Environmental Restoration
University of California
Environmental Restoration Project, MS M992
Los Alamos, New Mexico 87545
505-667-0808/FAX 505-665-4747

U. S. Department of Energy
Los Alamos Area Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
505-667-7203/FAX 505-665-4504

Date: July 31, 1997
Refer to: EM/ER:97-294

RECEIVED AUG 1997

Dr. Stu Dinwiddie
NMED-HRMB
P.O. Box 26110
Santa Fe, NM 87502

**SUBJECT: RESPONSE TO REQUEST FOR ER GROUND WATER AND SURFACE WATER ANALYTICAL RESULTS**

Dear Dr. Dinwiddie:

This letter is being sent in response to your request for Environmental Restoration (ER) ground water and surface water analytical results dated April 11, 1997, with subsequent clarification received by fax from John Kieling on June 30, 1997. We submitted a request for July 31, 1997, extension (reference EM/ER:97-177) dated May 12, 1997 and received approval for extension request from you dated June 16 1997.

The ER Project surface and ground water data in the attached submittal document (and on diskette) is presented for your use in review of the Los Alamos National Laboratory (LANL) Hydrogeological Work Plan. Some of the data has been previously reported; some has not yet undergone assessment and will be reported on as scheduled in the ER Project Baseline. The data sets included in this submittal have not undergone the level of rigorous review they would normally undergo prior to submittal in an Resource Conservation and Recovery Act facility investigation (RFI) report. Data available in the LANL Facility for Information Management and Display (FIMAD) have been prepared for submittal in electronic format as Excel spreadsheets. Data not available in FIMAD have been prepared as hard copy tables.

The submittal document consists of the following sections:

- Section 1 - Field Unit 1, Garry Allen
  - data set prepared in electronic format (compressed)
- Section 2 - Field Unit 2 - Gene Gould
  - data set prepared in electronic format (compressed)
- Section 3 - Field Unit 3 - Roy Michelotti

  The following data sets are not available in FIMAD, but are included in this submittal in tabular form as generated by the data owner.
  - TA-16 Springs Quarterly, Don Hickmott
  - Station 46-F1 Storm Water Runoff Data, Mike Alexander
  - TA-16 Waters, Don Hickmott
- Section 4 - Field Unit 4 - Allyn Pratt



13072

- Data set prepared in electronic format (compressed)

- Section 5 - Earth Sciences Council, Pat Longmire and Frasier Goff

  The following data set is not available in FIMAD, but are included in this submittal in tabular form as generated by the data owner.

  - Pajarito ER Background Waters, First of Quarterly Sampling

- Section 6 - MDA-P Closure, Roy Bohn

  - Data set prepared in electronic format (compressed)

Field Unit 5 did not have any applicable data to be included in this submittal.

Each section consists of a cover spreadsheet with general information about the samples for which analytical data are available. For data sets not available in FIMAD, an analytical data spreadsheet is also included. The electronic data files are submitted on 1.4 MB floppy disks and have been compressed using PKZIP software. Field Unit 4 has also included an additional attachment with field-collected data. An explanation of this attachment is in Section 4.

The data sets include the analytical results for surface water, storm water runoff, and ground water samples collected by the ER Project. The sample sources are indicated by the Media Code in the cover spreadsheets. The following sources may be included in the data sets.

| Sample Source | Media Code |
|---|---|
| Groundwater, alluvial well | WGA |
| Groundwater, intermediate well | WGI |
| Groundwater, deep well | WGD |
| Groundwater, springs | WGS |
| Surface water, flowing | WSF |
| Surface water, wetlands | WSW |
| Storm water, flowing | WTF |

The data set excludes QA/QC water samples (such as field blanks); lysimeter samples; samples from outfalls, septic tanks, and sump pits; waste characterization samples; and water samples from stagnant sources such as surface impoundments.

The type of sample is indicated by the Sample Technique Code in the cover spreadsheets. The following sample types may be included in the data sets.

| Sample Technique Code | Description |
|---|---|
| AS | Auto-Sampler (ISCO...) |
| BA | Bailer |
| BP | Bladder Pump |
| GSP | Gear-driven Submersible Pump |
| PP | Peristaltic Pump |
| PSP | Propeller-driven Submersible Pump |
| RSP | Reciprocating piston-type Submersible Pump |
| SSS | Single Stage Sample for surface water runoff |
| TD | Transfer Device for grab samples |
| WB | Weighted Bottle |

The cover spreadsheets also indicate whether the sample is filtered or nonfiltered.

We recognize this may not be a complete data set for all surface and groundwater investigations conducted by the Environmental Restoration Project. Additional data may be provided in the future as our databases are further developed and/or refined.

If you have any questions, please call Dave McInroy at (505) 667-0819 or Joe Mose at (505) 667-5808.

Sincerely,

Jorg Jansen, Program Manager
LANL/ER Project

Sincerely,

for Theodore J. Taylor, Program Manager
DOE/LAAO

JJ/TT/ss

Cy (w hard copy encs.):
D. Griswold, AL-ERD, MS A906
J. Harry, EES-5, MS M992
M. Johansen, LAAO, MS A316
N. Naraine, DOE-HQ, EM-453
D. Neleigh, EPA, R.6, 6PD-N
T. Taylor, LAAO, MS A316
J. White, ESH-19, MS K490
EM/ER CT# 255, MS M992
RPF, MS M707
J. Kieling, NMED-HRMB
M. Leavitt, NMED-GWQB
J. Parker, NMED-OB
G. Saums, NMED-SWQB
S. Yanicak, NMED-AIP, MS J993

Cy (w/o encs.):
M. Alexander, ESH-18, MS K497
G. Allen, CST-7, MS E525
T. Baca, EM, MS J591
R. Bohn, EM/ER, MS M992
J. Canepa, EM/ER, MS M992
B. Garcia, NMED-HRMB
T. Glatzmaier, DDEES/ER, MS M992
F. Goff, EES-1, MS D462
G. Gould, EES-15, MS J495
D. Hickmott, EES-1, MS D462
D. Krier, EES-1, MS D462
P. Longmire, CST-7, MS J534
D. McInroy, EM/ER, MS M992
R. Michelotti, CST-18, MS E525
J. Mose, LAAO, MS A316
A. Pratt, EES-13, MS J521
G. Rael, AL-ERD, MS A906
M. Salazar, EM/ER, MS M769
W. Spurgeon, DOE-HQ, EM-453
J. Vozella, LAAO, MS A316
K. Zamora, LAAO, MS A316
EM/ER File, MS M992

# ER PROJECT SURFACE AND GROUND WATER DATA

## SECTION 1. FIELD UNIT 1, GARRY ALLEN

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0121-95-0251 | WGI | NOT SPECIFIED | BA | | | | | | | | |
| 0121-95-0252 | WGI | NOT SPECIFIED | BA | | | | | | | | |
| 0121-95-0253 | WGS | NOT SPECIFIED | | | | | | | | | |
| 0121-95-0264 | WGI | NOT SPECIFIED | | | | | | | | | |
| 0121-95-0265 | WGI | NOT SPECIFIED | BA | | | | | | | | |
| 0121-95-0266 | WGS | NOT SPECIFIED | | | | | | | | | |
| AAA2428 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| AAA2430 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| AAA2432 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| AAA2434 | WGA | NOT SPECIFIED | | | | | | | | | |
| AAA5679 | WGA | NOT SPECIFIED | | | | | | | | | |
| AAA6848 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| AAA7498 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| AAB7760 | WGS | NOT SPECIFIED | | | | | | | | | |
| AAB7764 | WGS | NOT SPECIFIED | | | | | | | | | |
| AAC0469 | WGA | NOT SPECIFIED | | | | | | | | | |
| AAC0558 | WGI | NOT SPECIFIED | | | | | | | | | |
| AAC0559 | WGI | NOT SPECIFIED | | | | | | | | | |
| AAC0856 | WGA | NOT SPECIFIED | | | | | | | | | |
| AAC1081 | WGA | NOT SPECIFIED | | | | | | | | | |
| AAC3129 | WGS | NOT SPECIFIED | | | | | | | | | |
| AAC3130 | WGA | NOT SPECIFIED | | | | | | | | | |
| AAC3133 | WGA | NOT SPECIFIED | | | | | | | | | |

# ER PROJECT SURFACE AND GROUND WATER DATA

## SECTION 2. FIELD UNIT 2, GENE GOULD

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|
| 0218-95-0001 | WGA | NOT SPECIFIED | PP |
| 0218-95-0002 | WGA | NOT SPECIFIED | PP |
| 0218-95-0003 | WGA | NOT SPECIFIED | PP |
| 0218-95-0004 | WGA | NOT SPECIFIED | PP |
| 0218-95-0005 | WGA | NOT SPECIFIED | PP |
| 0218-95-0006 | WGA | NOT SPECIFIED | PP |
| 0218-95-0251 | WGA | N | PP |
| 0218-95-0252 | WGA | N | PP |
| 0218-95-0253 | WGA | N | PP |
| 0218-95-0255 | WGA | NOT SPECIFIED | PP |
| 0218-95-0256 | WGA | NOT SPECIFIED | PP |
| 0218-96-0521 | WGA | Y | PP |
| 0218-96-0522 | WGA | N | PP |
| 0218-96-0523 | WGA | Y | PP |
| 0218-96-0524 | WGA | N | PP |
| 0218-96-0525 | WGA | Y | PP |
| 0218-96-0526 | WGA | N | PP |
| 0218-96-0527 | WGA | Y | PP |
| 0218-96-0528 | WGA | N | PP |
| 0218-96-0529 | WGA | Y | PP |
| 0218-96-0530 | WGA | N | PP |
| 0218-97-0001 | WGA | Y | PP |
| 0218-97-0002 | WGA | N | PP |
| 0218-97-0003 | WGA | Y | PP |
| 0218-97-0004 | WGA | N | PP |
| 0218-97-0005 | WGA | Y | PP |
| 0218-97-0006 | WGA | N | PP |
| 0218-97-0007 | WGA | Y | PP |
| 0218-97-0008 | WGA | N | PP |
| 0218-97-0009 | WGA | Y | PP |
| 0218-97-0010 | WGA | N | PP |

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|
| 0236-95-0501 | WGA | NOT SPECIFIED | PP |
| 0236-95-0503 | WGA | NOT SPECIFIED | PP |
| 0236-95-0504 | WGA | NOT SPECIFIED | BA |
| AAA5901 | WSW | NOT SPECIFIED | PP |
| AAA5902 | WSW | NOT SPECIFIED | PP |
| AAA5907 | WSW | NOT SPECIFIED | PP |
| AAA5909 | WSW | NOT SPECIFIED | PP |
| AAA5915 | WSW | NOT SPECIFIED | PP |
| AAA5916 | WSW | NOT SPECIFIED | PP |
| AAA5921 | WSW | NOT SPECIFIED | PP |
| AAA5922 | WSW | NOT SPECIFIED | PP |
| AAA5927 | WSW | NOT SPECIFIED | PP |
| AAA5928 | WSW | NOT SPECIFIED | PP |
| AAA5933 | WSW | NOT SPECIFIED | PP |
| AAA5934 | WSW | NOT SPECIFIED | PP |
| AAA5945 | WSW | NOT SPECIFIED | PP |
| AAA5946 | WSW | NOT SPECIFIED | PP |
| AAA5953 | WGA | NOT SPECIFIED | PP |
| AAA5954 | WGA | NOT SPECIFIED | PP |
| AAA5956 | WGA | NOT SPECIFIED | PP |
| AAA5957 | WGA | NOT SPECIFIED | PP |
| AAA5958 | WGA | NOT SPECIFIED | PP |
| AAA5959 | WGA | NOT SPECIFIED | PP |
| AAA5960 | WGA | NOT SPECIFIED | PP |
| AAA5961 | WGA | NOT SPECIFIED | PP |
| AAA5984 | WGA | NOT SPECIFIED | PP |
| AAA5987 | WGA | NOT SPECIFIED | PP |
| AAA9539 | WGA | NOT SPECIFIED | PP |
| AAA9542 | WGA | NOT SPECIFIED | PP |
| AAA9543 | WGA | NOT SPECIFIED | PP |
| AAA9544 | WGA | NOT SPECIFIED | PP |

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|
| AAA9554 | WGA | NOT SPECIFIED | PP |
| AAA9555 | WGA | NOT SPECIFIED | PP |
| AAA9556 | WGA | NOT SPECIFIED | PP |
| AAA9557 | WGA | NOT SPECIFIED | PP |
| AAA9558 | WGA | NOT SPECIFIED | PP |
| AAA9560 | WGA | NOT SPECIFIED | PP |
| AAA9561 | WGA | NOT SPECIFIED | PP |
| AAA9563 | WGA | NOT SPECIFIED | PP |
| AAA9564 | WGA | NOT SPECIFIED | PP |
| AAA9565 | WGA | NOT SPECIFIED | PP |
| AAA9566 | WGA | NOT SPECIFIED | PP |
| AAA9571 | WGA | NOT SPECIFIED | PP |
| AAA9572 | WGA | NOT SPECIFIED | PP |
| AAA9577 | WGA | NOT SPECIFIED | BA |
| AAA9578 | WGA | NOT SPECIFIED | BA |
| AAA9579 | WGA | NOT SPECIFIED | BA |
| AAA9580 | WGA | NOT SPECIFIED | BA |
| AAA9584 | WGA | NOT SPECIFIED | BA |
| AAA9585 | WGA | NOT SPECIFIED | BA |
| AAA9587 | WGA | NOT SPECIFIED | BA |
| AAA9588 | WGA | NOT SPECIFIED | BA |
| AAA9589 | WGA | NOT SPECIFIED | BA |
| AAB1821 | WSF | NOT SPECIFIED | PP |
| AAB1822 | WSF | NOT SPECIFIED | PP |
| AAB2442 | WGA | NOT SPECIFIED | BA |
| AAB2450 | WGA | NOT SPECIFIED | BA |
| AAB2533 | WGA | NOT SPECIFIED | PP |
| AAB2534 | WGA | NOT SPECIFIED | PP |
| AAB2535 | WGA | NOT SPECIFIED | PP |
| AAB2536 | WGA | NOT SPECIFIED | PP |
| AAB2537 | WGA | NOT SPECIFIED | PP |

SECTION 2. FIELD UNIT 2, GENE GOULD

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AAB2538 | WGA | NOT SPECIFIED | PP | | | | | | | | |
| AAB2539 | WGA | NOT SPECIFIED | PP | | | | | | | | |
| AAB2541 | WGA | NOT SPECIFIED | PP | | | | | | | | |
| AAB2542 | WGA | NOT SPECIFIED | PP | | | | | | | | |
| AAB4552 | WGA | Y | BA | | | | | | | | |
| AAB4561 | WGA | Y | BA | | | | | | | | |
| AAB4596 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| AAB4604 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| AAB4631 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| AAB4639 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| AAB4671 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| AAB4678 | WGA | NOT SPECIFIED | BA | | | | | | | | |
| ECXX-95-0301 | WGA | N | PP | | | | | | | | |
| ECXX-95-0309 | WGA | Y | PP | | | | | | | | |
| ECXX-96-0300 | WGA | N | PP | | | | | | | | |
| ECXX-96-0301 | WGA | Y | PP | | | | | | | | |

# ER PROJECT SURFACE AND GROUND WATER DATA

SECTION 3. FIELD UNIT 3, ROY MICHELOTTI
STATION 46-F1 STORM WATER RUNOFF DATA
MIKE ALEXANDER

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F101796G | WTF | N | AS | | | | | | | | |
| F129696G | WTF | N | AS | | | | | | | | |

| ANALYSIS DESCRIPTION | ANALYTE | SAMPLE_ID | | RESULT | UNITS |
|---|---|---|---|---|---|
| **Water Chemistry** | | | | | |
| | 1-methylnaphthalene | | | | |
| | | F101796G | < | 1. | µg/L |
| | 2,3,4,6-tetrachlorophenol | | | | |
| | | F101796G | < | 50. | µg/L |
| | 3/4 methylphenol / M/P-cresol | | | | |
| | | F101796G | < | 1. | µg/L |
| | 4,6-dinitro-2-methylphenol | | | | |
| | | F101796G | < | 10. | µg/L |
| | 4-bromophenyl-phenylether | | | | |
| | | F101796G | < | 1. | µg/L |
| | aniline | | | | |
| | | F101796G | < | 10. | µg/L |
| | azobenzene | | | | |
| | | F101796G | < | 1. | µg/L |
| | benzo(b)+(k)fluoranthene | | | | |
| | | F101796G | < | 1. | µg/L |
| | calcium, total | | | | |
| | | F129696G | < | 0.3 | mg/L |
| | | F101796G | < | 0.3 | mg/L |
| | potassium, total | | | | |
| | | F129696G | < | 0.2 | mg/L |
| | | F101796G | < | 0.2 | mg/L |
| | pyridine | | | | |
| | | F101796G | < | 10. | µg/L |
| | sodium, total | | | | |
| | | F129696G | < | 0.3 | mg/L |
| | | F101796G | < | 0.3 | mg/L |

| ANALYSIS DESCRIPTION | ANALYTE | SAMPLE_ID | | RESULT | UNITS |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| | aluminum, total | | | | |
| | | F129696G | < | 0.5 | mg/L |
| | | F101796G | | 1.1 | mg/L |
| | antimony, total | | | | |
| | | F129696G | < | 0.03 | mg/L |
| | | F101796G | < | 0.03 | mg/L |
| | arsenic, total | | | | |
| | | F129696G | < | 0.06 | mg/L |
| | | F101796G | < | 0.06 | mg/L |
| | barium, total | | | | |
| | | F129696G | < | 0.01 | mg/L |
| | | F101796G | | 0.05 | mg/L |
| | beryllium, total | | | | |
| | | F129696G | < | 0.001 | mg/L |
| | | F101796G | < | 0.001 | mg/L |
| | cadmium, total | | | | |
| | | F129696G | < | 0.004 | mg/L |
| | | F101796G | < | 0.004 | mg/L |
| | chromium, total | | | | |
| | | F129696G | < | 0.2 | mg/L |
| | | F101796G | < | 0.02 | mg/L |
| | colbalt, total | | | | |
| | | F129696G | < | 0.01 | mg/L |
| | | F101796G | < | 0.01 | mg/L |
| | copper, total | | | | |
| | | F129696G | < | 0.01 | mg/L |
| | | F101796G | | 0.02 | mg/L |
| | iron, total | | | | |
| | | F129696G | < | 0.3 | mg/L |
| | | F101796G | | 0.8 | mg/L |
| | lead, total | | | | |
| | | F129696G | < | 0.04 | mg/L |
| | | F101796G | < | 0.04 | mg/L |
| | magnesium, total | | | | |
| | | F129696G | < | 0.2 | mg/L |
| | | F101796G | < | 0.2 | mg/L |
| | manganese, total | | | | |
| | | F129696G | < | 0.005 | mg/L |
| | | F101796G | | 0.01 | mg/L |

| ANALYSIS DESCRIPTION | ANALYTE | SAMPLE_ID | | RESULT | UNITS |
|---|---|---|---|---|---|
| **Metals (continued)** | | | | | |
| | mercury, total | | | | |
| | | F129696G | < | 0.0002 | mg/L |
| | | F101796G | | 0.0002 | mg/L |
| | molybdenum, total | | | | |
| | | F129696G | < | 0.1 | mg/L |
| | | F101796G | < | 0.4 | mg/L |
| | nickel, total | | | | |
| | | F129696G | | 0.09 | mg/L |
| | | F101796G | | 0.07 | mg/L |
| | selenium, total | | | | |
| | | F129696G | < | 0.05 | mg/L |
| | | F101796G | < | 0.05 | mg/L |
| | silver, dissolved | | | | |
| | | F129696G | < | 0.02 | mg/L |
| | silver, total | | | | |
| | | F101796G | < | 0.02 | mg/L |
| | uranium, total | | | | |
| | | F129696G | < | 10. | µg/L |
| | | F101796G | < | 10. | µg/L |
| | vanadium, total | | | | |
| | | F129696G | < | 0.003 | mg/L |
| | | F101796G | | 0.006 | mg/L |
| | zinc, total | | | | |
| | | F129696G | < | 0.1 | mg/L |
| | | F101796G | < | 0.1 | mg/L |

| ANALYSIS DESCRIPTION | ANALYTE | SAMPLE_ID | | RESULT | UNITS |
|---|---|---|---|---|---|
| **Organic Acids** | | | | | |
| | 2,4,5-trichlorophenol | | | | |
| | | F101796G | < | 10. | µg/L |
| | 2,4,6-trichlorophenol | | | | |
| | | F101796G | < | 10. | µg/L |
| | 2,4-dichlorophenol | | | | |
| | | F101796G | < | 10. | µg/L |
| | 2,4-dimethylphenol | | | | |
| | | F101796G | < | 1. | µg/L |
| | 2,4-dinitrophenol | | | | |
| | | F101796G | < | 50. | µg/L |
| | 2-chlorophenol | | | | |
| | | F101796G | < | 1. | µg/L |
| | 2-methylphenol | | | | |
| | | F101796G | < | 1. | µg/L |
| | 2-nitrophenol | | | | |
| | | F101796G | < | 10. | µg/L |
| | 4-chloro-3-methylphenol | | | | |
| | | F101796G | < | 10. | µg/L |
| | 4-nitrophenol | | | | |
| | | F101796G | < | 20. | µg/L |
| | benzoic acid | | | | |
| | | F101796G | < | 100. | µg/L |
| | pentachlorophenol | | | | |
| | | F101796G | < | 20. | µg/L |
| | phenol | | | | |
| | | F101796G | < | 10. | µg/L |

| ANALYSIS DESCRIPTION | ANALYTE | SAMPLE_ID | RESULT | | UNITS |
|---|---|---|---|---|---|
| **Base/Neutral** | | | | | |
| | 1,2,4-trichlorobenzene | | | | |
| | | F101796G | < | 1. | µg/L |
| | 1,2-dichlorobenzene | | | | |
| | | F101796G | < | 1. | µg/L |
| | 1,3-dichlorobenzene | | | | |
| | | F101796G | < | 1. | µg/L |
| | 1,4-dichlorobenzene | | | | |
| | | F101796G | < | 1. | µg/L |
| | 2,4-dinitrotoluene | | | | |
| | | F101796G | < | 10. | µg/L |
| | 2,6-dinitrotoluene | | | | |
| | | F101796G | < | 10. | µg/L |
| | 2-chloronaphthalene | | | | |
| | | F101796G | < | 1. | µg/L |
| | 2-methylnaphthalene | | | | |
| | | F101796G | < | 1. | µg/L |
| | 2-nitroaniline | | | | |
| | | F101796G | < | 10. | µg/L |
| | 3,3'-dichlorobenzidine | | | | |
| | | F101796G | < | 10. | µg/L |
| | 3-nitroaniline | | | | |
| | | F101796G | < | 10. | µg/L |
| | 4-chloroaniline | | | | |
| | | F101796G | < | 10. | µg/L |
| | 4-chlorophenyl phenyl ether | | | | |
| | | F101796G | < | 1. | µg/L |
| | 4-nitroaniline | | | | |
| | | F101796G | < | 10. | µg/L |
| | acenaphthene | | | | |
| | | F101796G | < | 1. | µg/L |
| | acenaphthylene | | | | |
| | | F101796G | < | 1. | µg/L |
| | anthracene | | | | |
| | | F101796G | < | 1. | µg/L |
| | benzo (a) anthracene | | | | |
| | | F101796G | < | 1. | µg/L |
| | benzo (a) pyrene | | | | |
| | | F101796G | < | 1. | µg/L |

| ANALYSIS DESCRIPTION | ANALYTE | SAMPLE_ID | | RESULT | UNITS |
|---|---|---|---|---|---|
| **Base/Neutral (continued)** | | | | | |
| | benzo (g,h,i) perylene | | | | |
| | | F101796G | < | 10. | µg/L |
| | benzyl alcohol | | | | |
| | | F101796G | < | 50. | µg/L |
| | bis (2-chloroethoxy) methane | | | | |
| | | F101796G | < | 1. | µg/L |
| | bis (2-chloroethyl) ether | | | | |
| | | F101796G | < | 1. | µg/L |
| | bis (2-chloroisopropyl) ether | | | | |
| | | F101796G | < | 1. | µg/L |
| | bis (2-ethylhexyl) phthalate | | | | |
| | | F101796G | < | 10. | µg/L |
| | butylbenzyl phthalate | | | | |
| | | F101796G | < | 1. | µg/L |
| | chrysene | | | | |
| | | F101796G | < | 1. | µg/L |
| | di-n-butyl phthalate | | | | |
| | | F101796G | < | 10. | µg/L |
| | di-n-octyl phthalate | | | | |
| | | F101796G | < | 10. | µg/L |
| | dibenzo(a,h)anthracene | | | | |
| | | F101796G | < | 10. | µg/L |
| | dibenzofuran | | | | |
| | | F101796G | < | 1. | µg/L |
| | diethyl phthalate | | | | |
| | | F101796G | < | 1. | µg/L |
| | dimethyl phthalate | | | | |
| | | F101796G | < | 1. | µg/L |
| | fluoranthene | | | | |
| | | F101796G | < | 1. | µg/L |
| | fluorene | | | | |
| | | F101796G | < | 1. | µg/L |
| | hexachlorobenzene | | | | |
| | | F101796G | < | 1. | µg/L |
| | hexachlorobutadiene | | | | |
| | | F101796G | < | 1. | µg/L |
| | hexachlorocyclopentadiene | | | | |
| | | F101796G | < | 50. | µg/L |

| ANALYSIS DESCRIPTION | ANALYTE | SAMPLE_ID | | RESULT | UNITS |
|---|---|---|---|---|---|
| **Base/Neutral (continued)** | | | | | |
| | hexachloroethane | | | | |
| | | F101796G | < | 1. | µg/L |
| | indeno(1,2,3-cd)pyrene | | | | |
| | | F101796G | < | 10. | µg/L |
| | isophorone | | | | |
| | | F101796G | < | 1. | µg/L |
| | n-nitrosodi-n-propylamine | | | | |
| | | F101796G | < | 1. | µg/L |
| | n-nitrosodimethylamine | | | | |
| | | F101796G | < | 10. | µg/L |
| | n-Nitrosodiphenylamine | | | | |
| | | F101796G | < | 1. | µg/L |
| | naphthalene | | | | |
| | | F101796G | < | 1. | µg/L |
| | nitrobenzene | | | | |
| | | F101796G | < | 1. | µg/L |
| | phenanthrene | | | | |
| | | F101796G | < | 1. | µg/L |
| | pyrene | | | | |
| | | F101796G | < | 1. | µg/L |

| ANALYSIS DESCRIPTION | ANALYTE | SAMPLE_ID | | RESULT | UNITS |
|---|---|---|---|---|---|
| **Pesticides and PCBs** | | | | | |
| | aroclor-1016 (PCB) | | | | |
| | | F101796G | < | 0.1 | µg/L |
| | aroclor-1221 (PCB) | | | | |
| | | F101796G | < | 0.1 | µg/L |
| | aroclor-1232 (PCB) | | | | |
| | | F101796G | < | 0.1 | µg/L |
| | aroclor-1242 (PCB) | | | | |
| | | F101796G | < | 0.1 | µg/L |
| | aroclor-1248 (PCB) | | | | |
| | | F101796G | < | 0.1 | µg/L |
| | aroclor-1254 (PCB) | | | | |
| | | F101796G | < | 0.1 | µg/L |
| | aroclor-1260 (PCB) | | | | |
| | | F101796G | < | 0.1 | µg/L |

# ER PROJECT SURFACE AND GROUND WATER DATA

SECTION 3. FIELD UNIT 3, ROY MICHELOTTI
TA-16 WATERS
DON HICKMOTT

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MDA P S-1 | WSF | Y | PP | | | | | | | | |
| MDA P S-2 | WSF | Y | PP | | | | | | | | |
| MDA P S-3 | WSF | Y | PP | | | | | | | | |
| MDA P S-4 | WSF | Y | PP | | | | | | | | |
| MDA P S-5 | WSF | Y | PP | | | | | | | | |
| MDA P S-6 | WSF | Y | PP | | | | | | | | |
| PP94-50 | WSF | Y | PP | | | | | | | | |
| PP94-51 | WSF | Y | PP | | | | | | | | |
| PP94-52 | WSF | Y | PP | | | | | | | | |
| PP94-74 | WSF | Y | PP | | | | | | | | |
| PP95-132 | WSF | Y | PP | | | | | | | | |
| PP95-134 | WSF | Y | PP | | | | | | | | |
| SSite95-1 | WSF | Y | PP | | | | | | | | |
| SSite95-2 | WSF | Y | PP | | | | | | | | |
| SSite95-3 | WSF | Y | PP | | | | | | | | |
| SSite96-11 | WSF | Y | PP | | | | | | | | |
| SSite96-15 | WSF | Y | PP | | | | | | | | |
| SSite96-17 | WSF | Y | PP | | | | | | | | |
| SSite96-18 | WSF | Y | PP | | | | | | | | |
| SSite96-4 | WSF | Y | PP | | | | | | | | |
| SSite96-5 | WSF | Y | PP | | | | | | | | |
| SSite96-6 | WSF | Y | PP | | | | | | | | |

FU3 TA-16 WATERS
MAJOR ELEMENTS

DON HICKMOTT

| SAMPLE_ID | LOCATION | DATE_COLLECTED | BORON (ppm) | BROMINE (ppm) | CALCIUM (ppm) | CHLORINE (ppm) | FLUORINE (ppm) | HYDROGEN CARBONATE (ppm) | LITHIUM (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| **Springs/Seeps** | | | | | | | | | |
| PP94-50 | Burning Ground Spring | 4/15/94 | 0.01 | 0.08 | 18.7 | 21.8 | 0.2 | 87.4 | <0.01 |
| SSite96-5 | Burning Ground Spring | 3/01/96 | 0.021 | 0.09 | 17.5000 | 16.6 | 0.160 | 104 | <0.01 |
| SSite96-17 | Burning Ground Spring | 4/10/96 | 0.021 | 0.07 | 16.4 | 14.3 | 0.14 | 100 | <0.01 |
| PP95-132 | Martin Spring | 7/21/95 | 1.58 | 0.13 | 24.6000 | 20.2 | 0.61 | 122 | 0.01 |
| SSite96-4 | Martin Spring | 3/01/96 | 1.81 | 0.16 | 28.1000 | 20.6 | 0.700 | 130 | 0.01 |
| SSite96-15 | Martin Spring | 4/10/96 | 1.81 | 0.16 | 28.1 | 20.3 | 0.67 | 137 | 0.01 |
| PP94-74 | SWSC Spring | 8/12/94 | 0.026 | 0.09 | 18.4000 | 17.3 | 0.180 | 92.9 | <0.01 |
| SSite96-18 | SWSC Spring | 4/10/96 | 0.029 | 0.09 | 16.3 | 14.3 | 0.13 | 100 | <0.01 |
| SSite96-6 | SWSC Spring | 3/01/96 | 0.033 | 0.10 | 18.2000 | 16.8 | 0.160 | 104 | <0.01 |
| SSite96-11 | Fish Ladder Seep | 3/27/96 | 0.04 | <0.01 | 5.44 | 5.21 | 0.07 | 11.5 | 0.04 |
| **Creeks** | | | | | | | | | |
| PP95-134 | 300-line Canyon TA-16 | 7/21/95 | 0.21 | 0.03 | 13.4 | 3.79 | 0.21 | 83 | 0.01 |
| SSite95-1 | Cañon de Valle Creek | 3/17/95 | 0.038 | 0.03 | 13.5 | 16.8 | 0.14 | 69.9 | <0.01 |
| SSite95-2 | Cañon de Valle Creek | 3/17/95 | 0.033 | 0.07 | 14.8 | 20.9 | 0.2 | 81 | <0.01 |
| SSite95-3 | Cañon de Valle Creek | 3/17/95 | 0.015 | 0.08 | 19.6 | 22.9 | 0.27 | 92.6 | <0.01 |
| MDA P S-1 | Cañon de Valle Creek | 4/94 | NA | NA | 19 | NA | NA | NA | NA |
| MDA P S-2 | Cañon de Valle Creek | 4/94 | NA | NA | 19 | NA | NA | NA | NA |
| MDA P S-3 | Cañon de Valle Creek | 4/94 | NA | NA | 19 | NA | NA | NA | NA |
| MDA P S-4 | Cañon de Valle Creek | 4/94 | NA | NA | 18 | NA | NA | NA | NA |
| MDA P S-5 | Cañon de Valle Creek | 4/94 | NA | NA | 18 | NA | NA | NA | NA |
| MDA P S-6 | Cañon de Valle Creek | 4/1/94 | NA | NA | 17 | NA | NA | NA | NA |
| PP94-52 | Snowmelt, Cañon de Valle | 4/15/94 | <0.01 | <0.02 | 7.56 | 1.50 | 0.04 | 38 | <0.01 |
| PP94-51 | Weirbox, Cañon de Valle | 4/15/94 | 0.04 | 0.07 | 15.5 | 19.8 | 0.23 | 82 | <0.01 |

[a]NA = Not analyzed.
[b]NC = Not calculated.

