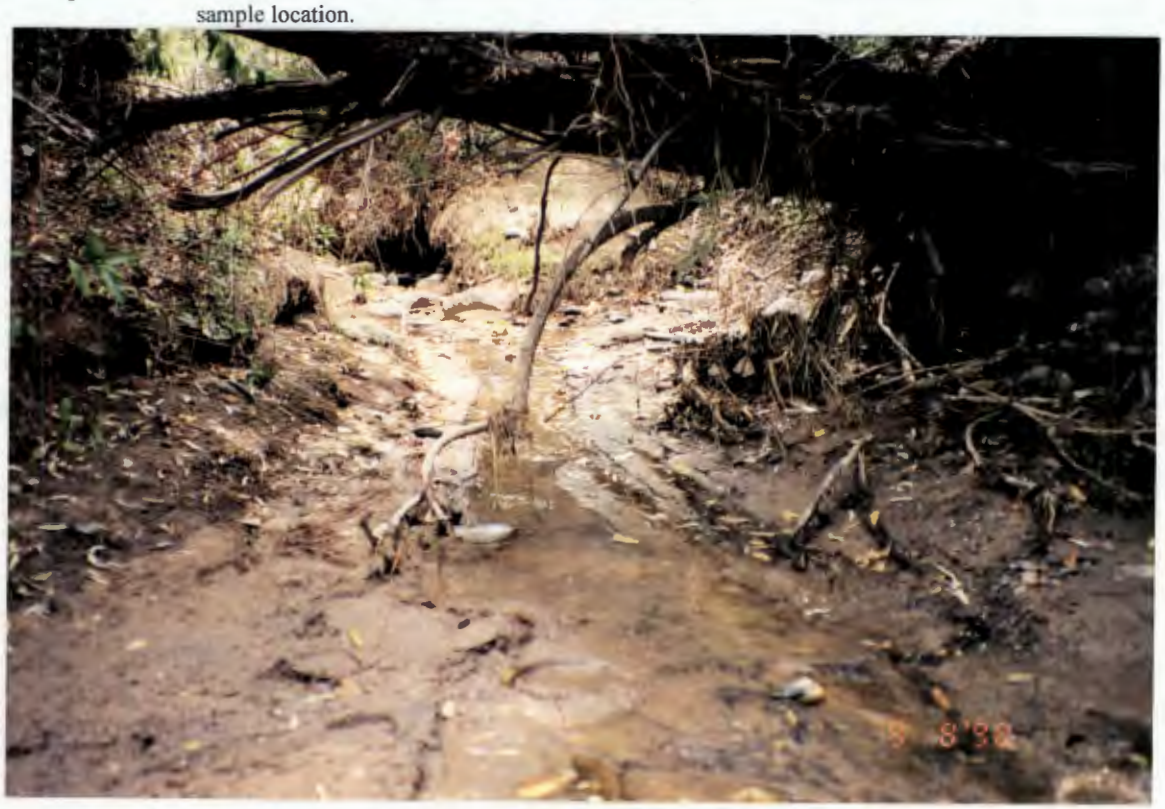
Photograph No.:	3-6	**Facility:**	Los Alamos National Laboratory
Date:	September 8, 1998	**Time:**	0958
Photo By:	C. Morrow	**Direction:**	South

Description: A close-up view sample collection at La Mesita Spring, just east of the Rio Grande River. Water collected from the spring was transferred to the appropriate sample containers.

Photograph No.:	3-7	**Facility:**	Los Alamos National Laboratory
Date:	September 8, 1998	**Time:**	1014
Photo By:	C. Morrow	**Direction:**	South
Description:	View of La Mesita Springs, located just east of the Rio Grande River.		

Photograph No.:	3-8	**Facility:**	Los Alamos National Laboratory
Date:	September 8, 1998	**Time:**	1400
Photo By:	C. Morrow	**Direction:**	West

Description: View of filtered water sample collection by LANL personnel using a peristaltic pump at Sacred Spring sample location.



Photograph No.:	3-9	**Facility:**	Los Alamos National Laboratory
Date:	September 8, 1998	**Time:**	1415
Photo By:	C. Morrow	**Direction:**	West

Description: View looking upstream towards the sample location for Sacred Spring. Samples were collected in the pool before the log.

Photograph No.:	3-10	**Facility:**	Los Alamos National Laboratory
Date:	September 8, 1998	**Time:**	1544
Photo By:	C. Morrow	**Direction:**	West
Description:	Close-up view of Otawi Spring sample location, situated along the west side of the Rio Grande River.		