# FU3 TA-16 WATERS
## MAJOR ELEMENTS

| SAMPLE_ID | MAGNESIUM (ppm) | POTASSIUM (ppm) | SODIUM (ppm) | SILICATE (ppm) calc | SULFATE (ppm) | STRONTIUM (ppm) | TOTAL DISSOLVED SOLVENTS (ppm) | CATION SUM | ANION SUM |
|---|---|---|---|---|---|---|---|---|---|
| **Springs/Seeps** | | | | | | | | | |
| PP94-50 | 4.86 | 3.3 | 21.40 | 49.862 | 8.31 | 0.14 | 220.5 | 2.461 | 2.279 |
| SSite96-5 | 5.03 | 3.33 | 25.4 | 47.722 | 9.84 | 0.11 | 206.8 | 0.121 | 4.851 |
| SSite96-17 | 4.71 | 3.26 | 24 | 46.438 | 9.02 | 0.11 | 223.8 | 2.396 | 2.313 |
| PP95-132 | 5.71 | 3.31 | 30.9 | 47.08 | 17.9 | 0.13 | 290.2 | 3.16 | 3.298 |
| SSite96-4 | 6.45 | 2.89 | 34.1 | 51.36 | 20.7 | 0.14 | 275.300 | 0.552 | 6.047 |
| SSite96-15 | 6.47 | 2.85 | 36.4 | 52.002 | 21 | 0.16 | 325.9 | 3.618 | 3.675 |
| PP94-74 | 4.97 | 3.04 | 20.20 | 45.368 | 10.2 | 0.13 | 219 | 2.318 | 2.322 |
| SSite96-18 | 4.83 | 3.26 | 24.8 | 46.438 | 9.18 | 0.11 | 225.2 | 2.419 | 2.324 |
| SSite96-6 | 5.19 | 3.38 | 25.4 | 44.94 | 10.1 | 0.12 | 206.6 | 0.132 | 4.851 |
| SSite96-11 | 1.88 | 3.1 | 9.36 | 72.546 | 17.7 | 0.04 | 130.2 | 1.141 | 0.709 |
| **Creeks** | | | | | | | | | |
| PP95-134 | 3.41 | 5.36 | 13.6 | 33.17 | 5.16 | 0.09 | 163.2 | 1.741 | 1.609 |
| SSite95-1 | 4.12 | 3.080 | 18.2 | 29.104 | 15.5 | 0.13 | 175.5 | 1.983 | 1.953 |
| SSite95-2 | 4.48 | 3.240 | 22.1 | 35.738 | 9.78 | 0.11 | 196.8 | 2.22 | 2.143 |
| SSite95-3 | 5.48 | 3.88 | 22.7 | 47.08 | 11.1 | 0.12 | 233.6 | 2.588 | 2.47 |
| MDA P S-1 | 5.6 | 3 | 21 | NC | NA | NA | NC | NC | NC |
| MDA P S-2 | 5.5 | 3.1 | 20 | NC | NA | NA | NC | NC | NC |
| MDA P S-3 | 5.5 | 2.5 | 20 | NC | NA | NA | NC | NC | NC |
| MDA P S-4 | 5.3 | 2.7 | 20 | NC | NA | NA | NC | NC | NC |
| MDA P S-5 | 5.2 | 2.8 | 20 | NC | NA | NA | NC | NC | NC |
| MDA P S-6 | 5.1 | 2.5 | 20.00 | NC | NA | NA | NC | NC | NC |
| PP94-52 | 2.26 | 1.47 | 3.29 | 25.894 | 3.39 | 0.07 | 84.4 | 0.827 | 0.738 |
| PP94-51 | 4.09 | 2.89 | 20 | 35.31 | 7.76 | 0.14 | 191.3 | 2.147 | 2.079 |

[a]NA = Not analyzed.
[b]NC = Not calculated.

# FU 3 TA-16 WATERS
## MINOR ELEMENTS

| SAMPLE_ID | LOCATION | DATE_COLLECTED | SILVER (ppm) | ALUMINUM (ppm) | ARSENIC (ppm) | BARIUM (ppm) | CADMIUM (ppm) | COBALT (ppm) | CHROMIUM (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| **Springs/Seeps** | | | | | | | | | |
| PP94-50 | Burning Ground Spring | 4/15/94 | <0.0005 | 0.75 | 0.0006 | 0.29 | 0.0003 | <0.002 | <0.002 |
| SSite96-5 | Burning Ground Spring | 3/01/96 | 0.0004 | 0.55 | 0.0035 | 0.23 | <0.001 | <0.002 | <0.002 |
| SSite96-17 | Burning Ground Spring | 4/10/96 | <0.0002 | 0.41 | 0.0009 | 0.21 | <0.0002 | <0.002 | <0.002 |
| PP95-132 | Martin Spring | 7/21/95 | <0.0005 | 0.16 | 0.0013 | 0.17 | <0.0002 | <0.002 | <0.002 |
| SSite96-4 | Martin Spring | 3/01/96 | <0.0002 | 0.08 | 0.0019 | 0.19 | <0.001 | <0.002 | <0.002 |
| SSite96-15 | Martin Spring | 4/10/96 | <0.0002 | 0.16 | 0.0018 | 0.19 | <0.0002 | <0.002 | 0.002 |
| PP94-74 | SWSC Spring | 8/12/94 | <0.0005 | 0.09 | <0.0005 | 0.32 | 0.0006 | <0.002 | <0.002 |
| SSite96-18 | SWSC Spring | 4/10/96 | <0.0002 | 0.29 | 0.0016 | 0.27 | <0.0002 | <0.002 | <0.002 |
| SSite96-6 | SWSC Spring | 3/01/96 | 0.0003 | 0.52 | 0.0016 | 0.28 | <0.001 | <0.002 | <0.002 |
| SSite96-11 | Fish ladder Seep | 3/27/96 | <0.0002 | 1.20 | 0.0024 | 0.29 | <0.0002 | <0.002 | 0.002 |
| **Creeks** | | | | | | | | | |
| PP95-134 | 300-line Canyon TA-16 | 7/21/95 | <0.0005 | 0.32 | 0.0019 | 0.24 | 0.0008 | <0.002 | <0.002 |
| SSite95-1 | Cañon de Valle Creek | 3/17/95 | <0.0005 | 0.51 | 0.0003 | 3.28 | 0.0016 | <0.002 | <0.002 |
| SSite95-2 | Cañon de Valle Creek | 3/17/95 | <0.0005 | 0.68 | 0.0008 | 2.44 | <0.0002 | <0.002 | <0.002 |
| SSite95-3 | Cañon de Valle Creek | 3/17/95 | <0.0005 | 2.39 | 0.0006 | 0.43 | <0.0002 | <0.002 | <0.002 |
| MDA P S-1 | Cañon de Valle Creek | 4/94 | ND[b] | 0.31 | ND | 3 | ND | ND | ND |
| MDA P S-2 | Cañon de Valle Creek | 4/94 | ND | 0.56 | ND | 3 | ND | ND | ND |
| MDA P S-3 | Cañon de Valle Creek | 4/94 | ND | 0.74 | ND | 3.1 | ND | ND | ND |
| MDA P S-4 | Cañon de Valle Creek | 4/94 | ND | 0.37 | ND | 3.4 | ND | ND | ND |
| MDA P S-5 | Cañon de Valle Creek | 4/94 | ND | 0.18 | ND | 3.4 | ND | ND | ND |
| MDA P S-6 | Cañon de Valle Creek | 4/94 | ND | ND | ND | 3.3 | ND | ND | ND |
| PP94-52 | Snowmelt, Cañon de Valle | 4/15/94 | <0.0005 | 0.59 | <0.0005 | 0.05 | 0.0004 | <0.002 | <0.002 |
| PP94-51 | Weirbox, Cañon de Valle | 4/15/94 | <0.0005 | 0.29 | 0.0016 | 2.90 | <0.0002 | <0.002 | <0.002 |

[a]NA = Not analyzed.
[b]ND= Not Detected.

# FU 3 TA-16 WATERS
## MINOR ELEMENTS

| SAMPLE_ID | CESIUM (ppm) | COPPER (ppm) | IRON (ppm) | MERCURY (ppm) | IODINE (ppm) | MANGANESE (ppm) | MOLYBDENUM (ppm) | AMMONIUM (ppm) | NICKEL (ppm) | NITRITE (ppm) | NITRATE (ppm) | LEAD (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Springs/Seeps** | | | | | | | | | | | | |
| PP94-50 | <0.002 | 0.004 | 0.31 | 0.0002 | <0.01 | <0.01 | <0.002 | 0.10 | 0.005 | <0.02 | 2.91 | 0.003 |
| SSite96-5 | <0.002 | 0.004 | 0.22 | 0.0002 | <0.01 | <0.01 | 0.002 | 0.05 | <0.002 | <0.02 | 3.91 | <0.002 |
| SSite96-17 | 0.003 | <0.002 | 0.16 | <0.0002 | <0.01 | <0.01 | 0.003 | 0.05 | 0.002 | <0.01 | 4.08 | <0.002 |
| PP95-132 | <0.002 | <0.002 | 0.06 | <0.0002 | <0.01 | <0.01 | 0.007 | 0.19 | <0.002 | 0.04 | 15.2 | <0.002 |
| SSite96-4 | <0.002 | 0.005 | 0.04 | 0.0006 | 0.04 | <0.01 | 0.009 | 0.10 | 0.003 | <0.02 | 18.3 | <0.002 |
| SSite96-15 | 0.002 | <0.002 | 0.01 | <0.0002 | 0.03 | <0.01 | 0.010 | 0.03 | <0.002 | <0.01 | 18.3 | <0.002 |
| PP94-74 | <0.002 | 0.018 | 0.07 | <0.0002 | <0.01 | 0.06 | <0.002 | 0.15 | 0.003 | <0.01 | 5.32 | <0.002 |
| SSite96-18 | 0.002 | <0.002 | 0.10 | <0.0002 | <0.01 | <0.01 | 0.003 | 0.04 | <0.002 | <0.01 | 4.60 | <0.002 |
| SSite96-6 | <0.002 | 0.003 | 0.22 | <0.0002 | <0.01 | <0.01 | 0.002 | 0.07 | 0.004 | 0.07 | 4.31 | <0.002 |
| SSite96-11 | <0.002 | 0.008 | 1.28 | <0.0002 | <0.01 | 0.05 | <0.002 | 0.22 | 0.003 | <0.01 | <0.02 | 0.005 |
| **Creeks** | | | | | | | | | | | | |
| PP95-134 | <0.002 | <0.002 | 0.21 | <0.0002 | <0.01 | 0.02 | 0.007 | 0.14 | 0.006 | <0.01 | 0.17 | 0.002 |
| SSite95-1 | <0.002 | 0.031 | 0.58 | <0.0002 | <0.01 | 0.04 | <0.002 | 0.21 | <0.002 | <0.02 | 0.10 | 0.004 |
| SSite95-2 | <0.002 | 0.020 | 0.32 | <0.0002 | <0.01 | 0.01 | <0.002 | 0.26 | 0.005 | <0.02 | 0.55 | <0.002 |
| SSite95-3 | <0.002 | 0.020 | 0.97 | <0.0002 | <0.01 | <0.01 | <0.002 | 0.20 | 0.002 | <0.02 | 3.71 | <0.002 |
| MDA P S-1 | NA | ND | ND | ND | NA | ND | NA | NA | ND | NA | 0.1 | ND |
| MDA P S-2 | NA | ND | 0.34 | ND | NA | ND | NA | NA | ND | NA | 0.12 | ND |
| MDA P S-3 | NA | ND | 0.35 | ND | NA | ND | NA | NA | ND | NA | ND | ND |
| MDA P S-4 | NA | ND | 0.31 | ND | NA | ND | NA | NA | ND | NA | ND | ND |
| MDA P S-5 | NA | ND | ND | ND | NA | ND | NA | NA | ND | NA | ND | ND |
| MDA P S-6 | NA | ND | ND | ND | NA | ND | NA | NA | ND | NA | ND | ND |
| PP94-52 | <0.002 | 0.008 | 0.20 | <0.0002 | <0.01 | <0.01 | <0.002 | 0.08 | <0.002 | <0.02 | <0.02 | <0.002 |
| PP94-51 | <0.002 | 0.003 | 0.16 | 0.0006 | <0.01 | 0.02 | <0.002 | 0.11 | 0.008 | <0.02 | <0.02 | <0.002 |

[a]NA = Not analyzed.
[b]ND= Not Detected.

## FU 3 TA-16 WATERS
## MINOR ELEMENTS

| SAMPLE_ID | PHOSPHATE (ppm) | RUBIDIUM (ppm) | ANTIMONY (ppm) | SELENIUM (ppm) | THIOSULFATE (ppm) | ZINC (ppm) |
|---|---|---|---|---|---|---|
| **Springs/Seeps** | | | | | | |
| PP94-50 | <0.05 | 0.005 | <0.0002 | <0.0002 | <0.01 | 0.01 |
| SSite96-5 | 0.44 | 0.005 | <0.0002 | <0.0002 | <0.01 | 0.01 |
| SSite96-17 | 0.42 | 0.006 | <0.0001 | <0.0001 | <0.01 | <0.01 |
| PP95-132 | 0.21 | 0.003 | <0.0002 | <0.0002 | <0.01 | 0.01 |
| SSite96-4 | 0.28 | 0.002 | <0.0002 | <0.0002 | <0.01 | 0.01 |
| SSite96-15 | 0.21 | 0.004 | 0.0001 | <0.0001 | <0.01 | <0.01 |
| PP94-74 | 0.09 | 0.002 | <0.0002 | <0.0002 | <0.01 | 0.10 |
| SSite96-18 | 0.41 | 0.005 | <0.0001 | <0.0001 | <0.01 | <0.01 |
| SSite96-6 | 0.33 | 0.006 | <0.0002 | <0.0002 | <0.01 | 0.01 |
| SSite96-11 | <0.05 | 0.003 | <0.0001 | <0.0001 | <0.01 | 0.04 |
| **Creeks** | | | | | | |
| PP95-134 | 0.65 | 0.003 | <0.0002 | <0.0002 | <0.01 | 0.01 |
| SSite95-1 | <0.05 | 0.002 | 0.0004 | <0.0002 | <0.01 | 0.15 |
| SSite95-2 | <0.05 | 0.004 | 0.0002 | <0.0002 | <0.01 | 0.02 |
| SSite95-3 | <0.05 | 0.005 | <0.0002 | <0.0002 | <0.01 | 0.02 |
| MDA P S-1 | NA | NA | ND | ND | NA | ND |
| MDA P S-2 | NA | NA | ND | ND | NA | ND |
| MDA P S-3 | NA | NA | ND | 0.003 | NA | ND |
| MDA P S-4 | NA | NA | ND | ND | NA | ND |
| MDA P S-5 | NA | NA | ND | ND | NA | ND |
| MDA P S-6 | NA | NA | 0.003 | ND | NA | ND |
| PP94-52 | <0.05 | <0.002 | <0.0002 | <0.0002 | <0.01 | <0.01 |
| PP94-51 | <0.05 | 0.004 | <0.0002 | <0.0002 | <0.01 | <0.01 |

[a]NA = Not analyzed.
[b]ND= Not Detected.

# FU 3 TA-16 WATERS
## HIGH EXPLOSIVES

| SAMPLE_ID | LOCATION | DATE_COLLECTED | A-DNT (ppm) | DNT (ppm) | HMX (ppm) | NQ (ppm) | PETN (ppm) | RDX (ppm) | 1,3,5-TNB (ppm) | TNT (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| SAL[a] | N/A[b] | N/A | NC[c] | NC | 1.8 | 3.7 | 0.7 | 0.00061 | 0.0018 | 0.0022 |
| **Springs/Seeps** | | | | | | | | | | |
| PP94-50 | Burning Ground Spring | 4/15/94 | NA[d] | NA | <0.02 | <0.01 | <0.05 | <0.02 | NA | <0.02 |
| SSite96-5 | Burning Ground Spring | 3/01/96 | NA | NA | 0.04 | <0.01 | <0.05 | 0.01 | NA | <0.01 |
| SSite96-17 | Burning Ground Spring | 4/10/96 | NA | NA | <0.02 | <0.01 | <0.05 | <0.01 | NA | <0.01 |
| PP95-132 | Martin Spring | 7/21/95 | NA | NA | 0.05 | <0.01 | <0.05 | 0.11 | NA | <0.02 |
| SSite96-4 | Martin Spring | 3/01/96 | NA | NA | 0.03 | <0.01 | <0.05 | 0.11 | NA | <0.01 |
| SSite96-15 | Martin Spring | 4/10/96 | NA | NA | 0.02 | <0.01 | <0.05 | 0.12 | NA | <0.01 |
| PP94-74 | SWSC Spring | 8/12/94 | NA | NA | <0.02 | <0.01 | <0.05 | <0.02 | NA | <0.02 |
| SSite96-18 | SWSC Spring | 4/10/96 | NA | NA | <0.02 | <0.01 | <0.05 | <0.01 | NA | <0.01 |
| SSite96-6 | SWSC Spring | 3/01/96 | NA | NA | 0.03 | <0.01 | <0.05 | 0.02 | NA | <0.01 |
| SSite96-11 | Fish ladder Seep | 3/27/96 | NA | NA | <0.02 | <0.01 | <0.05 | <0.01 | NA | <0.01 |
| **Creeks** | | | | | | | | | | |
| PP95-134 | 300-line canyon TA-16 | 7/21/95 | NA | NA | <0.02 | <0.01 | <0.05 | <0.02 | NA | <0.02 |
| SSite95-1 | Cañon de Valle Creek | 3/17/95 | NA | NA | 0.04 | <0.01 | <0.05 | 0.07 | NA | <0.02 |
| SSite95-2 | Cañon de Valle Creek | 3/17/95 | NA | NA | 0.05 | <0.01 | <0.05 | 0.12 | NA | <0.02 |
| MDA P S-1 | Cañon de Valle Creek | 4/94 | NA | NA | NA | NA | NA | 0.18 | NA | NA |
| MDA P S-2 | Cañon de Valle Creek | 4/94 | NA | NA | NA | NA | NA | 0.152 | NA | NA |
| MDA P S-3 | Cañon de Valle Creek | 4/94 | NA | NA | NA | NA | NA | 0.196 | NA | NA |
| MDA P S-4 | Cañon de Valle Creek | 4/94 | NA | NA | NA | NA | NA | 0.133 | NA | NA |
| MDA P S-5 | Cañon de Valle Creek | 4/94 | NA | NA | NA | NA | NA | 0.146 | NA | NA |
| MDA P S-6 | Cañon de Valle Creek | 4/94 | NA | NA | NA | NA | NA | 0.162 | NA | NA |
| SSite95-3 | Cañon de Valle Creek | 3/17/95 | NA | NA | 0.02 | <0.01 | <0.05 | <0.02 | NA | <0.02 |
| PP94-52 | Snowmelt, Cañon de Valle | 4/15/94 | NA | NA | <0.02 | <0.01 | <0.05 | <0.02 | NA | <0.02 |
| PP94-51 | Weirbox, Cañon de Valle | 4/15/94 | NA | NA | 0.04 | <0.01 | <0.05 | 0.16 | NA | <0.02 |

[a]SAL=Screening action level.

[b]N/A= Not applicable.

[c]NC=Not calculated.

[d]NA=Not analyzed.

[e]ND=Not detected.

# FU 3 TA-16 WATERS
## TRITIUM AND STABLE ISOTOPES IN TA-16 WATERS

| SAMPLE_ID | LOCATION | DATE_COLLECTED | D (‰) | 18O (‰) | TRITIUM UNITS |
|---|---|---|---|---|---|
| **Springs/Seeps** | | | | | |
| SSite96-5 | Burning Ground Spring | 3/01/96 | NA[a] | NA | 33.5 |
| SSite96-17 | Burning Ground Spring | 4/10/96 | --79.0 | --11.8 | NA |
| SSite96-27 | Burning Ground Spring | 7/12/96 | --71.0 | --11.1 | NA |
| PP95-132 | Martin Spring | 7/21/95 | --73.0 | --11.2 | 32.9 |
| SSite96-4 | Martin Spring | 3/01/96 | NA | NA | 0.2 |
| SSite96-15 | Martin Spring | 4/10/96 | --73.0 | --11.2 | NA |
| SSite96-23 | Martin Spring | 7/12/96 | --66.0 | --9.9 | NA |
| SSite96-6 | SWSC Spring | 3/01/96 | NA | NA | 35.7 |
| SSite96-18 | SWSC Spring | 4/10/96 | --76.0 | --11.7 | NA |
| SSite96-26 | SWSC Spring | 7/12/96 | --64.0 | --11.1 | NA |
| SSite96-11 | Fish ladder Seep | 3/27/96 | --70.0 | --10.4 | 11.3 |

[a]NA=Not analyzed.

# ER PROJECT SURFACE AND GROUND WATER DATA

SECTION 3. FIELD UNIT 3, ROY MICHELOTTI
SPRINGS QUARTERLY
DON HICKMOTT

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0316-96-3000 | WGS | N | WB | | | | | | | | |
| 0316-96-3001 | WGS | N | WB | | | | | | | | |
| 0316-96-3002 | WGS | N | WB | | | | | | | | |
| 0316-97-3002 | WGS | Y | PP | | | | | | | | |
| 0316-97-3003 | WGS | Y | PP | | | | | | | | |
| 0316-97-3004 | WGS | N | WB | | | | | | | | |
| 0316-97-3005 | WGS | Y | PP | | | | | | | | |
| 0316-97-3006 | WGS | Y | PP | | | | | | | | |
| 0316-97-3007 | WGS | N | WB | | | | | | | | |
| 0316-97-3008 | WGS | Y | PP | | | | | | | | |
| 0316-97-3009 | WGS | N | WB | | | | | | | | |
| 0316-97-3010 | WGS | N | WB | | | | | | | | |
| 0316-97-3011 | WGS | N | WB | | | | | | | | |

# FU 3 SPRINGS QUARTERLY
# VOLATILES

DON HICKMOTT

| SAMPLE_ID | LOCATION | DATE_COLLECTED | CHLOROMETHANE (ppm) | BROMOMETHANE (ppm) | ACETONE (ppm) | 1,2-DICHLOROETHANE (ppm) | TRICHLOROETHENE (ppm) |
|---|---|---|---|---|---|---|---|
| 0316-96-3000 | Burning Ground | 12/20/96 | 0.03 | 0.004 | 0.018 | 0.006 | 0.002 |
| 0316-96-3001 | SWSC Spring | 12/20/96 | 0.012 | ND | 0.012 | 0.003 | ND |
| 0316-96-3002 | Martin Spring | 12/20/96 | 0.016 | ND | 0.018 | 0.005 | |
| 0316-97-3001 | Martin Spring, unfiltered | 3/31/97 | 0.012 | ND | 0.039 | ND | ND |
| 0316-97-3004 | SWSC Spring, unfiltered | 3/31/97 | ND | ND | ND | ND | ND |
| 0316-97-3007 | Burning Ground, unfiltered | 3/31/97 | ND | ND | 0.0026 | ND | ND |

# FU 3 SPRINGS QUARTERLY
# SEMIVOLATILES

DON HICKMOTT

| SAMPLE_ID | DATE_COLLECTED | LOCATION | DI-N-BUTYLPHTHALATE (ppm) | BIS(2-ETHYLHEXYL)PHTHALATE (ppm) |
|---|---|---|---|---|
| 0316-96-3000 | 12/20/96 | Burning Ground | 0.001 | ND |
| 0316-96-3001 | 12/20/96 | SWSC Spring | ND | .003 B |
| 0316-96-3002 | 12/20/96 | Martin Spring | NA | NA |
| 0316-97-3000 | 3/31/97 | Martin Spring, filtered | ND | ND |
| 0316-97-3001 | 3/31/97 | Martin Spring, unfiltered | ND | ND |
| 0316-97-3003 | 3/31/97 | SWSC Spring, filtered | ND | ND |
| 0316-97-3004 | 3/31/97 | SWSC Spring, unfiltered | ND | ND |
| 0316-97-3006 | 3/31/97 | Burning Ground, filtered | ND | ND |
| 0316-97-3007 | 3/31/97 | Burning Ground, unfiltered | ND | ND |

# FU 3 SPRINGS QUARTERLY
## METALS

| SAMPLE_ID | DATE_COLLECTED | LOCATION | ALUMINUM (ppm) | ANTIMONY (ppm) | ARSENIC (ppm) | BARIUM (ppm) | BERYLLIUM (ppm) | CADMIUM (ppm) | CALCIUM (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0316-96-3000 | 12/20/96 | Burning Ground unfiltered | 1.02 | ND | ND | 0.263 | ND | ND | 16.8 |
| 0316-96-3001 | 12/20/96 | SWSC Spring unfiltered | 1.19 | ND | ND | 0.253 | ND | ND | 16.7 |
| 0316-96-3002 | 12/20/96 | Martin Spring unfiltered | 0.413 | ND | ND | 0.171 | ND | ND | 25.9 |
| 0316-97-3000 | 3/31/97 | Martin Spring, filtered | 2.25 | U | U | 0.16 B | 0.00071 B | U | 22.9 |
| 0316-97-3001 | 3/31/97 | Martin Spring, unfiltered | 3.08 | U | U | 0.16 B | U | U | 22.4 |
| 0316-97-3003 | 3/31/97 | SWSC Spring, filtered | 2.23 | U | U | 0.302 | 0.00055 B | U | 16.2 |
| 0316-97-3004 | 3/31/97 | SWSC Spring, unfiltered | 3.87 | U | U | 0.329 | 0.00044 B | U | 17.1 |
| 0316-97-3006 | 3/31/97 | Burning Ground, filtered | 2.54 | U | U | 0.237 | U | U | 16 |
| 0316-97-3007 | 3/31/97 | Burning Ground, unfiltered | 3.17 | U | U | 0.244 | U | U | 15.6 |

# FU 3 SPRINGS QUARTERLY
## METALS

| SAMPLE_ID | CHROMIUM (ppm) | COBALT (ppm) | COPPER (ppm) | CYANIDE (ppm) | IRON (ppm) | LEAD (ppm) | MAGNESIUM (ppm) | MANGANESE (ppm) | MERCURY (ppm) | NICKEL (ppm) | POTASSIUM (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0316-96-3000 | ND | ND | ND | ND | 0.425 | ND | 4.9 | ND | ND | ND | 2.91 |
| 0316-96-3001 | ND | ND | ND | ND | 0.508 | 0.0028 | 4.97 | ND | ND | ND | 2.99 |
| 0316-96-3002 | ND | ND | ND | ND | 0.199 | ND | 6.07 | ND | ND | ND | 2.69 |
| 0316-97-3000 | U | U | U | NA | 1.39 | U | 5.81 | 0.0077 B | U | U | 2.36 B |
| 0316-97-3001 | 0.0031 B | U | U | NA | 1.93 | U | 5.78 | 0.0103 B | U | U | 3 B |
| 0316-97-3003 | 0.0027 B | 0.0032 B | U | NA | 1.64 | U | 5.04 | 0.0088 B | U | U | 3.55 B |
| 0316-97-3004 | 0.0043 B | U | 0.0115 B | NA | 2.43 | U | 5.4 | 0.0203 | U | U | 2.77 B |
| 0316-97-3006 | U | U | U | NA | 1.39 | U | 4.92 B | 0.0081 B | U | U | 2.68 B |
| 0316-97-3007 | U | U | U | NA | 1.84 | U | 4.89 B | 0.01 B | U | U | 3.08 B |

# FU 3 SPRINGS QUARTERLY
## METALS

| SAMPLE_ID | SELENIUM (ppm) | SILVER (ppm) | SODIUM (ppm) | THALLIUM (ppm) | VANADIUM (ppm) | ZINC (ppm) |
|---|---|---|---|---|---|---|
| 0316-96-3000 | ND | ND | 19.9 | ND | ND | ND |
| 0316-96-3001 | ND | ND | 20.7 | ND | ND | ND |
| 0316-96-3002 | ND | ND | 32.5 | ND | ND | ND |
| 0316-97-3000 | U | U | 27.3 | 0.0041 B | 0.0072 B | 0.012 B |
| 0316-97-3001 | 0.0037 B | U | 26.6 | U | 0.0078 B | 0.022 |
| 0316-97-3003 | U | U | 21 | U | 0.0052 B | 0.013 B |
| 0316-97-3004 | U | U | 21.7 | U | 0.0065 B | 0.0189 B |
| 0316-97-3006 | U | U | 21 | U | 0.0064 B | 0.0149 B |
| 0316-97-3007 | U | U | 20.7 | U | 0.0044 B | 0.0126 B |

# FU 3 SPRINGS QUARTERLY
# WATER CHEMISTRY

DON HICKMOTT

| SAMPLE_ID | LOCATION | DATE_COLLECTED | Ag ppm | Std.D +/- | Al ppm | Std.D. +/- | As ppm | B ppm | Std.D. +/- | Ba ppm | Std.D. +/- | Be ppm | Std.D. +/- | Br ppm | Ca ppm | Std.D. +/- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0316-96-3000 | Burning Ground | 12/20/96 | <0.001 | | 0.52 | 0.01 | 0.0007 | 0.02 | 0.01 | 0.27 | 0.01 | <0.002 | | 0.07 | 17.9 | 0.1 |
| 0316-96-3001 | SWSC Spring | 12/20/96 | <0.001 | | 0.44 | 0.01 | 0.0007 | 0.03 | 0.01 | 0.27 | 0.01 | <0.002 | | 0.07 | 17.5 | 0.1 |
| 0316-96-3002 | Martin Spring | 12/20/96 | <0.001 | | 0.16 | 0.01 | 0.0018 | 1.66 | 0.02 | 0.17 | 0.01 | <0.002 | | 0.11 | 27.5 | 0.4 |
| 0316-97-3002 | Martin Spring, filtered | 4/1/97 | <0.001 | | 3.58 | 0.03 | 0.002 | 1.34 | 0.01 | 0.14 | 0.01 | <0.002 | | 0.11 | 22.3 | 0.2 |
| 0316-97-3009 | Martin Spring, raw | 4/1/97 | <0.001 | | 5.31 | 0.04 | 0.002 | 1.32 | 0.03 | 0.15 | 0.01 | <0.002 | | 0.11 | 22.6 | 0.3 |
| 0316-97-3005 | SWSC Spring, filtered | 4/2/97 | <0.001 | | 3.08 | 0.02 | <0.001 | 0.04 | 0.01 | 0.28 | 0.02 | <0.002 | | 0.04 | 15.7 | 0.1 |
| 0316-97-3010 | SWSC Spring, raw | 4/2/97 | <0.001 | | 5.90 | 0.07 | 0.001 | 0.04 | 0.01 | 0.31 | 0.01 | <0.002 | | 0.07 | 16.0 | 0.2 |
| 0316-97-3008 | Burning Ground, filtered | 4/2/97 | 0.001 | 0.001 | 3.29 | 0.01 | 0.002 | 0.02 | 0.01 | 0.23 | 0.01 | <0.002 | | 0.07 | 15.7 | 0.3 |
| 0316-97-3011 | Burning Ground, raw | 4/2/97 | 0.001 | 0.001 | 5.41 | 0.05 | 0.001 | 0.02 | 0.01 | 0.23 | 0.01 | <0.002 | | 0.06 | 15.3 | 0.2 |
| 0316-97-3011 | Burning Ground, raw, spiked | 4/2/97 | --- | | 7.04 | (+2) | --- | --- | | 2.22 | (+2) | 0.049 | (+0.05) | --- | --- | |

# FU 3 SPRINGS QUARTERLY
# WATER CHEMISTRY

DON HICKMOTT

| SAMPLE_ID | Cd ppm | Std.D. +/- | Cl ppm | ClO3 ppm | Co ppm | Std.D. +/- | CO3 ppm | Cond.(L) µmho/cm | Cr ppm | Std.D. +/- | Cs ppm | Cu ppm | Std.D. +/- | F ppm | Fe ppm | Std.D. +/- | HCO3 ppm | Hg ppm | I ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0316-96-3000 | <0.001 | | 16.4 | <0.02 | <0.002 | | 0 | 230 | <0.002 | | <0.005 | <0.002 | | 0.24 | 0.19 | 0.01 | 93.9 | <0.0002 | <0.01 |
| 0316-96-3001 | <0.001 | | 15.7 | <0.02 | <0.002 | | 0 | 231 | <0.002 | | <0.005 | <0.002 | | 0.22 | 0.17 | 0.01 | 91.9 | <0.0002 | <0.01 |
| 0316-96-3002 | 0.003 | 0.001 | 20.9 | <0.02 | <0.002 | | 0 | 342 | <0.002 | | <0.005 | <0.002 | | 0.84 | 0.05 | 0.01 | 127 | <0.0002 | <0.01 |
| 0316-97-3002 | <0.001 | | 19.7 | <0.02 | 0.002 | 0.002 | 0 | 280 | 0.003 | 0.002 | <0.002 | <0.005 | | 0.64 | 1.51 | 0.04 | 99.2 | <0.00005 | 0.02 |
| 0316-97-3009 | <0.001 | | 19.6 | <0.02 | <0.002 | | 0 | 280 | 0.006 | 0.002 | <0.002 | 0.010 | 0.002 | 0.63 | 2.30 | 0.06 | 99.8 | <0.00005 | 0.02 |
| 0316-97-3005 | <0.001 | | 18.0 | <0.02 | <0.002 | | 0 | 218 | 0.002 | 0.002 | <0.002 | <0.005 | | 0.21 | 1.16 | 0.01 | 79.2 | <0.00005 | <0.01 |
| 0316-97-3010 | <0.001 | | 17.9 | <0.02 | <0.002 | | 0 | 219 | 0.006 | 0.002 | <0.002 | 0.008 | 0.002 | 0.22 | 2.46 | 0.01 | 80.2 | <0.00005 | <0.01 |
| 0316-97-3008 | <0.001 | | 17.8 | <0.02 | <0.002 | | 0 | 213 | 0.002 | 0.002 | <0.002 | 0.007 | 0.002 | 0.22 | 1.44 | 0.02 | 78.1 | <0.00005 | <0.01 |
| 0316-97-3011 | <0.001 | | 17.2 | <0.02 | <0.002 | | 0 | 213 | 0.006 | 0.002 | <0.002 | 0.008 | 0.002 | 0.19 | 2.24 | 0.02 | 78.3 | <0.00005 | <0.01 |
| 0316-97-3011 | 0.051 | (+0.05) | --- | --- | 0.489 | (+0.5) | --- | --- | 0.203 | (+0.2) | --- | 0.253 | (+0.25) | --- | 3.06 | (+1) | --- | --- | --- |

# FU 3 SPRINGS QUARTERLY
# WATER CHEMISTRY

DON HICKMOTT

| SAMPLE_ID | K ppm | Std.D. +/- | Li ppm | Mg ppm | Std.D. +/- | Mn ppm | Std.D. +/- | Mo ppm | Std.D. +/- | Na ppm | Std.D. +/- | NH4 ppm | Ni ppm | Std.D. +/- | NO2 ppm | NO3 ppm | OH ppm | Pb ppm | Std.D. +/- | pH (F) | pH (L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0316-96-3000 | 3.37 | 0.04 | <0.01 | 5.07 | 0.04 | <0.002 | | 0.02 | 0.01 | 21.6 | 0.1 | 0.05 | 0.002 | | <0.02 | 2.08 | --- | <0.004 | | --- | 7.17 |
| 0316-96-3001 | 3.39 | 0.04 | <0.01 | 5.07 | 0.05 | 0.008 | 0.002 | 0.02 | 0.01 | 21.6 | 0.1 | 0.05 | <0.002 | | <0.02 | 3.17 | --- | <0.004 | | --- | 7.08 |
| 0316-96-3002 | 3.04 | 0.04 | <0.01 | 6.38 | 0.05 | <0.002 | | 0.02 | 0.01 | 32.9 | 0.1 | 0.07 | <0.002 | | <0.02 | 14.6 | --- | <0.004 | | --- | 7.06 |
| 0316-97-3002 | 3.23 | 0.02 | <0.01 | 5.69 | 0.01 | 0.007 | 0.002 | <0.01 | | 26.6 | 0.1 | 0.04 | <0.002 | | <0.02 | 10.7 | --- | <0.002 | | --- | 7.14 |
| 0316-97-3009 | 3.22 | 0.01 | <0.01 | 5.90 | 0.03 | 0.010 | 0.002 | <0.01 | | 26.5 | 0.1 | 0.04 | <0.002 | | <0.02 | 9.83 | --- | <0.002 | | --- | 7.09 |
| 0316-97-3005 | 3.41 | 0.02 | <0.01 | 4.81 | 0.01 | 0.006 | 0.002 | <0.01 | | 21.1 | 0.1 | 0.04 | 0.002 | 0.002 | <0.02 | 3.83 | --- | <0.002 | | --- | 7.44 |
| 0316-97-3010 | 3.58 | 0.02 | <0.01 | 5.03 | 0.05 | 0.031 | 0.002 | <0.01 | | 20.3 | 0.1 | 0.04 | 0.004 | 0.002 | <0.02 | 3.34 | --- | 0.003 | 0.002 | --- | 7.37 |
| 0316-97-3008 | 3.38 | 0.04 | <0.01 | 4.90 | 0.04 | 0.008 | 0.002 | <0.01 | | 21.0 | 0.1 | 0.04 | 0.004 | 0.002 | <0.02 | 3.54 | --- | <0.002 | | --- | 7.34 |
| 0316-97-3011 | 3.38 | 0.03 | <0.01 | 4.76 | 0.06 | 0.012 | 0.002 | <0.01 | | 19.8 | 0.1 | 0.04 | 0.004 | 0.002 | <0.02 | 3.14 | --- | 0.003 | 0.002 | --- | 7.25 |
| 0316-97-3011 | --- | | --- | --- | | 0.535 | (+0.5) | --- | | --- | | --- | 0.514 | (+0.5) | --- | --- | --- | 0.506 | | --- | --- |

# FU 3 SPRINGS QUARTERLY
# WATER CHEMISTRY

| SAMPLE_ID | PO4 ppm | Rb ppm | Std.D. +/- | Sb ppm | Std.D. +/- | Se ppm | Si ppm | Std.D. +/- | SiO2 ppm calc | Sn ppm | SO4 ppm | S2O3 ppm | Sr ppm | Std.D. +/- | Ti ppm | Std.D. +/- | Tl ppm | U ppm | V ppm | std.D. +/- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0316-96-3000 | 0.07 | 0.004 | 0.002 | <0.0002 | | <0.0002 | 21.9 | 0.3 | 46.9 | <0.005 | 9.73 | <0.01 | 0.20 | 0.01 | 0.006 | 0.002 | <0.002 | --- | 0.002 | 0.002 |
| 0316-96-3001 | 0.16 | 0.004 | 0.002 | <0.0002 | | <0.0002 | 21.7 | 0.2 | 46.4 | <0.005 | 9.39 | <0.01 | 0.17 | 0.01 | 0.005 | 0.002 | <0.002 | --- | 0.002 | 0.002 |
| 0316-96-3002 | 0.36 | 0.002 | 0.002 | <0.0002 | | <0.0002 | 24.9 | 0.2 | 53.3 | <0.005 | 20.2 | <0.01 | 1.23 | 0.02 | <0.002 | | <0.002 | --- | 0.004 | 0.002 |
| 0316-97-3002 | 0.13 | 0.005 | 0.002 | <0.001 | | <0.001 | 19.1 | 0.2 | 40.9 | <0.005 | 15.4 | <0.01 | 0.10 | 0.01 | 0.067 | 0.002 | <0.002 | --- | 0.006 | 0.002 |
| 0316-97-3009 | 0.12 | 0.010 | 0.002 | <0.001 | | <0.001 | 28.7 | 0.3 | 61.4 | <0.005 | 15.3 | <0.01 | 0.11 | 0.01 | 0.091 | 0.002 | <0.002 | --- | 0.007 | 0.002 |
| 0316-97-3005 | 0.17 | 0.008 | 0.002 | <0.001 | | <0.001 | 25.5 | 0.2 | 54.6 | <0.005 | 9.41 | <0.01 | 0.10 | 0.01 | 0.057 | 0.002 | <0.002 | --- | 0.005 | 0.002 |
| 0316-97-3010 | 0.14 | 0.014 | 0.002 | <0.001 | | <0.001 | 29.4 | 0.3 | 62.9 | <0.005 | 9.24 | <0.01 | 0.10 | 0.01 | 0.11 | 0.01 | <0.002 | --- | 0.007 | 0.002 |
| 0316-97-3008 | 0.23 | 0.007 | 0.002 | <0.001 | | <0.001 | 28.7 | 0.2 | 61.4 | <0.005 | 9.30 | <0.01 | 0.10 | 0.01 | 0.074 | 0.002 | <0.002 | --- | 0.005 | 0.002 |
| 0316-97-3011 | 0.15 | 0.013 | 0.002 | <0.001 | | <0.001 | 27.7 | 0.3 | 59.3 | <0.005 | 9.07 | <0.01 | 0.10 | 0.01 | 0.098 | 0.002 | <0.002 | --- | 0.007 | 0.002 |
| 0316-97-3011 | --- | --- | | 0.431 | (+0.5) | --- | --- | | --- | --- | --- | --- | --- | | --- | | --- | --- | 0.537 | (+0.5) |

# FU 3 SPRINGS QUARTERLY
# WATER CHEMISTRY

DON HICKMOTT

| SAMPLE_ID | Zn ppm | Std.D. +/- | B/CL by wt | LI/CL by wt | F/CL by wt | NA/CL by wt | K/CL by wt | SO4/CL by wt | HCO3/CL by wt | CS/CL by wt | BR/CL by wt | pH | Conductance | Dissolved Oxygen (TDS) | Turbidity | Temp | Flow Rate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0316-96-3000 | <0.01 | | 0.00122 | 0.00000 | 0.01463 | 1.31707 | 0.20549 | 0.59329 | 5.72561 | 0.00000 | 0.00427 | 7.09 | 205 | 157 | NA | 9.04 | NA |
| 0316-96-3001 | <0.01 | | 0.00191 | 0.00000 | 0.01401 | 1.37580 | 0.21592 | 0.59809 | 5.85350 | 0.00000 | 0.00446 | 7.23 | 202 | 155 | NA | 5.5 | NA |
| 0316-96-3002 | <0.01 | | 0.07943 | 0.00000 | 0.04019 | 1.57416 | 0.14545 | 0.96651 | 6.07656 | 0.00000 | 0.00526 | 6.54 | 302 | 232 | NA | 9.9 | NA |
| 0316-97-3002 | <0.01 | | 0.06802 | 0.00000 | 0.03249 | 1.35025 | 0.16396 | 0.78173 | 5.03553 | 0.00000 | 0.00558 | | | | NA | | NA |
| 0316-97-3009 | <0.01 | | 0.06735 | 0.00000 | 0.03214 | 1.35204 | 0.16429 | 0.78061 | 5.09184 | 0.00000 | 0.00561 | | | | NA | | NA |
| 0316-97-3005 | <0.01 | | 0.00222 | 0.00000 | 0.01167 | 1.17222 | 0.18944 | 0.52278 | 4.40000 | 0.00000 | 0.00222 | | | | NA | | NA |
| 0316-97-3010 | 0.01 | 0.01 | 0.00223 | 0.00000 | 0.01229 | 1.13408 | 0.20000 | 0.51620 | 4.48045 | 0.00000 | 0.00391 | | | | NA | | NA |
| 0316-97-3008 | <0.01 | | 0.00112 | 0.00000 | 0.01236 | 1.17978 | 0.18989 | 0.52247 | 4.38764 | 0.00000 | 0.00393 | | | | NA | | NA |
| 0316-97-3011 | <0.01 | | 0.00116 | 0.00000 | 0.01105 | 1.15116 | 0.19651 | 0.52733 | 4.55233 | 0.00000 | 0.00349 | | | | NA | | NA |
| 0316-97-3011 | 0.51 | (+0.5) | --- | --- | --- | --- | --- | --- | --- | --- | --- | | | | | | |

# FU 3 SPRINGS QUARTERLY
# HIGH EXPLOSIVES

DON HICKMOTT

| SAMPLE_ID | DATE_COLLECTED | LOCATION | 2-AMINO-4,6-DINITROTOLUENE (ppm) | 4-AMINO-2,6-DINITROTOLUENE (ppm) | 1,3-DINITROBENZENE (ppm) | 2,4-DINITROTOLUENE (ppm) | 2,6-DINITROTOULUENE (ppm) |
|---|---|---|---|---|---|---|---|
| 0316-96-3000 | 12/20/96 | Burning Ground | 0.00024 | 0.00032 | U | 0.00005 | U |
| 0316-96-3001 | 12/20/96 | SWSC Spring | 0.00059 | 0.00094 | 0.00007 | 0.00006 | U |
| 0316-96-3002 | 12/20/96 | Martin Spring | 0.00232 | 0.00303 | U | 0.00013 | U |
| 0316-97-3000 | 3/31/97 | Martin Spring, filtered | U | U | U | U | U |
| 0316-97-3004 | 3/31/97 | SWSC Spring, unfiltered | U | U | U | U | U |
| 0316-97-3006 | 3/31/97 | Burning Ground, filtered | U | U | U | U | U |
| 0316-97-3007 | 3/31/97 | Burning Ground, unfiltered | U | U | U | U | U |

# FU 3 SPRINGS QUARTERLY
## HIGH EXPLOSIVES

| SAMPLE_ID | HMX (ppm) | NITROBENZENE (ppm) | 2-NITROTOLUENE (ppm) | 3-NITROTOLUENE (ppm) | 4-NITROTOLUENE (ppm) | RDX (ppm) | TETRYL, TOTAL (ppm) | 1,3,5-TRINITROBENZENE (ppm) | 2,4,6-TRINITROTOLUENE (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0316-96-3000 | 0.00180 | U | U | U | U | 0.02340 | U | 0.00065 | U |
| 0316-96-3001 | 0.00257 | U | U | U | U | 0.04990 | 0.00007 | 0.00011 | U |
| 0316-96-3002 | 0.01770 | U | U | U | U | 0.15700 | 0.00068 | 0.00144 | 0.00008 |
| 0316-97-3000 | U | U | U | U | U | 0.0055 | U | U | U |
| 0316-97-3004 | U | U | U | U | U | 0.0015 | U | U | U |
| 0316-97-3006 | U | U | U | U | U | 0.001 | U | U | U |
| 0316-97-3007 | U | U | U | U | U | 0.0012 | U | U | U |

# ER PROJECT SURFACE AND GROUND WATER DATA

## SECTION 4. FIELD UNIT 4, ALLYN PRATT

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|
| 0402-95-0344 | WSF | N | SOP- 6.13 |
| 0402-95-0345 | WSF | Y | SOP- 6.13 |
| 0402-95-0346 | WGA | N | SOP- 6.01 |
| 0402-95-0347 | WGA | Y | SOP- 6.01 |
| 0402-95-0348 | WGA | N | SOP- 6.01 |
| 0402-95-0350 | WGA | Y | SOP- 6.01 |
| 0402-95-0351 | WGA | N | SOP- 6.01 |
| 0402-95-0352 | WGA | Y | SOP- 6.01 |
| 0402-95-0357 | WSF | N | SOP- 6.13 |
| 0402-95-0360 | WGI | N | SOP- 6.01 |
| 0402-95-0361 | WGI | Y | SOP- 6.01 |
| 0402-95-0366 | WSF | N | SOP- 6.13 |
| 0402-95-0367 | WSF | Y | SOP- 6.13 |
| 0402-95-0379 | WGA | N | SOP- 6.01 |
| 0402-95-0380 | WGA | Y | SOP- 6.01 |
| 0402-95-0387 | WSF | N | SOP- 6.13 |
| 0402-95-0388 | WSF | Y | SOP- 6.13 |
| 0402-95-0420 | WGI | N | SOP- 6.01 |
| 0402-95-0422 | WGI | Y | SOP- 6.01 |
| 0441-95-0013 | WGA | N | SOP- 6.01 |
| 0441-95-0014 | WGA | Y | SOP- 6.01 |
| 0441-95-0015 | WGA | N | SOP- 6.01 |
| 0441-95-0016 | WGA | Y | SOP- 6.01 |
| 0441-95-0017 | WGA | Y | SOP- 6.01 |
| 0441-95-0022 | WSF | N | SOP- 6.13 |
| 0441-95-0023 | WSF | Y | SOP- 6.13 |
| 0441-95-0024 | WGA | N | SOP- 6.01 |
| 0441-95-0025 | WGA | Y | SOP- 6.01 |
| 0441-95-0026 | WGA | N | SOP- 6.01 |
| 0441-95-0027 | WGA | Y | SOP- 6.01 |
| 0441-95-0031 | WSF | N | SOP- 6.13 |

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|
| 0441-95-0032 | WSF | Y | SOP- 6.13 |
| 04LA-96-0199 | WGA | N | BP |
| 04LA-96-0200 | WGA | Y | BP |
| 04LA-96-0202 | WGA | N | BP |
| 04LA-96-0203 | WGA | Y | BP |
| 04LA-96-0298 | WGA | N | PSP |
| 04LA-96-0299 | WGA | Y | PSP |
| 04LA-96-0302 | WGA | N | PSP |
| 04LA-96-0303 | WGA | Y | PSP |
| 04LA-97-0001 | WGA | N | BP |
| 04LA-97-0002 | WGA | Y | BP |
| 04LA-97-0005 | WGA | N | PSP |
| 04LA-97-0006 | WGA | Y | PSP |
| 04LA-97-0007 | WGA | N | PSP |
| 04LA-97-0008 | WGA | Y | PSP |
| 04LA-97-0009 | WGA | N | PSP |
| 04LA-97-0010 | WGA | Y | PSP |
| 04PU-96-0101 | WGA | N | PP |
| 04PU-96-0102 | WGA | Y | PP |
| 04PU-96-0103 | WGA | NOT SPECIFIED | PP |
| 04PU-96-0105 | WGI | N | BP |
| 04PU-96-0106 | WGI | Y | BP |
| 04PU-96-0280 | WGD | Y | SOP- 6.04 |
| 04PU-96-0281 | WGD | Y | SOP- 6.04 |
| 04PU-96-0282 | WGD | Y | SOP- 6.04 |
| 04PU-96-0283 | WGD | Y | SOP- 6.04 |
| 04PU-96-0284 | WGD | Y | SOP- 6.04 |
| 04PU-97-0001 | WGA | N | BP |
| 04PU-97-0002 | WGA | Y | BP |
| 04PU-97-0003 | WGI | N | BP |
| 04PU-97-0004 | WGI | Y | BP |

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|
| AAB0105 | WSF | N | SOP- 6.13 |
| AAB0106 | WSF | Y | SOP- 6.13 |
| AAB0108 | WSF | Y | SOP- 6.13 |
| AAB0110 | WSF | Y | SOP- 6.13 |
| AAB0111 | WSF | N | SOP- 6.13 |
| AAB0112 | WSF | Y | SOP- 6.13 |
| AAB0113 | WGA | N | SOP- 6.04 |
| AAB0114 | WGA | Y | SOP- 6.04 |
| AAB0115 | WSF | N | SOP- 6.13 |
| AAB0116 | WSF | Y | SOP- 6.13 |
| AAB0117 | WSF | N | SOP- 6.13 |
| AAB0118 | WSF | Y | SOP- 6.13 |
| AAB0119 | WSF | N | SOP- 6.13 |
| AAB0120 | WSF | Y | SOP- 6.13 |
| AAB1336 | WGA | N | SOP- 6.01 |
| AAB1340 | WGA | Y | SOP- 6.01 |
| AAB1342 | WGA | N | SOP- 6.01 |
| AAB1345 | WGA | N | SOP- 6.01 |
| AAB1346 | WGA | Y | SOP- 6.01 |
| AAB1348 | WGA | N | OP- 6.01, 6.0 |
| AAB1349 | WGA | Y | OP- 6.01, 6.0 |
| AAB1351 | WGA | N | OP- 6.01, 6.0 |
| AAB1352 | WGA | Y | OP- 6.01, 6.0 |
| AAB1354 | WSF | N | SOP- 6.13 |
| AAB1355 | WGA | Y | SOP- 6.05 |
| AAB1362 | WGA | N | OP- 6.01, 6.0 |
| AAB1363 | WGA | Y | OP- 6.01, 6.0 |
| AAB1377 | WGA | N | PP |
| AAB1378 | WGA | Y | PP |
| AAB1380 | WGA | Y | SOP- 6.01 |
| AAB8428 | WGA | N | BP |

# ER PROJECT SURFACE AND GROUND WATER DATA

## SECTION 4. FIELD UNIT 4, ALLYN PRATT

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|
| AAB8429 | WSF | Y | PP |
| AAB8456 | WSF | Y | PP |
| AAB8486 | WSF | N | SOP- 6.13 |
| AAB8487 | WGA | N | SOP- 6.04 |
| AAB8488 | WSF | N | SOP- 6.13 |
| AAB8489 | WGA | N | SOP- 6.04 |
| AAB8490 | WGA | N | PP |
| AAB8491 | WGA | N | PP |
| AAB8492 | WGA | N | PP |
| AAB8493 | WSF | N | PP |
| AAB8494 | WGI | N | BA |
| AAB8495 | WGA | N | PP |
| AAB8496 | WGA | N | SOP- 6.04 |
| AAB8497 | WGA | N | PP |
| AAB8498 | WGI | N | BA |
| AAB8502 | WSF | Y | SOP- 6.13 |
| AAB8503 | WGA | Y | SOP- 6.04 |
| AAB8504 | WGA | Y | SOP- 6.04 |
| AAB8505 | WGA | Y | SOP- 6.04 |
| AAB8506 | WGA | Y | SOP- 6.04 |
| AAB8507 | WSF | Y | SOP- 6.13 |
| AAB8508 | WGA | Y | SOP- 6.04 |
| AAB8509 | WGA | Y | SOP- 6.04 |
| AAB8510 | WGA | Y | SOP- 6.04 |
| AAB8511 | WGI | NOT SPECIFIED | SOP- 6.01 |
| AAB8512 | WGI | NOT SPECIFIED | SOP- 6.01 |
| AAB8538 | WGA | N | BP |
| AAB8539 | WGA | N | BP |
| AAB8541 | WSF | N | SOP- 6.13 |
| AAB8542 | WSF | N | SOP- 6.13 |
| AAB8543 | WGA | N | BP |
| AAB8544 | WGA | N | BP |
| AAB8545 | WGA | N | PP |
| AAB8546 | WGA | N | PP |
| AAB8547 | WGA | N | SOP- 6.01 |
| AAB8550 | WSF | N | PP |
| AAB8551 | WSF | Y | SOP- 6.13 |
| AAB8552 | WSF | Y | PP |
| AAB8555 | WGA | Y | PP |
| AAB8556 | WSF | Y | PP |
| AAB8557 | WGA | Y | BP |
| AAB8558 | WGA | Y | BP |
| AAB8559 | WGA | Y | BP |
| AAB8560 | WGA | Y | PP |
| AAB8561 | WGA | Y | BP |
| AAB8562 | WGA | Y | BP |
| AAB8563 | WGA | Y | BP |
| AAB8564 | WSF | Y | PP |
| AAB8582 | WSF | N | SOP- 6.13 |
| AAB8584 | WGI | N | BP |
| AAB8585 | WGI | Y | BP |

## ER PROJECT SURFACE AND GROUND WATER DATA
## FU 4 FIELD DATA ATTACHMENT

This attachment includes the following:

- Cross reference for all FU 4 water samples associated with wells
- Well completion forms and monitor well construction field data logs for wells LAO-B, LAO-0.3, LAO-0.6, LAO-0.8, LAO-0.91, and LAOI-1.1
- Characterization well construction diagrams for wells LAO-1.6(g), LLAO-1, LLAO-2, LLAO-4, LLAO-5, POI-4, and PO-4
- Water level measurements, from 5/94 through 11/94, and 11/96 through 7/97, for LA and Pueblo Canyon monitoring wells LAO-B, LAO-0.3, LAO-0.6, LAO-0.8, LAO-0.91, LAOI-1.1, LAO-1.6(g), LLAO-1, LLAO-2, LLAO-4, LLAO-5, POI-4, and PO-4
- Water quality sampling data, from FY'94, FY'95, FY'96, and FY'97 sampling events, for LA and Pueblo Canyon monitoring wells LAO-B, LAO-0.3, LAO-0.6, LAO-0.8, LAO-0.91, LAO-1.6(g), LLAO-1, LLAO-2, LLAO-4, LLAO-5, POI-4, and PO-4

# FU4 CROSS REFERENCE SHEET FOR WELLSAMPLES

| WELL_NAME | SAMPLE_ID | WELL_NAME | SAMPLE_ID | WELL_NAME | SAMPLE_ID | WELL_NAME | SAMPLE_ID |
|---|---|---|---|---|---|---|---|
| LAO-0.3 | 0441-95-0015 | LAO-0.8 | AAB8510 | LAO-B | AAB8509 | LLAO-4 | 04LA-96-0303 |
| LAO-0.3 | 0441-95-0016 | LAO-0.8 | AAB8546 | LAO-B | AAB8547 | LLAO-4 | 04LA-97-0007 |
| LAO-0.3 | 0441-95-0017 | LAO-0.8 | AAB8555 | LAO-B | AAB8559 | LLAO-4 | 04LA-97-0008 |
| LAO-0.3 | AAB1340 | LAO-0.91 | 0402-95-0346 | LAO-C | 0441-95-0024 | LLAO-5 | 04LA-96-0202 |
| LAO-0.3 | AAB1342 | LAO-0.91 | 0402-95-0347 | LAO-C | 0441-95-0025 | LLAO-5 | 04LA-96-0203 |
| LAO-0.3 | AAB8491 | LAO-0.91 | AAB1351 | LAO-C | AAB8496 | LLAO-5 | 04LA-97-0009 |
| LAO-0.3 | AAB8505 | LAO-0.91 | AAB1352 | LAO-C | AAB8508 | LLAO-5 | 04LA-97-0010 |
| LAO-0.3 | AAB8539 | LAO-0.91 | AAB1362 | LAO-C | AAB8538 | OTOWI-1 | 04PU-96-0280 |
| LAO-0.3 | AAB8563 | LAO-0.91 | AAB1363 | LAO-C | AAB8557 | OTOWI-1 | 04PU-96-0281 |
| LAO-0.3(R) | AAB1377 | LAO-0.91 | AAB8492 | LAO-R1 | 0402-95-0348 | OTOWI-1 | 04PU-96-0282 |
| LAO-0.3(R) | AAB1378 | LAO-0.91 | AAB8506 | LAO-R1 | 0402-95-0350 | OTOWI-1 | 04PU-96-0283 |
| LAO-0.6 | 0441-95-0026 | LAO-0.91 | AAB8545 | LAO-R1 | AAB8490 | OTOWI-1 | 04PU-96-0284 |
| LAO-0.6 | 0441-95-0027 | LAO-0.91 | AAB8560 | LAO-R1 | AAB8503 | PO-4 | 04PU-96-0101 |
| LAO-0.6 | AAB1345 | LAO-1 | 0402-95-0351 | LAOI(a)-1.1 | AAB8494 | PO-4 | 04PU-96-0102 |
| LAO-0.6 | AAB1346 | LAO-1 | 0402-95-0352 | LAOI(a)-1.1 | AAB8498 | PO-4 | 04PU-96-0103 |
| LAO-0.6 | AAB1355 | LAO-1 | AAB0113 | LAOI(a)-1.1 | AAB8511 | PO-4 | 04PU-97-0001 |
| LAO-0.6 | AAB8487 | LAO-1 | AAB0114 | LAOI(a)-1.1 | AAB8512 | PO-4 | 04PU-97-0002 |
| LAO-0.6 | AAB8489 | LAO-1 | AAB8428 | LAOI-1.1 | 0402-95-0360 | POI-4 | 04PU-96-0105 |
| LAO-0.6 | AAB8504 | LAO-1 | AAB8558 | LAOI-1.1 | 0402-95-0361 | POI-4 | 04PU-96-0106 |
| LAO-0.6 | AAB8543 | LAO-1.6 | 04LA-96-0199 | LAOI-1.1 | 0402-95-0420 | POI-4 | 04PU-97-0003 |
| LAO-0.6 | AAB8544 | LAO-1.6 | 04LA-96-0200 | LAOI-1.1 | 0402-95-0422 | POI-4 | 04PU-97-0004 |
| LAO-0.6 | AAB8561 | LAO-1.6 | 04LA-97-0001 | LAOI-1.1 | AAB8584 | | |
| LAO-0.6 | AAB8562 | LAO-1.6 | 04LA-97-0002 | LAOI-1.1 | AAB8585 | | |
| LAO-0.8 | 0402-95-0379 | LAO-B | 0441-95-0013 | LLAO-2 | 04LA-96-0298 | | |
| LAO-0.8 | 0402-95-0380 | LAO-B | 0441-95-0014 | LLAO-2 | 04LA-96-0299 | | |
| LAO-0.8 | AAB1348 | LAO-B | AAB1336 | LLAO-2 | 04LA-97-0005 | | |
| LAO-0.8 | AAB1349 | LAO-B | AAB1380 | LLAO-2 | 04LA-97-0006 | | |
| LAO-0.8 | AAB8497 | LAO-B | AAB8495 | LLAO-4 | 04LA-96-0302 | | |

# ER PROJECT SURFACE AND GROUND WATER DATA
# FU 4 FIELD DATA ATTACHMENT

**Well completion forms and monitor well construction field data logs**

**for wells**

**LAO-B, LAO-0.3, LAO-0.6, LAO-0.8, LAO-0.91, and LAOI-1.1**

**Los Alamos National Laboratory Environmental Restoration**
**Well Completion Information Form (continued)**



Well ID: LAO-B

Site Work Plan LA-UR-92-3825

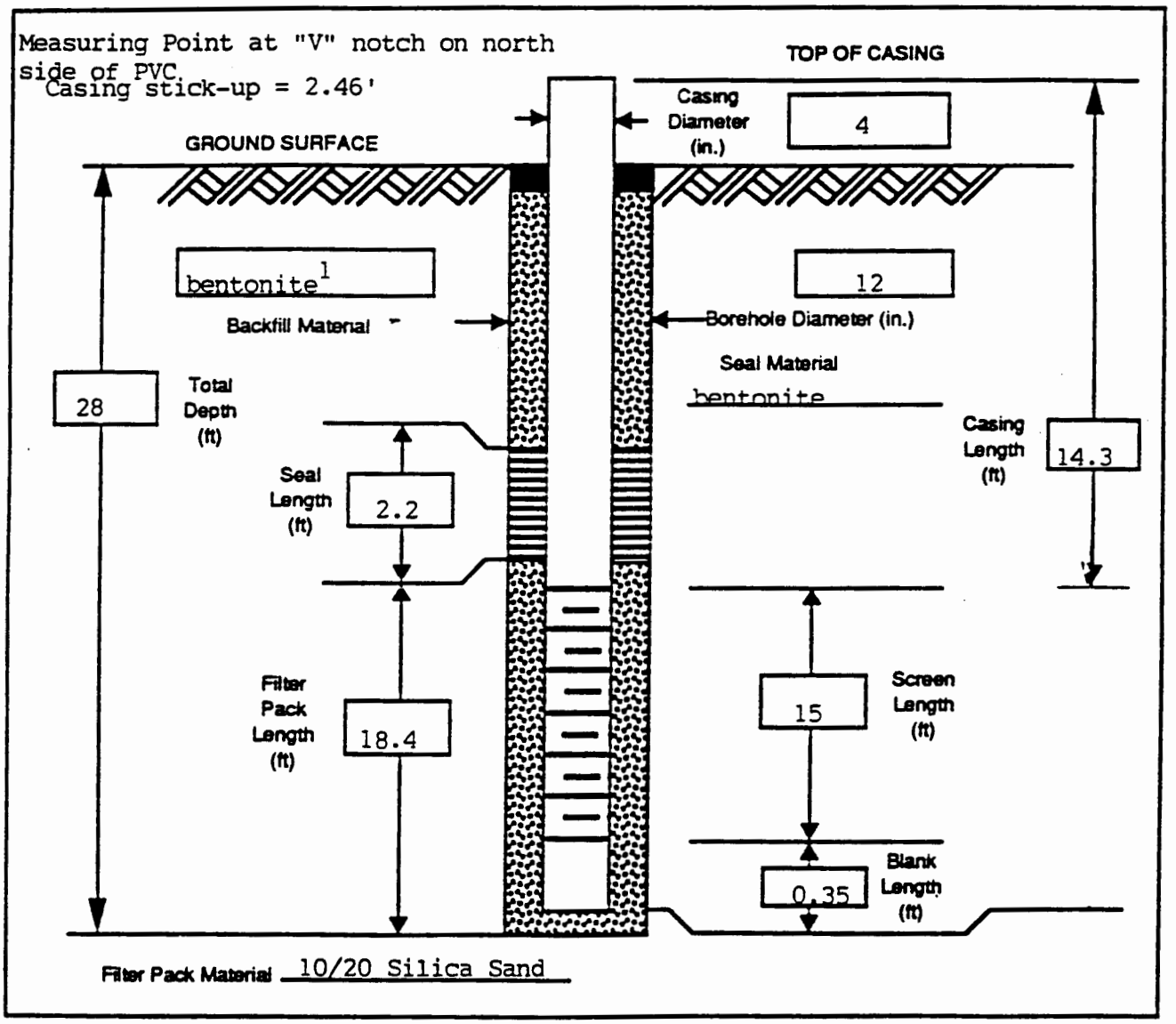
Technical Area (0) Reservoir Road

Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____ Date _____




Comments 1 natural materials collapse 7.4' - approx 4'; bentonite placed 4' - 2'; Surface Completion: 5' x 8" steel casing placed from top of bentonite to approx. 3' above ground surface. Concrete pad form 2.25 x 2.25' x 0.5' placed approx. 1" into ground; Quickrete poured from top of bentonite to fill pad form; bentonite chips placed inside steelcasing annulus to 1" below top of pad; pea gravel placed above bent. to 3" below top of PVC.