Photograph No.:	3-11	**Facility:**	Los Alamos National Laboratory
Date:	September 8, 1998	**Time:**	1548
Photo By:	C. Morrow	**Direction:**	Southeast
Description:	View of Otawi Spring sample location (seen at the right), situated along the west bank of the Rio Grande River, visible in the background.		

Photograph No.:	3-12	**Facility:**	Los Alamos National Laboratory
Date:	September 9, 1998	**Time:**	0908
Photo By:	C. Morrow	**Direction:**	Southeast
Description:	Close-up view of the sample location for Basalt Springs, located in Los Alamos Canyon.		

Photograph No.:	3-13	**Facility:**	Los Alamos National Laboratory
Date:	September 9, 1998	**Time:**	0908
Photo By:	C. Morrow	**Direction:**	Southeast
Description:	View of the area around the sample location for Basalt Springs, located in Los Alamos Canyon.		

Photograph No.:	3-14	**Facility:**	Los Alamos National Laboratory
Date:	September 9, 1998	**Time:**	0951
Photo By:	C. Morrow	**Direction:**	East-Southeast
Description:	Close-up view of the sample location for LA Springs, located in Los Alamos Canyon. The sample was collected from the metal pipe.		

Photograph No.:	3-15	**Facility:**	Los Alamos National Laboratory
Date:	September 9, 1998	**Time:**	0951
Photo By:	C. Morrow	**Direction:**	North-Northwest

Description: View of area north of LA Springs. The spring is unmarked and the area is overgrown. A tank on the hilltop is visible in the background.

Photograph No.:	3-16	**Facility:**	Los Alamos National Laboratory
Date:	September 9, 1998	**Time:**	1003
Photo By:	C. Morrow	**Direction:**	Southeast
Description:	Close-up view of the sample collection at LA Springs from the metal pipe.		

Photograph No.:	01-BK	**Facility:**	Los Alamos National Laboratory
Date:	September 1, 1998	**Time:**	0927
Photo By:	B. Kendrick	**Direction:**	Southeast
Description:	View of purging conducted at well LAO-1.6g located in Los Alamos Canyon. Purging and sampling was conducted using a dedicated bladder pump.		

Photograph No.:	02-BK	**Facility:**	Los Alamos National Laboratory
Date:	September 1, 1998	**Time:**	0938
Photo By:	B. Kendrick	**Direction:**	Downward
Description:	View of the Well Wizard Controller used to control pumping action of the bladder pumps.		

Photograph No.:	03-BK	**Facility:**	Los Alamos National Laboratory
Date:	September 1, 1998	**Time:**	1550
Photo By:	B. Kendrick	**Direction:**	Northwest
Description:	View of well LAO-0.3 located in Los Alamos Canyon.		

Photograph No.:	04-BK	**Facility:**	Los Alamos National Laboratory
Date:	September 1, 1998	**Time:**	1557
Photo By:	B. Kendrick	**Direction:**	Northwest
Description:	View of well LAO-0.6 located in Los Alamos Canyon.		

Photograph No.:	05-BK	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1210
Photo By:	B. Kendrick	**Direction:**	Southeast
Description:	View of well POI-4 located in Pueblo Canyon.		

Photograph No.:	06-BK	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1215
Photo By:	B. Kendrick	**Direction:**	Northeast
Description:	View of crack on south side of the POI-4 well pad.		

Photograph No.:	07-BK	**Facility:**	Los Alamos National Laboratory
Date:	September 2, 1998	**Time:**	1218
Photo By:	B. Kendrick	**Direction:**	Southwest
Description:	View of crack on east side of POI-4 well pad.		

Photograph No.:	08-BK	**Facility:**	Los Alamos National Laboratory
Date:	September 3, 1998	**Time:**	1404
Photo By:	B. Kendrick	**Direction:**	East
Description:	View of well LAO-0.91 located in Los Alamos Canyon immediately east of TA-2.		

Photograph No.:	09-BK	**Facility:**	Los Alamos National Laboratory
Date:	September 3, 1998	**Time:**	1420
Photo By:	B. Kendrick	**Direction:**	Southeast
Description:	View of well LAO-B located in Los Alamos Canyon.		

Photograph No.: 10-BK
Date: September 9, 1998
Photo By: B. Kendrick
Description: View of well LLAO-2 located near Totavi on State Route 502.
Facility: Los Alamos National Laboratory
Time: 1250
Direction: South

Photograph No.: 11-BK
Date: September 9, 1998
Photo By: B. Kendrick
Description: View of well LLAO-5 located near the Rio Grande River.
Facility: Los Alamos National Laboratory
Time: 1309
Direction: West

Photograph No.: 12-BK
Date: September 9, 1998
Photo By: B. Kendrick
Description: Close-up view of well LLAO-5.

Facility: Los Alamos National Laboratory
Time: 1311
Direction: Downward