**Los Alamos National Laboratory Environmental Restoration**
**Monitor Well Construction Field Data Log**

Sheet 1 of 1

WELL ID: LAO-B

Site Work Plan LA-UR-92-3825

Technical Area (0) Reservoir Road

Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____ Date _____

## BOREHOLE SUMMARY

| BIT TYPE | HOLE DIAMETER (in.) | END[1] DEPTH (ft) | FLUID TYPE |
|---|---|---|---|
| HSA | 12 | 28 | none |
| | | | |
| | | | |
| | | | |
| | | | |

## CASING SUMMARY

| CASING TYPE | DESCRIPTION | DIAM. (in.) | END[2] DEPTH (ft) |
|---|---|---|---|
| P | 5' steel | 8 | 2 - +3 |
| Riser | Schedule 40 PVC | 4 | -11.8 |
| S | 0.010-slot Sch 40 PVC | 4 | -26.8 |
| End Cap | Schedule 40 PVC | 4 | -27.1 |
| | | | |

P - Protective S - Screen O - Open N - None

[1] Depth from Ground Surface [2] Depth from Toe of Casing

## WELL CONSTRUCTION

| TYPE[1] CODE | DESCRIPTION | END[1] DEPTH (ft) |
|---|---|---|
| F | 10/20 Silica Sand | 28 - 9.6 |
| S | Bentonite Chips | 9.6- 7.4 |
| B | Natural Materials | 7.4- 4 |
| B | Bentonite Chips | 4 - 2 |
| | | |

B - Backfill S - Seal F - Filter Pack [1] Depth from Ground Surface

## CONSTRUCTION TIME LOG

| ACTIVITY | START DATE | START TIME | END TIME |
|---|---|---|---|
| DRILLING | 28-APR-94 | 0920 | 1010 |
| CASING | 28-APR-94 | 1015 | 1045 |
| FILTER PACK | 28-APR-94 | 1045 | 1136 |
| SEAL | 28-APR-94 | 1136 | 1210 |
| BACKFILL | | N/A - continuous seal planned to 2; BGS-borehole collapse 7.4 - 4' | |
| DEVELOPMENT | 17-MAY-94 | 1326 | 1505 |
| OTHER | 18-MAY-94 | 1122 | 1353 |

## WELL DEVELOPMENT

Water Level 8.23' BMP; Bailed 85 gallons;
pumped addtn'l 155 gallons using GrundFos
Pump;

Initial:T=8°C,pH=6.85, SC=118 umhos/cm , turb
@70 gals T=6.7°C, pH=6.84,SC=114 umhos/cm,
@235 gal T=6.9°C,pH=6.71,SC=104 umhos/cm,CLEA

SOP 5.01, R03-6-92

# Los Alamos National Laboratory Environmental Restoration
## Well Completion Information Form



Well ID: LAO-0.3

Site Work Plan LA-UR-92-3825

Technical Area 41

Inclusive Sample Identifier:

Operable Unit 1098

_____ to _____

Signature _____ Date _____

Owner LANL ER Program

Installer Stewart Bros. Drilling

Installation Date 27-May-94

Filter Pack Length (ft) 11.4 - 4.5

Well Type Classification M

Formation of Completion (US/RC)) Alluvial Sediments

Well Completion Method S

Zone of Completion Screen 10.9'- 5.9'

Casing Elevation (ft MSL) 6970.25 (Measuring Pt)

Open/Screen Depth (FTFD)* 10.9' - 5.9'

Casing Depth (ft) 5.9 - +2.43

Open/Screen Length (ft) 5

Casing Diameter (in.) 4

Open/Screen Area ($in.^2$/ft) 5.9

Seal End Depth (FTFD) 4.5 - 2.0

Flow Relationship D

Screen Material 0.010-slot Sch 40 PVC

Cap Material FI

Riser Material Sch 40 PVC

Cap Type LC

### WELL TYPE CLASSIFICATIONS

M - Monitor Well
P - Production Well
T - Test Well
O - Other (specify) _____

### FLOW RELATIONSHIP

U - Upgradient
D - Downgradient
C - Cross Gradient
O - Onsite
N - Not known
B - Background

### CAP TYPE

LC - Locking
SL - Slip-on
TR - Threaded
NO - None
SC - Screw-on
OT - Other (specify) _____

### WELL COMPLETION METHODS

C- Porous Concrete
F - Gravel Pack
H - Horizontal Galley
O - Open End
P - Perforated/Slotted
S - Screen
T - Sand Front
W - Walled
X - Open
O - Other (specify) _____

### CAP MATERIALS

CT - Concrete
CR - Copper
FI - Fiberglass
GI - Galvanized Iron
WI - Wrought Iron
SS - Stainless Steel
OM - Other Material
TE - Teflon
PV - PVC
RK - Rock or Stone
ST - Steel
TI - Tile
CS - Costed Steel
WD - Wood
NO - None
OT - Other (specify) _____

### ZONES OF CONCERN

A - Artesian
C - Confined
H - Acquitard
G - Aquiclude
M - Multisystem
S - Semi-confined
U - Unconsolidated

* FTFD = feet from datum.

Location: Northing 1774511.64 Easting 1624799.01 NMSPC NAD 83

Ground Surface Elevation = 6967.82'; Brass Disk = 6968.13'

# Los Alamos National Laboratory Environmental Restoration
## Well Completion Information Form (continued)

Well ID: LAO-0.3

Site Work Plan LA-UR-92-3825

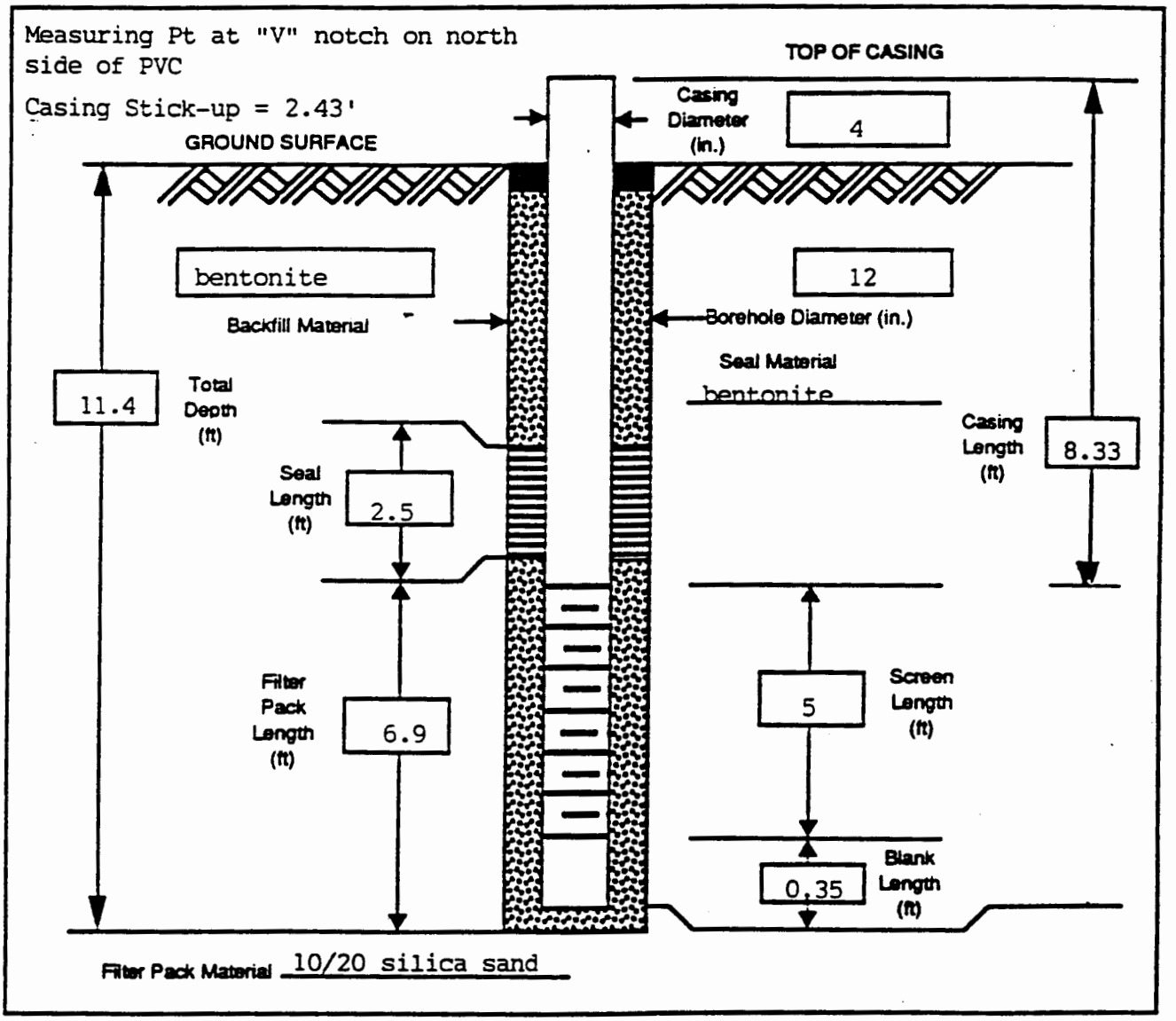
Technical Area 41

Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____ Date _____




Comments Surface Completion: 5'x8" steel protective casing seated in top of bentonite; 2.25x2.25'x0.5' pad form set approx 1" into ground. Quickrete poured into annular space and into form; survey marker placed in NE corner of pad; bentonite chips poured into Pro casing annular space to 1" below top of pad; pea gravel poured into Pro casing annular space to 3" below top of PVC; weep hole drilled into steel casing 3" above pad

**Los Alamos National Laboratory Environmental Restoration**
**Monitor Well Construction Field Data Log**

Sheet 1 of 1

Well ID: LAO-0.3

Site Work Plan LA-UR-92-3825

Technical Area 41

Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____ Date _____

## BOREHOLE SUMMARY

| BIT TYPE | HOLE DIAMETER (in.) | END[1] DEPTH (ft) | FLUID TYPE |
|---|---|---|---|
| HSA | 12 | 12 | none |
| | | | |
| | | | |
| | | | |
| | | | |

## CASING SUMMARY

| CASING TYPE | DESCRIPTION | DIAM. (in.) | END[2] DEPTH (ft) |
|---|---|---|---|
| P | 5' steel | 8 | 2 - +3 |
| Riser | Schedule 40 PVC | 4 | 5.9-+2.43 |
| S | 0.010-slot Sch 40 PVC | 4 | 10.9-5.0 |
| End Cap | Sch 40 PVC | 4 | 11.25 |
| | | | |

P - Protective S - Screen O - Open N - None

[1] Depth from Ground Surface [2] Depth from Toe of Casing

## WELL CONSTRUCTION

| TYPE[1] CODE | DESCRIPTION | END[1] DEPTH (ft) |
|---|---|---|
| F | 10/20 Silica Sand | 11.4-4.5 |
| S | Bentonite Chips | 4.5-2.0 |
| | | |
| | | |
| | | |

B - Backfill S - Seal F - Filter Pack [1] Depth from Ground Surface

## CONSTRUCTION TIME LOG

| ACTIVITY | START DATE | START TIME | END TIME |
|---|---|---|---|
| DRILLING | 27-May-94 | 0853 | 0907 |
| CASING | 27-May-94 | 0913 | 0918 |
| FILTER PACK | 27-May-94 | 0920 | 0945 |
| SEAL | 27-May-94 | 0947 | 0953 |
| BACKFILL | None | | |
| DEVELOPMENT | 1-Jun-94 | 0828 | 1001 |
| OTHER | | | |

## WELL DEVELOPMENT

Water Level 8.05' BMP; WD = 13.7' BMP

Initial: T=9.6 C, pH=6.63, SC=315umhos/cm,muddy

@70 gals T=10.3 C,pH=6.52, SC=313umhos/cm, turb

@150gals T=10.2 C,pH=6.53, SC=317umhos/cm,CLEAR

COMMENTS: stainless steel bailer used for initial 50 gallons; switched to GrundFos Pump to complete development; increased temp due to 300' GrundFos hose

SOP 6.01, R0.0-6-92

# Los Alamos National Laboratory Environmental Restoration
## Well Completion Information Form



Well ID: LAO-0.6

Site Work Plan LA-UR-92-3825

Technical Area 41

Inclusive Sample Identifier:

Operable Unit 1098

_____ to _____

Signature _____ Date _____

Owner LANL ER Program

Installer Stewart Bros. Drilling

Installation Date 6-May-94

Filter Pack Length (ft) 13.6 - 5.6

Well Type Classification M

Formation of Completion (US/RC)) Alluvial Sediments

Well Completion Method S

Zone of Completion Screen 13.0 - 8.0

Casing Elevation (ft MSL) 6912.88 (Measuring Pt)

Open/Screen Depth (FTFD)* 13.0 - 8.0

Casing Depth (ft) 8.0 - +2.54

Open/Screen Length (ft) 5

Casing Diameter (in.) 4

Open/Screen Area ($in^2$/ft) 5.9

Seal End Depth (FTFD) 5.6 - 2.0

Flow Relationship D

Screen Material 0.010 slot Sch 40 PVC

Cap Material FI

Riser Material Sch 40 PVC

Cap Type LC

### WELL TYPE CLASSIFICATIONS

M - Monitor Well
P - Production Well
T - Test Well
O - Other (specify) _____

### FLOW RELATIONSHIP

U - Upgradient
D - Downgradient
C - Cross Gradient
O - Onsite
N - Not known
B - Background

### CAP TYPE

LC - Locking
SL - Slip-on
TR - Threaded
NO - None
SC - Screw-on
OT - Other (specify) _____

### WELL COMPLETION METHODS

C- Porous Concrete
F - Gravel Pack
H - Horizontal Galley
O - Open End
P - Perforated/Slotted
S - Screen
T - Sand Front
W - Walled
X - Open
O - Other (specify) _____

### CAP MATERIALS

CT - Concrete
CR - Copper
FI - Fiberglass
GI - Galvanized Iron
WI - Wrought Iron
SS - Stainless Steel
OM - Other Material
TE - Teflon
PV - PVC
RK - Rock or Stone
ST - Steel
TI - Tile
CS - Costed Steel
WD - Wood
NO - None
OT - Other (specify) _____

### ZONES OF CONCERN

A - Artesian
C - Confined
H - Acquitard
G - Aquiclude
M - Multisystem
S - Semi-confined
U - Unconsolidated

* FTFD = feet from datum.

Location: Northing 1774332.90 Easting 1626748.11 NMSPC NAD 83

SOP 5.01, R0.3-5-92

Ground Surface Elev. = 6910.34 Brass Disk Elev. = 6910.74

**Los Alamos National Laboratory Environmental Restoration**
**Well Completion Information Form (continued)**



WELL ID: LAO-0.6

Site Work Plan LA-UR-92-3825

Technical Area 41

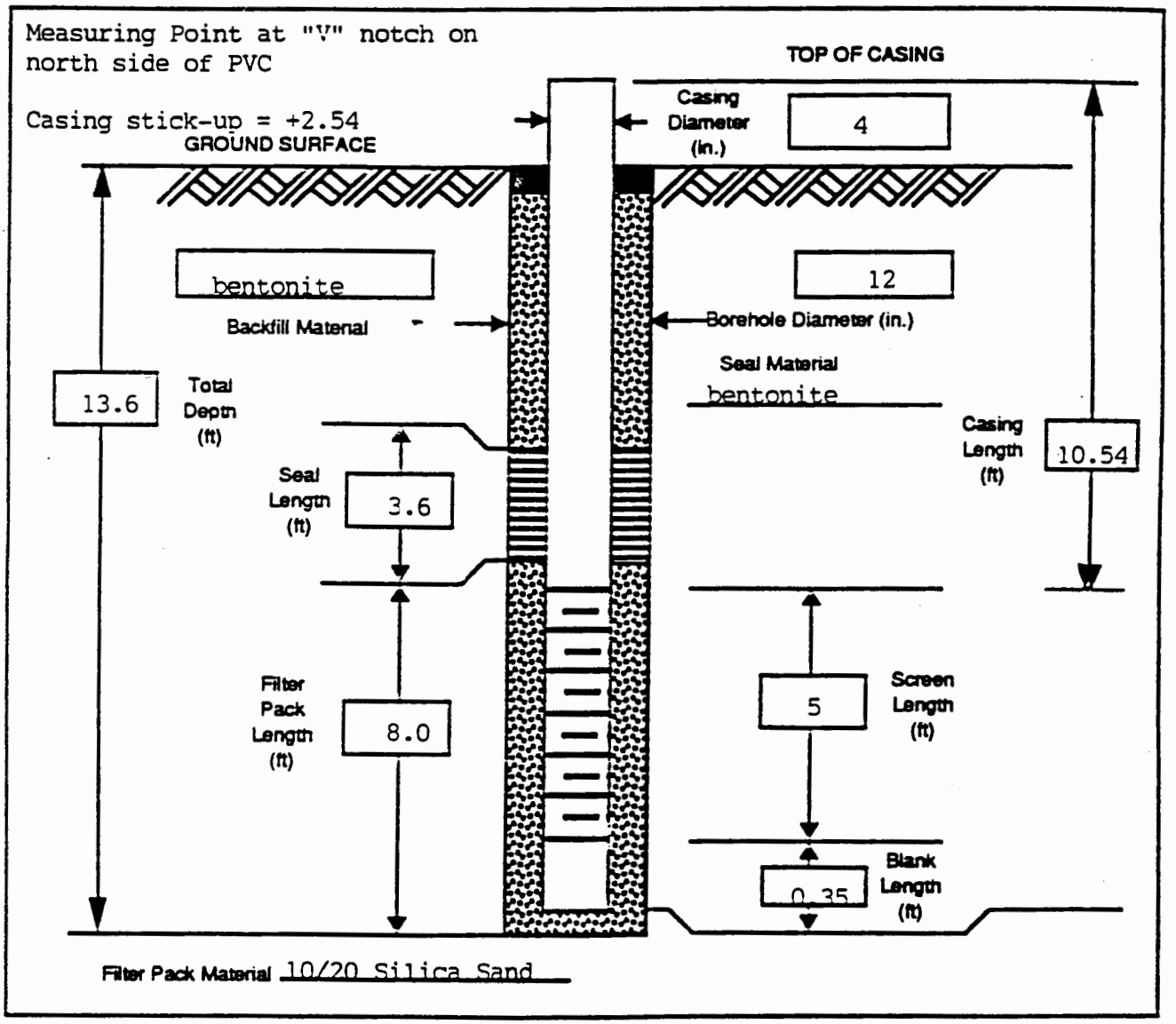
Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____

Date _____




Comments Surface Completion: 5'x8" steel protective casing seated in top of bentonite; 2.25x2.25'x0.5' pad form set approx 1" into ground; Quikrete poured into borehole/pro casing annular space and into form; brass survey marker placed in NE corner of pad; bentonite chips poured into pro casing/PVC annular space to 1" below top of pad; pea gravel poured into pro casing/PVC annular space to 3" below top of PVC; weep hole drilled into steel casing 3" above top of pad

**Los Alamos National Laboratory Environmental Restoration**
**Monitor Well Construction Field Data Log**

Sheet 1 of 1

WELL ID: LAO-0.6

Site Work Plan LA-UR-92-3825

Technical Area 41

Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____ Date _____

## BOREHOLE SUMMARY

| BIT TYPE | HOLE DIAMETER (in.) | END[1] DEPTH (ft) | FLUID TYPE |
|---|---|---|---|
| HSA | 12 | 13.6 | none |
| | | | |
| | | | |
| | | | |
| | | | |

## CASING SUMMARY

| CASING TYPE | DESCRIPTION | DIAM. (in.) | END[2] DEPTH (ft) |
|---|---|---|---|
| P | 5' steel | 8 | 2-+3 |
| Riser | Schedule 40 PVC | 4 | 8.0-+2.5 |
| S | 0.010slot Sch 40 PVC | 4 | 13 - 8 |
| End Cap | Sch 40 PVC | 4 | 13.35 |
| | | | |

P - Protective S - Screen O - Open N - None

[1] Depth from Ground Surface [2] Depth from Toe of Casing

## CONSTRUCTION TIME LOG

| ACTIVITY | START DATE | START TIME | END TIME |
|---|---|---|---|
| DRILLING | 6-May-94 | 1550 | 1615 |
| CASING | 6-May-94 | 1620 | 1627 |
| FILTER PACK | 6-May-94 | 1627 | 1657 |
| SEAL | 6-May-94 | 1657 | 1710 |
| BACKFILL | N/A | | |
| DEVELOPMENT | 23-May-94 | 1135 | 1448 |
| OTHER | | | |

## WELL CONSTRUCTION

| TYPE[1] CODE | DESCRIPTION | END[1] DEPTH (ft) |
|---|---|---|
| F | 10/20 Silica Sand | 13.6-5.6 |
| S | Bentonite Chips | 5.6-2.0 |
| | | |
| | | |
| | | |

B - Backfill S - Seal F - Filter Pack [1] Depth from Ground Surface

## WELL DEVELOPMENT

Water Level=7.13'BMP; WD = 15.8' BMP

Initial: T=10.9 C,pH=6.90, SC=558umhos/cm,muddy

@75 gals T=19.8 C, pH=6.69, SC=539umhos/cm, clea

@125 gals T=13.4 C,pH=6.63, SC=532umhos/cm,CLEAR

COMMENTS: Bailed initial 30 gallons; switch to Grundfos Pump for remaining 95 gallons; High temp due to purge water traveling thru 300' of hose during heat of day.

# Los Alamos National Laboratory Environmental Restoration
## Well Completion Information Form



WELL ID: LAO-0.8

Site Work Plan LA-UR-92-3825

Technical Area 2

Inclusive Sample Identifier:

Operable Unit 1098

_____ to _____

Signature _____

Date _____

Owner LANL ER Program

Installer Stewart Bros. Drilling

Installation Date 11-May-94

Filter Pack Length (ft) 13 - 5.6

Well Type Classification M

Formation of Completion (US/RC)) Alluvial Sediments

Well Completion Method S

Zone of Completion Screen12.5 - 7.5'BGS

Casing Elevation (ft MSL) 6889.71 (Measuring Pt)

Open/Screen Depth (FTFD)* 12.5 - 7.5

Casing Depth (ft) 7.5 - +2.67

Open/Screen Length (ft) 5

Casing Diameter (in.) 4

Open/Screen Area ($in^2$/ft) 5.9

Seal End Depth (FTFD) 5.6 - 2.0

Flow Relationship D

Screen Material 0.010-slot Sch 40 PVC

Cap Material FI

Riser Material Sch 40 PVC

Cap Type LC

### WELL TYPE CLASSIFICATIONS

M - Monitor Well
P - Production Well
T - Test Well
O - Other (specify) _____

### FLOW RELATIONSHIP

U - Upgradient
D - Downgradient
C - Cross Gradient
O - Onsite
N - Not known
B - Background

### CAP TYPE

LC - Locking
SL - Slip-on
TR - Threaded
NO - None
SC - Screw-on
OT - Other (specify) _____

### WELL COMPLETION METHODS

C- Porous Concrete
F - Gravel Pack
H - Horizontal Galley
O - Open End
P - Perforated/Slotted
S - Screen
T - Sand Front
W - Walled
X - Open
O - Other (specify) _____

### CAP MATERIALS

CT - Concrete
CR - Copper
FI - Fiberglass
GI - Galvanized Iron
WI - Wrought Iron
SS - Stainless Steel
OM - Other Material
TE - Teflon
PV - PVC
RK - Rock or Stone
ST - Steel
TI - Tile
CS - Costed Steel
WD - Wood
NO - None
OT - Other (specify) _____

### ZONES OF CONCERN

A - Artesian
C - Confined
H - Acquitard
G - Aquiclude
M - Multisystem
S - Semi-confined
U - Unconsolidated

* FTFD = feet from datum.

Location: Northing 1774274.66 Easting 1627699.74 NMSPC NAD 83

SOP 5.01, R0.3-5-92

Ground Surface Elev. 6887.04'; Brass Survey Marker Elev. 6887.58'

## Los Alamos National Laboratory Environmental Restoration
## Well Completion Information Form (continued)

Well ID: LAO-0.8

Site Work Plan LA-UR-92-3825

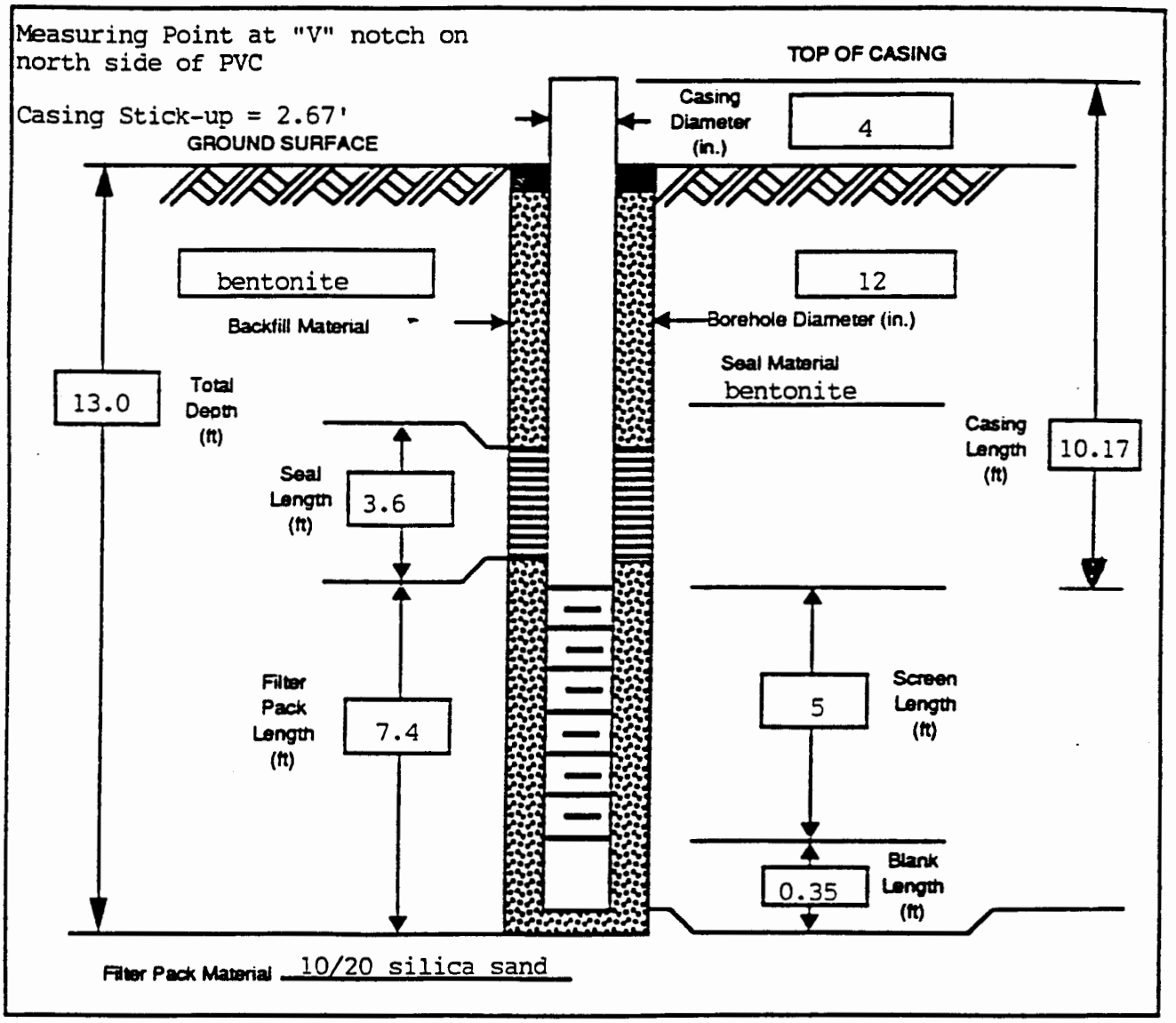
Technical Area 2

Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____ Date _____




Comments Surface Completion: 5'x8" steel protective casing seated in top of bentonite; 2.25'x2.25'x0.5' pad form set approx 1" into ground; Quickrete poured into borehole/pro casing annular space and into form; brass survey marker set in NE corner of pad; bentonite chips poured into pro casing/PVC annular space to 1" below top of pad; pea gravel poured into pro casing/PVC annular space to 3" below top of PVC; weep hole drilled into steel casing 3" above top of pad

**Los Alamos National Laboratory Environmental Restoration**
**Monitor Well Construction Field Data Log**

Sheet 1 of 1

WELL ID: LAO-0.8

Site Work Plan LA-UR-92-3825

Technical Area 2

Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____ Date _____

## BOREHOLE SUMMARY

| BIT TYPE | HOLE DIAMETER (in.) | END[1] DEPTH (ft) | FLUID TYPE |
|---|---|---|---|
| HSA | 12 | 13.5 | none |
| | | | |
| | | | |
| | | | |
| | | | |

## CASING SUMMARY

| CASING TYPE | DESCRIPTION | DIAM. (in.) | END[2] DEPTH (ft) |
|---|---|---|---|
| P | 5' steel | 8 | 2-+3 |
| Riser | Sch 40 PVC | 4 | 7.5 |
| S | 0.010-slot Sch40 | PVC 4 | 12.5 |
| End Cap | Sch 40 PVC | 4 | 12.85 |
| | | | |

P - Protective S - Screen O - Open N - None

[1] Depth from Ground Surface [2] Depth from Toe of Casing

## WELL CONSTRUCTION

| TYPE[1] CODE | DESCRIPTION | END[1] DEPTH (ft) |
|---|---|---|
| F | 10/20 silica sand | 13.0 - 5.6 |
| S | Bentonite Chips | 5.6- 2.0 |
| | | |
| | | |
| | | |

B - Backfill S - Seal F - Filter Pack [1] Depth from Ground Surface

## CONSTRUCTION TIME LOG

| ACTIVITY | START DATE | START TIME | END TIME |
|---|---|---|---|
| DRILLING | 11-May-94 | 1000 | 1015 |
| CASING | 11-May-94 | 1015 | 1042 |
| FILTER PACK | 11-May-94 | 1047 | 1123 |
| SEAL | 11-May-94 | 1123 | 1148 |
| BACKFILL | N/A | | |
| DEVELOPMENT | 24-May-94 | 0845 | 1630 |
| | 2-Jun-94 | 0840 | 1155 |
| OTHER | | | |

## WELL DEVELOPMENT

Water Level=12.92' BMP; WD=15.5' BMP

Bailed 50 gals 24-May; Easily bailed dry - slow recovery; Used peristaltic pump @ 0.2 gpm to continuously remove water 2-Jun.

COMMENTS: 2-Jun-94 after 50 gallons (24-MAY)

WL=13.85'BMP; T=11.8 C,pH=7.10,SC=262umhos/cm

@22 gals(72 gals) T=11.8 C,pH=7.00,SC=252 umhos/c

water CLEAR;total removed = 72 gallons.

SOP 5.01, R03-6-92

# Los Alamos National Laboratory Environmental Restoration
## Well Completion Information Form



Well ID: LAO-0.91

Site Work Plan LA-UR-92-3825

Technical Area 2

Inclusive Sample Identifier:

Operable Unit 1098

_____ to _____

Signature _____

Date _____

Owner LANL ER Program

Installer Stewart Bros. Drilling

Installation Date 13-May-94

Filter Pack Length (ft) 15.0 - 7.0

Well Type Classification M

Formation of Completion (US/RC)) Alluvial Sediments

Well Completion Method S

Zone of Completion Screen 14.5 - 9.5' BGS

Casing Elevation (ft MSL) 6864.79 (Measuring Pt)

Open/Screen Depth (FTFD)* 14.5 - 9.5' BGS

Casing Depth (ft) 0.5 - +3.63

Open/Screen Length (ft) 5

Casing Diameter (in.) 4

Open/Screen Area ($in^2$/ft) 5.9

Seal End Depth (FTFD) 7.0-1.5

Flow Relationship D

Screen Material 10/20 silica sand

Cap Material FI

Riser Material Schedule 40 PVC

Cap Type LC

### WELL TYPE CLASSIFICATIONS

M - Monitor Well
P - Production Well
T - Test Well
O - Other (specify) _____

### FLOW RELATIONSHIP

U - Upgradient
D - Downgradient
C - Cross Gradient
O - Onsite
N - Not known
B - Background

### CAP TYPE

LC - Locking
SL - Slip-on
TR - Threaded
NO - None
SC - Screw-on
OT - Other (specify) _____

### WELL COMPLETION METHODS

C- Porous Concrete
F - Gravel Pack
H - Horizontal Galley
O - Open End
P - Perforated/Slotted
S - Screen
T - Sand Front
W - Walled
X - Open
O - Other (specify) _____

### CAP MATERIALS

CT - Concrete
CR - Copper
FI - Fiberglass
GI - Galvanized Iron
WI - Wrought Iron
SS - Stainless Steel
OM - Other Material
TE - Teflon
PV - PVC
RK - Rock or Stone
ST - Steel
TI - Tile
CS - Costed Steel
WD - Wood
NO - None
OT - Other (specify) _____

### ZONES OF CONCERN

A - Artesian
C - Confined
H - Acquitard
G - Aquiclude
M - Multisystem
S - Semi-confined
U - Unconsolidated

* FTFD = feet from datum.

Location: Northing 1774207.01 Easting 1628654.28 NMSPC NAD 83

SOP 5.01, R03-6-92

Ground Surface Elev.=6861.16' Brass Survey Marker Elev.=6861.74'

**Los Alamos National Laboratory Environmental Restoration**
**Well Completion Information Form (continued)**



Well ID: LAO-0.91

Site Work Plan LA-UR-92-3825

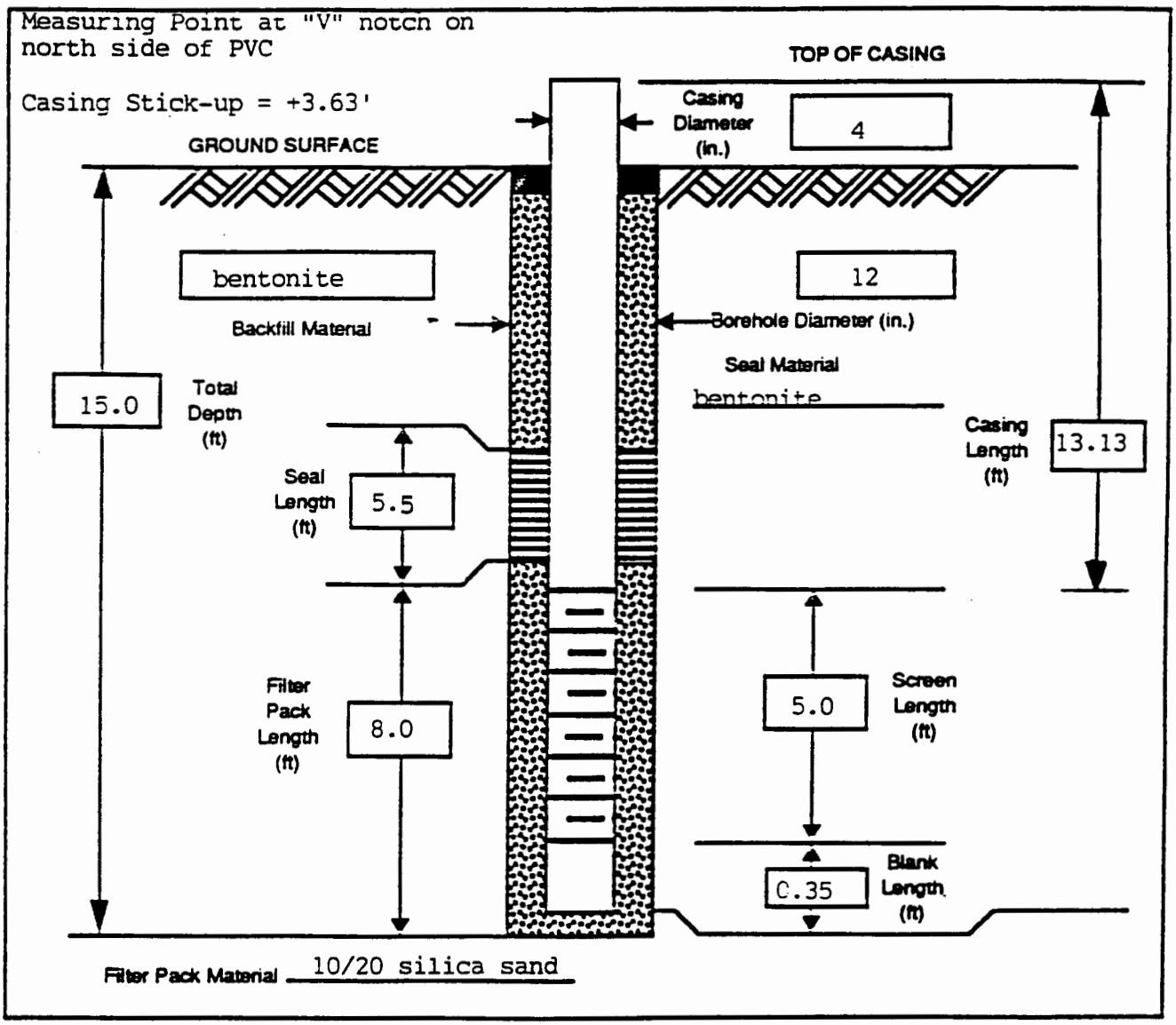
Technical Area 2

Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____ Date _____




Comments Surface Completion: 5'x8" steel protective casing seated in top of bentonite; 2.25'x2.25'x0.5' pad form set approx 1" into ground; Quikcrete poured into borehole/ pro casing annular space and into form; brass survey marker set in NE corner of pad; bentonite chips poured into pro casing/PVC annular space to 1" below top of pad; pea gravel poured into pro casing/PVC annular space to 3" below top of PVC; weep hole drille into steel casing 3" above top of pad

**Los Alamos National Laboratory Environmental Restoration**
**Monitor Well Construction Field Data Log**

Sheet 1 of 1

Well ID: LAO-0.91

Site Work Plan LA-UR-92-3825

Technical Area 2

Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____ Date _____

## BOREHOLE SUMMARY

| BIT TYPE | HOLE DIAMETER (in.) | END[1] DEPTH (ft) | FLUID TYPE |
|---|---|---|---|
| HSA | 12 | 15.5 | none |
| | | | |
| | | | |
| | | | |
| | | | |

## CASING SUMMARY

| CASING TYPE | DESCRIPTION | DIAM. (in.) | END[2] DEPTH (ft) |
|---|---|---|---|
| P | 5' steel | 8 | 1.5 - +3.5 |
| Riser | Sch 40 PVC | 4 | 9.5- +3.63 |
| S | 0.010slot Sch 40 PVC | 4 | 14.5- 9.5 |
| En Cap | Sch 40 PVC | 4 | 14.85 |
| | | | |

P - Protective S - Screen O - Open N - None

[1] Depth from Ground Surface [2] Depth from Toe of Casing

## WELL CONSTRUCTION

| TYPE[1] CODE | DESCRIPTION | END[1] DEPTH (ft) |
|---|---|---|
| F | 10/20 silica sand | 15.0- 7.0 |
| S | bentonite chips | 7.0- 1.5 |
| | | |
| | | |
| | | |

B - Backfill S - Seal F - Filter Pack [1] Depth from Ground Surface

## CONSTRUCTION TIME LOG

| ACTIVITY | START DATE | START TIME | END TIME |
|---|---|---|---|
| DRILLING | 12-May-94 | 0914 | 0935 |
| CASING | 12-May-94 | 0935 | 0948 |
| FILTER PACK | 12-May-94 | 0948 | 1009 |
| SEAL | 12-May-94 | 1009 | 1023 |
| BACKFILL | N/A | | |
| DEVELOPMENT | 1-Jun-94 | 1348 | 1505 |
| OTHER | | | |

## WELL DEVELOPMENT

Water Level 8.72'BMP, WD=18.4'BMP

Initial T=12.2 C,pH=7.08,SC=276umhos/cm,muddy

@60 gals T=13.6 C,pH=6.94,SC=273, turbid

@140 gals,T=13.5 C,pH=6.98,SC=274 umhos/cm, CLEA

COMMENTS: Bailed 35 gallons using stainless steel bailer; switched to GrundFos pump to remove additional 110 gallons;increased Temp due to purge water traveling thru 300' of hose

SOP 5.01, R0.3-6-92

**Los Alamos National Laboratory Environmental Restoration**
**Well Completion Information Form**



WELL ID: LAOI-1.1

Site Work Plan LA-UR-92-3825

Technical Area 2 (21)

Inclusive Sample Identifier:

Operable Unit 1098

_____ to _____

Signature _____ Date _____

Datum = ground surface BGS = below ground surface

Installation

Owner LANL - ER Project

Installer Tonto Drilling

Date 4-8 NOV 94

Filter Pack Length (ft) 20.5

Well Type Classification M

Formation of Completion (US/RC)) Guaje Pumice Bed

Well Completion Method S

Zone of Completion Screen 295.2 - 305' BGS

Casing Elevation (ft MSL) 6837.94 (Measuring Pt)

Open/Screen Depth (FTFD)* 295.2 - 305'

Casing Depth (ft) 310.2-305.0, 295.2 - +3.14

Open/Screen Length (ft) 9.8

Casing Diameter (in.) 3

Open/Screen Area ($in^2$/ft) 3.9 - 4.0

Seal End Depth (FTFD) 293.5 - 90

Flow Relationship D

Screen Material Schedule 80 PVC, 0.010 slot

Cap Material FI

Riser Material Schedule 80 PVC

Cap Type LC

**WELL TYPE CLASSIFICATIONS**

M - Monitor Well
P - Production Well
T - Test Well
O - Other (specify) _____

**FLOW RELATIONSHIP**

U - Upgradient
D - Downgradient
C - Cross Gradient
O - Onsite
N - Not known
B - Background

**CAP TYPE**

LC - Locking
SL - Slip-on
TR - Threaded
NO - None
SC - Screw-on
OT - Other (specify) _____

**WELL COMPLETION METHODS**

C- Porous Concrete
F - Gravel Pack
H - Horizontal Galley
O - Open End
P - Perforated/Slotted
S - Screen
T - Sand Front
W - Walled
X - Open
O - Other (specify) _____

**CAP MATERIALS**

CT - Concrete
CR - Copper
FI - Fiberglass
GI - Galvanized Iron
WI - Wrought Iron
SS - Stainless Steel
OM - Other Material
TE - Teflon
PV - PVC
RK - Rock or Stone
ST - Steel
TI - Tile
CS - Costed Steel
WD - Wood
NO - None
OT - Other (specify) _____

**ZONES OF CONCERN**

A - Artesian
C - Confined
H - Acquitard
G - Aquiclude
M - Multisystem
S - Semi-confined
U - Unconsolidated

Well Location = N-1773923.16 E-1629426.92 Brass Disc Location = N1773924.51 E-1629427.38

* FTFD = feet from datum. Ground Surface Elev. = 6834.80 ft MSL, Brass Disc = 6835.20 ft MSL

## Los Alamos National Laboratory Environmental Restoration
## Well Completion Information Form (continued)

WELL ID: LAOI-1.1

Site Work Plan LA-UR-92-3825

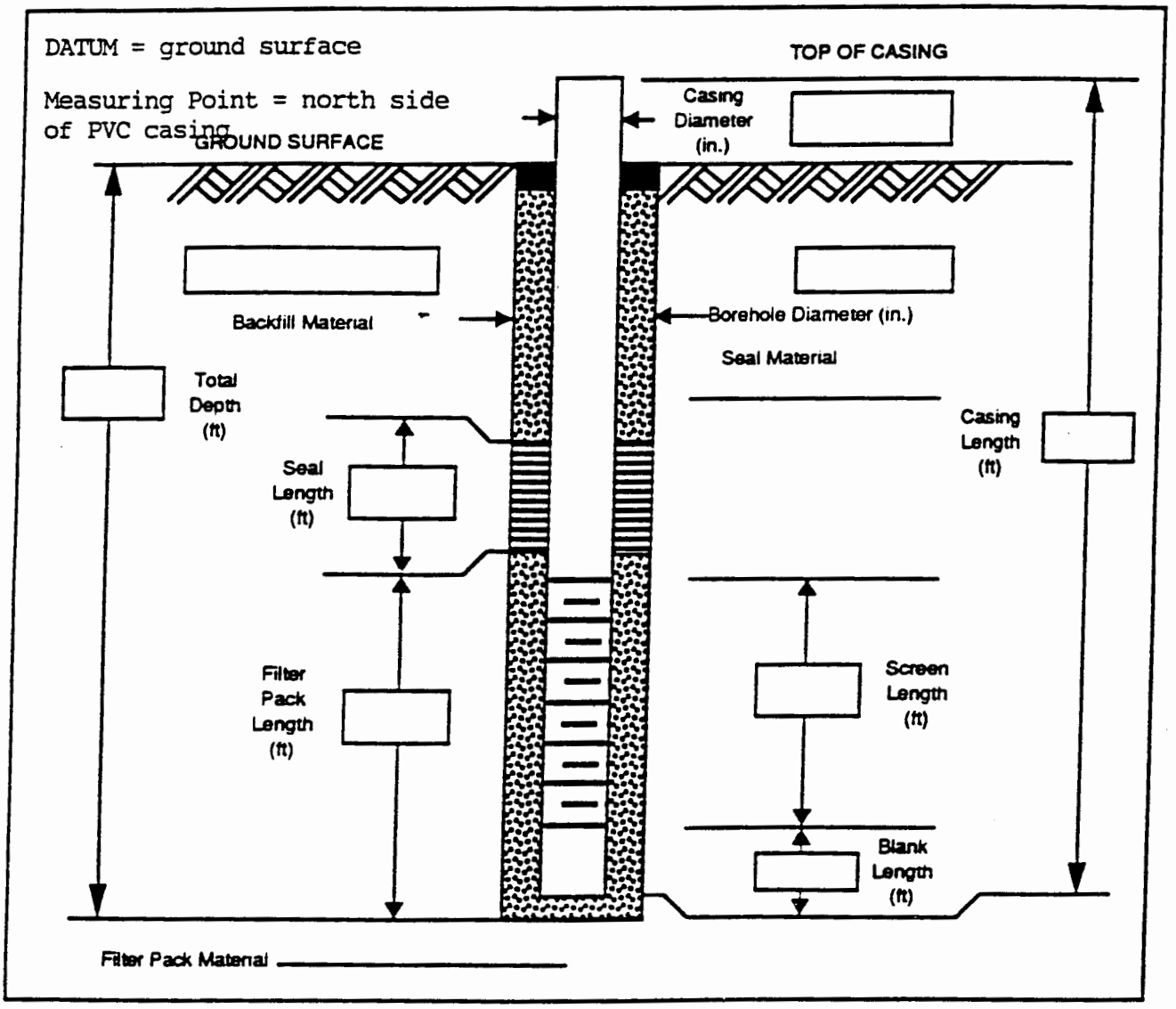
Technical Area 2 (21)

Inclusive Sample Identifiers

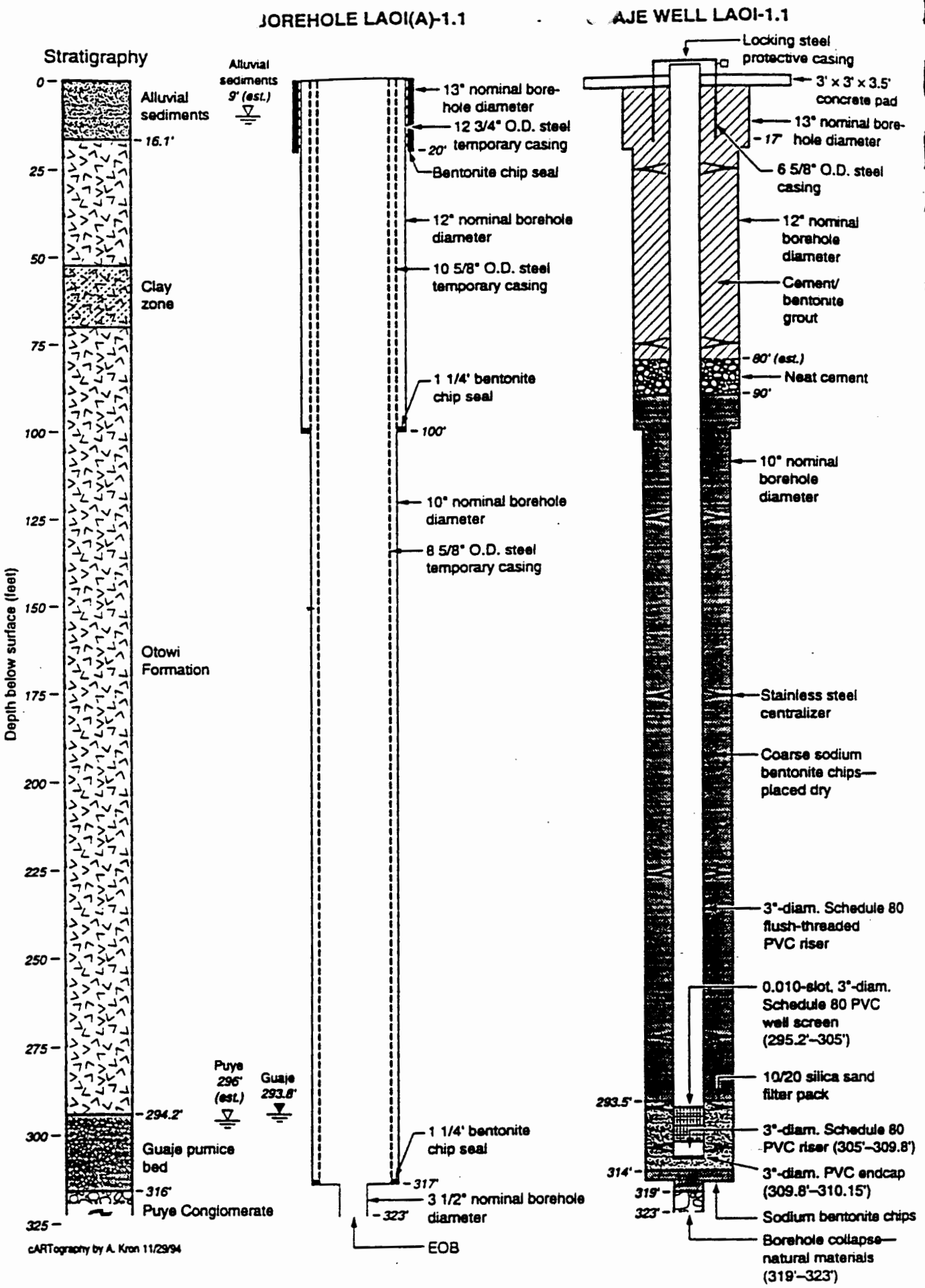
Operable Unit 1098

_____ to _____

Signature _____ Date _____




Comments Well diagram above not applicable; see atached figure


JOREHOLE LAOI(A)-1.1
AJE WELL LAOI-1.1
Stratigraphy
Depth below surface (feet)
0
25
50
75
100
125
150
175
200
225
250
275
300
325
Alluvial sediments
16.1'
Clay zone
Otowi Formation
294.2'
Guaje pumice bed
316'
Puye Conglomerate
Alluvial sediments 9' (est.)
Puye 296' (est.)
Guaje 293.8'
13" nominal borehole diameter
12 3/4" O.D. steel temporary casing
20'
Bentonite chip seal
12" nominal borehole diameter
10 5/8" O.D. steel temporary casing
1 1/4' bentonite chip seal
100'
10" nominal borehole diameter
8 5/8" O.D. steel temporary casing
1 1/4' bentonite chip seal
317'
3 1/2" nominal borehole diameter
323'
EOB
Locking steel protective casing
3' x 3' x 3.5' concrete pad
13" nominal borehole diameter
17'
6 5/8" O.D. steel casing
12" nominal borehole diameter
Cement/ bentonite grout
80' (est.)
Neat cement
90'
10" nominal borehole diameter
Stainless steel centralizer
Coarse sodium bentonite chips—placed dry
3"-diam. Schedule 80 flush-threaded PVC riser
0.010-slot, 3"-diam. Schedule 80 PVC well screen (295.2'–305')
10/20 silica sand filter pack
293.5'
3"-diam. Schedule 80 PVC riser (305'–309.8')
314'
3"-diam. PVC endcap (309.8'–310.15')
319'
323'
Sodium bentonite chips
Borehole collapse—natural materials (319'–323')
cARTography by A. Kron 11/29/94

**Los Alamos National Laboratory Environmental Restoration**
**Monitor Well Construction Field Data Log**

Sheet 1 of 1

WELL ID: LAOI-1.1

Site Work Plan LA-UR-92-3825

Technical Area 2 (21)

Inclusive Sample Identifiers

Operable Unit 1098

_____ to _____

Signature _____ Date _____

## BOREHOLE SUMMARY

| BIT TYPE | HOLE DIAMETER (in.) | END[1] DEPTH (ft) | FLUID TYPE |
|---|---|---|---|
| Air Hammer | 13 | 20 | Air |
| ODEX | 12 | 100 | Air |
| ODEX | 10 | 317 | Air |
| Drive Smplr | 3.5 | 323 | N/A |
| | | | |

## CASING SUMMARY

| CASING TYPE | DESCRIPTION | DIAM. (in.) | END[2] DEPTH (ft) |
|---|---|---|---|
| Steel | temporary ODEX | 12-3/4 | 20 |
| Steel | temporary ODEX | 10-5/8 | 100 |
| Steel | temporary ODEX | 8-5/8 | 317 |
| Steel | surface/protect | 6-5/8 | 17 |
| Sch80 PVC | Riser& screen | 3 | 310.2 |

P - Protective S - Screen O - Open N - None

[1] Depth from Ground Surface [2] Depth from Toe of Casing

## CONSTRUCTION TIME LOG

| ACTIVITY | START DATE | START TIME | END TIME |
|---|---|---|---|
| DRILLING | 01-SEP-94 through 27-OCT-94 | 1330 | 1658 |
| CASING (well string) | 04-NOV-94 | 1550 | 1623 |
| FILTER PACK | 04-NOV-94 05-NOV-94 | 1220 | 1008 |
| SEAL below well (final attempt) | 04-NOV-94 | 1035 | 1220 |
| SEAL above filter | 05-NOV-94 | 1008 | 1715 |
| BACKFILL | 07-NOV-94 | 0834 | 1658 |
| cement | 08-NOV-84 | 1010 | 1220 |
| cement/bent | 08-NOV-94 | 1315 | 1602 |
| DEVELOPMENT | 15-NOV-94 | 0950 | 1600 |
| | 16-NOV-94 | 0840 | 1630 |
| OTHER | 17-NOV-94 | 0837 | 1555 |
| surface completion | 09-NOV-94 | 1330 | 1710 |
| | 10-NOV-94 | 0820 | 0900 |

## WELL CONSTRUCTION

| TYPE[1] CODE | DESCRIPTION | END[1] DEPTH (ft) |
|---|---|---|
| B | borehole collapse | 319 |
| S | bentonite chips | 314 |
| F | 10/20 silica sand | 293.5 |
| S | bentonite chips (unhydrated) | 90 |
| B | neet cement | 80 |
| B | cement/bentonite grout | 4 |
| B | concrete | +0.5 |

B - Backfill S - Seal F - Filter Pack [1] Depth from Ground Surface

## WELL DEVELOPMENT

Initial water level=296.95' BMP; Bailed 25 gallons using stainless steel bailer; bailed 200 addt'n'l gallons using SCH40 PVC Bailer (larger volume than Stainless steel)

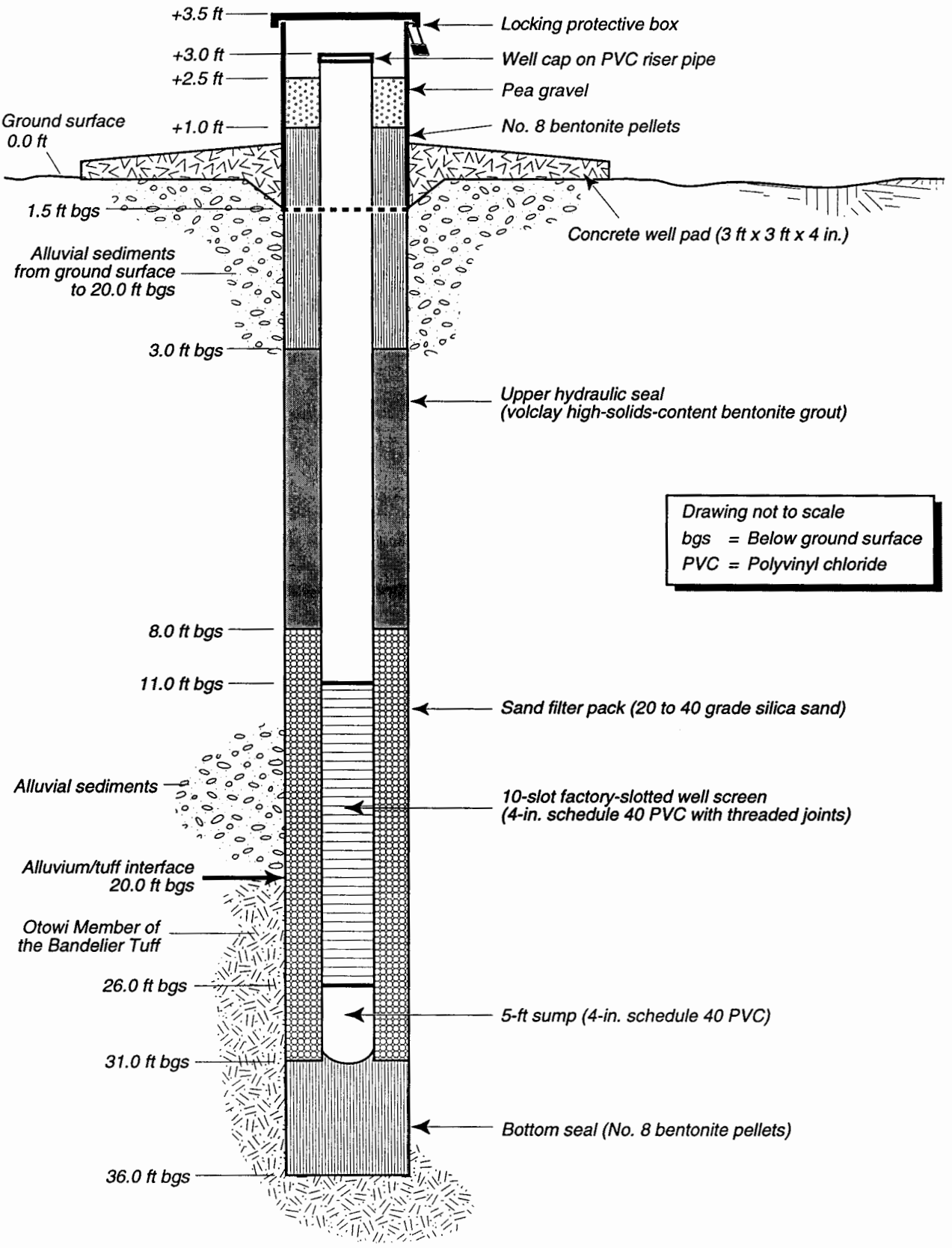
SOP 6.01, R0:3-6-92

# ER PROJECT SURFACE AND GROUND WATER DATA
# FU 4 FIELD DATA ATTACHMENT

**Characterization well construction diagrams**

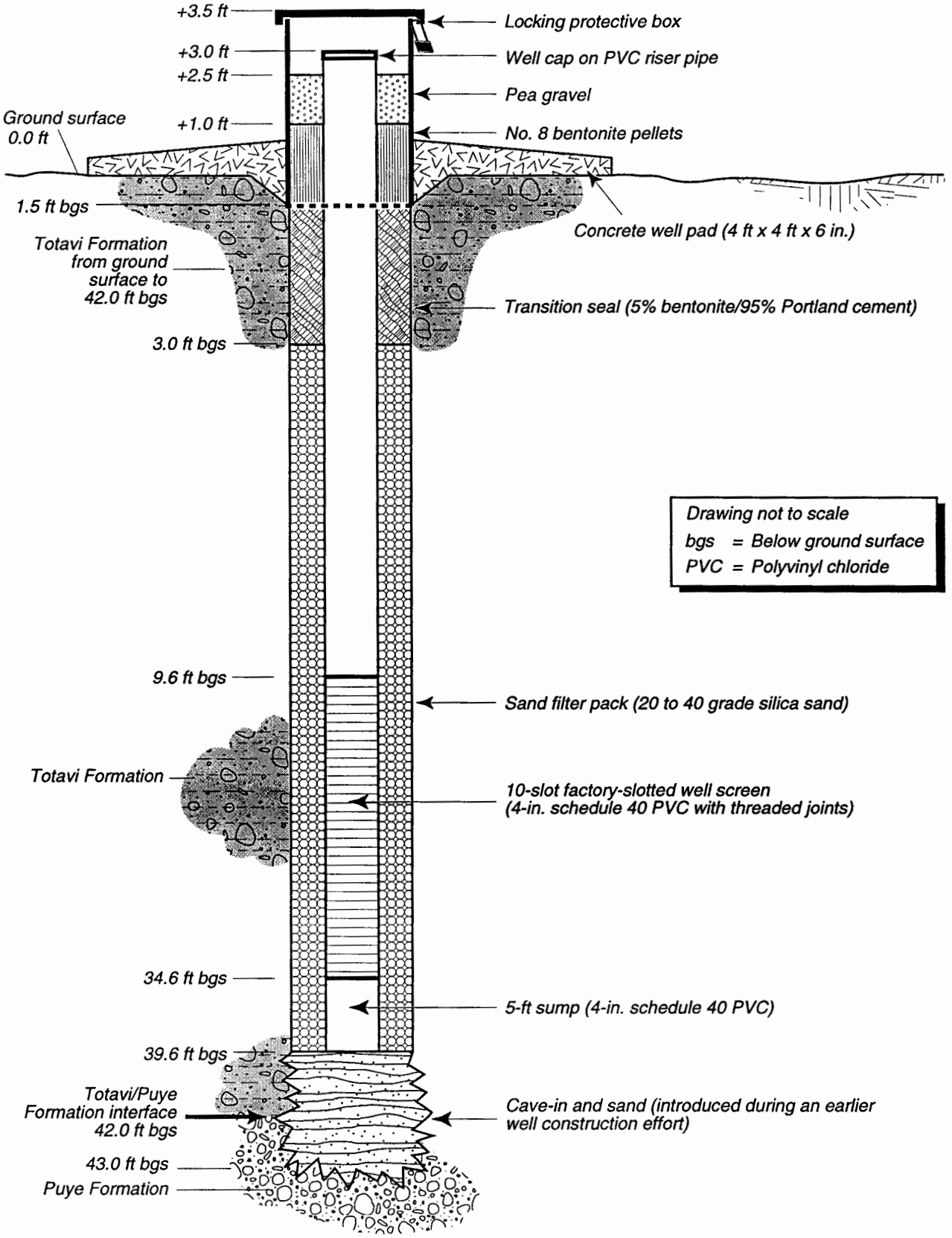
**for wells**

**LAO-1.6(g), LLAO-1, LLAO-2, LLAO-4, LLAO-5, POI-4, and PO-4**



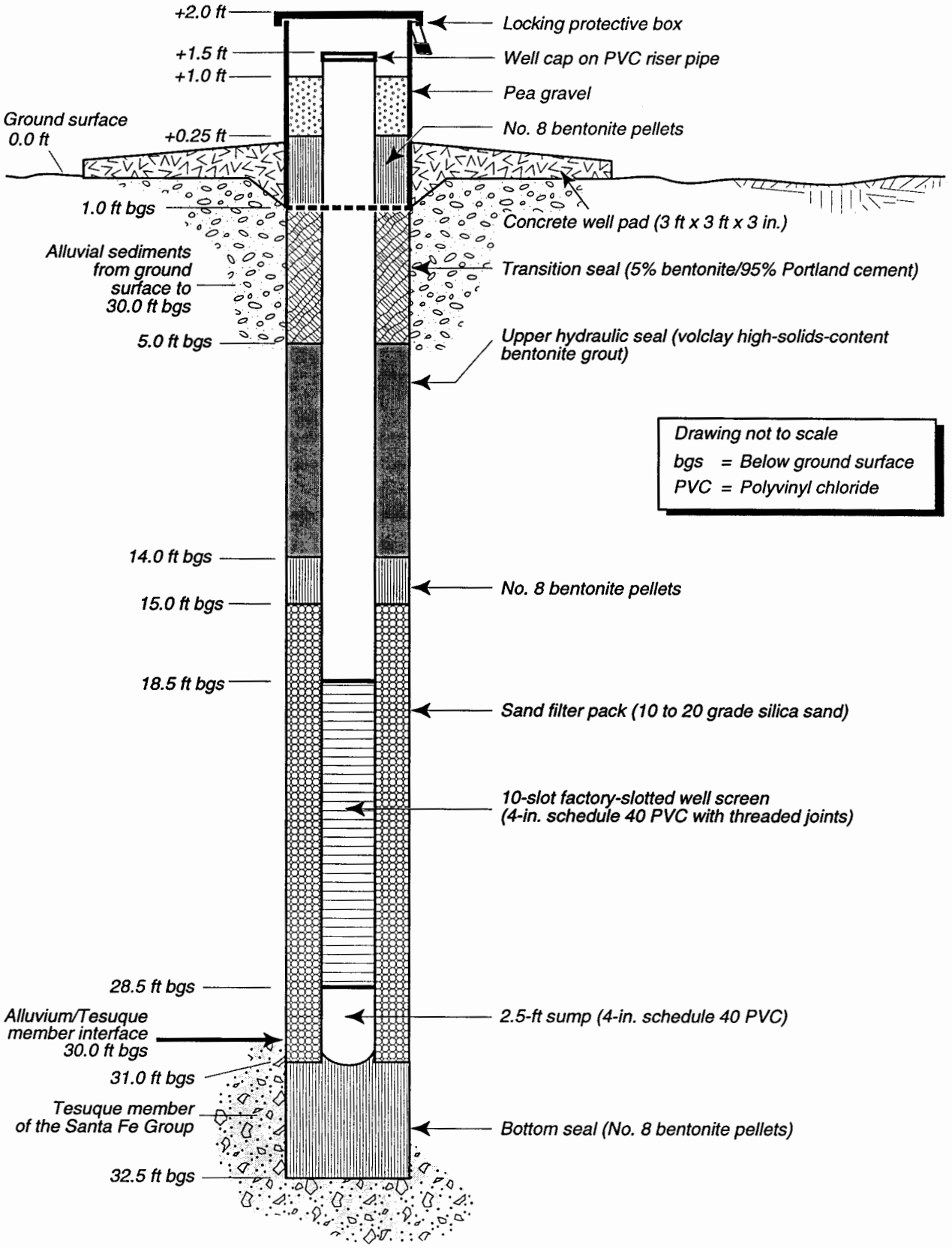

**Characterization well construction for LAO-1.6(g).**

LAO-1.6(g) WSR/112296



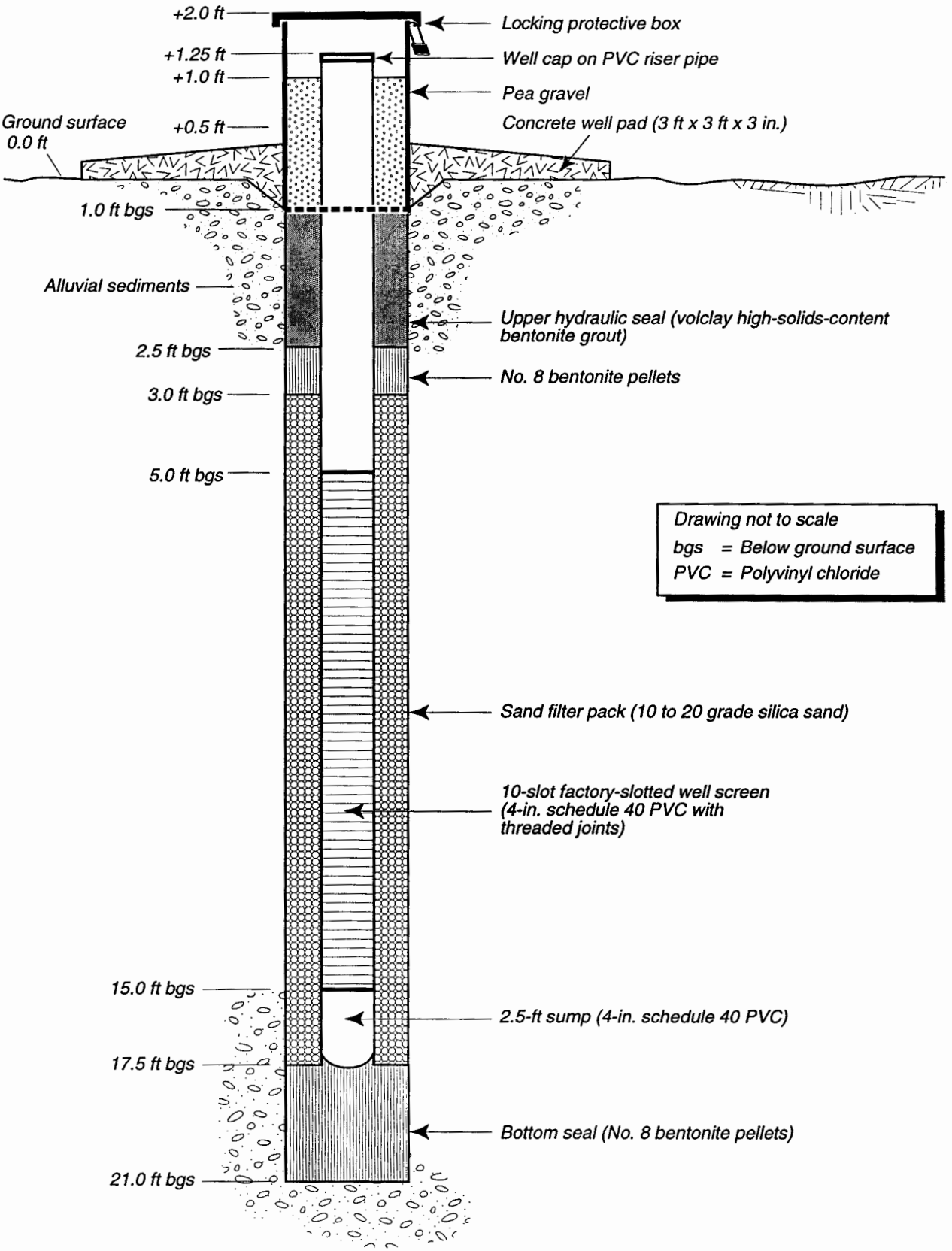

**Characterization well construction for LLAO-1.**

LLAO-1 WSR/112296



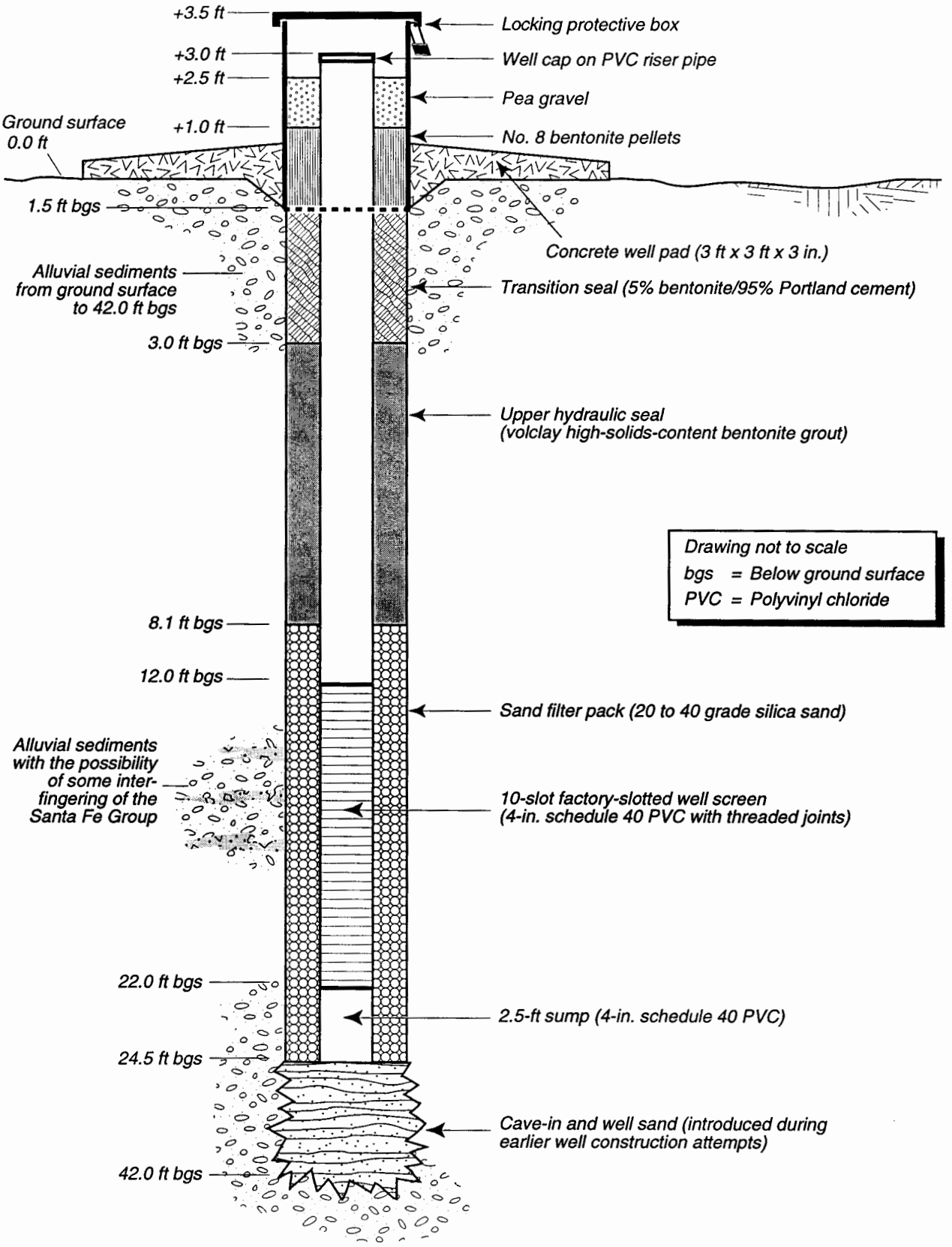

**Characterization well construction for LLAO-2.**

LLAO-2 WSR/112296



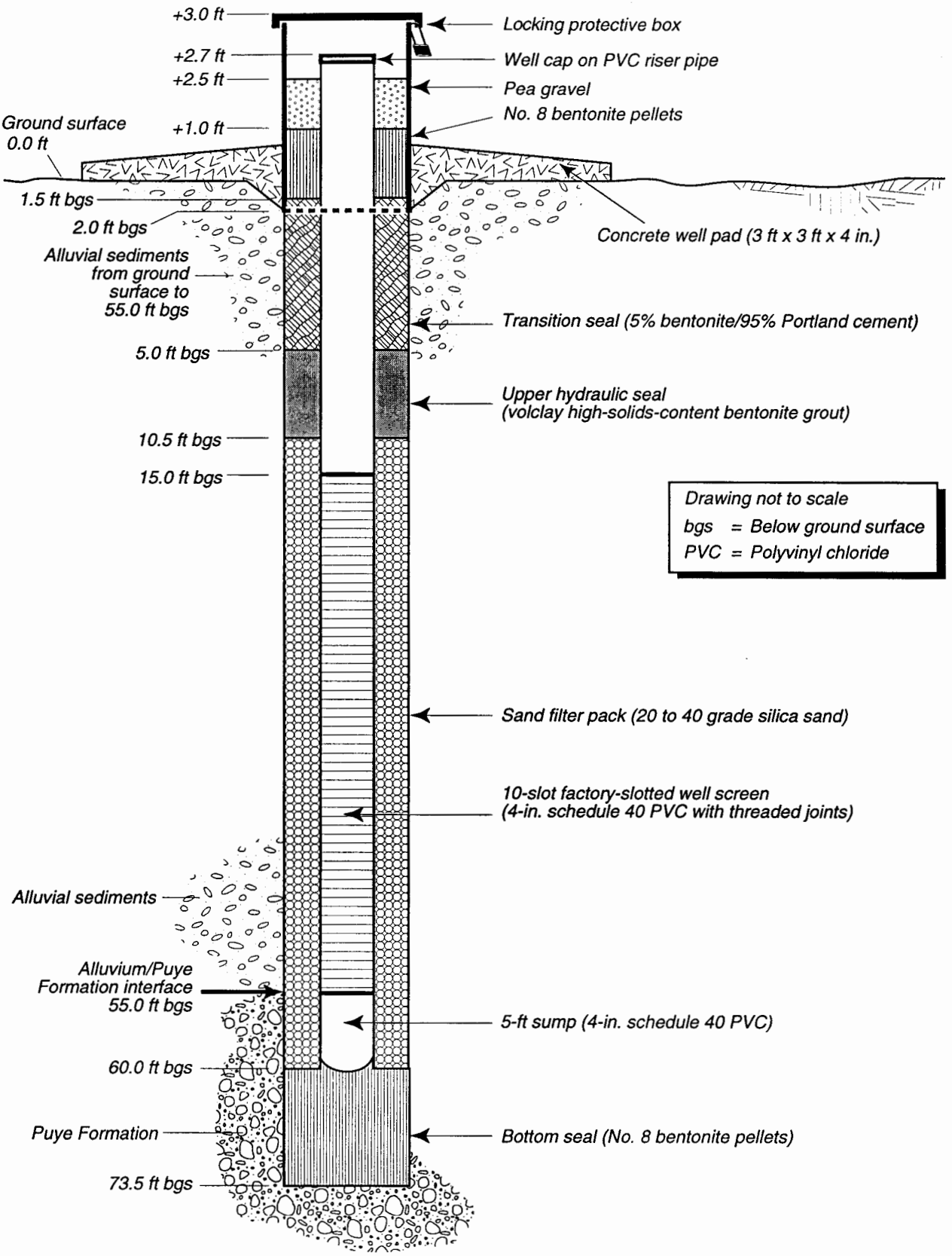

**Characterization well construction for LLAO-4.**

LLAO-4 WSR/112296



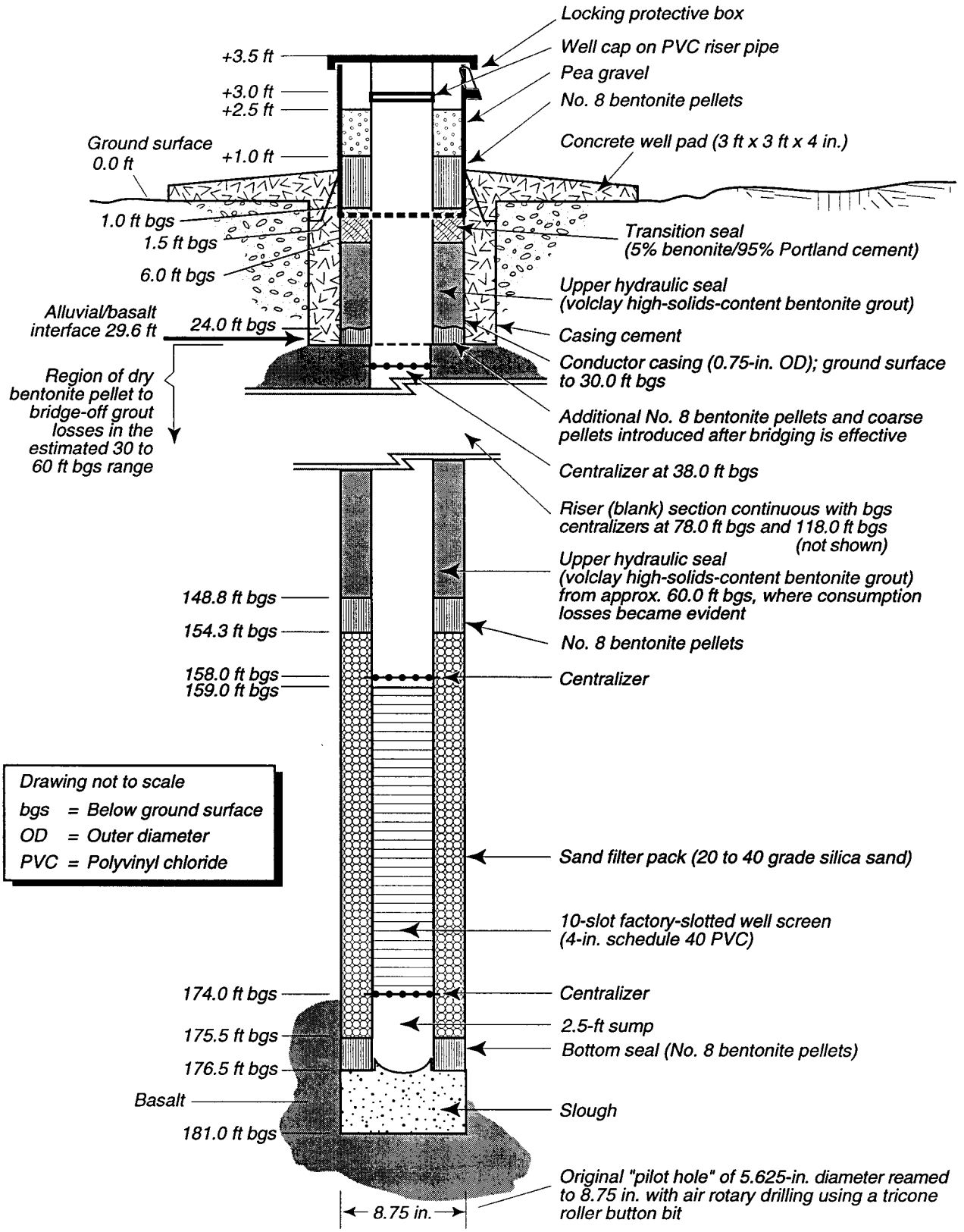

**Characterization well construction for LLAO-5.**

LLAO-5 WSR/112296




**Characterization well construction for PO-4.**

PO-4 WSR/112296




**Characterization well construction for POI-4.**

POI-4 WSR/121696

# ER PROJECT SURFACE AND GROUND WATER DATA
# FU 4 FIELD DATA ATTACHMENT

**Water level measurements**

**from 5/94 through 11/94, and 11/96 through 7/97**

**for LA and Pueblo Canyon monitoring wells**

**LAO-B, LAO-0.3, LAO-0.6, LAO-0.8, LAO-0.91, LAOI-1.1, LAO-1.6(g),**

**LLAO-1, LLAO-2, LLAO-4, LLAO-5, POI-4, and PO-4**

# TABLE 8
# WATER LEVEL DATA
# OU 1098 BASELINE CHARACTERIZATION
# ALLUVIAL WELLS

| | | | | GROUNDWATER ELEVATION | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL NUMBER | MEASURING POINT | GROUND SURFACE ELEVATION (ft MSL) | MEASURING POINT ELEVATION (ft MSL) | At Installation (DATE) (ft MSL) | Prior to Development (DATE) (ft MSL) | 6-Jun-94 (ft MSL) | 1st Quarterly Sampling (DATE) (ft MSL) | 6-Jul-94 (ft MSL) | 27-Jul-94 (ft MSL) | 24-Aug-94 (ft MSL) | 11-Oct-94 (ft MSL) |
| LAO-B | V' notch on north side of PVC riser | 7322.57 | 7325.03 | ~7314.1 (4/28/94) | 7326.80 (5/17/94) | 7316.55 | 7316.42 (6/13/94) | 7316.43 | 7315.58 | 7316.39 | NR |
| LAO-0.3 | V' notch on north side of PVC riser | 6967.82 | 6970.25 | Not Recorded (5/27/94) | 6962.20 (6/1/94) | 6962.12 | 6961.91 (6/14/94) | 6961.14 | 6961.47 | 6960.45 | 6964.07* |
| LAO-0.6 | V' notch on north side of PVC riser | 6910.34 | 6912.88 | ~6902.8 (5/6/94) | 6905.75 (5/23/94) | 6905.74 | 6905.52 (6/14/94) | 6905.52 | 6905.52 | 6905.36 | 6905.36 |
| LAO-0.8 | V' notch on north side of PVC riser | 6887.04 | 6889.71 | ~6874.3 (5/11/94) | ~6876.7 (6/24/94) | 6875.77 | 6875.38 (6/15/94) | 6874.69 | 6874.71 | 6874.68 | 6874.68 |
| LAO-0.91 | V' notch on north side of PVC riser | 6861.16 | 6864.79 | not recorded; log suggests between 6853.2 - 6848.2 (5/13/94) | 6856.07 (6/1/94) | 6854.95 | 6854.57 (6/16/94) | 6848.87 | 6847.37 | 6847.48 | 6847.26 |
| COMMENTS | | | | | | | | Creek dry at LAO-0.3 - LAO-0.91 | | | |

NOTES

ft MSL = feet Above Mean Sea Level

NR = Not Collected; LAO-B Water Level not collected due to road construction closure

* Water Level double-checked for accuracy

F/N: TBL_AWTR.RPT
Checked by: CVK

# TABLE 10
# WATER LEVEL DATA
# OU 1098 BASELINE CHARACTERIZATION
# INTERMEDIATE WELL

| | | | GROUNDWATER ELEVATION (ft MSL) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | GROUND SURFACE ELEVATION (ft MSL) | MEASURING POINT ELEVATION (ft MSL) | 22-Aug-94 | 25-Oct-94 | 27-Oct-94 (15:10) | 27-Oct-94 (15:23) | 27-Oct-94 (15:45) | 28-Oct-94 (08:47) | 29-Oct-94 (10:36) | 15-Nov-94 | COMMENTS |
| LAOI-1.1 (borehole) | 6834.60 | N/A | 6828.1 (core) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Alluvial Aquifer |
| LAOI(A)-1.1 (borehole) | 6834.80 | N/A | N/A | 6541* | N/A | N/A | N/A | N/A | N/A | N/A | Guaje Member pumice bed |
| LAOI(A)-1.1 (borehole) | 6834.80 | N/A | N/A | N/A | 6525* | 6526* | 6527* | 6539* | 6544(?) | N/A | Puye Formation |
| LAOI-1.1 (well) | 6834.80 | 6837.94 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6540.99 | Guaje Well LAOI-1.1 |

NOTES

N/A = Not Applicable

* Water levels are estimates at best; water level sounder accurate to ± 2 feet

(?) Water level reported questionable

ft MSL = feet above Mean Sea Level

*F/N: TBL_IWTR.RPT*
*Checked by: CVK*

## FU 4 LA AND PUEBLO CANYON MONITORING WELLS
## WATER LEVEL MEASUREMENTS

| Date | LAO-B | | LAO-0.3 | | LAO-0.6 | | LAO-0.8 | | LAO-0.91 | | LAOI-1.1 | | LAOI-1.6G | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth to Water (ft) | Total Depth (ft) | Depth to Water (ft) | Total Depth (ft) | Depth to Water (ft) | Total Depth (ft) | Depth to Water (ft) | Total Depth (ft) | Depth to Water (ft) | Total Depth (ft) | Depth to Water (ft) | Total Depth[1] (ft) | Depth to Water (ft) | Total Depth (ft) |
| 11/22/96 | 8.6 | 29.6 | 8.5 | 13.4 | 8.4 | 15.8 | 13.8 | 15.8 | 10.2 | 18.4 | 294.7 | n/a | 15.8 | 26.1[2] |
| 12/30/96 | 8.4 | 29.5 | 8.5 | 13.4 | 7.4 | 15.8 | 14.3 | 15.7 | 13.8 | 18.4 | 294.8 | n/a | 18.9 | 33.7 |
| 1/31/97 | 8.6 | 29.5 | 8.4 | 13.4 | 7.2 | 15.9 | 13.8 | 15.6 | 11.6 | 18.3 | 294.7 | n/a | 13.1 | 33.9 |
| 2/27/97 | 8.5 | 29.6 | 8.4 | 13.4 | 7.2 | 15.9 | 14.3 | 15.6 | 12.9 | 18.4 | 294.1 | n/a | 14.0 | 33.9 |
| 3/27/97 | 8.1 | 29.5 | 7.7 | 13.4 | 6.9 | 15.8 | 13.3 | 15.6 | 9.8 | 18.4 | 294.4 | n/a | 9.3 | 33.6 |
| 5/1/97 | 8.1 | 29.5 | 7.9 | 13.4 | 6.8 | 15.8 | 14.1 | 15.6 | 10.4 | 18.4 | 294.2 | n/a | 9.1 | 33.7 |
| 5/27/97 | 8.4 | 29.1 | 8.3 | 13.3 | 7.0 | 15.8 | 13.8 | 15.5 | 10.8 | 18.3 | 294.7 | n/a | 9.4 | 33.7 |
| 6/19/97 | 8.67 | 29.51 | 9.6 | 14.45 | 7.09 | 15.77 | 14.48 | 15.47 | 11.26 | 18.4 | >300 | n/a | 9.69 | 33.88 |
| 7/17/97 | 8.99 | 29.5 | 9.89 | 14.45 | 7.43 | 15.78 | 15.08 | 15.61 | 17.23 | 18.45 | n/a[4] | n/a[4] | 14.31 | 33.65 |

The measurements are in feet.

[1]Water Level Indicator is not long enought to reach the bottom of the well

[2] Water Level Probe was caught on the pump. The correct TD should be 37.8 ft.

[3] The water level measurement was not taken because the well is going to be re-drilled.

[4]A Transducer was installed by ESH-18.

## FU 4 LA AND PUEBLO CANYON MONITORING WELLS
## WATER LEVEL MEASUREMENTS

| Date | LLAO-1 | | LLAO-2 | | LLAO-4 | | LLAO-5 | | POI-4 | | PO-4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth to Water (ft) | Total Depth (ft) | Depth to Water (ft) | Total Depth (ft) | Depth to Water (ft) | Total Depth (ft) | Depth to Water (ft) | Total Depth (ft) | Depth to Water (ft) | Total Depth (ft) | Depth to Water (ft) | Total Depth (ft) |
| 11/22/96 | 36.9 | 42.6 | 24.5 | 32.1 | 6.2 | 19.2 | 14.6 | 23.6 | 162.1 | 182.1 | 53.5 | 63.0 |
| 12/30/96 | 36.9 | 42.6 | 24.3 | 32.2 | 5.6 | 19.3 | 14.2 | 23.8 | 162.1 | 193.8 | 53.5 | 63.1 |
| 1/31/97 | 36.9 | 42.5 | 24.3 | 32.1 | 4.5 | 19.2 | 14.1 | 23.8 | 162.4 | 187.1 | 53.7 | 63.2 |
| 2/27/97 | 36.9 | 42.5 | 24.3 | 32.1 | 5.4 | 19.3 | 13.7 | 23.8 | 162.8 | 193.8 | 53.5 | 59.5 |
| 3/27/97 | 36.9 | 42.7 | 24.7 | 32.2 | 5.2 | 19.2 | 12.8 | 23.7 | 161.7 | 185.1 | 53.4 | 62.9 |
| 5/1/97 | 36.9 | 42.7 | 23.8 | 32.2 | 5.4 | 19.3 | 12.7 | 23.7 | 161.8 | 189.7 | 53.5 | 63.1 |
| 5/27/97 | n/a[3] | n/a | 24.4 | 32.1 | 4.9 | 19.2 | 10.6 | 23.7 | 162.1 | 191.1 | 53.5 | 63.0 |
| 6/19/97 | n/a[3] | n/a | 25.13 | 32.09 | 5.32 | 19.14 | 10.72 | 23.72 | 162.14 | 191.05 | n/a[3] | n/a |
| 7/17/97 | n/a[3] | n/a | 25.9 | 32.2 | 6.54 | 19.18 | 13.51 | 23.42 | 162.53 | 191.1 | n/a[3] | n/a |

The measurements are in feet.

[1]Water Level Indicator is not long enought to reach the bottom of the well

[2] Water Level Probe was caught on the pump. The correct TD should be 37.8 ft.

[3] The water level measurement was not taken because the well is going to be re-drilled.

[4]A Transducer was installed by ESH-18.

# ER PROJECT SURFACE AND GROUND WATER DATA
# FU 4 FIELD DATA ATTACHMENT

**Water quality sampling data**

**from FY'94, FY'95, FY'96, and FY'97 sampling events**

**for LA and Pueblo Canyon monitoring wells**

**LAO-B, LAO-0.3, LAO-0.6, LAO-0.8, LAO-0.91, LAO-1.6(g), LLAO-1, LLAO-2,**

**LLAO-4, LLAO-5, POI-4, and PO-4**

## TABLE 16
## WATER QUALITY FIELD PARAMETERS RECORDED DURING DEVELOPMENT AND SAMPLING
## OU 1098 BASELINE CHARACTERIZATION
## ALLUVIAL WELLS

| WELL NUMBER | EVENT | FIELD PARAMETERS | | | | | |
|---|---|---|---|---|---|---|---|
| | | pH (pH units) | Specific Conductivity (umhos/cm) | Temperature (deg C) | Turbidity (NTU) | Dissolved Oxygen (mg/L) | Alkalinity (mg/L CaCO3) |
| LAO-B | Development | 6.71 | 104 | 6.9 | CLEAR | NR | NR |
| | June 1994 Sampling | 6.68 | 41 | 9.2 | 27.2 | NR | 31 |
| | October 1994 Sampling | 6.64 | 123 | 9.9 | 27 | 5.7 | 30 |
| | January 1995 Sampling | 6.59 | 112 | 4.2 | 4.28 | 5.66 | 27.6 |
| LAO-0.3 | Development | 6.53 | 317 | 10.2 | CLEAR | NR | NR |
| | June 1994 Sampling | 6.39 | 310 | 14.2* | 8.9 | NR | 45.8 |
| | October 1994 Sampling | 6.53 | 356 | 13.0* | 19.6 | 5.56 | 60 |
| | January 1995 Sampling | 6.61 | 295 | 3.4 | 6.65 | 8.07 | N/A |
| LAO-0.6 | Development | 6.63 | 532 | 13.4* | CLEAR | NR | NR |
| | June 1994 Sampling | 6.55 | 502 | 14.6* | 54 | NR | 62.3 |
| | October 1994 Sampling | 6.43 | 468 | 13.8* | 21.5 | 3.45 | 77 |
| | January 1995 Sampling | 6.30 | 431 | 8.0 | 0.5 | 1.87 | 98.4 |
| LAO-0.8 | Development | 7.00 | 252 | 11.8* | CLEAR, visible | NR | NR |
| | June 1994 Sampling | 7.04 | 330 | 14.4* | >200 | NR | 51.9 |
| | October 1994 Sampling | 6.55 | 303 | 9.3 | 33.8 | 10.2 | NR |
| | January 1995 Sampling | 7.30 | 506 | 2.8 | 18.1 | 9.33 | 40 |
| LAO-0.91 | Development | 6.98 | 274 | 13.5* | CLEAR | NR | NR |
| | June 1994 Sampling | 6.60 | 321 | 15.0* | 8.4 | NR | 56 |
| | October 1994 Sampling | 6.35 | 336 | 14.0* | 19.8 | 4.35 | 75 |
| | January 1995 Sampling | 6.83 | 350 | 7.2 | 6.5 | 6.82 | 37 |

NOTES

N/A = Not available or not applicable

NR = Not Recorded

* = Temperatures not representative of formation water; elevated temperatures observed during pumping

*F/N: TBL_AFP.RPT*
*Checked By: CVK*

**FU 4 LA AND PUEBLO CANYON MONITORING WELLS**
**WATER QUALITY SAMPLING DATA**

| WELL NAME | DATE | SAMPLING (start) | SAMPLING (end) | PURGED AMT (gal) | INITIAL GW DEPTH (ft) | SAMPLE DEPTH (ft) | pH (S.U.) | Specific Conductance (umhos/cm) | Temperature (deg C) | Dissolved Oxygen (mg/l) |
|---|---|---|---|---|---|---|---|---|---|---|
| LAO-1.6(g) | 7/12/96 | | | | 17.45 | 31.5 | 6.43 | 304 | 12.5 | 11 |
| LAO-1.6(g) | 4/10/97 | 13:30 | 14:40 | 40 | 9.3 | 9.3 | 6.3 | 0.259 ms/cm | 10 | 14.24 |
| LLAO-2 | 10/10/96 | 10:30 | 11:50 | | 22.15 | 24 to 28 | 7.39 | 4.22 | 14.5 | 12 |
| LLAO-2 | 5/5/97 | 10:50 | 12:45 | 15 | 23.73 | 24 | 7.31 | 0.469 ms/cm | 13.9 | 3.98 |
| LLAO-4 | 10/15/96 | | | | 5.75 | 6 to 15 | 6.95 | 3.97 | 17.3 | 10.84 |
| LLAO-4 | 5/6/97 | 9:10 | 10:00 | 25 | 5.1 | 5.3 | 6.87 | 0.424 ms/cm | 12.2 | 2.51 |
| LLAO-5 | 7/22/96 | 11:00 | 12:00 | | 14.68 | 23.5 | 6.85 | 560 | 17.1 | 12.34 |
| LLAO-5 | 5/6/97 | 11:00 | 11:45 | 20 | 12.57 | 12 | 6.51 | 0.808 ms/cm | 16.1 | 6.03 |
| POI-4 | 6/8/96 | 10:15 | 1:30 | | 159.9 | 171 | 7.84 | 418 | 13.6 | 12.74 |
| POI-4 | 4/8/97 | 10:30 | 12:30 | 65 | 162.25 | 163 | 7.97 | 0.427 ms/cm | 12.4 | 13.7 |
| PO-4 | 6/13/96 | | | | 57 | 57 | 7.51 | 390 | 17.4 | |
| PO-4 | 4/16/97 | 9:00 | 14:30 | 15 | 53.45 | 54.6 | 7.03 | 0.451 ms/cm | 14.1 | 13.45 |

# ER PROJECT SURFACE AND GROUND WATER DATA

## SECTION 5. EARTH SCIENCES COUNCIL, PAT LONGMIRE AND FRASIER GOFF
## PAJARITO ER BKGRD WATERS, FIRST OF QUARTERLY SAMPLING

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|
| PP94-50 | WSF | Y | PP |
| PP94-51 | WSF | Y | PP |
| PP94-52 | WSF | Y | PP |
| PP94-74 | WSF | Y | PP |
| PP95-132 | WSF | Y | PP |
| PP95-134 | WSF | Y | PP |
| PP97-1 | WGS | Y | TD |
| PP97-10 | WGI | Y | TD |
| PP97-11 | WGS | Y | TD |
| PP97-12 | WGS | Y | TD |
| PP97-12R | WGS | Y | TD |
| PP97-13 | WGA | Y | BP |
| PP97-13R | WGA | N | BP |
| PP97-14 | WGS | Y | TD |
| PP97-14R | WGS | N | TD |
| PP97-15 | WGS | Y | TD |
| PP97-15R | WGS | N | TD |
| PP97-16 | WGD | Y | TD |
| PP97-16R | WGD | N | TD |
| PP97-17 | WGD | Y | TD |
| PP97-18 | WGD | Y | TD |
| PP97-18R | WGD | N | TD |
| PP97-19 | WGD | Y | TD |
| PP97-1R | WGS | N | TD |
| PP97-2 | WGS | Y | TD |
| PP97-20 | WGS | Y | TD |
| PP97-20R | WGS | N | TD |
| PP97-2R | WGS | N | TD |
| PP97-3 | WSF | Y | TD |
| PP97-4 | WGS | Y | TD |
| PP97-4R | WGS | N | TD |

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|
| PP97-5 | WGS | Y | TD |
| PP97-5R | WGS | N | TD |
| PP97-6 | WGS | Y | TD |
| PP97-6R | WGS | N | TD |
| PP97-7 | WGS | Y | TD |
| PP97-7R | WGS | N | TD |
| PP97-8 | WGI | Y | TD |
| PP97-8R | WGI | N | TD |
| PP97-9 | WGI | Y | BP |
| PP97-9R | WGI | N | BP |

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|

# EARTH SCIENCES, PAJARITO - ER BKGRD WATERS
## FIRST OF QTRLY SAMPLING

| SAMPLE_ID | DATE_COLLECTED | LOCATION | Temp. (deg. C) | Ag (ppm) | Std.D. (+/-) | Al (ppm) | Std.D. (+/-) | As (ppm) | B (ppm) | Std.D. (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|
| PP97-1 | 04/22/97 | DOE Spring | 17.5 | <0.001 | | 0.04 | 0.01 | 0.0013 | 0.013 | 0.002 |
| PP97-1R | 04/22/97 | DOE Spring | 17.5 | 0.001 | 0.001 | 0.06 | 0.01 | 0.0014 | 0.007 | 0.002 |
| PP97-2 | 04/22/97 | Spring 9B | 20.1 | <0.001 | | 0.04 | 0.01 | 0.0016 | 0.012 | 0.002 |
| PP97-2R | 04/22/97 | Spring 9B | 20.1 | <0.001 | | 0.06 | 0.01 | 0.0016 | 0.009 | 0.002 |
| PP97-3 | 04/22/97 | Rio Grande | 12.6 | <0.001 | | 0.17 | 0.01 | 0.0021 | 0.033 | 0.002 |
| PP97-4 | 04/27/97 | Pajarito Spring | 21.3 | <0.001 | | 0.06 | 0.01 | 0.0015 | 0.022 | 0.002 |
| PP97-4R | 04/27/97 | Pajarito Spring | 21.3 | <0.001 | | 0.08 | 0.02 | 0.0015 | 0.019 | 0.002 |
| PP97-5 | 04/27/97 | Seven Springs | 12.4 | 0.001 | 0.001 | 0.64 | 0.01 | 0.0004 | 0.011 | 0.002 |
| PP97-5R | 04/27/97 | Seven Springs | 12.4 | 0.001 | 0.001 | 1.07 | 0.01 | 0.0004 | 0.008 | 0.002 |
| PP97-6 | 05/07/97 | Pine Spring | 6.8 | <0.001 | | 0.74 | 0.01 | 0.0007 | 0.010 | 0.002 |
| PP97-6R | 05/07/97 | Pine Spring | 6.8 | <0.001 | | 10.3 | 0.2 | 0.0007 | 0.017 | 0.002 |
| PP97-7 | 05/07/97 | Apache Spring | 8.3 | <0.001 | | 0.24 | 0.01 | 0.0002 | 0.010 | 0.002 |
| PP97-7R | 05/07/97 | Apache Spring | 8.3 | <0.001 | | 2.23 | 0.03 | 0.0002 | 0.012 | 0.002 |
| PP97-8 | 05/07/97 | W.C. Gallery | 11.3 | <0.001 | | 1.83 | 0.04 | <0.0002 | <0.002 | |
| PP97-8R | 05/07/97 | W.C. Gallery | 11.3 | <0.001 | | 2.74 | 0.02 | <0.0002 | <0.002 | |
| PP97-9 | 05/09/97 | LAOIA-1.1 | 9.7 | <0.001 | | 0.06 | 0.01 | 0.0006 | 0.010 | 0.002 |
| PP97-9R | 05/09/97 | LAOIA-1.1 | 9.7 | <0.001 | | 2.53 | 0.01 | 0.0006 | 0.010 | 0.002 |
| PP97-10 | 05/09/97 | LAOIA-1.1, duplicate | 9.7 | <0.001 | | 0.05 | 0.01 | 0.0007 | 0.009 | 0.002 |
| PP97-11 | 05/13/97 | Upper Canyon de Valle, VCDV-5.0, dup | 8.9 | <0.001 | | 4.14 | 0.01 | 0.0003 | 0.007 | 0.002 |
| PP97-12 | 05/13/97 | Upper Canyon de Valle, VCDV-5.0 | 8.9 | <0.001 | | 4.58 | 0.01 | 0.0003 | 0.007 | 0.002 |
| PP97-12R | 05/13/97 | Upper Canyon de Valle, VCDV-5.0, raw | 8.9 | <0.001 | | 4.80 | 0.01 | 0.0003 | 0.008 | 0.002 |
| PP97-13 | 05/14/97 | LAOB | 4.8 | <0.001 | | 0.54 | 0.02 | <0.0002 | 0.005 | 0.002 |
| PP97-13R | 05/14/97 | LAOB | 4.8 | <0.001 | | 1.85 | 0.01 | <0.0002 | 0.008 | 0.002 |
| PP97-14 | 05/21/97 | Spring 1 | 16.8 | <0.001 | | 0.05 | 0.01 | 0.0044 | 0.041 | 0.002 |
| PP97-14R | 05/21/97 | Spring 1 | 16.8 | <0.001 | | 0.55 | 0.01 | 0.0036 | 0.039 | 0.002 |
| PP97-15 | 05/21/97 | La Mesita | 15.2 | <0.001 | | 0.07 | 0.01 | 0.0007 | 0.046 | 0.002 |
| PP97-15R | 05/21/97 | La Mesita | 15.2 | <0.001 | | 0.55 | 0.01 | 0.0006 | 0.045 | 0.002 |
| PP97-16 | 05/29/97 | Otowi 4 | 27.9 | <0.001 | | 0.03 | 0.01 | 0.0019 | 0.048 | 0.002 |
| PP97-16R | 05/29/97 | Otowi 4 | 27.9 | <0.001 | | 0.05 | 0.01 | 0.0018 | 0.050 | 0.002 |
| PP97-17 | 05/29/97 | Otowi 4, duplicate | 27.9 | <0.001 | | 0.05 | 0.01 | 0.0018 | 0.048 | 0.002 |
| PP97-18 | 05/29/97 | Guaje 5 | 26.8 | <0.001 | | 0.04 | 0.01 | 0.0028 | 0.013 | 0.002 |
| PP97-18R | 05/29/97 | Guaje 5 | 26.8 | <0.001 | | 0.09 | 0.01 | 0.0023 | 0.015 | 0.002 |
| PP97-19 | 05/29/97 | Guaje 5, duplicate | 26.8 | <0.001 | | 0.06 | 0.01 | 0.0022 | 0.015 | 0.002 |
| PP97-20 | 05/29/97 | Sacred Spring | 14.3 | <0.001 | | 0.06 | 0.01 | 0.0018 | 0.032 | 0.002 |
| PP97-20R | 05/29/97 | Sacred Spring | 14.3 | <0.001 | | 0.28 | 0.01 | 0.0019 | 0.031 | 0.002 |

# EARTH SCIENCES, PAJARITO - ER BKGRD WATERS
## FIRST OF QTRLY SAMPLING

| SAMPLE_ID | Ba (ppm) | Std.D. (+/-) | Be (ppm) | Br (ppm) | Ca (ppm) | Std.D. (+/-) | Cd (ppm) | Cl (ppm) | ClO3 (ppm) | Co (ppm) | CO3 (ppm) | Std.D. (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PP97-1 | 0.011 | 0.002 | <0.002 | 0.03 | 10.7 | 0.1 | <0.001 | 2.11 | <0.02 | <0.002 | 0 | |
| PP97-1R | 0.011 | 0.002 | <0.002 | 0.02 | 10.3 | 0.1 | <0.001 | 1.89 | <0.02 | <0.002 | 0 | |
| PP97-2 | 0.004 | 0.002 | <0.002 | 0.03 | 10.1 | 0.1 | <0.001 | 2.06 | <0.02 | <0.002 | 0 | |
| PP97-2R | 0.004 | 0.002 | <0.002 | 0.04 | 9.55 | 0.02 | <0.001 | 2.04 | <0.02 | <0.002 | 0 | |
| PP97-3 | 0.057 | 0.002 | <0.002 | 0.03 | 39.1 | 0.1 | <0.001 | 6.54 | <0.02 | <0.002 | 0 | |
| PP97-4 | 0.041 | 0.002 | <0.002 | 0.06 | 20.2 | 0.1 | <0.001 | 5.03 | <0.02 | <0.002 | 0 | |
| PP97-4R | 0.039 | 0.002 | <0.002 | 0.05 | 20.7 | 0.2 | <0.001 | 4.93 | <0.02 | <0.002 | 0 | |
| PP97-5 | 0.019 | 0.002 | <0.002 | 0.02 | 12.5 | 0.1 | <0.001 | 1.53 | <0.02 | <0.002 | 0 | |
| PP97-5R | 0.019 | 0.002 | <0.002 | 0.02 | 12.4 | 0.1 | <0.001 | 1.51 | <0.02 | <0.002 | 0 | |
| PP97-6 | 0.058 | 0.002 | <0.002 | 0.01 | 12.4 | 0.2 | <0.001 | 1.64 | <0.02 | <0.002 | 0 | |
| PP97-6R | 0.072 | 0.002 | <0.002 | <0.01 | 12.2 | 0.1 | <0.001 | 1.62 | <0.02 | <0.002 | 0 | |
| PP97-7 | 0.072 | 0.002 | <0.002 | 0.02 | 13.7 | 0.1 | <0.001 | 29.1 | <0.02 | <0.002 | 0 | |
| PP97-7R | 0.079 | 0.002 | <0.002 | 0.02 | 13.8 | 0.1 | <0.001 | 28.9 | <0.02 | <0.002 | 0 | |
| PP97-8 | 0.020 | 0.002 | <0.002 | 0.01 | 7.48 | 0.08 | <0.001 | 0.73 | <0.02 | <0.002 | 0 | |
| PP97-8R | 0.023 | 0.002 | <0.002 | <0.01 | 7.91 | 0.05 | <0.001 | 0.69 | <0.02 | <0.002 | 0 | |
| PP97-9 | 0.013 | 0.002 | <0.002 | 0.01 | 6.22 | 0.03 | <0.001 | 1.45 | <0.02 | <0.002 | 0 | |
| PP97-9R | 0.020 | 0.002 | <0.002 | 0.01 | 6.50 | 0.04 | <0.001 | 1.37 | <0.02 | <0.002 | 0 | |
| PP97-10 | 0.010 | 0.002 | <0.002 | 0.01 | 5.80 | 0.05 | <0.001 | 1.48 | <0.02 | <0.002 | 0 | |
| PP97-11 | 0.043 | 0.002 | <0.002 | <0.01 | 7.33 | 0.08 | <0.001 | 1.05 | <0.02 | <0.002 | 0 | |
| PP97-12 | 0.043 | 0.002 | <0.002 | <0.01 | 7.32 | 0.09 | <0.001 | 1.03 | <0.02 | <0.002 | 0 | |
| PP97-12R | 0.047 | 0.002 | <0.002 | <0.01 | 7.30 | 0.05 | <0.001 | 1.03 | <0.02 | <0.002 | 0 | |
| PP97-13 | 0.022 | 0.002 | <0.002 | <0.01 | 8.11 | 0.01 | <0.001 | 9.08 | <0.02 | <0.002 | 0 | |
| PP97-13R | 0.025 | 0.002 | <0.002 | <0.01 | 8.18 | 0.01 | <0.001 | 8.98 | <0.02 | <0.002 | 0 | |
| PP97-14 | 0.022 | 0.002 | <0.002 | 0.03 | 15.0 | 0.1 | <0.001 | 3.24 | <0.02 | <0.002 | 0 | |
| PP97-14R | 0.026 | 0.002 | <0.002 | 0.03 | 15.2 | 0.1 | <0.001 | 3.24 | <0.02 | <0.002 | 0 | |
| PP97-15 | 0.094 | 0.002 | <0.002 | 0.13 | 34.3 | 0.1 | <0.001 | 8.69 | <0.02 | <0.002 | 0 | |
| PP97-15R | 0.102 | 0.002 | <0.002 | 0.13 | 33.4 | 0.2 | <0.001 | 8.62 | <0.02 | <0.002 | 0 | |
| PP97-16 | 0.048 | 0.002 | <0.002 | 0.04 | 21.2 | 0.2 | <0.001 | 9.01 | <0.02 | <0.002 | 0 | |
| PP97-16R | 0.049 | 0.002 | <0.002 | 0.04 | 20.8 | 0.1 | <0.001 | 9.05 | <0.02 | <0.002 | 0 | |
| PP97-17 | 0.047 | 0.002 | <0.002 | 0.04 | 21.0 | 0.1 | <0.001 | 9.14 | <0.02 | <0.002 | 0 | |
| PP97-18 | 0.011 | 0.002 | <0.002 | 0.03 | 17.0 | 0.1 | <0.001 | 3.12 | <0.02 | <0.002 | 0 | |
| PP97-18R | 0.011 | 0.002 | <0.002 | 0.03 | 17.2 | 0.1 | <0.001 | 3.06 | <0.02 | <0.002 | 0 | |
| PP97-19 | 0.011 | 0.002 | <0.002 | 0.03 | 17.4 | 0.1 | <0.001 | 3.10 | <0.02 | <0.002 | 0 | |
| PP97-20 | 0.104 | 0.002 | <0.002 | 0.02 | 22.7 | 0.2 | <0.001 | 2.04 | <0.02 | <0.002 | 0 | |
| PP97-20R | 0.112 | 0.002 | <0.002 | 0.02 | 22.4 | 0.1 | <0.001 | 1.96 | <0.02 | <0.002 | 0 | |

# EARTH SCIENCES, PAJARITO - ER BKGRD WATERS
## FIRST OF QTRLY SAMPLING

| SAMPLE_ID | Cond.(F) (µmho/cm) | Cond.(L) (µmho/cm) | Cr (ppm) | Std.D. (+/-) | Cs (ppm) | Std.D. (+/-) | Cu (ppm) | Std.D. (+/-) | DO(F) (ppm) | F (ppm) | Fe (ppm) | Std.D. (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PP97-1 | --- | 125 | 0.004 | 0.002 | <0.002 | | 0.004 | 0.002 | --- | 0.49 | <0.01 | |
| PP97-1R | --- | 124 | 0.004 | 0.002 | <0.002 | | 0.004 | 0.002 | --- | 0.44 | 0.03 | 0.01 |
| PP97-2 | --- | 122 | 0.006 | 0.002 | <0.002 | | 0.003 | 0.002 | --- | 0.44 | <0.01 | |
| PP97-2R | --- | 122 | 0.007 | 0.002 | <0.002 | | 0.003 | 0.002 | --- | 0.43 | 0.03 | 0.01 |
| PP97-3 | --- | 320 | <0.002 | | <0.002 | | 0.004 | 0.002 | --- | 0.16 | 0.05 | 0.01 |
| PP97-4 | 207 | 189 | 0.005 | 0.002 | <0.002 | | <0.002 | | 8.6 | 0.43 | <0.01 | |
| PP97-4R | 207 | 189 | 0.007 | 0.002 | <0.002 | | <0.002 | | 8.6 | 0.42 | <0.01 | |
| PP97-5 | 83 | 105 | 0.002 | 0.002 | <0.002 | | 0.003 | 0.002 | 10.65 | 0.19 | 0.25 | 0.01 |
| PP97-5R | 83 | 105 | 0.002 | 0.002 | <0.002 | | 0.008 | 0.002 | 10.65 | 0.19 | 0.47 | 0.01 |
| PP97-6 | --- | 116 | <0.002 | | 0.003 | 0.002 | 0.008 | 0.002 | --- | 0.10 | 0.36 | 0.01 |
| PP97-6R | --- | 116 | 0.006 | 0.002 | 0.003 | 0.002 | 0.008 | 0.002 | --- | 0.10 | 4.78 | 0.03 |
| PP97-7 | --- | 222 | <0.002 | | <0.002 | | <0.002 | | --- | 0.11 | 0.09 | 0.01 |
| PP97-7R | --- | 223 | 0.003 | 0.002 | <0.002 | | 0.003 | 0.002 | --- | 0.11 | 0.91 | 0.01 |
| PP97-8 | --- | 86.6 | 0.002 | 0.002 | <0.002 | | <0.002 | | --- | 0.06 | 0.70 | 0.01 |
| PP97-8R | --- | 86.3 | 0.003 | 0.002 | <0.002 | | 0.002 | 0.002 | --- | 0.05 | 1.05 | 0.02 |
| PP97-9 | --- | 127 | <0.002 | | <0.002 | | 0.003 | 0.002 | --- | 0.11 | 0.02 | 0.01 |
| PP97-9R | --- | 127 | <0.002 | | <0.002 | | 0.005 | 0.002 | --- | 0.11 | 0.86 | 0.02 |
| PP97-10 | --- | 127 | <0.002 | | <0.002 | | 0.004 | 0.002 | --- | 0.12 | 0.02 | 0.01 |
| PP97-11 | --- | 79.7 | <0.002 | | <0.002 | | 0.005 | 0.002 | --- | 0.06 | 1.47 | 0.01 |
| PP97-12 | --- | 79.8 | <0.002 | | <0.002 | | 0.002 | 0.002 | --- | 0.05 | 1.56 | 0.01 |
| PP97-12R | --- | 79.5 | <0.002 | | <0.002 | | 0.008 | 0.002 | --- | 0.06 | 1.74 | 0.01 |
| PP97-13 | --- | 101 | <0.002 | | <0.002 | | 0.004 | 0.002 | --- | 0.06 | 0.26 | 0.01 |
| PP97-13R | --- | 100 | 0.002 | 0.002 | <0.002 | | 0.006 | 0.002 | --- | 0.06 | 0.76 | 0.01 |
| PP97-14 | --- | 214 | 0.008 | 0.002 | <0.002 | | 0.003 | 0.002 | --- | 0.47 | 0.02 | 0.01 |
| PP97-14R | --- | 214 | 0.009 | 0.002 | <0.002 | | 0.004 | 0.002 | --- | 0.47 | 0.23 | 0.01 |
| PP97-15 | --- | 310 | 0.004 | 0.002 | <0.002 | | <0.002 | | --- | 0.24 | <0.01 | 0.01 |
| PP97-15R | --- | 312 | 0.004 | 0.002 | <0.002 | | 0.003 | 0.002 | --- | 0.23 | 0.33 | 0.01 |
| PP97-16 | --- | 266 | 0.006 | 0.002 | <0.002 | | 0.005 | 0.002 | --- | 0.26 | <0.01 | |
| PP97-16R | --- | 266 | 0.007 | 0.002 | <0.002 | | 0.005 | 0.002 | --- | 0.26 | <0.01 | |
| PP97-17 | --- | 268 | 0.006 | 0.002 | <0.002 | | 0.005 | 0.002 | --- | 0.26 | <0.01 | |
| PP97-18 | --- | 169 | 0.003 | 0.002 | <0.002 | | <0.002 | | --- | 0.28 | <0.01 | |
| PP97-18R | --- | 169 | 0.003 | 0.002 | <0.002 | | 0.006 | 0.002 | --- | 0.28 | 0.01 | 0.01 |
| PP97-19 | --- | 170 | 0.003 | 0.002 | <0.002 | | <0.002 | | --- | 0.28 | <0.01 | |
| PP97-20 | --- | 211 | <0.002 | | <0.002 | | <0.002 | | --- | 0.45 | 0.08 | 0.01 |
| PP97-20R | --- | 213 | <0.002 | | <0.002 | | 0.002 | 0.002 | --- | 0.43 | 0.25 | 0.01 |

# EARTH SCIENCES, PAJARITO - ER BKGRD WATERS
## FIRST OF QTRLY SAMPLING

| SAMPLE_ID | HCO3 (ppm) | Hg (ppm) | I (ppm) | K (ppm) | Std.D. (+/-) | Li (ppm) | Std.D. (+/-) | Mg (ppm) | Std.D. (+/-) | Mn (ppm) | Std.D. (+/-) | Mo (ppm) | Std.D. (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PP97-1 | 67.9 | <0.00002 | <0.01 | 1.62 | 0.02 | 0.03 | 0.01 | 3.05 | 0.01 | <0.002 | | <0.002 | |
| PP97-1R | 68.1 | 0.00001 | <0.01 | 1.47 | 0.02 | 0.03 | 0.01 | 2.98 | 0.01 | <0.002 | | 0.002 | 0.002 |
| PP97-2 | 65.8 | <0.00002 | <0.01 | 1.60 | 0.01 | 0.03 | 0.01 | 3.48 | 0.01 | <0.002 | | <0.002 | |
| PP97-2R | 65.9 | <0.00001 | <0.01 | 1.56 | 0.02 | 0.02 | 0.01 | 2.99 | 0.02 | <0.002 | | 0.002 | 0.002 |
| PP97-3 | 113 | <0.00002 | <0.01 | 2.71 | 0.02 | 0.02 | 0.01 | 7.24 | 0.01 | 0.011 | 0.002 | 0.004 | 0.002 |
| PP97-4 | 96.1 | <0.00002 | <0.01 | 2.27 | 0.01 | 0.04 | 0.01 | 4.54 | 0.01 | <0.002 | | <0.002 | |
| PP97-4R | 96.3 | <0.00001 | <0.01 | 2.27 | 0.01 | 0.07 | 0.01 | 4.56 | 0.01 | <0.002 | | <0.002 | |
| PP97-5 | 52.5 | <0.00002 | <0.01 | 2.12 | 0.01 | <0.01 | | 1.61 | 0.01 | 0.002 | 0.002 | <0.002 | |
| PP97-5R | 52.6 | 0.00001 | <0.01 | 2.18 | 0.01 | <0.01 | | 1.61 | 0.02 | 0.004 | 0.002 | <0.002 | |
| PP97-6 | 51.2 | <0.0002 | <0.01 | 4.42 | 0.03 | <0.01 | | 4.02 | 0.01 | 0.006 | 0.002 | <0.002 | |
| PP97-6R | 51.0 | 0.00002 | <0.01 | 4.46 | 0.03 | <0.01 | | 4.15 | 0.01 | 0.021 | 0.002 | <0.002 | |
| PP97-7 | 64.5 | <0.0002 | <0.01 | 4.73 | 0.04 | <0.01 | | 4.72 | 0.01 | 0.002 | 0.002 | <0.002 | |
| PP97-7R | 64.5 | 0.00003 | <0.01 | 4.58 | 0.02 | <0.01 | | 4.82 | 0.02 | 0.007 | 0.002 | <0.002 | |
| PP97-8 | 44.7 | <0.0002 | <0.01 | 2.18 | 0.01 | <0.01 | | 3.19 | 0.06 | 0.006 | 0.002 | <0.002 | |
| PP97-8R | 44.6 | 0.00003 | <0.01 | 2.09 | 0.01 | <0.01 | | 3.38 | 0.03 | 0.007 | 0.002 | <0.002 | |
| PP97-9 | 56.0 | <0.0002 | <0.01 | 7.47 | 0.02 | <0.01 | | 1.26 | 0.01 | 0.002 | 0.002 | 0.003 | 0.002 |
| PP97-9R | 56.6 | 0.00003 | <0.01 | 7.28 | 0.01 | <0.01 | | 1.59 | 0.01 | 0.007 | 0.002 | 0.007 | 0.002 |
| PP97-10 | 56.4 | <0.0002 | <0.01 | 7.38 | 0.05 | <0.01 | | 1.18 | 0.01 | 0.002 | 0.002 | 0.002 | 0.002 |
| PP97-11 | 33.8 | <0.0002 | <0.01 | 2.74 | 0.01 | <0.01 | | 2.60 | 0.01 | 0.009 | 0.002 | <0.002 | |
| PP97-12 | 33.8 | <0.0002 | <0.01 | 2.70 | 0.03 | <0.01 | | 2.60 | 0.03 | 0.009 | 0.002 | <0.002 | |
| PP97-12R | 33.8 | 0.00002 | <0.01 | 2.64 | 0.01 | <0.01 | | 2.63 | 0.02 | 0.011 | 0.002 | <0.002 | |
| PP97-13 | 33.3 | <0.0002 | <0.01 | 2.35 | 0.01 | <0.01 | | 2.37 | 0.01 | 0.003 | 0.002 | <0.002 | |
| PP97-13R | 35.0 | 0.00003 | <0.01 | 2.22 | 0.01 | <0.01 | | 2.44 | 0.01 | 0.005 | 0.002 | <0.002 | |
| PP97-14 | 117 | <0.0001 | <0.01 | 2.10 | 0.01 | 0.04 | 0.01 | 0.99 | 0.01 | 0.015 | 0.002 | 0.003 | 0.002 |
| PP97-14R | 117 | 0.00004 | <0.01 | 2.01 | 0.01 | 0.04 | 0.01 | 1.05 | 0.01 | 0.045 | 0.002 | 0.003 | 0.002 |
| PP97-15 | 152 | <0.0001 | <0.01 | 2.63 | 0.03 | 0.03 | 0.01 | 1.37 | 0.01 | <0.002 | | <0.002 | |
| PP97-15R | 153 | <0.00001 | <0.01 | 2.53 | 0.03 | 0.03 | 0.01 | 1.40 | 0.02 | 0.014 | 0.002 | <0.002 | |
| PP97-16 | 143 | <0.0001 | <0.01 | 3.69 | 0.02 | 0.04 | 0.01 | 8.23 | 0.01 | <0.002 | | <0.002 | |
| PP97-16R | 143 | 0.00003 | <0.01 | 3.54 | 0.01 | 0.04 | 0.01 | 8.18 | 0.06 | <0.002 | | <0.002 | |
| PP97-17 | 144 | 0.00003 | <0.01 | 3.72 | 0.01 | 0.04 | 0.01 | 8.29 | 0.01 | 0.002 | 0.002 | <0.002 | |
| PP97-18 | 91.2 | <0.0001 | <0.01 | 2.11 | 0.03 | 0.02 | 0.01 | 3.72 | 0.02 | <0.002 | | <0.002 | |
| PP97-18R | 91.5 | <0.00001 | <0.01 | 1.96 | 0.01 | 0.02 | 0.01 | 3.72 | 0.02 | <0.002 | | <0.002 | |
| PP97-19 | 91.4 | <0.00001 | <0.01 | 2.10 | 0.01 | 0.02 | 0.01 | 3.84 | 0.01 | <0.002 | | <0.002 | |
| PP97-20 | 121 | <0.0001 | <0.01 | 2.30 | 0.01 | 0.03 | 0.01 | 0.43 | 0.01 | 0.012 | 0.002 | <0.002 | |
| PP97-20R | 121 | 0.00002 | <0.01 | 2.26 | 0.01 | 0.03 | 0.01 | 0.48 | 0.01 | 0.014 | 0.002 | <0.002 | |

# EARTH SCIENCES, PAJARITO - ER BKGRD WATERS
## FIRST OF QTRLY SAMPLING

| SAMPLE_ID | Na (ppm) | Std.D. (+/-) | NH4 (ppm) | Ni (ppm) | Std.D. (+/-) | NO2 (ppm) | NO3 (ppm) | Pb (ppm) | Std.D. (+/-) | pH (F) | pH (L) | PO4 (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PP97-1 | 11.2 | 0.1 | 0.04 | <0.002 | | <0.01 | 1.37 | <0.002 | | 8.19 | 8.06 | 0.03 |
| PP97-1R | 10.8 | 0.1 | 0.04 | <0.002 | | <0.01 | 1.38 | <0.002 | | 8.19 | 7.98 | 0.03 |
| PP97-2 | 11.0 | 0.1 | 0.04 | <0.002 | | <0.01 | 1.94 | <0.002 | | 7.82 | 7.91 | 0.04 |
| PP97-2R | 10.6 | 0.1 | 0.04 | <0.002 | | <0.01 | 1.89 | <0.002 | | 7.82 | 7.90 | 0.06 |
| PP97-3 | 19.0 | 0.2 | 0.08 | 0.002 | 0.002 | <0.01 | 0.21 | <0.002 | | 8.34 | 8.07 | <0.02 |
| PP97-4 | 12.7 | 0.1 | 0.04 | <0.002 | | <0.01 | 3.98 | <0.002 | | 7.30 | 8.05 | <0.02 |
| PP97-4R | 12.5 | 0.1 | 0.03 | <0.002 | | <0.01 | 3.83 | <0.002 | | 7.30 | 8.01 | <0.02 |
| PP97-5 | 6.66 | 0.02 | 0.03 | <0.002 | | <0.01 | 1.01 | <0.002 | | 7.49 | 7.35 | <0.02 |
| PP97-5R | 6.67 | 0.05 | 0.03 | <0.002 | | <0.01 | 0.79 | 0.003 | 0.002 | 7.49 | 7.31 | <0.02 |
| PP97-6 | 6.26 | 0.08 | 0.04 | 0.003 | 0.002 | <0.01 | 0.08 | <0.002 | | 5.81 | 6.81 | 0.24 |
| PP97-6R | 6.07 | 0.02 | 0.04 | 0.002 | 0.002 | <0.01 | 0.05 | <0.002 | | 5.81 | 6.68 | 0.22 |
| PP97-7 | 21.9 | 0.1 | 0.04 | <0.002 | | <0.01 | 1.19 | <0.002 | | 7.27 | 7.51 | 0.14 |
| PP97-7R | 21.2 | 0.1 | 0.04 | <0.002 | | <0.01 | 1.19 | <0.002 | | 7.27 | 7.43 | 0.12 |
| PP97-8 | 5.35 | 0.02 | 0.04 | <0.002 | | <0.01 | 0.76 | <0.002 | | 7.42 | 7.42 | 0.07 |
| PP97-8R | 5.08 | 0.04 | 0.03 | <0.002 | | <0.01 | 0.74 | <0.002 | | 7.42 | 7.39 | 0.08 |
| PP97-9 | 15.6 | 0.1 | 0.10 | <0.002 | | <0.01 | 2.33 | 0.002 | 0.002 | 6.82 | 7.31 | <0.05 |
| PP97-9R | 15.1 | 0.1 | 0.03 | <0.002 | | <0.01 | 1.94 | 0.002 | 0.002 | 6.82 | 7.15 | <0.05 |
| PP97-10 | 15.5 | 0.1 | 0.07 | <0.002 | | <0.01 | 2.40 | <0.002 | | 6.82 | 7.32 | <0.05 |
| PP97-11 | 4.43 | 0.01 | 0.04 | <0.002 | | <0.01 | 0.02 | 0.002 | 0.002 | 7.33 | 7.39 | <0.05 |
| PP97-12 | 4.42 | 0.05 | 0.04 | <0.002 | | <0.01 | 0.93 | 0.002 | 0.002 | 7.33 | 7.33 | 0.10 |
| PP97-12R | 4.28 | 0.01 | 0.03 | <0.002 | | <0.01 | 0.85 | 0.002 | 0.002 | 7.33 | 7.30 | 0.09 |
| PP97-13 | 7.12 | 0.02 | 0.03 | <0.002 | | <0.01 | 0.07 | <0.002 | | 6.64 | 6.68 | <0.05 |
| PP97-13R | 6.78 | 0.03 | 0.03 | <0.002 | | <0.01 | <0.02 | <0.002 | | 6.64 | 6.63 | <0.05 |
| PP97-14 | 30.8 | 0.1 | 0.06 | <0.002 | | <0.01 | 1.80 | <0.002 | | 7.43 | 8.10 | <0.05 |
| PP97-14R | 30.3 | 0.1 | 0.05 | <0.002 | | <0.01 | 1.73 | 0.004 | 0.002 | 7.43 | 8.03 | <0.05 |
| PP97-15 | 31.5 | 0.1 | 0.04 | <0.002 | | <0.01 | 8.38 | <0.002 | | 7.17 | 7.65 | <0.05 |
| PP97-15R | 30.2 | 0.1 | 0.04 | <0.002 | | <0.01 | 8.46 | <0.002 | | 7.17 | 7.58 | <0.05 |
| PP97-16 | 22.4 | 0.1 | 0.04 | <0.002 | | <0.01 | 1.73 | 0.002 | 0.002 | 6.92 | 7.50 | <0.05 |
| PP97-16R | 21.7 | 0.1 | 0.03 | <0.002 | | <0.01 | 1.68 | 0.002 | 0.002 | 6.92 | 7.35 | <0.05 |
| PP97-17 | 22.4 | 0.2 | 0.03 | <0.002 | | <0.01 | 1.73 | <0.002 | | 6.92 | 7.51 | <0.05 |
| PP97-18 | 12.6 | 0.1 | 0.04 | <0.002 | | <0.01 | 2.85 | <0.002 | | 7.86 | 8.12 | <0.05 |
| PP97-18R | 12.0 | 0.1 | 0.03 | <0.002 | | <0.01 | 2.86 | <0.002 | | 7.86 | 8.14 | <0.05 |
| PP97-19 | 12.5 | 0.1 | 0.03 | <0.002 | | <0.01 | 2.87 | <0.002 | | 7.86 | 8.17 | <0.05 |
| PP97-20 | 23.6 | 0.1 | 0.06 | <0.002 | | <0.01 | 0.11 | <0.002 | | 7.53 | 7.41 | <0.05 |
| PP97-20R | 22.8 | 0.1 | 0.04 | <0.002 | | <0.01 | 0.01 | <0.002 | | 7.53 | 7.19 | <0.05 |

# EARTH SCIENCES, PAJARITO - ER BKGRD WATERS
## FIRST OF QTRLY SAMPLING

| SAMPLE_ID | Rb (ppm) | Std.D. (+/-) | Sb (ppm) | Se (ppm) | Si (ppm) | Std.D. (+/-) | SiO2 (ppm calc) | SO4 (ppm) | S2O3 (ppm) | Sn (ppm) | Sr (ppm) | Std.D. (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PP97-1 | 0.003 | 0.002 | <0.0001 | <0.0001 | 37.1 | 0.1 | 79.4 | 1.96 | <0.01 | <0.005 | 0.049 | 0.002 |
| PP97-1R | 0.003 | 0.002 | <0.0001 | <0.0001 | 39.8 | 0.1 | 85.2 | 1.95 | <0.01 | <0.005 | 0.049 | 0.002 |
| PP97-2 | 0.002 | 0.002 | <0.0001 | <0.0001 | 38.1 | 0.1 | 81.5 | 2.12 | <0.01 | <0.005 | 0.051 | 0.002 |
| PP97-2R | 0.002 | 0.002 | <0.0001 | <0.0001 | 35.1 | 0.2 | 75.1 | 2.09 | <0.01 | <0.005 | 0.050 | 0.002 |
| PP97-3 | 0.003 | 0.002 | <0.0001 | 0.0001 | 9.04 | 0.1 | 19.3 | 53.5 | <0.01 | <0.005 | 0.28 | 0.01 |
| PP97-4 | 0.003 | 0.002 | <0.0001 | <0.0001 | 32.2 | 0.3 | 68.9 | 5.59 | <0.01 | <0.005 | 0.13 | 0.01 |
| PP97-4R | 0.003 | 0.002 | <0.0001 | <0.0001 | 31.9 | 0.5 | 68.3 | 5.48 | <0.01 | <0.005 | 0.12 | 0.01 |
| PP97-5 | 0.017 | 0.002 | <0.0001 | <0.0001 | 15.1 | 0.1 | 32.3 | 4.35 | <0.01 | <0.005 | 0.080 | 0.002 |
| PP97-5R | 0.017 | 0.002 | <0.0001 | <0.0001 | 15.9 | 0.3 | 34.0 | 4.35 | <0.01 | <0.005 | 0.075 | 0.002 |
| PP97-6 | 0.004 | 0.002 | <0.0005 | <0.0005 | 37.6 | 0.5 | 80.5 | 9.72 | <0.01 | <0.005 | 0.10 | 0.01 |
| PP97-6R | 0.010 | 0.002 | <0.0005 | <0.0005 | 41.3 | 0.1 | 88.4 | 9.67 | <0.01 | <0.005 | 0.10 | 0.01 |
| PP97-7 | 0.006 | 0.002 | <0.0005 | <0.0005 | 26.6 | 0.1 | 56.9 | 7.51 | <0.01 | <0.005 | 0.12 | 0.01 |
| PP97-7R | 0.006 | 0.002 | <0.0005 | <0.0005 | 28.2 | 0.3 | 60.3 | 7.50 | <0.01 | <0.005 | 0.12 | 0.01 |
| PP97-8 | 0.005 | 0.002 | <0.0005 | <0.0005 | 21.2 | 0.3 | 45.4 | 3.50 | <0.01 | <0.005 | 0.065 | 0.002 |
| PP97-8R | 0.005 | 0.002 | <0.0005 | <0.0005 | 22.2 | 0.3 | 47.5 | 3.48 | <0.01 | <0.005 | 0.067 | 0.002 |
| PP97-9 | 0.040 | 0.002 | <0.0005 | <0.0005 | 31.8 | 0.2 | 68.1 | 11.3 | <0.01 | <0.005 | 0.069 | 0.002 |
| PP97-9R | 0.042 | 0.002 | <0.0005 | <0.0005 | 37.3 | 0.1 | 79.8 | 10.3 | <0.01 | <0.005 | 0.078 | 0.002 |
| PP97-10 | 0.040 | 0.002 | <0.0005 | <0.0005 | 31.9 | 0.3 | 68.3 | 10.2 | <0.01 | <0.005 | 0.066 | 0.002 |
| PP97-11 | 0.008 | 0.002 | <0.0005 | <0.0005 | 25.8 | 0.1 | 55.2 | 7.49 | <0.01 | <0.005 | 0.069 | 0.002 |
| PP97-12 | 0.008 | 0.002 | <0.0005 | <0.0005 | 25.3 | 0.5 | 54.1 | 6.21 | <0.01 | <0.005 | 0.070 | 0.002 |
| PP97-12R | 0.012 | 0.002 | <0.0005 | <0.0005 | 26.0 | 0.2 | 55.6 | 6.16 | <0.01 | <0.005 | 0.072 | 0.002 |
| PP97-13 | 0.005 | 0.002 | <0.0005 | <0.0005 | 17.4 | 0.1 | 37.2 | 4.75 | <0.01 | <0.005 | 0.062 | 0.002 |
| PP97-13R | 0.007 | 0.002 | <0.0005 | <0.0005 | 18.1 | 0.1 | 38.7 | 4.70 | <0.01 | <0.005 | 0.067 | 0.002 |
| PP97-14 | 0.003 | 0.002 | <0.0002 | <0.0002 | 15.4 | 0.1 | 33.0 | 6.99 | <0.01 | <0.005 | 0.21 | 0.01 |
| PP97-14R | 0.003 | 0.002 | <0.0002 | <0.0002 | 17.9 | 0.2 | 38.3 | 6.95 | <0.01 | <0.005 | 0.21 | 0.01 |
| PP97-15 | 0.002 | 0.002 | <0.0002 | <0.0002 | 13.5 | 0.1 | 28.9 | 15.1 | <0.01 | <0.005 | 0.76 | 0.01 |
| PP97-15R | 0.002 | 0.002 | <0.0002 | <0.0002 | 14.2 | 0.2 | 30.4 | 14.9 | <0.01 | <0.005 | 0.76 | 0.01 |
| PP97-16 | 0.006 | 0.002 | <0.0002 | <0.0002 | 43.0 | 0.3 | 92.0 | 5.81 | <0.01 | <0.005 | 0.14 | 0.01 |
| PP97-16R | 0.007 | 0.002 | <0.0002 | <0.0002 | 41.9 | 0.2 | 89.7 | 5.68 | <0.01 | <0.005 | 0.14 | 0.01 |
| PP97-17 | 0.007 | 0.002 | <0.0002 | <0.0002 | 43.4 | 0.4 | 92.9 | 5.81 | <0.01 | <0.005 | 0.14 | 0.01 |
| PP97-18 | 0.004 | 0.002 | <0.0002 | <0.0002 | 27.3 | 0.1 | 58.4 | 3.69 | <0.01 | <0.005 | 0.10 | 0.01 |
| PP97-18R | 0.004 | 0.002 | <0.0002 | <0.0002 | 27.3 | 0.1 | 58.4 | 3.66 | <0.01 | <0.005 | 0.10 | 0.01 |
| PP97-19 | 0.005 | 0.002 | <0.0002 | <0.0002 | 27.4 | 0.2 | 58.6 | 3.67 | <0.01 | <0.005 | 0.10 | 0.01 |
| PP97-20 | <0.002 | | <0.0002 | <0.0002 | 14.4 | 0.1 | 30.8 | 5.84 | <0.01 | <0.005 | 0.49 | 0.01 |
| PP97-20R | 0.002 | 0.002 | <0.0002 | <0.0002 | 15.0 | 0.2 | 32.1 | 5.84 | <0.01 | <0.005 | 0.49 | 0.01 |

# EARTH SCIENCES, PAJARITO - ER BKGRD WATERS
## FIRST OF QTRLY SAMPLING

| SAMPLE_ID | Ti (ppm) | Std.D. (+/-) | Tl (ppm) | TSS (ppm) | Turbidity(F) (ppm) | V (ppm) | Std.D. (+/-) | Zn (ppm) | Std.D. (+/-) | TDS (ppm) | Cation (Sum) | Anion (Sum) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PP97-1 | <0.002 | | <0.002 | --- | --- | 0.010 | 0.002 | 0.06 | 0.01 | 180.1 | 1.328 | 1.263 |
| PP97-1R | 0.002 | 0.001 | <0.002 | --- | --- | 0.010 | 0.002 | <0.01 | | 184.8 | 1.283 | 1.257 |
| PP97-2 | <0.002 | | <0.002 | --- | --- | 0.013 | 0.002 | <0.01 | | 180.3 | 1.322 | 1.237 |
| PP97-2R | <0.002 | | <0.002 | --- | --- | 0.012 | 0.002 | <0.01 | | 172.5 | 1.238 | 1.237 |
| PP97-3 | 0.002 | 0.001 | <0.002 | --- | --- | 0.005 | 0.002 | 0.01 | 0.01 | 261.6 | 3.479 | 3.163 |
| PP97-4 | <0.002 | | <0.002 | --- | 5 | 0.006 | 0.002 | <0.01 | | 228.8 | 2.010 | 1.922 |
| PP97-4R | <0.002 | | <0.002 | --- | 5 | 0.007 | 0.002 | <0.01 | | 228.3 | 2.034 | 1.917 |
| PP97-5 | 0.012 | 0.002 | <0.002 | --- | 0 | <0.002 | | 0.01 | 0.01 | 126.5 | 1.118 | 1.022 |
| PP97-5R | 0.016 | 0.002 | <0.002 | --- | 0 | <0.002 | | <0.01 | | 128.7 | 1.245 | 1.019 |
| PP97-6 | 0.10 | 0.01 | <0.002 | --- | --- | 0.002 | 0.002 | <0.01 | | 172.0 | 1.442 | 1.098 |
| PP97-6R | 0.22 | 0.01 | <0.002 | --- | --- | 0.010 | 0.002 | 0.02 | 0.01 | 193.5 | 2.737 | 1.093 |
| PP97-7 | 0.015 | 0.002 | <0.002 | --- | --- | 0.005 | 0.002 | <0.01 | | 205.1 | 2.183 | 2.062 |
| PP97-7R | 0.032 | 0.002 | <0.002 | --- | --- | 0.003 | 0.002 | <0.01 | | 210.5 | 2.428 | 2.056 |
| PP97-8 | 0.034 | 0.002 | <0.002 | --- | --- | 0.006 | 0.002 | 0.01 | 0.01 | 116.1 | 1.170 | 0.843 |
| PP97-8R | 0.047 | 0.002 | <0.002 | --- | --- | 0.006 | 0.002 | <0.01 | | 119.6 | 1.313 | 0.839 |
| PP97-9 | 0.003 | 0.002 | <0.002 | --- | --- | <0.002 | | 0.02 | 0.01 | 170.1 | 1.300 | 1.238 |
| PP97-9R | 0.018 | 0.002 | <0.002 | --- | --- | <0.002 | | 0.02 | 0.01 | 184.3 | 1.630 | 1.219 |
| PP97-10 | 0.002 | 0.002 | <0.002 | --- | --- | <0.002 | | 0.01 | 0.01 | 169.0 | 1.263 | 1.224 |
| PP97-11 | 0.094 | 0.002 | <0.002 | 26.9 | --- | 0.004 | 0.002 | 0.02 | 0.01 | 120.6 | 1.387 | 0.743 |
| PP97-12 | 0.096 | 0.002 | <0.002 | --- | --- | 0.004 | 0.002 | 0.01 | 0.01 | 119.7 | 1.439 | 0.732 |
| PP97-12R | 0.080 | 0.002 | <0.002 | 20.5 | --- | 0.006 | 0.002 | 0.02 | 0.01 | 121.3 | 1.466 | 0.730 |
| PP97-13 | 0.008 | 0.002 | <0.002 | --- | --- | <0.002 | | 0.01 | 0.01 | 105.4 | 1.047 | 0.905 |
| PP97-13R | 0.022 | 0.002 | <0.002 | 6.9 | --- | <0.002 | | <0.01 | | 109.9 | 1.211 | 0.928 |
| PP97-14 | <0.002 | | <0.002 | --- | --- | 0.017 | 0.002 | <0.01 | | 211.9 | 2.244 | 2.211 |
| PP97-14R | 0.014 | 0.002 | <0.002 | 13.8 | --- | 0.017 | 0.002 | <0.01 | | 217.5 | 2.303 | 2.209 |
| PP97-15 | <0.002 | | <0.002 | --- | --- | 0.004 | 0.002 | <0.01 | | 284.3 | 3.294 | 3.203 |
| PP97-15R | 0.018 | 0.002 | <0.002 | 4.9 | --- | 0.003 | 0.002 | <0.01 | | 285.2 | 3.264 | 3.214 |
| PP97-16 | <0.002 | | <0.002 | --- | --- | 0.015 | 0.002 | 0.06 | 0.01 | 307.8 | 2.820 | 2.764 |
| PP97-16R | <0.002 | | <0.002 | 0.2 | --- | 0.014 | 0.002 | 0.06 | 0.01 | 304.1 | 2.764 | 2.761 |
| PP97-17 | <0.002 | | <0.002 | 0.1 | --- | 0.014 | 0.002 | 0.08 | 0.01 | 309.7 | 2.818 | 2.784 |
| PP97-18 | <0.002 | | <0.002 | --- | --- | 0.012 | 0.002 | <0.01 | | 195.3 | 1.768 | 1.722 |
| PP97-18R | <0.002 | | <0.002 | 0.1 | --- | 0.012 | 0.002 | <0.01 | | 195.0 | 1.754 | 1.725 |
| PP97-19 | <0.002 | | <0.002 | 0.1 | --- | 0.011 | 0.002 | <0.01 | | 196.1 | 1.795 | 1.725 |
| PP97-20 | <0.002 | | <0.002 | --- | --- | <0.002 | | <0.01 | | 210.2 | 2.285 | 2.190 |
| PP97-20R | 0.005 | 0.002 | <0.002 | 36.9 | --- | 0.002 | 0.002 | <0.01 | | 210.6 | 2.271 | 2.185 |

# EARTH SCIENCES, PAJARITO - ER BKGRD WATERS
## FIRST OF QTRLY SAMPLING

| SAMPLE_ID | Balance | B/CL (by wt) | LI/CL (by wt) | F/CL (by wt) | NA/CL (by wt) | K/CL (by wt) | SO4/CL (by wt) | HCO3/CL (by wt) | CS/CL (by wt) | BR/CL (by wt) |
|---|---|---|---|---|---|---|---|---|---|---|
| PP97-1 | 0.0497 | 0.0062 | 0.0142 | 0.2322 | 5.3081 | 0.7678 | 0.9289 | 32.1801 | 0.0000 | 0.0142 |
| PP97-1R | 0.0201 | 0.0037 | 0.0159 | 0.2328 | 5.7143 | 0.7778 | 1.0317 | 36.0317 | 0.0000 | 0.0106 |
| PP97-2 | 0.0661 | 0.0058 | 0.0146 | 0.2136 | 5.3398 | 0.7767 | 1.0291 | 31.9417 | 0.0000 | 0.0146 |
| PP97-2R | 0.0010 | 0.0044 | 0.0098 | 0.2108 | 5.1961 | 0.7647 | 1.0245 | 32.3039 | 0.0000 | 0.0196 |
| PP97-3 | 0.0950 | 0.0050 | 0.0031 | 0.0245 | 2.9052 | 0.4144 | 8.1804 | 17.2783 | 0.0000 | 0.0046 |
| PP97-4 | 0.0446 | 0.0044 | 0.0080 | 0.0855 | 2.5249 | 0.4513 | 1.1113 | 19.1054 | 0.0000 | 0.0119 |
| PP97-4R | 0.0589 | 0.0039 | 0.0142 | 0.0852 | 2.5355 | 0.4604 | 1.1116 | 19.5335 | 0.0000 | 0.0101 |
| PP97-5 | 0.0898 | 0.0072 | 0.0000 | 0.1242 | 4.3529 | 1.3856 | 2.8431 | 34.3137 | 0.0000 | 0.0131 |
| PP97-5R | 0.1999 | 0.0053 | 0.0000 | 0.1258 | 4.4172 | 1.4437 | 2.8808 | 34.8344 | 0.0000 | 0.0132 |
| PP97-6 | 0.2707 | 0.0061 | 0.0000 | 0.0610 | 3.8171 | 2.6951 | 5.9268 | 31.2195 | 0.0018 | 0.0061 |
| PP97-6R | 0.8588 | 0.0105 | 0.0000 | 0.0617 | 3.7469 | 2.7531 | 5.9691 | 31.4815 | 0.0019 | 0.0000 |
| PP97-7 | 0.0569 | 0.0003 | 0.0000 | 0.0038 | 0.7526 | 0.1625 | 0.2581 | 2.2165 | 0.0000 | 0.0007 |
| PP97-7R | 0.1656 | 0.0004 | 0.0000 | 0.0038 | 0.7336 | 0.1585 | 0.2595 | 2.2318 | 0.0000 | 0.0007 |
| PP97-8 | 0.3247 | 0.0000 | 0.0000 | 0.0822 | 7.3288 | 2.9863 | 4.7945 | 61.2329 | 0.0000 | 0.0137 |
| PP97-8R | 0.4402 | 0.0000 | 0.0000 | 0.0725 | 7.3623 | 3.0290 | 5.0435 | 64.6377 | 0.0000 | 0.0000 |
| PP97-9 | 0.0487 | 0.0069 | 0.0000 | 0.0759 | 10.7586 | 5.1517 | 7.7931 | 38.6207 | 0.0000 | 0.0069 |
| PP97-9R | 0.2891 | 0.0073 | 0.0000 | 0.0803 | 11.0219 | 5.3139 | 7.5182 | 41.3139 | 0.0000 | 0.0073 |
| PP97-10 | 0.0310 | 0.0061 | 0.0000 | 0.0811 | 10.4730 | 4.9865 | 6.8919 | 38.1081 | 0.0000 | 0.0068 |
| PP97-11 | 0.6041 | 0.0067 | 0.0000 | 0.0571 | 4.2190 | 2.6095 | 7.1333 | 32.1905 | 0.0000 | 0.0000 |
| PP97-12 | 0.6513 | 0.0068 | 0.0000 | 0.0485 | 4.2913 | 2.6214 | 6.0291 | 32.8155 | 0.0000 | 0.0000 |
| PP97-12R | 0.6704 | 0.0078 | 0.0000 | 0.0583 | 4.1553 | 2.5631 | 5.9806 | 32.8155 | 0.0000 | 0.0000 |
| PP97-13 | 0.1451 | 0.0006 | 0.0000 | 0.0066 | 0.7841 | 0.2588 | 0.5231 | 3.6674 | 0.0000 | 0.0000 |
| PP97-13R | 0.2641 | 0.0009 | 0.0000 | 0.0067 | 0.7550 | 0.2472 | 0.5234 | 3.8976 | 0.0000 | 0.0000 |
| PP97-14 | 0.0149 | 0.0127 | 0.0123 | 0.1451 | 9.5062 | 0.6481 | 2.1574 | 36.1111 | 0.0000 | 0.0093 |
| PP97-14R | 0.0415 | 0.0120 | 0.0123 | 0.1451 | 9.3519 | 0.6204 | 2.1451 | 36.1111 | 0.0000 | 0.0093 |
| PP97-15 | 0.0281 | 0.0053 | 0.0035 | 0.0276 | 3.6249 | 0.3026 | 1.7376 | 17.4914 | 0.0000 | 0.0150 |
| PP97-15R | 0.0156 | 0.0052 | 0.0035 | 0.0267 | 3.5035 | 0.2935 | 1.7285 | 17.7494 | 0.0000 | 0.0151 |
| PP97-16 | 0.0203 | 0.0053 | 0.0044 | 0.0289 | 2.4861 | 0.4095 | 0.6448 | 15.8713 | 0.0000 | 0.0044 |
| PP97-16R | 0.0008 | 0.0055 | 0.0044 | 0.0287 | 2.3978 | 0.3912 | 0.6276 | 15.8011 | 0.0000 | 0.0044 |
| PP97-17 | 0.0124 | 0.0053 | 0.0044 | 0.0284 | 2.4508 | 0.4070 | 0.6357 | 15.7549 | 0.0000 | 0.0044 |
| PP97-18 | 0.0266 | 0.0042 | 0.0064 | 0.0897 | 4.0385 | 0.6763 | 1.1827 | 29.2308 | 0.0000 | 0.0096 |
| PP97-18R | 0.0168 | 0.0049 | 0.0065 | 0.0915 | 3.9216 | 0.6405 | 1.1961 | 29.9020 | 0.0000 | 0.0098 |
| PP97-19 | 0.0401 | 0.0048 | 0.0065 | 0.0903 | 4.0323 | 0.6774 | 1.1839 | 29.4839 | 0.0000 | 0.0097 |
| PP97-20 | 0.0423 | 0.0157 | 0.0147 | 0.2206 | 11.5686 | 1.1275 | 2.8627 | 59.3137 | 0.0000 | 0.0098 |
| PP97-20R | 0.0384 | 0.0158 | 0.0153 | 0.2194 | 11.6327 | 1.1531 | 2.9796 | 61.7347 | 0.0000 | 0.0102 |

# ER PROJECT SURFACE AND GROUND WATER DATA

SECTION 6. MDA-P CLOSURE, ROY BOHN

| SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE | SAMPLE_ID | MEDIA CODE | FILTERED ? | SAMPLE TECHNIQUE CODE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0816-96-0045 | WSF | Y | AS | | | | | | | | |
| 0816-96-0046 | WSF | Y | AS | | | | | | | | |
| 0816-96-0047 | WSF | N | AS | | | | | | | | |
| 0816-96-0048 | WSF | N | AS | | | | | | | | |
| 0816-96-0049 | WTF | Y | SSS | | | | | | | | |
| 0816-96-0051 | WTF | Y | SSS | | | | | | | | |
| 0816-96-0052 | WTF | Y | SSS | | | | | | | | |
| 0816-96-0053 | WTF | Y | SSS | | | | | | | | |
| 0816-96-0091 | WSF | N | TD | | | | | | | | |
| 0816-96-0092 | WSF | N | TD | | | | | | | | |
| 0816-96-0093 | WSF | N | TD | | | | | | | | |
| 0816-96-0094 | WSF | N | TD | | | | | | | | |
| 0816-96-0095 | WSF | N | TD | | | | | | | | |
| 0816-96-0096 | WSF | N | TD | | | | | | | | |
| 0816-96-0097 | WSF | N | TD | | | | | | | | |
| 0816-96-0098 | WSF | N | TD | | | | | | | | |
| 0816-96-0099 | WSF | N | TD | | | | | | | | |
| 0816-96-0100 | WSF | N | TD | | | | | | | | |
| 0816-96-0101 | WSF | N | TD | | | | | | | | |
| 0816-96-0102 | WSF | N | TD | | | | | | | | |
| 0816-96-0103 | WSF | N | TD | | | | | | | | |
| 0816-96-0104 | WSF | N | TD | | | | | | | | |
| 0816-96-0105 | WSF | N | TD | | | | | | | | |
| 0816-96-0106 | WSF | N | TD | | | | | | | | |
| 0816-96-0107 | WSF | N | TD | | | | | | | | |
| 0816-96-0108 | WSF | N | TD | | | | | | | | |
| 0816-96-0109 | WSF | N | TD | | | | | | | | |
| 0816-96-0110 | WSF | N | TD | | | | | | | | |
| 0816-96-0111 | WSF | N | TD | | | | | | | | |
| 0816-96-0112 | WSF | N | TD | | | | | | | | |
| 0816-96-0113 | WSF | N | TD | | | | | | | | |